NOAA Technical Memorandum NWS WR-289

A Century of Weather in Death Valley, CA: 1911-2011

Chris Stachelski[1]

January 2013

[1]NOAA National Weather Service, Weather Forecast Office, Las Vegas, NV

United States
Department of Commerce
Dr. Rebecca Blank
Acting Secretary

National Oceanic and
Atmospheric Administration Dr.
Jane Lubchenco
Under Secretary

National Weather Service
Laura Furgione
Acting Assistant Administrator
For Weather Services

And is approved for publication
By Science and Technology
Infusion Division,
Western Region

Andy Edman, Chief
Science and Technology Infusion Division,
Salt Lake City, UT

A Century of Weather in Death Valley, California: 1911-2011

Table Of Contents

Death Valley as seen from Dante's View. Photo Credit: Chris Stachelski.

Preface

June 8, 2011 marked a significant milestone in the weather history of Death Valley, California. On this date, a virtually continuous record of weather in one of the world's most extreme climates reached the century mark. Fascination with the weather of Death Valley, California ranges well beyond that of meteorologists and weather enthusiasts. Numerous people throughout the United States frequently track temperatures in Death Valley to see just how extreme they are. Each year thousands of visitors – many from Asia and Europe – travel to Death Valley to personally experience the intense summer heat it usually offers.

Few people would argue that Death Valley is one of the leading locations in the United States where there is not only national but global interest in the local climate. However, despite such a prominent location, the weather of Death Valley has been recorded for a century only by volunteer weather observers using equipment provided by the National Weather Service or its' predecessor agencies. No formal weather observatory such as those at Mount Washington, New Hampshire or Blue Hill, Massachusetts has ever been set up here nor has there ever been a National Weather Service office located here. As a result, a formal publication listing the individual records by day, month and year has never been produced by the National Weather Service or any of its predecessor agencies. After 100 years, it was decided that such a prominent weather site should have a formally documented set of such records as well as additional information on the climate of Death Valley, hence this report. It is hoped this publication serves to benefit those seeking information on the climate of Death Valley.

Geographical Introduction

Death Valley is located in southeast California in the Mojave Desert, just west of the California-Nevada state border. The words “Death Valley” can be confusing to people not familiar with the area as they can describe the valley itself or Death Valley National Park. Death Valley National Park is the largest national park in the continental United States and contains a vast range of elevations and landscapes within it including the valley named Death Valley. (From this point on the words “Death Valley’ will refer to the valley and the entire national park). Death Valley stretches nearly 140 miles and is oriented northwest to southeast and extends from Last Chance Canyon in the north to near Saratoga Springs in the south. Abrupt elevation changes in as little as 15 miles exist due to the mountain chains that surround the valley. The valley is bordered by the Last Chance Range and Panamint and Owlshead Mountains to the west, the Sylvania Mountains to the north and the Grapevine, Funeral and Black Mountains to the east. The Owlshead Mountains also form most of the southwest border of the valley, while the southeast portion is a more loosely defined area of the desert floor above sea level. The Panamint Mountains are the tallest mountain range that border the valley floor and have elevations over 11,000 feet tall, with the tallest point being Telescope Peak at 11,049 feet. The Grapevine, Funeral and Black Mountains average 4,000 to 5,000 feet with the tallest peak being just over 7,900 feet. The valley floor itself consists of areas above sea level at the north and south ends as well as a roughly 500 square mile area below sea level in the center of the valley. The lowest point on the valley floor is Badwater Basin at 282 feet below sea level which is the lowest point in North America.

Most of the valley floor is sparsely vegetated with vast sections containing no vegetation at all. Common native vegetation includes creosote bushes with date palms and mesquite trees planted around developed areas. The National Park Service states on their official park website that over 1,000 species of plants and 440 species of animals live in Death Valley National Park, but many of these live in specific sections as well as higher elevations of the park. The valley floor consists of sand and small rocks along with a roughly 200 square mile area of salt flats (Hunt et. al 1966). The mountains that surround the valley do exhibit variations in rock color with shades ranging from cream to dark brown. In most cases, the lower portions of these mountains are void or nearly void of vegetation themselves.

A few areas of the valley floor do contain development. The United States Park Service operates a visitor center in the north-central portion of the valley in an area known as Furnace Creek at an elevation of 190 feet below sea level. Some development does exist just south and southwest of this area including the Furnace Creek Ranch as well as a golf course and the Furnace Creek Airport. About 3,000 feet to the southwest of the Furnace Creek Visitor Center sits the Timbisha Shoshone Tribe Village. Other significant areas of development on or near the valley floor include the Inn at Furnace Creek (located at and slightly

above sea level), Cow Creek (about 150 feet below sea level) and Stovepipe Wells Village (around 10 feet above sea level). All of these also sit in the north-central part of the valley.

History of Weather Observations

According to Roof and Callagan (2003), weather observations in Death Valley were first taken in the 1860s by government surveys, but it was not until 1891 that a consistent set of weather observations were taken in Death Valley. These began on April 30, 1891 and lasted until September 30th of that year as part of a weather station established under a survey conducted jointly by the U.S. Geological Service and the U.S. Signal Service. This station was established at the Pacific Coast Borax Company in a building known as the "Coleman". John H. Cleary was appointed the observer in charge and Mr. R.H. Williams was the assistant but Mr. Williams had to leave soon after his arrival as he fell ill because of the heat. The weather station was equipped with standard weather equipment used by cooperative weather observers including maximum and minimum thermometers in a shelter and a standard rain gauge. In addition, an anemometer, psychrometer, barograph and thermograph were installed. A report published in the first U.S. Weather Bureau Bulletin 1892 by Mark Harrington titled *The Climate and Meteorology of Death Valley, California* provides extremely detailed descriptions of the weather equipment used at the time. Given it was known that this area was extremely hot, thermometers that could read higher readings were ordered. Extremely detailed observations of the weather including cloud cover and cloud type and beginning and end times of precipitation were also taken.

In 1911, a permanent weather station was finally established in Death Valley at the Greenland Ranch. Greenland Ranch was located across the street from what is today the Furnace Creek Ranch. According to Willson (1915), arrangements were made between the United States Weather Bureau and the Pacific Borax Company to establish and maintain a weather station here. On June 8, 1911 observations of maximum and minimum temperature for a twenty four hour period along with precipitation began. The station was located at 178 feet below sea level. The initial thermometers were housed in a shelter located four feet above the ground with the shelter door facing north and 50 feet from the nearest object. The ground below the shelter at this time was alfalfa sod. The rain gauge was located 30 feet from the nearest high object with the top 4 feet above the ground. The ranch foreman was given the job as the station's observer. The station's first observer was T. Osborn.

No changes were made with the location of the equipment until 1924, when on March around the 22nd the rain gauge was moved about five feet to have it located further away from the thermometer shelter. This placed the rain gage now six feet to the east of the shelter. The gauge was also raised up eighteen inches higher.

On September 1, 1929 the entire Greenland Ranch weather station was moved about 310 feet to the north. The weather station was then placed in a fifteen foot square wire fence enclosure. Another major move came around January 1, 1938

when the entire station was moved 40 feet west because of highway construction. The elevation at this later location was about 172 feet below sea level.

On November 20, 1934 an agreement was made to establish a weather station at Cow Creek in Death Valley. On December 3, 1934 a weather station was established at Cow Creek. This weather station was located at the offices for the National Park Service which were located at Cow Creek at the time. The Cow Creek station was located further north and at a slightly higher elevation than the weather station at Greenland Ranch and is not considered a climatologically compatible station. An evaporation station was set up at Cow Creek on April 16, 1958.

In late October 1954, the Greenland Ranch station was moved to 310 feet north and east to an area with open ground below it and with the instrument shelter located three and a half feet above the ground. The station was located about 100 feet east of Highway 190 at this time in an area over bare ground in a fenced in enclosure with the shelter facing north. The area was located about 800 feet east of a date grove. The elevation at this point was listed as 168 feet below sea level.

During the early 1950s, problems began to develop with the weather observations taken at Greenland Ranch. After reviewing and comparing temperatures, officials from the Weather Bureau including the California State Climatologist came across a number of suspect temperatures that appeared inaccurate after consistency checks with the station at Cow Creek. In order to cross check observations more carefully, a thermograph was installed at the Greenland Ranch station on March 22, 1954. The thermograph could then be used to ensure the temperatures taken by the observers were accurate. One large source of the errors was found to be the observer at the time who had vision problems and needed eyeglasses to read the thermometers even in the daytime. The observer even opted to take observations at 7 PM in the dark. The weather bureau then recommended having the observations read during the evening before it became dark in March of 1954.

On May 1, 1955 further problems with the observers at Greenland Ranch began when the observer decided to change the time of observation to a morning reading. Upon a station inspection visit in March 1956, the Weather Bureau learned the longtime observer at the Greenland Ranch was to retire and a new observer would be taking over. The new observer informed the Weather Bureau representative that he was trained to log the observations on the observer form one day back. The new observer stated he was very suspicious of how the previous observer was recording the observations but complied because the previous observer had been there a long time. On March 11, 1956 the observation time was changed back to the evening.

It appeared hopeful for the United States Weather Bureau that the new observer would be enthusiastic in taking the observations, however this turned out not to be the case. By June 1, 1956 the new observer began taking the temperatures in the morning once again as this turned out to be a more convenient time for them. During a station visit on March 21, 1957 it was found the observer was recording the observations at Greenland Ranch but not sending the forms into the United States Weather Bureau. However, the new observer not only worked for Pacific Coast Borax Company but also the Fred Harvey Company which by that time had taken over running the Furnace Creek Ranch and also worked as a local sheriff. As a result of his many jobs, it became increasingly difficult for him to find time to take observations. A thermograph continued in operation to allow for a cross check of observations.

Observations continued to be taken by the observer from the Pacific Borax Company through the summer of 1957. However, by September of that year, the observer became “too busy” to take observations and stopped taking them. The observer at the time stated that when a new thermograph was installed and failed, he became disinterested in the observations and completely ceased taking them. This gap in observations lasted through the end of February of 1958. On March 1, 1958 the National Park Service took over observations at the Greenland Ranch site after the United States Weather Bureau convinced the park service to send staff to the area from their nearby office at Cow Creek in order to keep the records going. The National Park Service also was going to be relocating their visitor center from Cow Creek to Furnace Creek, which eventually was thought of as a new location for the weather station. The period from September 1, 1957 through February 28, 1958 marks the largest period without weather observations of any sort being taken in the Greenland Ranch area.

On April 1, 1961, the official weather station moved to the new Furnace Creek Visitor Center operated by the National Park Service. At this time, the name of Greenland Ranch was also changed officially on the station name listed on weather records. It was felt by the National Park Service at the time that the name “Greenland Ranch” had fallen out of use in this area. An inspection report from the U.S. Weather Bureau at the time states the Greenland Ranch was now called the Furnace Creek Ranch and was “just as green if not greener than formerly”. The new station was located a half of a mile to the north of the date grove that was located 800 feet west of the previous station. On April 25, 1961 the evaporation station was closed at the Cow Creek Visitor Center station and relocated to Furnace Creek. The new station was located at an elevation of 194 feet below sea level. On July 1, 1961 a 4 foot chain link permanent fence was erected around the weather station at Furnace Creek. Outside of changes in the vegetation around the station with some nearby trees and creosote bushes having grown taller, the setting of the station remains the same as it was when it was first installed in April 1961.

This is the oldest known picture of the weather station at Greenland Ranch in Death Valley likely taken at the latest in 1921. It was published in *Monthly Weather Review* by the United States Weather Bureau in January 1922. Image Credit: American Meteorological Society.

This picture of the weather station at Greenland Ranch in Death Valley was taken during a station visit in March 1924 prior to the rain gauge being moved. Photo Credit: NWS Las Vegas archives.

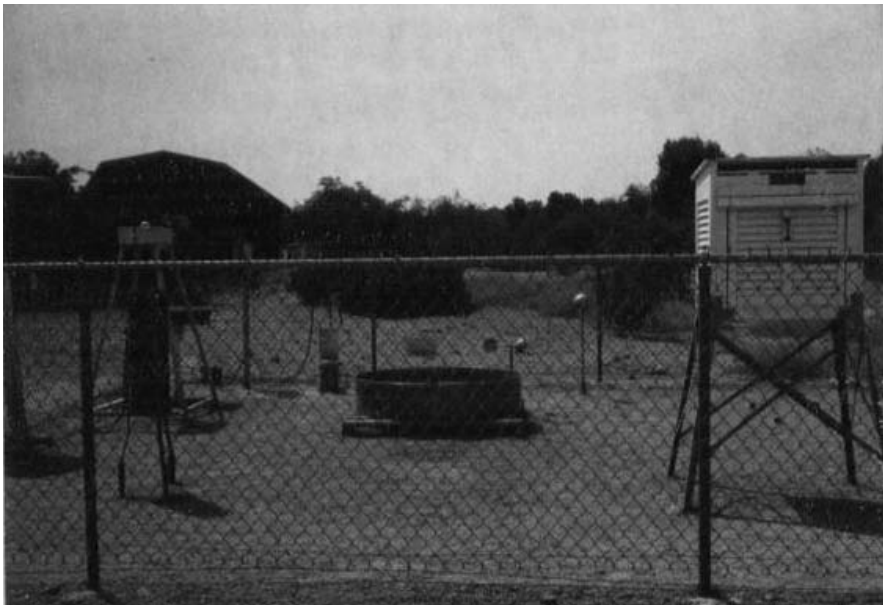
The Greenland Ranch weather station in Death Valley after the rain gauge was moved. It was taken in March 1924. Photo Credit: NWS Las Vegas archives.

During a station inspection to Greenland Ranch in March 1924, two unidentified individuals posed for this photograph at the weather station. Photo Credit: NWS Las Vegas archives.

On March 8, 1960 this photo of the Greenland Ranch (then Furnace Creek Ranch) weather station was taken after a new instrument shelter was installed. The Furnace Creek Inn can be seen in the upper right side of this picture. Photo Credit: Zeal Borum/NWS Las Vegas archives.

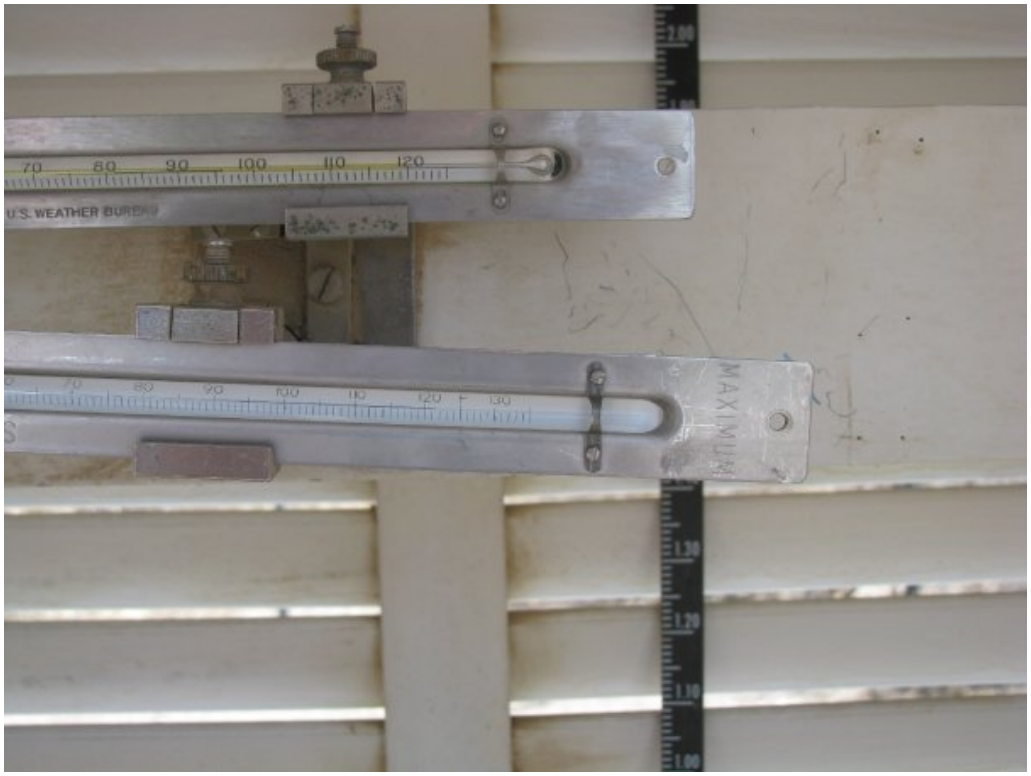
View of the weather station after moving to the Visitor Center at Furnace Creek. The instrument shelter, evaporation pan and rain gauge can all be seen in this photograph. Photo taken in August 1961 after a four and a half foot tall chain link fence was installed around the weather station. Photo Credit: NWS Las Vegas archives.

View of the weather station at the Visitor Center at Furnace Creek looking towards the Funeral Mountains. The instrument shelter, evaporation pan and rain gauge can all be seen in this photograph. Photo taken on February 20, 1962. Photo Credit: NWS Las Vegas archives.



An undated photograph of the Death Valley weather station at Furnace Creek. Photo Credit: NWS Las Vegas archives.

The Death Valley weather station in June 2008. Photo Credit: Chris Stachelski.



Thermometers inside the shelter in Death Valley in June 2008. The temperature at the time read 121 degrees. Photo Credit: Chris Stachelski

An Overview of Death Valley's Climate

Death Valley is one of the world's most extreme climates and is colloquially and meteorologically known as the hottest and driest place in the United States and North America. It is one of the hottest and driest places on the Earth, however several other locations record less precipitation annually such as the Atacama Desert in South America and Antarctica, while Dallol, Ethiopia is considered the hottest significantly inhabited location in the world. Satellite estimated skin temperatures have shown the Lut Desert in Iran to have reached temperatures as high as 159.3°F (http://earthobservatory.nasa.gov/IOTD/view.php?id=77627).

The climate of Death Valley is heavily influenced by the mountain ranges that surround the valley on all sides, especially those to the west as well as its' location below sea level in a narrow and deep yet sparsely vegetated valley. Death Valley sits in the rain shadow of three major mountain ranges to the west. The primary storm track for cold season storm systems is from the west and northwest. These storms usually originate from the Pacific Ocean and then travel inland, having to move across several significant mountain chains before they arrive in Death Valley. The Sierra Nevada, averaging 10,000 to 14,000 feet intercepts most of the moisture from Pacific storm systems with additional moisture intercepted by the 6,000 to 10,000 foot peaks of the White, Inyo and Argus Mountains just to the east of the Sierra Nevada. Whatever moisture is then left then must cross the Panamint Mountain Range, which reaches to just over 11,000 feet. Additional moisture is then blocked by the Panamints before whatever is left arrives in Death Valley. In the summer, moisture typically arrives from the south and again, has to pass over a number of mountain chains in the Mojave Desert that range between 4,000 and 7,000 feet before reaching Death Valley. Death Valley only averages just over two inches of precipitation a year at the official climate station. About 76 percent of the annual precipitation at Death Valley falls in the six month period between November and April. A secondary spike can be seen in association with the North American Monsoon in the period from July through September.

Death Valley is renowned for the extremely high temperatures it records during the summer months. Temperatures in the triple digit are normal from the middle of May to very early October with the most sweltering days featuring highs of 120°F or greater. July is on average the hottest month of the year in Death Valley. The extreme heat appears to be a combination of several factors including the elevation below sea level, the lack of vegetation especially on the lowest part of the valley floor, the narrow width of the valley and its north-south orientation which likely traps air in the valley, radiation of heat from the rocky surfaces of the mountains that surround the valley and low humidity as dry air heats at a much quicker rate than moist air. Death Valley holds the United States, North American and world air temperature record for the highest reading ever recorded at 134°F. It is only one of a handful of locations in the United States that has recorded minimum temperatures in the triple digits.

Despite the fact that Death Valley has recorded the hottest temperature ever in the United States, it is not the hottest location in the country at all times. Death Valley only holds the record for the hottest temperature ever recorded in the United States for July (134°F on the 10th in 1913). A comparison of the hottest temperature by month at Death Valley and for the United States can be seen below:

Month	United States All-Time High Temperature	Death Valley All-Time High Temperature
January	98°F on the 4th in 1997 at Zapata, TX	87°F on the 8th in 1962
February	104°F on the 26th in 1902 at Fort Ringgold, TX	98°F on the 28th in 1986
March	108°F on the 30th in 1954 at Rio Grande, TX	103F on the 31st in 2011
April	118°F on the 25th in 1898 at Volcano Springs, CA	113°F on the 24th in 1946
May	124°F on the 27th in 1896 at Salton, CA	122°F on the 29th in 2000
June	129°F on the 23rd in 1902 at Volcano, CA	128°F on the 29th in 1994
July	134°F on the 10th in 1913 at Death Valley, CA	134°F on the 10th in 1913
August	129°F on the 23rd in 1915 at Niland, CA	127°F on the 12th in 1927 127°F on the 2nd in 1993
September	126°F on the 1st in 1950 at Mecca, CA	123°F on the 1st in 1996
October	117°F on the 2nd in 1980 at Mecca, CA	113°F on the 2nd in 1980
November	105°F on the 12th in 1906 at Craftonville, CA	97°F on the 2nd in 1931 97°F on the 1st in 1966
December	100°F on the 7th in 1938 at LaMesa, CA	89°F on the 3rd in 1949

Despite being the lowest point in North America, Death Valley is located much further north than other locations below sea level near the Salton Sea in California. As the sun angle becomes lower away from the summer solstice, the amount of sunlight and thus potential heating at Death Valley becomes lower than at locations further south, thus Death Valley is not as easily able to heat up. The effect of the sun angle can also be seen in the normal daily high temperatures for Death Valley, which reach their lowest point in December when the days are shortest and the sun angle is lowest. By January as the days become longer and the sun angle increases, normal high temperatures rise six degrees from the beginning to the end of the month. Largely as a result of its latitude, Death Valley rarely is the 'National Hot Spot' during the months of

November, December, January and February. Even when temperatures may reach well into the 90s or even above 100 degrees during strong offshore flow events in southern California during the fall and winter months, temperatures in Death Valley are cooler as areas along the coastal plain heat up considerably from compressional heating which does not take place in Death Valley during offshore flow patterns. During the winter and even sometimes the spring and fall, the 'National Hot Spot' can frequently be found in South Texas or the Florida peninsula which are further south and moderated from the colder air masses further north by their proximity to water. Communities in the Rio Grande Valley of Texas or in South Florida frequently exceed high temperature values recorded in Death Valley in the time between late October and March.

Few winters have passed without the temperature dropping to or below freezing at least once. Severe cold snaps, while infrequent, have occurred in Death Valley during the winter months mainly in December and January. The most brutal cold snaps in Death Valley have seen temperatures drop into the teens and have had high temperatures stay in the 30s. These cold snaps can threaten dates grown in Death Valley.

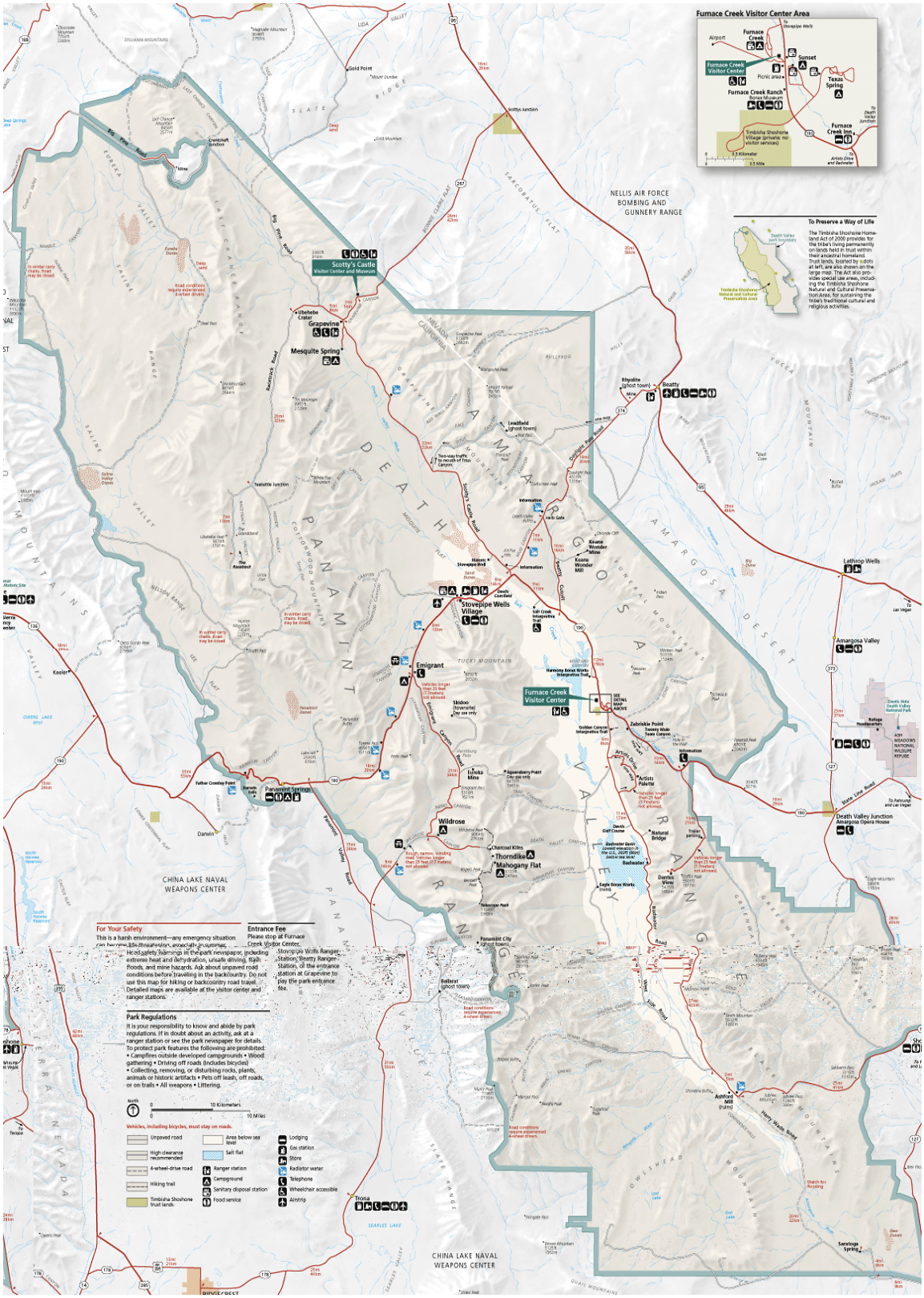
Once winter passes, those winters that do bring above normal precipitation to Death Valley especially over a period of several months are often followed by an extensive wildflower bloom in March and April. These blooms typically peak around the occurrence of the first stretch of multiple days with high temperatures in the 90s. In springs following a winter with below normal precipitation, few wildflowers may bloom – if at all.

Although no official wind records have been kept in Death Valley, reports and observations from park rangers over the years have described the strongest winds often coming from the north and northwest behind the passage of cold fronts. These winds are likely funneled by the narrow valley and enhanced by the orientation of Death Valley. Winds exceeding 50 mph are not frequent, but when they occur can be responsible for lofting sand and dust and creating dust storms that can quickly lower visibility to as low as a few feet. Strong winds associated with cold fronts are most common between October and May. During the summer, thunderstorms will occasionally produce strong winds. Away from storm systems and thunderstorms, winds in the valley at night at the Furnace Creek will frequently come from the east as a mountain-valley wind circulation develops and air rushes in from the mountains into the valley.

Sunshine is prevalent throughout the year in Death Valley. The cloudiest periods occur during the winter. Even then low clouds obscuring the mountains around the valley for more than a day are rare. During the summer, cloud cover can become extensive when monsoon moisture moves into the area. The sunniest periods of the year are typically the transition seasons of the fall and spring. Fog, although unusual, has been reported in Death Valley but does not last more than a few hours.

Aside from the heat, the biggest weather hazard in Death Valley comes from thunderstorms in the warm season and strong cold season storm systems that produce heavy rain. Rainfall totals exceeding even a quarter of an inch on the valley floor can result in flash flooding as runoff from the mountains brings rock and mud downhill and towards the valley floor. In many areas the rugged terrain can quickly funnel water creating dangerous flash flood situations. Flash floods in Death Valley can strand travelers and wash out roads or cover them with debris making travel impossible.

Snow has fallen on the valley floor in Death Valley in the winter but only in a handful of events. Snow can be found on the mountains around Death Valley each winter and as early as October and as late as May in higher mountain ranges such as the Panamints. Colder winter storms about once a winter will produce snow as low as the 3000 foot elevation bringing snow to locations such as Scotty’s Castle and Dante’s View. Only small hail has been documented in Death Valley. There are no reports of freezing rain.



United States Park Service map of Death Valley National Park.

Temperature Record

Official weather observations in Death Valley have always been taken by volunteer weather observers for the National Weather Service since the beginning of records. Official weather records for Death Valley are considered to be observation day records as the data is not collected at the end of each calendar day. In a system where observation day is used to keep on a record, readings of temperatures are made officially once a day generally at a designated observing time determined as part of the agreement between the observer and the National Weather Service. Data collected each day has typically consisted of a high temperature and low temperature for a twenty four period ending at the time of observation as well as the temperature at the time of observation.

This time of observation has changed though over the years. From 1911 through 1981 (except from May 1, 1955 through March 10, 1956 and June 1, 1956 through August 31, 1957 when observations were taken between 0700 and 0800 local time), daily observations always took place between 1600 and 1900 local time. During this time period, the majority of the high temperatures are likely from the day the observation was taken on. Since 1982, observations have been taken at 0800 LST/LDT. Thus, with observations taken at 0800 LST/LDT, the high temperature typically is for the preceding day from that on which it was reported and the low temperature likely would have occurred on the morning the observation was taken.

Temperature records in Death Valley used in this report were made with maximum-minimum liquid in glass thermometers housed in a white painted cotton region shelter that meets National Weather Service observing standards. One thermometer is used to record the highest temperature in the last 24 hours while the other the lowest. They are then reset manually by the observer after collecting their observation.

The Approach To Construct A More Accurate Temperature Record

In order to better represent a set of weather records by calendar day the author assumed that in each case the high and low temperature in the official National Climatic Data Center datasets was for a calendar day. The official National Climatic Data Center dataset consists of a set of records that uses observation day for the entire period. The dataset used for this study thus time shifted the high temperatures in the National Climatic Data Center's dataset to the calendar day that occurred on starting in 1982 in order to provide what was felt to be a more accurate indication of the day the extreme occurred on. It is possible in an isolated case the high may have not have occurred that way. However, it is felt such days are not represented in the extreme daily records. No adjustments at all were made for minimum temperatures, thus each minimum was left assigned to the day it was reported on. However, there may be some cases on a very cold

morning where the at observation temperature may wind up being the low for the next twenty-four hour period and thus reflected as the next day's minimum temperature.

Temperature data for Death Valley were initially written on a monthly observation form. Initially this form was titled "Cooperative Observer's Meteorological Record". During the early 2000s the National Climatic Data Center in Asheville, North Carolina digitized the cooperative weather records nationwide including those of Death Valley's. Data from 1948 onwards was assigned to a data set known as TD-3200 or Surface Land Daily Cooperative Summary of the Day while the data from 1911 through 1947 was assigned to TD-3206 known as Cooperative Summary Of The Day - CDMP (Pre 1948). While the datasets from 1948 onward did have quality control measures noted in them by the National Climatic Data Center, some of the earlier data before the 1940s did not undergo this. Therefore the author of this paper worked with the National Climatic Data Center staff to remove suspect temperature data. Many of these observations appear to be related to poor observing practices on the part of observers at the time (such as not resetting thermometers after taking an observation) or occasional faulty equipment. In some cases a broken thermometer accounted for a large chunk of missing maximum or minimum temperatures until the observer was able to be sent a new thermometer. Prior to the 1940s very little quality control was done on cooperative observer data. In addition, meteorologists at the time lacked the duration of observations in such an extreme region to perform a thorough assessment of the area's climate with respect to catching some outlying reports. Tthe handwriting on older forms was in many cases illegible or hard to read due to the forms being pulled from microfilm. A number of erroneous temperatures were corrected through consulting the *Climatological Data* publication for values as well as restudying original forms available online from the National Climatic Data Center's Image and Publications System. Lastly, a few months of data were found missing in the records of the National Climatic Data Center but had hard copies of the observations on file at the Death Valley library in Cow Creek. The author, through correspondence with the National Park Service, was able to obtain copies of these forms and have them added into the official National Climatic Data Center records.

During the mid-2000s, the National Weather Service instituted several changes to the cooperative weather observing program. Among the changes was to submit weather observations through a computer program known as WxCoder. This allowed observers to enter their observations in at a computer and then generated the monthly observation form in a typed format. This significantly reduces the risk of an observation being misread due to poor handwriting. In 2011, the official National Climatic Center datasets for Death Valley moved to a new dataset called GHCN-Daily or (Global Historical Climatology Network)-Daily.

It should be noted that as of the publication of this report, some suspect low temperature data was not removed from the National Climatic Data Center's

datasets as reviews by their staff were still underway. This included low temperatures on May 25 and 27 in 1922, May 1, 1925, from April 24 through the 28 of 1927, May 17, 1927, June 2, 1934 and from May 29 through June 1 of 1935. Low temperatures on these dates were considered suspect by the author based on small diurnal temperature ranges given relatively clear conditions as well as based on comparison checks with nearby cooperative weather stations.

The temperature dataset compiled locally then was used to generate additional temperature statistics listed in this publication as well. These included statistics on the number of days a certain temperature threshold was reached in a month, consecutive days of a certain temperature as well as average temperature.

Daily Temperature Records

Daily records of temperature in Death Valley started on June 8, 1911. All temperature data is given in degrees Fahrenheit. On overview of each month's temperature extremes is listed below, followed by the record extremes for each day.

Month	Record Highest Maximum	Record Lowest Maximum	Record Highest Minimum	Record Lowest Minimum
January	87 on 1/8/1962	38 on 1/21/1937	70 on 1/26/1934	15 on 1/8/1913
February	98 on 2/28/1986	44 on 2/9/1920	68 on 2/27/1963	21 on 2/13/1933
March	103 on 3/31/2011	55 on 3/12/1937	77 on 3/30/1978	26 on 3/4/1989
April	113 on 4/24/1946	59 on 4/10/1927*	87 on 4/15/1947	35 on 4/6/1921
May	122 on 5/29/2000	60 on 5/5/1921	94 on 5/20/2008	42 on 5/7/1930*
June	128 on 6/29/1994	74 on 6/6/1925	102 on 6/16/1917	49 on 6/2/1923
July	134 on 7/10/1913	85 on 7/8/1918	110 on 7/5/1918	62 on 7/1/1927
August	127 on 8/2/1993*	80 on 8/18/1983	106 on 8/1/1920	65 on 8/27/1972*
September	123 on 9/1/1996	76 on 9/20/2005*	100 on 9/18/1927	41 on 9/22/1924
October	113 on 10/2/1980	61 on 10/30/1920	85 on 10/8/1964*	32 on 10/13/1924*
November	97 on 11/1/1966*	45 on 11/27/1919	75 on 11/8/1913	24 on 11/27/1921
December	89 on 12/3/1949	38 on 12/23/1990	70 on 12/23/1914*	19 on 12/27/1924
Annual	134 on 7/10/1913	38 on 12/23/1990*	110 on 7/51918	15 on 1/8/1913

Daily records started on June 8, 1911.
***Date listed above is most recent occurrence.**

January

Period of Record: 1912- 2011

Date	Record High Maximum	Record Low Maximum	Record High Minimum	Record Low Minimum
1	79/1936	48/1991	59/1931	21/1919
2	80/2001	48/1991	64/1931	22/1991*
3	81/1997	46/1991	64/1931	22/1974*
4	76/1943*	44/1974	54/1932*	22/1950
5	77/1981	44/1974	52/1926	19/1950
6	82/2003	45/1993*	57/2008	20/1950*
7	84/2003*	46/1937	54/2003*	19/1950
8	**87/1962**	40/1937	58/1962*	**15/1913**
9	83/1962	43/1937	65/1962	16/1913
10	83/1943	41/1930	55/1995	21/1937
11	83/1983	41/1949	57/2005	22/1937
12	81/1983	44/1949	51/1980	23/1919
13	82/1942	47/1949*	55/1979*	20/1963
14	81/1980	45/1916	58/1979	22/1913
15	80/2003	48/1919	54/1978	23/1963
16	81/2009*	48/1917	50/1979	23/1963
17	80/1912	49/1917	53/1967	22/1919
18	81/2009	50/1917	52/1923	20/1928
19	82/1944	51/1917	57/1976	18/1928
20	82/1923	40/1937	57/1969	20/1928
21	81/1975	**38/1937**	64/1969	20/1928
22	84/1968	40/1937	60/1967	20/1929*
23	83/1968	45/1937	56/1923	22/1928
24	81/1970	48/1937	54/1923	22/1928
25	82/2003	49/1937	59/1999	21/1937
26	85/1912	50/1937	**70/1934**	25/1937*
27	82/1931	49/1957	62/1934	25/1950
28	86/1966	52/1957	55/1984*	27/1950
29	82/1931	53/1979	54/1987	25/1948
30	81/2009	52/1979*	56/1963	27/1945
31	86/1954	49/1979	58/1963	28/2002

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

February

Period of Record: 1912- 2011

Date	Record High Maximum	Record Low Maximum	Record High Minimum	Record Low Minimum
1	86/1912	46/1979	61/1935	28/2002*
2	86/1935	52/1979*	60/1935	27/1923
3	84/1935	49/1939	58/2005	26/1932
4	83/1935	57/1985*	56/1976*	25/1932
5	87/1967	53/1985	59/1961	29/1985
6	85/1954	48/1989	56/1915	26/1985
7	88/1912	50/1989	58/1980*	26/1985
8	86/1954	46/1989	57/1915	28/1933
9	91/2006	**44/1920**	59/1962	28/1933
10	85/2006	54/1982	63/1962	29/1946*
11	90/1996	53/1986	60/1922*	32/2001*
12	90/1996	57/1986	62/1951	28/1933
13	90/1996	52/1949	57/1951*	**21/1933**
14	89/1991*	53/1990	63/1957	29/1949
15	89/1977*	57/1990*	64/1957	29/1990*
16	90/1913	53/2009	59/1987	26/1956
17	90/1981	60/1932	59/2007*	29/1990
18	90/1981	55/1918	58/1970*	32/1929
19	90/1995	53/1969	58/1915*	34/1929
20	89/1995	61/1953	66/1996	33/1919
21	88/1995*	61/1922	62/1963	32/1919
22	89/1943	57/1998	61/1963	33/1919
23	90/1954	59/1969*	66/1963	31/1919
24	93/1986	62/1920	61/1973	34/1929
25	94/1989*	57/1987	61/1917	29/1919
26	96/1986	56/2001*	62/1915	30/1919
27	97/1986	54/1962	**68/1963**	30/1921
28	**98/1986**	55/1993	62/1986*	32/1962
29	89/2008	65/1960	61/1940	37/1928

* Also in previous years.

Bold values are the monthly extremes.

Bold and underlined values are the all-time extremes.

March

Period of Record: 1912- 2011

Date	Record High Maximum	Record Low Maximum	Record High Minimum	Record Low Minimum
1	94/1986	61/1945	70/1936	34/1919
2	91/1986*	60/1951	76/1936	35/1985*
3	92/1986*	60/1951	65/1967	34/1971*
4	96/1986	60/1976*	66/1957	**26/1989**
5	97/1972	64/2000*	68/1957	35/1997*
6	96/1972	64/2000*	66/1936*	36/1966
7	96/1972	64/1952	67/1936	36/1966
8	96/1972	59/1922	67/1934	34/1919
9	96/1972	65/1969*	72/1914	39/1964
10	98/1972*	62/1969	71/1989	40/1962*
11	98/1916	60/1917	74/1989	30/1919
12	97/2007*	**55/1973**	65/1994	37/1956
13	98/2007	61/1973	69/1994	35/1990
14	99/2007	62/1944	66/1972	39/1919
15	99/2007	58/1987	71/2003	30/1919
16	102/2007	59/1930	72/1972	36/1919*
17	102/2007	56/1982	70/1914	35/1919
18	98/1947*	65/1927*	75/1916	38/1917
19	97/2004*	64/1987	75/1916	41/1998*
20	101/2004	59/1991	70/2007*	41/1945
21	102/2004	62/1919	72/1978	40/1952
22	99/2004*	60/1920	72/1972	39/1919
23	99/1990	62/1920	72/1967	41/1917
24	98/1990	65/1927	74/1930	40/1921
25	100/1930	67/1980	75/1940	42/1913
26	100/1988	60/1920	73/1971	38/1977
27	98/1986	62/1920	75/1960	38/1913
28	102/1986	65/1975	70/1957	39/1913
29	99/2002	69/1977	71/1943	42/1998
30	101/2002	68/1977	**77/1978**	41/1998
31	**103/2011**	68/1949	72/2011	44/1925

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

April

Period of Record: 1912- 2011

Date	Record High Maximum	Record Low Maximum	Record High Minimum	Record Low Minimum
1	105/1966	66/1940	73/2003*	44/1917
2	103/1966	63/1997	72/1960	41/1998
3	105/1961	71/1965	72/2011*	42/1945
4	104/2000	61/1965	83/1914	40/1921
5	103/2000*	**59/1926**	74/1969*	40/1921
6	108/1989	65/1921	76/1953	**35/1921**
7	109/1989	65/1958	79/1960	41/1932
8	110/1989	61/2011	80/1930	40/1921
9	110/1989	67/1965	79/1951	39/1999
10	108/1989	**59/1927**	80/1972	42/1929
11	107/1934	67/1941*	77/1972	44/1929
12	107/1934	62/1941	77/1989	45/1965*
13	107/2002	70/1922*	79/1914	36/1912
14	109/2002	65/1939	77/1935*	46/1938*
15	108/1947	69/1988	**87/1947**	44/1998*
16	107/1947	64/1927	82/1947	45/1921
17	107/1954*	71/1920	82/1947	43/1917
18	108/1954*	63/1995	83/1947	43/1985
19	108/1994*	71/1967	81/1947*	48/1995*
20	109/1994	71/1967	85/1989	42/1912
21	109/2009	71/1925	83/1989	46/2010*
22	108/2009*	72/2010*	79/1986*	48/1928*
23	109/1946	73/2003	79/1930	45/1937
24	**113/1946**	68/1921	81/1975*	45/1921
25	109/1946*	71/1984	82/1946	45/1921
26	110/1996	75/1984*	79/1987*	49/1989
27	110/2000	75/1984	78/1953*	47/1963
28	110/2007	70/1970	82/1916	46/1970
29	112/2007	65/1914	85/1921	42/1967
30	111/1981	66/1914	83/1977	50/1955*

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

May

Period of Record: 1912- 2011

Date	Record High Maximum	Record Low Maximum	Record High Minimum	Record Low Minimum
1	111/1981	69/1915	79/1943	51/1937
2	112/1947	70/1915	84/1981	51/1933
3	116/1947	77/1950*	83/1985	51/1933
4	114/1947	74/1930	83/1918	53/1950*
5	116/1947	**60/1921**	85/1947	45/1921
6	112/1989	65/1921	83/1931	47/1988
7	114/1989	67/1921	83/1962*	**42/1930**
8	112/2001*	77/1955	86/1954	51/1932*
9	112/2001	68/1977	84/1989	45/1928
10	111/2001*	68/1918	80/2004	50/1928
11	115/1960	70/1933	85/2001	46/2000
12	116/1996	76/1998	86/1960	49/1989
13	116/1997	72/1998	87/1927	50/1998
14	115/1997	83/1995	89/1937	46/1998
15	118/1927	81/2011*	88/2006	54/1953*
16	114/2006	78/2011	87/1937	53/1953
17	116/2009*	63/1921	85/2007*	55/1921
18	118/2009*	83/1991*	87/1954	**42/1921**
19	120/2008	75/1921	93/1954	45/1921
20	118/2008	75/1921	**94/2008**	55/1928
21	115/2000	75/1921	90/1954	49/1975
22	118/2000	70/1957	86/1979*	44/1922
23	119/2000	70/1921	89/1984	50/1921
24	119/2001	78/1927	90/1943	48/1978
25	120/1913	80/1927	87/1947	48/1978
26	119/1951	84/1953	87/1951*	58/1917
27	117/2003*	75/1918	91/1984	55/1998
28	121/2003	80/1918	88/2000*	58/1962
29	**122/2000**	68/1918	91/2003	55/1953*
30	118/2002*	85/1921	90/1939	50/1927
31	118/2001	80/1948	91/2001	53/1923

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

June

Period of Record: 1911- 2011

Date	Record High Maximum	Record Low Maximum	Record High Minimum	Record Low Minimum
1	121/2001	83/1967	92/1922	52/1923
2	119/2003	88/1999	91/2007	**49/1923**
3	120/1996	83/1999	91/1939	60/1923
4	122/1996	86/1933	92/2003*	58/1998
5	121/1996*	76/1993	91/2003	54/1925
6	121/2002*	**74/1925**	95/1927	54/1993
7	123/1955	82/1995	93/2006	55/1995
8	121/1955	90/1995	92/2003	57/1995
9	120/1973*	88/2004	94/1955	57/1912
10	120/1994*	87/1964	92/1955	60/1913
11	121/1921	92/1976	92/1949	54/1928
12	124/1918	90/1943	92/1936*	61/1928
13	123/1918	79/1997	100/1918	59/1998
14	122/2000*	86/1997	93/1940	57/1997
15	126/2000	87/1962	96/2007*	58/1997
16	123/1917	83/1995	**102/1917**	56/1923
17	122/1917	89/1969*	94/1961*	50/1921
18	121/2008*	92/1979	94/1961	57/1923*
19	123/1961	93/1975	96/1985*	60/1979
20	125/1961	88/1938	97/1915	57/1979
21	125/1961	90/1923	97/1915	60/1923
22	124/1961	89/1923	100/1961	63/1944
23	124/2011*	94/1912	98/1981*	60/1912
24	125/2006	100/1952	98/1959	58/1912
25	125/2006	96/1975	95/1974*	65/1950
26	126/1994	90/1928	93/2002*	64/1965
27	126/1994	90/1928	101/1994	64/1913
28	125/1994	85/1920	100/1918	63/1913
29	**128/1994**	90/1920	98/1956	60/1920
30	127/1994	89/1982	100/1918	61/1927

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

July

Period of Record: 1911- 2011

Date	Record High Maximum	Record Low Maximum	Record High Minimum	Record Low Minimum
1	125/1990	98/1982	97/1999	**62/1927**
2	127/2001	100/1935	99/1934	67/1975
3	127/2001	96/1912	98/1986	69/1992*
4	126/2007*	100/1921	100/1915	67/1992*
5	127/2007	103/1982	**110/1918**	64/1921
6	129/2007	102/2001	95/2007*	63/1928*
7	127/1989*	103/2001	97/1927	67/1923
8	128/1913	**85/1918**	100/1927	70/1933
9	129/1913	88/1926	101/2008	68/1933
10	**134/1913**	98/1936	100/1927*	71/1928
11	129/1913	105/1918	105/1920	65/1928
12	130/1913	95/1918	100/1931*	73/1926
13	131/1913	104/1932	100/2002	72/1995
14	128/1972	99/1932	100/1925	73/1912
15	128/1972	101/1986	100/1949	73/1928
16	127/2006*	106/1993	100/2005*	74/1944*
17	129/1998	99/1987	100/1959*	73/1931*
18	129/1960	96/1987	102/2010	69/1987
19	129/2005	101/1987	102/1960	75/1987*
20	126/1931	92/1987	101/2005	75/1969*
21	124/2003*	98/1987*	101/2005	69/1987
22	125/2006*	91/1997	105/1917	70/1925*
23	127/1916	94/1984	102/2003	72/1984
24	126/2006*	102/1982	103/1916	70/1925
25	126/2006	102/1982	99/1964	73/1997
26	127/1933	90/1982	101/1980*	68/1938
27	127/1933	101/1984	102/2006	75/1982*
28	126/1995	100/1941	100/1943*	73/1931
29	127/1995	100/1999	100/1928*	71/1997*
30	124/2002*	98/1936	98/2010*	70/1931
31	125/1920	100/1918	100/1921	70/1931

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

August

Period of Record: 1911- 2011

Date	Record High Maximum	Record Low Maximum	Record High Minimum	Record Low Minimum
1	126/1993	100/1918	**106/1920**	70/1946
2	**127/1993**	103/1922	100/1916	74/1928
3	125/1992	104/1945	100/1921	71/1944
4	124/1998	103/1976*	100/1925	69/1928
5	125/1998*	105/1976*	100/1915	67/1931
6	126/1998*	102/1982	99/1975*	72/1931
7	125/1998	102/2009*	99/1947	68/2009
8	125/1981	100/1921	101/1920	72/1941
9	124/1978	97/1983	99/1915	74/2009
10	125/2004	96/1942	100/1915	71/1945
11	126/1933	99/1941	100/1970*	74/1941
12	**127/1933**	89/1979	100/1937*	69/1923
13	125/1996*	99/1931	100/1958*	70/1923
14	124/2002*	99/1968	100/1924	72/1928*
15	124/2002*	82/1984	97/2008*	72/1933
16	125/1994	95/1983	98/2008*	69/1945
17	124/2001*	85/1977	97/2007*	72/2009*
18	125/2001	**80/1983**	96/2007*	70/1912
19	124/1992	81/1983	99/2003*	68/1923*
20	123/1919	95/1983	98/1999*	**65/1921**
21	122/2009	94/1968	100/1919	70/1996
22	121/2006*	95/1968	98/1915	67/1947
23	123/1913	94/1921	95/1915	68/1947
24	124/1926*	86/1920	96/1991	69/1968
25	123/1913	93/1920	98/1991	67/1944
26	122/2011	91/1920	95/2007	69/1948*
27	124/2011*	95/1920	95/2011*	**65/1972**
28	123/1998	101/1920	98/1971	70/1926
29	124/1998	96/2000*	97/1929	66/2002
30	124/1998	96/1957*	96/2008	**65/1930**
31	121/1996	97/1931	95/1970	**65/1945***

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

September

Period of Record: 1911- 2011

Date	Record High Maximum	Record Low Maximum	Record High Minimum	Record Low Minimum
1	**123/1996**	95/2000	**100/1924**	62/2000
2	122/2007	95/2000*	**100/1924**	67/1944
3	121/2007	96/1985	**100/2007***	67/1964*
4	120/1955	87/1912	**100/2007**	63/1912
5	118/2006*	91/1985*	94/2006	56/1912
6	119/1955	95/1991	94/2006*	59/1912
7	121/1932	90/1950	98/1913	60/1921
8	118/1997*	94/1912	92/1979	63/1921
9	120/1923	93/1985	93/1979*	62/1924*
10	119/1993*	89/1985	92/1968	60/1918
11	119/1993*	87/1976*	93/1923*	62/1931*
12	118/1971*	92/1976	96/1937	61/1985*
13	120/1971	93/1939	90/2007*	60/1928
14	119/1971*	90/1936	89/1979	59/1928
15	119/1971	92/1986*	97/1971	55/1927
16	118/1922	82/1982	96/1927	52/1921
17	118/2000	90/1977*	98/1927	55/1921
18	118/1937	77/1963	**100/1927**	58/1924
19	116/2000*	**76/1963**	97/1927	58/1924
20	116/1913	**76/2005**	95/1927	56/1965*
21	115/1949	77/1988	90/1927	45/1924
22	115/1949	86/2007	86/1991	**41/1924**
23	118/1949	85/2007	86/1915	52/1945
24	114/1962*	77/1920	87/1915	45/1924
25	113/2003*	**76/1997**	83/1964*	48/1948
26	116/2003	80/1920	84/1962	50/1928
27	115/2010	84/1986	83/1958*	51/1928
28	114/1962	87/1982	86/1938	45/1924
29	114/2003*	82/1982	84/1915	46/1924
30	113/2003*	82/1983	88/1962	45/1928

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

October

Period of Record: 1911- 2011

Date	Record High Maximum	Record Low Maximum	Record High Minimum	Record Low Minimum
1	110/2001*	78/1930	**85/1920**	54/1950*
2	**113/1980**	69/1986	**85/1929**	42/1912
3	112/1980	82/1919	**85/1943**	51/1928
4	111/1980	80/1916	**85/1963**	50/1928*
5	110/1987	79/1912	79/1943	51/1928
6	109/1996*	76/1916	83/1943	46/1927
7	112/1996	76/1916	80/1943	43/1927
8	112/1996	74/1949	**85/1964**	42/1927
9	108/1996*	75/1985	75/1934	41/1927
10	109/1991	70/1960	77/1958	40/1924
11	108/1991	71/1920	79/1980	**32/1924**
12	107/1971	70/1920	80/1968	**32/1924**
13	105/1971	75/1925*	80/1959	**32/1924**
14	108/1991	71/2006	80/1954	40/1928
15	108/1991	77/1984	79/1917	35/1924
16	104/1988*	76/1980	78/1964	36/1924
17	110/1927	71/1971	80/1914	38/1924
18	106/1927	74/1984	74/1964	35/1924
19	105/1991*	68/1949	80/1913	34/1924
20	104/1988*	71/1949	82/1913	35/1924
21	102/2003*	72/1920	74/1914	33/1924
22	105/1913	69/1941	72/1937*	34/1924
23	101/1959*	65/1921	76/1959	35/1924
24	102/1959	69/1941	76/1914	36/1924
25	99/2003*	65/1921	73/1914	37/1921
26	98/2003*	70/1921	72/2003*	35/1924*
27	100/1934	70/1919	79/1943	39/1924
28	104/1934	66/1996	73/1974	40/1928*
29	99/1962	63/1971	72/1958	41/1928
30	96/1988	**61/1920**	73/1914	40/1971
31	98/1988*	65/1996*	70/1959	38/1971*

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

November

Period of Record: 1911- 2011

Date	Record High Maximum	Record Low Maximum	Record High Minimum	Record Low Minimum
1	**97/1966**	61/1920	74/1966	40/1935*
2	**97/1931**	63/1920	70/1914*	37/1919
3	94/2010*	65/1920	73/1914	41/1943*
4	94/2010	69/1994	68/2008*	40/1919
5	95/1950	61/1920	74/1941	39/1989
6	95/1988	60/1920	68/1963*	38/2002
7	94/2007	64/1920	69/1914	31/2000
8	93/1956*	62/1920	**75/1913**	33/1918
9	92/1991*	65/1919	72/1914	32/1945*
10	91/1955*	62/1920	70/1914	33/1918
11	94/1921	58/1985	63/2005*	33/1945
12	95/1983	56/1985	62/1983*	30/1918
13	89/1969	57/1985	62/1953	33/1945
14	91/2008	62/1985	65/2004*	30/1911
15	90/1995	61/1964	69/1963*	30/1916
16	90/1932	57/1958	63/1934	30/1916
17	93/1932	56/1964	63/1999	31/1916
18	93/1932	60/1958	73/1932	31/1928
19	87/1936	54/1921	70/1932	32/1928
20	90/2002	57/1985	61/1968	32/1985*
21	86/1936*	57/1993	59/1966*	32/1948
22	87/1950	55/1931	59/1932	33/1979
23	86/1950	48/1931	60/1919	32/1931
24	86/1933*	55/2003	64/1946	32/1956*
25	85/1933	59/1927	60/1914	27/1927
26	87/1954	58/1920	67/1970	30/1921
27	93/1922	**45/1919**	66/1932	**24/1921**
28	84/1949	59/2001*	66/1932	30/1994*
29	85/2008	55/1919	63/1914	28/1948*
30	86/2008	49/1919	59/2008*	27/1911

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

December

Period of Record: 1911- 2011

Date	Record High Maximum	Record Low Maximum	Record High Minimum	Record Low Minimum
1	84/1949	59/2001	61/1914	23/1911
2	82/1927	59/1985	60/1932	30/1928*
3	**89/1949**	50/1984	65/1966	26/1945
4	86/1949	52/1945	66/1980	26/1945*
5	85/1949*	54/1919	62/1925*	30/1968*
6	86/1927	50/1997	64/1966	28/1948
7	83/1925	50/1992	54/1926	29/1927
8	78/1995*	49/1978	57/1988*	28/1999
9	80/1912	49/1978	55/1914	26/1919*
10	80/1911	45/1972	56/1970*	26/1994*
11	81/1914	47/1932	58/1914	26/1994*
12	83/1995	46/1972	60/1914	23/1972
13	79/1958*	50/1932*	63/1933	25/1949*
14	82/1942	47/1967	60/1937	23/1945
15	84/1998	46/1987	61/1959	23/1919
16	88/1998	50/1987	66/1998	22/1919
17	86/1998	50/1940*	60/1998	23/1945
18	81/1922	43/1984	58/1914	22/1927
19	79/1999	47/1984	56/1914	23/1927
20	81/1999	51/1990	65/1999	23/1927
21	79/1922*	41/1990	60/1914	23/1927
22	82/1914	39/1990	**70/1914**	22/1990
23	84/1955	**38/1990**	**70/1914**	23/1990*
24	78/1914	42/1990	62/1914	22/1912
25	81/1942	50/1920	61/1914	22/1990*
26	79/2005	50/1920	64/1914	20/1924
27	78/1967	50/1984*	63/1914	**19/1924**
28	79/1975	48/1916	60/1914	21/1918
29	77/1951	45/1915	65/1914	21/1912
30	75/1989*	43/1915	59/1951	21/1912
31	77/1929	48/1990*	59/1914	22/1990*

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

Monthly and Annual Average Temperatures

Listed below are the ten warmest and ten coldest months for each month based on average temperature. Monthly averages for the warmest and coldest were listed only for months where 5 days or less of missing data existed.

January

Warmest Januaries	Coldest Januaries
1. 58.7 / 2003	1. 40.6 / 1937
2. 57.9 / 1980	2. 43.0 / 1919
3. 56.9 / 1981	3. 43.9 / 1949
4. 56.8 / 1934	4. 45.7 / 1913
5. 56.3 / 2005	5. 46.3 / 1929
5. 56.3 / 1959	6. 46.5 / 1950
7. 56.0 / 1953	6. 46.5 / 1917
8. 55.9 / 1938	8. 48.4 / 1991
9. 55.7 / 1986	8. 48.4 / 1921
9. 55.7 / 1984	10. 48.5 / 1963

February

Warmest Februaries	Coldest Februaries
1. 66.5 / 1963	1. 50.9 / 1919
2. 64.4 / 1995	2. 51.9 / 1933
3. 63.6 / 1954	3. 52.1 / 1929
4. 63.5 / 1968	4. 53.3 / 1949
5. 63.3 / 1957*	5. 53.4 / 1939
6. 63.2 / 1930	6. 53.8 / 1956*
7. 63.1 / 1977	7. 53.9 / 1928*
8. 62.7 / 1996	8. 54.4 / 1998
8. 62.7 / 1991	8. 54.4 / 1955
8. 62.7 / 1934	10. 54.6 / 2001

* Contains 1-5 days of missing data.

March

Warmest Marches	Coldest Marches
1. 75.3 / 1957*	1. 58.3 / 1919
2. 75.1 / 2004	2. 60.4 / 1952
3. 75.0 / 1972	3. 60.7 / 1924
4. 74.9 / 1934	4. 60.8 / 1920
5. 73.6 / 2007	5. 61.3 / 1917
6. 73.5 / 1914	6. 61.5 / 1945
7. 72.8 / 1994	7. 62.2 / 1927
8. 72.5 / 1916	8. 62.3 / 1991
9. 72.4 / 1960	9. 62.9 / 1922
10. 72.3 / 1986	10. 63.2 / 1913

* Contains 1-5 days of missing data.

April

Warmest Aprils	Coldest Aprils
1. 83.4 / 1989	1. 65.8 / 1967*
2. 82.4 / 1934	2. 67.8 / 1921
3. 82.2 / 1962	3. 68.1 / 1929*
4. 81.8 / 1946	4. 69.4 / 1983
5. 81.5 / 1959	5. 69.7 / 1998
6. 81.3 / 1954	6. 70.1 / 1975
7. 81.0 / 1916	7. 70.2 / 1941
8. 80.6 / 1949	8. 70.4 / 1999*
9. 80.5 / 1992	9. 71.3 / 1920
10. 80.3 / 1960	10. 71.4 / 1922

* Contains 1-5 days of missing data.

May

Warmest Mays	Coldest Mays
1. 92.7 / 2001*	1. 72.3 / 1921*
2. 92.4 / 2009	2. 76.4 / 1998
3. 91.0 / 1997	3. 77.7 / 1977
4. 90.9 / 2006	4. 78.1 / 1933
4. 90.9 / 1954	5. 78.7 / 1917
4. 90.9 / 1947	6. 78.8 / 1953
7. 90.8 / 1992	7. 79.2 / 1918
8. 90.4 / 2007	8. 79.5 / 1957
9. 90.2 / 1984	9. 79.6 / 1930
10. 89.5 / 1973	10. 80.0 / 1991

* Contains 1-5 days of missing data.

June

Warmest Junes	Coldest Junes
1. 100.4 / 1960	1. 86.0 / 1923
2. 100.1 / 1961	2. 87.0 / 1944
3. 100.0 / 2006	3. 87.8 / 1998
4. 99.5 / 1959	4. 87.9 / 1928
5. 99.3 / 2002	5. 89.5 / 1945
5. 99.3 / 1981	6. 89.6 / 1952
7. 99.1 /1994	7. 90.1 / 1995
7. 99.1 / 1940	7. 90.1 / 1943
9. 98.8 / 2007	9. 90.3 / 1912
9. 98.8 / 2001	10. 90.6 / 1991

July

Warmest Julys	Coldest Julys
1. 107.2 / 1917	1. 95.2 / 1912
2. 106.9 / 2006	2. 96.4 / 1987
3. 106.7 / 2005	3. 97.2 / 1983
3. 106.7 / 1929	4. 97.3 / 1982
5. 106.3 / 2002	5. 97.5 / 1997
5. 106.3 / 1959	5. 97.5 / 1986
7. 106.1 / 2007	7. 97.6 / 1944
8. 105.7 / 2010	8. 97.8 / 1992
9. 105.5 / 2003	9. 97.9 / 1928*
10. 105.4 / 1915*	10. 98.2 / 1918

* Contains 1-5 days of missing data.

August

Warmest Augusts	Coldest Augusts
1. 106.2 / 1915*	1. 94.4 / 1976
2. 105.7 / 1929	2. 94.5 / 1983
3. 104.5 / 1971	3. 94.6 / 1941
4. 104.3 / 2008	4. 94.7 / 1945*
5. 103.5 / 2001	5. 94.9 / 1928
6. 103.4 / 1969	6. 95.2 / 1979
7. 103.2 / 2007	7. 95.4 / 1918
7. 103.2 / 1970	8. 95.9 / 1925
9. 103.1 / 1967	9. 96.1 / 1968
10. 102.9 / 1958	10. 96.1 / 1912

* Contains 1-5 days of missing data.

September

Warmest Septembers	Coldest Septembers
1. 95.7 / 1915	1. 83.1 / 1912
2. 95.4 / 1974	2. 83.3 / 1921
3. 94.8 / 2003	3. 84.2 / 1985
4. 94.7 / 1935	3. 84.2 / 1918
5. 94.4 / 2009	5. 85.0 / 1920
6. 94.3 / 2011	6. 85.3 / 1986
7. 94.2 / 1979	6. 85.3 / 1941
8. 93.9 / 2008	8. 85.4 / 1965
8. 93.9 / 1969	9. 86.0 / 1928
10. 93.7 / 2001	10. 86.6 / 1982
10. 93.7 / 1958	

October

Warmest Octobers	Coldest Octobers
1. 82.8 / 1988	1. 66.2 / 1924*
2. 82.7 / 1964	2. 68.4 / 1919
3. 82.6 / 2003	3. 68.6 / 1920
4. 82.5 / 1913	4. 69.5 / 1916
5. 81.9 / 1933	5. 70.0 / 1928
5. 81.9 / 1914	6. 71.1 / 1921
7. 81.5 / 1978	7. 71.3 / 1984*
8. 81.3 / 1963	8. 71.8 / 1912
8. 81.3 / 1958	9. 71.9 / 1918
10. 81.2 / 1991	10. 72.1 / 1941

* Contains 1-5 days of missing data.

November

Warmest Novembers	Coldest Novembers
1. 72.6 / 1914	1. 54.4 / 1918
2. 67.7 / 2008	2. 54.5 / 1920
3. 66.6 / 2007	3. 54.6 / 1919
3. 66.6 / 1932	4. 54.8 / 1916
5. 66.1 / 1950	5. 55.9 / 1994
6. 66.0 / 1995	6. 57.0 / 1938
7. 65.8 / 1986*	7. 57.3 / 2000
8. 65.6 / 1968	8. 57.8 / 1928
9. 65.5 / 1981	9. 57.9 / 1990
10. 65.4 / 2001	10. 58.0 / 1985

* Contains 1-5 days of missing data.

December

Warmest Decembers	Coldest Decembers
1. 66.2 / 1914	1. 43.4 / 1990
2. 57.4 / 1937	2. 44.9 / 1918
3. 57.1 / 1925	3. 45.6 / 1919
4. 56.3 / 1950	4. 46.4 / 1945
5. 56.2 / 1980	4. 46.4 / 1920
5. 56.2 / 1977	6. 46.6 / 1916
7. 56.1 / 1946	7. 46.8 / 1928
8. 56.0 / 1975	8. 47.6 / 1927*
9. 55.6 / 1922*	9. 47.9 / 1968
10. 55.5 / 1943	9. 47.9 / 1931
10. 55.5 / 1938	
10. 55.5 / 1929	

* Contains 1-5 days of missing data.

Warmest and Coldest Months Overall

Warmest Months	Coldest Months
1. 107.2 / July 1917	1. 40.6 / January 1937
2. 106.9 / July 2006	2. 43.0 / January 1919
3. 106.7 / July 2005	3. 43.4 / December 1990
3. 106.7 / July 1929	4. 43.9 / January 1949
5. 106.3 / July 2002	5. 44.9 / December 1918
5. 106.3 / July 1959	6. 45.6 / December 1919
7. 106.2 / August 1915*	7. 45.7 / January 1913
8. 106.1 / July 2007	8. 46.4 / December 1945
9. 105.7 / July 2010	8. 46.4 / December 1920
9. 105.7 / August 1929	10. 46.5 / January 1950
	10. 46.5 / January 1917

* Contains 1-5 days of missing data.

Annual

Warmest Years	Coldest Years
1. 79.3 / 2007	1. 71.9 / 1919
2. 78.9 / 1959*	2. 72.1 / 1920*
3. 78.8 / 2008	3. 72.7 / 1918*
4. 78.6 / 1960*	4. 73.0 / 1945*
5. 78.5 / 1981	5. 73.1 / 1912
6. 78.2 / 2006	6. 73.5 / 1998*
6. 78.2 / 2003*	7. 74.3 / 1944
8. 77.9 / 2005	7. 74.3 / 1923*
9. 77.6 / 2002	10. 74.5 / 1982*
10. 77.5 / 2004*	10. 74.5 / 1941*
10. 77.5 / 1974	

* Contains at least one month that had 5 days or less of missing data.

Average Monthly and Annual Temperatures at Death Valley

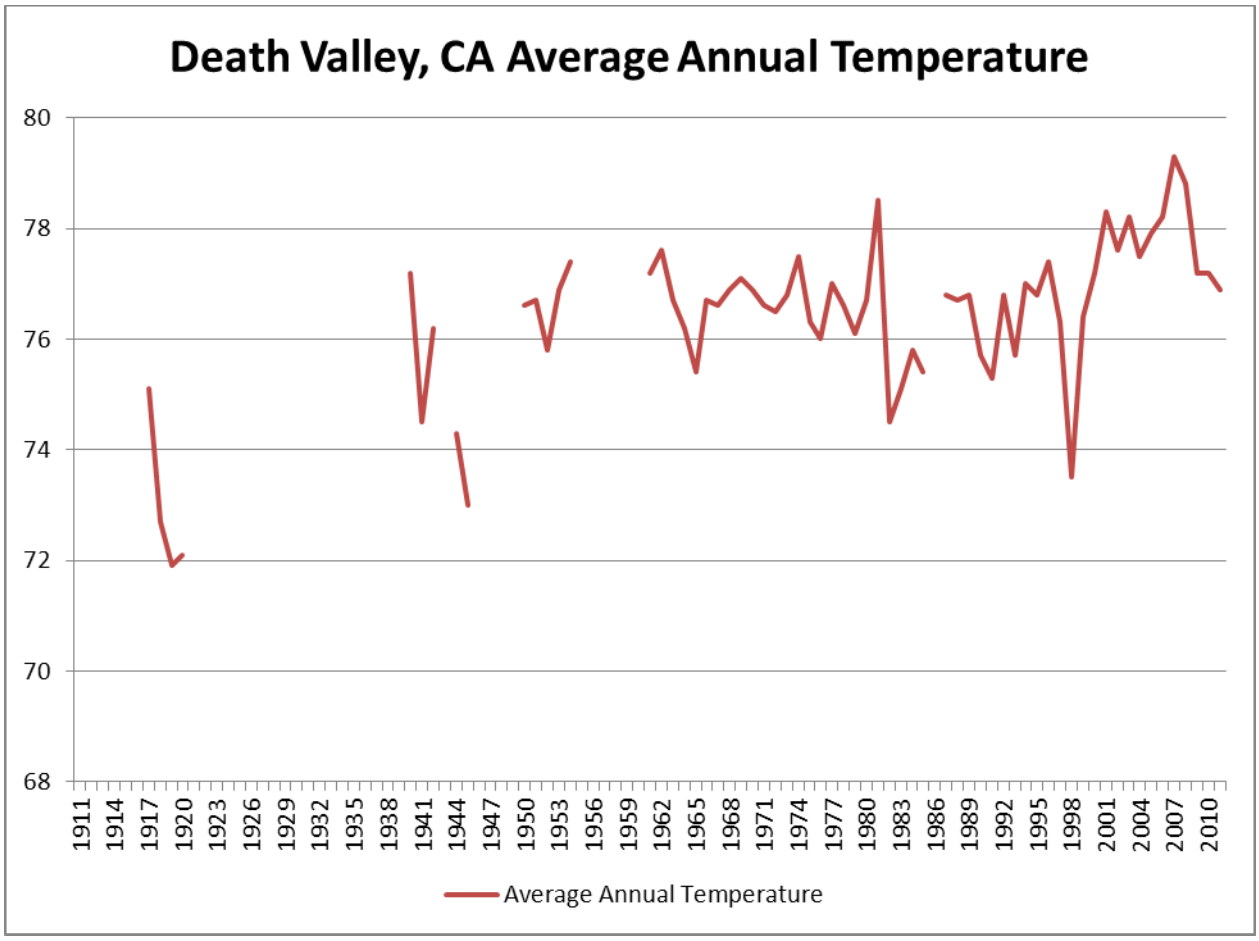
Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
1911	-	-	-	-	-	-	100.3	97.4	87.7	73.1	59.7	51.6	-
1912	52.8	60.0	65.5	71.6	82.4	90.3	95.2	96.1	83.1	71.8	59.2	48.9	73.1
1913	45.7	57.3	63.2	77.1	84.7	92.3	98.6	100.5	92.8	82.5	M	M	M
1914	M	M	73.5	75.4*	86.1	91.5	101.2*	100.0*	M	81.9	72.6	66.2	M
1915	M	61.8	69.8	78.1	80.2	98.1*	105.4*	106.2*	95.7	76.1	60.3	M	M
1916	M	58.2	72.5	81.0	84.5	M	102.6*	98.0	90.1	69.5	54.8	46.6	M
1917	46.5	58.3	61.3	73.7	78.7	96.3	107.2	100.7	89.4	77.5	59.8	51.4	75.1
1918	51.2	54.8	64.7	73.8*	79.2	98.4	98.2	95.4	84.2	71.9	54.4	44.9	72.7
1919	43.0	50.9	58.3	71.9	85.1	92.8	101.7	99.9	89.2	68.4	54.6	45.6	71.9
1920	51.2	54.9	60.8	71.3	83.7	91.8	100.6	97.9*	85.0	68.6	54.5	46.4	72.1**
1921	48.4	56.8	64.6*	67.8	72.3*	91.8*	M	M	83.3	71.1	60.4	M	M
1922	45.9*	56.4*	62.9	71.4	85.1	M	M	99.6	93.5*	75.9	60.5*	55.6*	M
1923	53.4*	57.3*	65.8*	74.2*	85.0	86.0	98.7*	95.1*	88.9*	73.7	62.5	51.9	74.3**
1924	48.8*	61.7*	60.7	75.4*	89.1	97.4	102.8*	M	88.4*	66.2*	58.8	48.7	M
1925	51.0	61.0*	66.8	75.7	87.1*	91.3*	99.8*	95.9	86.8*	73.5	59.7*	57.1	75.2**
1926	54.2*	60.2	71.4*	78.2	88.8*	97.3	M	96.7	88.3*	76.6*	63.5	53.6*	M
1927	52.4*	58.7	62.2	71.3*	81.9*	96.1	105.1*	100.4	89.5	73.8	60.8	47.6*	75.0**
1928	M	53.9*	67.4	75.1	82.5	87.9	97.9*	94.9	86.0	70.0	57.8	46.8	M
1929	46.3	52.1	64.4	68.1*	82.9*	92.3	106.7	105.7	M	80.1*	62.0*	55.5	M
1930	50.0*	63.2	68.3	79.4*	79.6	M	M	97.8	88.6	76.7	61.8	M	M
1931	54.7*	M	M	77.8	88.3	92.2	102.5	M	87.7	M	58.4	47.9	M
1932	48.8	55.1	66.0*	76.3*	83.2*	M	100.0	97.9	92.7*	77.2	66.6	50.7	M
1933	49.2	51.9	M	72.9	78.1	M	M	100.5	91.3	81.9	63.7	52.5	M
1934	56.8	62.7	74.9	82.4	89.2	91.0	M	M	91.2	77.2	64.2	55.0	M
1935	52.7	60.0	63.3	76.0	83.8*	98.9*	99.3	M	94.7	75.8	58.8	53.8	M
1936	53.1	58.5	71.0	80.2	85.7	96.4*	101.2*	M	89.3	75.8	M	51.6	M
1937	40.6	55.3	65.4	72.9	88.4	94.7	102.1*	102.6	93.4	78.1	63.0	57.4	76.2**
1938	55.9	58.4	64.3	76.3	83.7	94.7	M	98.6	92.0	74.9	57.0	55.5	M
1939	53.1	53.4	67.1	78.5	86.6	93.5	M	M	87.5	75.0	62.6	54.8	M
1940	54.4	59.2	70.4	76.6	88.4	99.1	100.0	101.0	88.3	76.1	59.4	52.4	77.2
1941	53.6	58.9	65.7	70.2	86.3	91.5	100.2*	94.6	85.3	72.1	62.0	53.3	74.5**
1942	53.2	57.2	65.4	75.9	81.8	94.6	104.9*	99.3	88.4	77.5	61.2	54.7	76.2**
1943	54.3	60.4	69.2	79.2	87.0	90.1	101.0	99.0	91.2	M	61.4	55.5	M
1944	52.6	57.3	66.0	72.7	83.7	87.0	97.6	96.4	89.2	76.7	61.0	51.2	74.3
1945	50.9	56.8	61.5	71.7	81.2	89.5	101.2	94.7*	89.0	74.0	58.9	46.4	73.0**
1946	50.8	55.5	66.6	81.8	86.1	M	98.6*	99.4	91.8	76.2	M	56.1	M
1947	52.6	62.1*	71.3	80.2	90.9	M	100.6	98.0	93.2	77.2	60.4	52.8	M
1948	52.8	56.7	M	75.1	83.4	91.9	98.9*	97.9	88.8	75.5	58.2	50.5	M
1949	43.9	53.3	65.3	80.6	83.5	95.6*	M	97.1	M	73.9	64.9	50.1	M
1950	46.5	61.3	66.4	78.6	83.9	90.7	100.8	98.4	88.8	79.8	66.1	56.3	76.6
1951	52.5	57.7	66.5	77.2	86.5	95.6	102.9	98.7*	93.2	76.6	62.0	52.2	76.7**
1952	50.5	58.5	60.4	75.4	86.6	89.6	100.9	102.3*	92.2	81.1	59.3	52.8	75.8**
1953	56.0	58.3	68.2	77.3	78.8	92.1	104.6	98.8	91.9	77.6	65.1	53.1	76.9
1954	52.1	63.6	64.4	81.3	90.9	93.1	103.0	96.6	90.8	77.3	64.4	50.9	77.4
1955	49.0*	54.4	67.5*	72.4	82.2	93.6	99.4	101.6	91.1*	78.3	M	54.4*	M
1956	54.7	53.8*	67.9*	74.5*	M	96.0	99.4	97.2*	92.3	76.5	61.7	52.2	M
1957	50.3	63.3*	75.3*	78.7	79.5	96.9	100.3	99.0*	M	M	M	M	M
1958	M	M	64.4	75.2	89.4*	94.8	101.0	102.9	93.7	81.3	62.0	54.2	M
1959	56.3	58.7	71.5	81.5	84.4*	99.5	106.3	99.9	89.2	79.9	62.7*	54.1	78.9**
1960	50.4	57.7	72.4	80.3	86.0	100.4	104.5	101.2*	93.6	77.7	M	53.3	M

1961	51.5	61.4	68.6	79.6*	84.7	100.1	104.7	100.3	88.4	76.1	59.7	50.4	77.2**
1962	53.9	59.3	63.6	82.2	83.6	95.7	100.7	100.4	93.0	79.9	64.9	52.6	77.6
1963	48.5	66.5	66.3	72.5	87.8	91.0	101.2	98.8	90.8	81.3	63.4	51.3	76.7
1964	50.8	58.2	64.9	75.1	83.9	93.2	102.0	100.0*	90.7	82.7	58.9	54.7	76.2**
1965	55.6	61.1	66.7	72.6	83.3	90.7	98.5	98.2	85.4	78.6	62.7	49.0*	75.4**
1966	49.1	54.8*	66.8	78.8	88.5	95.0	100.0	100.6	90.8*	76.2*	63.5	53.9*	76.7**
1967	53.1	61.7	70.3*	65.8*	84.6	90.7	103.1	103.1	91.3	78.2	65.2	50.0	76.6
1968	51.4	63.5	68.7	74.9	85.7	97.1	101.1	96.1	91.8	78.3	65.6	47.9	76.9
1969	54.9	55.8	64.5	77.0	88.7	92.3	101.8	103.4	93.9	73.9	63.7	52.8*	77.1**
1970	52.2	61.4	67.1	71.6	87.3	95.9	103.3	103.2	89.2	75.2	63.3	52.0	76.9
1971	52.7	60.6	66.9	75.0	81.9	94.4	103.8	104.5	91.2	74.0	61.1	51.6	76.6
1972	49.9	59.2	75.0	76.5	86.6	95.4	103.7	98.6	88.7	74.6	59.8	49.3	76.5
1973	50.0	60.1*	63.4	75.0	89.5	97.8	102.9	100.1	89.6	77.0	60.9	53.6	76.8**
1974	50.7	59.0	69.6	75.7	88.4	98.5	101.3	97.9	95.4	78.5	62.1	52.1	77.5
1975	51.7	60.0	66.0	70.1	84.9	95.7	101.1	97.9	92.4	76.7	61.5	56.0	76.3
1976	54.7	60.5	65.9	74.0	88.2	94.0	101.0	94.4	88.4	77.3	64.2	48.9	76.0
1977	52.5	63.1	64.0	80.0	77.7	98.7	102.0	99.0	89.1	79.0	62.3	56.2	77.0
1978	55.3	60.1	69.5	72.3*	83.0	96.1	101.0	99.8	88.3	81.5	62.5	48.5	76.6**
1979	50.5	56.3	67.4	75.4*	86.7	93.5	99.8	95.2	94.2	79.1	60.4	53.2	76.1**
1980	57.9	62.2*	65.0	75.5	80.5	91.7	101.6	99.2	90.0	78.0	61.9	56.2	76.7**
1981	56.9	61.6	67.8	80.1	86.5	99.3	102.3	100.3	92.9	74.5	65.5	53.6	78.5
1982	51.8	59.1	64.2	74.8	86.0	91.6	97.3	97.6	86.6	72.6	58.3	51.2*	74.5**
1983	52.2	58.6	65.2	69.4	83.6	93.0	97.2	94.5	92.0	77.6	63.9	52.7	75.1
1984	55.7	59.1	67.9	73.5	90.2	93.2	99.3	96.6	91.8	71.3*	59.5*	49.0	75.8**
1985	51.1	56.7	64.9	78.7*	85.7	97.4	102.3	97.5	84.2	75.0	58.0	52.0	75.4**
1986	55.7	61.7*	72.3	76.5	86.7*	97.2*	97.5	101.9	85.3	M	65.8*	52.9	M
1987	52.0	62.4*	65.8	79.4	85.2	95.4	96.4	99.5	91.8	80.4	63.2	48.9	76.8**
1988	49.9	61.0	68.9	74.0	83.2*	93.0	103.3	98.8	89.4	82.8	63.4	52.3	76.7**
1989	50.9	57.9	71.0	83.4	85.3	95.6*	102.7	97.2	88.5	75.2	62.9	51.2	76.8**
1990	51.7	57.4	69.9	79.3	84.4	95.8	102.1	98.2	92.0	75.0	57.9	43.4	75.7
1991	48.4	62.7	62.3	73.6	80.0	90.6	99.5*	98.3	92.6	81.2	62.5	52.4	75.3**
1992	50.6	61.0	67.0	80.5	90.8	93.7	97.8	100.5	91.0	79.7	60.1	48.5	76.8
1993	49.3	57.0	68.6	77.7	87.1	91.3	99.1	98.5	89.7	77.6	59.0	51.5	75.7
1994	53.0	55.9	72.8	77.4	85.4	99.1	104.3	102.5	90.4	74.9	55.9	51.0	77.0
1995	52.9	64.4	67.1	73.4	80.2	90.1	100.9	101.5	92.9	77.0	66.0	54.2	76.8
1996	54.8	62.7	69.0	78.8	86.9	97.2	104.2	100.3	88.8	73.8	60.8	51.5	77.4
1997	54.3	59.9	69.6	75.2	91.0	93.0	97.5	99.8	89.8	73.4	60.5	49.7*	76.3**
1998	51.7	54.4	63.8	69.7	76.4	87.8	101.1	100.2	88.3	72.5	60.7	53.2*	73.5**
1999	54.9	59.3	68.5	70.4*	85.1	94.3	99.1	98.7	90.8	77.8	62.5	54.0	76.4**
2000	54.5	61.4	68.5*	80.1	89.0	98.4	101.1	99.5	88.8*	75.6*	57.3	51.8	77.2**
2001	50.1	54.6	69.8*	75.3*	92.7*	98.8	100.5	103.5	93.7	79.6	65.4	52.4*	78.3**
2002	52.2	59.2	65.7	78.3	86.3	99.3	106.3	98.6	91.5	75.2	64.3	53.2	77.6
2003	58.7	58.9	68.7*	72.5	86.8	98.2	105.5	101.4	94.8	82.6	58.3	49.6	78.2**
2004	52.1	57.1	75.1	78.5	87.4	97.0	102.6	99.8*	90.1	76.0	61.4	54.1	77.5**
2005	56.3	60.6	68.1	74.7	88.3	94.2	106.7	101.3	88.1	77.8	65.0	52.1	77.9
2006	55.4	61.7	64.2	75.3	90.9	100.0	106.9	100.2	91.0	75.7	64.4	51.3	78.2
2007	52.5	61.4	73.6	79.6	90.4	98.8	106.1	103.2	91.0	76.8	66.6	50.5	79.3
2008	53.2	59.8	69.4	77.7	85.8	98.0	105.2	104.3	93.9	77.7	67.7	52.3	78.8
2009	56.9	57.4	67.1	75.7	92.4	91.7	105.2	98.2	94.4	73.6	61.6	49.8	77.2
2010	51.6	59.7	67.4	73.3	82.2	97.8	105.7	100.2	91.6	79.0	62.7	54.1	77.2
2011	52.0	57.6	68.4	76.1	82.4	95.4	101.3	101.9	94.3	79.2	60.2	52.4	76.9

* Contains 1-5 days of missing data.

**Average based on months that have 1-5 days of missing data.

M = a month missing more than 5 days of data or a year with at least one month of missing data.



Average Annual Temperature for Death Valley, California from 1911-2011. Red line is the average annual temperature. Blank areas of the red line indicate missing data.

Average Maximum Temperatures at Death Valley By Month and Year

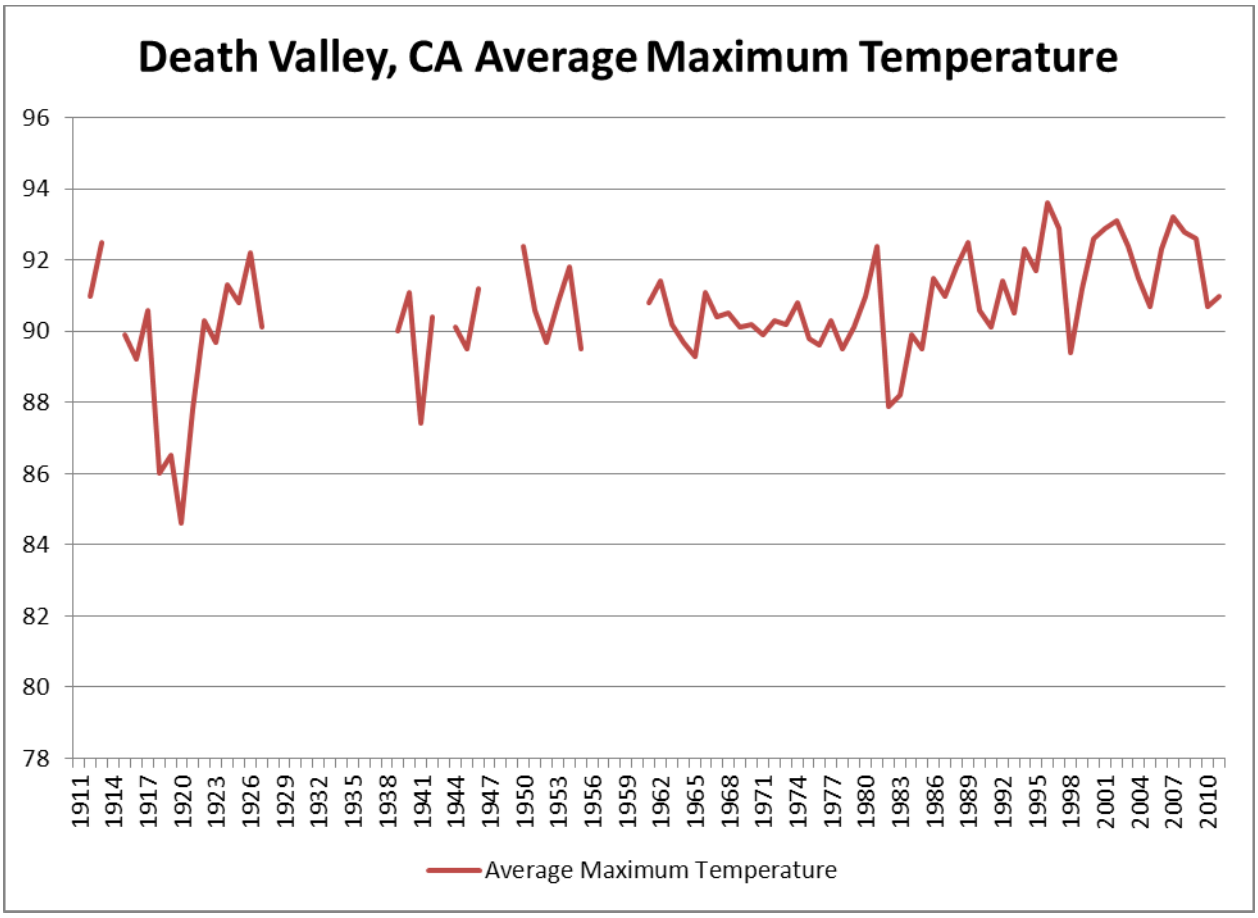
Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
1911	-	-	-	-	-	-	117.0	115.8	105.2	91.1	78.2	68.9	-
1912	72.7	80.6	81.5	88.7	100.0	109.5	110.7	111.4	100.9	88.4	79.3	67.7	91.0
1913	64.8	72.7	81.4	96.2	103.2	110.0	116.5	116.7	107.7	94.8	78.5	65.7	92.5
1914	69.0	75.1	86.3	88.5	100.6	106.9	116.6	116.3	M	91.5	81.5	59.4	M
1915	69.8	69.0	82.6	91.4	95.2	110.7	114.6	118.2	104.9	90.6	71.3	58.5	89.9
1916	56.5	70.4	85.5	92.1	100.2	111.6	118.4*	112.7	108.3	84.1	70.4	60.5	89.2**
1917	59.3	72.0	76.6	90.6	93.7	113.2	121.9	118.6	105.1	93.8	74.8	66.5	90.6
1918	65.8	68.1	76.0	88.0*	92.2	112.2	110.1	109.1	100.1	84.9	67.7	56.6	86.0**
1919	57.8	65.6	73.8	88.2	100.8	111.0	116.2	113.3	102.0	81.3	68.3	58.7	86.5
1920	62.7	65.5	71.7	84.1	98.6	104.5	114.9	111.1*	97.7	79.4	65.7	59.1	84.6**
1921	59.4	72.0	81.1*	82.6	86.3	108.1	116.1*	110.6*	104.3	91.7	76.9	69.3	87.8**
1922	62.6	68.1*	76.2	83.8	101.3	111.3*	118.9	113.5	110.4*	90.2	75.2	69.3*	90.3**
1923	67.5	72.0*	80.8*	88.0	101.2	104.0	114.5*	111.9	104.8	89.7	75.9	65.5	89.7**
1924	64.1	77.3	74.9	90.2	104.8	115.6	116.9*	115.7	109.8*	89.2*	74.8	62.7	91.3**
1925	66.2	76.4*	83.1	90.5	102.1	106.5*	116.4*	110.9	102.5*	89.8	73.8	72.1	90.8**
1926	68.5	75.0	87.3	90.3	102.4*	113.6	115.7*	113.5	105.3*	92.5*	78.3	66.0*	92.2**
1927	68.0*	71.7	73.8	86.7	95.3	109.7	118.1*	114.0	105.9	95.8	77.5	62.7*	90.1**
1928	M	72.4	87.7	96.7	105.3	109.9	118.3*	115.2	108.2	94.5	79.1	66.8	M
1929	M	71.5	84.7	88.2*	101.9*	111.0	119.5	116.5	105.8	96.1	78.7	71.5	M
1930	62.7*	79.8	83.1	93.6	93.8	112.2*	116.0	112.9	103.1	94.5	79.7	66.8	91.7**
1931	70.5*	M	86.6*	93.0	103.4	107.8	120.6	112.3	102.9	92.0	73.2	62.3	M
1932	62.1	70.0	84.3	90.9	98.3	107.0	114.5	113.5	110.4*	93.4	82.4	63.9	90.9**
1933	62.7	67.0	M	90.6	94.2	108.7	119.9	115.7	108.5	98.6	80.9	65.4	M
1934	71.6	77.9	91.6	99.0	104.4	105.0	116.9	115.1	105.9	92.5	77.5	69.5	94.0
1935	66.1	72.8	77.7	89.9	96.9	111.9	111.0	M	109.6	91.6	74.4	68.4	M
1936	69.2	73.9	85.4	95.1	100.5	111.0	115.6	115.3	103.5	89.8	M	65.0	M
1937	50.1	69.0	78.9	88.0	102.8	108.1	115.7	116.9	108.4	93.4	78.2	70.1	90.1
1938	70.3	70.4	77.3	90.1	97.7	107.1	M	112.7	106.2	89.1	71.8	66.7	M
1939	66.4	65.5	80.4	92.2	99.6	108.2	115.2	114.4	100.7	89.4	77.2	68.6	90.0
1940	67.6	71.4	84.4	89.4	103.7	113.5	114.7	115.3	102.0	92.3	73.7	64.7	91.1
1941	66.2	70.8	79.5	82.1	98.8	104.8	114.1	107.4	99.6	84.5	75.4	64.0	87.4
1942	66.4	68.7	79.2	88.3	95.1	108.0	118.0	113.2	104.4	93.0	77.7	71.9	90.4
1943	70.6	78.7	84.2	93.6	100.4	103.2	115.5	112.8	107.0	M	77.9	68.2	M
1944	67.7	71.6	81.1	87.4	99.1	102.4	113.6	114.0	107.2	94.1	75.2	67.7	90.1
1945	66.8	72.6	77.0	89.4	95.5	105.9	116.5	111.0*	107.4	91.5	77.8	61.9	89.5**
1946	66.6	70.9	82.9	96.5	99.1	109.3	113.8	114.0	107.9	88.9	73.8	69.6	91.2
1947	67.4	77.9	87.0	92.7	105.6	M	114.5	110.1	108.6	91.7	73.8	64.5	M
1948	69.2	70.2	M	91.4	98.2	107.1	113.5*	113.0	106.7	93.2	76.6	65.8	M
1949	53.9	66.4	77.8	94.6	96.6	109.7	115.3	111.5	M	90.7	83.5	66.8	M
1950	62.5	78.1	83.9	96.0	99.4	107.4	114.7	113.8	102.6	96.3	81.8	71.4	92.4
1951	66.4	72.0	80.1	90.9	100.2	108.3	116.7	112.3*	108.7	91.5	76.5	64.8	90.6**
1952	62.1	72.4	72.2	88.7	101.5	104.8	114.9	115.4	107.6	98.8	72.4	65.1	89.7
1953	69.2	73.7	82.8	90.4	91.4	106.1	117.4	112.3	108.3	91.7	78.7	66.8	90.8
1954	66.6	80.3	78.7	96.3	104.3	106.6	116.5	110.1	105.6	92.8	79.3	64.3	91.8
1955	61.2	67.1	81.4	86.4	95.5	107.5	111.9	114.4	107.6*	94.4	76.8	68.4	89.5**
1956	68.4	69.2*	83.2*	88.4*	M	110.2	112.5	111.1	107.8	91.8	78.9	68.8	M
1957	64.6	78.0*	87.0*	93.8	92.3	111.1	114.5	112.4*	M	M	M	M	M
1958	M	M	75.6	88.5	103.4*	108.2	114.4	116.4	108.1	96.2	75.3	67.8	M
1959	68.1	70.3	85.4	95.9	97.4	113.1	119.3	113.1	101.9	94.4	77.8*	66.2	92.1**
1960	61.3	70.3	86.3	94.3	100.7	114.7	118.1	114.9	108.7	92.0	M	66.1	M

1961	65.5	75.1	82.2	94.3*	97.9	113.7	117.9	112.7	102.7	90.9	72.5	63.3	90.8**
1962	67.4	71.5	76.6	97.8	96.5	109.6	113.8	114.9	108.7	94.1	78.6	66.5	91.4
1963	63.0	79.7	79.7	85.7	100.2	104.4	114.0	111.9	105.7	94.5	76.6	66.2	90.2
1964	64.6	72.3	78.4	88.4	97.0	106.3	115.5	112.8	105.3	97.9	71.1	67.2	89.7
1965	69.1	76.0	79.9	84.1	96.2	104.8	112.1	112.1	100.3	96.4	77.5	61.2*	89.3**
1966	62.9	68.8*	83.6	94.5	102.5	108.5	113.5	114.2	106.1	92.3*	76.2	67.0	91.1**
1967	66.8	76.8	82.4	78.7	98.5	104.9	117.1	117.1	104.8	95.1	79.2	62.4	90.4
1968	66.1	76.6	83.2	88.7	99.7	110.6	113.5	108.3	106.8	92.9	78.7	60.5	90.5
1969	66.7	67.0	77.1	90.3	102.4	105.3	114.8	117.2	108.6	88.2	77.3	65.0	90.1
1970	64.4	74.5	79.5	84.7	101.1	109.8	116.7	116.2	104.8	90.0	76.9	62.8	90.2
1971	65.4	74.8	82.0	88.7	94.9	108.0	116.6	115.7	105.4	89.5	74.8	62.4	89.9
1972	62.8	75.3	90.5	90.8	100.5	108.6	118.3	112.2	102.8	86.3	72.2	62.4	90.3
1973	62.2	71.3	75.0	88.5	103.4	111.7	117.3	113.3	104.9	92.3	74.3	67.3	90.2
1974	60.4	72.6	81.9	89.2	103.2	113.1	114.4	112.6	110.1	92.1	75.4	63.8	90.8
1975	65.3	72.5	78.1	81.7	99.0	108.9	114.6	111.8	107.1	91.3	75.8	70.0	89.8
1976	69.6	72.3	79.0	86.8	101.9	107.2	114.0	107.6	101.4	91.8	78.6	63.8	89.6
1977	65.6	78.8	77.3	93.6	88.8	110.6	115.1	111.6	103.0	94.3	76.2	68.3	90.3
1978	65.4	71.5	81.1	85.0	98.0	109.3	114.9	113.2	102.3	97.3	74.2	60.6	89.5
1979	59.5	68.7	79.7	89.8	100.8	110.2	115.1	109.0	109.9	94.4	74.6	67.6	90.1
1980	70.0	75.8	77.7	89.8	94.1	106.4	116.1	113.3	106.6	94.6	76.5	70.6	91.0
1981	70.5	76.1	80.3	94.9	100.9	112.5	116.0	115.1	107.2	88.2	79.8	66.5	92.4
1982	66.0	72.9	76.3	87.0	99.1	104.7	111.4	110.6	100.3	87.8	72.3	64.3*	87.9**
1983	67.1	70.7	76.9	81.6	98.2	106.3	111.0	106.5	105.5	91.3	76.6	65.5	88.2
1984	70.0	74.2	82.6	87.8	105.2	107.4	113.6	110.4	106.8	85.8*	73.9*	59.2	89.9**
1985	64.8	70.3	78.6	94.2	99.2	111.5	116.2	112.3	98.0	91.1	70.6	66.0	89.5
1986	70.7	76.4	87.0	90.0	101.1*	111.9*	111.5	115.3	99.2	87.6*	81.6*	65.0	91.5**
1987	63.9	74.7*	78.4	95.4	98.7	111.1	111.4	115.0	107.7	96.6	76.4	61.0	91.0
1988	63.4	77.3	83.4	87.9	98.4	107.6	118.3	113.6	105.5	100.8	78.3	66.1	91.8
1989	66.0	72.4	85.7	98.7	100.3	110.6	118.0	112.0	105.4	91.6	80.1	68.3	92.5
1990	66.9	72.4	85.8	94.6	98.6	111.7	116.7	112.9	106.7	91.9	70.8	56.6	90.6
1991	61.3	79.6	74.5	88.4	94.4	105.1	114.5	112.8	107.9	97.8	77.7	66.9	90.1
1992	64.6	73.3	78.7	96.2	105.0	109.0	113.5	116.5	108.0	95.6	74.8	61.0	91.4
1993	61.3	69.3	83.5	92.8	100.8	107.8	113.4	113.7	107.4	93.4	74.0	67.4	90.5
1994	69.0	70.3	88.0	92.4	100.1	115.3	118.7	117.9	106.9	90.6	70.6	66.0	92.3
1995	63.5	80.4	80.2	88.1	94.5	106.0	116.5	115.9	108.7	94.0	82.6	69.1	91.7
1996	71.0	77.3	84.7	94.5	102.2	113.3	120.2	118.2	106.0	91.1	76.6	67.2	93.6
1997	69.4	76.5	88.7	91.1	108.2	108.6	114.2	116.9	106.2	91.1	76.7	64.9*	92.9**
1998	67.6	68.0	78.8	86.0	91.5	103.9	118.0	118.5	104.2	89.6	75.7	67.4*	89.4**
1999	69.5	73.7	82.8	84.3	98.8	108.8	112.5	112.5	106.4	95.6	79.0	69.4	91.2
2000	69.1	74.4	82.0	96.3	105.7	113.9	116.5	115.2	106.1*	91.3	73.1	67.6	92.6**
2001	64.3	67.9	85.1	88.4	108.0	113.3	115.1	118.4	110.8	95.6	79.7	66.1	92.9
2002	67.2	76.9	81.5	93.3	101.4	113.8	120.6	115.3	107.8	91.8	80.2	67.0	93.1
2003	74.7	72.1	83.3*	85.0	101.8	113.0	120.3	114.4	110.5	99.3	70.1	62.4	92.4**
2004	66.7	69.8	90.6	92.2	101.8	112.0	117.4	113.7*	105.2	89.5	73.0	65.7	91.5**
2005	66.4	70.3	80.7	88.5	101.4	107.1	120.2	114.8	102.3	91.2	78.8	65.4	90.7
2006	68.8	76.4	77.0	88.9	105.1	115.0	120.3	115.2	106.6	89.3	79.0	64.5	92.3
2007	66.6	75.0	89.0	94.1	104.4	113.2	119.8	116.5	103.7	91.2	81.4	62.5	93.2
2008	65.0	74.2	84.4	92.4	98.7	113.0	118.4	118.1	109.8	93.5	80.6	65.1	92.8
2009	72.5*	71.2	82.0	90.9	107.5	106.7	121.4	114.8	110.3	89.2	78.6	64.0	92.6**
2010	65.1	71.2	81.1	87.1	95.0	110.8	119.2	114.1	109.3	92.2	76.9	65.6	90.7
2011	66.2	71.3	82.5	89.4	95.6	109.1	115.2	117.0	109.6	94.6	74.0	66.5	91.0

* Contains 1-5 days of missing data.

**Average based on months that have 1-5 days of missing data.

M = a month missing more than 5 days of data or a year with at least one month of missing data.



Average annual maximum temperatures by year for Death Valley for the period of 1911-2011. Blank areas of the blue line indicate missing data.

Average Minimum Temperatures at Death Valley By Month and Year

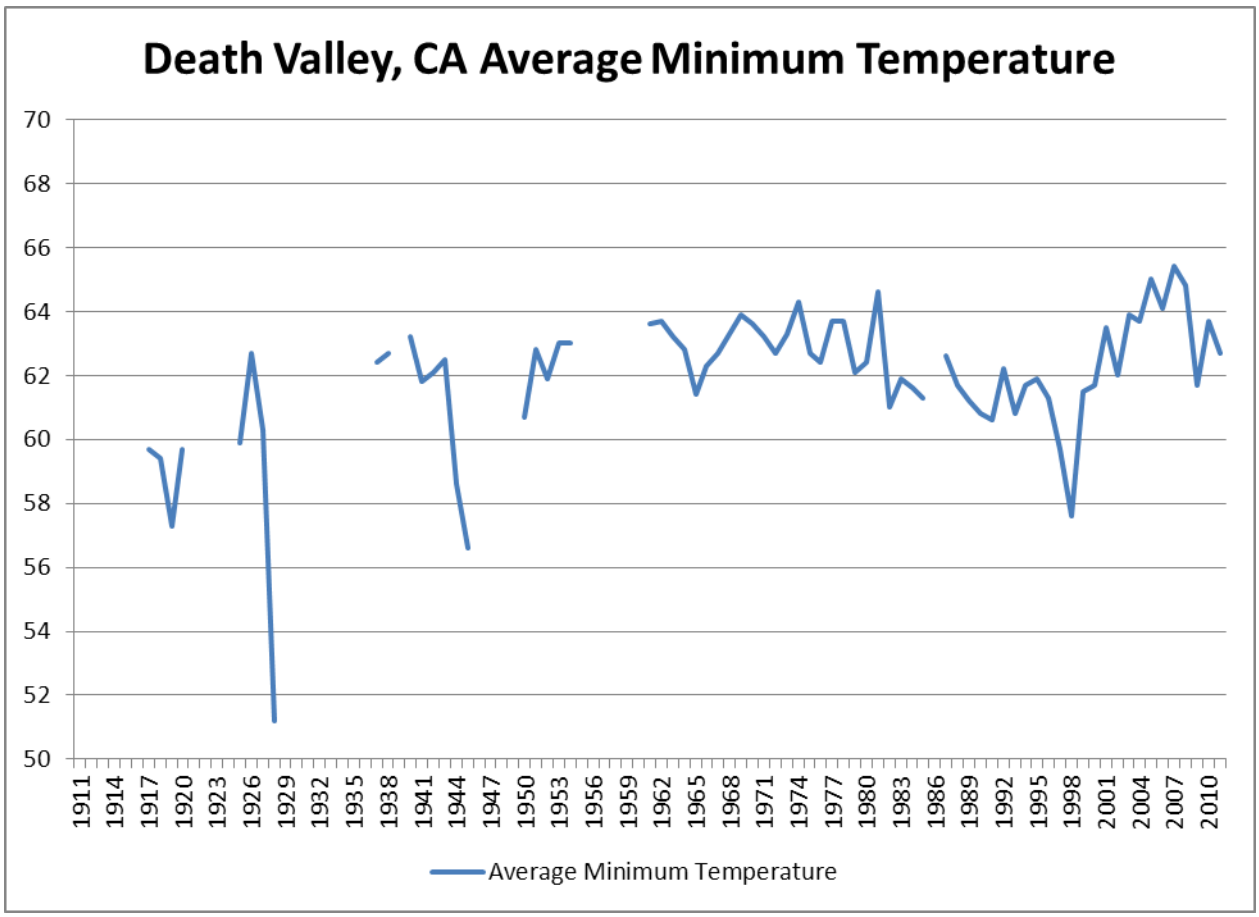
Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
1911	-	-	-	-	-	-	83.5	78.9	70.3	55.1	41.2	34.3	-
1912	32.9	39.4	49.5	54.6	64.8	71.0	79.6	80.7	65.4	55.3	39.1	30.2	55.3
1913	26.6	41.8	44.9	57.9	66.2	74.6	80.8	84.4	77.8	70.1	M	M	M
1914	M	M	60.6	62.4*	71.6	76.0	85.8*	83.7*	70.9	72.3	63.7	59.4	M
1915	M	54.6	57.0	64.8	65.3	85.6*	96.1*	94.5*	86.4	61.5	49.4	M	M
1916	M	46.0	59.4	69.9	68.8	M	86.8*	83.4	72.0	55.0	39.2	32.7	M
1917	33.6	44.6	45.9	56.8	63.6	79.4	92.6	82.7	73.7	61.3	44.7	36.3	59.7
1918	36.7	41.5	53.5	59.7*	66.2	84.7	86.2	81.6	68.4	58.9	41.1	33.1	59.4**
1919	28.1	36.3	42.7	55.5	69.4	74.7	87.3	86.5	76.3	55.5	41.0	32.4	57.3
1920	39.7	44.3	49.9	58.6	68.7	79.0	86.4	85.0*	72.4	57.8	43.3	33.6	59.7**
1921	37.5	41.5	49.0*	53.1	58.3	75.5*	M	M	62.2	50.4	43.9	M	M
1922	29.8*	44.4	49.6	58.9	68.9*	M	M	85.7	76.4	61.5	45.6*	42.4*	M
1923	39.7*	42.1*	50.4	60.4*	68.7	67.9	82.9*	78.3*	73.4*	57.7	49.0	38.2	59.0**
1924	33.5*	46.5	46.5	60.2*	73.4	79.1	88.5	M	66.3	43.2	42.8	34.7	M
1925	35.7	46.0	50.6	60.9	72.0*	76.2*	83.6*	80.9	71.3	57.3	45.6*	42.0	59.9**
1926	40.0	45.4	55.5*	66.0	75.1	81.0	84.5*	79.8	71.0	60.5*	48.8	41.1*	62.7**
1927	36.9*	45.7	50.7	59.1*	69.7*	82.4	92.8*	86.8	73.2	51.7	44.0	31.8	60.3**
1928	29.8	35.5*	47.1	53.5	59.6	66.0	78.3*	74.7	63.8	45.5	36.6	26.9	51.2**
1929	M	32.8	44.1	48.2	63.9	73.6	93.9	94.9	M	63.9*	45.1	39.5	M
1930	37.4	46.6	53.4	65.7*	65.4	M	M	82.8	74.1	58.9	43.9	M	M
1931	41.3	M	M	62.6	73.2	76.6	84.4	M	72.4	M	43.5	33.5	M
1932	35.5	40.3	48.3*	62.0*	67.9*	M	85.6	82.3	75.1*	60.9	50.8	37.5	M
1933	35.7	36.8	50.0	55.3	62.0	M	M	85.2	74.2	65.1	46.5	39.5	M
1934	41.9	47.5	58.2	65.7	74.1	76.8*	M	M	76.5	61.8	50.9	40.5	M
1935	39.4	47.2	48.9	62.0	71.3*	85.7*	87.6	88.5	79.9	59.9	43.1	39.2	62.7**
1936	37.1	43.1	56.6	65.3	70.8	82.1*	87.5*	M	75.1	61.7	47.1	38.2	M
1937	31.1	41.5	51.9	57.7	74.0	81.3	88.7*	88.4	78.5	62.8	47.8	44.7	62.4**
1938	41.5	46.5	51.3	62.4	69.7	82.3	87.6	84.5	77.7	60.8	42.3	44.3	62.7
1939	39.8	41.4	53.8	64.8	73.6	78.8	M	M	74.2	60.5	48.0	40.9	M
1940	41.1	47.1	56.4	63.8	73.2	84.8	85.4	86.6	74.6	59.9	45.1	40.0	63.2
1941	41.1	47.1	52.0	58.2	73.8	78.2	86.5*	81.8	70.9	59.8	48.6	42.6	61.8**
1942	40.0	45.6	51.7	63.5	68.5	81.3	91.9*	85.5	72.4	61.9	44.8	37.5	62.1**
1943	38.0	42.2	54.3	64.7	73.5	77.0	86.7	85.2	75.4	63.2	45.0	42.8	62.5
1944	37.5	43.1	50.8	58.1	68.3	71.6	81.6	78.8	71.2	59.4	46.9	34.7	58.6
1945	34.9	41.0	46.1	54.0	66.9	73.1	85.8	78.1	70.7	56.4	40.1	30.9	56.6
1946	34.9	40.1	50.4	67.0	73.2	M	83.4*	84.7	75.7	63.5	M	42.6	M
1947	37.8	46.4*	55.5	67.7	76.2	M	86.8	85.9	77.8	62.7	47.0	41.1	M
1948	36.3	43.2	M	58.8	68.6	76.6	84.4*	82.7	70.8	57.7	39.8	35.2	M
1949	33.8	40.2	52.8	66.5	70.5	81.9*	M	82.7	M	57.0	46.3	33.5	M
1950	30.6	44.6	48.9	61.2	68.5	74.1	86.9	83.0	74.9	63.4	50.5	41.2	60.7
1951	38.7	43.4	52.8	63.5	72.7	83.0	89.5	85.2*	77.8	61.8	47.5	39.6	62.8**
1952	38.9	44.7	48.5	62.1	71.6	74.4	86.8	89.2*	76.9	63.4	46.3	40.5	61.9**
1953	42.8	42.8	53.5	64.3	66.3	78.1	91.8	85.4	75.6	63.6	51.5	39.5	63.0
1954	37.5	47.0	50.1	66.3	77.6	79.6	89.5	83.1	75.9	61.8	49.4	37.4	63.0
1955	36.9*	41.6	53.3*	58.3	68.9	79.6	86.9	88.8	74.5	62.1*	M	40.7*	M
1956	40.9	38.4	52.3*	60.6*	M	81.9	86.2	83.3*	76.8	61.2	44.5	35.5	M
1957	36.1	48.9*	63.4*	63.5	66.7	82.6	86.0	85.1	M	M	M	M	M
1958	M	M	53.2	61.8	75.5*	81.3	87.6	89.4	79.3	66.4	48.7	40.7	M
1959	44.5	47.1	57.7	67.1	71.3*	85.8	93.3	86.7	76.4	65.4	47.6*	42.1	65.6**
1960	39.5	45.0	58.5	66.4	71.4	86.1	90.8	87.4*	78.6	63.4	M	40.5	M

1961	37.4	47.7	54.9	64.8	71.4	86.5	91.5	87.8	74.0	61.4	46.9	37.5	63.6
1962	40.4	47.1	50.6	66.7	70.7	81.8	87.5	85.9	77.3	65.7	51.1	38.7	63.7
1963	34.1	53.4	52.9	59.3	75.5	77.7	88.3	85.7	75.8	68.1	50.2	36.4	63.2
1964	37.0	44.1	51.4	61.9	70.8	80.0	88.5	87.1	76.1	67.5	46.6	42.3	62.8
1965	42.2	46.3	53.4	61.1	70.4	76.6	84.9	84.3	70.5	60.9	47.9	36.8*	61.4**
1966	35.3	40.7*	50.0	63.1	74.5	81.4	86.5	87.0	75.6*	60.1*	50.7	40.9*	62.3**
1967	39.3	46.6	58.2*	53.5*	70.8	76.5	89.1	89.0	77.7	61.4	51.2	37.5	62.7**
1968	36.7	50.5	54.3	61.2	71.6	83.5	88.7	83.9	76.8	63.7	52.4	35.4	63.3
1969	43.2	44.7	51.9	63.6	75.0	79.2	88.8	89.5	79.1	59.5	50.1	40.3*	63.9**
1970	40.1	48.4	54.7	58.4	73.5	81.9	89.8	90.2	73.6	60.4	49.7	41.2	63.6
1971	40.1	46.4	51.8	61.4	68.8	80.8	90.9	93.4	76.9	58.5	47.4	40.8	63.2
1972	37.0	43.1	59.5	62.1	72.7	82.2	89.1	84.9	74.5	63.0	47.4	36.2	62.7
1973	37.8	49.0*	51.8	61.4	75.6	83.8	88.5	86.8	74.3	61.8	47.4	39.9	63.3**
1974	41.0	45.4	57.4	62.2	73.6	83.9	88.3	83.3	80.6	64.8	48.9	40.5	64.3
1975	38.0	47.5	53.8	58.5	70.8	82.4	87.5	84.0	77.7	62.2	47.2	42.1	62.7
1976	39.9	48.7	52.8	61.1	74.6	80.9	88.0	81.1	75.4	62.7	49.7	34.1	62.4
1977	39.4	47.3	50.8	66.5	66.6	86.8	88.9	86.4	75.3	63.7	48.3	44.1	63.7
1978	45.1	48.7	57.9	59.9*	68.0	82.9	87.1	86.4	74.2	65.7	50.7	36.5	63.7**
1979	41.5	43.9	55.0	61.2*	72.5	76.8	84.5	81.5	78.4	63.8	46.2	38.7	62.1**
1980	45.7	48.6*	52.2	61.1	67.0	76.9	87.2	85.2	73.5	61.3	47.4	41.7	62.4**
1981	43.4	47.0	55.2	65.3	72.0	86.0	88.6	85.6	78.5	60.7	51.2	40.7	64.6
1982	37.5	45.4	52.1	62.5	72.8	78.6	83.2	84.7	73.0	57.3	44.4	38.6*	61.0**
1983	37.3	46.5	53.4	57.2	69.0	79.6	83.4	82.5	78.5	63.9	51.1	39.9	61.9
1984	41.4	44.0	53.1	59.2	75.3	79.1	85.0	82.9	76.8	56.6	45.1*	38.7	61.6**
1985	37.5	43.1	51.1	63.2*	72.2	83.4	88.4	82.7	70.4	58.9	45.4	38.0	61.3
1986	40.7	47.3*	57.5	62.6*	73.5*	82.6*	83.5	88.4	71.3	M	49.7*	38.4	M
1987	40.1	49.8*	53.2	63.4	71.6	79.8	81.5	84.0	75.9	64.2	49.9	36.7	62.6**
1988	36.5	44.8	54.4	60.2	68.3*	78.3	88.2	83.9	73.3	64.8	48.6	38.6	61.7**
1989	35.7	43.4	56.3	68.1	70.3	81.0*	87.4	82.5	71.6	58.7	45.6	34.1	61.2**
1990	36.4	42.3	54.1	64.0	70.1	79.9	87.5	83.6	77.3	58.1	45.0	30.1	60.8
1991	35.5	45.9	50.1	58.8	65.6	76.1	84.4*	83.7	77.2	64.6	47.3	37.9	60.6
1992	36.6	48.7	55.4	64.8	76.6	78.3	82.1	84.5	74.1	63.8	45.4	36.0	62.2
1993	37.4	44.8	53.8	62.6	73.4	74.9	84.8	83.3	71.9	61.8	43.9	35.6	60.8
1994	36.9	41.5	57.6	62.4	70.7	82.8	89.8	87.1	74.0	59.2	41.3	36.0	61.7
1995	42.4	48.5	54.1	58.7	65.9	74.3	85.4	87.0	77.1	59.9	49.4	39.4	61.9
1996	38.6	48.0	53.3	63.2	71.6	81.1	88.2	82.3	71.5	56.5	45.0	35.7	61.3
1997	39.3	43.3	50.4	59.3	73.8	77.3	80.8	82.6	73.5	55.7	44.3	34.7	59.7
1998	35.8	40.9	48.7	53.4	61.4	71.7	84.1	81.9	72.3	55.5	45.6	38.4	57.6
1999	40.3	44.9	54.2	56.4*	71.3	79.7	85.8	84.9	75.1	60.0	46.0	38.5	61.5
2000	39.9	48.4	55.0*	63.8	72.2	82.8	85.6	83.8	71.4	59.6*	41.5	35.9	61.7**
2001	35.9	41.3	55.1*	60.2*	77.2*	84.4	86.0	88.5	76.7	63.6	51.5	38.8*	63.5**
2002	37.3	41.5	49.9	63.2	71.2	84.7	91.9	81.9	75.2	58.5	48.5	39.4	62.0
2003	42.6	45.8	54.4*	60.1	71.8	83.5	90.7	88.5	79.1	65.9	46.6	36.8	63.9**
2004	37.4	44.4	59.5	64.8	73.0	82.0	87.8	85.5*	74.9	62.4	49.8	42.5	63.7**
2005	46.3	50.8	55.5	60.8	75.2	81.3	93.3	87.8	73.9	64.4	51.2	38.9	65.0
2006	42.0	46.9	51.4	61.7	76.7	85.0	93.5	85.2	75.4	62.2	49.8	38.1	64.1
2007	38.3	47.8	58.2	65.1	76.4	84.3	92.4	89.9	78.3	62.5	51.7	38.4	65.4
2008	41.5	45.3	54.3	62.9	72.8	82.9	92.1	90.5	78.0	61.9	54.7	39.5	64.8
2009	41.2	43.7	52.2	60.5	77.3	76.7	89.1	81.7	78.4	58.1	44.7	35.5	61.7
2010	38.2	48.3	53.6	59.5	69.3	84.7	92.2	86.3	73.9	65.7	48.5	42.5	63.7
2011	37.9	43.9	54.3	62.8	69.1	81.7	87.4	86.8	79.1	63.8	46.4	38.3	62.7

* Contains 1-5 days of missing data.

**Average based on months that have 1-5 days of missing data.

M = a month missing more than 5 days of data or a year with at least one month of missing data.



Average annual minimum temperatures by year for Death Valley for the period of 1911-2011. Blank areas of the blue line indicate missing data.

Highest Maximum Temperatures Recorded

134 degrees
July 10, 1913

131 degrees
July 13, 1913

130 degrees
July 12, 1913

129 degrees
July 6, 2007
July 19, 2005
July 17, 1998
July 18, 1960
July 11, 1913
July 9, 1913

Lowest Maximum Temperatures Recorded

38 degrees
December 23, 1990
January 21, 1937

39 degrees
December 22, 1990

40 degrees
January 22, 1937
January 20, 1937
January 8, 1937

41 degrees
December 21, 1990
January 11, 1949
January 10, 1930

Highest Minimum Temperatures Recorded

110 degrees
July 5, 1918

106 degrees
August 1, 1920

105 degrees
July 11, 1920
July 22, 1917

103 degrees
July 24, 1916

Lowest Minimum Temperatures Recorded

15 degrees
January 8, 1913

16 degrees
January 9, 1913

18 degrees
January 19, 1928

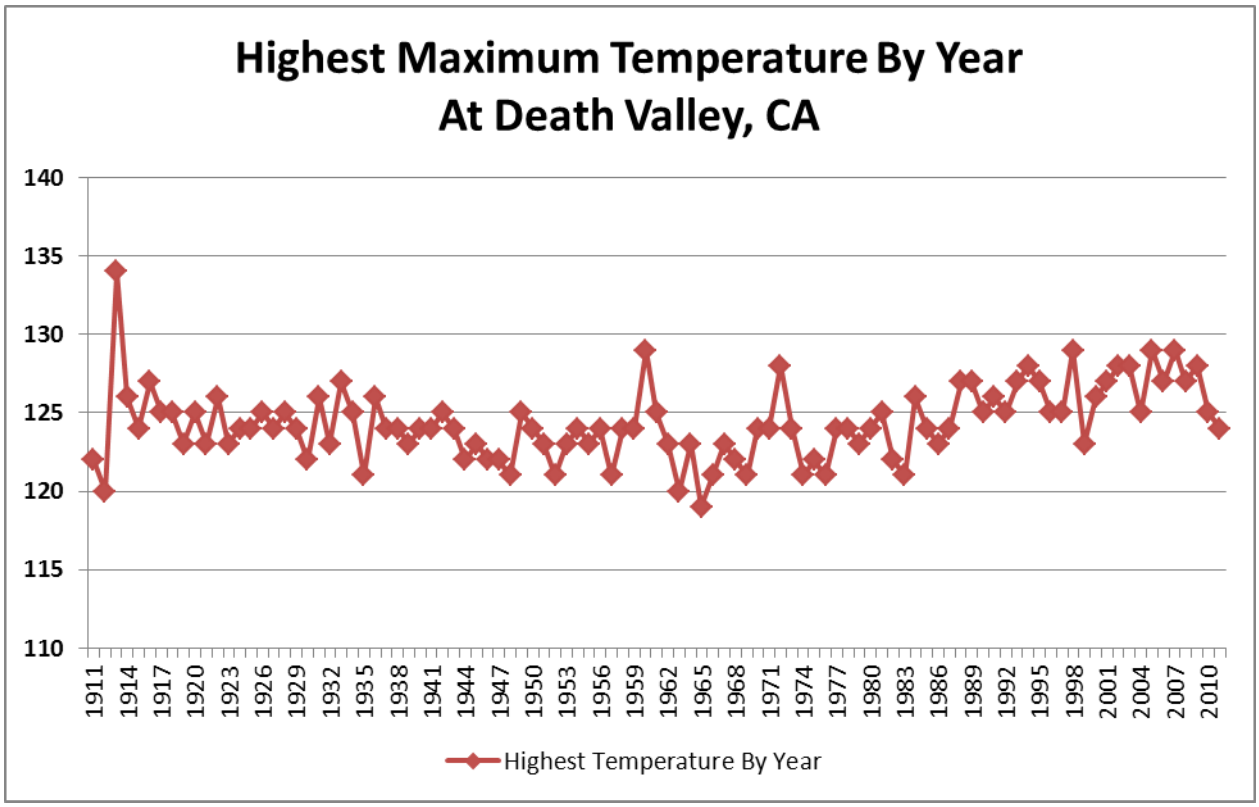
19 degrees
January 7, 1950
January 5, 1950
December 27, 1924
January 9, 1919

Highest Maximum Temperature By Year

Year	Date
1911	122 on July 14 & August 20
1912	120 on May 29, June 5 and August 8
1913	134 on July 10
1914	126 on August 6
1915	124 on August 11
1916	127 on July 23
1917	125 on July 12
1918	125 on August 3
1919	123 on August 20
1920	125 on July 31
1921	123 on July 1 and July 8
1922	126 on July 15
1923	123 on July 29
1924	124 on July 1 and August 27
1925	124 on July 13, July 14 and July 17
1926	125 on July 16
1927	124 on July 14
1928	125 on July 27
1929	124 on June 23
1930	122 on July 14
1931	126 on July 19, July 20 and July 26
1932	123 on August 5
1933	127 on July 26, July 27 and August 12
1934	125 on July 12 and July 27
1935	121 on July 13
1936	126 on August 6
1937	124 on August 11, August 12 and August 13
1938	124 on August 1 and August 2
1939	123 on July 13, July 14, July 22 and July 23
1940	124 on August 11
1941	124 on July 22
1942	125 on July 24
1943	124 on July 26 and July 27
1944	122 on August 12 and August 13
1945	123 on July 26 and August 24
1946	122 on August 3
1947	122 on July 19
1948	121 on August 30 and September 1
1949	125 on July 16
1950	124 on July 1
1951	123 on July 18
1952	121 on August 4

1953	123 on July 22 and July 23
1954	124 on June 22
1955	123 on June 7
1956	124 on June 28
1957	121 on June 25, June 27 and August 17
1958	124 on July 11
1959	124 on July 16
1960	129 on July 18
1961	125 on June 20, June 21, July 10 and July 11
1962	123 on August 15
1963	120 on July 15 and July 16
1964	123 on July 24
1965	119 on August 7, August 9 and August 10
1966	121 on August 5-7
1967	123 on July 1, July 2, July 3 and July 4
1968	122 on June 22
1969	121 on July 31, August 1, August 2, August 3, August 4 and August 15
1970	124 on July 18 and July 19
1971	124 on July 29 and August 10
1972	128 on July 14 and July 15
1973	124 on July 6
1974	121 on July 28 and July 29
1975	122 on July 25, July 26, July 27, August 5 and August 6
1976	121 on July 8, July 9 and July 10
1977	124 on August 2
1978	124 on August 8 and August 9
1979	123 on July 17, July 18 and July 19
1980	124 on July 26
1981	125 on August 8
1982	122 on July 30 and July 31
1983	121 on July 13
1984	126 on July 4
1985	124 on July 4 and July 5
1986	123 on August 5
1987	124 on July 14 and August 3
1988	127 on July 18
1989	127 on July 7
1990	125 on July 1 and July 12
1991	126 on July 4
1992	125 on August 3
1993	127 on August 2
1994	128 on June 29
1995	127 on July 29

1996	125 on July 2, July 25, August 1 and August 13
1997	125 on August 6 and August 7
1998	129 on July 17
1999	123 on July 1
2000	126 on June 15
2001	127 on July 2 and July 3
2002	128 on July 9
2003	128 on July 12
2004	125 on August 10 and August 11
2005	129 on July 19
2006	127 on July 16
2007	129 on July 6
2008	127 on July 9
2009	128 on July 18
2010	125 on July 25
2011	124 on June 23 and August 27



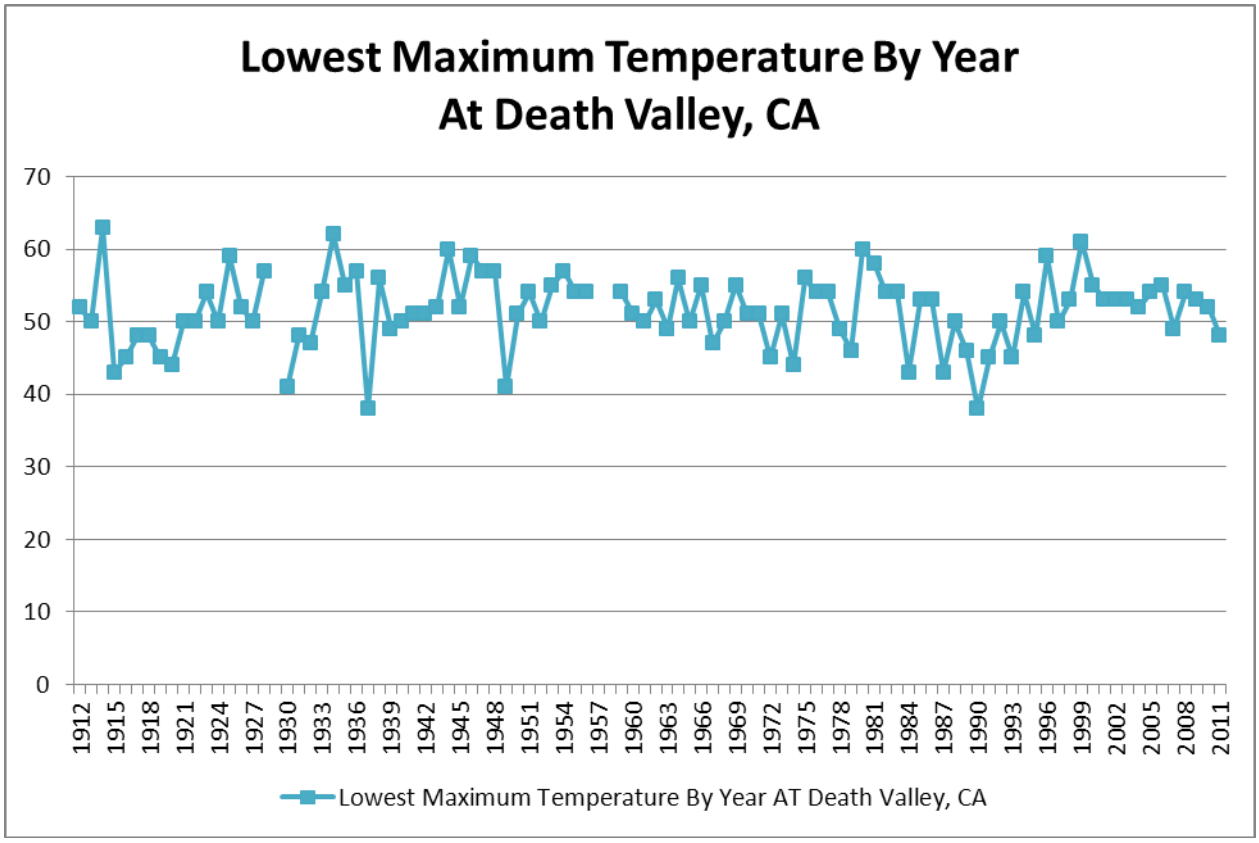
Highest maximum temperature by year at Death Valley, California.

Lowest Maximum Temperature By Year

Year	Date
1911	Incomplete data.
1912	52 on January 4
1913	50 on January 7 and 8
1914	63 on January 12
1915	43 on December 30
1916	45 on January 14
1917	48 on January 16
1918	48 on December 29, December 30 and December 31
1919	45 on November 27
1920	44 on February 9
1921	50 on January 12, January 13, January 22 and January 23
1922	50 on January 20
1923	54 on February 2
1924	50 on December 19
1925	59 on January 13
1926	52 on December 23
1927	50 on December 11
1928	57 on February 5
1929	Incomplete data.
1930	41 on January 10
1931	48 on November 23
1932	47 on December 11
1933	54 on February 8
1934	62 on December 19
1935	55 on January 5
1936	57 on December 30
1937	38 on January 21
1938	56 on February 18
1939	49 on February 3
1940	50 on December 17
1941	51 on December 28
1942	51 on January 5
1943	52 on January 20
1944	60 on January 10
1945	52 on December 4
1946	59 on February 5
1947	57 on December 5
1948	57 on January 26
1949	41 on January 11
1950	51 on January 4

1951	54 on December 7
1952	50 on January 6
1953	55 on December 24
1954	57 on December 28 and 30
1955	54 on January 1
1956	54 on January 30
1957	Incomplete data.
1958	Incomplete data.
1959	54 on January 6
1960	51 on January 15
1961	50 on December 14
1962	53 on January 22
1963	49 on January 13
1964	56 on November 17
1965	50 on December 21
1966	55 on January 3 and January 4
1967	47 on December 14
1968	50 on December 24
1969	55 on January 2
1970	51 on January 7
1971	51 on January 4 and January 8
1972	45 on December 10
1973	51 on January 9
1974	44 on January 4 and January 5
1975	56 on January 5
1976	54 on December 3
1977	54 on January 2
1978	49 on December 8 and December 9
1979	46 on February 1
1980	60 on January 9 and February 14
1981	58 on December 18
1982	54 on February 10 and December 29
1983	54 on February 3
1984	43 degrees on December 18
1985	53 on January 7, February 3 and February 5
1986	53 on February 11
1987	43 on December 24
1988	50 on January 5
1989	46 on February 8
1990	38 on December 23
1991	45 on January 4
1992	50 on December 7
1993	45 on January 6
1994	54 on December 10
1995	48 on January 4

1996	59 on February 26
1997	50 on January 15 and December 6
1998	53 on December 21
1999	61 on February 5
2000	55 on January 4
2001	53 on February 13
2002	53 on December 20
2003	53 on December 29
2004	52 on December 28
2005	54 on January 3, January 13 and December 17
2006	55 on December 26
2007	49 on January 14
2008	54 on December 17
2009	53 on February 7 and February 16
2010	52 on January 21
2011	48 on January 11



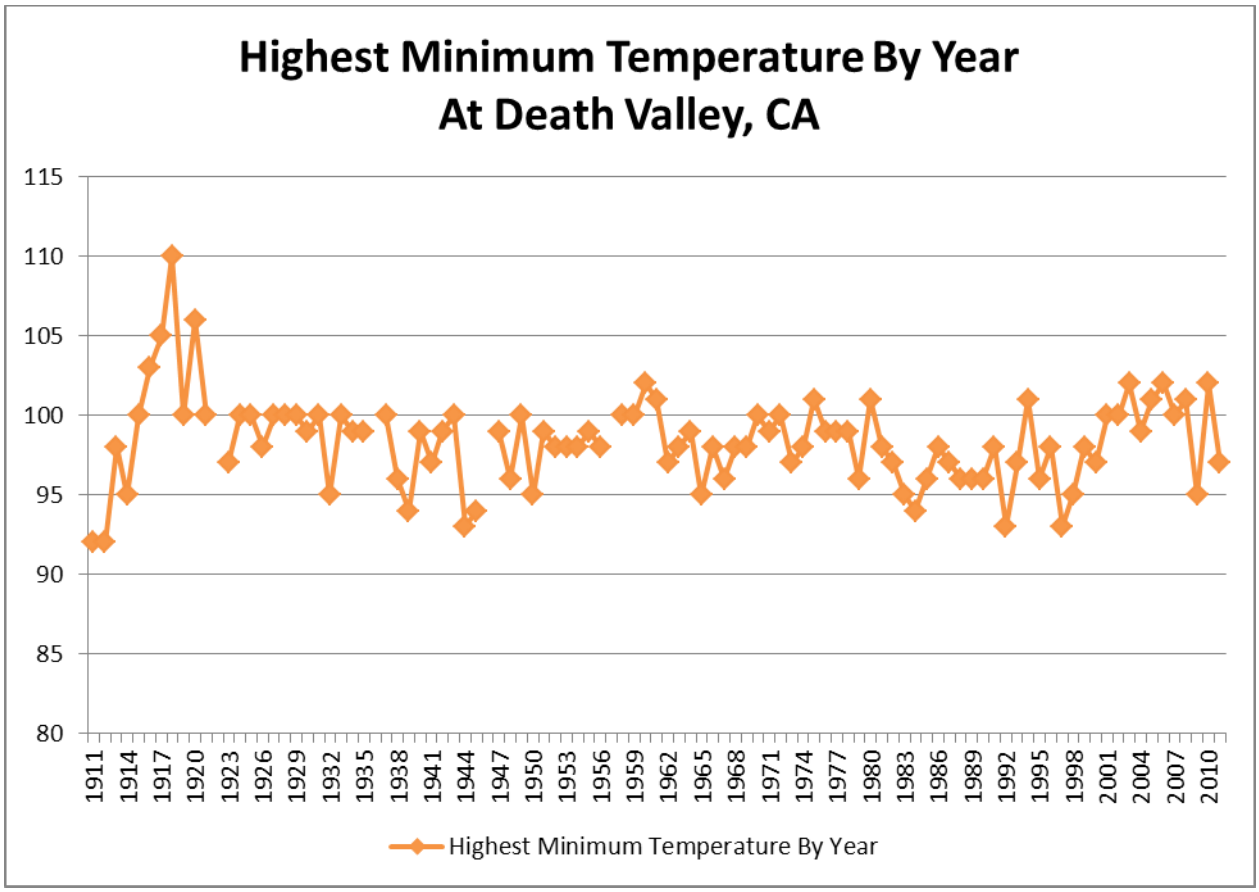
Lowest maximum temperature by year at Death Valley, California.

Highest Minimum Temperature By Year

Year	Date
1911	92 on July 17
1912	92 on July 17
1913	98 on September 7
1914	95 on June 30 and July 1
1915	100 on July 4, July 10, July 17, July 21, August 5, August 10 and August 12
1916	103 on July 24
1917	105 on July 22
1918	110 on July 5
1919	100 on July 21
1920	106 on August 1
1921	100 on July 31 and August 3
1922	Incomplete data.
1923	97 on July 29
1924	100 on July 29, August 11, August 12, August 14, September 1, September 2 and September 3
1925	100 on June 27, July 14 and August 4
1926	98 on July 17
1927	100 on June 16, July 8, July 9, July 10, July 12, July 17, July 19, July 20, July 23, July 24, July 28, August 1 and September 18
1928	100 on July 23, July 26 and July 29
1929	100 on July 24, August 11 and August 12
1930	99 on July 17 and July 19
1931	100 on July 12 and July 21
1932	95 on July 5 and August 8
1933	100 on July 17, July 18 and July 20
1934	99 on July 2 and August 19
1935	99 on July 14 and July 15
1936	Incomplete data.
1937	100 on August 12 and August 13
1938	96 on July 24
1939	94 on July 10, July 26 and July 27
1940	99 on August 12
1941	97 on July 23
1942	99 on July 10 and July 12
1943	100 on July 28
1944	93 on August 14
1945	94 on July 27
1946	Incomplete data.

1947	99 on August 7
1948	96 on July 18
1949	100 on July 15
1950	95 on July 25
1951	99 on July 16, August 1 and August 2
1952	98 on August 6
1953	98 on July 14, July 23, July 24, July 27 and July 30
1954	98 on July 16 and July 29
1955	99 on July 24 and August 10
1956	98 on June 30
1957	Incomplete record.
1958	100 on August 13
1959	100 on July 11, July 17, July 18 and July 19
1960	102 on July 19
1961	101 on July 18
1962	97 on August 17
1963	98 on July 22
1964	99 on July 25
1965	95 on August 9 and August 10
1966	98 on July 29
1967	96 on July 26, August 1 and August 5
1968	98 on July 21
1969	98 on August 3 and August 16
1970	100 on July 18, July 21and August 11
1971	99 on July 24, August 2 and August 11
1972	100 on July 16
1973	97 on June 27, July 11 and August 19
1974	98 on July 29 and August 4
1975	101 on July 26
1976	99 on July 11
1977	99 on August 2
1978	99 on August 3
1979	96 on July 26
1980	101 on July 26
1981	98 on June 23
1982	97 on August 1
1983	95 on August 4
1984	94 on July 7, July 8 and August 14
1985	96 on June 19, July 9 and July 25
1986	98 on July 3
1987	97 on August 6
1988	96 on July 30
1989	96 on July 21 and July 25
1990	96 on July 13 and August 6

1991	98 on August 25
1992	93 on August 17
1993	97 on August 4
1994	101 on June 27
1995	96 on July 10 and August 7
1996	98 on July 26
1997	93 on July 17
1998	95 on July 19
1999	98 on August 20
2000	97 on August 2 and August 3
2001	100 on July 5
2002	100 on July 13
2003	102 on July 23
2004	99 on August 13
2005	101 on August 20 and August 21
2006	102 on July 27
2007	100 on September 3 and September 4
2008	101 on July 9
2009	95 on August 22
2010	102 on July 18
2011	97 on July 26



Highest minimum temperature by year at Death Valley, California.

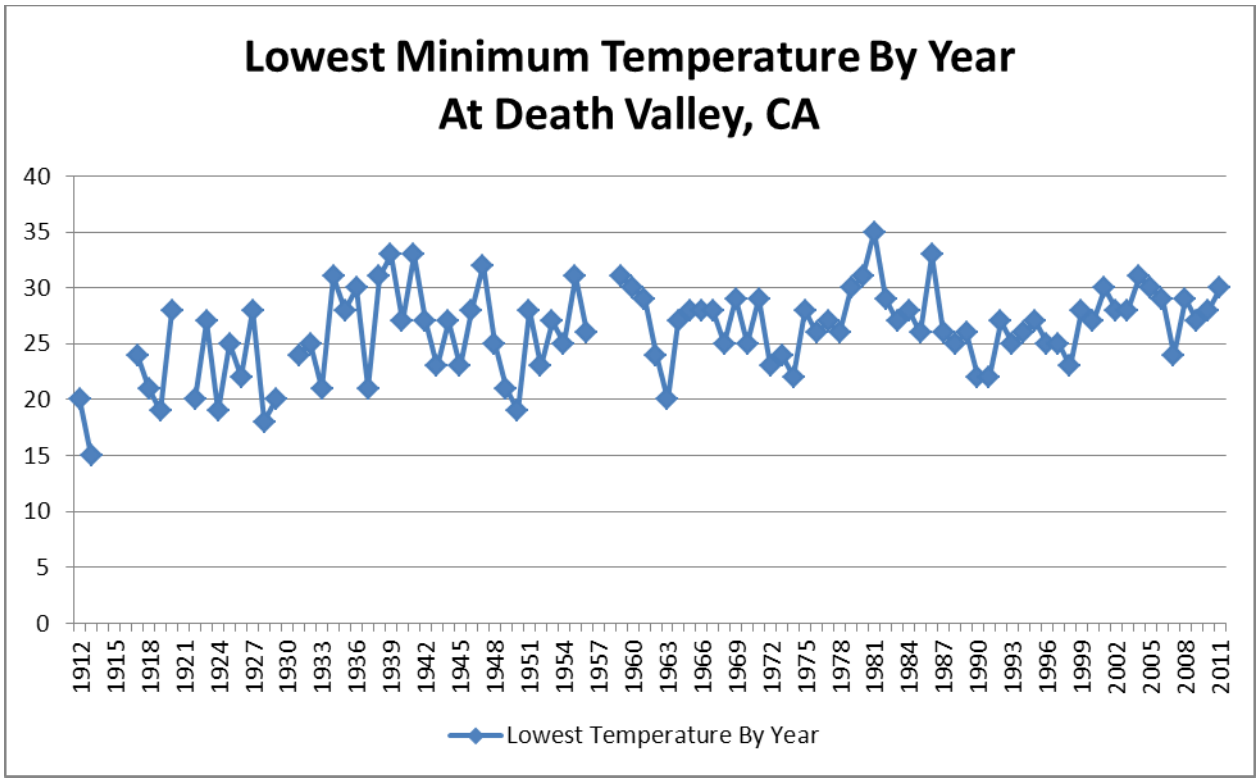
Lowest Minimum Temperature By Year

Year	Date
1911	Incomplete record.*
1912	20 on January 9
1913	15 on January 8
1914	Incomplete record.*
1915	Incomplete record.*
1916	Incomplete record.*
1917	24 on January 17
1918	21 on December 28
1919	19 on January 9
1920	28 on December 19
1921	Incomplete record.*
1922	20 on January 22
1923	27 on January 5 and February 2
1924	19 on December 27
1925	25 on January 14
1926	22 on December 25
1927	28 on January 25
1928	18 on January 19
1929	20 on January 22
1930	Incomplete data*
1931	24 on December 17
1932	25 on January 25, January 26 and February 4
1933	21 on February 13
1934	31 on December 2
1935	28 on December 17
1936	30 on January 20
1937	21 on January 25
1938	31 on November 25
1939	33 on February 10 and December 27
1940	27 on December 15
1941	33 on January 3, November 24 and December 25
1942	27 on December 9
1943	23 on January 19
1944	27 on December 19
1945	23 on December 17
1946	28 on January 10
1947	32 on December 15
1948	25 on January 29
1949	21 on January 8
1950	19 on January 7
1951	28 on January 9 and December 23

1952	23 on January 4 and January 5
1953	27 on December 25
1954	25 on January 2
1955	31 on January 14 and December 30
1956	26 on February 16
1957	Incomplete record.*
1958	Incomplete record.*
1959	31 on January 4
1960	30 on January 17
1961	29 on January 5 and December 13
1962	24 on December 29
1963	20 on January 13
1964	27 on December 16
1965	28 on December 20
1966	28 on January 23, January 24 and December 25
1967	28 on December 21
1968	25 on December 22
1969	29 on January 2
1970	25 on January 4
1971	29 on January 10 and January 11
1972	23 on December 12
1973	24 on January 7
1974	22 on January 3
1975	28 on January 4
1976	26 on December 25
1977	27 on January 11
1978	26 on December 31
1979	30 on January 4
1980	31 on December 11
1981	35 on December 25 and December 26
1982	29 on December 27
1983	27 on January 3
1984	28 on December 23, December 24 and December 25
1985	26 on February 6 and February 7
1986	33 on December 11
1987	26 on December 30
1988	25 on December 31
1989	26 on March 4
1990	22 on December 22, December 25 and December 31
1991	22 on January 1 and January 2
1992	27 on December 27
1993	25 on January 6

1994	26 on December 10 and December 11
1995	27 on December 28
1996	25 on December 20
1997	25 on January 14 and December 27
1998	23 on December 25
1999	28 on December 8
2000	27 on January 9
2001	30 on December 18 and December 19
2002	28 on January 31 and February 1
2003	28 on December 28 and December 29
2004	31 on December 25
2005	30 on December 16 and December 17
2006	29 on December 21
2007	24 on January 14
2008	29 on December 28
2009	27 on December 9
2010	28 on January 3, January 5 and January 6
2011	30 on December 8

*Years with more than half of the days in January, February or December missing minimum temperatures are listed as incomplete.



Lowest minimum temperature by year at Death Valley, CA.

Number of Days With A Specified Temperature

With A High Temperature of 125 degrees or higher

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	0	0	0	0	0	5/1994	10/1913	3/1933,1936 &1998	0	0	0	0	10/1913
Least	0	0	0	0	0	0/2011*	0/2011*	0/2011*	0	0	0	0	0/2011*

*Most recent of multiple occurrences.

With A High Temperature of 120 degrees or higher

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	0	0	0	0	2/2000 &2003	12/1961	29/1917	17/1917	3/1950 &2007	0	0	0	52/1917
Least	0	0	0	0	0/2011*	0/2005*	0/1966*	0/1999*	0/2011*	0	0	0	0/1965

*Most recent of multiple occurrences.

With A High Temperature of 110 degrees or higher

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	0	0	0	2/1989 &2007	15/1997 &2001	27/1924	31/2010*	31/2008*	21/2001 &2003	4/1991	0	0	119/2001
Least	0	0	0	0/2011*	0/2011*	5/1944 &1965	16/1935	10/1976	0/1957 &1965	0/2011*	0	0	47/1941

*Most recent of multiple occurrences.

With A High Temperature of 100 degrees or higher

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	0	0	2/1966, 2004 &2007	18/1989	29/1997	30/2003*	31/2011*	31/2011*	30/2008*	19/1991	0	0	161/2001
Least	0	0	0/2011*	0/2003*	3/1998	19/1944	27/1987	25/1983	11/1985 &1986	0/1998*	0	0	110/1998

*Most recent of multiple occurrences.

With A High Temperature of 90 degrees or higher

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	0	5/1986	24/1934	30/1928	31/2009*	30/2011*	31/2011*	31/2011*	30/2011*	31/1988	9/1950	0	221/1928
Least	0	0/2011*	0/1992*	0/1967	13/1977	27/1999	30/1918	29/1983	24/1986	4/1920	0/2011*	0	156/1920

*Most recent of multiple occurrences.

With A High Temperature below 50 degrees

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	13/1937	2/1989	0	0	0	0	0	0	0	0	2/1919	5/1990	13/1937
Least	0/2010*	0/2011*	0	0	0	0	0	0	0	0	0/2011*	0/2011*	0/2010*

*Most recent of multiple occurrences.

With A Low Temperature of 100 degrees or higher

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	0	0	0	0	0	3/1918	10/1927	3/1924	3/1924	0	0	0	14/1927
Least	0	0	0	0	0	0/2011*	0/2011*	0/2011*	0/2011*	0	0	0	0/2011*

*Most recent of multiple occurrences.

With A Low Temperature of 90 degrees or higher

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	0	0	0	0	3/1954	14/1961	31/1929	30/1929	9/1915	0	0	0	75/1915
Least	0	0	0	0	0/2011*	0/1999*	1/1944, 1983 &1992	0/1998*	0/2010*	0	0	0	2/1944 &1997

*Most recent of multiple occurrences.

With A Low Temperature of 32 degrees or below

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	25/1919	12/1929	2/1919	0	0	0	0	0	0	3/1924	6/1945	30/1928	58/1928
Least	0/2008*	0/2010*	0/2011*	0	0	0	0	0	0	0/2011*	0/2011*	0/2010*	0/1939, 1941, 1958 &1986

*Most recent of multiple occurrences.

Number of Consecutive Days – Temperature

High Temperature of 125 degrees or higher
10 days from July 5, 1913 through July 14, 1913
7 days from July 14, 2005 through July 20, 2005
5 days from July 16, 2009 through July 20, 2009
5 days from June 26, 1994 through July 1, 1994

High Temperature of 120 degrees or higher
43 days from July 6, 1917 through August 17, 1917
21 days from June 21, 1929 through July 11, 1929
14 days from July 11, 2009 through July 24, 2009
14 days from July 21, 1980 through August 3, 1980

High Temperature of 110 degrees or higher
84 days from June 14, 1917 through September 5, 1917
80 days from June 13, 2008 through August 31, 2008
78 days from June 17, 1994 through September 2, 1994
73 days from June 11, 1960 through August 22, 1960

High Temperature of 100 degrees or higher
154 days from May 5, 2001 through October 5, 2001
145 days from May 18, 2003 through October 9, 2003
136 days from May 26, 1960 through October 8, 1960
134 days from May 22, 1974 through October 2, 1974

High Temperature of 90 degrees or higher
205 days from April 2, 1992 through October 23, 1992
172 days from May 11, 2003 through October 29, 2003
164 days from April 25, 2006 through October 5, 2006
164 days from April 21, 1981 through October 1, 1981

High Temperature below 50 degrees
7 days from January 7, 1937 through January 13, 1937
6 days from January 20, 1937 through January 25, 1937
5 days from December 31, 1990 through January 4, 1991
5 days from January 3, 1974 through January 7, 1974

Low Temperature of 100 degrees or higher
3 days from July 17, 1959 through July 19, 1959
3 days from July 8, 1927 through July 10, 1927
3 days from September 1, 1924 through September 3, 1924

Low Temperature of 90 degrees or higher
47 days from July 1, 1929 through August 16, 1929
29 days from July 18, 1971 through August 15, 1971
24 days from July 11, 1959 through August 3, 1959
23 days from July 19, 1915 through August 10, 1915*

*Missing data on days just before and after streak. This may be a longer stretch.

Low Temperature of 33 degrees or higher (Freeze-Free Period)
445 days from January 14, 1977 through
420 days from February 5, 1913 through
387 days from December 12, 1980 through
363 days from January 6, 1974 through

Low Temperature of 32 degrees or below
30 days from December 2, 1928 through December 31, 1928
30 days from December 11, 1912 through January 9, 1913
20 days from December 20, 1949 through January 8, 1950
20 days from January 17, 1928 through February 5, 1928
20 days from December 24, 1918 through January 12, 1919

Low Temperature of 20 degrees or below
2 days from January 8, 1913 through January 9, 1913

Earliest and Latest First Occurrence and Last Occurrence for Specific Temperature Thresholds

High Temperature of 110 degrees or higher

	Earliest	Latest
First Occurrence	April 8, 1989	June 15, 1953 and June 15, 1998
Last Occurrence	September 1, 1985	October 8, 1996

High Temperature of 100 degrees or higher

	Earliest	Latest
First Occurrence	March 16, 2007	May 20, 1983
Last Occurrence	September 24, 1939	October 28, 1934

High Temperature of 90 degrees or higher

	Earliest	Latest
First Occurrence	February 9, 2006	April 23, 1941
Last Occurrence	October 6, 1920	November 20, 2002

Low Temperature of 40 degrees or below

	Earliest	Latest
First Occurrence	October 10, 1924	December 11, 1962
Last Occurrence	January 15, 2005	April 13, 1912

Low Temperature of 32 degrees or below

	Earliest	Latest
First Occurrence	October 11, 1924	N/A*
Last Occurrence	N/A*	March 15, 1919

*Three winter seasons had no freezing temperatures at Death Valley.

Precipitation Record

Precipitation records for Death Valley have been made through the period of record by use of a Standard Rain Gauge. The components of this gauge include a large outer container called the overflow can, which today is 8 inches in diameter and almost 24 inches tall, a brass or clear plastic measure tube, which is 2.5 inches in diameter and 20 inches deep and a copper or white plastic collector (funnel), which is 8 inches in diameter. A measuring stick is then used by the observer to read how much precipitation fell in the gauge and is marked in inches once a day at the designated time of observation.

As was the case with temperatures, precipitation values are not for a calendar day but rather the observation day since precipitation is measured at the same time temperature observations are taken. From 1911 through 1981 (except for a few months in 1955, 1956 and 1957), daily observations always took place at 1600 or 1700 LST. Since 1982, observations have been taken at 0800 LST/LDT. No attempt was made to adjust precipitation to a calendar day since the records are for a twenty four hour period and supplemental observations of how much fell each hour are not made. Therefore the extreme amounts listed by day are the highest value ever on that observation day and the monthly totals and extremes are computed off the sum of the observational day values for that month.

Precipitation that falls but does not accumulate enough to be measured, known as a trace amount, must be manually noted in the records by the observer. Trace and zero amounts of precipitation in the records should be taken with precaution due to observing practices. It is possible the observer on duty was not around or did not witness a light amount of precipitation in the observation period. Additionally, the increase in trace amounts in more recent years in the datasets compared to earlier years is likely due to the fact that a team of park rangers for the National Park Service now take the observations instead of a single observer. Therefore the person tasked with recording the weather is able to ask other rangers on duty if they witnessed any precipitation at the station.

Records of precipitation in Death Valley started on June 8, 1911. All precipitation data is given in inches. The record highest amount for each day and month follow.

Observation Date Precipitation

January

Period of Record: 1912- 2011

Date	Record Precipitation
1	0.20/1922
2	0.06/2006
3	0.14/1978*
4	0.99/2005
5	0.62/1995
6	0.40/1992
7	0.13/1993
8	0.56/1974
9	0.40/1930
10	0.09/1955
11	0.48/2001
12	0.06/1937
13	0.45/1957
14	0.10/1969
15	0.65/1960
16	0.14/1978
17	0.80/1988*
18	0.70/1916
19	0.34/1973
20	0.90/1954
21	0.30/2010
22	0.98/2010
23	0.25/1943
24	0.45/1995
25	0.60/1995
26	0.64/1941
27	0.41/2001
28	0.50/1915
29	0.60/1915
30	**1.00/1922**
31	0.26/1979

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

February

Period of Record: 1912- 2011

Date	Record Precipitation
1	0.62/1940
2	0.44/1940
3	0.22/1939
4	0.51/1998
5	0.22/1935
6	0.53/1935
7	0.69/1976
8	0.96/2009
9	0.82/1976
10	0.84/1968
11	0.74/1973
12	0.20/2005
13	0.92/2003
14	**1.00/1927**
15	0.22/1998
16	0.30/1959
17	0.40/1980
18	0.28/1969
19	0.62/1969
20	0.26/1941
21	0.64/1970
22	0.97/1944
23	0.58/2004
24	0.99/1998
25	0.70/1913
26	0.58/2001
27	0.58/1949
28	0.43/2010
29	0.18/1960

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

March

Period of Record: 1912- 2011

Date	Record Precipitation
1	**1.00/1978**
2	0.33/1981
3	0.96/1983
4	0.30/1943
5	0.08/1981
6	0.29/2000
7	0.25/1987
8	0.32/1974
9	0.70/1912
10	0.22/1969
11	0.30/1918
12	0.10/1973*
13	0.05/1973*
14	0.13/1986
15	0.47/1987
16	0.50/1952
17	0.29/1982
18	0.64/1982
19	0.32/1979
20	0.10/1979
21	0.40/1991
22	0.10/1920
23	0.30/1954
24	0.08/2011
25	0.20/2005
26	0.60/1998
27	0.52/1991
28	0.28/1993
29	0.40/1912
30	0.10/1930
31	0.38/1978

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

April

Period of Record: 1912- 2011

Date	Record Precipitation
1	0.58/1940
2	0.23/1937
3	0.14/1965
4	0.46/1965
5	0.28/1926
6	0.29/1943
7	0.10/1958
8	0.27/1965
9	0.24/1965
10	0.09/1967
11	0.47/1941
12	0.11/1965
13	0.27/1956
14	0.21/1939
15	**1.47/1988**
16	0.20/1988
17	T/1988*
18	0.04/1972
19	T/2003*
20	0.03/1988
21	0.37/1957
22	0.02/2010
23	0.18/1942
24	0.34/1939
25	0.10/1947
26	0.13/1952
27	0.01/1994
28	0.12/1952
29	0.09/1980
30	0.27/1980

* Also in previous years.

Bold values are the monthly extremes.

Bold and underlined values are the all-time extremes.

May

Period of Record: 1912- 2011

Date	Record Precipitation
1	0.40/1930
2	0.14/1938
3	0.03/1991
4	T/1982*
5	0.07/1998
6	0.07/1976
7	0.08/1986*
8	0.10/1977
9	**0.60/1977**
10	0.24/1985
11	0.18/1957
12	0.03/1935
13	0.05/1998*
14	0.12/1939
15	0.02/1957
16	0.05/1944
17	0.44/1949
18	0.02/1987
19	0.40/1916
20	0.05/1957
21	0.10/1920
22	0.01/1957
23	0.11/1977
24	0.48/1941
25	0.11/1996
26	0.01/2008
27	0.03/1999
28	0.01/1990
29	0.01/1913
30	0.11/1948
31	0.01/1913

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

June

Period of Record: 1911- 2011

Date	Record Precipitation
1	T/1973*
2	0.05/1914
3	0.00/2011*
4	0.08/1998
5	0.10/1931
6	0.18/1972
7	0.25/1972
8	0.26/1968
9	0.08/1957
10	0.05/1957
11	0.10/1998
12	0.05/1963
13	0.04/1998
14	0.40/1997
15	T/1997*
16	0.16/2004
17	0.00/2011*
18	0.00/2011*
19	0.03/1988
20	T/1938
21	T/1944
22	0.10/1972
23	0.09/1988
24	T/1936
25	0.00/2011
26	T/1961
27	T/1922
28	**0.60/1920**
29	T/1938*
30	0.02/1980

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

July

Period of Record: 1911- 2011

Date	Record Precipitation
1	0.31/1925
2	0.00/2011*
3	T/1961
4	T/1961
5	0.10/2011
6	0.05/2001
7	0.20/2001
8	0.00/2011*
9	0.04/1966
10	0.01/1999
11	T/1939
12	0.02/1992
13	0.04/2008
14	0.06/1984
15	0.21/1999
16	0.20/1999
17	0.12/1990
18	0.06/2002
19	0.05/1922
20	0.50/1969
21	0.20/1984
22	0.30/1913
23	0.60/1974
24	0.41/1956
25	0.16/1965
26	**0.75/1954**
27	0.30/1964
28	0.64/1934
29	0.25/1997
30	0.38/1966
31	0.19/1991

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

August

Period of Record: 1911- 2011

Date	Record Precipitation
1	0.29/2011
2	0.10/1966
3	0.08/1922
4	0.05/1964
5	**1.10/1936**
6	0.09/1964
7	0.02/1982
8	0.37/1941
9	0.17/1983
10	0.33/1983
11	0.40/1942
12	0.01/1979
13	0.02/1982
14	0.10/1965
15	0.51/1984
16	0.66/1984
17	0.95/1977
18	0.19/1983
19	0.32/1983
20	0.08/1983
21	0.01/1975
22	0.60/1946
23	0.05/1961
24	0.10/1920
25	0.00/2011
26	0.07/1938
27	0.22/1988
28	0.30/1922
29	0.02/2000
30	0.36/1938
31	0.16/2000

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

September

Period of Record: 1911- 2011

Date	Record Precipitation
1	T/1940
2	0.00/2011*
3	0.32/1997
4	0.33/1967
5	0.38/1998
6	0.32/1978
7	0.40/1950
8	0.52/2006
9	0.23/1980
10	0.37/1976
11	0.34/1976
12	0.53/2004
13	0.47/1959
14	0.15/1923
15	0.00/2011*
16	0.00/2011*
17	0.10/1938
18	0.52/1963
19	0.29/1963
20	0.60/1939
21	0.65/2005
22	0.63/2007
23	0.14/1990
24	0.20/1990
25	0.96/1939
26	1.11/1997
27	0.18/1983
28	0.03/1967
29	0.20/1911
30	**1.20/1911**

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

October

Period of Record: 1911- 2011

Date	Record Precipitation
1	0.03/1981*
2	0.43/1976
3	0.04/1974
4	**0.55/1972**
5	0.20/1912
6	0.26/1945
7	0.05/1974
8	0.50/1923
9	0.20/1943
10	0.00/2011*
11	0.10/1928
12	0.04/1947
13	0.20/1987
14	0.07/2006
15	0.02/2006
16	0.16/1936
17	**0.55/1934**
18	0.08/2005
19	0.48/1972
20	0.35/1926
21	0.06/2010
22	0.04/2010
23	0.10/1921
24	0.26/1941
25	0.06/1998
26	0.05/1974
27	0.08/2004
28	0.10/1992
29	0.36/1974
30	0.20/1920
31	0.40/1996

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

November

Period of Record: 1911- 2011

Date	Record Precipitation
1	0.30/1987
2	0.80/1913
3	0.00/2011*
4	0.00/2011*
5	0.51/1944
6	0.69/1987
7	0.02/2010*
8	0.75/2004
9	**1.40/1923**
10	0.30/1923
11	0.75/1954
12	0.50/1944
13	0.90/1946
14	0.06/1972
15	0.32/1952
16	0.31/1952
17	0.24/1972
18	0.24/1987
19	0.60/1913
20	0.30/1967
21	0.22/1963
22	0.29/1965
23	0.25/1965
24	0.00/2011*
25	0.20/1961
26	0.44/2008
27	0.22/1960
28	0.01/1967*
29	0.80/1981
30	0.20/1913

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

December

Period of Record: 1911- 2011

Date	Record Precipitation
1	0.12/1947
2	0.16/1961
3	0.10/1928
4	0.30/1919
5	0.38/1947
6	0.32/1997
7	0.25/1992
8	0.55/2007
9	0.29/1965
10	0.27/1941
11	0.01/1941
12	0.35/1927
13	0.28/1934
14	0.06/1934
15	0.06/1993
16	0.09/1924
17	0.31/1987
18	0.15/1938
19	0.72/1938
20	0.41/1938
21	0.51/1943
22	0.22/1945
23	0.23/1945
24	0.23/1959
25	0.51/1983
26	0.72/1946
27	0.27/1971
28	0.39/1977
29	**1.25/2004**
30	0.14/1991
31	0.20/1936

* Also in previous years.
Bold values are the monthly extremes.
Bold and underlined values are the all-time extremes.

Death Valley Precipitation Records

Maximum 24 Hour Precipitation*

Month	Amount/Date
January	1.00 inch / January 29 - 30, 1922
February	1.00 inch / February 14, 1927
March	1.00 inch / March 1, 1978
April	1.47 inches / April 14 - 15, 1988
May	0.60 inch / May 8 - 9, 1977
June	0.60 inch / June 28, 1920
July	0.54 inch / July 25 - 26, 1954
August	1.10 inches / August 5, 1936
September	1.20 inches / September 29 - 30, 1911
October	0.55 inch / October 17, 1934
November	1.40 inches / November 9, 1923
December	1.25 inches / December 28 - 29, 2004
Annual	1.47 inches / April 14 - 15, 1988

* Date based on time provided by observer.

Wettest 24 Hour Periods Ever

1. 1.47 inches / April 14 – 15, 1988
2. 1.40 inches / November 9, 1923
3. 1.25 inches / December 28 – 29, 2004
4. 1.20 inches / September 29 – 30, 1911
5. 1.11 inches / September 25 – 26, 1997
6. 1.10 inches / August 5, 1936
7. 1.00 inch / March 1, 1978
7. 1.00 inch / February 14, 1927
7. 1.00 inch / January 29 – 30, 1922
10. 0.99 inch / January 3 – 4, 2005
10. 0.99 inch / February 23 – 24, 1998
12. 0.98 / January 21 – 22, 2010
13. 0.97 inch / February 22, 1944
14. 0.96 inch / February 7 – 8, 2009
14. 0.96 inch / March 2 – 3, 1983
14. 0.96 inch / September 24 – 25, 1939
17. 0.95 inch / August 17, 1977
18. 0.92 inch / February 12 – 13, 2003
19. 0.90 inch / January 19 – 20, 1954
19. 0.90 inch / November 13, 1946

Wettest and Driest Months, Years and Seasons

Listed below are the ten wettest months, years and seasons on record followed by the driest.

January

Wettest Januaries
1. 2.59 inches / 1995
2. 1.84 inches / 2005
3. 1.56 inches / 2010
4. 1.51 inches / 1916
5. 1.20 inches / 1988
5. 1.20 inches / 1974
5. 1.20 inches / 1922
8. 1.11 inches / 1954
9. 1.10 inches / 1915
10. 1.03 inches / 2001

Driest Januaries									
Years With No Precipitation (0.00 inch)									
1912	1918	1919	1923	1924	1925	1928	1929	1936	1945
1946	1947	1948	1950	1951	1953	1956	1968	1971	1972
1976	1984	1991	1996	2002	2004				
Years With A Trace									
1926	1931	1932	1934	1942	1962	1967	1970	1975	1989
1997	2000	2003							

February

Wettest Februaries
1. 2.37 inches / 1976
2. 2.31 inches / 1998
3. 1.90 inches / 1913
4. 1.87 inches / 1969
5. 1.53 inches / 2010
6. 1.36 inches / 2009
6. 1.36 inches / 1970
8. 1.35 inches / 1993
9. 1.32 inches / 2001
10. 1.26 inches / 2005

Driest Februaries									
Years With No Precipitation (0.00 inch)									
1912	1917	1919	1921	1924	1925	1929	1930	1933	1948
1950	1952	1953	1954	1956	1957*	1965	1967	1972	1977
1985	1989	1991**	1999	2002					
Years With A Trace									
1923	1934	1947	1955	1961	1974	1975	1984	2008	

*Missing 4 days of data.
** Missing 2 days of data.

March

Wettest Marches
1. 1.64 inches / 1978
2. 1.32 inches / 1952
3. 1.14 inches / 1983
4. 1.13 inches / 1987
5. 1.10 inches / 1912
6. 1.01 inches / 1982
7. 1.00 inch / 1991
8. 0.81 inch / 1980
9. 0.75 inch / 1992
9. 0.75 inch / 1918

Driest Marches									
Years With No Precipitation (0.00 inch)									
1914	1917	1921	1925	1926	1927	1929	1931	1932	1933
1950	1951	1953	1955	1956	1957	1966	1972	1985	1989
1997	1999	2008	2009						
Years With A Trace									
1922	1923	1934	1940	1959	1961	1967	1968	1970	1984

April

Wettest Aprils
1. 1.70 inches / 1988
2. 1.27 inches / 1965
3. 0.69 inch / 1939
4. 0.63 inch / 2003
5. 0.58 inch / 1941
5. 0.58 inch / 1940
7. 0.55 inch / 1943
8. 0.46 inch / 1999
9. 0.41 inch / 1956
10. 0.40 inch / 1980

Driest Aprils									
Years With No Precipitation (0.00 inch)									
1913	1916	1919	1920	1921	1927	1928	1929	1930	1932
1933	1934	1935	1936	1950	1953	1954	1959	1960	1962
1969	1974	1977	1979	1981	1984	1985	1989	1990	1991
1993	1995	1996	1997	2002	2008	2009	2011		
Years With A Trace									
1912	1922	1923	1945	1949	1951	1966	1970	1982	1992
2000									

May

Wettest Mays
1. 0.96 inch / 1977
2. 0.48 inch / 1941
3. 0.47 inch / 1949
4. 0.41 inch / 1957
5. 0.40 inch / 1980
5. 0.40 inch / 1930
5. 0.40 inch / 1916
8. 0.34 inch / 1978
9. 0.30 inch / 1917
10. 0.26 inch / 1985

Driest Mays									
Years With No Precipitation (0.00 inch)									
1914	1919	1921	1923	1924	1925	1926	1927	1928	1929
1931	1936	1943	1946	1950	1951	1952	1953	1954	1956
1958	1959	1960	1965	1966	1967	1968	1970	1972	1979
1981	1984	1989	1993	1994	1997	2002	2004	2007	
Years With A Trace									
1912	1918	1932	1933	1934	1937	1940	1942	1947	1962
1963	1974	1975	1988	2000	2005	2009	2010		

June

Wettest Junes
1. 0.60 inch / 1920
2. 0.53 inch / 1972
3. 0.40 inch / 1997
4. 0.26 inch / 1968
5. 0.22 inch / 1998
6. 0.16 inch / 2004
6. 0.16 inch / 1963
8. 0.13 inch / 1957
9. 0.12 inch / 1988
10. 0.10 inch / 1969
10. 0.10 inch / 1949
10. 0.10 inch / 1931

Driest Junes									
Years With No Precipitation (0.00 inch)									
1912	1913	1915	1916	1917	1918	1919	1921	1923	1924
1927	1928	1929	1930	1935	1939	1940	1942	1946	1947
1950	1951	1952	1953	1954	1955	1956	1958	1959	1962
1964	1970	1971	1974	1977	1978	1979	1981	1982	1983
1984	1985	1986	1987	1989	1991	1992	1993	1994	1996
1999	2001	2002	2003	2005	2007	2008	2010	2011	
Years With A Trace									
1922	1925	1926	1933	1934	1936	1937	1938	1943	1944
1945	1948	1960	1961	1965	1966	1973	1975	1976	2000
2006					2009				

July

Wettest Julys
1. 0.75 inch / 1954
2. 0.70 inch / 1950*
3. 0.68 inch / 1974
3. 0.68 inch / 1964
5. 0.64 inch / 1934
6. 0.60 inch / 1913
7. 0.56 inch / 1936
8. 0.50 inch / 1969
9. 0.42 inch / 1999
9. 0.42 inch / 1984
9. 0.42 inch / 1966

* Missing 1 day of data.

Driest Julys									
Years With No Precipitation (0.00 inch)									
1911	1914	1916	1918	1920	1921	1923	1924	1926	1927
1928	1929	1930	1931	1932	1940	1942	1944	1947	1948*
1949	1955	1957	1959	1960	1963	1970	1972	1973	1977
1978	1980	1981	1988	1989	1993	1994	1995	2000	2004
2005									
Years With A Trace									
1935	1937	1939	1941	1943	1945	1946	1951	1953	1961
1962			1983				2007		

* Missing 5 days of data.

August

Wettest Augusts
1. 1.35 inches / 1936
2. 1.20 inches / 1984
3. 1.14 inches / 1977
4. 1.12 inches / 1983
5. 0.75 inch / 1961
6. 0.65 inch / 1946
7. 0.53 inch / 2011
8. 0.52 inch / 1941
9. 0.43 inch / 1938
10. 0.40 inch / 1942
10. 0.40 inch / 1922

Driest Augusts									
Years With No Precipitation (0.00 inch)									
1911	1912	1914	1915	1916	1917	1919	1921	1924	1927
1928	1929	1932	1937	1940	1943	1944	1948	1950	1951*
1952	1953	1954	1955	1956	1957	1960	1962	1963	1967
1969	1976	1980	1981	1985	1987	1989	1991	1992	1993
1994	1996	1999	2001	2002	2006	2008			
Years With A Trace									
1923	1930	1934	1935	1947	1959	1970	1973	1974	1990
1995			1997				2010		

* Missing 3 days of data.

September

Wettest Septembers
1. 1.57 inches / 1939
2. 1.48 inches / 1997
3. 1.40 inches / 1911
4. 1.12 inches / 1963
5. 0.87 inch / 1976
6. 0.76 inch / 2005
7. 0.63 inch / 2007
8. 0.56 inch / 1990
9. 0.53 inch / 2004
10. 0.52 inch / 2006
10. 0.52 inch / 1959
10. 0.52 inch / 1950

Driest Septembers									
Years With No Precipitation (0.00 inch)									
1912	1914	1915	1916	1918	1919	1920	1921	1922	1924
1925	1926	1927	1928	1929	1930	1931	1933	1936	1941
1942	1945	1947	1948	1951	1952	1953	1954	1955	1956
1960	1961	1964	1965	1968	1969	1970	1973	1974	1977
1984	1987	1989	1992	1993	1994	1995	1996	2000	2001
2002	2003	2008	2009	2010					
Years With A Trace									
1934	1935	1937	1944	1946	1972	1979	1981	1986	

October

Wettest Octobers
1. 1.09 inches / 1972
2. 0.82 inch / 1974
3. 0.55 inch / 1934
4. 0.50 inch / 1923
5. 0.47 inch / 1976
6. 0.45 inch / 1941
7. 0.42 inch / 1996
8. 0.38 inch / 1945
9. 0.36 inch / 1936
10. 0.35 inch / 1926

Driest Octobers									
Years With No Precipitation (0.00 inch)									
1911	1913	1914	1915	1917	1919	1922	1924	1927	1929
1930	1949	1950	1952	1954	1955	1956	1959	1965	1966
1967	1969	1970	1977	1980	1982	1985	1988	1989	1990
1991	1993	1994	1997	1999	2001	2003	2007	2011	
Years With A Trace									
1931	1933	1935	1937	1939	1940	1942	1944	1946	1953
1962		1971			1979			2009	

November

Wettest Novembers
1. 1.70 inches / 1923
2. 1.61 inches / 1913
3. 1.50 inches / 1946
4. 1.45 inches / 1978
5. 1.01 inches / 1944
6. 0.86 inch / 1965
7. 0.81 inch / 1970
8. 0.80 inch / 1981
9. 0.78 inch / 2004
10. 0.75 inch / 1954

Driest Novembers									
Years With No Precipitation (0.00 inch)									
1911	1912	1914	1915	1916	1918	1920	1921	1924	1925
1927	1928	1929	1930	1932	1940	1942	1945	1948	1949
1950	1956	1959	1962	1968	1976	1978	1979	1980	1984*
1989	1991	1992	1994	1995	1996	1998	1999	2000	2006
Years With A Trace									
1922	1926	1934	1935	1937	1938	1943	1947	1953	1955
1971		1974			1990			2007	

*Missing 2 days of data.

December

Wettest Decembers
1. 1.51 inches / 1938
2. 1.31 inches / 2004
3. 1.18 inches / 1946
4. 0.87 inch / 1992
5. 0.85 inch / 1943
6. 0.77 inch / 1959
7. 0.65 inch / 1936
8. 0.63 inch / 1971
9. 0.60 inch / 1914
10. 0.57 inch / 1987
10. 0.57 inch / 1965

Driest Decembers									
Years With No Precipitation (0.00 inch)									
1911	1912	1913	1915	1916	1917	1918	1920	1922	1923
1925	1929	1930	1944	1948	1950	1953	1954	1955	1956
1958	1960	1963	1969	1976	1979	1980	1981	1989	1990
1998	1999	2000	2005						
Years With A Trace									
1926	1933	1968	1972	1975	1986	2001			

Wettest Months

Wettest Months
1. 2.59 inches / January 1995
2. 2.37 inches / February 1976
3. 2.31 inches / February 1998
4. 1.90 inches / February 1913
5. 1.87 inches / February 1969
6. 1.84 inches / January 2005
7. 1.70 inches / November 1923
7. 1.70 inches / April 1988
9. 1.64 inches / March 1978
10. 1.61 inches / November 1913

Calendar Years

Wettest Years	Driest Years
1. 4.73 inches / 2005	1. 0.00 inch / 1929
2. 4.62 inches / 1941	2. Trace / 1989
3. 4.54 inches / 1913	2. Trace / 1953
4. 4.26 inches / 1998	4. 0.15 inch / 1932
5. 4.25 inches / 2004	5. 0.26 inch / 1933
6. 4.21 inches / 1976	6. 0.32 inch / 1951*
7. 4.19 inches / 1988	7. 0.41 inch / 1917
8. 4.15 inches / 1983	8. 0.44 inch / 1924
9. 4.03 inches / 1978	9. 0.47 inch / 1955
10. 3.86 inches / 1938	10. 0.48 inch / 2002

* Missing 3 days of data in August.

Water Years (July - June)

Wettest Years	Driest Years
1. 6.44 inches / 2004-2005	1. 0.03 inch / 1918-1919
2. 6.09 inches / 1997-1998	2. 0.16 inch / 1932-1933
3. 5.78 inches / 1987-1988	3. 0.17 inch / 1931-1932
4. 5.09 inches / 1977-1978	4. 0.18 inch / 1932-1933
5. 4.52 inches / 1938-1939	5. 0.20 inch / 1928-1929
6. 3.72 inches / 1936-1937	5. 0.20 inch / 1924-1925
7. 3.64 inches / 1972-1973	7. 0.24 inch / 1993-1994
7. 3.64 inches / 1939-1940	8. 0.27 inch / 1935-1936
9. 3.57 inches / 1913-1914	9. 0.41 inch / 1955-1956
10. 3.53 inches / 1992-1993	10. 0.44 inch / 1916-1917

Monsoon Season (June 15th – September 30th)

Wettest Monsoon Seasons
1. 1.91 inches / 1936
2. 1.78 inches / 1939
3. 1.77 inches / 1997
4. 1.62 inches / 1984
5. 1.40 inches / 1911
6. 1.32 inches / 1983
7. 1.22 inches / 1950
8. 1.15 inches / 2005
9. 1.14 inches / 1977
10. 1.12 inches / 1963

Driest Monsoon Seasons									
Years With No Precipitation (0.00 inch)									
1914	1916	1921	1924	1927	1928	1929	1955	1960	1989
1993									
Years With A Trace									
1930	1935	1937	1944	1947	1953	1970	1973	1981	1995

Meteorological Winter (December – February)

Wettest Winters	Driest Winters
1. 4.41 inches / 2004-2005	1. 0.00 inch / 1990-1991**
2. 3.13 inches / 2009-2010	1. 0.00 inch / 1955-1956
3. 2.92 inches / 1997-1998	1. 0.00 inch / 1923-1924
4. 2.89 inches / 1992-1993	1. 0.00 inch / 1918-1919
5. 2.76 inches / 1994-1995*	1. 0.00 inch 1911-1912
6. 2.37 inches / 1975-1976	6. Trace / 2001-2002
7. 2.35 inches / 2000-2001	6. Trace / 1933-1934
8. 2.17 inches / 1968-1969	6. Trace / 1922-1923
9. 2.14 inches / 1987-1988	9. 0.03 inch / 1988-1989
10. 2.07 inches / 1938-1939	9. 0.03 inch / 1916-1917

*Missing all of December 1994. **Missing 2 days of data in February 1991.

Meteorological Spring (March-May)

Wettest Springs
1. 2.02 inches / 1978
2. 1.82 inches / 1988
3. 1.71 inches / 1952
4. 1.61 inches / 1980
5. 1.46 inches / 1941
6. 1.34 inches / 1939
7. 1.32 inches / 1965
8. 1.23 inches / 1983
9. 1.20 inches / 1987
10. 1.10 inches / 1912

Driest Springs						
Years With No Precipitation (0.00 inch)						
1921	1927	1929	1950	1953	1989	1997

Years With A Trace									
1923	1932	1933	1934	1951	1959	1966	1970	1984	2009

Meteorological Summer (June-August)

Wettest Summers
1. 1.91 inches / 1936
2. 1.62 inches / 1984
3. 1.14 inches / 1977
4. 1.12 inches / 1983
5. 0.82 inch / 1964*
6. 0.80 inch / 2011
7. 0.75 inch / 1961
7. 0.75 inch / 1954
9. 0.70 inch / 1950**
9. 0.70 inch / 1938
9. 0.70 inch / 1920

* Missing 1 day of data in August 1964. ** Missing 1 day of data in July 1950.

Driest Summers									
Years With No Precipitation (0.00 inch)									
1916	1921	1924	1927	1928	1929	1940	1955	1981	1989
1993					1994				
Years With A Trace									
1923	1930	1935	1937	1943	1944	1947	1948*	1951**	1953
1959		1960		1962		1970		1973	

*Missing 5 days of data in July 1948. **Missing 3 days of data in August 1951.

Meteorological Fall (September-November)

Wettest Falls
1. 2.36 inches / 1923
2. 1.91 inches / 1913
3. 1.69 inches / 1987
4. 1.59 inches / 1997
5. 1.58 inches / 1972
5. 1.58 inches / 1939
7. 1.50 inches / 1946
8. 1.45 inches / 2004
9. 1.41 inches / 1963
10. 1.40 inches / 1911

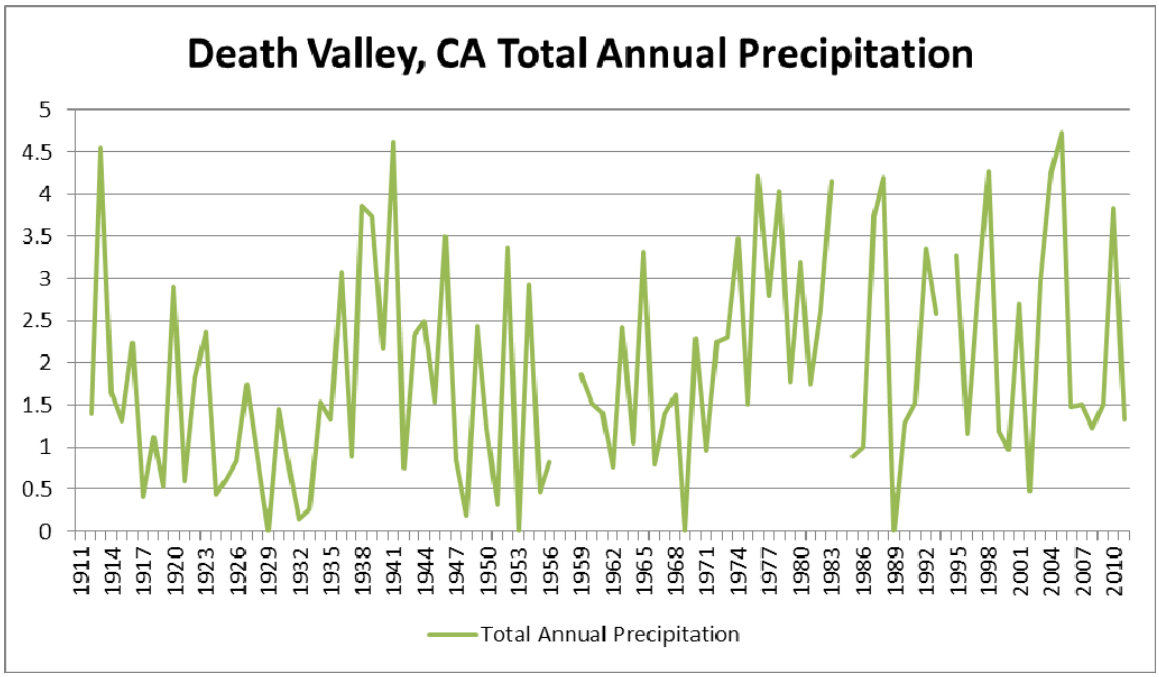
Driest Falls							
Years With No Precipitation (0.00 inch)							
1914	1915	1924	1927	1929	1930	1956	1989
Years With A Trace							
1922	1935	1937	1942	1953	1955	1979	

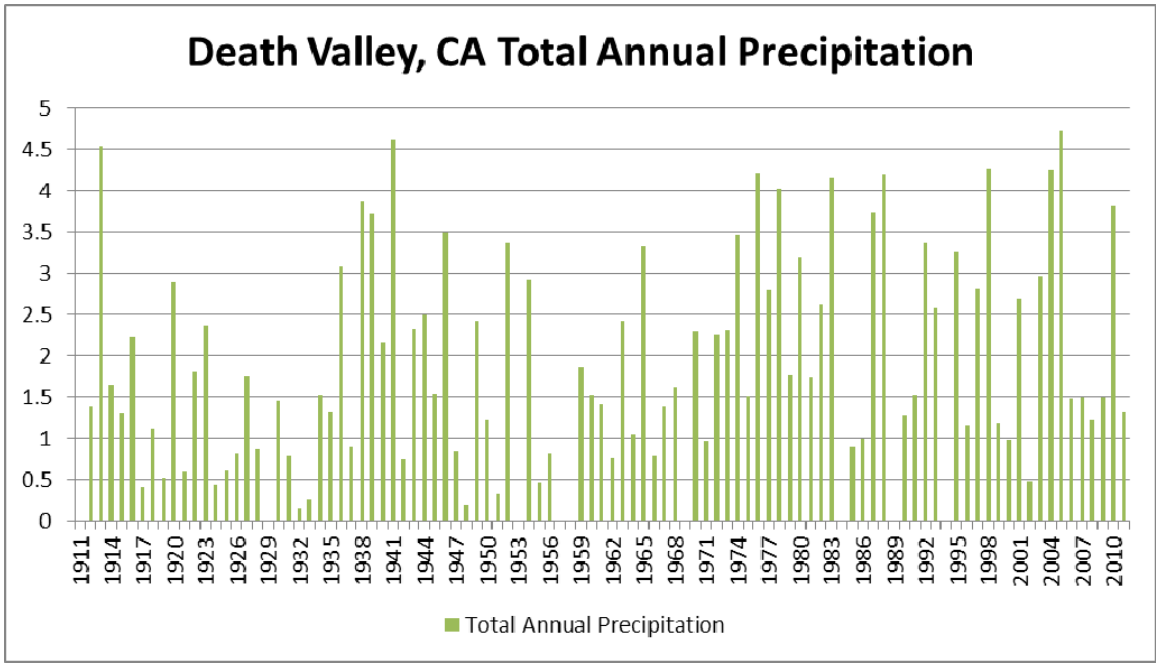
Monthly and Annual Precipitation at Death Valley

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
1911	-	-	-	-	-	-	0.00	0.00	1.40	0.00	0.00	0.00	-
1912	0.00	0.00	1.10	T	T	0.00	0.10	0.00	0.00	0.20	0.00	0.00	1.40
1913	0.01	1.90	0.10	0.00	0.01	0.00	0.60	0.01	0.30	0.00	1.61	0.00	4.54
1914	0.67	0.21	0.00	0.12	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.60	1.65
1915	1.10	0.02	0.02	0.08	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	1.31
1916	1.51	0.20	0.02	0.00	0.40	0.00	0.00	0.00	0.00	0.10	0.00	0.00	2.23
1917	0.03	0.00	0.00	0.01	0.30	0.00	0.06	0.00	0.01	0.00	0.00	0.00	0.41
1918	0.00	0.30	0.75	0.05	T	0.00	0.00	0.01	0.00	0.01	0.00	0.00	1.12
1919	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.20	0.30	0.52
1920	0.60	1.00	0.30	0.00	0.10	0.60	0.00	0.10	0.00	0.20	0.00	0.00	2.90
1921	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.60
1922	1.20	0.10	T	T	0.06	T	0.05	0.40	0.00	0.00	T	0.00	1.81
1923	0.00	T	T	T	0.00	0.00	0.00	T	0.16	0.50	1.70	0.00	2.36
1924	0.00	0.00	0.15	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.44
1925	0.00	0.00	0.00	0.11	0.00	T	0.36	0.10	0.00	0.04	0.00	0.00	0.61
1926	T	0.10	0.00	0.28	0.00	T	0.00	0.10	0.00	0.35	T	T	0.83
1927	0.30	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	1.75
1928	0.00	0.37	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.87
1929	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1930	0.40	0.00	0.65	0.00	0.40	0.00	0.00	T	0.00	0.00	0.00	0.00	1.45
1931	T	0.57	0.00	0.03	0.00	0.10	0.00	0.05	0.00	T	0.02	0.03	0.80
1932	T	0.05	0.00	0.00	T	0.02	0.00	0.00	0.05	0.02	0.00	0.01	0.15
1933	0.10	0.00	0.00	0.00	T	T	0.01	0.07	0.00	T	0.08	T	0.26
1934	T	T	T	0.00	T	T	0.64	T	T	0.55	T	0.34	1.53
1935	0.27	0.75	0.09	0.00	0.10	0.00	T	T	T	T	T	0.11	1.32
1936	0.00	0.13	0.03	0.00	0.00	T	0.56	1.35	0.00	0.36	0.00	0.65	3.08
1937	0.22	0.08	0.27	0.23	T	T	T	0.00	T	T	T	0.09	0.89
1938	0.03	0.36	0.55	0.16	0.14	T	0.27	0.43	0.38	0.03	T	1.51	3.86
1939	0.33	0.23	0.51	0.69	0.14	0.00	T	0.21	1.57	T	0.01	0.04	3.73
1940	0.03	1.20	T	0.58	T	0.00	0.00	0.00	0.02	T	0.00	0.34	2.17
1941	0.82	0.74	0.40	0.58	0.48	0.01	T	0.52	0.00	0.45	0.16	0.46	4.62
1942	T	0.01	0.15	0.18	T	0.00	0.00	0.40	0.00	T	0.00	0.01	0.75
1943	0.29	0.03	0.36	0.55	0.00	T	T	0.00	0.05	0.20	T	0.85	2.33
1944	0.05	1.12	0.15	0.11	0.05	T	0.00	0.00	T	T	1.01	0.00	2.49
1945	0.00	0.15	0.06	T	0.02	T	T	0.39	0.00	0.38	0.00	0.54	1.54
1946	0.00	0.01	0.13	0.03	0.00	0.00	T	0.65	T	T	1.50	1.18	3.50
1947	0.00	T	0.03	0.10	T	0.00	0.00	T	0.00	0.18	T	0.54	0.85
1948	0.00	0.00	M	0.04	0.11	T	0.00*	0.00	0.00	0.04	0.00	0.00	M
1949	0.41	0.85	0.41	T	0.47	0.10	0.00	0.14	M	0.00	0.00	0.05	M
1950	0.00	0.00	0.00	0.00	0.00	0.00	0.70*	0.00	0.52	0.00	0.00	0.00	1.22**
1951	0.00	0.05	0.00	T	0.00	0.00	T	0.00*	0.00	0.06	0.04	0.17	0.32**
1952	0.59	0.00	1.32	0.39	0.00	0.00	0.13	0.00	0.00	0.00	0.63	0.31	3.37
1953	0.00	0.00	0.00	0.00	0.00	0.00	T	0.00	0.00	T	T	0.00	T
1954	1.11	0.00	0.31	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.75	0.00	2.92
1955	0.26	T	0.00	0.13	0.08	0.00	0.00	0.00	0.00	0.00	T	0.00	0.47
1956	0.00	0.00	0.00	0.41	0.00	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.82
1957	0.45	0.00*	0.00	0.37	0.41	0.13	0.00	0.00	M	M	M	M	M
1958	M	M	0.22	0.30	0.00	0.00	0.08	0.06	0.15	0.16	0.40	0.00	M
1959	0.21	0.36	T	0.00	0.00	0.00	0.00	T	0.52	0.00	0.00	0.77	1.86
1960	0.78	0.30	0.03	0.00	0.00	T	0.00	0.00	0.00	0.19	0.22*	0.00	1.52**

1961	0.14	T	T	0.09	0.01	T	T	0.75	0.00	0.01	0.25	0.16	1.41
1962	T	0.39	0.11	0.00	T	0.00	T	0.00	0.19	T	0.00	0.08	0.77
1963	0.01	0.65	0.18	0.01	T	0.16	0.00	0.00	1.12	0.01	0.28	0.00	2.42
1964	0.03	0.02	0.03	0.01	0.01	0.00	0.68	0.14*	0.00	0.02	0.10	0.01	1.05**
1965	0.09	0.00	0.05	1.27	0.00	T	0.21	0.27	0.00	0.00	0.86	0.57	3.32
1966	0.08	0.04	0.00	T	0.00	T	0.42	0.10	0.05	0.00	0.02	0.08	0.79
1967	T	0.00	T	0.10	0.00	0.02	0.13	0.00	0.42	0.00	0.68	0.04	1.39
1968	0.00	1.16	T	0.09	0.00	0.26	0.04	0.02	0.00	0.05	0.00	T	1.62
1969	0.30	1.87	0.25	0.00	0.03	0.10	0.50	0.00	0.00	0.00	0.37	0.00	3.42
1970	T	1.36	T	T	0.00	0.00	0.00	T	0.00	0.00	0.81	0.12	2.29
1971	0.00	0.07	0.02	0.02	0.15	0.00	0.01	0.01	0.05	T	T	0.63	0.96
1972	0.00	0.00	0.00	0.09	0.00	0.53	0.00	0.05	T	1.09	0.49	T	2.25
1973	0.34	1.00	0.57	0.09	0.01	T	0.00	T	0.00	0.18	0.03	0.09	2.31
1974	1.20	T	0.40	0.00	T	0.00	0.68	T	0.00	0.82	T	0.37	3.47
1975	T	T	0.41	0.33	T	T	0.32	0.01	0.35	0.04	0.05	T	1.51
1976	0.00	2.37	0.03	0.12	0.15	T	0.20	0.00	0.87	0.47	0.00	0.00	4.21
1977	0.16	0.00	0.08	0.00	0.96	0.00	0.00	1.14	0.00	0.00	0.02	0.44	2.80
1978	0.70	0.77	1.64	0.04	0.34	0.00	0.00	0.03	0.39	0.05	0.00	0.07	4.03
1979	0.95	0.21	0.45	0.00	0.00	0.00	0.15	0.01	T	T	0.00	0.00	1.77
1980	0.35	0.95	0.81	0.40	0.40	0.02	0.00	0.00	0.26	0.00	0.00	0.00	3.19
1981	0.08	0.02	0.66	0.00	0.00	0.00	0.00	0.00	T	0.18	0.80	0.00	1.74
1982	0.14	0.35	1.01	T	0.02	0.00	0.36	0.06	0.09	0.00	0.19	0.40	2.62
1983	0.54	0.50	1.14	0.08	0.01	0.00	T	1.12	0.20	0.01	0.01	0.54	4.15
1984	0.00	T	T	0.00	0.00	0.00	0.42	1.20	0.00	0.02	0.00	M	M
1985	0.05	0.00	0.00	0.00	0.26	0.00	0.13	0.00	0.08	0.00	0.28	0.09	0.89
1986	0.18	0.08	0.15	0.02	0.08	0.00	0.01	0.17	T	0.09	0.22	T	1.00
1987	0.21	0.06	1.13	0.04	0.03	0.00	0.01	0.00	0.00	0.24	1.45	0.57	3.74
1988	1.20	0.37	0.12	1.70	T	0.12	0.00	0.22	0.41	0.00	0.02	0.03	4.19
1989	T	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T
1990	0.37	0.10	0.05	0.00	0.01	0.04	0.15	T	0.56	0.00	T	0.00	1.28
1991	0.00	0.00*	1.00	0.00	0.06	0.00	0.19	0.00	0.02	0.00	0.00	0.25	1.52**
1992	0.53	1.03	0.75	T	0.01	0.00	0.02	0.00	0.00	0.15	0.00	0.87	3.36
1993	0.67	1.35	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.06	2.58
1994	0.04	0.05	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	M	M
1995	2.59	0.17	0.31	0.00	0.07	0.02	0.00	T	0.00	0.04	0.00	0.07	3.27
1996	0.00	0.33	0.15	0.00	0.12	0.00	0.02	0.00	0.00	0.42	0.00	0.11	1.15
1997	T	0.01	0.00	0.00	0.00	0.40	0.29	T	1.48	0.00	0.11	0.52	2.81
1998	0.09	2.31	0.74	0.17	0.16	0.22	0.02	0.04	0.45	0.06	0.00	0.00	4.26
1999	0.14	0.00	0.00	0.46	0.07	0.00	0.42	0.00	0.09	0.00	0.00	0.00	1.18
2000	T	0.43	0.29	T	T	T	0.00	0.24	0.00	0.02	0.00	0.00	0.98
2001	1.03	1.32	0.06	0.02	0.01	0.00	0.25	0.00	0.00	0.00	0.01	T	2.70
2002	0.00	0.00	0.20	0.00	0.00	0.00	0.06	0.00	0.00	0.05	0.02	0.15	0.48
2003	T	1.16	0.05	0.63	0.01	0.00	0.05	0.15	0.00	0.00	0.67	0.24	2.96
2004	0.00	0.85	0.04	0.11	0.00	0.16	0.00	0.33	0.53	0.14	0.78	1.31	4.25
2005	1.84	1.26	0.20	0.05	T	0.00	0.00	0.39	0.76	0.22	0.01	0.00	4.73
2006	0.06	0.04	0.24	0.24	0.01	T	0.11	0.00	0.52	0.20	0.00	0.06	1.48
2007	0.02	0.14	0.08	0.07	0.00	0.00	T	0.01	0.63	0.00	T	0.55	1.50
2008	0.38	T	0.00	0.00	0.01	0.00	0.04	0.00	0.00	0.15	0.61	0.04	1.23
2009	0.03	1.36	0.00	0.00	T	T	0.02	0.02	0.00	T	0.03	0.04	1.50
2010	1.56	1.53	0.02	0.09	T	0.00	0.01	T	0.00	0.13	0.02	0.47	3.83
2011	0.08	0.14	0.10	0.00	0.07	0.00	0.27	0.53	0.09	0.00	0.01	0.03	1.32

* Contains 1-5 days of missing data. ** Total contains a month with 1-5 days of missing data.
M = a month missing more than 5 days of data or a year with at least one month of missing data.
T = trace





Graphs of total annual precipitation at Death Valley, California.

Number of Days (Precipitation) at Death Valley

With A Trace or More

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	13 1978	12 1998	12 1973	10 1999	7 1957& 1977	6 1972	10 1984	10 1983	7 1932& 1976	9 1974	7 1972	13 2010	58 1941

With 0.01 inch or More

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	11 1978& 1995	10 1998	9 1973	8 1999	7 1977	3 1972& 1998	5 1984	7 1983	6 1976	6 1974	6 1965 1967& 1972	8 2010	42 1941

With 0.10 inch or More

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	6 1995	6 1998	5 1952	5 1965	3 1977	3 1972	3 1913& 1936	4 1983	3 1963& 1990	2 1936 1945 1972& 1974	4 1965& 1987	4 1938	15 1965

With 0.25 inch or More

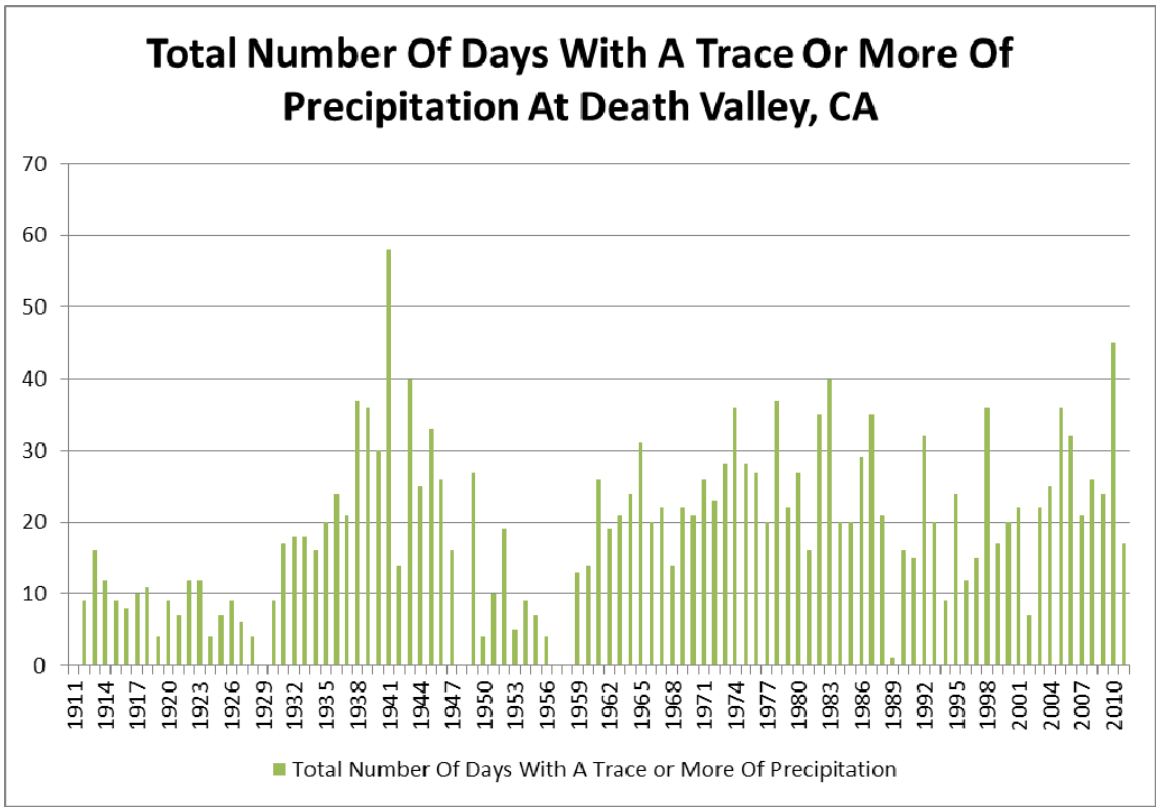
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	4 1995	4 1969& 1976	3 1987	3 1965	1 1916 1917 1930 1941 1949 1977 1978 1980& 1985	1 1920 1968 1972& 1997	2 1964	2 1961 1983 1984& 2011	3 1963	2 1972& 1974	3 1987	2 1914 1938 1946& 1992	9 1941

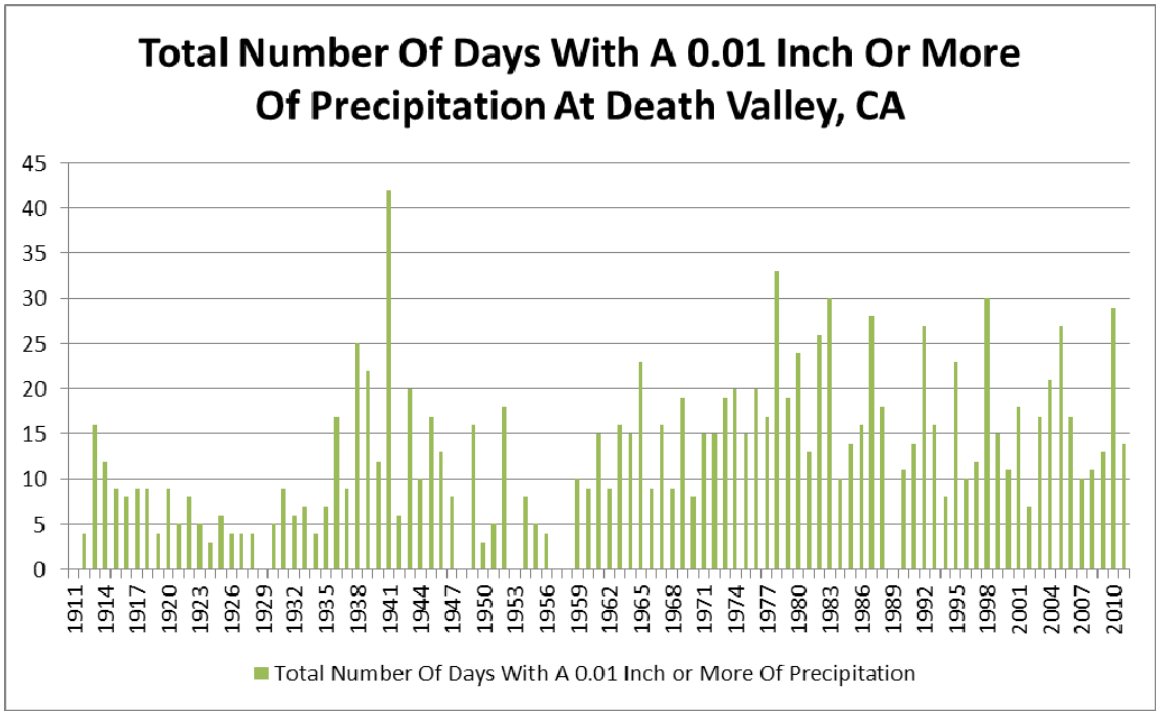
With 0.50 inch or More

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	3 1995	3 1913	1 1912 1952 1978 1980 1982 1983 1991& 1998	1 1940 1988& 2003	1 1977	1 1920	1 1934 1950 1954 1969& 1974	2 1984	2 1939	1 1923 1934& 1972	2 1913 1944& 1946	1 1938 1943 1946 1983 1992 2004& 2007	5 1913

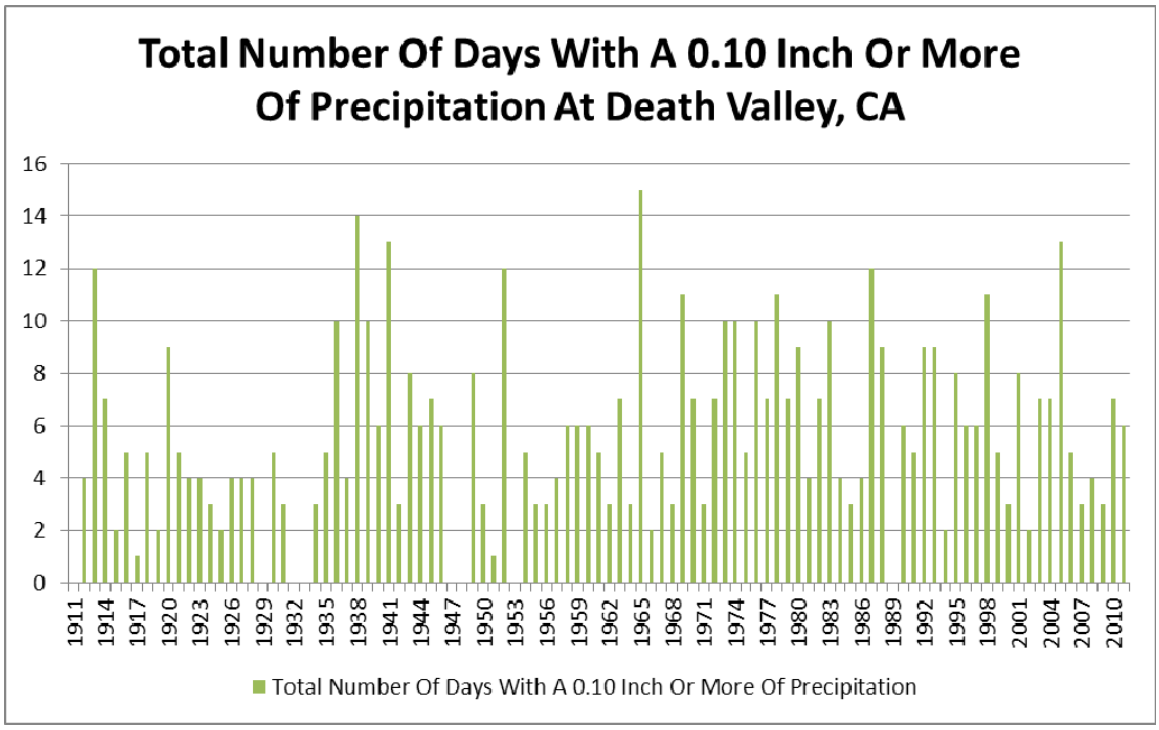
With 1.00 inch or More

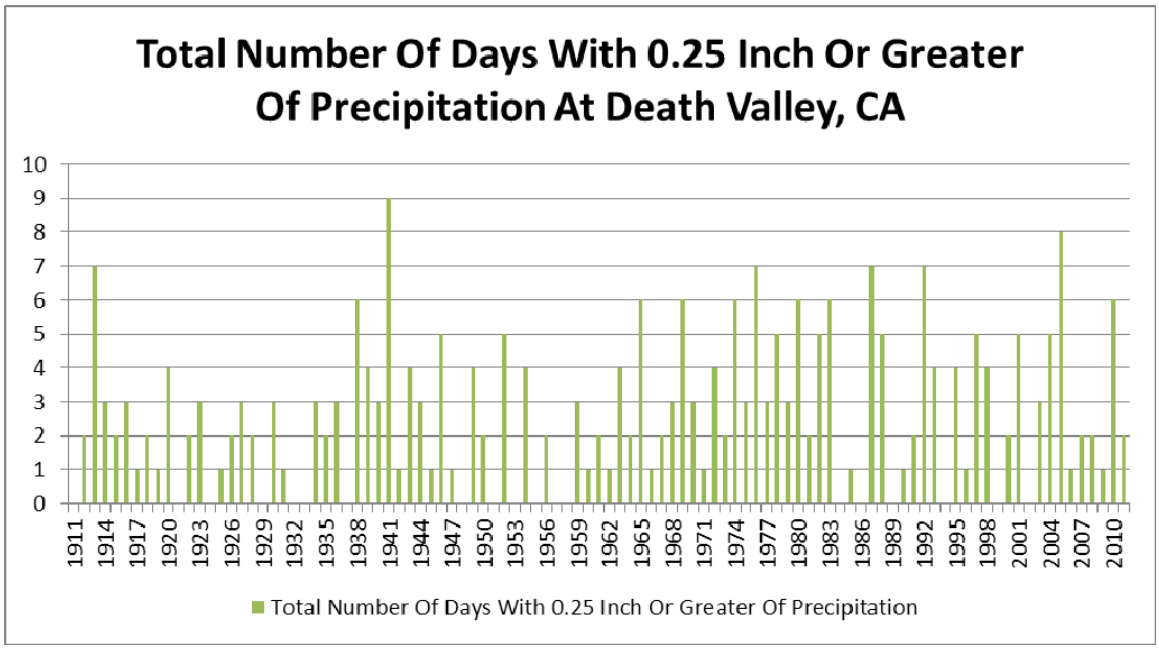
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Greatest	1 1922& 2005	1 1927 &1998	1 1978	1 1988	0	0	0	1 1936	1 1911& 1997	0	1 1923	1 2004	1 1911 1922 1923 1927 1936 1978 1988 1997 1998 2004& 2005





Graphs showing the total number of days by year with a trace or more of precipitation (top) and 0.01 inch or more of precipitation (bottom) at Death Valley, CA. Note 1948, 1957 and 1958 are not shown due to excessive missing data.





Graphs showing the total number of days by year with 0.10 inch or more of precipitation (top) and 0.25 inch or more of precipitation (bottom) at Death Valley, CA. Note 1948, 1957 and 1958 are not shown due to excessive missing data.

Consecutive Days Records For Precipitation*

Consecutive Days With A Trace or More
11 days from December 17, 2010 through December 27, 2010
6 days from January 2, 1992 through January 7, 1992
6 days from August 15, 1983 through August 20, 1983
6 days from February 14, 1980 through February 19, 1980
6 days from January 4, 1974 through 9, 1974
6 days from January 30, 1940 through February 4, 1940
6 days from February 27, 1938 through March 4, 1938
6 days from September 25, 1932 through September 30, 1932

Consecutive Days With Measurable Precipitation (0.01 or More)
6 days from February 14, 1980 through February 19, 1980
5 days from February 10, 1992 through February 14, 1992
5 days from January 15, 1979 through January 19, 1979
5 days from September 29, 1976 through October 3, 1976
5 days from February 6, 1976 through February 10, 1976
5 days from January 4, 1974 through January 8, 1974
5 days from February 20, 1941 through February 24, 1941

Consecutive Dry Days
399 days from December 4, 1928 through January 6, 1930
378 days from January 5, 1989 through January 17, 1990
299 days from February 16, 1927 through November 11, 1927
272 days from January 24, 1921 through October 22, 1921
236 days from April 24, 1924 through December 15, 1924
229 days from March 29, 1993 through November 12, 1993
221 days from March 4, 1928 through October 10, 1928
207 days from December 11, 1949 through July 5, 1950
194 days from December 30, 1952 through July 11, 1953
192 days from June 3, 1914 through December 11, 1914

Consecutive Days Without Measurable Precipitation
401 days from December 4, 1928 through January 8, 1930
385 days from December 29, 1988 through January 17, 1990
385 days from December 30, 1952 through January 18, 1954
380 days from August 29, 1922 through September 12, 1923
305 days from June 1, 1955 through May 30, 1955
300 days from February 15, 1927 through December 11, 1927

* Based on observational period day, which is not a calendar day.

Snow

Observations of snow are taken as part of collecting routine weather observations at Death Valley. The total amount of snow that has fallen is reported once a day at the time of observation by the observer on duty. This observation time is the same as when temperature, liquid precipitation and evaporation readings are taken. Therefore the snow amounts listed for each day represent the observation day ending at the time the observation was taken.

Daily Snow Amounts

The following are all* the instances of snow at Death Valley and the observation date that snow was reported.

0.5 inch – January 29, 1922
Trace – January 9, 1949
Trace – January 11, 1949
Trace – January 22, 1962
Trace – January 4, 1974
Trace – January 5, 1974

*A trace of snow on January 2, 1949 is counted as snow in the official records but is listed as hail on the observation form.

Greatest Seasonal Totals

0.5 inch – 1921-1922
Trace – 1948-1949
Trace – 1961-1962
Trace – 1973-1974

Evaporation

During the 1950s scientists became interested in obtaining evaporation readings in Death Valley given the extreme climate. The United States Geological Survey (USGS) wanted readings of evaporation in desert areas of California for use in research and at the time, none were being made. The USGS persuaded the United States Weather Bureau to add evaporation equipment to Death Valley in a meeting in February 1958 and also arranged to have the National Park Service staff take the readings at no cost. The original anemometer was provided by the National Park Service while the United States Weather Bureau provided an evaporation pan for the cost of $10.25.

At the time, the National Park Service in Death Valley largely operated in the Cow Creek area of the Park, which already had a cooperative weather station established. The Greenland Ranch station was not taking observations in early 1958. Therefore the initial evaporation station was installed at the Cow Creek site and became operational on April 16, 1958. Evaporation readings continued at Cow Creek until April 25, 1961 when the entire Cow Creek weather station was permanently closed. The evaporation station was then moved to Furnace Creek and placed at the existing cooperative weather station there that same day.

Evaporation readings are made at Death Valley once a day at the time of observation along with the collection of maximum and minimum air temperatures and precipitation for the observation period. Wind movement and readings of the high and low water temperature are also collected as part of the evaporation reading.

Total evaporation has always exceeded 100 inches a year at Death Valley since records started at Furnace Creek. However, a marked decline in the total evaporation can be seen since the start of records. The highest evaporation occurs during the summer months when air temperatures are the highest along with the sun angle while the lowest evaporation takes place during the months of December and January when the sun angle is lowest and air temperatures are usually the coldest. The highest total evaporation was in 1964 when 177.12 inches was recorded. The lowest total was 116.66 inches in 1998. The highest daily evaporation rate reported was on May 18, 1961 when 1.95 inches of water evaporated. However, some caution should be taken with respect to this value as the previous two days that month had no evaporation reading reported.

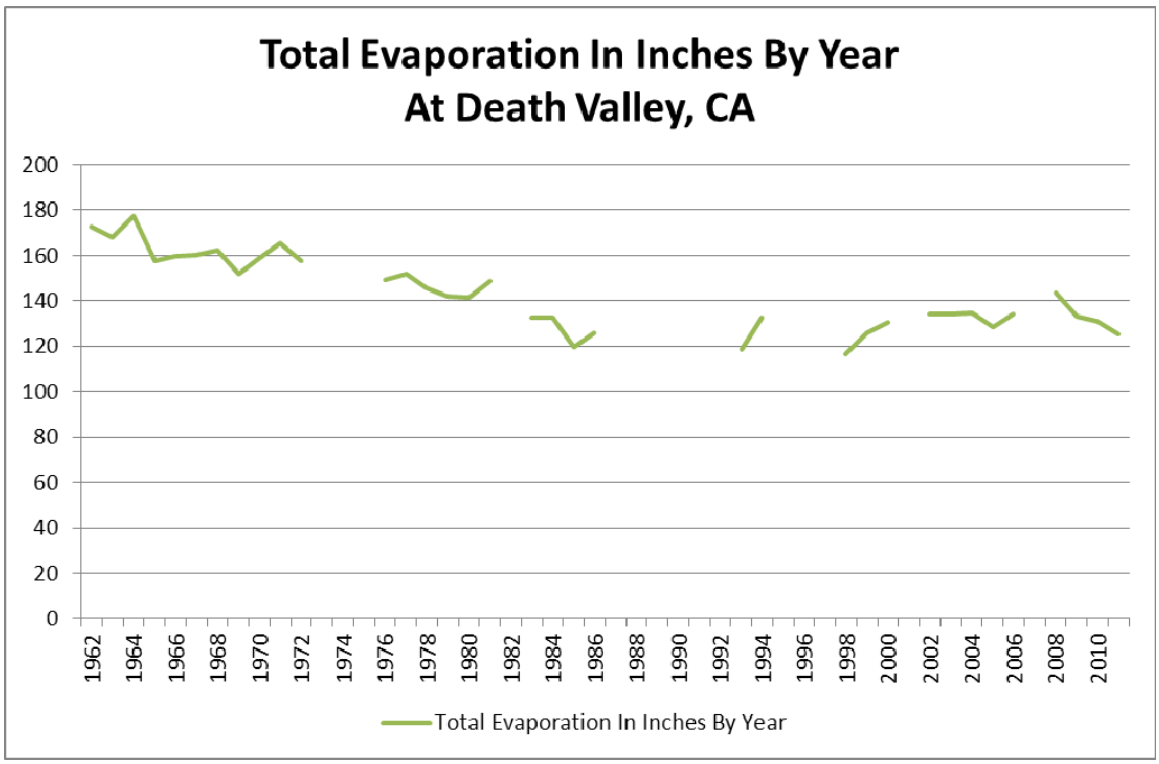
Values listed in the total evaporation by month and year were in some cases adjusted by the National Climatic Data Center to the entire month where a few days of data were missing. Starting in 2011, however, the National Climatic Data Center discontinued this practice as a part of a standard policy to no longer adjust observer totals. Therefore the totals listed in 2011 are the total of the observed values listed by the observers on the B-92 form used to report evaporation.

Evaporation readings have been manually taken since the start of observations. Due to the warm climate of Death Valley, the water in the evaporation pan rarely freezes for a significant amount of time with exceptions such as December 1990. During periods where the pan freezes, no readings are made. One large period where evaporation readings are missing is from June 1987 through February 1988. From June through September of 1987, the evaporation readings at Death Valley began to develop a noticeable low bias. These readings were initially not pulled from published records by the National Climatic Data Center. In October 1987, the low bias became evident and the readings were removed from the published record.

Total Evaporation In Inches at Death Valley By Month and Year

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
1961	-	-	-	-	22.82	25.17	26.39	21.51	17.55	11.60	6.41	3.34^	-
1962	6.28	5.81	9.71	16.52	20.04	23.26	24.79	25.50	17.64	13.43	6.04	3.62^	172.64
1963	4.19	6.21	11.36	14.76	21.41	22.20	27.78	23.86	14.82	11.25	6.54	3.85	168.23
1964	5.52	9.45	12.36	15.69	20.43	23.43	26.69	23.27	18.28	10.99	6.35	4.66	177.12
1965	5.29	7.76	10.90	12.87	19.75	20.69	24.73	20.55	17.56^	10.56	4.84	2.30	157.80
1966	3.55^	5.74	9.45	15.22^	20.50^	21.61	26.15^	19.88	16.55	10.52	6.23	4.51	159.91
1967	4.96	7.96	12.55	12.81^	18.63	20.82	23.24	22.47	15.45	12.67	3.57	4.79	159.92
1968	4.72	4.80	11.76	15.48	18.85	21.16	23.66	21.61	17.35	10.90	7.34	4.61	162.24
1969	4.07	3.65	10.91	15.79	18.81	18.95	21.72	21.77^	16.28	10.28	5.44	4.26	151.93
1970	3.91	6.45	10.03^	13.64	19.71	22.01	23.20	21.69	17.11	11.58	6.34	3.12	158.79
1971	4.77	7.50^	10.86	13.17	17.63	21.57	24.25	22.74	17.81	11.96	7.94	5.25^	165.45
1972	5.23	5.78	12.74	15.22	19.07	20.32	24.10	20.47	15.06	9.57	5.02	4.97	157.55
1973	M	5.43^	8.07	15.48	17.91^	21.31	23.65	20.59	15.88	12.28	6.63	5.43^	M
1974	3.92	7.33	9.51	15.27	19.62	22.68	22.63	19.61	16.63	9.93	5.18	4.13	156.44
1975	4.85	M	10.76^	13.20	17.84	21.47	24.08	21.28	14.93	12.33	7.66	5.70	M
1976	5.15	5.49	10.67	12.99	18.54	21.19	21.86	19.77	12.53	10.33	6.53	4.05	149.10
1977	3.95	6.87	10.88	14.77	14.76	19.66	23.93	20.36^	15.14	10.51	7.28	3.70	151.81
1978	2.52	4.42	7.00	11.15	17.57	21.21	21.90	20.77	14.97	12.00	7.46	4.71	145.68
1979	3.38	4.48	8.71	13.27	18.16	19.87	20.89	17.63	14.20^	11.36^	5.90	4.09	141.94
1980	4.24	5.95^	8.73	11.83	14.37	19.83	21.17^	19.65	15.10	10.55	6.07	3.70	141.19
1981	3.97	5.91	8.50	14.36^	17.00^	20.28^	22.47	18.90	15.98	12.20	6.48	2.57^	148.62
1982	M	6.31^	M	11.85	16.32	17.95	18.08^	17.10	12.64	9.62	M	4.45^	M
1983	4.26^	4.59	7.68^	12.64	16.76^	18.90	21.02	14.42	14.48^	8.27^	6.54^	3.14	132.70
1984	4.75	6.36^	10.76	13.14	17.20	18.66	16.04	16.06^	12.31	9.21	5.78^	2.56^	132.83
1985	4.07	5.09^	9.33	12.58	15.14	15.50	15.27	16.44^	11.22	8.11^	4.15	2.83^	119.73
1986	3.18	5.00	8.36^	11.29^	13.52^	19.22^	17.77	17.68	13.00	8.08^	6.40^	2.41	125.91
1987	3.60	5.98^	8.20^	13.10^	11.70^	M	M	M	M	M	M	M	M
1988	M	M	8.60	M	14.37^	14.92	18.11	15.42	12.76	9.30	5.09	5.00	M
1989	M	M	10.82	15.07^	15.61^	17.81	19.24	17.72	11.59	8.19	4.73^	3.43^	M
1990	2.73	4.83	8.10	11.13	15.84	17.10	18.85^	17.30^	11.61	8.62	5.50	3.11*	124.72
1991	4.99^	5.36	8.00^	11.70	14.48^	18.07	M	17.35	11.97	9.14	5.26	M	M
1992	M	4.29	5.60	11.08	15.77	17.66	19.00	17.29	12.28	7.77	4.86^	M	M
1993	1.06^	2.71^	6.23	10.98	15.76	16.11	19.54	18.00	12.42	8.19	4.88^	2.75^	118.63
1994	3.46^	4.59^	10.01	11.37	15.14	19.27	21.21	19.75	12.98	7.96	4.52	2.25	132.51
1995	M	4.25	7.84^	11.43	12.16	16.33	19.79	18.86	13.61	8.35	4.36	2.79	M
1996	M	4.46	7.99	12.88	15.31	19.36	20.65	17.75	13.50	8.97^	4.02	2.81	M
1997	3.73	6.04	8.49	11.58	15.55	18.44	18.65	18.80	13.16	8.93	3.26	M	M
1998	2.62	2.49	6.34^	9.94	13.35	15.03	19.49	18.39^	12.16	7.89	3.95	5.01^	116.66
1999	3.51	4.77	8.57	9.41	14.21	17.94^	18.74	18.83	12.84	8.40^	4.25	4.11	125.58
2000	3.14	4.36	8.23^	12.36	17.19	19.70^	20.69	17.48	12.58	8.18^	3.98	2.65	130.54
2001	M	M	7.23^	10.77	15.71^	14.04	15.55	14.42	10.51	6.31	M	2.93^	M
2002	3.70	4.83	8.02	8.21	16.29	19.44	22.03	18.91	15.72^	8.08	6.02	2.73	133.98
2003	3.23	5.15	9.01	11.20	15.21	19.66	21.27	18.20	14.56	10.14	4.14	2.19	133.96
2004	3.11	4.79	9.37	12.53	17.31	19.45	21.63	18.54	12.44	8.91	4.91	1.60	134.59
2005	3.29	4.38	7.90	11.35^	15.50	18.88	21.50	17.19^	12.96	8.44	4.44	2.72^	128.55
2006	3.83	4.87	7.00*	11.03	15.62	19.09	21.09	19.39	14.85	8.71	4.95	3.51	133.94
2007	4.15	5.33	8.75*	12.27	18.19	M	22.64	20.62	14.91	9.38	5.95	3.28	M
2008	3.93	5.61	9.93	13.55	15.92	19.23	22.36	20.51	15.02	9.36	4.71	3.14	143.27
2009	4.06	3.68	9.17	12.42	16.42	17.30	19.65	18.36	14.59	9.28	5.05	3.37^	133.35
2010	2.61^	3.56^	8.30	11.48	15.66	19.56^	19.17	21.48	13.30^	7.82	5.79^	2.41^	131.14
2011	3.10	5.68	8.49	12.66	16.05	20.40	18.30	12.50	9.97	9.93	4.38	4.01	125.47

^Value adjusted to full month by NCDC.
*Contains missing data.

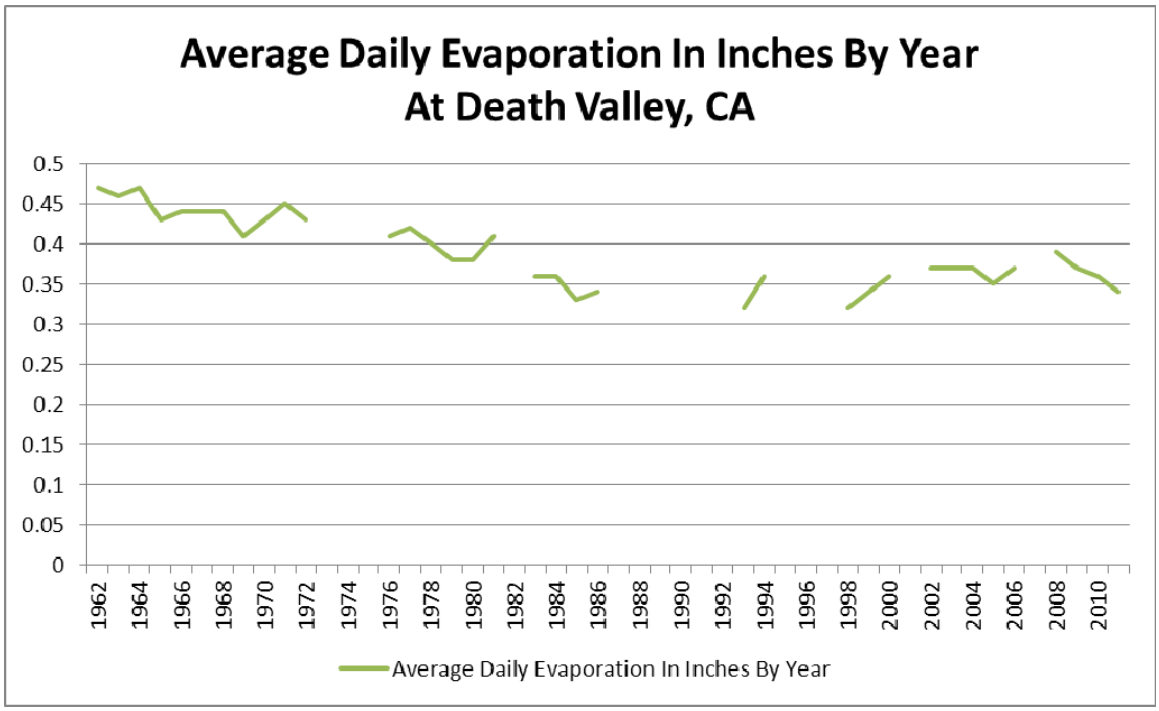


Total yearly evaporation in inches by year at Death Valley, CA as shown by the green line. Blank areas denote missing values.

Average Daily Evaporation In Inches at Death Valley By Month and Year

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
1961	-	-	-	-	0.74*	0.84	0.85	0.69	0.59	0.37	0.21	0.11*	-
1962	0.20	0.21	0.31	0.55	0.65	0.78	0.80	0.82	0.59	0.43	0.20	0.12*	0.47**
1963	0.14	0.22	0.37	0.49	0.69	0.74	0.90	0.77	0.49	0.36	0.21	0.12	0.46
1964	0.18	0.16	0.40	0.52	0.68	0.78	0.86	0.75	0.61	0.35	0.21	0.15	0.47
1965	0.17	0.28	0.35	0.43	0.64	0.69	0.80	0.66	0.59*	0.34	0.16	0.07	0.43**
1966	0.11*	0.21	0.30	0.51*	0.66*	0.72	0.87*	0.64	0.55	0.34	0.21	0.15	0.44**
1967	0.16	0.28	0.40	0.43*	0.60	0.69	0.75	0.72	0.52	0.41	0.12	0.15	0.44**
1968	0.15	0.17	0.38	0.52	0.61	0.71	0.75	0.70	0.58	0.35	0.24	0.15	0.44
1969	0.13	0.13	0.35	0.53	0.61	0.63	0.70	0.70*	0.54	0.33	0.18	0.14	0.41**
1970	0.13	0.23	0.32*	0.45	0.64	0.73	0.75	0.70	0.57	0.37	0.21	0.10	0.43**
1971	0.15	0.27*	0.35	0.44	0.57	0.72	0.78	0.73	0.59	0.39	0.26	0.17*	0.45**
1972	0.17	0.20	0.41	0.51	0.62	0.68	0.78	0.66	0.50	0.31	0.17	0.16	0.43
1973	M	0.19*	0.26	0.51	0.58*	0.71	0.76	0.66	0.53	0.40	0.22	0.18*	M
1974	0.13	0.26	0.31	0.51	0.63	0.76	0.73	0.63	0.55	0.32	0.17	0.13	0.43
1975	0.16	M	0.35*	0.44	0.58	0.72	0.78	0.69	0.50	0.40	0.26	0.18	M
1976	0.17	0.19	0.34	0.43	0.60	0.71	0.71	0.64	0.42	0.33	0.22	0.13	0.41
1977	0.13	0.25	0.35	0.49	0.48	0.66	0.77	0.77*	0.50	0.33	0.24	0.12	0.42**
1978	0.08	0.16	0.23	0.37	0.57	0.71	0.71	0.67	0.50	0.39	0.25	0.15	0.40
1979	0.11	0.16	0.28	0.44	0.59	0.66	0.67	0.57	0.47*	0.37*	0.20	0.14	0.38**
1980	0.14	0.21*	0.28	0.39	0.46	0.66	0.68*	0.63	0.50	0.34	0.20	0.12	0.38**
1981	0.13	0.21	0.27	0.48*	0.55*	0.68*	0.72	0.61	0.53	0.39	0.22	0.08*	0.41**
1982	M	0.22*	M	0.40	0.53	0.60	0.58*	0.55	0.42	0.31	M	0.14*	M
1983	0.13*	0.16	0.25*	0.42	0.54	0.63	0.68	0.47	0.48*	0.27*	0.22*	0.10	0.36**
1984	0.15	0.22*	0.35	0.44	0.55	0.62	0.52*	0.52	0.41	0.30	0.19*	0.09*	0.36**
1985	0.13	0.18*	0.30	0.42	0.49	0.52	0.49	0.53*	0.38	0.26*	0.14	0.09*	0.33**
1986	0.10	0.18	0.27*	0.38*	0.44*	0.64*	0.57	0.57	0.43	0.26*	0.21*	0.07	0.34**
1987	0.11	0.21*	0.26*	0.44*	0.39*	M	M	M	M	M	M	M	M
1988	M	M	0.28*	M	0.46*	0.50*	0.58	0.50	0.43	0.30	0.17	0.16	M
1989	M	M	0.35	0.50*	0.50*	0.59	0.62	0.57	0.39	0.26	0.16*	0.11*	M
1990	0.09	0.17	0.26	0.37	0.51	0.57	0.61*	0.56*	0.39	0.28	0.18	0.14*	0.34**
1991	0.16*	0.19	0.26*	0.39	0.47*	0.60	M	0.56	0.40	0.29	0.18	M	M
1992	M	0.15	0.18	0.37	0.51	0.59	0.61	0.56	0.41	0.25	0.16*	M	M
1993	0.03*	0.10*	0.20	0.21	0.51	0.54	0.63	0.58	0.41	0.26	0.16*	0.16*	0.32**
1994	0.11*	0.16*	0.32	0.38	0.49*	0.64	0.68	0.64	0.43	0.26	0.15	0.07	0.36**
1995	M	0.15	0.25*	0.38	0.39	0.54	0.64	0.61	0.45	0.27	0.15	0.09	M
1996	M	0.15	0.26	0.43	0.49	0.65	0.67	0.57	0.45	0.29*	0.13	0.09	M
1997	0.12	0.22	0.27	0.39	0.39	0.50	0.61	0.60	0.44	0.29	0.11	M	M
1998	0.08	0.09	0.20*	0.33	0.43	0.50	0.63	0.59*	0.41	0.25	0.13	0.16*	0.32**
1999	0.11	0.17	0.27	0.31	0.46	0.60*	0.58*	0.61	0.43	0.28*	0.14	0.13	0.34**
2000	0.10	0.15	0.27*	0.41	0.55	0.66*	0.67*	0.56	0.42	0.26*	0.13	0.09	0.36**
2001	M	M	0.23*	0.36	0.51*	0.47	0.50	0.47	0.35	0.20	M	0.09*	M
2002	0.12	0.17	0.26	0.27	0.53	0.65	0.71	0.61	0.52*	0.26	0.20	0.09	0.37**
2003	0.10	0.18	0.29	0.37	0.49	0.66	0.69	0.59	0.49	0.33	0.14	0.07	0.37
2004	0.10	0.17	0.30	0.42	0.55	0.65	0.70	0.60	0.41	0.29	0.16	0.05	0.37
2005	0.11	0.16	0.25	0.38*	0.50	0.63	0.69	0.55*	0.43	0.27	0.15	0.09*	0.35**
2006	0.12	0.17	0.24*	0.37	0.50	0.64	0.68	0.63	0.50	0.28	0.17	0.11	0.37**
2007	0.13	0.19	0.30*	0.41	0.59	M	0.73	0.66	0.50	0.30	0.20	0.11	M
2008	0.13	0.19	0.32	0.45	0.51	0.64	0.72	0.66	0.50	0.30	0.16	0.10	0.39
2009	0.13	0.13	0.30	0.41	0.53	0.58	0.64	0.59	0.49	0.30	0.17	0.11*	0.37**
2010	0.08*	0.13*	0.27	0.38	0.51	0.65*	0.62	0.69	0.44*	0.25	0.19*	0.08*	0.36**
2011	0.10	0.20	0.27	0.42	0.52	0.68	0.59	0.40	0.33	0.32	0.15	0.13	0.34

* Averaged based off an adjusted value by NCDC due to missing data.
**Average based on month(s) that have missing data.



Average daily evaporation in inches by year at Death Valley, CA as shown by the green line. Blank areas denote missing values.

Holiday Weather

Statistics are made from the entire period of record even if the holiday did not exist the entire period.

New Year's Day

	Highest	Lowest
Low Temperature	59 1931	21 1919
High Temperature	79 1936	48 1991
Precipitation	0.20" 1922	-
Snow	0.0"	-
Snow Depth	0"	-

Martin Luther King, Jr. Day

	Highest	Lowest
Low Temperature	57 January 20, 1969 & January 19, 1976	26 January 20, 1919 & January 18, 1937
High Temperature	80 January 20, 1986	42 January 20, 1930
Precipitation	0.15" January 18, 1993	-
Snow	0.0"	-
Snow Depth	0"	-

Washington's Birthday

	Highest	Lowest
Low Temperature	59 February 16, 1987	32 February 18, 1929
High Temperature	89 February 20, 1995	53 February 16, 2009
Precipitation	0.30" February 16, 1959	-
Snow	0.0"	-
Snow Depth	0"	-

Memorial Day

	Highest	Lowest
Low Temperature	90 May 30, 1939	42 May 30, 1912
High Temperature	122 May 29, 2000	75 May 30, 1912
Precipitation	0.11" May 30, 1948	-
Snow	0.0"	-
Snow Depth	0"	-

Independence Day

	Highest	Lowest
Low Temperature	100 1915	67 1912 & 1992
High Temperature	126 1984, 1991 & 2007	100 1921
Precipitation	Trace 1961	-
Snow	0.0"	-
Snow Depth	0"	-

Labor Day

	Highest	Lowest
Low Temperature	100 September 1, 1924 & September 3, 2007	60 September 5, 1921
High Temperature	121 September 3, 2007	100 September 1, 1941
Precipitation	0.33” September 4, 1967	-
Snow	0.0”	-
Snow Depth	0”	-

Columbus Day

	Highest	Lowest
Low Temperature	74 October 9, 1922 & October 9, 1933	32 October 13, 1924
High Temperature	108 October 14, 1991	70 October 10, 1960
Precipitation	0.50” October 8, 1923	-
Snow	0.0”	-
Snow Depth	0”	-

Halloween

	Highest	Lowest
Low Temperature	70 1959	38 1924 & 1971
High Temperature	98 1966 & 1988	65 1920 & 1996
Precipitation	0.40” 1996	-
Snow	0.0”	-
Snow Depth	0”	-

Veterans Day

	Highest	Lowest
Low Temperature	63 November 11, 1914 & November 11, 2005	33 November 11, 1945
High Temperature	94 November 11, 1921	58 November 11, 1985
Precipitation	0.75” November 11, 1954	-
Snow	0.0”	-
Snow Depth	0”	-

Thanksgiving Day

	Highest	Lowest
Low Temperature		27 November 30, 1911
High Temperature	86	45 November 27, 1919
Precipitation	0.20” November 27, 1919	-
Snow	0.0”	-
Snow Depth	0”	-

Christmas Day

	Highest	Lowest
Low Temperature	61 1914	22 1926, 1928 & 1990
High Temperature	81 1942	50 1920
Precipitation	0.51” 1983	-
Snow	0.0”	-
Snow Depth	0”	-

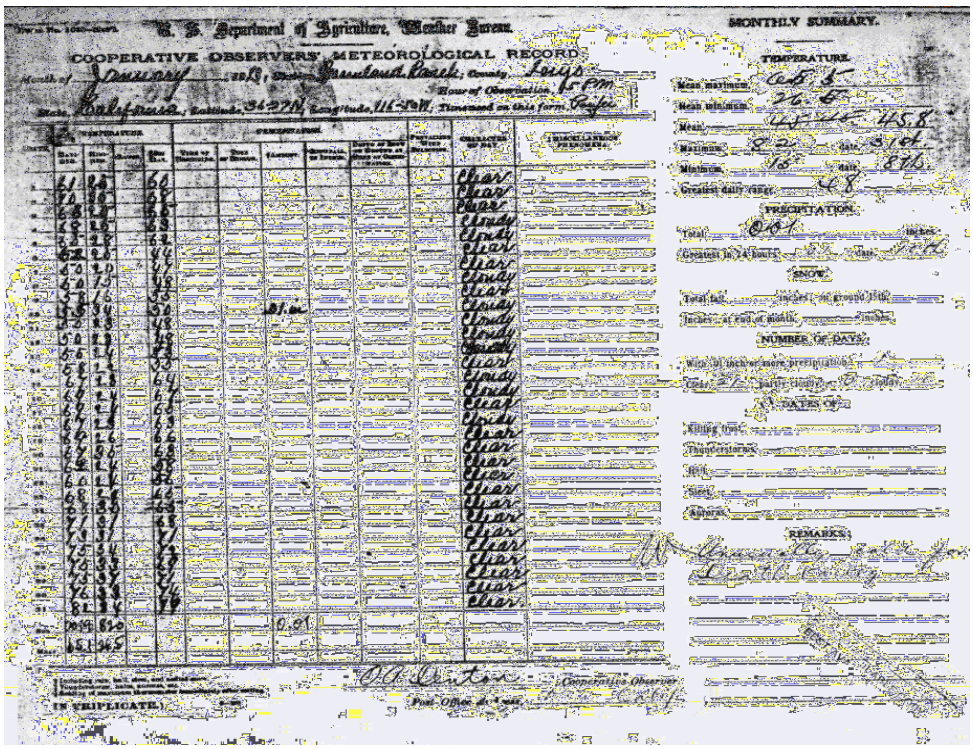
Twelve Significant Weather Events

Below is a list of events in chronological order of significant weather events in Death Valley, California. This list is intended to capture extreme events in terms of their place in meteorology and impact on society in Death Valley. It is not intended to be all-inclusive and should be considered objective in nature.

Arctic Outbreak of January 1913

Although only the seventh coldest month ever recorded in Death Valley based on average temperature, January 1913 still holds the record for the coldest low temperature ever recorded here. A total of 18 days saw a low temperature of 25 degrees or lower which is an all-time record for any month. The average low of 26.6 degrees in January 1913 is 1.5 degrees colder than the next coldest average low temperature for January which was in 1919. Only 7 days in January 1913 did not see the temperature fall to freezing or below. While the high temperatures in January 1913 were cool by Death Valley standards, the coldest high of the month was 50 degrees recorded on both January 7th and January 8th.

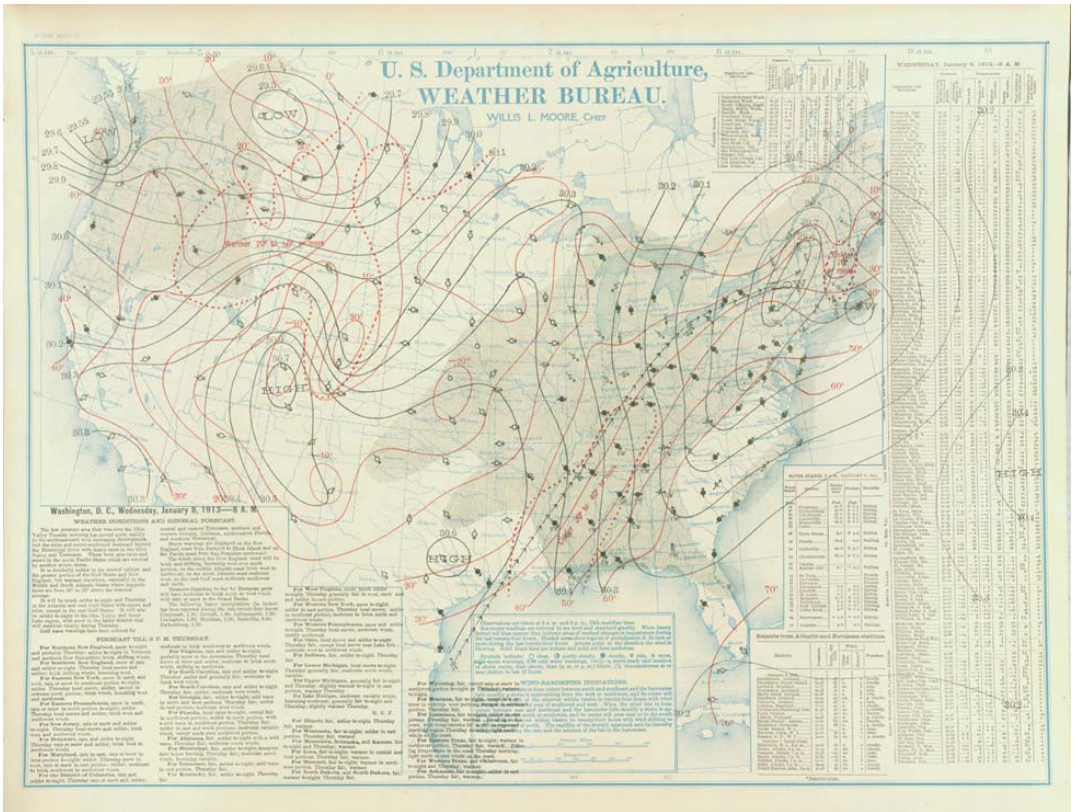
The lowest reading of January 1913 came on the morning of January 8th when the temperature dropped to 15 degrees. This set the record for the coldest low temperature ever at Death Valley. Surface weather maps show a 1030 mb high centered near the Four Corners region that morning. The character of the day was described as cloudy by the observer, which is interesting given that extremely cold readings are usually obtained under clear conditions at Death Valley or any location. Even though official weather observations had only been recorded for roughly a year and a half, the observer made a remark on that month's observations that the weather during January 1913 was "unusually cold" for this area.


U. S. Department of Agriculture, Weather Bureau.

COOPERATIVE OBSERVERS' METEOROLOGICAL RECORD

MONTHLY SUMMARY.

Observer's record of weather observations from Death Valley in January 1913 showing the coldest temperature ever recorded here.



U.S. Daily Weather Map for January 8, 1913 showing an area of surface high pressure near the Four Corners Region which helped bring extremely cold air to the southwest United States.

Hottest Temperature Ever – July 10, 1913

Death Valley holds the distinction of having both the lowest and hottest temperature ever recorded here being set in the same year. Unlike the record cold of January 1913 which set records throughout California – the July 1913 event was not noted for being a large scale regional heat spell. This reading at the time was the highest known air temperature ever recorded in a properly sighted and maintained instrument shelter. On September 13, 1922 a temperature of 136 degrees was recorded at El Azizia, Lybia. This was eventually certified by the World Meteorological Organization as the hottest air temperature ever recorded on Earth. However, evidence about the 136 degree reading suggested that it was invalid. On September 12, 2012 the World Meteorological Organization officially re-certified the 134 degrees reading at the Greenland Ranch as the all-time highest air temperature recorded on the planet (http://www.wmo.int/pages/mediacentre/press_releases/pr_956_en.html).

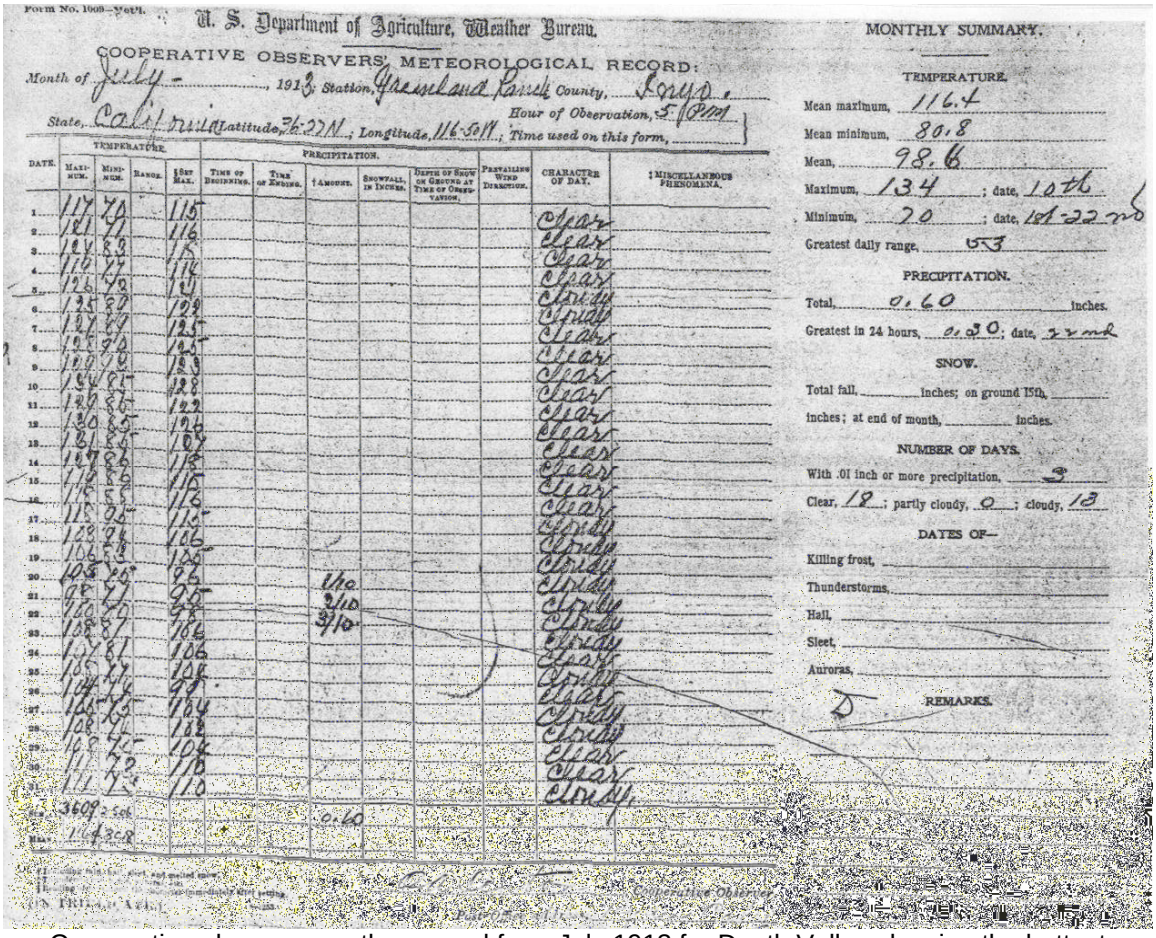
The morning surface weather map shows high pressure centered over western Oregon as well as in the Four Corners region with a thermal trough set up near the California coast. Remarks from the observer at Greenland Ranch gave the character of the day as clear.

Unlike most intense heat waves in Death Valley, a large diurnal range in temperatures occurred during this event. The low of 85 degrees that morning represents a 49 degree diurnal temperature spread. This is incredibly large for Death Valley, even in earlier times. More intense heat waves in modern times have usually seen lows of 95 degrees or hotter recorded on the day the hottest high temperature occurred. The low of 85 degrees would tie for the 30th coldest low temperature ever recorded on July 10th in the period of record from 1911 through 2011.

Why it got so hot in Death Valley on July 10, 1913 is somewhat difficult to determine because the observation was recorded well before the era of upper air observations as well as satellite data that can better gauge the pattern in the atmosphere. In addition, the observation network in those days was very sparse which would makes determining any mesoscale impacts difficult to determine. Although no remark of the weather was made on the observer's form from July 1913, details provided in a letter from F.W. Corkill on July 6, 1915 who was the mill superintendent then for the Pacific Borax Company give some additional details on the weather that day remarking about strong winds. One theory proposed in 1949 by Arnold Court was that the extreme heat experienced in Death Valley that day was generated by superheated sand picked that was up by the wind and blown inside the instrument shelter causing the temperature to spike (Court 1949). Increasing winds in the afternoon associated with the increased heating of the day and the typical flow of air towards the lower pressure associated with the thermal low over the deserts of southern California are common in the summer months. Typically these winds do not exceed 25 mph

at lower elevations away from terrain funneling. Personal experience forecasting in the Mojave Desert has shown that winds of 35 to 40 mph or greater are usually needed to loft large quantities of dust and sand which likely could have been caused by some sort of small scale weather feature, such as a favorable pressure gradient, on this date in Death Valley.

Further documentation also shows no issues noted during this time with the equipment at the station. However, when the observer did mail his form into the Weather Bureau a note was attached whether the 134 degree reading was high enough as the thermometer only could read to 135 degrees and other thermometers that day at the Greenland Ranch read much higher (Willson 1915). While the monthly climatological report for July 1913 for California initially did not include the monthly report from Greenland Ranch, the annual report for 1913 later published did include this value along with a remark that the 134 degree high was “believed to be the highest temperature ever recorded in the United States”.



Form No. 1003—Wea'l.

U. S. Department of Agriculture, Weather Bureau.

COOPERATIVE OBSERVERS' METEOROLOGICAL RECORD.

Month of July, 1913. Station, Greenland Ranch. County, Inyo.

State, California. Latitude, 36.22 N.; Longitude, 116.50 W.; Time used on this form, Hour of Observation, 5 PM

DATE.	TEMPERATURE. Maximum.	Minimum.	Range.	1 Set Max.	Time of Beginning.	Time of Ending.	PRECIPITATION. †Amount.	Snowfall, in Inches.	Depth of Snow on Ground at Time of Observation.	Prevailing Wind Direction.	CHARACTER OF DAY.	‡MISCELLANEOUS PHENOMENA.
1	117	70		115							Clear	
2	121	71		116							Clear	
3	124	83		118							Clear	
4	116	74		114							Clear	
5	126	78		120							Cloudy	
6	125	80		122							Cloudy	
7	124	84		125							Clear	
8	122	80		124							Clear	
9	120	80		118							Clear	
10	124	81		122							Clear	
11	120	80		122							Clear	
12	120	85		124							Clear	
13	121	84		104							Clear	
14	117	86		118							Clear	
15	118	86		115							Clear	
16	116	55		112							Clear	
17	115	92		110							Cloudy	
18	128	94		106							Cloudy	
19	106	78		100							Cloudy	
20	108	80		96			1/10				Cloudy	
21	98	77		95			2/10				Cloudy	
22	100	80		98			3/10				Cloudy	
23	102	87		100							Cloudy	
24	107	81		106							Clear	
25	105	77		104							Cloudy	
26	104	76		98							Cloudy	
27	106	75		104							Cloudy	
28	108	77		102							Cloudy	
29	109	75		104							Clear	
30	111	79		110							Clear	
31	111	75		110							Cloudy	
Total.	3609	2508					0.60					
Mean.	116.4	80.8										

MONTHLY SUMMARY.

TEMPERATURE.

Mean maximum, 116.4

Mean minimum, 80.8

Mean, 98.6

Maximum, 134; date, 10th

Minimum, 70; date, 1st-22nd

Greatest daily range, 53

PRECIPITATION.

Total, 0.60 inches.

Greatest in 24 hours, 0.30; date, 22nd

SNOW.

Total fall, ____ inches; on ground 1st, ____ inches; at end of month, ____ inches.

NUMBER OF DAYS.

With .01 inch or more precipitation, 3

Clear, 18; partly cloudy, 0; cloudy, 13

DATES OF—

Killing frost, ____

Thunderstorms, ____

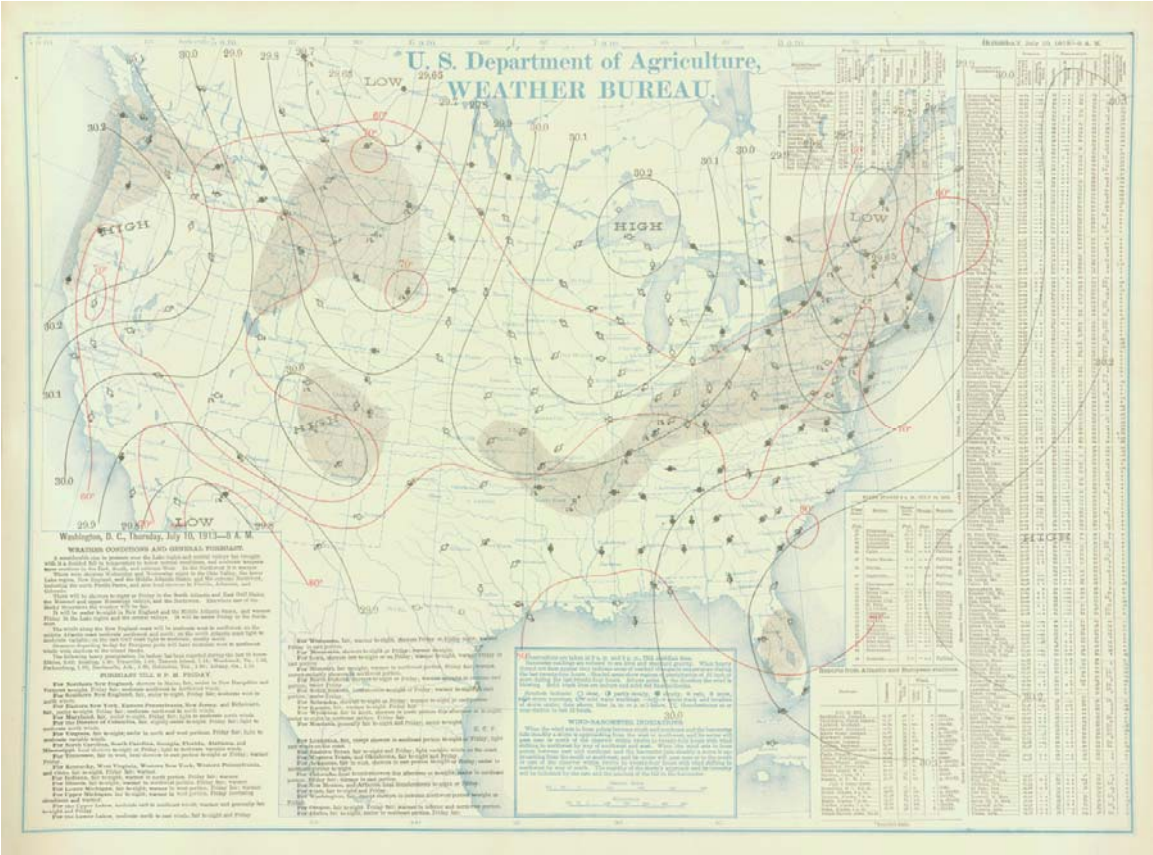
Hail, ____

Sleet, ____

Auroras, ____

REMARKS.

Cooperative observer weather record from July 1913 for Death Valley showing the hottest temperature ever recorded here of 134 degrees.



U.S. Daily Weather Map for July 10, 1913 on the date Death Valley set an all-time record high temperature. Two areas of high pressure at the surface are shown on this map – one in western Oregon and another near the Four Corners region.

July 6, 1915.

Mr. C. R. Dudley,
Pacific Coast Borax Co.,
Oakland, Calif.

Dear Sir:-

Replying to your favor of recent date relative to the hygrograph and thermometers at Greenland Ranch, will advise that the hygrograph at the present writing is recording a little high. I check this machine whenever I go to the Valley but since the mill was started at this point I have been unable to go out there very often. I have tried to show Mr. Denton how to check the machine with a sling psychrometer but it is a little out of his line, and after taking the wet and dry bulb readings he cannot figure from the tables the correct readings, and consequently we cannot keep the machine recording as accurately as it should be; in other words, it is not checked often enough. The thermometers seldom get out of order so the Weather Reports could be considered accurate.

Regarding the temperature of 134 deg. which was recorded July 10, 1913, will state that this record should be considered correct, for I remember the day very distinctly as a man by the name of Busch perished in the Valley that day, north of the Ranch, on account of the heat. We have no weather vane at the Ranch so I do not know in which direction the wind was blowing on that day, but it was blowing very hard in either a northerly or southerly direction. The chauffeur who was with Mr. Busch at the time he perished very nearly lost his life also. I saw him a few days later and he said that a terrific wind prevailed in the Valley on that day. The humidity records are undoubtedly on file in the Oakland office for they were always sent to Mr. Lockeas soon as they were received by me. The July charts probably would give Mr. Willson some information in case he wanted to refer back to that date.

I was out to Greenland Ranch on the 11th of July and the temperature then was 129, and I did not doubt for a minute that it was up to 134 the previous day.

I have not been out to the Ranch for three months and consequently the hygrograph has not been checked for that length of time. I have not sent the records to Oakland for the reason that they were not correct. However if you would

care to have them anyhow I will be pleased to forward them to you.

If possible I am going to make a trip to the Ranch within the next week or so and will endeavor to get the machine working accurately again.

I am under the impression that this machine should be sent in for a general overhauling as it has not been cleaned since it was taken out to the Ranch, or for about three years; and at least the clock should be cleaned and oiled by someone who understands the machine.

I am sending a copy of this letter to Mr. Willson and should he desire any other information about the instruments or weather conditions we will only be too glad to tell him all we know about them or to assist him in any other way that we can.

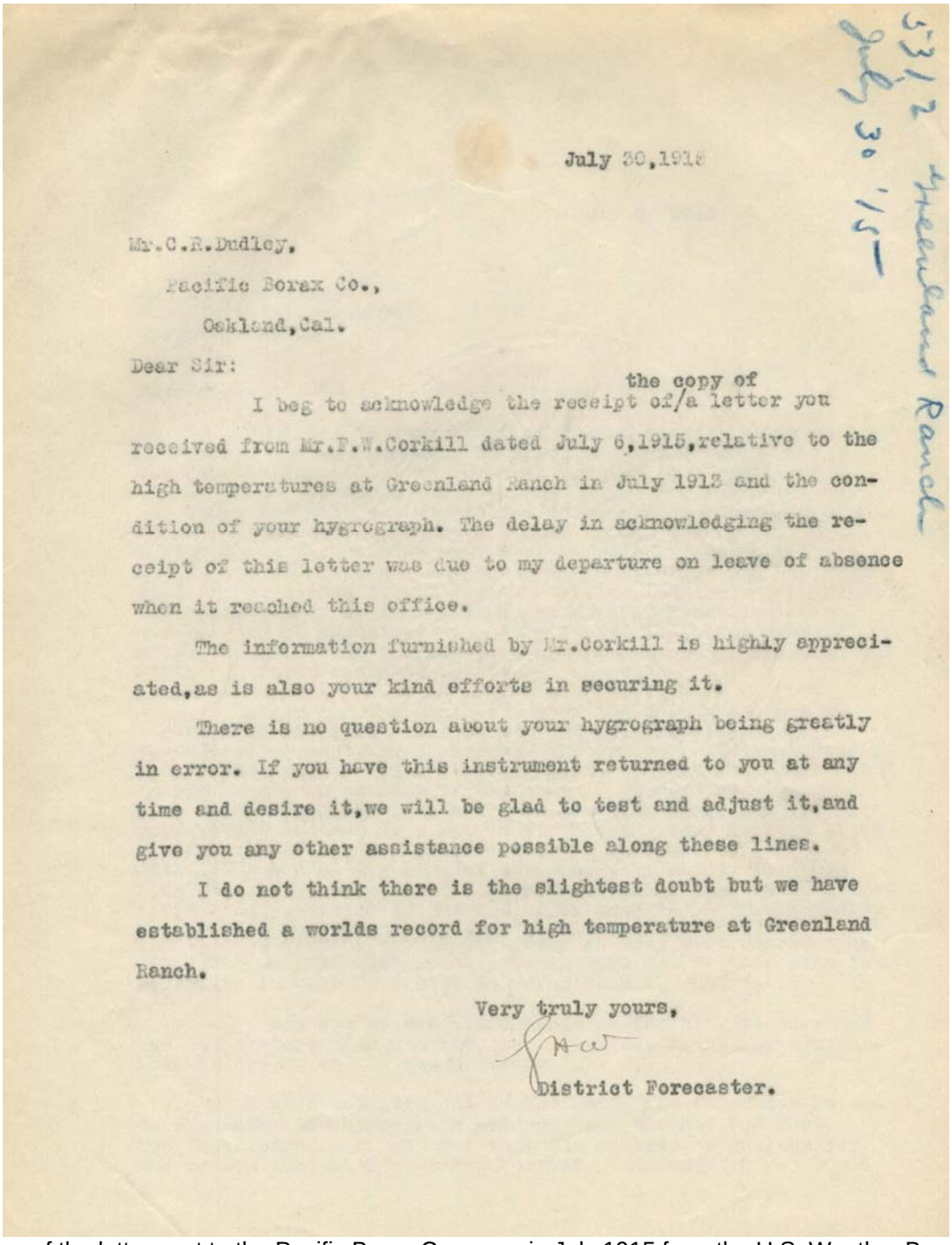
Yours very truly,

PACIFIC COAST BORAX CO.,

By F. W. Corkill
Mill Supt.

FWC/p
cc Mr. Willson,
cc/ Mr. Ryan.

Original letter from F.W. Corkill stating his recollection of the weather on July 10, 1913 when Death Valley set an all-time record high (National Weather Service Las Vegas archives).



July 30,1915

Mr.C.R.Dudley,
Pacific Borax Co.,
Oakland,Cal.

Dear Sir:

I beg to acknowledge the receipt of the copy of a letter you received from Mr.F.W.Corkill dated July 6,1915,relative to the high temperatures at Greenland Ranch in July 1913 and the condition of your hygrograph. The delay in acknowledging the receipt of this letter was due to my departure on leave of absence when it reached this office.

The information furnished by Mr.Corkill is highly appreciated,as is also your kind efforts in securing it.

There is no question about your hygrograph being greatly in error. If you have this instrument returned to you at any time and desire it,we will be glad to test and adjust it,and give you any other assistance possible along these lines.

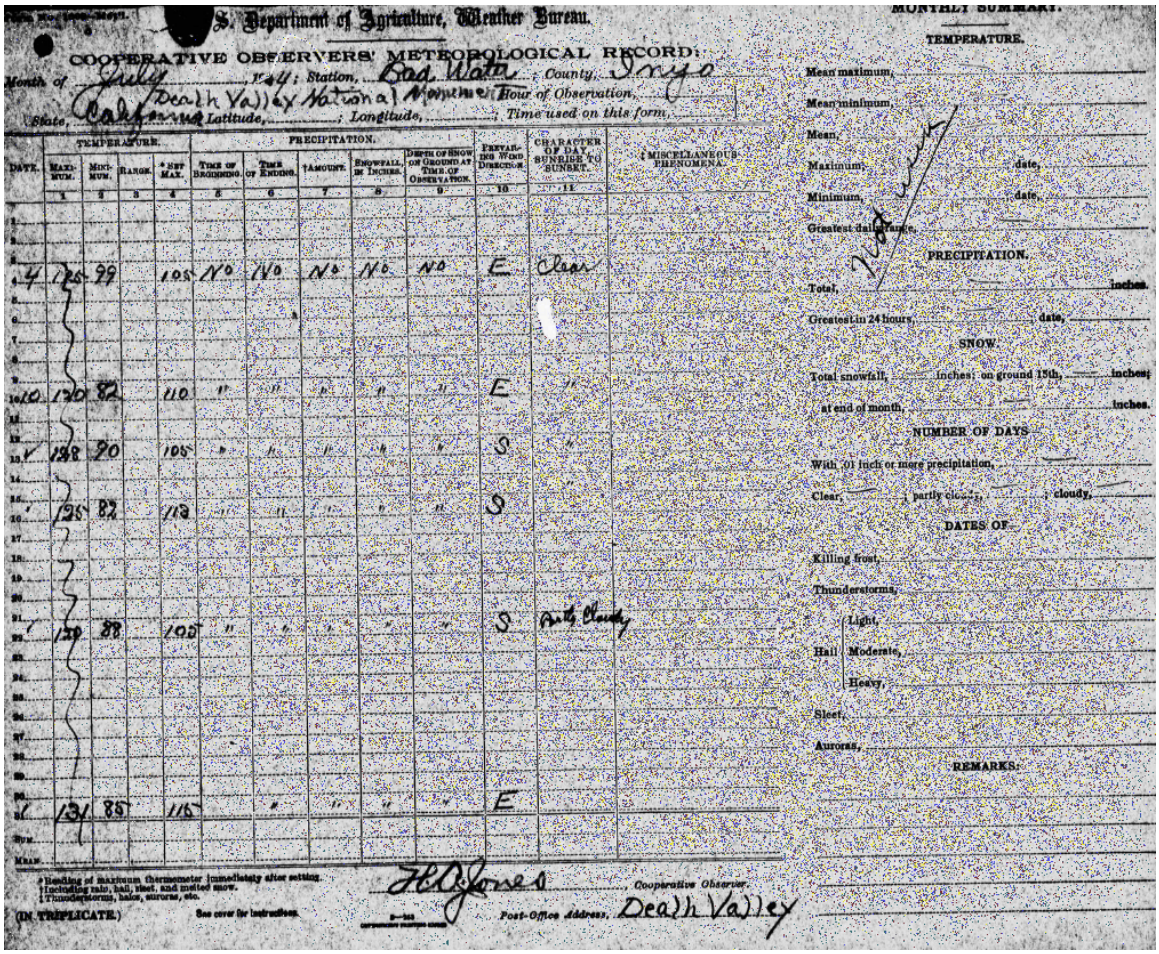
I do not think there is the slightest doubt but we have established a worlds record for high temperature at Greenland Ranch.

Very truly yours,

District Forecaster.

Copy of the letter sent to the Pacific Borax Company in July 1915 from the U.S. Weather Bureau District Forecaster acknowledging receipt of the letter describing in detail the weather in Death Valley on July 10, 1913 (National Weather Service Las Vegas archives).

In 1934, the United States Weather Bureau attempted to establish a weather station at Badwater Basin which is the lowest elevation in Death Valley. Although rangers from the National Park Service were not stationed in the immediate area, they agreed to travel to the site when possible to take weather readings. Observations were collected between May and September of that year before this station was closed due to the difficulty in collecting observations. These observations were never published by the Weather Bureau at the time. However, an inspection of these forms shows a high temperature of 131 degrees listed on the observation collected on July 31st which lasted for a 9 day period. During this time, the highest temperature recorded at Greenland Ranch was 125 degrees on the 27th. This is the only other known instance of a temperature reaching 130 degrees or higher somewhere in Death Valley at an official weather station.


U. S. Department of Agriculture, Weather Bureau.

COOPERATIVE OBSERVERS' METEOROLOGICAL RECORD.

Month of July 1934; Station, Bad. Water; County, Inyo

State, California; Latitude, ; Longitude, ; Time used on this form, Death Valley National Monument; Hour of Observation,

DATE.	TEMPERATURE. Maximum.	Minimum.	Range.	*Wet Max.	PRECIPITATION. Time of Beginning	Time of Ending	†Amount.	Snowfall, in Inches.	Depth of Snow on Ground at Time of Observation.	Prevailing Wind Direction.	Character of Day, Sunrise to Sunset.	Miscellaneous Phenomena.
1												
2												
3												
4	125	79		105	No	No	No	No	No	E	Clear	
5												
6												
7												
8												
9												
10	130	82		110	"	"	"	"	"	E	"	
11												
12												
13	128	80		105	"	"	"	"	"	S	"	
14												
15												
16	125	82		113	"	"	"	"	"	S	"	
17												
18												
19												
20												
21												
22	129	88		105	"	"	"	"	"	S	Partly Cloudy	
23												
24												
25												
26												
27												
28												
29												
30												
31	131	85		116	"	"	"	"	"	E	"	
SUM.												
MEAN.												

*Reading of maximum thermometer immediately after setting.
†Including rain, hail, sleet, and melted snow.
‡Thunderstorms, halos, auroras, etc.

(IN TRIPLICATE.) See cover for instructions.

H. D. Jones Cooperative Observer.

Post-Office address, Death Valley

MONTHLY SUMMARY.

TEMPERATURE.

Mean maximum,

Mean minimum,

Mean,

Maximum, date,

Minimum, date,

Greatest daily range,

PRECIPITATION.

Total, inches.

Greatest in 24 hours, date,

SNOW.

Total snowfall, inches; on ground 15th, inches; at end of month, inches.

NUMBER OF DAYS

With .01 inch or more precipitation,

Clear, ; partly cloudy, ; cloudy,

DATES OF

Killing frost,

Thunderstorms,

Hail Light,
Moderate,
Heavy,

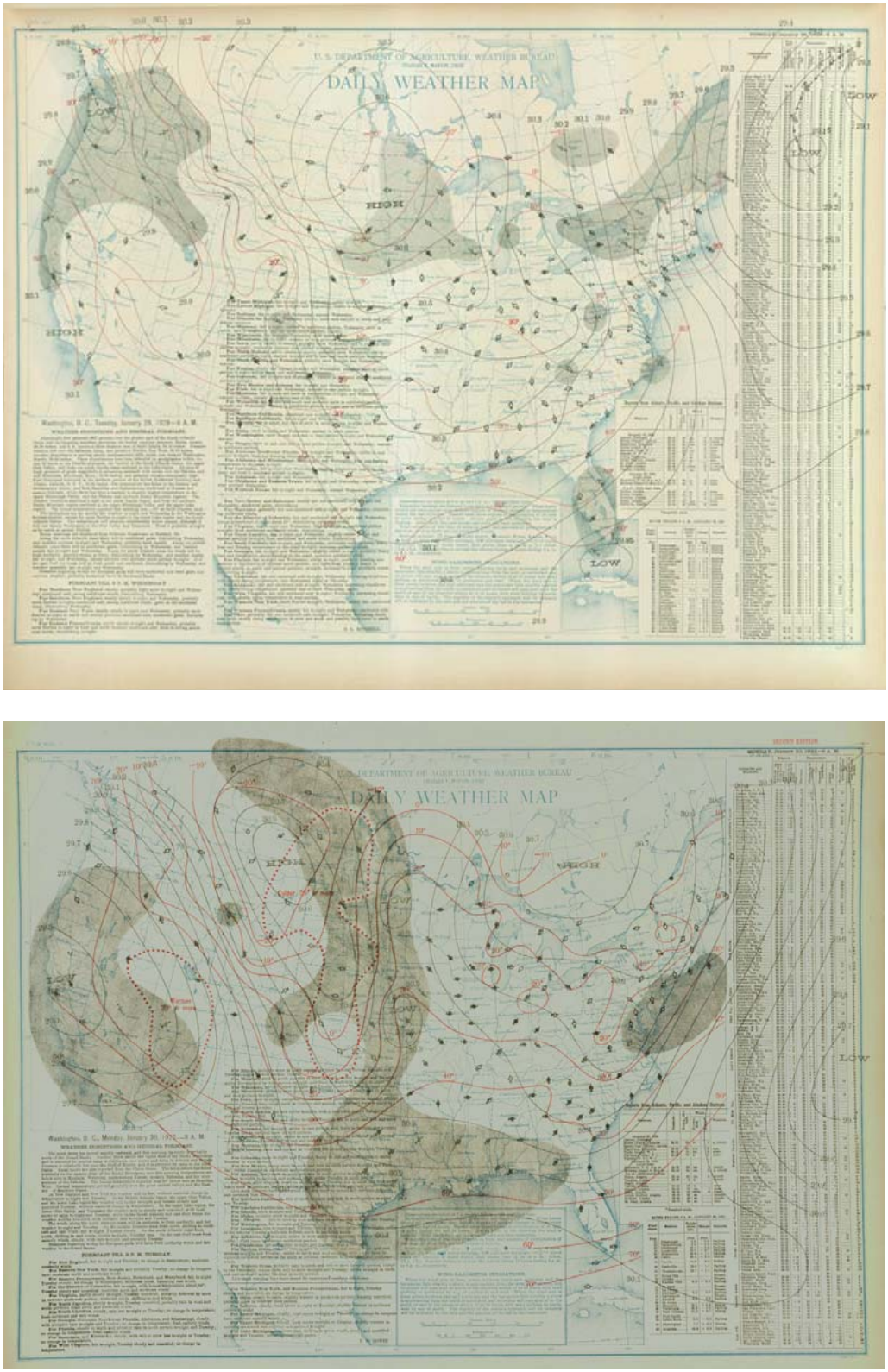
Sleet,

Auroras,

REMARKS:

The only other known documented instance of an air temperature on official weather equipment reaching above 130 degrees in Death Valley was recorded at Badwater in July 1934.

Only Measurable Snow – January 29, 1922



Daily weather maps from January 29, 1922 (top) and January 30, 1922 (bottom) showing a storm system moving into the Western United States.

Although there are six dates where snow has been observed in Death Valley at the official weather stations at Greenland Ranch and Furnace Creek, measurable snow has occurred on only one of these. This was on January 29, 1922 when a half an inch of snow was measured at Greenland Ranch. The observation form gives no information as to what time the snow fell at. Daily weather maps produced by the Weather Bureau from the continental United States show an area of low pressure had moved ashore in northern California by the morning of January 30th. In nearby Goldfield, Nevada a remark from the cooperative observer there states that snow began falling at 12:30 AM on January 29th. Oddly enough, temperatures during this time period in Death Valley were shown to be above freezing. The morning low on the 29th was reported to be 36 degrees and the afternoon high was 65 degrees. Therefore snow most likely fell on the 29th in the early morning hours. Even though temperatures were above freezing, dry low levels in the atmosphere could have likely contributed to some sort of evaporative cooling process which would have allowed the precipitation to fall as snow. Evaporative cooling aiding in precipitation falling as snow has been fairly well documented in snow events in nearby Las Vegas, Nevada especially in December 2003 (Czyzyk 2004) and December 2008 (Stachelski 2008).

The January 29-30, 1922 storm did produce snow at low elevations across a large portion of the Mojave Desert and southern Great Basin which fully supports the observation of accumulating snow at Death Valley. Totals from cooperative weather observers nearby during this event included in 2.5 inches at Trona, California: 2.5 inches and in Nevada: 6 inches at Beatty, 5 inches at Alamo, 4 inches at Goldfield, 1.2 inches on Fremont Street in Las Vegas, 0.5 inch at Logandale and a trace at Searchlight. Snow was also reported in Pahrump, Nevada but no measurement was given.

Year of No Precipitation – 1929

The driest year ever in Death Valley took place in 1929 when no precipitation fell at all for the entire year. A tenth of an inch of precipitation was reported in the afternoon observation of December 3, 1928 and precipitation was not observed in Death Valley again until January 7, 1930 when a trace was reported. On January 9, 1930 a total of 0.40 inch of precipitation was reported. The 401 days from December 4, 1928 through January 8, 1930 without any precipitation – not even a trace - is the longest dry stretch on record here.

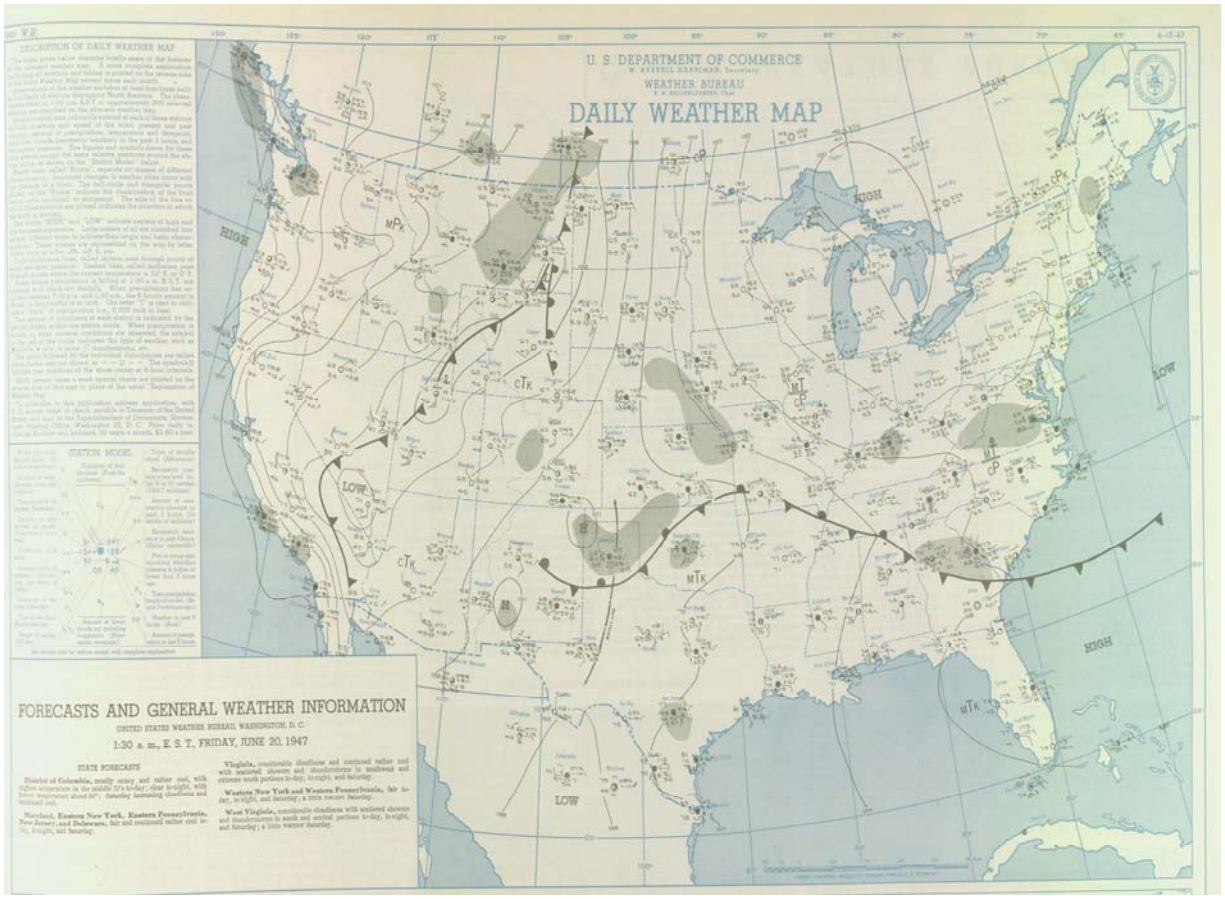
The second driest year on record in Death Valley was in 1989 when a trace was reported on only one day – January 4th. Although the total for 1953 was also a trace there were five instances of a trace reported throughout the year. Traces of precipitation (all rain) were reported in the observations on July 12th, July 13th, July 16th, October 19th and November 16th during 1953.

Death Valley Windstorm of June 20, 1947

Strong winds are not uncommon in the Mojave Desert including Death Valley. Winds are typically greatest during intense thunderstorms and in association with the passage of cold fronts through the area. Although cold fronts are most prevalent between October and May in the Mojave Desert, they do pass through sometime during the warmer season months. On June 20, 1947 a late season cold front was moving southwest across Nevada and California. Temperatures dropped considerable behind the front with highs on the 21st roughly 12 degrees cooler across the area.

According to a detail account of this event from the National Park Service, gusty south winds had been present during the day on June 20th when "suddenly a dust storm of bleak intensity appeared to the north of the valley" around 5:10 PM. So much dust was lofted that is virtually impossible to even see any highways. The wind which was estimated at 60 to 80 mph by the Park Service damaged cabins at Stovepipe Wells and warped buildings at Cow Creek. One section of roof of the Chief Ranger's quarters was blown off and carried over the top of the house and landed on top of one of the large palm trees located about 75 feet away. Several panes of glass were blown out of the window frames in homes. A total of 17 power poles were blown down between Death Valley Junction and the Furnace Creek Ranch. At the Furnace Creek Ranch, several trees and the official United States Weather Bureau instrument shelter were blown down. Observations of temperatures were thus unavailable for a 7 day period since the equipment was damaged. Although no wind vane was in the area, the Park Service noted the wind was greatest from the north when the storm struck with the entire event lasting about four hours.

A windstorm of this intensity is quite unusual for Death Valley in the late fall, winter or spring months when cold fronts are much more common. The fact that this event occurred so late in the season and with the intensity that it did certainly ranks it among the more impressive wind events ever documented in Death Valley – if not the most impressive. This same front did not just produce high winds in Death Valley as numerous trees fell down in nearby Beatty, Nevada and power was knocked out. High winds were also reported in the Antelope Valley of California and as far south as Mount Laguna in San Diego County where at 6,202 feet a 128 mph wind gust was recorded.

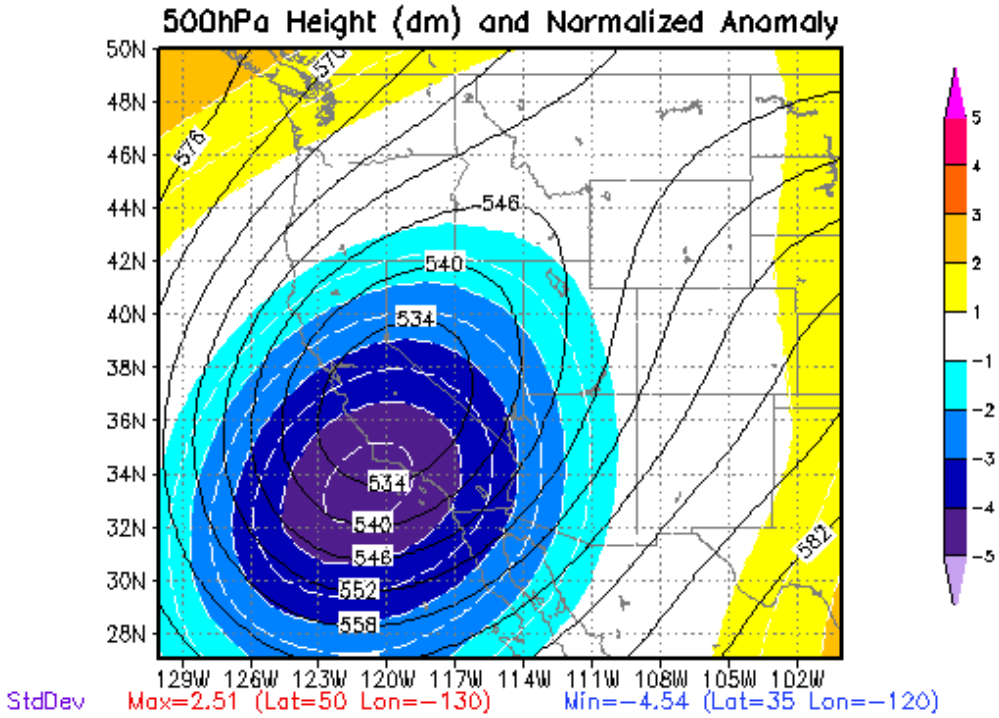


United States Daily Weather Map from June 20, 1947 showing a surface cold front moving through Nevada and California.

Snow of January 1949

January 1949 was notorious for the widespread cold and snow that took place during this month throughout the southwestern United States. A cold area of low pressure aloft over the Great Basin dropped south towards the coast of southern California between January 9th and 11th then moved very little afterwards. In Death Valley, precipitation was generally light for this entire event with a total of 0.30 inch measured in the period between January 8th and 13th. In Death Valley snow was reported during this event twice at the Furnace Creek Ranch – on the 9th and again on the 11th with total amount both times reported as a trace. On the 11th, snow was reported by the observer to have fallen from 1:45 PM until 2:15 PM. Although the liquid equivalent was also a trace in both instances when snow fell, the observer did remark that snow did cover the ground at the ranch but did not indicate a day. In addition, it was remarked the snow melted fast and did not appear to damage any date trees. At Cow Creek, the Park Service recorded a total of 0.88 inch of precipitation during this event with precipitation falling from the 10th through the 13th. Precipitation at Cow Creek began on the 10th at 2 PM and continued until 9 AM on the 11th. However, Cow Creek reported a total of 4 inches of snow- significantly more snow than what fell at the Furnace Creek Ranch in the time frame between the afternoon of the 10th and the morning of the

11th. The 4 inches at Cow Creek is the greatest known snowfall documented below sea level in Death Valley.



Reanalysis of the 500 mb heights (black lines) and normalized anomalies (shaded colors) for 00Z on January 11, 1949 showing a cold area of low pressure near the southern California Coast. This low produced snow at Death Valley. Image Credit: Penn State University.

February 1976 Rain Event and Golden Canyon Flash Flood

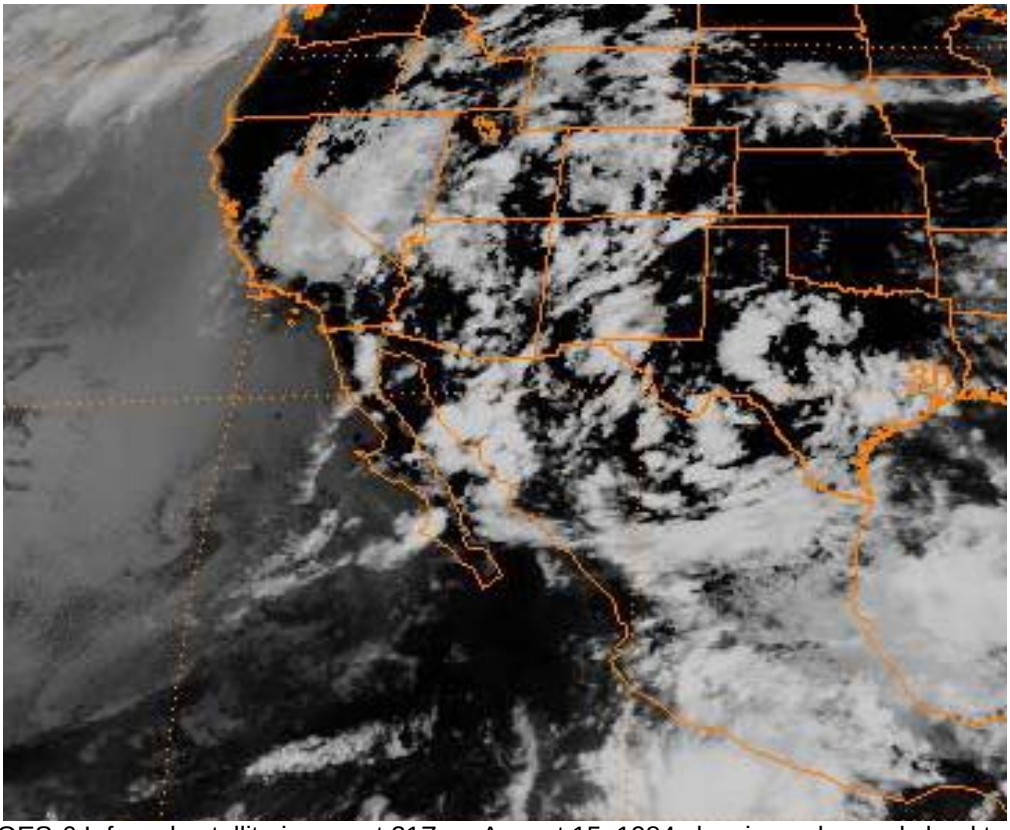
One of Death Valley's wettest periods ever on record took place in February 1976 when a total of 2.37 inches fell. This was reported from the observation days of the 6th through the 10th when a mid and upper level trough moved across California. The wettest 24 hour period was from the 8th through the 9th when 0.82 inch fell. The combination of days of heavy rain and persistent runoff along with rugged terrain in Death Valley resulted in a significant flash flood in Golden Canyon, located south of Furnace Creek and north of Badwater. At this time a paved road ran through Golden Canyon. However, it was no match for the surge of water, rock and mud that was forced through the narrow canyon by heavy rain on February 9th. The paved road that wandered through Golden Canyon was wiped out completely. Left behind was a crumbled mess of macadam that was no longer drivable. Today access into Golden Canyon by foot allows one to see the ruins of the paved road that once wandered through here.

Golden Canyon in Death Valley National Park in June 2008. Portions of the old paved road can be seen in the distance. Photo Credit: Chris Stachelski.

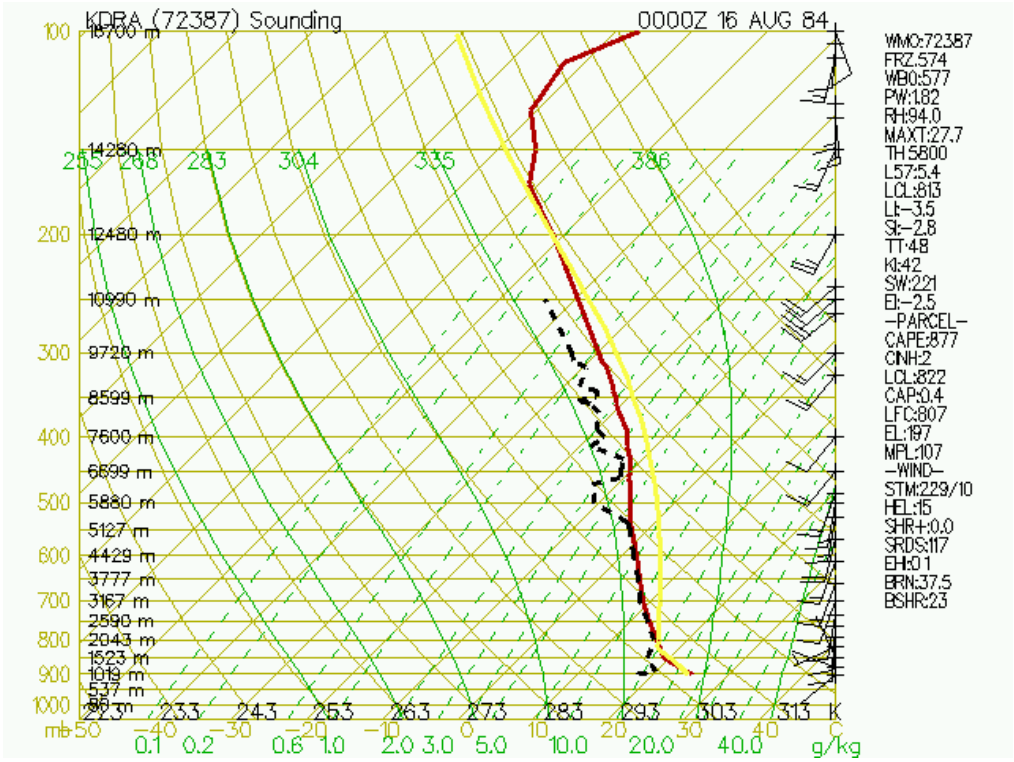
Flash Flood of August 15-16, 1984

The monsoon season of 1984 was one of the most active on record in the Mojave Desert. Reanalysis data obtained from Penn State University of 500 mb heights shows that an area of high pressure became centered near the Four Corners region by August 10th and an inverted trough moved north on the back side of this high across Arizona initiating a push of moisture into the Mojave Desert. This 500 mb high remained in place near the Four Corners through August 15th with a broad southerly flow noted across the Mojave Desert. Sounding data from Desert Rock, Nevada showed a rise in precipitable water in this time frame. On the morning of August 15, 1984 the 12Z radiosonde had a precipitable water value of 1.62 inches with a lifted index of -1.6 degree. By the afternoon that day, the 00Z August 16 radiosonde showed a drop in the lifted index with a value of -3.5 degrees observed. Precipitable water increased to 1.82 inches, which based on a climatology complied by WFO Rapid City (http://www.crh.noaa.gov/images/unr/soo/pw/pw_Top50.pdf) ranks as the second highest on record for southern Nevada. These values indicate the atmosphere over southeast California was incredibly moist and unstable.

At Furnace Creek, observations show rain began falling around 4:00 AM on August 15th and continued through 5:00 PM on August 16th. A total of 1.17 inches was measured. The intense rains over the valley, likely combined with runoff from nearby mountains, resulted in tremendous flash flooding throughout what was then Death Valley National Monument. All roads in the monument except for the Beatty cutoff were closed due to flooding. The chief ranger for Death Valley at the time stated that floods caused cracks up to 5 feet deep on Highway 190. Other roads in the monument had rocks, mud and gravel up to two and a half feet deep. At least 37 cars were stranded within Death Valley due to the flooding. In the Panamint Range to the west, 6.09 inches of rain was measured by the Park Service at the Wildrose Ranger Station for the 15th and 16th of August combined. The heavy rain washed out the water supply system for the station and a nearby campground.



GOES-6 Infrared satellite image at 21Z on August 15, 1984 showing enhanced cloud tops asoociated with thunderstorms in Death Valley. Image Credit: NCDC.

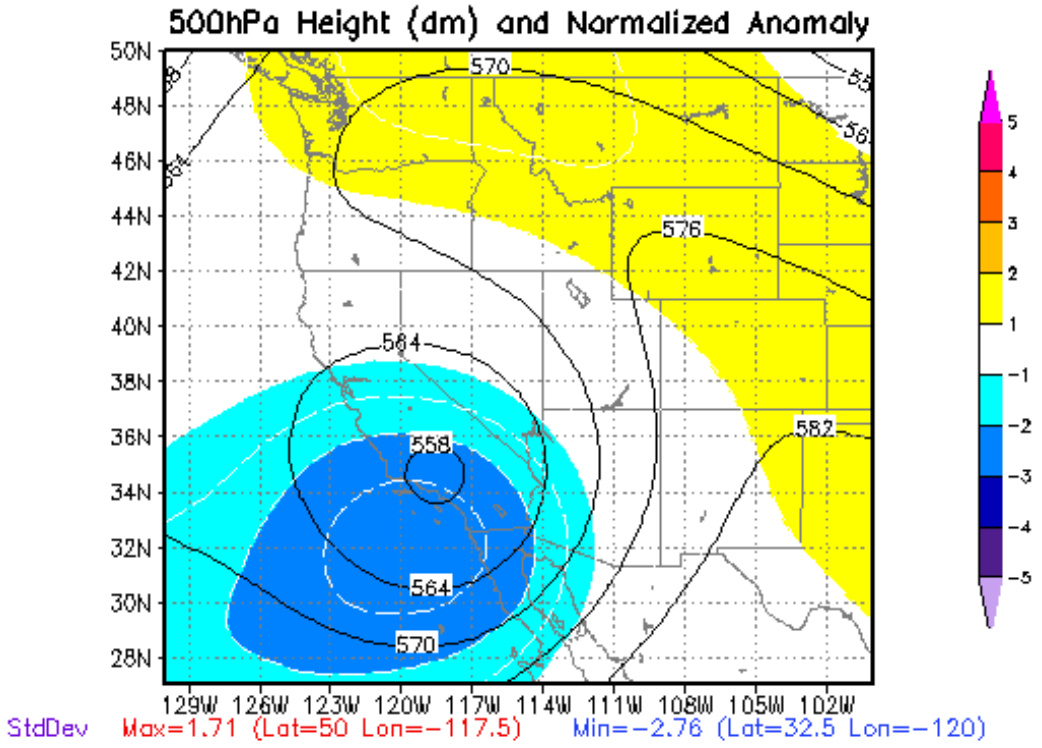


Sounding from KDRA from 00Z on August 16, 1984. Image Credit: Plymouth State University.

Heavy Rain Strands Thousands – November 1987

Perhaps the greatest number of people impacted by the weather at any one time in Death Valley took place in November 1987 when a cold upper level low moved ashore in southern California on the evening of November 5th and then moved inland towards southern Nevada by November 6th. This low produced 0.71 inch of rain at Furnace Creek. Rain fell much of the day on November 5th but became heavier as the day progressed. Between 5,000 and 8,000 people were in Death Valley National Monument for a recreational encampment that was held the first weekend in November. The heavy rain triggered extensive flooding that resulted in thousands being stranded in the monument.

The National Park Service reported that State Route 190 was covered with water, rocks and mud for a five mile stretch between Furnace Creek and Death Valley Junction resulting in the road being closed from 4:00 PM on November 5th through 1100 AM on November 6th. An eight mile stretch of State Route 190 was closed between Stovepipe Wells and Furnace Creek was also closed due to flooding with 30 vehicles stranded on it and was reopened by 1 PM on November 6th. High water and debris also closed Badwater Road from November 5th into November 7th. Lastly, flooding closed the connection road between State Route 190 and Scotty's Castle from November 5th through November 7th. The Park Service reported 1.20 inches of rain at Scotty's Castle.

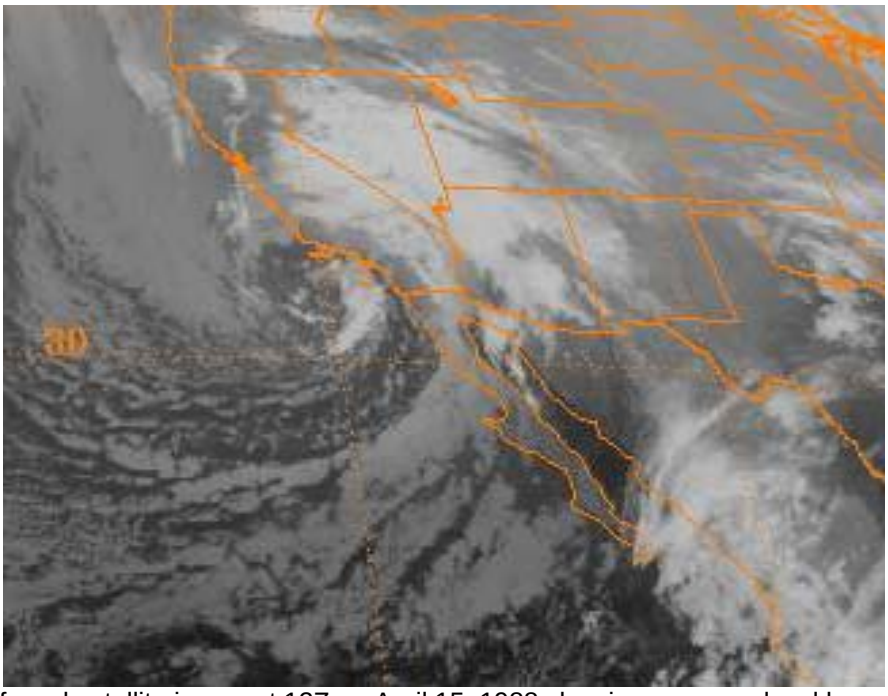


Reanalysis of the 500 mb heights (black lines) and normalized anomalies (shaded colors) for 00Z on November 6, 1987 showing a cold area of low pressure near the southern California Coast. Image Credit: Penn State University.

Wettest Observational Day Ever – April 1988

Death Valley's wettest observational day precipitation total of 1.47 inches fell from April 14th into April 15th of 1988. This is more than double the second greatest observational day total ever recorded in April of 0.63 inches from April 14th to April 15th in 2003. The heavy rain that fell from April 14th to April 15th in 1988 was brought by an upper level low that approached the coast of southern California and spread moisture northward into the Mojave Desert. Precipitable water values were high for April with a value of 0.82 inch recorded on the 00Z April 15, 1988 sounding.

An additional 0.20 inch fell from April 15th into the morning of April 16th, bringing the total for this event to 1.67 inches. This ranks as the second greatest two observational day precipitation total on record at Death Valley, exceeded by only the 1.70 inches from November 8th through November 10th in 1923.



GOES-6 Infrared satellite image at 12Z on April 15, 1988 showing an upper level low off the coast of southern California. Image Credit: NCDC.

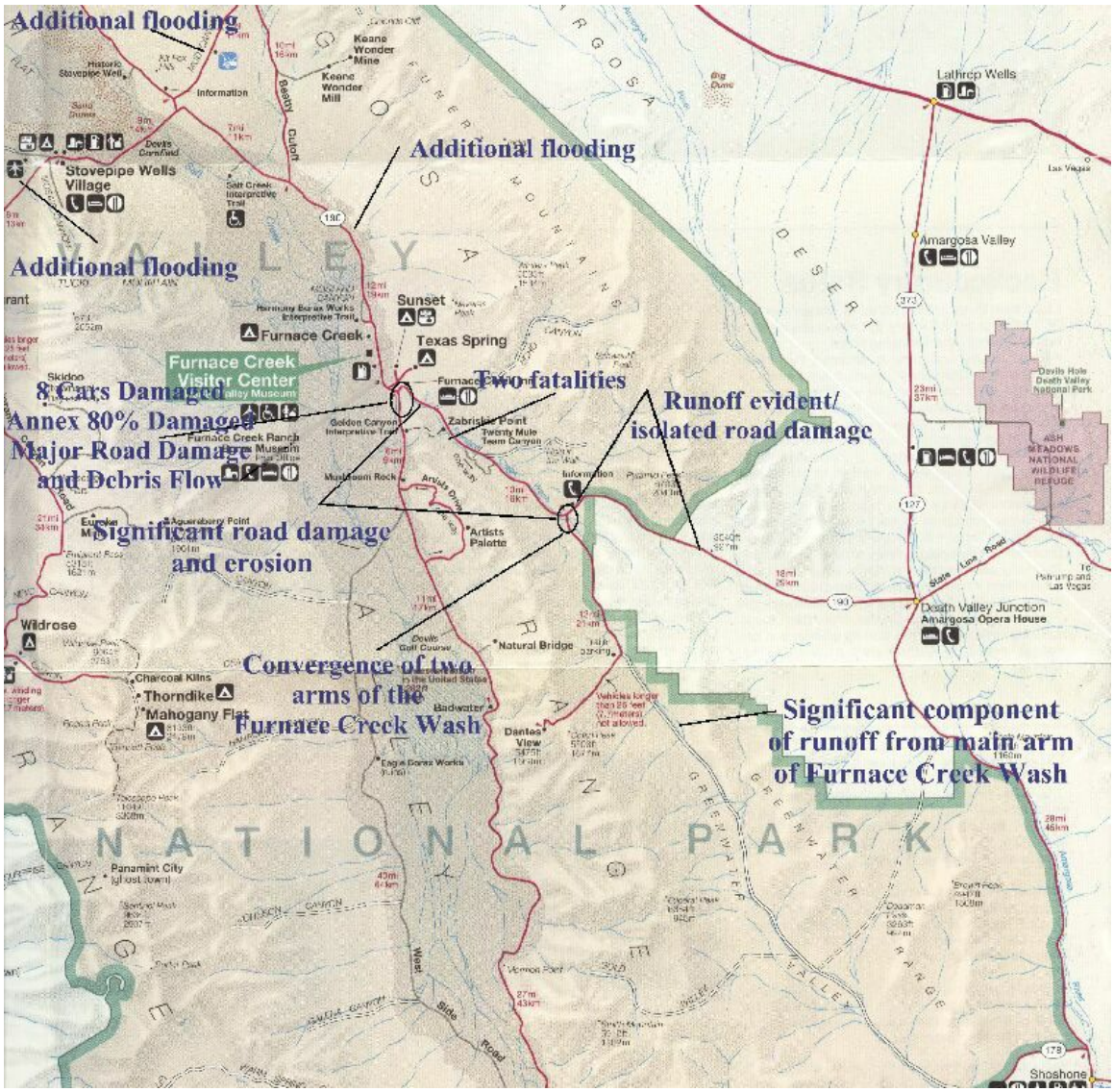
Flash Flood of August 15, 2004

The flash flood of August 15, 2004 ranks as the costliest weather event ever in Death Valley history with respect to monetary damages. Estimates by the NWS place the total damages from this event at twenty million dollars (in 2004 dollars).

High pressure in the mid and upper levels was centered over Utah while a mid and upper level trough was located off the West Coast of the United States. This set up a southerly flow across the Mojave Desert and allowed moisture to push north into the area. Radiosonde data from Desert Rock, Nevada showed precipitable water values reached well over an inch, with the 00Z release from August 15th recording a value of 1.31 inches. Water vapor imagery shows thunderstorms developed that afternoon and evening along the boundary between drier and more stable air over southern California and moist and unstable air that was in place along the border of southern California and southern Nevada. Local Analysis and Prediction System (or LAPS) data archived at the time show lifted indices reached as high as -9 degrees over Death Valley by the early evening hours, indicative of extremely unstable air.

An analysis of radar by the Las Vegas NWS office showed five separate cells tracked over the southern half of Death Valley National Park that evening in about a 90 minute period. Radar and estimates from park rangers indicate rain began around 7:00 PM with flooding starting to occur at 7:55 PM. Major flooding took place starting near 8:30 PM. The heaviest rain producer as estimated by the Las Vegas WSR-88D radar occurred in the area near Dante's View. One hour

estimates in this area were over two inches in an hour (although amounts were likely lower in reality as the WSR-88D radar has historically overestimated precipitation in the Mojave Desert). The total rainfall from this event was 0.33 inch at Furnace Creek while an automated station in the Panamint Mountains recorded 0.88 inch.

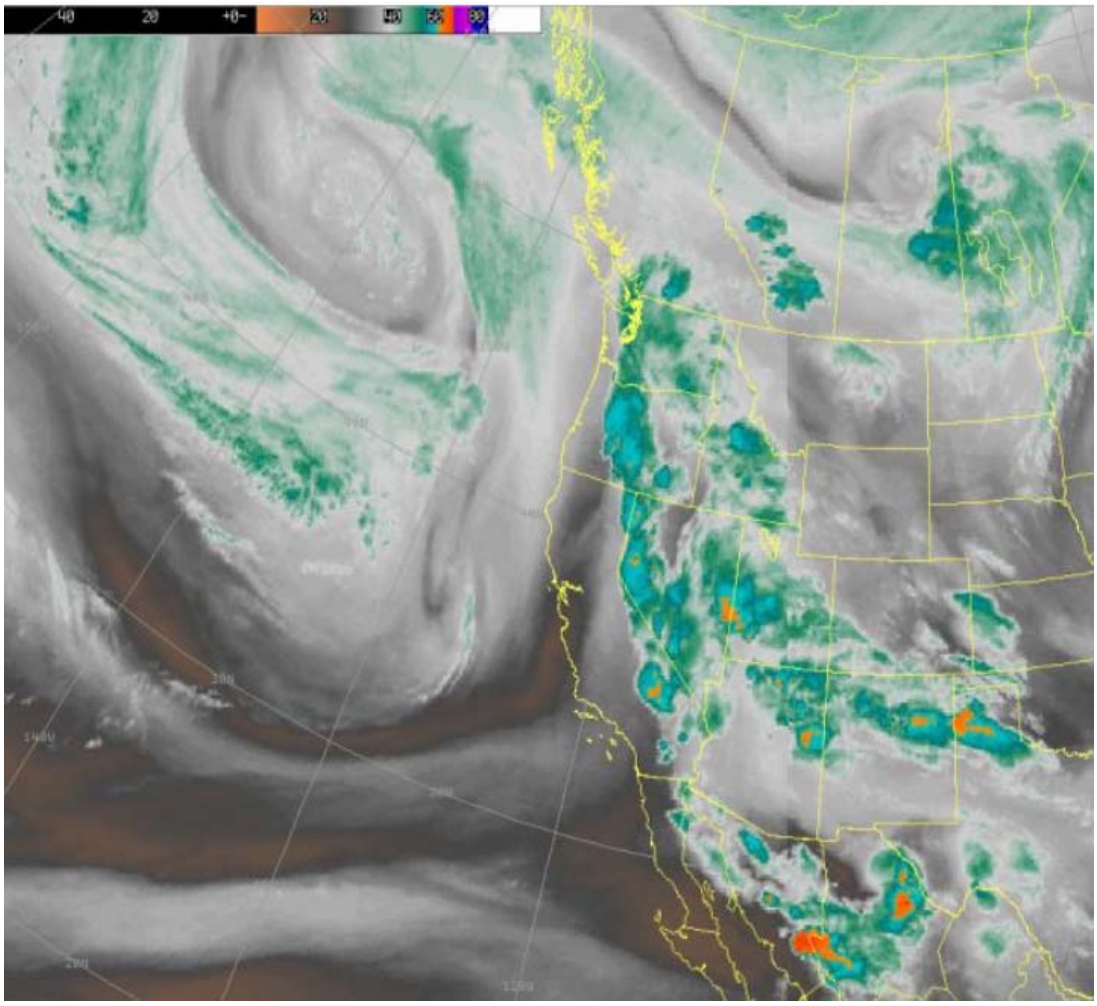


Map showing damage in Death Valley National Park from the flash flood of August 15, 2004. Map Credit: Stan Czyzyk/NWS Las Vegas.

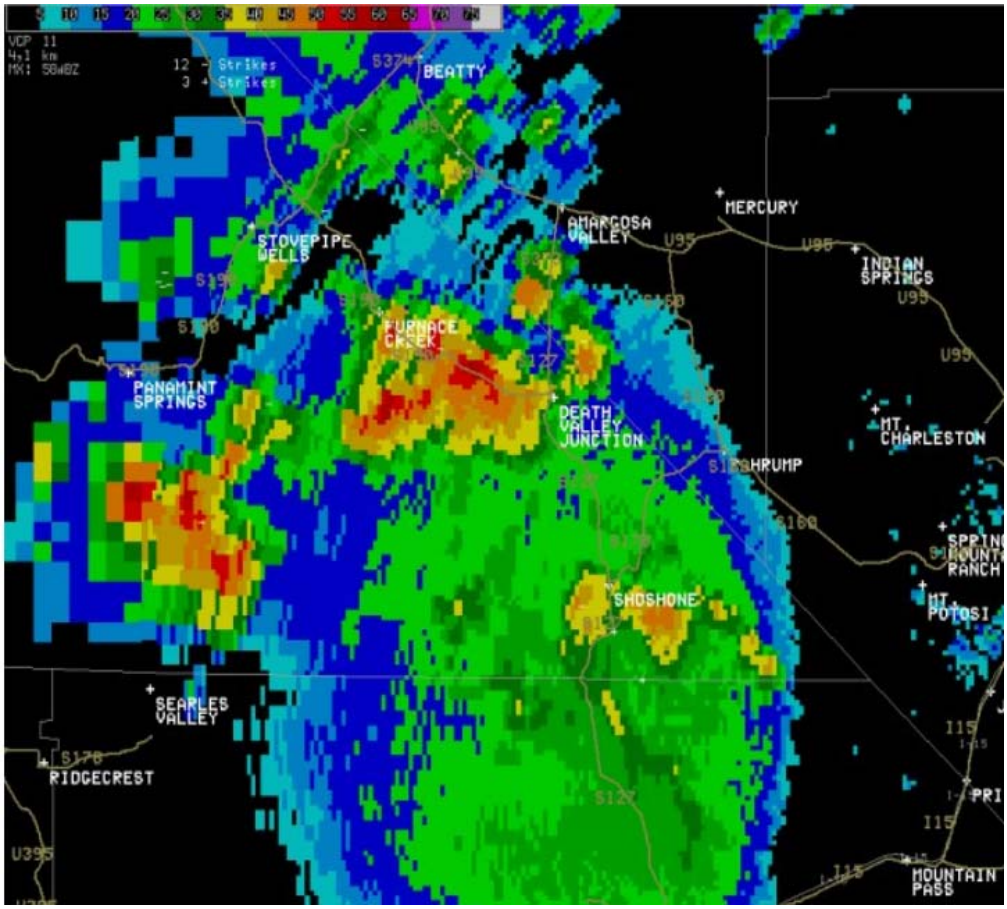
Flooding throughout the park, especially the southern portion was extensive and resulted in the parks closure for a few days. Visitors at the Furnace Creek Ranch and a nearby campground were escorted out of the park the following day because of safety concerns. Power in the park was knocked out but restored by 5:30 PM the following day. A damage survey conducted by the National Weather Service Office in Las Vegas after the event found most of the damage was along State Route 190 which borders the Furnace Creek Wash. Dante's View Road

was flooded and one vehicle was found flipped over north of the where the two arms of the Furnace Creek Wash meet. Two people died in a car along Highway 190 between the entrance of 20 Mule Team Canyon Road and Zabriskie Point that was found encased in mud and rocks. Besides complete destruction of portions of the paved road along Highway 190, damage included telephone poles knocked down and water supply pipes that were torn apart. The restrooms at Zabriskie Point had mud and debris nearly to their rooftops.

Additional damage took place near the Furnace Creek Inn. An annex that housed some of the National Park Service staff had water about eight to ten feet deep on it and eight cars were washed away and damaged severely. Several other vehicles were also damaged on back roads in the park. Flooding was also reported on Mud Canyon Road and on State Route 178 near Badwater.



Water vapor image from 0130Z on August 16, 2004.



KESX composite radar image from 0243Z on August 16, 2004 showing thunderstorms over the southern end of Death Valley National Park. This was when the most intense activity was moving through the Furnace Creek area.


Damaged vehicles at the Furnace Creek Inn. Photo Credit: Stan Czyzyk/NWS Las Vegas.

Damage at the intersection of State Routes 178 and 190. Note the extensive damage to roads and the vehicle washed away by the floodwaters. Photo Credit: Stan Czyzyk/NWS Las Vegas.

Wettest Water Year Ever – 2004 through 2005

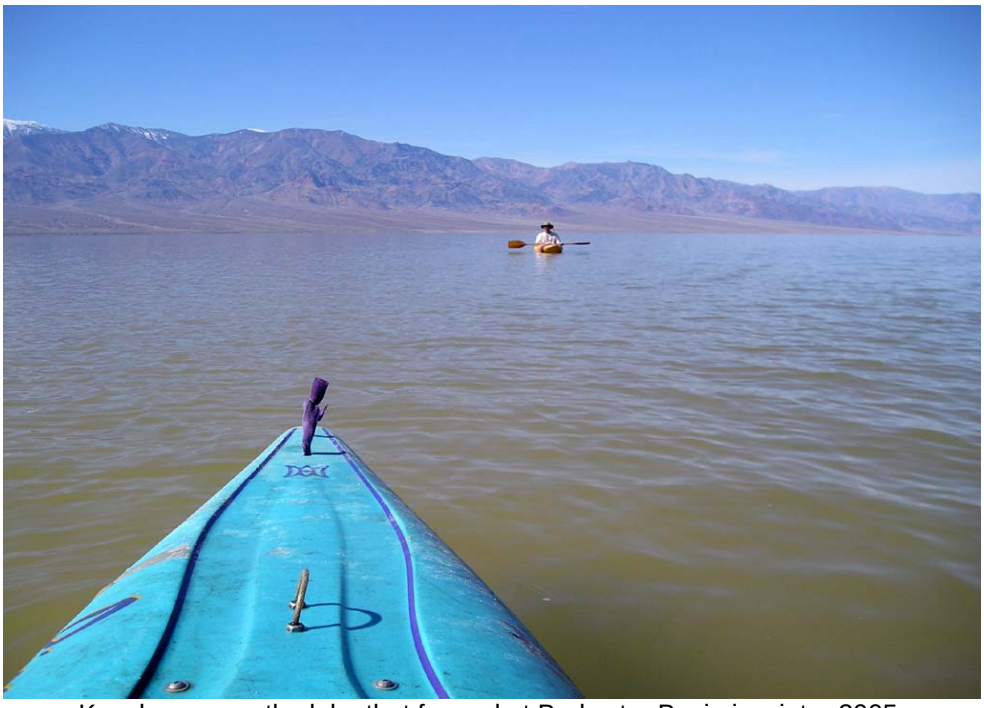
The water year in California is the period from July 1st through June 30th. From 2004 through 2005, the total precipitation during this period at Death Valley in Furnace Creek was 6.44 inches, more than any other eater year on record. A total of 5.44 inches of this fell between November 1st and April 30th during the cold season when storm systems typically arrive from west or north. The 2004-2005 cold season produced record or near record precipitation throughout much of the southwest United States. The 5.44 inches between November 1st and April 30th was the wettest such period on record in Death Valley.

The remarkable water year total in 2004-2005 was due to a high frequency of storm systems during the cold season including several that were efficient precipitation producers. The wettest events of that season were from November 7th through 9th when 0.76 inch fell, from December 27th and 30th when 1.31 inches fell, from January 3rd through 8th when 1.34 inches fell and from February 20th and 24th when 0.77 inch fell.

The event from December 27th through the 30th produced the most significant flooding when on the 29th most roads leading into Death Valley National Park were closed. Moderate flooding was reported by the National Park Service on January 3rd on Badwater Road. Highway 190 was closed on the same date in the park due to flooding.

The excessive precipitation in Death Valley resulted in some unique sights in the park. By late January 2005, enough water had collected in Badwater Basin to allow for people to kayak in the small lake that had formed. Some nicknamed the

water a “mini Lake Manly” after the lake that had once filled Death Valley some 10,000 years ago. Mini Lake Manly was described in internet reports at the time to be up to 5 miles wide, 20 miles long and 2 feet deep (http://www.canoekayak.com/canoe/deathvalley/) . Most of the water in Badwater receded by May of that year.



Kayakers roam the lake that formed at Badwater Basin in winter 2005.
Photo Credit: Alan Van Valkenburg/National Park Service.

Landsat 5 Satellite image of the lake that formed at Badwater Basin in the winter of 2005. The image above was take in February 2005. Image Credit: NASA.

Wildflowers typically bloom in the late winter and early spring in Death Valley following winters, especially those with above normal precipitation. However, the hefty precipitation totals from the winter of 2004-2005 led the flowers that spring to be billed as a “once-in-a-lifetime bloom”. Flowers started to bloom in the south end of the park as early as mid-January 2005 and peaked in mid-March 2005 after temperatures spiked into the low 90s for 5 days. The National Park Service reported over 50 varieties of wildflowers bloomed that spring. The wildflower display brought in large crowds of tourists including then-First Lady Laura Bush.

Wildflowers at Jubilee Pass from the “once in a lifetime bloom” in late winter 2005.
Photo Credit: Alan Van Valkenburg/National Park Service.

Deaths and Injuries Due To Heat In Death Valley

Heat is one of the leading causes of weather-related deaths in the United States and the leading cause of weather-related deaths in Death Valley. The earliest documented death due to heat in Death Valley took place on July 10, 1913 when the high temperature reached the all-time record high of 134 degrees. A car traveling through Death Valley broke down north of Greenland Ranch. A man in the car died and the driver of the car became seriously ill due to heat. The National Park Service provided a list of deaths and injuries due to the heat in Death Valley National Park (and previously monument) back to 1976. It should be noted that no information on heat related deaths was found by the Park Service for 1977-1981, 1989-1990, 1992, 1996 and 2007. A significant increase in deaths and injuries due to heat in Death Valley can be found since 1993, which may be due to changes in reporting methods.

Since 1976, a total of 15 people have died and 191 have been injured due to the heat in Death Valley National Park. There were 13 males that died and 2 females that have died. By age, the greatest number of deaths was to people in their 60s while injuries were highest among twenty year olds. July was the leading months for deaths with 7. Injuries also showed a significant spike in the warmer months; however, even the winter months have seen injuries due to heat. A full list of deaths and injuries due to heat in Death Valley from 1976 through 2011 can be found below.

Date	Number Dead	Description
September 2, 1984	1	1 male (age unknown) died of heat stroke
July 26, 1991	1	40 year old man died from heat stroke
June 2, 2000	1	A 69 year old male died from heat stroke
June 4, 2001	1	A 83 year old male died from heat stroke
July 18, 2001	1	A man died from heat exhaustion
June 29, 2002	1	A 38 year old male died from and a 64 year old male was injured from heat exhaustion
July 24, 2002	1	A man died from heat stroke
August 28, 2002	1	A 32 year old male died from heat stroke
July 7, 2003	1	79 year old male dead after walking near sand dunes and suffering heat stroke
October 13, 2004	1	47 year old male died from heat stroke
July 23, 2005	1	1 man died at the Sand Dunes with limited water
July 25, 2005	1	1 man died trying to reach a stranded vehicle near Saline Hot Springs
May 16, 2006	1	63 year old female died from heat stroke
May 19, 2009	1	69 year old man died after getting disoriented in the heat from combination of health and heat-related issues
July 26, 2009	1	52 year old female died after falling ill to the heat after walking around

Date	Number Injured	Description
April 24, 1976	1	19 year old male injured from heat exhaustion
May 30, 1976	1	2 year old girl injured from heat exhaustion
August 28, 1976	1	22 year old male injured from heat exhaustion
September 7, 1982	1	57 year old male injured from heat exhaustion
March 8, 1983	2	27 year old make and 24 year female injured from heat exhaustion
February 23, 1985	1	76 year old male injured from dehydration and heat exhaustion
June 27, 1985	1	27 year old male injured from heat exhaustion
June 13, 1986	1	26 year old male injured from decreased level of consciousness due to dehydration
July 19, 1986	1	32 year old female injured from decreased level of consciousness due to dehydration
February 19, 1987	1	66 year old female fainted from dehydration
August 1, 1987	1	58 year old male fainted from dehydration
May 28, 1993	1	43 year old male injured from heat exhaustion
June 25, 1993	1	33 year old male injured from heat exhaustion
June 26, 1993	1	37 year old male injured from heat exhaustion
June 28, 1993	1	22 year old male injured from heat exhaustion
July 1, 1993	1	37 year old female injured from heat exhaustion
July 7, 1993	1	17 year old female injured from heat exhaustion
July 17, 1993	1	26 year old female injured from heat exhaustion
July 19, 1993	2	14 year old female and 22 year old female injured from heat exhaustion
July 28, 1993	1	21 year old female injured from heat exhaustion
August 1, 1993	1	35 year old female injured from heat

		exhaustion
August 3, 1993	1	32 year old female injured from heat exhaustion
August 4, 1993	1	10 year old male injured from heat exhaustion
August 16, 1993	2	27 year old male and 21 year old female were injured from heat exhaustion
September 10, 1993	1	47 year old female injured from heat exhaustion
March 6, 1994	1	61 year old female injured from dehydration
March 20, 1994	1	35 year old female injured from dehydration
April 4, 1994	2	An 80 year old female and 7 year old female both were injured from dehydration
April 7, 1994	2	A 25 year old female and 24 year old female were both injured from heat exhaustion
April 8, 1994	1	A 6 year old female was injured from heat exhaustion
April 14, 1994	1	A 37 year old female was injured from dehydration
April 21, 1994	1	A 51 year old male was injured from heat exhaustion
June 24, 1994	1	11 year old female was injured from dehydration
June 25, 1994	1	A 34 year old male was injured from heat exhaustion
July 22, 1994	1	A 30 year old female was injured from heat exhaustion
July 25, 1994	1	A 20 year old female was injured from dehydration
July 26, 1994	1	A 28 year old female was injured from dehydration
July 28, 1994	1	A26 year old female was injured from heat exhaustion
February 3, 1995	1	A 43 year old male was injured from dehydration
June 12, 1995	1	A 24 year old male was injured from heat exhaustion
June 19, 1995	1	A 43 year old male was injured from heat exhaustion
July 26, 1995	1	A 25 year old male was injured from heat exhaustion

July 30, 1995	1	A 44 year old female was injured from heat exhaustion
August 7, 1995	1	A 58 year old female was injured from heat exhaustion
August 8, 1995	1	A 54 year old female was injured from heat stroke
August 15, 1995	1	A 25 year old female was injured from heat exhaustion
August 19, 1995	1	A 40 year old female was injured from dehydration
August 25, 1995	1	A 58 year old male was injured from heat cramps
September 28, 1995	1	A 15 year old female was injured from heat exhaustion
May 20, 1997	1	A 48 year old male was injured from heat exhaustion
July 16, 1997	1	A 58 year old female was injured from heat exhaustion
July 24, 1997	1	A 42 year old female was injured from heat exhaustion
August 15, 1997	1	A 43 year old female was injured from dehydration
September 6, 1997	1	A 43 year old female was injured from heat cramps
June 30, 1998	1	A 24 year old male was injured from heat exhaustion
July 10, 1998	1	A 37 year old male was injured from dehydration
July 17, 1998	1	A 40 year old female was injured from heat exhaustion
July 18, 1998	1	A 49 year old female was injured from dehydration
August 2, 1998	1	A 46 year old male was injured from heat exhaustion
August 8, 1998	1	A 50 year old female was injured from heat exhaustion
August 13, 1998	1	A 17 year old male was injured from heat exhaustion
August 17, 1998	1	A 33 year old female was injured from dehydration
August 24, 1998	1	A 42 year old female was injured from dehydration
November 11, 1998	1	A 45 year old male was injured from dehydration
March 3, 1999	1	A 67 year old male was injured from dehydration

April 8, 1999	1	A 77 year old male was injured from heat exhaustion
May 16, 1999	1	A 35 year old male was injured from dehydration
May 29, 1999	1	A 45 year old female was injured from heat cramps
June 15, 1999	1	A 63 year old female was injured from heat cramps
June 30, 1999	1	An 80 year old male was injured from heat exhaustion
August 2, 1999	1	A 47 year old female was injured from heat exhaustion
August 8, 1999	1	A 39 year old female was injured from dehydration
August 21, 1999	1	A 30 year old female was injured from dehydration
October 4, 1999	1	A 46 year old female was injured from dehydration
October 7, 1999	1	A 30 year old female was injured from dehydration
June 1, 2001	1	A 56 year old female was injured from heat exhaustion
June 19, 2001	1	A 54 year old male was injured from dehydration
July 1, 2001	1	A 41 year old female was injured from heat exhaustion
July 9, 2001	1	A 27 year old male was injured from heat exhaustion
July 11, 2001	1	A 22 year old female was injured from heat exhaustion
July 14, 2001	1	A 47 year old female was injured from dehydration
July 21, 2001	1	A 43 year old female was injured from heat exhaustion
July 22, 2001	1	A 58 year old male was injured from heat exhaustion
July 24, 2001	1	A 26 year old female was injured from heat exhaustion
July 25, 2001	1	A 50 year old male was injured from heat exhaustion
August 2, 2001	1	A 15 year old female was injured from dehydration
August 4, 2001	1	A 21 year old female was injured from heat exhaustion
August 5, 2001	1	A 80 year old male was injured from heat exhaustion

August 17, 2001	2	A 52 year old male and 52 year old female were injured from heat exhaustion
November 13, 2001	1	A 46 year old male was injured from dehydration
February 17, 2002	1	A 36 year old female was injured from heat exhaustion
February 18, 2002	1	A 57 year old male was injured from heat exhaustion
February 26, 2002	1	A 51 year old female was injured from heat exhaustion
April 3, 2002	1	A 12 year old male was injured from heat exhaustion
May 7, 2002	1	A 65 year old male was injured from heat exhaustion
June 8, 2002	1	A 42 year old female was injured from heat stroke
June 14, 2002	1	A 50 year old female was injured from heat exhaustion
June 28, 2002	1	A 52 year old female was injured from heat exhaustion
June 29, 2002	1	A 64 year old male was injured from heat exhaustion
July 4, 2002	1	A 42 year old female was injured from heat exhaustion
July 5, 2002	1	A 35 year old male was injured from heat exhaustion
July 7, 2002	1	A 25 year old female was injured from heat exhaustion
July 12, 2002	1	A 23 year old male was injured from heat exhaustion
July 22, 2002	1	A 17 year old female was injured from dehydration
July 23, 2002	1	A 39 year old female was injured from heat exhaustion
July 25, 2002	1	A 55 year old female was injured from heat exhaustion
July 28, 2002	1	A 46 year old male was injured from heat exhaustion
October 9, 2002	1	A 79 year old female was injured from dehydration
March 22, 2003	1	A 48 year old male injured from heat exhaustion
April 9, 2003	1	44 year old female injured from heat exhaustion
May 24, 2003	2	36 year old male and 64 year old male

		injured from heat stroke
June 17, 2003	1	27 year old female injured from dehydration
July 6, 2003	1	26 year old female injured from dehydration
July 7, 2003	1	16 year old female injured from dehydration
July 11, 2003	1	18 year old male injured from heat exhaustion
March 30, 2004	1	64 year old female injured from dehydration
July 18, 2004	1	17 year old female injured from dehydration
July 6, 2005	1	42 year old male injured from dehydration
March 6, 2008	1	78 year old male injured from heat exhaustion
April 12, 2008	1	25 year old male injured from dehydration
April 13, 2008	1	62 year old male injured from heat exhaustion
May 22, 2008	1	64 year old female injured from heat exhaustion
June 30, 2008	1	58 year old male injured from dehydration
July 3, 2008	1	36 year old male injured from dehydration
July 15, 2008	1	31 year old female injured from heat exhaustion
July 16, 2008	1	16 year old male injured from heat stroke
July 18, 2008	1	40 year old male injured from heat exhaustion
July 24, 2008	2	25 year old female injured from dehydration and 62 year old female injured from heat exhaustion
August 12, 2008	2	27 year old and 29 year old females injured from heat exhaustion
August 15, 2008	1	52 year old male dead from heat exhaustion
September 25, 2008	1	58 year old male dead from dehydration
January 10, 2009	1	48 year old female injured from dehydration
April 19, 2009	1	66 year old male injured from heat exhaustion

May 3, 2009	1	61 year old female injured from heat exhaustion
May 4, 2009	1	52 year old female injured from heat exhaustion
May 11, 2009	1	72 year old female injured from heat exhaustion
June 27, 2009	1	23 year old male injured from heat stroke
July 13, 2009	1	63 year old female injured from heat exhaustion
July 23, 2009	1	27 year old male injured from heat exhaustion
July 26, 2009	3	3 injured (33 year old female, 40 year old male and 70 year old male) after falling ill to the heat after walking around
July 29, 2009	1	26 year old male died from heat exhaustion
July 30, 2009	1	68 year old male died from dehydration
August 12, 2009	1	18 year old male injured from heat exhaustion
May 8, 2010	1	18 year old male injured from heat exhaustion
May 27, 2010	1	18 year old male injured from dehydration
June 21, 2010	1	37 year old female injured from heat exhaustion
June 26, 2010	1	50 year old female injured from heat exhaustion
June 28, 2010	1	48 year old female injured from heat exhaustion
June 30, 2010	1	17 year old female injured from heat exhaustion
July 12, 2010	1	26 year old male injured from dehydration
July 14, 2010	1	19 year old male injured from heat exhaustion
July 18, 2010	1	42 year old female injured from dehydration
July 20, 2010	1	23 year old female injured from dehydration
July 30, 2010	2	32 year old female and 41 year old male injured from heat exhaustion
August 9, 2010	2	23 year old male and 29 year old male both were injured from heat

		exhaustion
August 17, 2010	1	63 year old male injured from dehydration
August 27, 2010	3	15 year old male, 41 year old male and a 54 year old male were all injured from dehydration
September 3, 2010	1	44 year old female injured from dehydration
September 25, 2010	1	28 year old male injured from heat cramps
June 11, 2011	1	54 year old male injured from heat exhaustion
July 9, 2011	3	33 year old male and 34 year old male injured from heat exhaustion and a 14 year old female injured from dehydration
July 14, 2011	1	15 year old female injured from heat exhaustion
July 18, 2011	6	2 19 year old males, a 22 year old female, a 36 year old female and a 56 year old male were all injured from dehydration and a 40 year old female was injured from dehydration
July 19, 2011	1	30 year old female injured from heat exhaustion
July 29, 2011	1	17 year old male injured from heat exhaustion
August 14, 2011	1	35 year old female injured from heat exhaustion
August 17, 2011	1	16 year old male injured from dehydration
August 30, 2011	1	41 year old female injured from dehydration
September 8, 2011	1	70 year old male injured from heat exhaustion

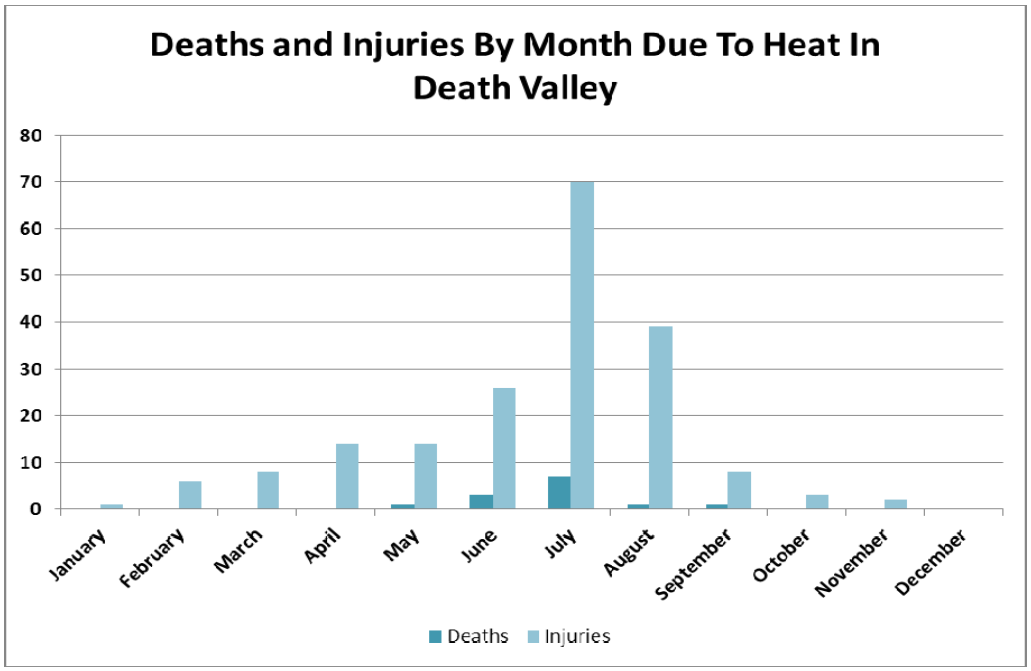


Chart showing the number of deaths and injuries by month due to heat in Death Valley National Park from 1976 through 2011 based on data from the National Park Service and Storm Data.

El Niño and La Niña Episodes and Their Impact On The Weather In Death Valley

Introduction

El Niño and La Niña episodes have been shown in numerous studies to have large scale and regional impacts on weather patterns and seasonal climate averages. This study presents the observed values of temperature and precipitation values to see what, if any, correlations there are due to El Niño and La Niña episodes on a more local scale.

Methodology

Oceanic Niño Index (ONI) values, defined as sea surface temperature anomalies in the Niño 3.4 region (located at 5ºN to 5ºS and 120º to170ºW) of the eastern and central equatorial Pacific Ocean based on centered 30-year base periods updated every 5 years, were obtained from the Climate Prediction Center (CPC) for each year since 1950 to the present. These values were analyzed for departures of 0.5°C warmer than normal for at least five consecutive overlapping three month seasons which indicated an El Niño episode and departures of 0.5°C cooler than normal for at least five consecutive overlapping three month seasons which inferred a La Niña episode for the purposes of this report. It should be noted that this criteria is also what CPC uses to define El Niño and La Niña episodes. Episodes were then defined from a July-June period for simplistic purposes for the compilation of this report.

The next step was to rate El Niño and La Niña episodes into three categories – strong, moderate and weak based on ONI values. At least three consecutive three month periods with a given value were used to rate episodes. The thresholds for rating ONI values were obtained from correspondence with CPC in a previous study on El Niño and La Niña episodes done by the author.

For El Niño episodes events were defined as:
Weak – ONI values from +0.5°C to +0.9°C
Moderate – ONI values from +1.0°C to +1.8°C
High – ONI values greater than +1.8°C

For La Niña episodes events were defined as:
Weak – ONI values from -0.5°C to -0.9°C
Moderate – ONI values from -1.0°C to -1.8°C
High – ONI values greater than -1.8°C

Precipitation and Snowfall

The table below lists precipitation totals for the July through June period for years with an El Niño episode as well as for the November through April time frame in order to look at precipitation totals not influenced by the monsoon. In order to compute normals, totals for the 1981-2010 period were ranked from greatest to least and then split into thirds. Those values were then used to denote above normal (upper third), near normal (middle third) and below normal (bottom third). The cut-offs for these thresholds were then used as the thirty year normal for defining above normal, near normal and below normal precipitation. These cut-offs were then applied to any season that met El Niño criteria and the totals for a given season were then rated above normal (shown in green for precipitation and blue for snow), near normal (shown in black) and below normal (shown in brown for precipitation and purple for snow).

Episode	Strength of Episode	Death Valley July-June Precipitation Total	Death Valley July-June Seasonal Snowfall Total	Death Valley November-April Precipitation Total
1951-1952	Moderate	2.57”	0.0”	2.51”
1952-1953	Weak	1.07”	0.0”	0.94”
1953-1954	Weak	1.42”	0.0”	1.42”
1957-1958	Moderate	M	M	M
1963-1964	Moderate	1.51”	0.0”	0.37”
1965-1966	Moderate	2.03”	0.0”	1.55”
1968-1969	Moderate	2.66”	0.0”	2.42”
1969-1970	Moderate	2.23”	0.0”	1.73”
1972-1973	Strong	3.64”	0.0”	2.49”
1976-1977	Weak	2.74”	0.0”	0.24”
1977-1978	Weak	5.09”	0.0”	3.61”
1982-1983	Strong	3.37”	0.0”	2.85”
1986-1987	Moderate	1.96”	0.0”	1.66”
1987-1988	Moderate	5.78”	0.0”	5.41”
1991-1992	Moderate	2.78”	0.0”	2.56”
1994-1995	Moderate	3.42”*	0.0”	3.07”*
1997-1998	Strong	6.09”	0.0”	3.94”
2002-2003	Moderate	2.13”	0.0”	2.01”
2004-2005	Weak	6.44”	0.0”	5.44”
2006-2007	Weak	1.20”	0.0”	0.37”
2009-2010	Moderate	3.31”	0.0”	3.27”
30 Year Normal	N/A	2.36”	0.0”	1.80”
Average for Moderate and Strong Events	N/A	3.11”	0.0”	2.56”

* Missing data for December 1994.

Overall there appears to be a good correlation between El Niño episodes and near to above normal precipitation during both the water season and the cold season in Death Valley especially during strong events. The five wettest 24 hour precipitation totals in Death Valley ever recorded since 1949 were all during El Niño episodes, with four of these five occurring in the cold season and the other occurring from Tropical Storm Nora. Since 1911, there have only been 45 months in Death Valley that have recorded an inch or more of precipitation during the cold season from November through April. Since 1949, there are only 30 months that have reached this mark, with 20 months or 67 percent of them occurring during El Niño episodes. No snow has ever been recorded in Death Valley during an El Niño episode.

The table below lists precipitation totals for the July through June period for years with a La Niña episode as well as for the November through April time frame in order to look at precipitation totals not influenced by the monsoon. In order to compute normals, totals for the 1981-2010 period were ranked from greatest to least and then split into thirds. Those values were then used to denote above normal (upper third), near normal (middle third) and below normal (bottom third). The cut-offs for these thresholds were then used as the thirty year normal for defining above normal, near normal and below normal precipitation. These cut-offs were then applied to any season that met La Niña criteria and the totals for a given season were then rated above normal (shown in green for precipitation and blue for snow), near normal (shown in black) and below normal (shown in brown for precipitation and purple for snow).

Episode	Strength of Episode	Death Valley July-June Precipitation Total	Death Valley July-June Seasonal Snowfall Total	Death Valley November-April Precipitation Total
1949-1950	Moderate	0.19”	0.0”	0.05”
1950-1951	Weak	1.27”	0.0”	0.05”
1954-1955	Weak	1.97”	0.0”	1.14”
1955-1956	Moderate	0.41”	0.0”	0.41”
1956-1957	Weak	1.77”	0.0”	0.82”
1964-1965	Weak	2.36”	0.0”	1.52”
1970-1971	Moderate	1.19”	0.0”	1.04”
1971-1972	Weak	1.32”	0.0”	0.72”
1973-1974	Strong	1.90”	Trace	1.72”
1974-1975	Weak	2.61”	0.0”	1.11”
1975-1976	Moderate	3.44”	0.0”	2.57”
1983-1984	Weak	1.88”	0.0”	0.55”
1984-1985	Moderate	1.95”*	0.0”	M
1988-1989	Strong	0.68”	0.0”	0.05”
1995-1996	Weak	0.71”	0.0”	0.55”
1998-1999	Moderate	1.24”	0.0”	0.60”
1999-2000	Moderate	1.23”	0.0”	0.72”
2000-2001	Weak	2.70”	0.0”	2.43”
2005-2006	Weak	1.97”	0.0”	0.59”
2007-2008	Moderate	1.58”	0.0”	0.93”
2010-2011	Moderate	1.19”	0.0”	0.81”
30 Year Normal	N/A	2.36”	0.0”	1.80”
Average for Moderate and Strong Events	N/A	1.36”	0.0”	0.89”

* Missing data for December 1984.

Overall there is a good correlation between La Niña episodes and near to below normal precipitation during both the water season and especially during the cold season at Death Valley. Moderate to strong events tended to have the best correlation to below normal precipitation. There were several interesting trends to note though. The La Niña episode of 1955-1956 had precipitation in just two months – November and April with the only measurable precipitation falling during April. The strong 1988-1989 La Niña episode had measurable precipitation in August, September, November and December and a trace in January but nothing in any month from February through June. The 1973-1974 La Niña, while strong, did result in near normal precipitation for the cold season. This was also the only La Niña episode where snow fell at Death Valley and one only of 4 winter seasons where snow has ever fallen here. Traces of snow fell on two days that month – the 4th and 5th. There has been a noted trend in the Southwest U.S. to see snow in La Niña winters in lower elevations.

Temperature

The table below lists the average temperature for meteorological winter (December through February) for years with an El Niño episode. In order to compute normals, average temperatures for the 1981-2010 period were ranked from greatest to least and then split into thirds. Those values were then used to denote above normal (upper third), near normal (middle third) and below normal (bottom third). The cut-offs for these thresholds were then used as the thirty year normal for defining above normal, near normal and below normal temperatures. These cut-offs were then applied to any season that met El Niño criteria and the totals for a given season were then rated above normal (shown in orange), near normal (shown in black) and below normal (shown in blue).

Episode	Strength of Episode	Death Valley Average Temperature
1951-1952	Moderate	53.6
1952-1953	Weak	55.6
1953-1954	Weak	56.0
1957-1958	Moderate	M
1963-1964	Moderate	53.3
1965-1966	Moderate	50.8
1968-1969	Moderate	52.8
1969-1970	Moderate	55.3
1972-1973	Strong	52.8
1976-1977	Weak	54.6
1977-1978	Weak	57.1
1982-1983	Strong	53.9
1986-1987	Moderate	55.0
1987-1988	Moderate	53.1
1991-1992	Moderate	54.5
1994-1995	Moderate	55.9
1997-1998	Strong	51.9
2002-2003	Moderate	56.9
2004-2005	Weak	56.9
2006-2007	Weak	54.8
2009-2010	Moderate	53.5
30 Year Normal	N/A	55.0
Average for Moderate and Strong Events	N/A	53.8

Overall temperatures in Death Valley during meteorological winter average near to below normal during El Niño episodes, especially during strong ones.

The table below lists the average temperature for meteorological winter (December through February) for years with a La Niña episode. In order to compute normals, average temperatures for the 1981-2010 period were ranked from greatest to least and then split into thirds. Those values were then used to denote above normal (upper third), near normal (middle third) and below normal (bottom third). The cut-offs for these thresholds were then used as the thirty year normal for defining above normal, near normal and below normal temperatures. These cut-offs were then applied to any season that met La Niña criteria and the totals for a given season were then rated above normal (shown in orange), near normal (shown in black) and below normal (shown in blue).

Episode	Strength of Episode	Death Valley Average Temperature
1949-1950	Moderate	52.4
1950-1951	Weak	55.4
1954-1955	Weak	51.4
1955-1956	Moderate	54.3
1956-1957	Weak	54.5
1964-1965	Weak	57.0
1970-1971	Moderate	54.9
1971-1972	Weak	53.4
1973-1974	Strong	54.3
1974-1975	Weak	54.4
1975-1976	Moderate	57.0
1983-1984	Weak	55.7
1984-1985	Moderate	52.1
1988-1989	Strong	53.6
1995-1996	Weak	57.1
1998-1999	Moderate	55.7
1999-2000	Moderate	56.5
2000-2001	Weak	52.1
2005-2006	Weak	56.2
2007-2008	Moderate	54.4
2010-2011	Moderate	54.5
30 Year Normal	N/A	55.0
Average for Moderate and Strong Events	N/A	54.5

Overall the only correlation between La Niña episodes and temperatures during meteorological winter in Death Valley was during strong events when they averaged near normal. During weak to moderate events no correlation can be made.

Low Temperatures of 32 Degrees or Below

The table below lists the number of days with minimum temperatures of 32°F or below (above average years shown in blue) with an El Niño episode (July-June period).

Episode	Strength of Episode	Number of Days With Minimum Temperatures of 32 °F or Below At Death Valley
1951-1952	Moderate	13
1952-1953	Weak	4
1953-1954	Weak	12
1957-1958	Moderate	M
1963-1964	Moderate	15
1965-1966	Moderate	16
1968-1969	Moderate	18
1969-1970	Moderate	7
1972-1973	Strong	19
1976-1977	Weak	18
1977-1978	Weak	0
1982-1983	Strong	15
1986-1987	Moderate	1
1987-1988	Moderate	10
1991-1992	Moderate	6
1994-1995	Moderate	18
1997-1998	Strong	15
2002-2003	Moderate	1
2004-2005	Weak	3
2006-2007	Weak	11
2009-2010	Moderate	11
30 Year Normal	N/A	7.2
Average for Moderate and Strong Events	N/A	11.8

Overall there appears to be a good correlation for an above normal of days with a minimum temperature of 32 degrees or below during El Niños at Death Valley, especially during strong events.

The table below lists the number of days with minimum temperatures of 32°F or below (above average years shown in blue) with a La Niña episode (July-June period).

Episode	Strength of Episode	Number of Days With Minimum Temperatures of 32 °F or Below At Death Valley
1949-1950	Moderate	40
1950-1951	Weak	6
1954-1955	Weak	11
1955-1956	Moderate	9
1956-1957	Weak	12
1964-1965	Weak	11
1970-1971	Moderate	5
1971-1972	Weak	18
1973-1974	Strong	3
1974-1975	Weak	4
1975-1976	Moderate	6
1983-1984	Weak	2
1984-1985	Moderate	16
1988-1989	Strong	21
1995-1996	Weak	6
1998-1999	Moderate	12
1999-2000	Moderate	15
2000-2001	Weak	17
2005-2006	Weak	5
2007-2008	Moderate	6
2010-2011	Moderate	6
30 Year Normal	N/A	7.2
Average for Moderate and Strong Events	N/A	12.6

.
Overall no conclusion can be made about the number of low temperatures that reached 32 degrees or below in Death Valley during December when a La Niña occurs.

References

Court, A., 1949: How hot is Death Valley? Geographic Review, 39, 214–220.

Czyzyk, Stanley. “Death Valley Floods of August 15, 2004” National Weather Service Las Vegas. 2004. 24 June 2012. <http://www.wrh.noaa.gov/vef/projects/DeathValleyFloodSurvey.php>

Czyzyk, Stanley. The Impact of Evaporational Cooling on the Las Vegas Valley Snowfall of 30 December 2003. NWS Western Region TA-Lite No. 04-47

Harrington, M. W., 1892: Notes on the climate and meteorology of Death Valley, California, Weather Bureau Bull. 1, U.S. Weather Bureau, 50 pp.

Hunt, C. B. and Mabey, D. R., 1966, General geology of Death Valley, California; stratigraphy and structure, IN General geology of Death Valley, California: U.S. Geological Survey Professional Paper, 494-A, A1-A165.

“Kayaking Death Valley”. Canoe and Kayak Magazine. 9 April 2005. 24 June 2011. <http://www.canoekayak.com/canoe/deathvalley/>

NASA Earth Observatory. 17 March 2009. NASA. 24 June 2012. http://earthobservatory.nasa.gov/IOTD/view.php?id=37536

NASA Earth Observatory. 12 April 2012. NASA. 6 July 2012. http://earthobservatory.nasa.gov/IOTD/view.php?id=77627

Roof, Steven, Charlie Callagan, 2003: The Climate of Death Valley, California. Bulletin of the American Meteorological Society, 84, 1725–1739.

Stachelski, Chris. An Analysis of the December 17-18, 2008 Snow Event In The Las Vegas Valley. NWS Western Region TA-Lite No. 10-01

Top 50 PW values. Matthew Bunkers. 17 January 2012. National Weather Service Rapid City. 24 June 2012. <http://www.crh.noaa.gov/images/unr/soo/pw/pw_Top50.pdf>

Acknowledgements

Thanks for this report are extended to numerous individuals. First, I would like to thank Mike Staudenmaier, former Meteorologist in Charge at the NWS in Las Vegas, and Stan Czyzyk, Science and Operations Officer here at the NWS in Las Vegas for encouragement in pursuing this project and reviewing it for publication. Mike and Stan along with Ryan Metzger, intern at the NWS Las Vegas, all provided valuable feedback used to enhance the quality of this report. Stan also deserves thanks for providing most of the material from the August 15, 2004 flash flood. I also would like to thank Donald Maker, Cooperative Program Manager and Operational Program Leader at the NWS in Las Vegas, for his work in maintaining the cooperative weather station at Death Valley and willingness to work with me on climate record related issues with this station and numerous others. Additional thanks are extended to Charlie Callagan, of the National Park Service at Death Valley National Park, for sending me numerous weather records from copies at Death Valley to help improve the quality of the National Weather Service's datasets as well as in sharing his knowledge on the climate of Death Valley with me and overseeing the weather station here for many years. I also want to thank all of the National Park Service staff and previous cooperative observers who collected each individual weather report over the last 100 years which are the basis for compiling this report and the NWS and Weather Bureau staff through the years who also helped collect this data at the Las Vegas, Oxnard, Los Angeles and San Francisco offices among others. The National Climatic Data Center staff, particularly Bryant Korzeniewski, in Asheville, North Carolina also deserves to be thanked for getting me needed data and working with me to make corrections to existing data in the national datasets for Death Valley.