



**NATIONAL
WEATHER
SERVICE**

NWS Partners and Users Heat Webinar






April 20, 2023

NWS Public Weather Services Program





Webinar Logistics

- 
- 
- 
- 
- 
- This webinar is being **recorded** and will be publicly posted along with the Presentation PDF after the webinar. *By attending this webinar, you consent to the recording of your likeness including voice and/or webcam images.*
 - <https://www.weather.gov/wrn/calendar>
 - All lines will remain muted until the open discussion at the end.
 - Please use the **Question Box** or the **Hand-Raise Option** to ask questions.

Opening Remarks



Mike Coyne

Acting Chief Operations Officer
NOAA National Weather Service

Today's Speakers



Greg Carbin

WPC Chief of Forecast
Operations
NWS, NOAA



Evan Oswald

Research Meteorologist
ERT/CPC, NWS, NOAA



Kim McMahon

Public Weather Services
Program Manager
NWS, NOAA

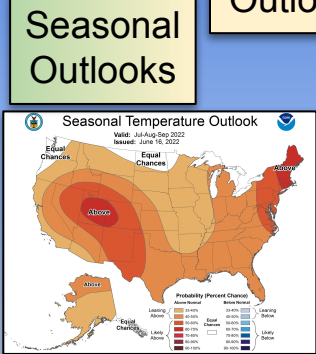


Stephen Baxter

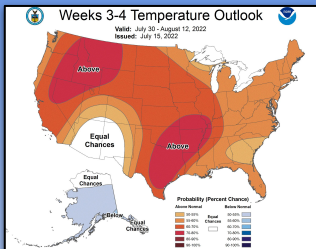
Climate Services Program
Manager
NWS, NOAA

National Weather Service

Impact-Based Decision Support Services and public messaging



Monthly Outlooks



Weeks 3-4 Outlooks

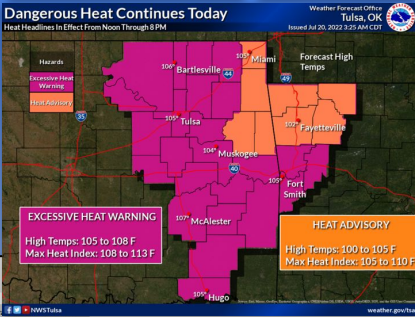
Week 2 Outlooks

Day 1-7 Forecasts

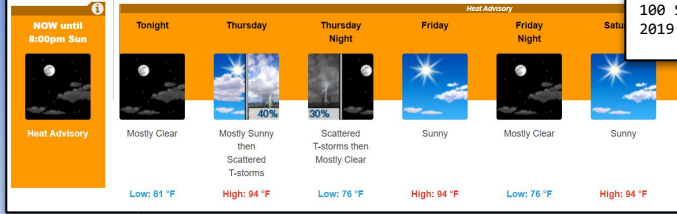
Watch, Warning, Advisory

Monitor, Update, Report

Monitor, Update, Report: Validated Observations & After Action



Extended Forecast for Central Park NY



...RECORD HIGH TEMPERATURE SET AT ALBUQUERQUE NM...
A RECORD HIGH TEMPERATURE OF 102 WAS SET AT ALBUQUERQUE NM TODAY.
THIS BREAKS THE OLD RECORD OF 100 SET IN 2009, 2010 AND 2019.

Planning

Preparedness

Response

Recovery



CPC = Climate Prediction Center

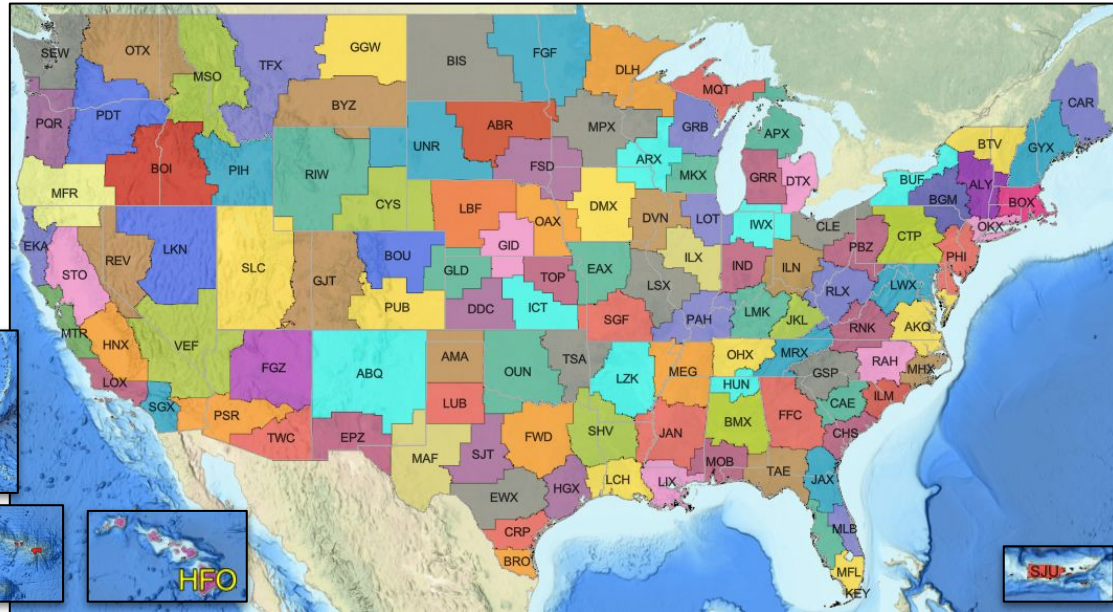
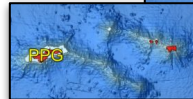
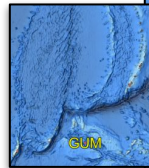
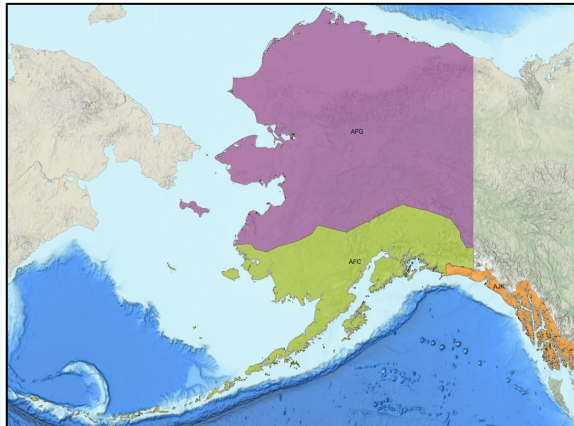
Mission: CPC delivers real-time products and information that predict and describe climate variations on timescales from weeks to years thereby promoting effective management of climate risk and a climate-resilient society.

WPC = Weather Prediction Center

Mission: To synthesize the nation's daily weather story and champion the operational prediction of rain storms, winter storms, and extreme temperature events for the protection of life and property.

WFO = local Weather Forecast Office

122 local offices across the country providing local forecasts, impact-based decision support, watch, warning, and advisories for the protection of life and property.

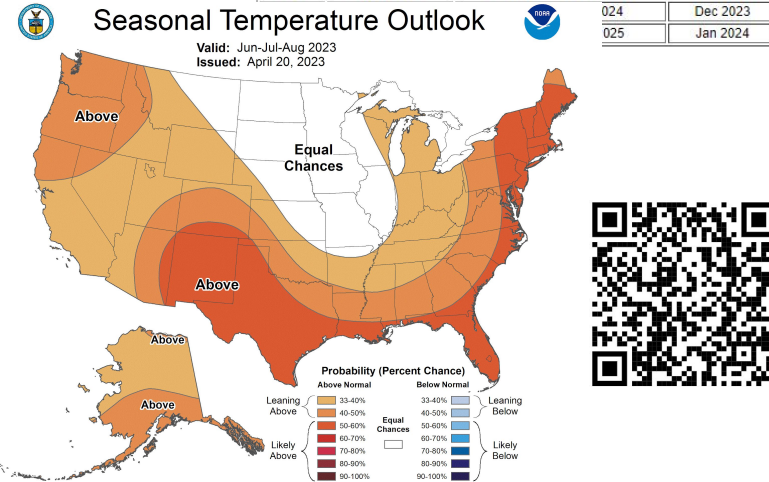
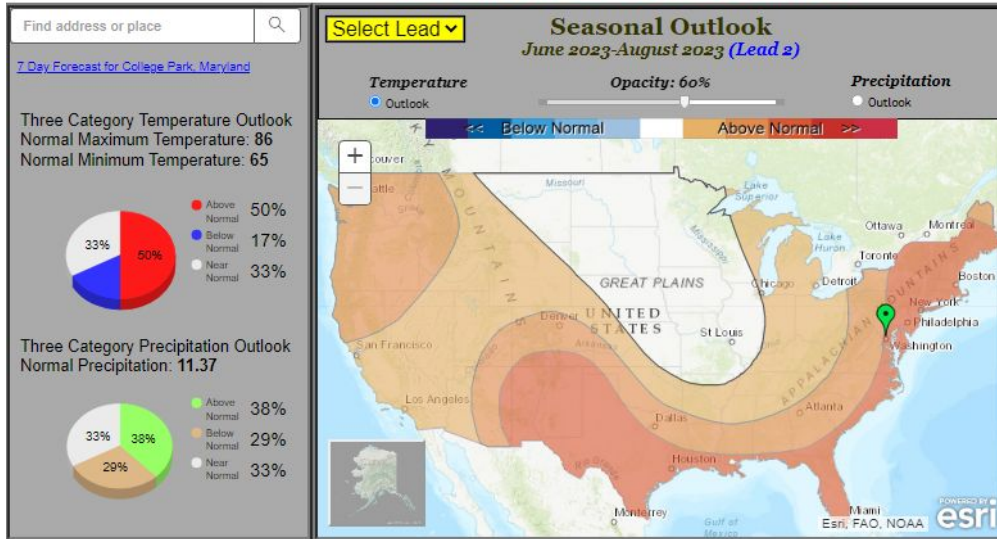


Seasonal Outlook

https://www.cpc.ncep.noaa.gov/products/predictions/long_range/
https://www.cpc.ncep.noaa.gov/products/predictions/long_range/interactive/index.php

Fcst #	Release Date	Inclusive Seasons	Fcst Month
1/2023	15 Dec 2022	JFM 2023 - JFM 2024	Jan 2023
2	19 Jan 2023	FMA 2023 - FMA 2024	Feb 2023
3	16 Feb 2023	MAM 2023 - MAM 2024	Mar 2023
4	16 Mar 2023	AMJ 2023 - AMJ 2024	Apr 2023
5	20 Apr 2023	MJJ 2023 - MJJ 2024	May 2023
6	18 May 2023	JJA 2023 - JJA 2024	Jun 2023
7	15 Jun 2023	JAS 2023 - JAS 2024	Jul 2023
8	20 Jul 2023	ASO 2023 - ASO 2024	Aug 2023
9	17 Aug 2023	SON 2023 - SON 2024	Sep 2023
10	21 Sep 2023	OND 2023 - OND 2024	Oct 2023
11	19 Oct 2023	NDJ 2023 - NDJ 2024	Nov 2023
			024 Dec 2023
			025 Jan 2024

INTERACTIVE DISPLAY - UPDATED: 20 APR 2023



- Outlooks released every 3rd Thursday of the month (top right table) for the next 13 three-month seasons
- Forecasts available in interactive GIS tool (left figure) or static graphics (right figure)
- Forecasts can only **loosely** be interpreted as increased/decreased likelihood of hot days relative to normal

These forecasts show the probability of seasonal average temperatures being above, near, or below normal!



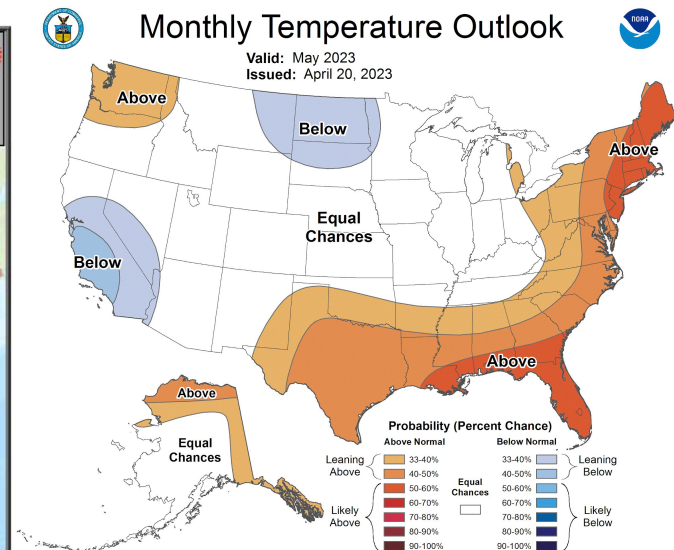
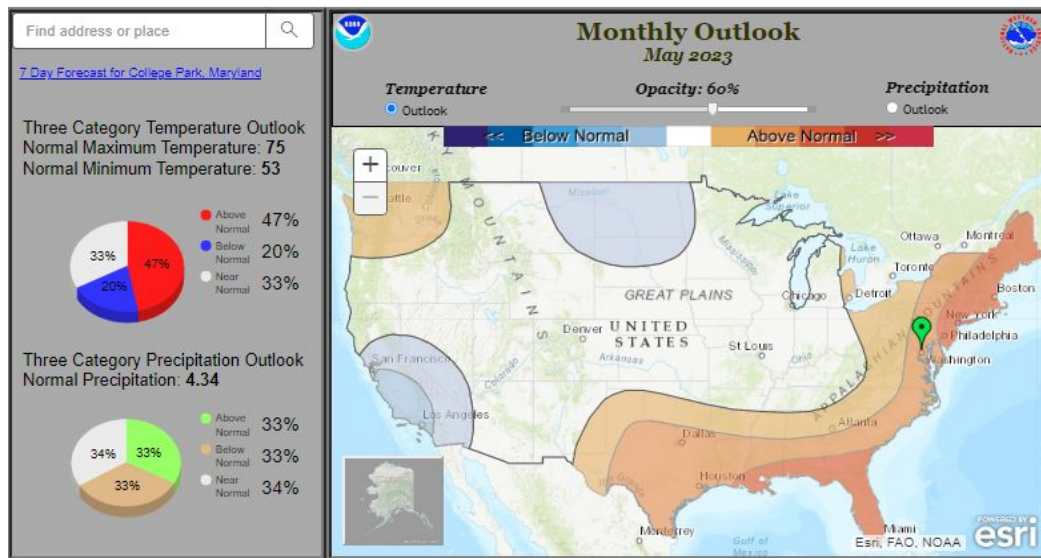
Monthly Outlook

<https://www.cpc.ncep.noaa.gov/products/predictions/30day/>

https://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead14/interactive/index.php



INTERACTIVE DISPLAY - UPDATED: 20 APR 2023



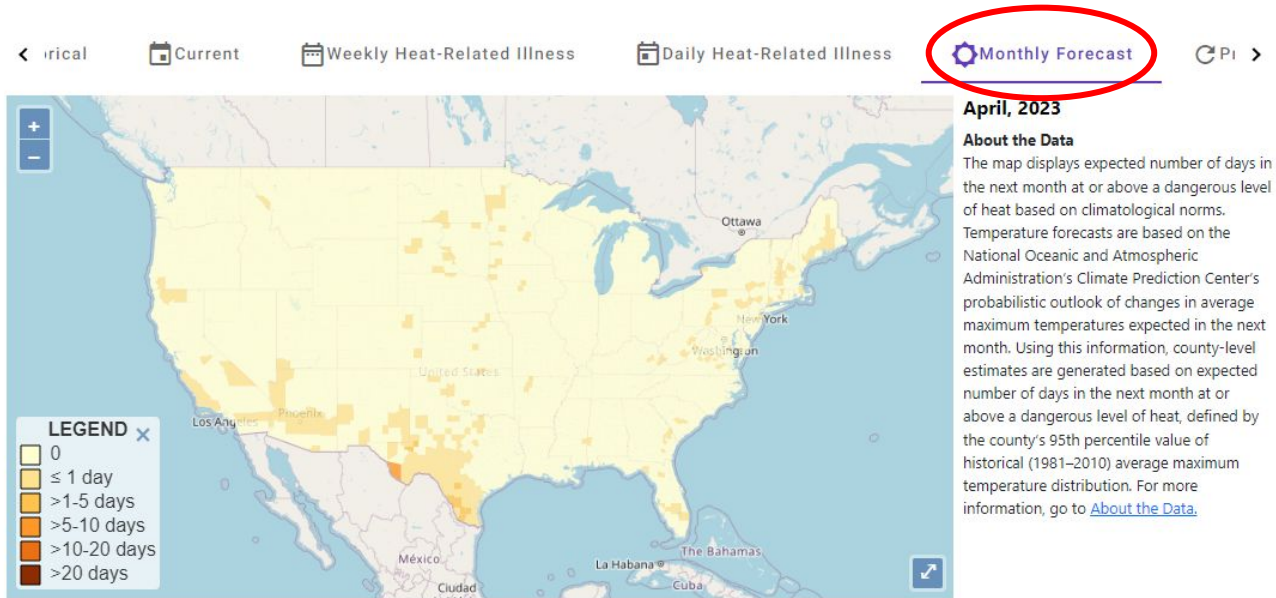
- Outlooks for next month are released **twice** a month (third Thursday and last day)
- Forecasts via interactive GIS tool (left) or static graphics (right)
- These can only **loosely** be interpreted as increased/decreased likelihood of hot days relative to normal

These forecasts show the probability of monthly average temperatures being above, near, or below normal!



CDC Heat and Health Tracker

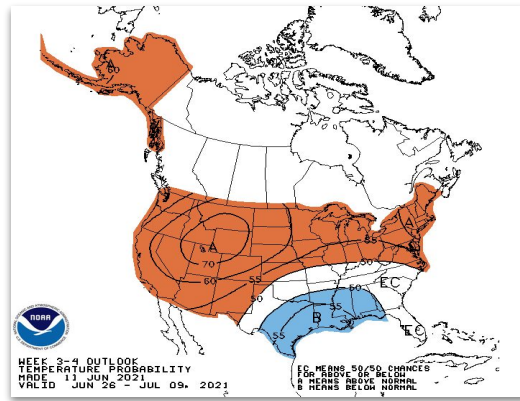
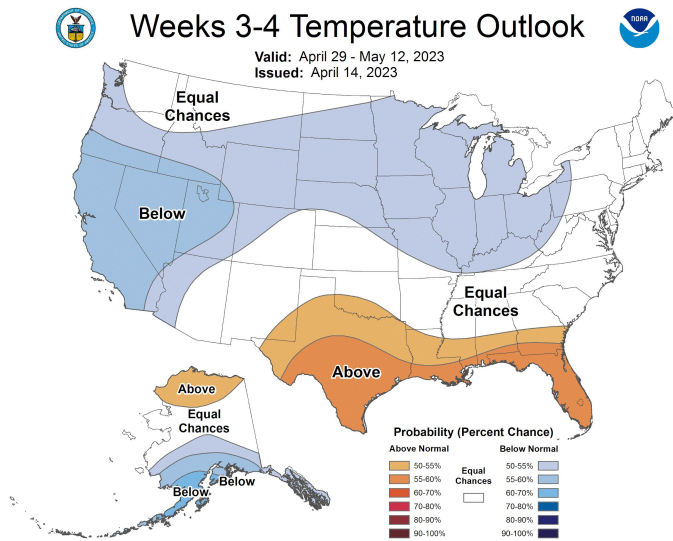
- Monthly Outlook of dangerous heat days (defined as county's 95% percentile value)
- Uses CPC Monthly Temperature Outlook
- Updates twice per month (third Thursday, and last day) with an outlook for the following month
- Available at <https://ephtracking.cdc.gov/Applications/heatTracker/>



Weeks 3-4 Outlook

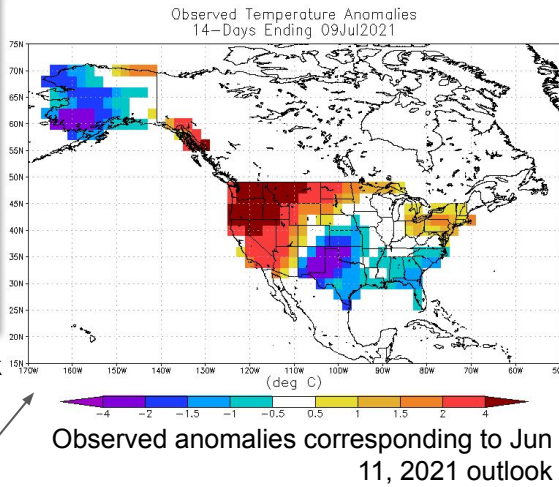


Front page: "Week 3-4 Outlooks"; <https://www.cpc.ncep.noaa.gov/products/predictions/WK34/>



Jun 11, 2021 Weeks 3-4 temperature outlook

2021 Heatwave of Pacific NW



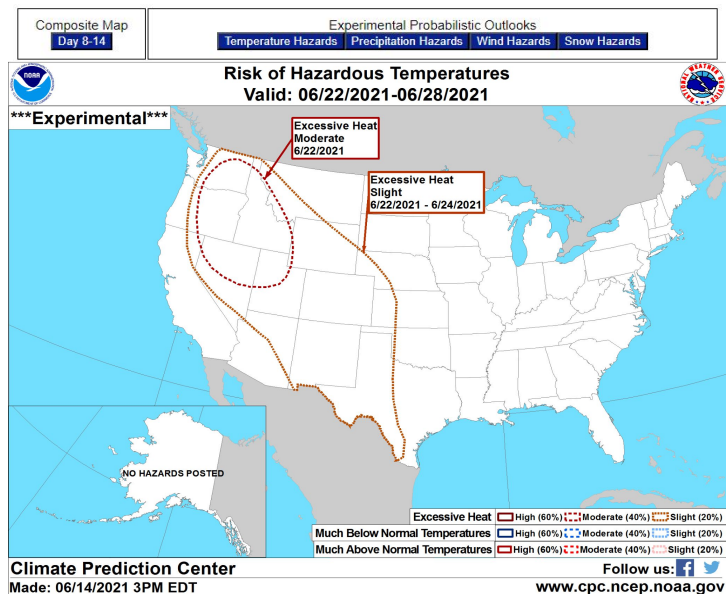
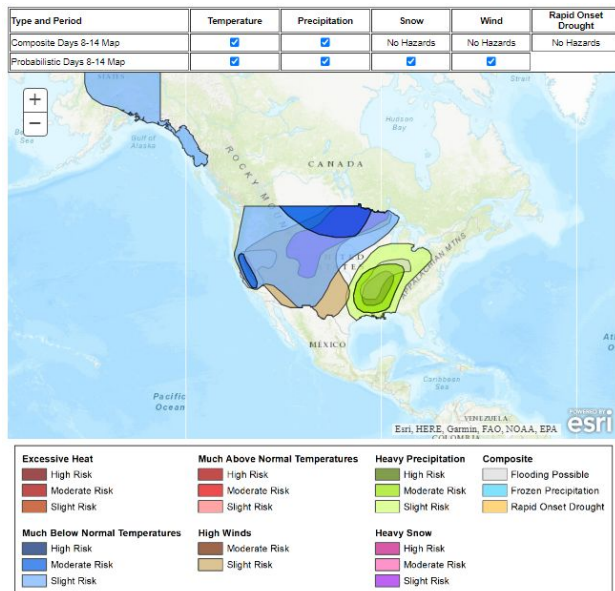
Observed anomalies corresponding to Jun 11, 2021 outlook

- Forecasts are issued weekly (Friday at 3PM) as static graphics
- The maps can **more confidently** be interpreted as increased/decreased likelihood of hot days relative to normal

These forecasts show the probability of Weeks 3-4 average temperatures being above or below normal!

Week 2 US Hazards outlook

Front page: “8-14 Day U.S. Hazards Outlook”; <https://www.cpc.ncep.noaa.gov/products/predictions/threats/threats.php>



Download Day 8-14 KML
Temperature
Precipitation
Snow
Wind
Rapid Onset Drought
Probabilistic Temperature
Probabilistic Excessive Heat
Probabilistic Precipitation
Probabilistic Snow
Probabilistic Wind
Hazards Forecast Archives
Model Guidance Tools
Probabilistic Extremes Tool

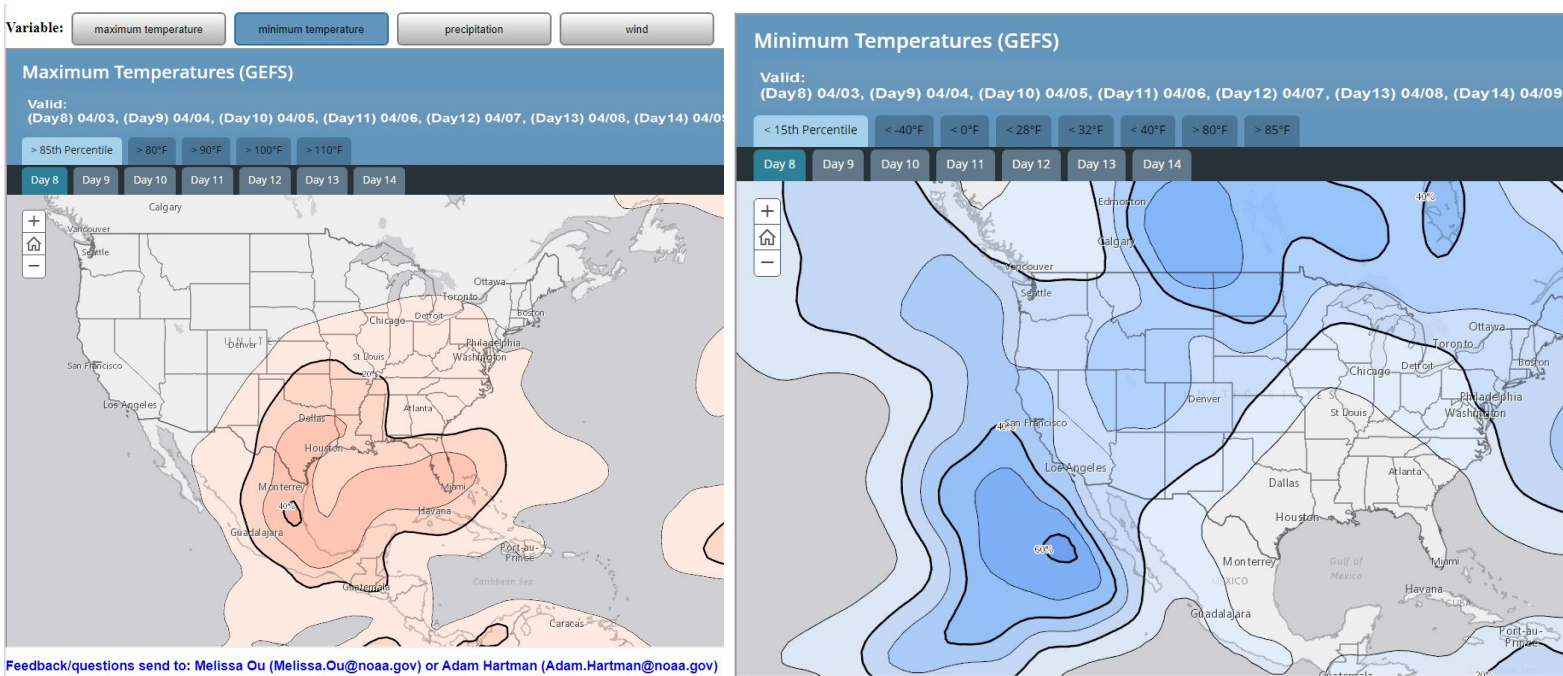
- Issued weekdays (M-F) at 3 PM in both interactive GIS interface (left) and as static graphics (middle)
- The temperature related hazards are ‘Excessive Heat’ and ‘Much Above Normal Temperatures’
- Probabilities in three levels: high, moderate, slight
- The associated forecast discussion provides additional information on context and impacts

These forecasts show the probability of extreme temperatures in Week 2!



Week-2 Probabilistic Extremes tool

<https://www.cpc.ncep.noaa.gov/products/predictions/threats/extremesTool.php>





This is an interactive tool based on post-processed ensemble model output (GEFS). Probabilities are available by target date, maximum vs minimum temperatures and various thresholds. Thresholds both relative and absolute in nature.

These forecasts show the probability of individual days with extreme temperatures in Week-2!



Climate Key Messages

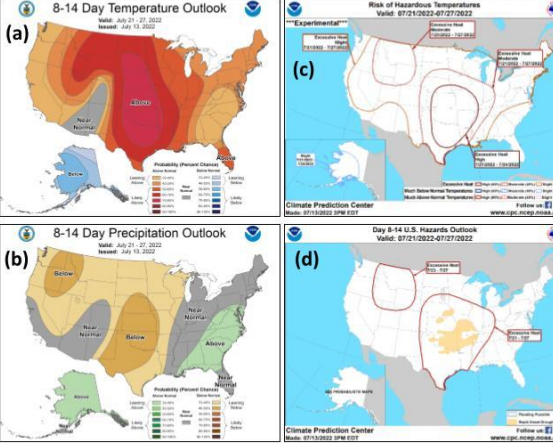
Key Messages are provided on the CPC Home Page under “Climate News” (when active)



Extreme Heat to Continue to Impact the Central U.S. Next Week *Drought to Rapidly Develop in Some Areas*

Key Messages

- ✓ Upper-level high pressure is forecast to expand over the central U.S. during week-2 resulting in hot and humid conditions coinciding with the hottest time of year climatologically (a).
- ✓ Temperatures are favored to range from the mid-90s to the mid-100s with heat index values ranging from 100 – 110 degrees.
- ✓ Greatest odds for the highest temperatures and impacts are for the central and southern Great Plains and Mississippi Valley (c).
- ✓ **Timing:** July 22 – July 28, but may persist through the remainder of July (into Week-3 time period).
- ✓ The excessive heat combined with current antecedent conditions and little rainfall forecast (b) is likely to lead to rapid development of drought conditions in the Central and Southern Plains and the Middle and Lower Mississippi Valley (d).
- ✓ Impacts to human health may be widespread and substantial agricultural impacts on crops and livestock are likely.

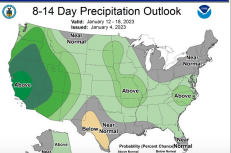
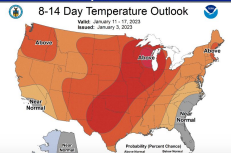


Climate News

- **Hazardous Winds, Snow, and Rain Forecast to Continue over the West Coast, Possibly Exacerbating Flooding Risk**
- **La Niña is expected to continue into the winter, with equal chances of La Niña and ENSO-neutral during January-March 2023. In February-April 2023, there is a 71% chance of ENSO-neutral (08 Dec 2022)**
- **NOAA Issues Winter Outlook (20 Oct 2022)**
- **47th Climate Diagnostics and Prediction Workshop Announcement (15 Apr 2022)**

Click on product title to go to product page. Move cursor over product parameter name to display the graphic -- click to enlarge. Links to these same products are also available below.

6-10 Day Outlook (Interactive)		One Month Outlook (Interactive)	
Temperature	Precipitation	Temperature	Precipitation
8-14 Day Outlook (Interactive)		Times March Outlook (Interactive)	
Temperature	Precipitation	Temperature	Precipitation
Week 3-4 Outlooks		Composite 8-14 Day U.S. Hazards Outlook	
Temperature	Exp. Precipitation	Probability	Temp. Precip. Snow Wind
Monitor Monthly Outlook Seasonal Outlook		Global Highs Hazards Outlook Weeks 2 and 3	



- New product for **high confidence and high impact events**
- Provides shareable graphics, talking points and concise details surrounding event
- Similar to Key Messages that NHC and WPC issue for tropical storms and winter storms, respectively

Key Messages - Future Evolution

- CPC and WPC are working together to define procedures for issuing **joint CPC/WPC key messages** for impactful extreme heat events that span the Week-1 and Week-2 interface
- This will ensure that our public, **impact-based** messaging is **event driven**, and that the NWS is providing our users with a **unified, actionable** message
- We plan to seek public comment on the current iteration of our Key Messages product; **stay tuned for this opportunity to provide your feedback!**

WPC Temp Forecasts & Resources



WEATHER PREDICTION CENTER

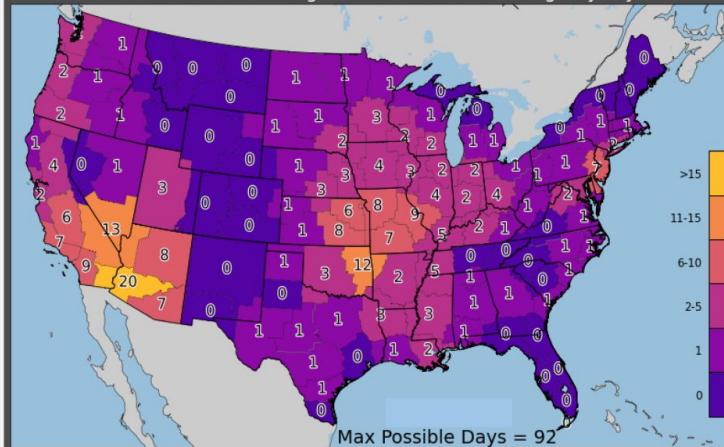
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



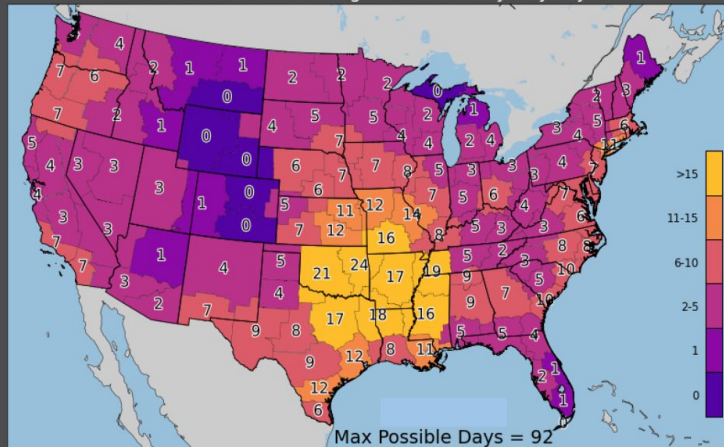
Heat is a Big Deal!

Expect Increasing Demand for NWS Forecasts and Services Related to Hot Weather

Summer 2010-2020 Average Excessive Heat Warning Days by CWA



Summer 2010-2020 Average Heat Advisory Days by CWA



How does NWS consistently deliver expertise to inform the public about the hazards associated with heat?
What can WPC do to better position the NWS in this important endeavour?



WPC Temp Forecasts & Resources

https://www.wpc.ncep.noaa.gov/heat_index.shtml

WEATHER PREDICTION CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NCEP: AWC · CPC · EMC · NCO · NHC · OPC · SPC · SWPC · WPC

HOME **FORECASTS & ANALYSES** ARCHIVES VERIFICATION INTERNATIONAL DEVELOPMENT ABOUT SEARCH

Daily Weather Map
Day 1/2-2 1/2
Day 3-7 CONUS
Day 3-7 Hazards
Day 4-8 Alaska
Day 4-8 Alaska
Excessive Rainfall
Flood Outlook
GIS Products

Heat Index
Mesoscale Precip Discussion
National Forecast Charts
National High & Low
PQPF
QPF
Storm Summaries
Surface Analysis
Tropical Products
Winter Weather
WPC Discussions

Valid Mon Mar 27, 2023

WPC Top Stories:
Mesoscale Precipitation Discussion #0140 is currently in effect
Understanding WPC Excessive Rainfall Risk Categories

Tweets from @NWSWPC

National Weather Service
Weather Prediction Center

Site Map News Organization

DOC NOAA NWS NCEP Centers: AWC CPC EMC NCO NHC OPC SPC SWPC WPC

Local forecast by "City, St" or Zip Code
City, St Go

Search WPC

HEAT INDEX FORECASTS (Days 3-7)

About These Products

- DAILY MAXIMUM Heat Index Forecasts
- DAILY MEAN Heat Index Forecasts
- DAILY MINIMUM Heat Index Forecasts
- GIS Formatted Heat Index Forecasts
- Preliminary (early) Deterministic Heat Index Forecasts
- Verification of Previous Summer Heat Index Forecasts

HEAT: A Major Killer

NOAA NWS Heat Index Chart

NCEP Quarterly Newsletter

WPC Home
Analyses and Forecasts
National Forecast Charts
National High & Low
WPC Discussions
Surface Analysis
Days 1/2-2 1/2 CONUS
Days 3-7 CONUS
Days 4-8 Alaska
QPF
PQPF
Excessive Rainfall
Mesoscale Precip Discussion
Flood Outlook
Winter Weather
Storm Summaries
Heat Index



WPC Temp Forecasts & Resources

National Weather Service
Weather Prediction Center

Site Map News Organization

DOC NOAA NWS NCEP Centers: AWC CPC EMC NCO NHC OPC SPC SWPC WPC

Local forecast by "City, St" or Zip Code
City, St Go

Search WPC
Go

HEAT INDEX FORECASTS
(Days 3-7)

About These Products

DAILY MAXIMUM Heat Index Forecasts

DAILY MEAN Heat Index Forecasts

DAILY MINIMUM Heat Index Forecasts

GIS Formatted Heat Index Forecasts

Preliminary (early) Deterministic Heat Index Forecasts

Verification of Previous Summer Heat Index Forecasts

HEAT: A Major Killer

NOAA NWS Heat Index Chart

WPC Home
Analyses and Forecasts
National Forecast Charts
National High & Low
WPC Discussions
Surface Analysis
Days 1/2-2 1/2 CONUS
Days 3-7 CONUS
Days 4-8 Alaska
QPF
PQPF
Excessive Rainfall
Mesoscale Precip Discussion
Flood Outlook
Winter Weather
Storm Summaries
Heat Index

MAXIMUM HEAT INDEX FORECASTS

[BACK TO THE MEAN, MINIMUM, MAXIMUM CHOICE PAGE](#)

[About These Products](#)

[Text of MAXIMUM Heat Index Probability Forecasts for Eastern US](#)

[Text of MAXIMUM Heat Index Probability Forecasts for Western US](#)

CLICK ON MAPS FOR MAXIMUM HEAT INDEX AND PROBABILITY FORECASTS FROM MON MAR 27 2023

MAXIMUM HEAT INDEX	95F THRESHOLD	100F THRESHOLD	105F THRESHOLD	110F THRESHOLD	115F THRESHOLD
THU MAR 30	THU MAR 30	THU MAR 30	THU MAR 30	THU MAR 30	THU MAR 30
FRI MAR 31	FRI MAR 31	FRI MAR 31	FRI MAR 31	FRI MAR 31	FRI MAR 31
SAT APR 01	SAT APR 01	SAT APR 01	SAT APR 01	SAT APR 01	SAT APR 01
SUN APR 02	SUN APR 02	SUN APR 02	SUN APR 02	SUN APR 02	SUN APR 02
MON APR 03	MON APR 03	MON APR 03	MON APR 03	MON APR 03	MON APR 03



WPC Temp Forecasts & Resources

MAXIMUM HEAT INDEX FORECASTS

[BACK TO THE MEAN, MINIMUM, MAXIMUM CHOICE PAGE](#)

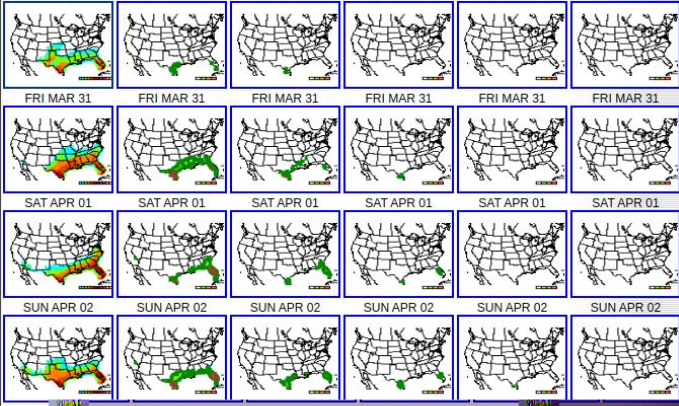
[About These Products](#)

[Text of MAXIMUM Heat Index Probability Forecasts for Eastern US](#)

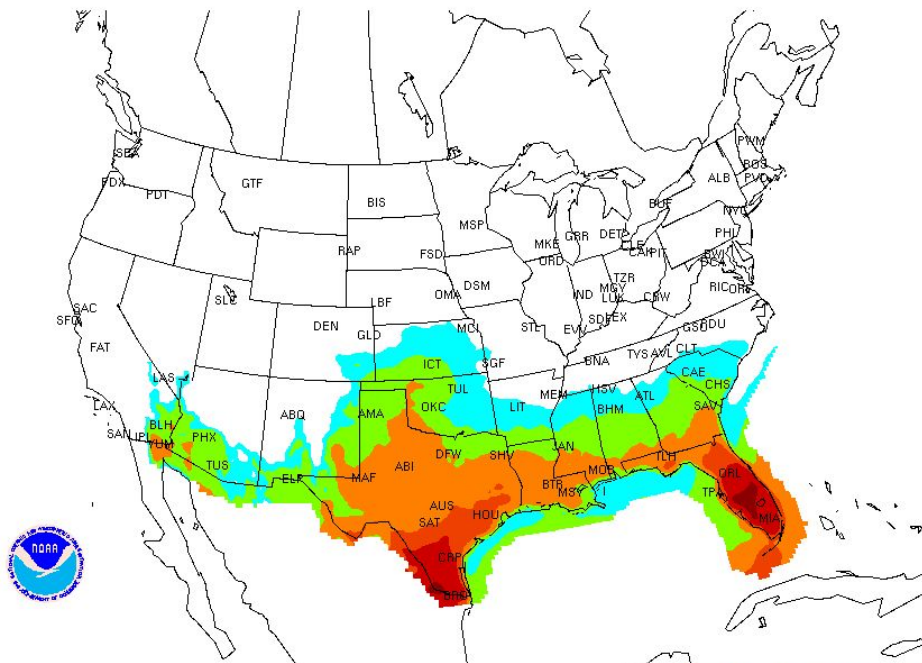
[Text of MAXIMUM Heat Index Probability Forecasts for Western US](#)

CLICK ON MAPS FOR MAXIMUM HEAT INDEX AND PROBABILITY FORECASTS FROM MON MAR 27 2023

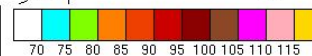
MAXIMUM HEAT INDEX THU MAR 30 95F THRESHOLD THU MAR 30 100F THRESHOLD THU MAR 30 105F THRESHOLD THU MAR 30 110F THRESHOLD THU MAR 30 115F THRESHOLD



CLICK ON A CITY CODE FOR A TABLE OF FORECAST VALUES



DAY 6 FORECAST DAILY MAXIMUM HEAT INDEX (DEG F)
ISSUED: 1536 UTC MON MAR 27 2023
VALID: SUN APR 02 2023
DOC/NOAA/NWS/NCEP
WEATHER PREDICTION CENTER



WPC Temp Forecasts & Resources

MAXIMUM HEAT INDEX FORECASTS

[BACK TO THE MEAN, MINIMUM, MAXIMUM CHOICE PAGE](#)

[About These Products](#)

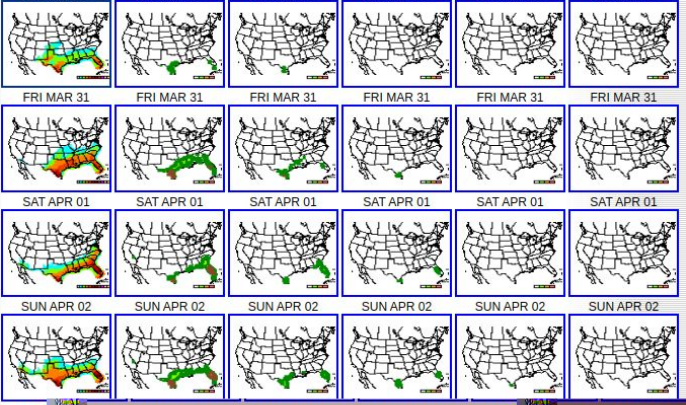
[Text of MAXIMUM Heat Index Probability Forecasts for Eastern US](#)

[Text of MAXIMUM Heat Index Probability Forecasts for Western US](#)

CLICK ON MAPS FOR MAXIMUM HEAT INDEX AND PROBABILITY FORECASTS FROM MON MAR 27 2023

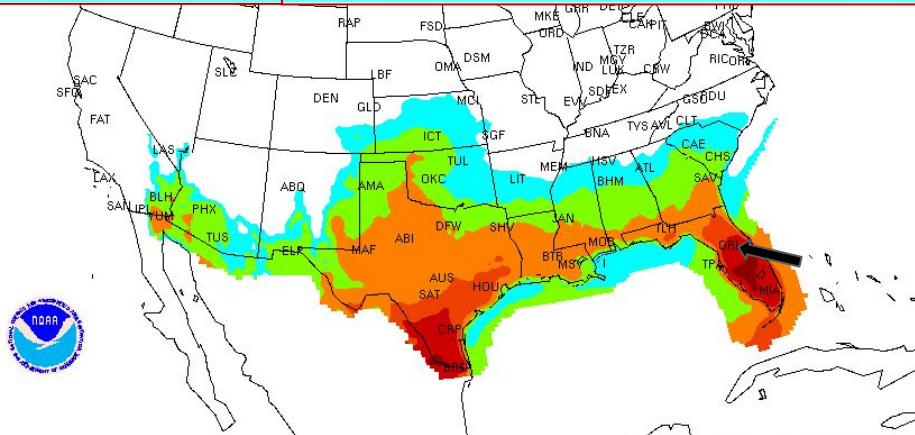
MAXIMUM HEAT INDEX THU MAR 30 THU MAR 30 THU MAR 30 THU MAR 30 THU MAR 30 THU MAR 30

95F THRESHOLD 100F THRESHOLD 105F THRESHOLD 110F THRESHOLD 115F THRE

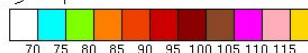


CLICK ON A CITY CODE FOR A TABLE OF FORECAST VALUES

MAXIMUM HEAT INDEX PROBABILITY OF MAXIMUM HEAT INDEX EXCEEDING:	THU MAR 30	FRI MAR 31	SAT APR 01	SUN APR 02	MON APR 03
115 F	83 F	87 F	94 F	93 F	93 F
110 F	0 %	0 %	0 %	1 %	1 %
105 F	0 %	0 %	1 %	3 %	3 %
100 F	0 %	0 %	6 %	8 %	10 %
95 F	0 %	1 %	20 %	20 %	22 %
90 F	0 %	5 %	44 %	39 %	41 %
85 F	1 %	26 %	71 %	61 %	62 %
80 F	24 %	63 %	90 %	80 %	80 %
	79 %	90 %	97 %	92 %	91 %



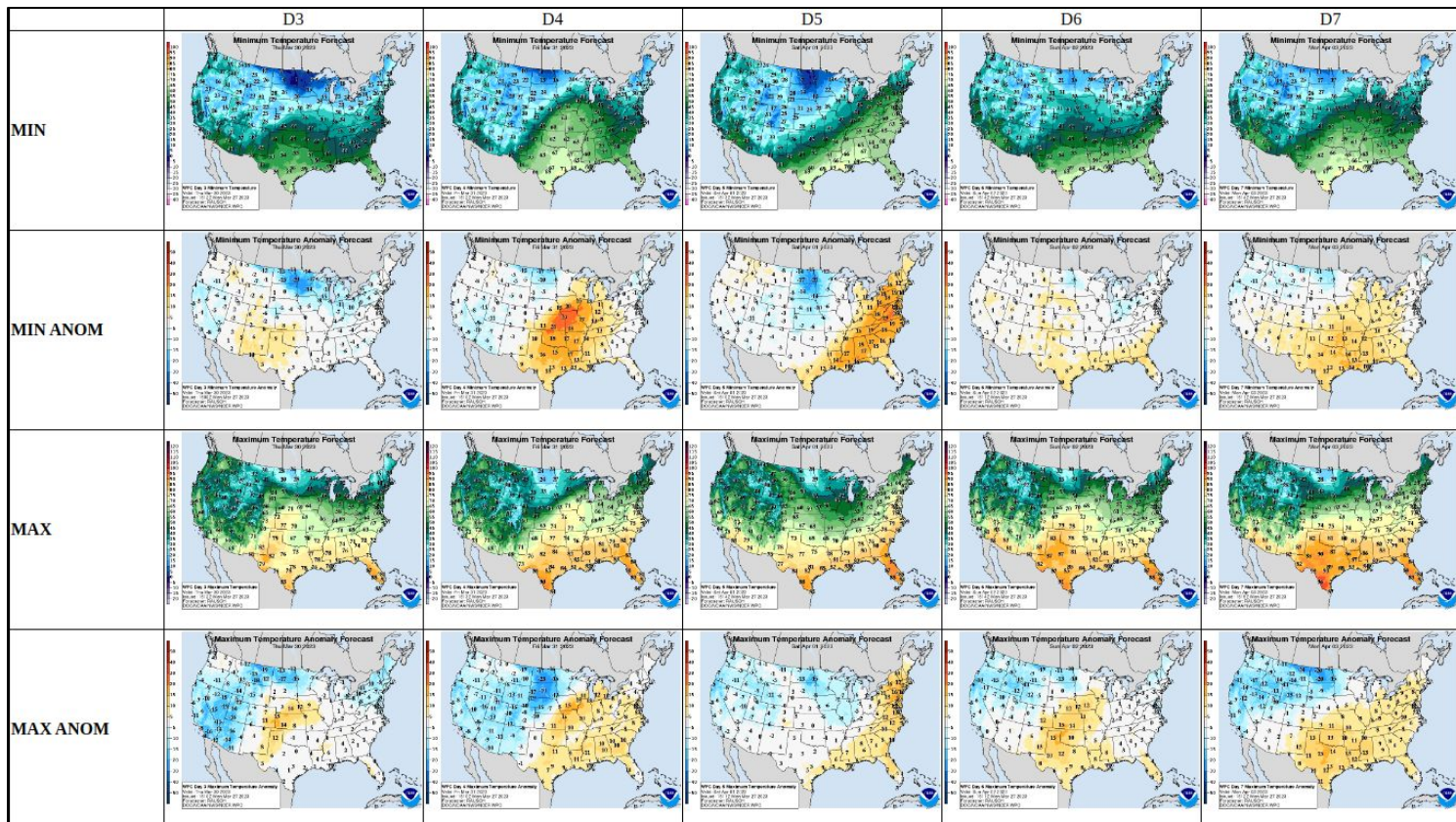
DAY 6 FORECAST DAILY MAXIMUM HEAT INDEX (DEG F)
 ISSUED: 1536 UTC MON MAR 27 2023
 VALID: SUN APR 02 2023
 DOC/NOAA/NWS/NCEP
 WEATHER PREDICTION CENTER



WPC Temp Forecasts & Resources

https://www.wpc.ncep.noaa.gov/medr/medr_max.shtml

Medium Range
Temp Forecasts
(Days 3-7)



WPC Temp Forecasts & Resources

<https://www.wpc.ncep.noaa.gov/threats/threats.php>

WEATHER PREDICTION CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NCEP: AWC · CPC · EMC · NCO · NHC · OPC · SPC · SWPC · WPC

HOME FORECASTS & ANALYSES ARCHIVES VERIFICATION INTERNATIONAL DEVELOPMENT ABOUT SEARCH

HAZARD	MAR 27	MAR 28	MAR 29
EXCESSIVE RAINFALL	SLIGHT	SLIGHT	NO AREA
HEAVY SNOW (≥ 4")	HIGH	HIGH	HIGH
ICE (≥ 0.25")	NO AREA	NO AREA	NO AREA

WPC'S MEDIUM RANGE HAZARDS FORECAST
WINTER STORM SEVERITY INDEX

Overview Surface Analysis Fronts QPF Excessive Rain Winter Wx Day 3-7 Forecast Tools

National Forecast Chart Valid Mon Mar 27, 2023
Day 1 Day 2 Day 3

Weather Valid 8am EDT Mon Mar 27 2023 to 8am EDT Tue Mar 28 2023
Fronts Valid 9pm EDT Mon Mar 27 2023

WPC Top Stories:
Mesoscale Precipitation Discussion #0140 is currently in effect
Understanding WPC Excessive Rainfall Risk Categories
Understanding WPC's Excessive Rainfall Risk Categories

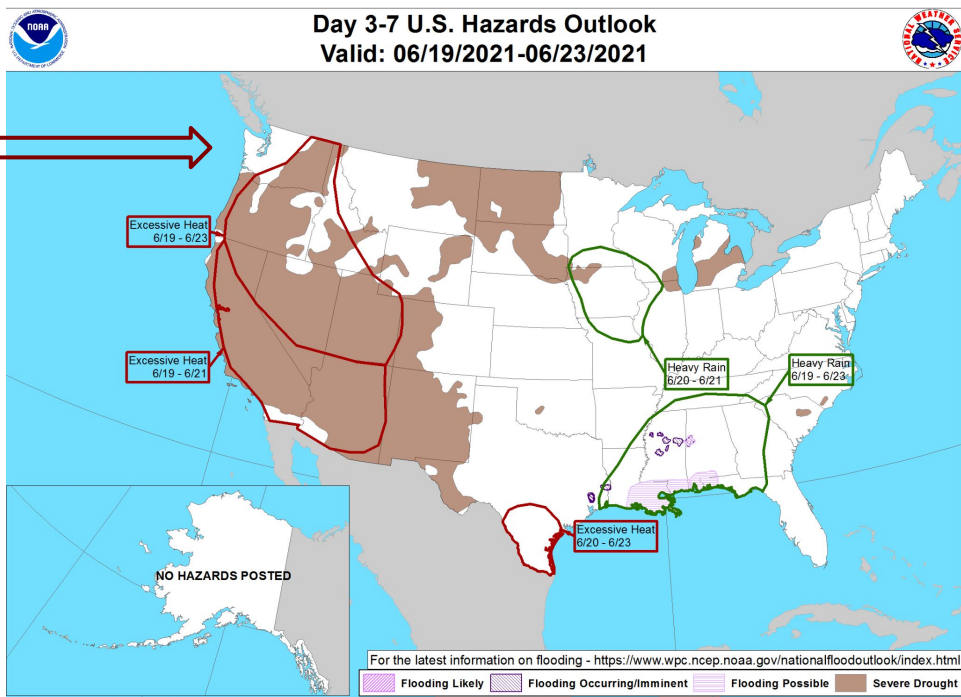
Issued 4:20 AM EDT Mon Mar 27 2023
DOC/NCA/NWS/NCEP/Weather Prediction Center
Prepared by Stefan von WPC/SPC/EMC forecasts
Layout | Powered by EBC | USGS, MapInfo by Bryan Design, CC BY 3.0 - MapData © OpenStreetMap

Interactive National Forecast Chart
Additional Links

Tweets from @NWSWPC Follow

NWS Weather Predictio... @NW... · 1h
#WPC_MD 0140 affecting Southeast AL...Portions

NOAA NWS Weather Prediction Center
Follow Page 370K followers
1 hour ending 06 UTC, Mar. 26, 2023



Weather Prediction Center
Made: 06/16/2021 3PM EDT

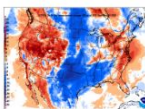
Follow us:
www.wpc.ncep.noaa.gov



WPC Temp Forecasts & Resources


<https://www.wpc.ncep.noaa.gov/#page=tl5>

1/3/6/24-hr Changes



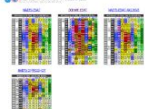
Change in weather parameters (temperature, dewpoint, surface pressure, etc) over the last 1/3/6/24 hours. Data is provided from the Real-Time Mesoscale Analysis (RTMA) or the Rapid Refresh (RAP).

Local Storm Reports



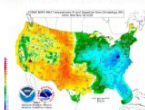
Custom plots of Local Storm Reports across the Contiguous United States. Reports include rain, snow, ice, and severe weather, as well as other significant information from storm spotters.

Ensemble Situational Awareness Table




An interactive situational awareness table that displays anomalies, percentiles, and return intervals from the GEFS, NAEFS, and ECMWF Ensembles (login required to view ECMWF data).
*Please note that there is currently an issue where only users on a NOAA network can access this page. We are actively working to resolve this problem.

NWS NDFD Max/Min Temperatures and Departure from Normal



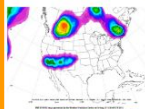
Displays Days 1-7 NDFD maximum and minimum temperatures, along with their respective departures from climatology.

Weather in Context Prototype




Displays forecast information and its climatological context to quickly alert a forecaster when a record or near-record breaking event is possible. This tool is available for both CONUS and Alaska.

GEFS Probabilities




Plots of GEFS probabilistic forecast of precipitation, temperature, and sea-level pressure exceeding various thresholds.

Experimental Extreme Precipitation Monitor




Displays the climatological significance of precipitation forecast by WPC. The climatological significance is represented by Average Recurrence Intervals (ARIs) of precipitation estimates from NOAA Atlas-14 and Atlas2.

NDFD Forecast Temperature Records





Interactive display of where temperatures could approach or exceed records within the contiguous U.S. (based on NDFD temperature forecasts)

Prototype Snowband Probability Forecasts



An interactive tool that depicts areas of heavy snowfall from individual members of high-resolution short range ensemble forecasts.





Early-Season Heat Wave Forecast Through Next Week

Heat Wave will expand from the Plains into the Mississippi Valley, Midwest, and Northeast. Highs are forecast to break daily records for some locations.

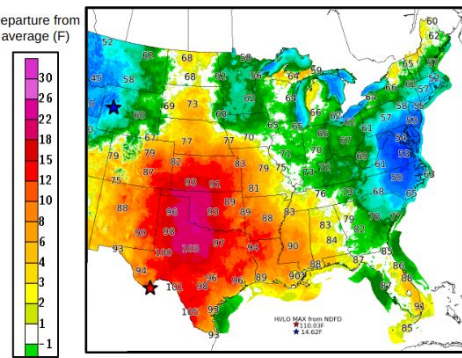
Fri, May 6, 2022
3 pm CDT

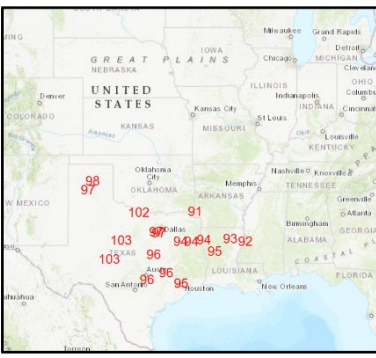
NWS NDFD MAX High Temperature (F) and Departure from Average (Fill)


Forecast Record or Near-Record MAX High Temperatures (F)

Sunday May 8th

Departure from average (F)







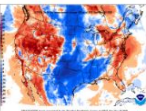
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

For more information go to:
www.wpc.ncep.noaa.gov and www.weather.gov

Weather Prediction Center
College Park, MD

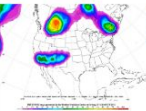
WPC Temp Forecasts & Resources

1/3/6/24-hr Changes



Change in weather parameters (temperature, dewpoint, surface pressure, etc) over the last 1/3/6/24 hours. Data is provided from the Real-Time Mesoscale Analysis (RTMA) or the Rapid Refresh (RAP).

GEFS Probabilities




Plots of GEFS probabilistic forecast of precipitation, temperature, and sea-level pressure exceeding various thresholds.

Local Storm Reports



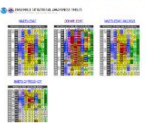
Custom plots of Local Storm Reports across the Contiguous United States. Reports include rain, snow, ice, and severe weather, as well as other significant information from storm spotters.

Experimental Extreme Precipitation Monitor




Displays the climatological significance of precipitation forecast by WPC. The climatological significance is represented by Average Recurrence Intervals (ARIs) of precipitation estimates from NOAA Atlas-14 and Atlas2.

Ensemble Situational Awareness Table



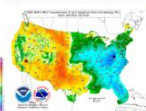
An interactive situational awareness table that displays anomalies, percentiles, and return intervals from the GEFS, NAEFS, and ECMWF Ensembles (login required to view ECMWF data).
*Please note that there is currently an issue where only users on a NOAA network can access this page. We are actively working to resolve this problem.

NDFD Forecast Temperature Records




Interactive display of where temperatures could approach or exceed records within the contiguous U.S. (based on NDFD temperature forecasts)

NWS NDFD Max/Min Temperatures and Departure from Normal




Displays Days 1-7 NDFD maximum and minimum temperatures, along with their respective departures from climatology.

Prototype Snowband Probability Forecasts



An interactive tool that depicts areas of heavy snowfall from individual members of high-resolution short range ensemble forecasts.

Weather in Context Prototype

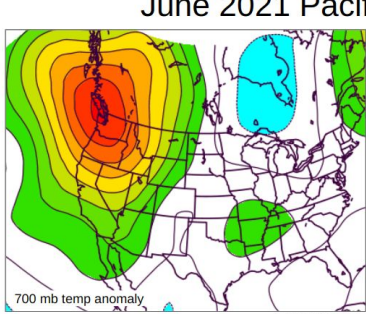


Displays forecast information and its climatological context to quickly alert a forecaster when a record or near-record breaking event is possible. This tool is available for both CONUS and Alaska.

Forecast Tools



June 2021 Pacific Northwest Heatwave

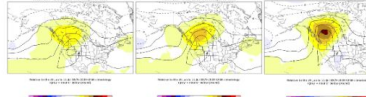


Northwestern U.S. Preliminary New All-time Maximum Temperature Records


The following locations in Washington and Oregon established new preliminary all-time maximum temperature records for any calendar day. It is quite remarkable for these temperature records to occur in June, even more remarkable some locations obliterated their previous all-time records by more than 10 degrees, and quite incredible that, in the majority of cases, the prior all-time record maximum temperature had only been set 24 hours earlier.

Washington (State all-time maximum temperature record: 118F, August 5, 1961)
 6/25/2021: 117F at Oros breaks previous all-time maximum temperature of 114F, July 26, 1929
 6/25/2021: 115F at Vancouver breaks previous all-time maximum temperature of 112, June 27, 2021
 6/25/2021: 115F at Yacoma breaks previous all-time maximum temperature of 105, June 27, 2021
 6/25/2021: 110F at Colville breaks previous all-time maximum temperature of 98, August 6, 1981
 6/26/2021: 105F at Olympia breaks previous all-time maximum temperature of 105, June 27, 2021
 6/25/2021: 105F at Spokane breaks previous all-time maximum temperature of 105, August 4, 1961
 6/26/2021: 109F Seattle/Tacoma breaks prev. all-time maximum temperature of 104, June 27, 2021

Oregon (State all-time maximum temperature record: 119F, August 10, 1988)
 6/25/2021: 117F at Salem breaks previous prev. all-time maximum temperature of 110, June 27, 2021
 6/26/2021: 119F at Portland breaks previous prev. all-time maximum temp. of 112, June 27, 2021
 6/26/2021: 114F at Medford breaks previous prev. all-time maximum temp. of 111, June 27, 2021
 6/27/2021: 119F at Eugene breaks previous prev. all-time maximum temp. of 108, August 5, 1991



700 mb temp anomaly



SA Tables

Model Run: Station: Output: Mar 27, 2023 ... CO ... NDFD Fore ... View Table

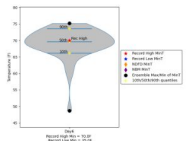
CONUS Table - Mar 27, 2023 00Z Run									
Wind	High	High Min	Low	Low Min	Rec	QPF			
Mon	73/17	61	21.5	0.0	0.0				
Tue	73/12	61	21.5	0.0	0.0				
Wed	73/12	61	21.5	0.0	0.0				
Thu	73/12	61	21.5	0.0	0.0				
Fri	73/12	61	21.5	0.0	0.0				
Sat	73/12	61	21.5	0.0	0.0				
Sun	73/12	61	21.5	0.0	0.0				
1st	73/12	61	21.5	0.0	0.0				
2nd	73/12	61	21.5	0.0	0.0				

Sat Apr 01 2023

HI Max (REC/191) POR

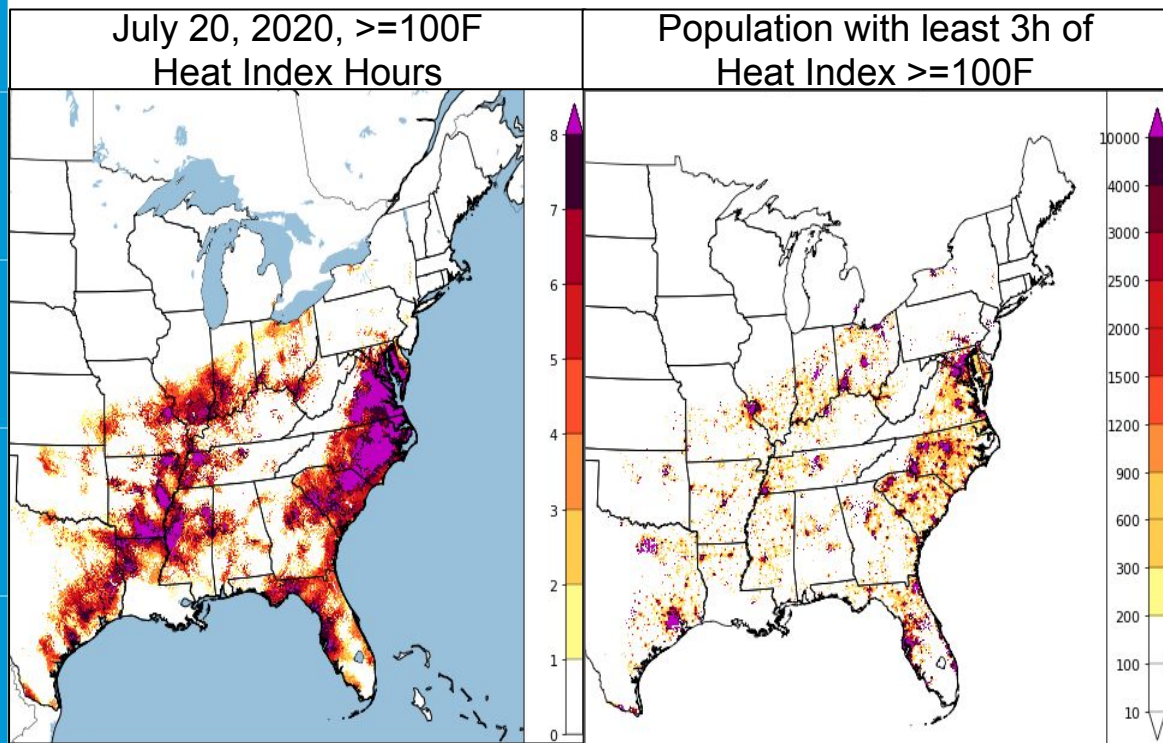
SOM 51 (54/2016) 1873
 ANH 61 (62/2016) 1899
 ATL 63 (65/1927) 1878
 AIL 56 (68/1927) 1876
 BHM 66 (66/2087) 1895
 BKH 53 (57/1986) 1896
 BFT 69 (71/2086) 1901
 BRW 72 (75/2088) 1878
 BTR 71 (78/2088) 1892
 CAE 63 (67/1896) 1887
 CHA 63 (67/1927) 1897
 CHO 61 (63/1998) 1899
 CMA 65 (67/1998) 1897
 CMB 56 (54/2087) 1922
 CLT 63 (64/1998) 1878
 CRE 62 (65/2016) 1931
 CDF 78 (74/2088) 1899
 CSC 63 (67/1929) 1891
 CSU60 65 (69/1927) 1903
 CVG 56 (58/2087) 1872
 DAN 62 (62/2016) 1916
 DAY 55 (57/2087) 1899
 DCA 48 (64/2016) 1872
 EYM 75 (78/2017) 1872
 FAY 64 (67/2016) 1918
 GUL 63 (67/2086) 1903

BTR - BATON ROUGER,VA (ASOS)
 Forecast: 71°F
 Record: 70°F (2006)
 Data starts: 1892



WPC Temp Forecasts & Resources

Future Heat Wave Visualization, Messaging, & Talking Points



WPC developed **talking points** and social media **key messages** during some of the more significant heat outbreaks of 2021.

Information included:

- **Pop. Statistics in WWA**
- **Temp Records and Context**
- **Heat and its Impacts FAQ**
- **NWS Safety Messaging**

WPC resources for the field (Forecast Tools Page):

- **Situational Awareness Tables**
- **NDFD Max/Min Records Page**
- **Weather in Context Viewer**

WPC Temperature Key Messages

Key Messages are provided on the WPC Home Page under “Top Stories” (when active)

Key Messages for June 25-28 Heat Wave
Updated June 24, 2021
2:00 PM PDT

Extended period of record-breaking heat on the way for much of the Western U.S.

- Heatwave Peaks this Weekend**
The upcoming heat wave in the Northwest U.S. is expected to peak this weekend and early next week, with widespread temperatures well into the triple digits.
- Widespread Impacts**
Over 13 million residents reside within an Excessive Heat Warning, with dangerous heat to persist for several days.
- Record-Breaking Temperatures**
Over 70 locations are forecast to break daily high temperature records through early next week, with monthly and even all-time temperature records possible.
- Heat Safety Tip**
Residents and visitors throughout the Pacific Northwest are advised to take an extended amount of time outdoors and drink lots of water. Check on friends, family, and neighbors, especially those most vulnerable to heat-related illness. If outdoors, wear lightweight and light-colored clothing while also taking breaks in the shade.

Current Heat Headlines

- Excessive Heat Warning
- Heat Advisory
- Excessive Heat Watch

Warmest Temperatures through Tuesday, June 29th

For more information go to: www.wpc.ncep.noaa.gov and www.weather.gov

Weather Prediction Center
College Park, MD

WEATHER PREDICTION CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME ▾ FORECASTS & ANALYSES ▾ ARCHIVES ▾ VERIFICATION ▾ INTERNATIONAL ▾ DEVELOPMENT ▾ ABOUT ▾ SEARCH

HAZARD	APR 11	APR 12	APR 13
EXCESSIVE RAINFALL	MARGINAL	MARGINAL	MARGINAL
HEAVY SNOW (≥ 4")	HIGH	HIGH	HIGH
ICE (≥ 0.25")	NO AREA	NO AREA	NO AREA

WPC Top Stories:

- Understanding WPC Excessive Rainfall Risk Categories
- Understanding WPC's Excessive Rainfall Risk Categories
- Looking for data from WPC products in a GIS format?

Interactive National Forecast Chart
Additional Links

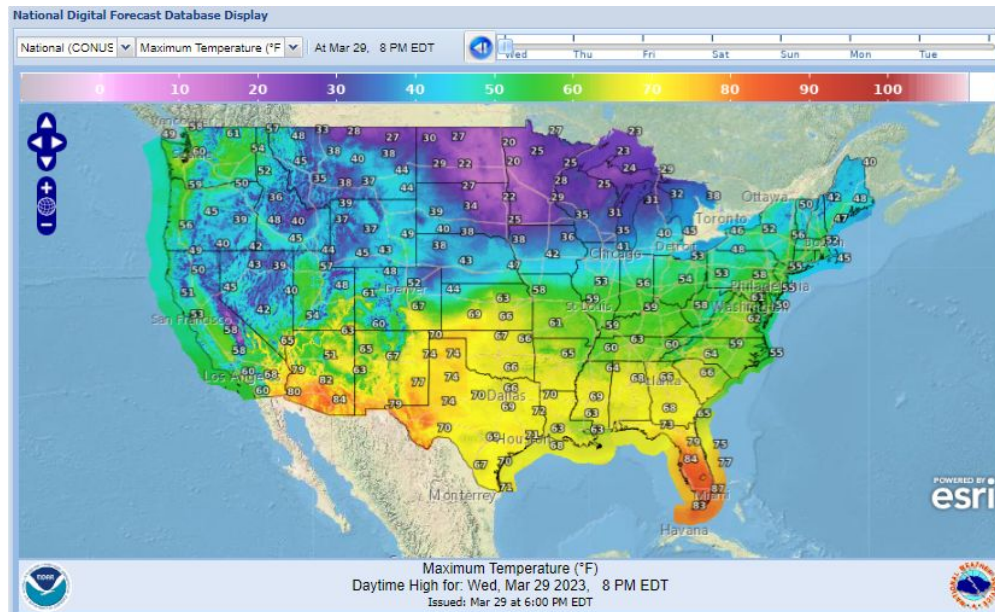
- New product for **high confidence and high impact events (roll over from CPC Key Messages for Heat)**
- Provides shareable graphics, talking points and concise details surrounding event
- Similar to Key Messages NHC and WPC issue for tropical storms and winter storms, respectively

WFO Routine Forecast Products



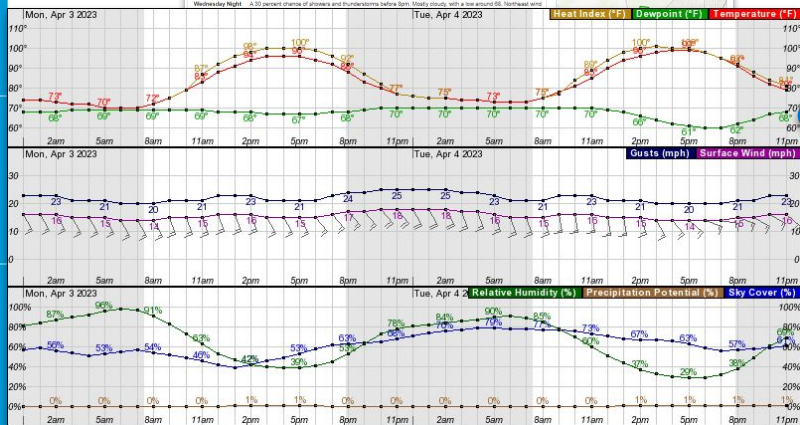
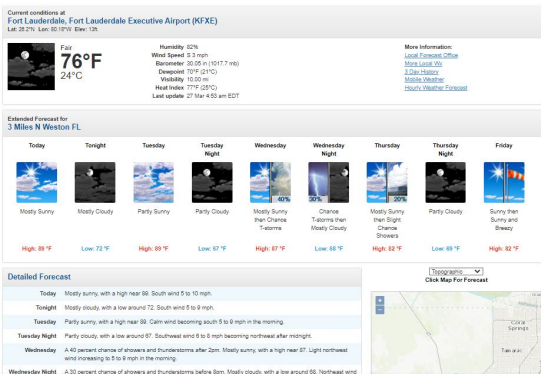
- 122 local Weather Forecast Offices (WFO)
- Graphical forecasts of 2.5km x 2.5km resolution
- Forecast out to 7 days:
 - Max and Min Temperatures
 - Hourly Temperatures, Dewpoints, and Relative Humidity
 - Sustained Wind Speed/Direction, and Gusts
 - Sky Cover (clouds)
 - Probability of Precipitation (%)
 - Amount of Precipitation (QPF)
 - Apparent Temperature (Heat Index or Wind Chill)
 - Wet Bulb Globe Temperature (WBGT)
 - Other elements as appropriate e.g. Snowfall Amount, Wave Height, etc.

<https://digital.mdl.nws.noaa.gov/>



WFO Routine Forecast Products

Point N' Click



Hourly Weather Graph

Zone Forecast Product for Southern New England
 National Weather Service Boston/Norton MA
 700 AM EDT Mon Jul 18 2022

Zone Forecast Product

MAZ015-182000-
 Suffolk MA-
 Including the city of Boston
 700 AM EDT Mon Jul 18 2022

.TODAY...Cloudy with a chance of showers with a slight chance of thunderstorms. Highs in the lower 80s. South winds 10 to 15 mph. Chance of rain 40 percent.

.TONIGHT...Cloudy. A chance of showers with a slight chance of thunderstorms in the evening, then a chance of showers with isolated thunderstorms after midnight. Some thunderstorms may produce gusty winds and heavy rainfall in the evening. Humid with lows in the lower 70s. South winds around 15 mph with gusts up to 30 mph. Chance of rain 40 percent.

.TUESDAY...Partly sunny in the morning, then clearing. Warmer with highs in the lower 90s. West winds 10 to 15 mph with gusts up to 25 mph.

.TUESDAY NIGHT...Mostly clear. Humid with lows in the lower 70s. West winds 5 to 10 mph. Gusts up to 20 mph in the evening.

.WEDNESDAY...Sunny, hot with highs in the mid 90s. West winds 5 to 10 mph.

.WEDNESDAY NIGHT...Mostly clear. Lows in the mid 70s.

.THURSDAY...Partly sunny with a chance of showers. Hot with highs in the lower 90s. Chance of rain 40 percent. Heat index values up to 100.

.THURSDAY NIGHT...Mostly clear. Lows in the lower 70s.

.FRIDAY AND FRIDAY NIGHT...Clear, hot. Highs around 90. Lows in the lower 70s.

.SATURDAY...Sunny, hot with highs in the lower 90s.

.SATURDAY NIGHT...Partly cloudy. Lows around 70.

.SUNDAY...Partly sunny with a 30 percent chance of showers. Hot with highs around 90.

Outlooks: Days 1-7

Text based HWO

Hazardous Weather Outlook
National Weather Service Wilmington NC
1009 PM EDT Wed Jul 27 2022

NCZ110-290215-
Coastal Brunswick-
1009 PM EDT Wed Jul 27 2022

...MODERATE RISK OF RIP CURRENTS IN EFFECT FROM 6 AM EDT THURSDAY THROUGH THURSDAY EVENING...
...HEAT ADVISORY IN EFFECT FROM NOON TO 7 PM EDT THURSDAY...

This Hazardous Weather Outlook is for southeast North Carolina.

.DAY ONE...Tonight.

No hazardous weather is expected at this time.

.DAYS TWO THROUGH SEVEN...Thursday through Tuesday.

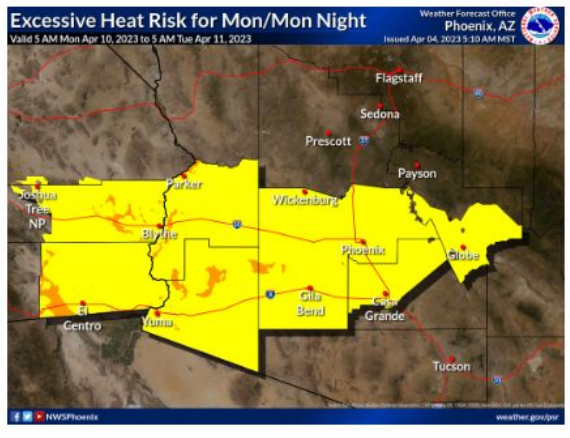
Please listen to NOAA Weather Radio or go to weather.gov on the Internet for more information about the following hazards.

Moderate Risk of Rip Currents.
Heat Advisory.

Heat indices of 105F to 109F are likely Thursday through Saturday.

Experimental Graphical Hazardous Weather Outlook (gHWO)

Example: <https://www.weather.gov/erh/ghwo?wfo=psr>



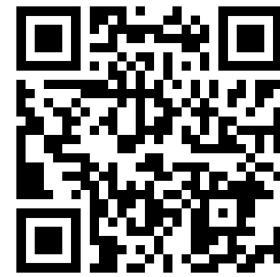
Risk Level	Category	Definition
Green	None	No Excessive Heat Risk.
Yellow	Limited	Heat exhaustion possible with prolonged exposure.
Orange	Elevated	Heat exhaustion likely with prolonged exposure. Heat stroke possible.
Red	Significant	Heat exhaustion or heat stroke likely with prolonged exposure.
Purple	Extreme	Dangerously hot conditions could quickly result in heat exhaustion or heat stroke.

24 Hr Hazard Risks	Today	Wed	Thu	Fri	Sat	Sun	Mon
Severe Thunderstorm	Green	Green	Green	Green	Green	Green	Green
Tornado	Green	Green					
Thunderstorm Wind	Green	Green					
Hail	Green	Green					
Lightning	Green	Green	Green	Green	Green	Green	Green
Excessive Rainfall	Green	Green	Green	Green			
Excessive Heat	Green	Green	Yellow	Yellow	Yellow	Yellow	Orange
Wind	Yellow	Green	Green	Green	Green	Green	Green
Frost/Freeze	Orange	Green	Green	Green	Green	Green	Green
Fog	Green	Green	Green	Green			
Fire Weather (Hot/Dry/Windy)	Green	Green	Green	Green	Green	Green	Green
Snow/Sleet	Green	Green	Green	Green	Green	Green	Green
Blowing Dust	Yellow	Green	Green	Green	Green	Green	Green



WFO Watch, Warning, Advisory

<https://www.weather.gov/safety/heat-ww>



Excessive Heat Watch

Conditions favorable for an excessive heat event to meet/exceed local heat warning criteria in the next 24 to 72 hrs



Heat Advisory

Heat Index values forecast to meet/exceed local heat advisory criteria for 1 to 2 days.

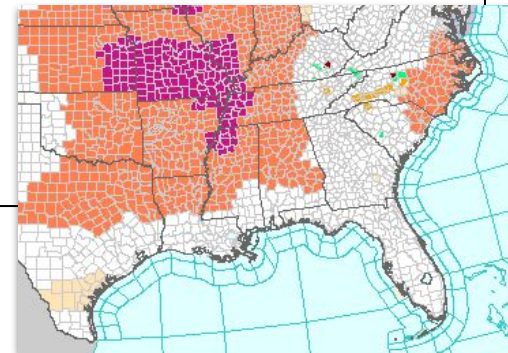
Generally **North:** HI>100 **South:** HI >105, and Min nighttime lows >/=75



Excessive Heat Warning

Heat Index values forecast to meet or exceed locally defined warning criteria for at least 2 days.

Generally **North:** HI>105 **South:** HI >110
Min nighttime lows >/=75



IMPORTANT NOTE:

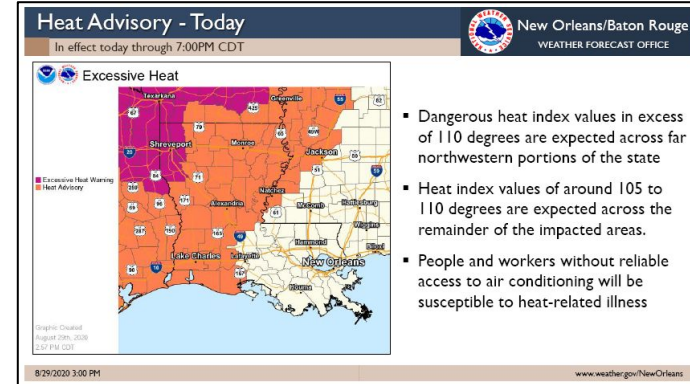
Strongly encourage local forecast offices to work with local partners, especially public health partners, to adjust criteria to reflect local impacts



Successful Collaboration Adjusting Criteria

Post Hurricane Laura 2020

- With nearly 100% of customers without power NWS offices reached out to the Louisiana Governor's Office of Homeland Security and Emergency Preparedness to validate the need for lowered criteria



New England / Northeast 2016-2017

- Multi-year effort to set Heat Advisory criteria that better reflect health impacts

2016

Green: Heat Index of 100-104 degrees for 2 Consecutive Hours



NWS Offices serving New England worked with Northeast Health Departments and NE Heat Consortium 2016-2017

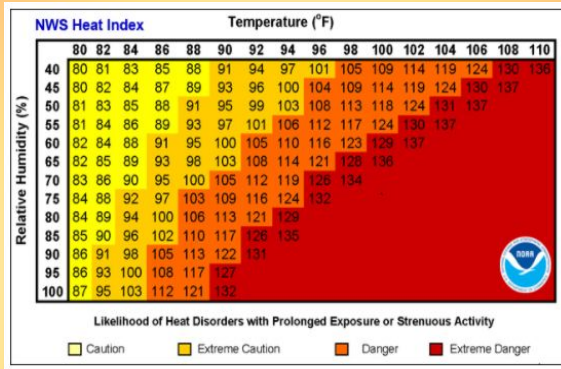
2017

Green: HI of 96-99 degrees for 2 consecutive hours
Yellow: HI of 100-104 degrees for 2 Consecutive Hours



NWS Forecast Tools used to assess Heat

Heat Index



Heat stress in context for **general public.**

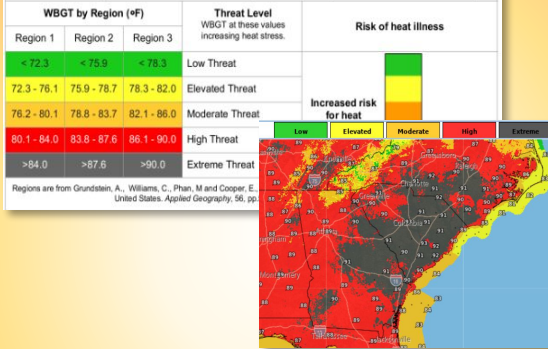
- Relatively simple: T + RH
- Light physical activity in shade



5'7" adult, 147.7 lbs, walking outside at 3.1 mph, wearing trousers and short sleeved shirt

Wet Bulb Globe Temperature

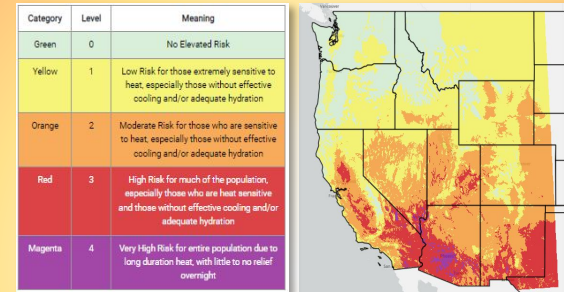
Disclaimer: Always check with local officials for appropriate actions and activity levels. Experienced heat stress will depend upon duration and intensity of activity and personal health and vulnerability.



Heat stress in context for **healthy, active outdoor communities.**

- More Complex: T + RH + wind + solar radiation
- High levels of physical activity

Western Region HeatRisk Prototype



Heat forecasts in **climatological context** with CDC-based health impact messaging.

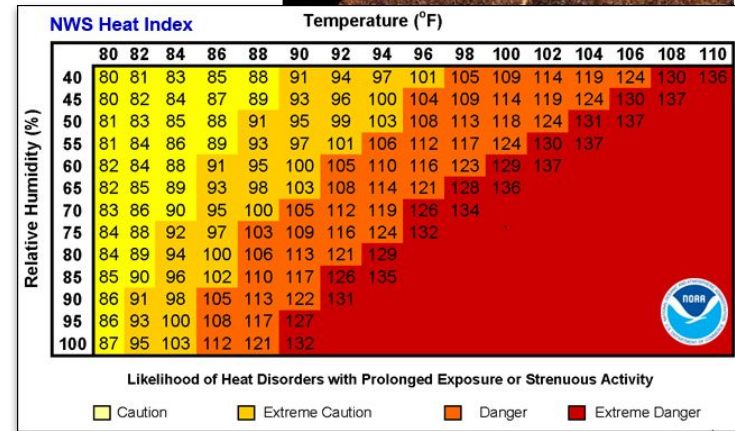
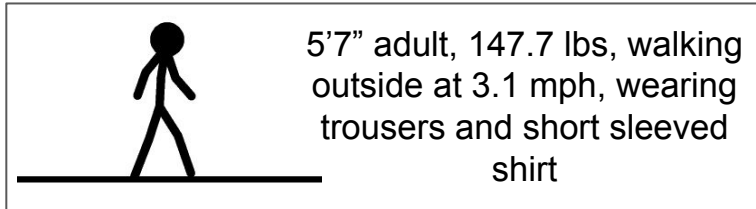
- How significantly above normal the temperatures are
- Messaging can target more sensitive/vulnerable groups



Heat Index

- Derived from Steadman's work and simplified by Lans Rothfus
- Traditional measurement of Heat stress due to high temperatures and high humidity. Includes several (21) parameters and assumptions such as:

- body mass & height
- clothing
- physical activity
- heat tolerance
- sunlight and UV exposure
- wind speed



Wet Bulb Globe Temperature (WBGT)

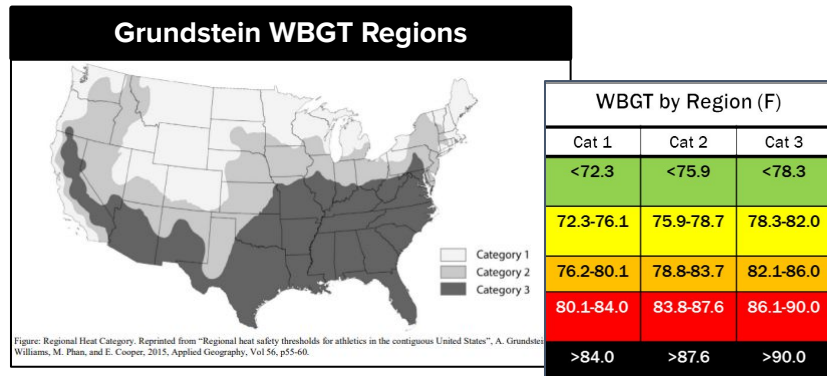
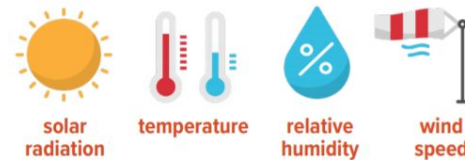
What is it?

- Estimates the effect of temperature, humidity, wind, and solar radiation on the human body
- Effective indicator of heat stress for active populations

	WBGT	HEAT INDEX
Measured in the sun	●	●
Measured in the shade	●	●
Uses temperature	●	●
Uses relative humidity	●	●
Uses wind	●	●
Uses cloud cover	●	●
Uses sun angle	●	●

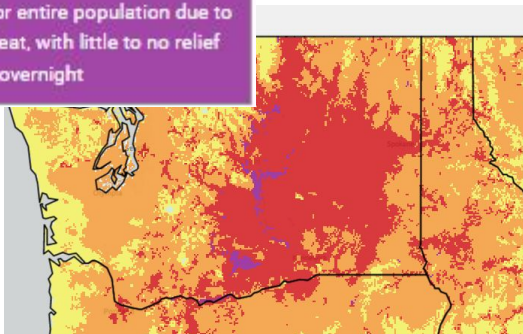
What are the benefits?

- Particularly useful for outdoor workers, athletes, people exercising or active outdoors, etc.
- Can help establish guidelines for activity modifications during exercise or outdoor work



Experimental Heat Tools

Category	Level	Meaning
Green	0	No Elevated Risk
Yellow	1	Low Risk for those extremely sensitive to heat, especially those without effective cooling and/or adequate hydration
Orange	2	Moderate Risk for those who are sensitive to heat, especially those without effective cooling and/or adequate hydration
Red	3	High Risk for much of the population, especially those who are heat sensitive and those without effective cooling and/or adequate hydration
Magenta	4	Very High Risk for entire population due to long duration heat, with little to no relief overnight



NWS Western Region HeatRisk Prototype

What does it take into account?

- How above normal temps are for a location
- Time of the year
- Duration of unusual heat
- Overnight temps
- Difference between lows and highs

What are the benefits?

- Helps people understand what forecasted heat means to them
- Provides heat risk guidance for decision makers and heat sensitive populations who may need to take action below NWS heat product levels

Event Messaging

S
o
c
i
a
l

EXTREME & DANGEROUS HEAT

Through Friday. High Fire Danger.

Extreme Heat Wave
Length of 10 days
Relief still many days away

POWER OUTAGES
POSSIBLE

USE CAUTION
WITH FIRE SOURCES

Job Sites
Stay hydrated and take breaks in the shade as often as possible

Indoors
Check up on the elderly, sick and those without AC

Vehicles
Never leave kids or pets unattended - LOOK before you LOCK

Outdoors
Limit strenuous outdoor activities, find shade, and stay hydrated

Details:
Valleys & Mountains: Highs 100-110, Lows 70-80.
Coasts: High 85-95, Lows 65-75

NATIONAL WEATHER SERVICE
Los Angeles / Oxnard Weather

M
e
d
i
a

Deadly Heat Wave

Through This Weekend

What To Do

- Avoid strenuous activity; cancel outdoor activities
- Seek air-conditioned buildings or operate air-conditioning, despite financial costs
- Check-in on family/friends
- Prepare for hot overnight temperatures
- Drink before you're thirsty
- In an emergency, call 911

Interact With Us [f](#) NWSPHOENIX [Weather.Gov/PSR](#) [@NWSPHOENIX](#) [YouTube](#) NWSPHOENIX

Weather Stories

NWS Forecast Office Las Vegas, NV
Weather.gov > Las Vegas, NV

Las Vegas, NV
Weather Forecast Office

Current Hazards | Current Conditions | Radar | Forecasts | Rivers and Lakes | Climate and Past Weather | Local Programs

Hot Rec Fcst | Partial Co. Alerts!

Weekend Recreation Forecast

Very Hot Temperatures

LIMIT TIME OUTSIDE
KEEP HYDRATED
WEAR LIGHT CLOTHING

	Fri	Sat	Sun
Red Rock Canyon	92°	97°	100°
Mt. Charleston	75°	80°	82°
Valley of Fire	100°	106°	110°
Lake Mead	95°	101°	104°
Death Valley	106°	113°	115°
Mojave National Preserve	93°	98°	100°

NATIONAL WEATHER SERVICE Las Vegas
9:00 AM - Friday, June 11, 2021

Show Caption

Click a location below for detailed forecast.

Last Map Update: Fri, Jun. 11, 2021 at 6:55:34 am PDT



Outreach & Engagement Materials



Seasonal Safety Campaigns
<https://www.weather.gov/safetycampaign>



Agency collaborations: OSHA messaging in NWS heat products

Take extra precautions if you work or spend time outside. When possible reschedule strenuous activities to early morning or evening. Know the signs and symptoms of heat exhaustion and heat stroke. Wear lightweight and loose fitting clothing when possible. To reduce risk during outdoor work, the Occupational Safety and Health Administration recommends scheduling frequent rest breaks in shaded or air conditioned environments. Anyone overcome by heat should be moved to a cool and shaded location. Heat stroke is an emergency! Call 9 1 1.



Heat Safety Website
<https://www.weather.gov/heat>

Heat Safety Tips and Resources

Weather.gov > Safety > Heat Safety Tips and Resources

Heat Safety	Heat Watch vs. Warning	Heat Forecast Tools	During a Heat Wave	Heat Related Illnesses
-------------	------------------------	---------------------	--------------------	------------------------

Heat Impacts: Vulnerable Populations

 PREPREGNANT	 NEWBORNS	 CHILDREN	 ELDERLY	 CHRONIC ILLNESS
<small>Extreme heat events have been associated with adverse birth outcomes such as low birth weight, preterm birth, infant mortality, and congenital anomalies.</small>	<small>Newborns are extra sensitive to heat because their ability to regulate body temperature is limited.</small>	<small>Young children and infants are particularly vulnerable to heat, as their bodies are less able to adapt to heat than adults. Those under four are especially vulnerable.</small>	<small>Older adults, especially those who have preexisting diseases, take certain medications, live alone or have limited mobility are at higher risk for heat illness.</small>	<small>People with chronic medical conditions are more likely to have a serious health problem during a heat wave.</small>

Source: The Impacts of Climate Change on Human Health in the United States, A Scientific Assessment (U.S. Global Change Research Program)

weather.gov



- Heat Safety Resources
- Heat Safety
- Children, Pets and Vehicles
- Seasonal Safety Campaign
- Ultraviolet (UV) Safety
- Games and Activities for Kids
- Survivor Stories
- Education and Outreach
- Links and Partners

Graphics



Federal Interagency Heat Health Efforts

G
R
A
P
H
I
C
S

Heat Exhaustion	Heat Stroke
<p>ACT FAST</p> <ul style="list-style-type: none"> Move to a cooler area Loosen clothing Sip cool water Seek medical help if symptoms don't improve 	<p>ACT FAST</p> <p>CALL 911</p> <ul style="list-style-type: none"> Move person to a cooler area Loosen clothing and remove extra layers Cool with water or ice
<p>Dizziness</p> <p>Thirst</p> <p>Heavy Sweating</p> <p>Nausea</p> <p>Weakness</p>	<p>Confusion</p> <p>Dizziness</p> <p>Becomes Unconscious</p>
<p><i>Heat exhaustion can lead to heat stroke.</i></p> <p><i>Heat stroke can cause death or permanent disability if emergency treatment is not given.</i></p>	
<p>Stay Cool, Stay Hydrated, Stay Informed!</p>	

heat.gov



Federal Heat Health Information Hub

Current Conditions and Future Outlooks

Extreme Heat

31,317,858 people in warning area



At left, see the current number of people in the U.S. that are currently under active National Weather Service extreme heat advisories, watches, and warnings.

Below, interact with current and future heat tools to understand where dangerous heat conditions may exist in the future.

Joint Social Media Campaigns May 15-19, 2023 #NIHHIS #HeatSafety



NATIONAL WEATHER SERVICE

Questions?

Contributors:

Kim McMahon
Greg Carbin
Alex Lamers
Evan Oswald
Steve Baxter
Jessica Lee
Rachel Gross
Sarah Rogowski
Andrea Bair

Presentation PDF and Recording will be available after processing at
<https://www.weather.gov/wrn/calendar>

Links:

Climate Prediction Center Homepage
<https://www.cpc.ncep.noaa.gov/>

Weather Prediction Center Homepage
<https://www.wpc.ncep.noaa.gov/>

National Weather Service
<https://www.weather.gov/>

NWS Heat Safety
<https://www.weather.gov/heat>

Federal Heat Health Information Hub
<https://www.heat.gov/>

CDC Heat & Health Tracker
<https://ephtracking.cdc.gov/Applications/heatTracker/>