



The Whispering Trades



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National Weather Service | San Juan, Puerto Rico



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2017

Climate Review for Puerto Rico and the U.S. Virgin Islands

The typical onset of the wet season was observed in April; however, it was a short-lived wet period since data showed a drier pattern in May and as a result, was categorized as a dry month. Near to above normal rainfall was observed across all the U.S. Virgin Islands.

The rainfall distribution was near to above normal in Saint Thomas and Saint Thomas and above normal in Saint Croix.

Near normal rainfall was observed across most of the eastern half of Puerto Rico, as well as across the southern coast of the island with 75 to 90 percent of the normal rainfall. In contrast, a much wetter scenario was observed across the western interior and northwest Puerto Rico with +20 inches above the normal rainfall.

The local dry season typically occurs between December and March. The rainfall pattern observed in January and February was consistent with this pattern; however, this was not the case for March. During this month, an atypical pattern was observed with above normal rainfall across all Puerto Rico. Portions of the southern coast observed 1 to 2 inches above normal, while 4 to 8 inches above normal were observed across the interior and northern portions of the island.

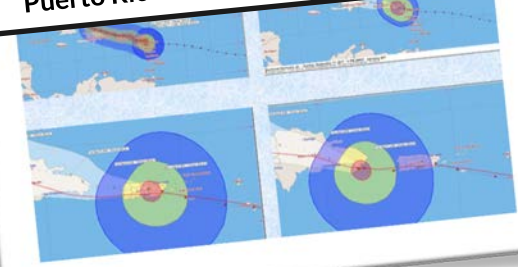
National Weather Service San Juan Supports Tropical Journey 2017

The San Juan Veteran Affairs Caribbean Healthcare System, Office of Emergency Management; conducted three tabletops and a regional Full Scale Exercise as part of the Tropical Journey 2017.

The exercise provided the opportunity for the Healthcare System Representatives, Local, Territorial and Federal agencies to evaluate their contingency plans, resources and capabilities during response and recovery from the impact of a major hurricane. Some of the participants that were brought together during the exercise were: Civilian airport and/or military base authorities, Puerto Rico Hospitals, state emergency management, amateur radio operators, Red Cross and Salvation Army Chapters, Private transport services, local and state public health departments, among other appropriate volunteer organizations. These simulations allowed the participants to assess how they should respond during a real-life situation.

Weather Forecast Office San Juan (WFO-SJU) recreated a powerful Cape Verde type Category 4/5 hurricane which moved across the islands of Puerto Rico and the U.S. Virgin Islands. The tabletops were held in three different areas of Puerto Rico (Aguadilla, Caguas and Carolina) between January and February 2017 (Fig 1). The tabletops exercise provided the opportunity to discuss and practice the different participants' plans as preparation for the Full-Scale Exercise. Then, each one of the participants received daily emails with information about the track, intensity, and development of the Tropical Cyclone during the One Week Tropical Journey-2017 Full Scale Exercise held in April 2017.

Figure 2. WFO-SJU simulated the impact of a Major Hurricane across the islands of Puerto Rico and the U.S. Virgin Islands.



Tabletops were held in three different areas of Puerto Rico: Aguadilla, Caguas and Carolina

WFO-SJU used Hurrevac® to create the track, intensity, and to write Tropical Cyclones Bulletins, Watches and Warnings throughout the event (Fig 2). In addition, Flooding Rain, Storm Surge, Tornado and Wind threats information were provided with the Tropical Cyclone Package recreating a situation quite close to reality. Also, short videos with weather briefings were recorded to provide useful information about the tropical system (Fig 3).

National Weather Service San Juan Supports Tropical Journey 2017

Having the ability to simulate a realistic Major Hurricane Event with all the essential personnel during the tabletops in a room and throughout a week during the Full-Scale Exercise provided a unique opportunity to review and prepare for the dawn of the 2017 Hurricane Season. The Weather Forecast Office in San Juan PR "... demonstrated their professionalism, commitment and exemplary performance in support of over 42 community agencies from local, state and federal level that participated during the all phases of the exercise" said Cosme C. Torres-Sabater, VA Caribbean Healthcare System.

Our commitment is that everyone involved walks away with the understanding of the importance of preparation before, during and after the Hurricane Season.

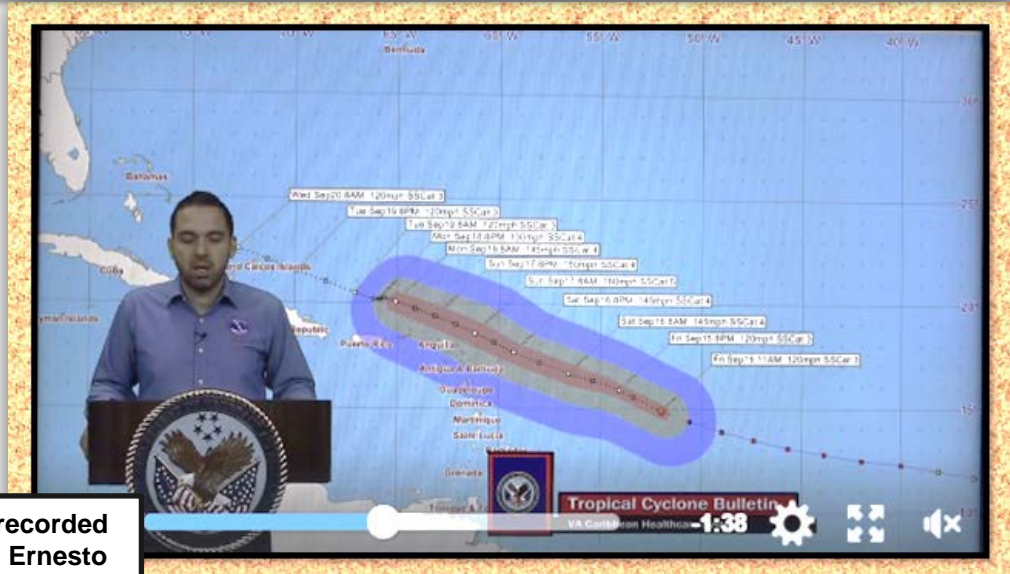


Figure 3. Weather briefings were recorded as part of the Full-Scale Exercise. Ernesto Rodriguez, SOO at the podium.

WFO San Juan Contributing to the Cause

The Puerto Rico Climate Change Council (PRCCC), which includes state and federal agencies, as well as members of Academia, was created to address key climate-related trends observed across Puerto Rico, while considering their future projections. In order to achieve the PRCCC's goal, the WFO/NWS San Juan provided historical rainfall and temperature data, in addition to valuable technical knowledge and analysis skills. As a result, the WFO/NWS San Juan contributions to the cause will help decisions makers and educators in their efforts to build a healthy nation and create resilient communities.



Top: PRCCC Meeting Bottom: Rainfall and Temperature Working Group



2017 Caribbean Hurricane Awareness Tour (CHAT)

The National Weather Service, emergency management agencies, several media outlets, family and guests all welcomed the 53rd Weather Reconnaissance Squadron in the WC 103J Hercules aircraft on April 29, 2017.

The 53rd Weather Reconnaissance Squadron, known as the “Hurricane Hunters”, came to Puerto Rico for the 2017 Caribbean Hurricane Awareness Tour, which took place in Rafael Hernandez airport in Aguadilla, PR on April 29, 2017. The last time the “Hurricane Hunter” aircraft visited the Northwest area was more than a decade ago. This year marks the 74th year the Air Force Reserve Command’s WRS has supported the National Hurricane Center and United States Hurricane Warning Program and helped mitigate the hurricane threat within the Atlantic Basin.

Due the large amount of people moving through the plane and long waiting lines in previous visits of the “Hurricane Hunter”, this year the U.S. Air Force planned the visit of two Hercules Aircraft. The First plane arrived on Thursday April 28 at around 4 PM with 10 crew members. Shortly after the first plane landed we received a call that the second had mechanical problems and they planned to arrive to the Rafael Hernandez airport an hour before the CHAT open to the public. We quickly had to change the planned logistics including hotel reservations, ground transportation and U.S. Customs.



In this aircraft, National Hurricane Center personnel including former NHC Director, Dr. Rick Knabbs, and Hurricane Specialist, Lixion Avila had to travel to San Juan by commercial flight. On Friday afternoon we received another call from the USAF personnel that the second plane will not be able to fly to Aguadilla, therefore we had to continue the CHAT with only one plane. This second plane was the official aircraft doing the CHAT with crew of 23, including Spanish speakers that will help on the explanation of their mission to the people of Puerto Rico. With this new scenario, once again we had to work on the logistics to accommodate all these changes. Our biggest challenge was how to accommodate a record breaking crowd with a small USAF crew of only 10. Aircraft Commander Lt Col Woods split the team in two, with 5 crew members working from 8 AM to 1PM and the second crew working from 1PM to 6PM. Part of our staff helped the crew members on the tour of the plane as none of the crew members knew Spanish.



2017 Caribbean Hurricane Awareness Tour (CHAT)



Nearly 20,000 individuals arrived to participate in the 2017 Caribbean Hurricane Awareness Tour, whose purpose was to raise awareness of the impacts of tropical cyclones. The public was invited to experience the logistics and equipment inside the WC-103J aircraft and learn about the roles and duties of the squadron members during the missions. Here, the public had the opportunity to explore and interact with the squadron and personnel while learning about the details of the mission, as well as the impacts and dangers of tropical cyclones.

The public had the opportunity to interact with Roberto Garcia (NWS San Juan Meteorologist In Charge), Ernesto Morales (NWS San Juan Warning Coordination Meteorologist) and other local and state emergency agencies. For example, the Puerto Rico Emergency Management Agency, also known as PREMA, was present with the local and state department, as well as the Port Authority Emergency Management. The Puerto Rico Police Department unit, Fuerzas Unidas de Rapida Accion (FURA) aircraft also demonstrated their roles and duties in emergency situations in the tour. Additionally, the Salvation Army actively participated while providing food and water for the public. As is always the case in these types of events, the Federal Emergency Management Agency (FEMA) participated with local staff giving orientation about their mission. Major media outlets were present with constant live reports and interviews throughout the event. The planning for this large event began on December 2016 and after several interagency meetings, a logistical plan was developed to accommodate all the event needs. The Puerto Rico Police department was responsible for transit control across the event area and the 24 hours airplane security at the Rafael Hernandez Airport in Aguadilla. PREMA was responsible for all event operations including water distribution, ground transportation and entrance security. Overall and, from an operational stand point, the event was a great success and it was a great example of team work between all agencies involved in the event. The Aguadilla Mayor, Carlos Méndez Martínez was so happy and proud about the success of this event that he personally invited the Air Force Reserve 53rd Weather Reconnaissance Squadron to come back next year.

FEMA Course L-320 Hurricane Preparedness for Decision Makers

WFO San Juan, in cooperation with the National Hurricane Center, FEMA Region 2, U.S. Corp of Engineer and FEMA Caribbean Office, administers a three day course called the Hurricane Preparedness for Decision Makers. Staff members from WFO SJU, NHC, USCE and FEMA administered this course on the days of May 2-4, 2017.



Figure 1. FEMA Course L-320 Attendees

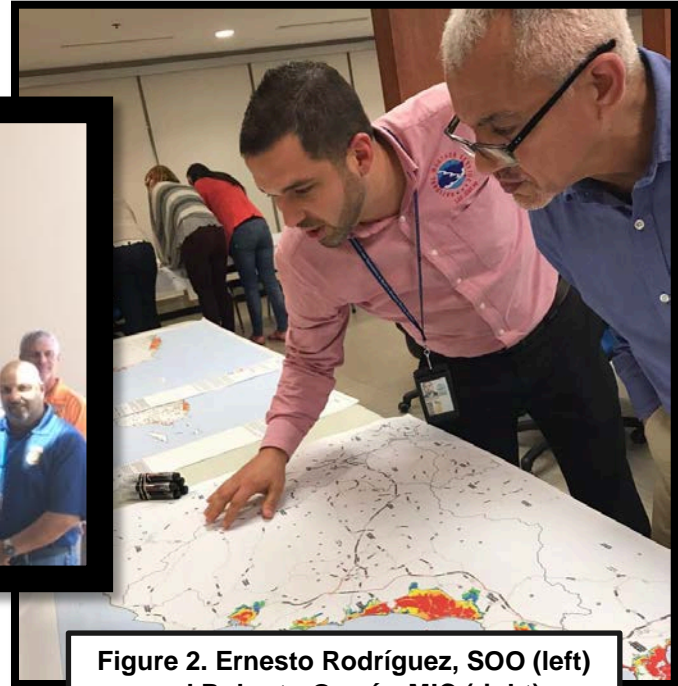


Figure 2. Ernesto Rodríguez, SOO (left) and Roberto García, MIC (right)

Topics covered in this course were Hurricane Basics, Hazards and Decision Making tools. Also, there was a descriptive explanation on NHC and local WFO tropical weather products and their best uses during an event. Personnel of the U.S. Corp of Engineer gave a detailed introduction to the HURREVAC software that was later used on a final exercise. The NHC Storm Surge Unit gave great presentations about these hazards and products that will help emergency managers take decisions before the onset of a tropical cyclone. FEMA staff members talked about the status of the Vulnerability, Behavioral and Shelter analysis and the way we use them to develop evacuation plans.

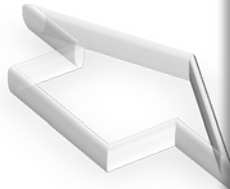
The people teaching those topics were... FEMA Hurricane Liaison Mathew Green, NHC Hurricane Specialists, Todd Kimberlain, and John Cangialosi, WFO SJU SOO Ernesto Rodriguez, NHC Storm Surge Team Cody Fritz, WFO SJU Lead Forecaster Odalys Martinez, USCE Carla Quinn, NHC Storm Surge Unit Lead Jamie Rhome, WFO SJU WCM Ernesto Morales and FEMA Program manager Chris Moore. The audience included representatives from a combination of local PREMA, VITEMA, and Federal employees. Apparently, this audience was very impressed by the large number of forecast products that are currently available from the NHC and WFO SJU which can be used in combination for their decision-making during a threat of tropical nature.

Something About Our Parent Agency—NOAA Part Two of Three

In the previous issue ([hyperlink](#)) we shared about how our parent agency, the National Oceanic and Atmospheric Administration (NOAA), was planning for the future as outlined in a strategic document called: “Research and Development at NOAA: Environmental Understanding to Ensure America’s Vital and Sustainable Future, A Five Year Strategic Plan 2013-2017”. We talked about NOAA’s Vision and how research and development played a critical part in that vision and about how NOAA’s goal is to strive for Research and Development that are intended to simultaneously improve their fundamental understanding of the world and yield applications that are both useful and used. In this issue we will explore the requirements NOAA sees for new knowledge and technology as defined by a series of key questions that respond to two goals and three objectives.

NOAA’s Goal for Climate Adaptation and Mitigation:

An informed society anticipating and responding to climate and its impacts.



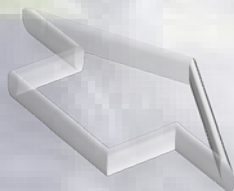
Key Questions NOAA’s Research and Development seeks to answer:

- What is the state of the climate and how is it evolving?
- What causes climate variability and change on global to regional scales?
- What improvements in global and regional climate predictions are possible?
- How can NOAA best inform and support the nation’s effort to adapt to the impacts of climate variability and changes?



NOAA’s Goal for a Weather Ready Nation:

A society that is prepared for and responds to weather related events.



Key Questions NOAA’s Research and Development seeks to answer:

- How can we improve forecasts, warnings and decision support for high impact weather events?
- How does climate affect seasonal weather and extreme weather events?
- How can we improve forecasts for fresh water resource management?

Something About Our Parent Agency—NOAA

Part Two of Three

NOAA's OBJECTIVES

NOAA's objective for people with an interest or concern regarding the environment: To develop an engaged and educated public with an improved capacity to make scientifically informed environmental decisions.

Key Questions NOAA's Research and Development seeks to answer:

How can we improve the way scientific information and its uncertainty is communicated?

How can we improve the capacity of the public to respond effectively to changing environmental conditions?

NOAA's objective for Environmental Data:
Accurate and reliable data from sustained and integrated Earth observing systems.

Key Questions NOAA's Research and Development seeks to answer:

What are the best observing systems to meet NOAA's mission?

How can we use current and emerging environmental data?

How can we improve the way we manage data?

NOAA's objective for Environmental Modeling:
An integrated modeling system.

Key Questions NOAA's Research and Development seeks to answer:

How can modeling be best integrated and improved with respect to skill, efficiency and adaptability?

What information technology developments can help NOAA improve quantitative predictions?

Did You Know?

A nationwide survey indicates that 96 percent of the U.S. public obtains, either actively or passively, a total of 301 billion weather forecasts each year. Based on an average annual household value of \$286 placed on weather information, the American public collectively receives \$31.5 billion in benefits from weather forecasts each year.

Typing it Together

Within the framework of these *strategic goals* and *questions*, the R&D objectives and targets are managed through regular planning, budgeting, monitoring and evaluation activities of people, places and things that form the core of the agency.

In the Next Issue

We will complete the picture by sharing the fundamental principles that guide NOAA.

Social Media @ WFO San Juan



The ability to communicate meteorological information and provide assistance during significant weather events is a vital, if not most important, part of our mission to protect life and property. Without this capability, we would not be able to effectively communicate the dangers and impacts that may or are currently threatening life and property. The NWS San Juan WFO provides many video and graphical images, in both English and Spanish, via the Facebook and Twitter platforms.

National Weather Service San Juan PR

WARNING!
 HIGH SURF ADVISORY IN EFFECT
 HIGH RIP CURRENT RISK IN EFFECT
 COSTAL FLOOD ADVISORY IN EFFECT AT MIDNIGHT TONIGHT

¡PELIGRO!
 ADVERTENCIA DE RESACAS FUERTES EN EFECTO
 RIESGO ALTO DE CORRIENTES SUBMARINAS EN EFECTO
 INUNDACIONES COSTERAS EN EFECTO DESDE LA MEDIANOCHE ESTA NOCHE

PELIGRO WARNING

OLEAJE FUERTE DANGEROUS SHOREBREAK

MATTHEW

What	Hurricane
Where	Puerto Rico & U.S. Virgin Islands
When	<ul style="list-style-type: none"> Now through Friday Morning Hazardous Seas of 10-15 feet, winds of 20-30 knots (gusts of 30-35 knots), and showers and thunderstorms over the waters, especially the Caribbean waters.

ST Friday for d Saint
 PR and regional
 until 11 PM

Throughout the years, San Juan WFO has been able to positively and effectively interact with the public and core agencies on a daily basis and has been particularly useful during significant weather events in Puerto Rico and the US Virgin Islands. Through social media, we can reach out to a broader range of people, as well as have a better platform for viewing the impacts during weather events and the damages caused by them. However, significant weather events are not the only entity we discuss in Facebook and Twitter. San Juan WFO also publishes various types of educational and climatology information appropriate for any type of audience.

For this upcoming tropical season, we will offer a variety of graphics that include storm forecasts and updates. Along with our daily weather posts, we provide bilingual posts that contain specific storm information, including the latest Tropical Cyclone Bulletin from the National Hurricane Center. These posts are effective not just for PR and USVI, but also for the continental US when appropriate.

We welcome everyone to check out our Facebook and Twitter pages for the local weather updates and forecasts, tropical cyclone forecasts and updates, the local marine conditions, as well as educational and climatological information.



WFO San Juan Visits St. Croix, USVI

On May 10th of 2017, Ian Colón-Pagán (MET Intern) had the opportunity to visit Saint Croix, USVI for the first time. Although this visit was as a Cooperative Observer Program (COOP) trainee, not only was it a great opportunity to enjoy the local scenery but a chance to learn about the local culture through one-on-one interactions with various very passionate Cooperative Observers. Under the guidance of Amaryllis Cotto and during a two day period, they visited four COOP stations, granted two individuals 60- and 25-year Length of Service Awards, replaced vital meteorological equipment and met over 10 individuals whose contributions make the local COOP program a success. Ian states that life in Saint Croix is comparable with life in Puerto Rico; warm temperatures, sandy beaches, 16th century Spanish-like structures, and mountains covered by trees, but driving on the opposite side of the road was a truly life changing experience.



Forecasts available in Spanish!

Complying with National Weather Service's mission to save life and property, our English forecasts are translated into Spanish so that Spanish-speakers may be fully informed regarding weather conditions that affect the local area. Besides the general public, different local agencies, local government, and the education system, our Cooperative observers and even other Spanish-speaking countries take advantage, of not only our English and Spanish forecasts, but also materials, presentations and valuable information.

Our office is also responsible for the translations into Spanish of the El Niño Southern Oscillation (ENSO) Diagnostic Discussion, issued on a monthly basis by the CLIMATE PREDICTION CENTER/NCEP/NWS and the International Research Institute for Climate and Society. For more information, please check out the following links:

FUERTES



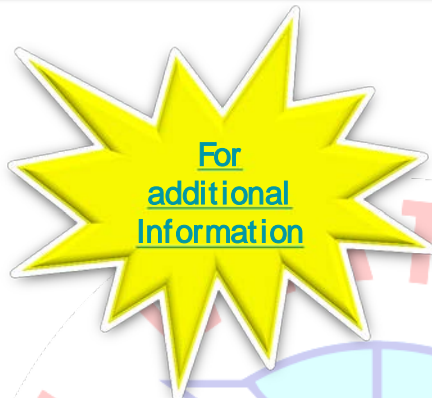
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc_Sp.pdf

Para acceder a nuestros pronósticos en Español, favor de visitar:

http://www.weather.gov/sju/forecast_text

Did you know? Student Volunteer Program



If you have any questions regarding these and other opportunities, please contact our Science & Operations Officer, Ernesto Rodriguez at ernesto.rodriquez@noaa.gov.

Student opportunities at the NWS San Juan are vital in enhancing the educational program for those who wish to get hands-on experience in becoming a meteorologist, IT officer, or ET/HMT technician. The NWS San Juan offers opportunities for students to expand and reach their educational goals. As the job market becomes more competitive, skills obtained through hands-on experience and research will be vital for the future.

2017 WFO San Juan Student Volunteers:

- Astrid Ojeda-Díaz
- Kevin Avilés-Pérez
- Edwin Barbosa
- Jobel Y. Villafañe-Pagán
- Ivan L. Fontanez-Vázquez

June is National Ocean Month

NOAA Ocean Services celebrated the National Ocean Month during June. Throughout the month we shared interesting facts about this extraordinary natural resource and source of life.

To learn more visit:

<http://oceanservice.noaa.gov/news/june17/30days.html>

You will be able to learn more about basics, health, science and life of the oceans. You can learn more very amazing things about our oceans by following the links below:

[How important is the ocean to our economy?](#)

[What is the biggest source of pollution in the ocean?](#)

[Why do scientists measure sea surface temperature?](#)

[What is a whale fall?](#)

If you are a Social Media enthusiast, follow or look for the hashtag **#30DaysofOcean** in Twitter, Facebook and Instagram.

[Email Us- Click here!](#)

Our 9th Edition Newsletter Team
Xiomara Cruz, ASA
Rosalina Vázquez Torres, HMT
Walter Snell, FIC

Collaborators:
Odalys Martínez, FIC
Ernesto Morales, WCM
Ernesto Rodríguez, SOO
Carlos Anselmi-Molina, GF
Ian Colón-Pagán, Met Intern
Amaryllis Cotto, Met Intern



Contact Us:

National Weather Service
4000 Carretera 190,
Carolina, PR 00979
Phone: (787) 253-4586
Fax: (787) 253-7802