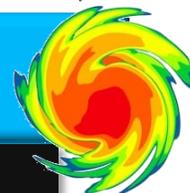




Volume 6, Issue 1 • June 2019

National Weather Service • San Juan, Puerto Rico

2019 Hurricane Season Outlook



Ernesto Rodríguez, Science Operations Officer

Hurricane Season 2019

~~ANDREA~~
BARRY
CHANTAL
DORIAN
ERIN
FERNAND
GABRIELLE
HUMBERTO
IMELDA
JERRY
KAREN

LORENZO
MELISSA
NESTOR
OLGA
PABLO
REBEKAH
SEBASTIEN
TANYA
VAN
WENDY

 Tropical Storms 9-15

 Hurricanes 4-8

 Major Hurricanes 2-4

Weather Forecast Office
San Juan PR



The hurricane season started on June 1 and extends through November 30. Each year, our agency releases the hurricane season outlook in late May. This year, NOAA's Climate Prediction Center is predicting a near-normal Atlantic hurricane season with 9 to 15 named storms (winds of 39 mph or higher), of which 4 to 8 could become hurricanes (winds of 74 mph or higher), including 2 to 4 major hurricanes (category 3, 4 or 5; with winds of 111 mph or higher). These expected ranges are similar to the official seasonal averages of 12 named storms, 6 hurricanes, and 3 major hurricanes.

There are two main factors that are competing for tropical cyclone development this year. The ongoing El Niño is forecast to persist most of the hurricane season which typically produce fewer hurricanes in the Atlantic basin. In contrast, warmer sea surface temperatures in the tropical Atlantic and the Caribbean Sea as well as an enhanced west African Monsoon, are the favorable factors that likely increase hurricane activity. Regardless of the numbers, our message is always the same:

“It does not matter how active or inactive a season is expected to be, it only takes one”. We should always be prepared and review our family preparedness plan before the beginning of the hurricane season. Knowing the vulnerabilities in your community and following the National Weather Service Forecast Office in San Juan, the official source of weather information, you and your family can save your life and property when the next hurricane threatens our local area.

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- Drought in PR
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- CHAT 2019
- Outreach in PR
- RIP Currents
- NWS San Juan Goes Green
- Volunteer Service
- COOP Appreciation Day
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The Dry, the Driest and the Fiery

By: Odalys Martinez, Service Hydrologist

Dryness has been observed across the local islands, particularly across the US Virgin Islands, the interior, south-central and southwest Puerto Rico. Long term rainfall deficits (6 months) across the interior of Puerto Rico are ranging between 6 to 12 inches while rainfall deficits across the southern portions of the island are ranging between 6 to 8 inches. The U.S. Drought Monitor, as a result, classifies these areas under abnormally dry to moderate drought conditions.

Although the northern US Virgin Islands have been dry, the highest rainfall deficits are observed across Saint Croix. 2018 ended as the 4th driest year on record at Henry E. Rohlsen Airport in Saint Croix, and 2019 is one of the driest start to a year with a year-to-date rainfall deficit of 5 inches.

With this dry and hot weather pattern, the risk of fire danger became significantly high with several brush and grassland fires occurring. According to reports from the Puerto Rico Fire Department and local media, significant fires were confirmed across portions of the southern and western Puerto Rico and Saint Croix early this year (image 1).

In terms of water supply, most reservoirs are now in optimum conditions since wetting rains during the month of May alleviated the conditions observed early this year.



Image 1. Grass Fires in Salinas – Photo by PR Fire Department

The Guajataca reservoir observed well below normal levels during February, March and April. As a result, water rationing was imposed to residents across northwest Puerto Rico. These drought conditions are natural events that occur in nearly all climate zones but with widely variable characteristics. While droughts can be defined as a climate phenomenon, their impacts on humans and the environment can be extreme. Differences in hydro-meteorological variables and socioeconomic factors as well as the stochastic nature of water demand have become an obstacle to compare drought conditions between 2015 and 2019. The latest seasonal outlook issued by the Caribbean Climate Outlook Forum (CariCOF) slightly favors below normal rainfall through at least August. Therefore, water conservations and wild fires prevention are imperative.



Check Next Page for Tips to Start Saving Water brought to you by EPA.



Image 2. Lago Guajataca February 2019 – Photo by ENDI.com

Start Saving... Tips to Save Water

Source: Start Saving www.epa.gov

Fix a leak:

Small household leaks can add up to gallons of water lost every day.

That's why WaterSense reminds Americans to check their plumbing fixtures and irrigation systems each year in March during [Fix a Leak Week](#).

In the bathroom—where over half of all water use inside a home takes place:

- Turn off the tap while shaving or brushing teeth. Showers use less water than baths, as long as you keep an eye on how long you've been lathering up. Learn tips on how to [Shower Better](#). If you're dreaming of a [Better Bathroom](#), get ready for your mini-makeover.

[Calculate how much you can save](#) with WaterSense labeled products in the bathroom!

In the kitchen—whip up a batch of big water savings:

- Plug up the sink or use a wash basin if washing dishes by hand.
 - Use a dishwasher—and when you do, make sure it's fully loaded!
 - Scrape your plate instead of rinsing it before loading it into the dishwasher.
 - Keep a pitcher of drinking water in the refrigerator instead of letting the faucet run until the water is cool.
 - Thaw in the refrigerator overnight rather than using a running tap of hot water.
- Add food wastes to your compost pile instead of using the garbage disposal.

In the laundry room—where you can be clean AND green:

- Wash only full loads of laundry or use the appropriate water level or load size selection on the washing machine.

To save money on your energy bills, set your washing machine to use cold water rather than hot or warm water.



More information available at <https://www.epa.gov/watersense/start-saving>



2019 Caribbean Hurricane Awareness Tour (CHAT)

Ernesto Morales, Warning Coordination Meteorologist

The 53rd Weather Reconnaissance Squadron, known as the “Hurricane Hunters” came to Puerto Rico for the 2019 Caribbean Hurricane Awareness Tour (CHAT) on April 13th 2019. They came in their WC-103J Hercules aircraft, and were also joined by NOAA’s Orion P-3 aircraft, which had not participated in this event since 1998. The National Weather Service, local emergency management, several media outlets, families and guests of all ages were present in this event, with the purpose of raising awareness of the potential impacts of tropical cyclones. This year the event took place at the Rafael Hernández Airport in Aguadilla, PR and it attracted around 18,000 visitors.

Visitors were 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 different flight missions. The public had the opportunity to explore and interact with the squadron and personnel while learning about the details of the flight missions and the impacts and dangers of the tropical cyclones. The NOAA P-3 crew also explained their mission, procedures, protocols and responsibilities during both the off season and the tropical season.



CHAT 2019



Roberto Garcia-Hiraldo, Meteorologist In Charge @WFO SAN JUAN, PR

Part of the WFO San Juan and the National Hurricane Center staff was on-site and interacted extensively with the public. Also, local emergency agencies actively participated in this event, such as the Puerto Rico Emergency Management Agency (PREMA) and the Port Authority Emergency Management. The Puerto Rico Police Department’s unit Fuerzas Unidas de Rápida Acción (FURA) aircraft also demonstrated their roles and duties in emergency situations in the tour. As always the case in these types of events, the Federal Emergency Management Agency (FEMA) participated with local staff members giving an orientation about their mission. The major media outlets were present with information booths, constant live reports and interviews throughout the event.



CHAT in the Eyes of a New Employee

Juan Peña, Meteorologist

The Caribbean Hurricane Awareness Tour (CHAT) was my first event as a NWS employee. I've been to other NOAA events and tours back home so I kind of knew what to expect, a few thousand people that are weather enthusiast. I couldn't have been more mistaken. I was amazed when I saw the amount of people that showed up, final amount of about 20,000 people! I was blown away, that more people in attendance than a baseball game might draw. I was also surprised of how much people know and care about weather here locally, which is a huge testament to the job that this WFO has done in helping develop a weather ready nation.

Another big takeaway was just the great job of staying on message. Roberto (MIC of WFO San Juan) was asked a variety of questions from the media from how many tropical cyclones to expect to how many tropical cyclones will form, even questions about the first picture published of the black hole at the time. He answered every questions admirably while always staying on message, "It doesn't matter how many tropical cyclones may form, it only takes one" as the residents of Puerto Rico and the U.S Virgin Islands learned the hard way with Maria in 2017. Although I have been to many events, this is one that I won't forget and am proud to be part of as we continue to build a more knowledgeable weather ready nation!

Outreach In Puerto Rico



By: Gabriel Lojero

In addition to providing forecast and warning products with the purpose of protecting life and property, the NWS San Juan also performs educational outreach activities. Outreach is a very essential part of the work performed at the NWS as it provides the opportunity to connect with the community. With the outreach activities, the NWS educates about the weather hazards that affect the local area on a daily basis, as well as educate about NWS local forecast products that can be used to make day-to-day decisions.

The ultimate goal of these outreach activities is to make the community more ready, responsive and resilient towards severe weather events. The audience usually consists of university student groups, local organizations, and both elementary and high school students. Over the past year, the staff of NWS San Juan has performed these outreach activities through office-tour and external-site visits.

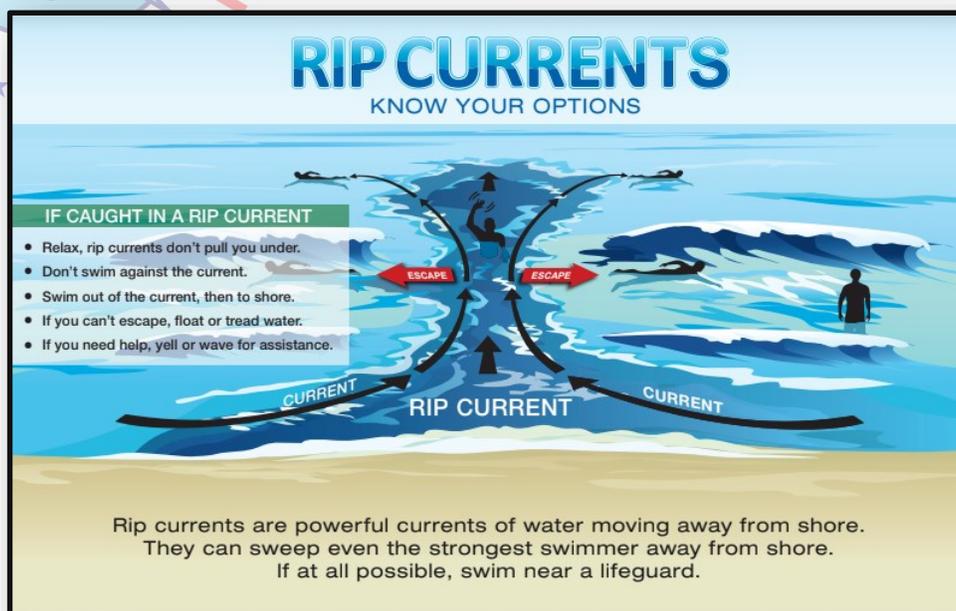


Rip Currents

By: David Sánchez, Lead Forecaster



Rip currents can occur at any surf beach with breaking waves and these currents can sweep even the strongest swimmer out to sea. Rip currents form when waves break near the shoreline, piling up water between the breaking waves and the beach. One of the ways this water returns to sea is to form a rip current, a narrow stream of water moving swiftly away from shore, often perpendicular to the shoreline.



What are some clues that rip currents may be present?

- A narrow gap of darker, seemingly calmer water between areas of breaking waves and whitewater.
- A channel of churning, choppy water.
- A difference in water color.
- A line of foam, seaweed or debris moving seaward



Before heading to the beach take a look at our Surf Zone Forecast:
<https://www.weather.gov/sju/beach>

Watch this video for more information: <https://www.youtube.com/watch?v=RJ4hcaJ91TY>



NWS San Juan goes "Green"

By: Edward Tirado, SITS/ESA

The National Weather Service office in San Juan, Puerto Rico is the very first NWS office to go "green". On July 18, 2016, we were notified that the National Weather Service office in San Juan, Puerto Rico had been selected to be part of a pilot project what would focus on installing of photovoltaic panels (also called solar panels) and inverters to reduce our energy costs. We are proud to announce that on June 13, 2019, the panels were fully commissioned. The panels are expected to improve power quality as well as to reduce the electricity consumed by our office by 20-35%.



Thanks to everyone that made this happen, some of whom are pictured below... those not pictured are equally important.



Pictured from left: Vidal Santiago (NWS SJU ET), Wilfredo Munoz (NWS SJU ET), Edward Tirado (NWS SJU SITS/ESA), William Martinez (FET NWS Miami), Tom Martin (NOAA Project Manager Seattle), Ray McGowan (Contract Engineer NWS Silver Springs), Tina Kastning (Contract Project Manager, Sealaska - Seattle), Matthew DeGeorge (SRH Electronics and Facilities Branch Chief), Orlando Diaz (Planet Solar).

45 Outstanding Years of Volunteer Service

By: Rosalina Vázquez-Torres, HMT

Retired agronomist, Mr. Antonio González, worked for many years in the sugar mill of Coloso in Aguada, Puerto Rico. Part of his duties included the collection of temperature and precipitation data, which helped the agronomists with the plantation of sugar cane. After the sugar mill closed, Mr. González retired, but requested the San Juan Weather Forecast Office to move the COOP station to his house. This has allowed him to continue serving as a weather observer while being part of the NWS cooperative stations network.

From his home, he has continued to provide temperature and precipitation data to the NWS during the last 18 years. The data he responsibly collects is not only used by the National Weather Service, but by the Land Authority of Puerto Rico, among other agencies. In the present, the agronomists of the Land Authority of Puerto Rico, approach Mr. González to request data that helps them identify the best time to conduct their projects.

On March 23rd, 2019, Mr González was the recipient of the Dick Hagemeyer award, for 45 years of being a very responsible and exemplary volunteer COOP weather observer. In addition, Mr. González was distinguished by the NWS with the John Campanius Holm Award in 2013, which recognizes the contribution of outstanding Cooperative Weather Observers. He is well known in his community, where he participates in many activities. He also enjoys sharing his talents as a musician.



Mr. Jorge Dávila-Quintana received an award as a COOP weather observer due to his dedication through more than 45 years of volunteer service.

Mr. Davila-Quintana obtained the property, previously owned by one of his brothers, where the rain gauge was located. He then decided to continue to report the daily precipitation data to the NWS in San Juan. His compromise with the NWS and with his community was demonstrated throughout his volunteer service by more than 45 years. His dedication and responsibility were an example for the COOP Observers.

Recently, Mr. Jorge Dávila-Quintana decided to retire as a COOP observer, leaving the legacy to his daughter. She has continued reporting the data very diligently and lead by her father's example.

Mr. Jorge Dávila-Quintana: we are very grateful for your compromise with the NWS throughout all those years and for teaching your family to continue with the observations. It is an honor for us to have observers like you and your family.



COOP Appreciation Day 2019

By: Lee Ann Inglés, Meteorologist & Xiomara Cruz, Administrative Support Assistant

On May 18th, 2019, in honor of our Cooperative Weather Observers, WFO San Juan's staff members celebrated "Cooperative Appreciation Day". The purpose of the activity is to recognize the hard work and dedication of the observers who collect daily meteorological information for our agency.

The National Weather Service (NWS) Cooperative Observer Program (COOP) is truly the Nation's weather and climate observing network. Its mission is to provide observational meteorological data; usually containing daily maximum and minimum temperatures, and 24-hour precipitation totals required to define the climate of the United States. This data helps measure long-term climate changes while also providing observational, meteorological data in near real-time to support forecast, warning and other public service programs of the NWS.

In the activity, staff members were able to spend time with the observers and their families. They received talks related to meteorology and Hurricane Maria. In addition, they had the opportunity to participate in a radiosonde launch, which is a battery-powered telemetry instrument carried into the atmosphere by a weather balloon that measures various

atmospheric parameters and transmits them by radio to a ground receiver.



To all the official Cooperative Weather Observers: We openly express our sincere gratitude for the work, effort and contribution performed by you in a completely voluntary. The continuous data reported are indispensable to establish our historical climatological records. It is a pleasure for us to have you as part of our family.

As in theatre or any organization, there are many important people who work very hard "behind the scenes". At WFO San Juan, our employees are always willing to support and give a helping hand to achieve goals as a team or as we like to see it: *a work family*.

Frequently, employees work privately or without being known or seen by the public to make things happen.

In this case, our HMT and COOP Program Manager, Rosalina Vázquez-Torres, showed her appreciation with the following statement:

"I have not enough words to thank all of you who contributed in one way or the other with the preparation of the COOP Observer Appreciation Day.

It was a very good day and the observers enjoyed the activity. All of them were very happy.

Special kudos to Roberto, Morales, Álamo, Xiomara, Lee, Fernanda, Odalys, Juan, Emanuel, Gabriel, and Rodríguez for your help before, during and after the activity!

Without you, the activity would not have been successful!" Thank you!!



Social Media @ WFO San Juan

By: Emanuel Rodríguez, Meteorologist

As social media continues to become part of everyone's daily life, the National Weather Service keeps expanding its content in this media. Nowadays, people prefer social media as their source of news. Hence, the weather service needs to be there in order to fulfill its mission of saving lives and property.

This year, we have plans to change our daily forecast posts to more visually appealing products that summarize weather conditions for different sectors in our forecast area. We are also improving our educational content and actively participating and posting important information during awareness weeks as well as taking precautionary measures during big events and holidays.

Flood Awareness Week

Semana de la Concienciación sobre las Inundaciones
May 6-10, 6-10 de mayo

Flash Flood Watch, Flood Advisory, Flash Flood Warning
 Vigilancia de Inundaciones Repentinas, Advertencia de Inundaciones, Aviso de Inundaciones Repentinas

Flash Flood Watch: Be prepared! • Favorable conditions for a hazardous weather event to occur.		Vigilancia de Inundaciones Repentinas: ¡Prepárese! Condiciones favorables para que ocurra un evento peligroso.
Flood Advisory: Be aware! • Flooding is not expected to be a life threatening situation.		Advertencia de Inundaciones: ¡Sea consciente! Inundaciones que no representan amenaza a la vida.
Flash Flood Warning: Take Action! • Its a life threatening situation.		Aviso de Inundaciones Repentinas: ¡Tome acción! ¡Es una amenaza a la vida!

Web: www.weather.gov/sju
 Twitter: @NWSSanJuan
 Facebook: NWSSanJuan

TROPICAL STORM KIRK

...STRONG WINDS AND HEAVY RAINFALL EXPECTED TO SPREAD OVER PORTIONS OF THE LESSER ANTILLES TONIGHT...

ADVISORY #16
 5:00 PM AST
 THU SEP 27 2018

COORDINATES
 Lat: 14.2 N Lon: 60.2 W

LOCATION
 85 mi northwest of Barbados

MOVEMENT
 West Northwest at 14 MPH

MAX SUSTAINED WINDS
 50 MPH

MIN CENTRAL PRESSURE
 1000 millibars

There are no coastal watches or warnings in effect for PR or USVI.

Tropical Storm Kirk
 Thursday September 27, 2018
 5 PM AST Advisory #16
 NWS National Hurricane Center

Current information: x
 Center location 14.2 N 60.2 W
 Maximum sustained wind 50 mph
 Movement WNW at 14 mph

Forecast positions:
 Tropical Cyclone
 Sustained winds: D - 39 mph
 S 39-73 mph H 74-110 mph M = 110 mph

Potential track area: Watches: Hurricane, Tropical Storm
 Warnings: Hurricane, Tropical Storm

National Weather Service San Juan, PR
www.weather.gov/sanjuan www.nhc.noaa.gov

This upcoming hurricane season, we will continue to provide bilingual support on any system that might pose a threat to Puerto Rico, U.S. Virgin Islands and any location with a Latino population along the coasts of the Continental United States. However, for the first time, we are eager to present live-streaming content to communicate the forecast and briefings at a human level. We, as the social media team, at NWS San Juan, are ready to provide timely content to keep up with the ever changing needs of our customers. As social media continues

to become an essential element in everyone's daily life and preferred source of information, the use of this tool has become crucial to the National Weather Service (NWS). As a result, the NWS keeps expanding its content, accessibility and resourcefulness in order to fulfill its mission of saving lives and property.

Web: www.weather.gov/sju
 Twitter: @NWSSanJuan
 Facebook: NWSSanJuan



Social Media Workshop @ WFO San Juan, Puerto Rico

Fernanda Ramos-Garces, Meteorologist

On Wednesday June 12th 2019, WFO San Juan hosted their Annual Media Workshop. The main purpose of this workshop is to provide the local media with important information about the upcoming Hurricane Season, latest forecast products and new social media efforts. The San Juan WFO is committed to NOAA's IDSS mission, and therefore the workshop serves as a two-way road to exchange ideas in order to improve the effective messaging through all of the available media outputs.

The workshop consisted of a series of presentations from different staff members which started with a 2018 Hurricane Season Summary and the 2019

Outlook offered by MIC, Roberto García. Mr. García focused on key points that the local media should highlight in order to promote a message of preparedness for this hurricane season. Following this presentation, Lead Forecaster Carlos Anselmi presented the new Storm Surge forecast product, which will be operational starting this Hurricane Season. The Storm Surge forecast product will provide more detailed information regarding the expected Storm Surge and its potential impacts to our partners and general public. An overview of the NHC and WFO San Juan hurricane products and their issuing timeline was discussed by SOO, Ernesto Rodríguez. Understanding these products and the time they would be issued provided insights to the media on how they can develop their weather stories. An open discussion was held regarding the Watches and Warnings and how to communicate multiple hazards and threats.



This discussion, facilitated by Service Hydrologist, Odalys Martínez, addressed the communication gap between our office and the press, which is paramount in the efforts to minimize misleading and confusing information received by the public. This discussion was complemented by Meteorologist Fernanda Ramos, who talked about WFO San Juan's

social media efforts and new ideas to promote awareness and preparedness to build trust with the local community. The presentation had tips on how the media will be able to communicate accurate and official information by sharing San Juan WFO's social media content.

Climate and Fire Weather are also a part of San Juan WFO's local programs and are of big interest for the local media. Therefore, Lead Meteorologist José Álamo and Meteorologist Ian Colón offered walkthroughs on how to search for Climate and Fire Weather information on our webpage. Both staff members answered the audience's questions and inquiries to make good use of the information, the audience was amazed at the wealth of information available and also offered some suggestions on what would be helpful for their purposes. Finally, WCM, Ernesto Morales, opened up another discussion with the local media. This discussion served as a great opportunity to listen to the media's perspective, which contributed to an overall wider spectrum of knowledge on how we can collaborate to make a Weather Ready Nation.

*Many thanks to everyone who participated.
We all make a great team!*



New Employees @ WFO San Juan



On behalf of our staff at WFO San Juan we recently welcomed three four new employees. As a part of our team, we believe that they are going to be excellent assets who will accomplish their day to day tasks and goals. We are very pleased to welcome them!



Lee Ann Inglés-Serrano



Fernanda Ramos-Garces



Juan Peña



Matthew Brewer

As Meteorologists (entry level), they will perform duties designed to provide orientation in the mission and work of the organization. Apply professional meteorological theories, methods, and techniques involved in forecasting and interpretive studies, and/or conducting related projects and programs.

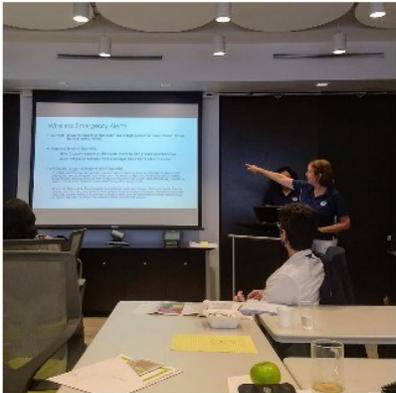
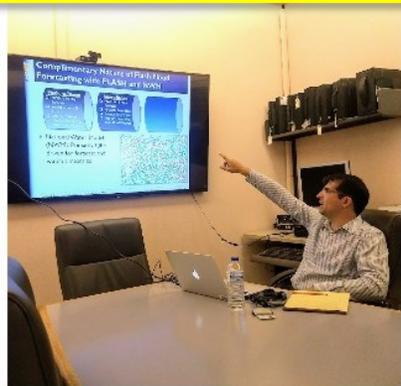
As a General Forecaster, Brewer will provide general weather information, warnings, advisories, aviation and public forecasts to the general public and to special user groups in the WFO service area. He is responsible for the coordination of NWS products, warnings, and forecasts with the Senior Forecaster on duty, the Service Hydrologist, and the hydrometeorological technicians. The forecaster provides professional advice and assistance to peers and lower grade staff members.



Collaborations with Universities and Research Centers are Essential for Improving Operations

By: Ernesto Rodríguez, Science Operations Officer

Every year the National Weather Service (NWS) San Juan received the visit of scientists and partners from universities and federal agencies to share knowledge and collaborate in different projects. Also, meteorologists go out at times to participate in research groups and other focal groups to understand the decision-making process using NWS forecasts and warnings. All this knowledge gained during the interaction with these scientists and collaborators has resulted in improvements to NWS San Juan operations as well as to our science-based services. Our office will continue to seek these collaborations in the future to adopt innovative science and technology into operations.



Something About Our Parent Agency– NOAA Part 3 of 3

By: Walter Snell, Lead Forecaster

In the [previous issue](#) we shared two goals and three objectives that our parent agency, NOAA, has for its Research and Development program:

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

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

To develop an engaged and educated public with an improved capacity to make scientifically informed environmental decisions.

Accurate and reliable data from sustained and integrated Earth observing systems.

An integrated modeling system.

In this issue we would like set out 6 fundamental principles that will lay the foundation for its efforts.

Integrity	NOAA must be a trusted source for environmental science
Integration	NOAA will build a holistic understanding of the earth’s systems— understanding both the components and how they fit together
Innovation	NOAA is committed to creating value in its products and services that support the nation.
Balance	NOAA is committed to achieving a balance between many pairs of competing goals and paradigms:
	Long term versus short term outcomes
	Emerging versus immediate needs
	Needs of stakeholders versus activities of researchers
	Low risk versus high risk activities
	Incremental versus radical change
Collaboration	NOAA recognizes the flexibility and diversity of expertise and capabilities that NOAA’s partners provide.
Coordination	NOAA acknowledges the importance of a vibrant exchange of scientific and management viewpoints a clear understanding of the mission, goals and objectives, the quality of its components and how well connected they are.

NOAA is America’s oldest science agency, and their reach extends from the surface of the sun to the bottom of the sea. They study, monitor, predict, and forecast the Earth’s environment, and provide critical environmental information to the nation. They are stewards of our nation’s fisheries, coasts and oceans. Their work makes a difference in the lives of each and every American and makes our work possible.



National Weather Service San Juan, PR

The [National Weather Service](#) is an agency under the [National Oceanic and Atmospheric Administration](#), which is a part of the Department of Commerce. The mission of the National Weather Service is to provide weather forecasts and hazardous weather warnings to the public. We maintain a constant eye on the weather across the country 24 hours a day, 7 days a week, 365 days a year. A staff of over 4,500 skilled employees accomplish this mission with the assistance of high-speed computer networks, an orbiting fleet of weather satellites in space, and ground-based radar systems.

The San Juan forecast office is staffed 24 hours a day with at least one meteorologist and one hydro-meteorological technician. This office provides forecasts for users across Puerto Rico and the U.S. Virgin Islands. One of the major duties in this office is the coordination with the [National Hurricane Center](#) and dissemination of products, statements, watches and warnings during the Hurricane Season. Several times each day, forecasts are prepared in both English and Spanish for use by the general public, broadcast media, and the aviation industry.

The Staff consists of 10 meteorologists, 6 hydro-meteorological and/or meteorologist interns, 2 electronics technicians, an electronics systems analyst, an information technology officer, a service hydrologist, an assistant administrator, a data acquisition program manager, a warning coordination meteorologist, a science and operations officer and a meteorologist in charge.

This is edition of "The Whispering Trades" is brought to you by the Newsletter Team & the collaboration of various staff members.

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