The Wilmington Wave

National Weather Service, Wilmington, NC

Fall 2018 Volume VIII, Issue I

INSIDE THIS ISSUE:

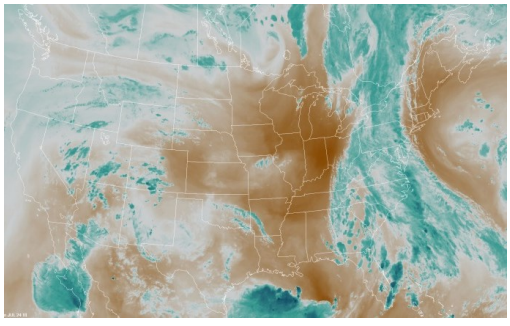
2018: Record Rainfall in Wilmington

By Victoria Oliva

Wilmington, NC has experienced an unprecedented amount of rainfall in 2018. The average annual rainfall for the city is 57.61 inches. As of October 1st, an outstanding 86.70 inches of rain has fallen in 2018, 29.09 inches above average … with 3 months to go! With climate records in Wilmington going back to 1871, the previous annual rainfall record was set way back in 1877 with 83.65 inches for the year. Over 60% of the record 2018 rainfall occurred within 3 separate months: May, July and September.

Despite a relatively dry start to the month, May 2018 turned into the wettest May on record at Wilmington, with 14.36 in. of rainfall surpassing the previous May record of 9.12 in. set in 1956. The wettest day in May 2018, and subsequently the wettest May day on record, was the 19th when 5.52 in. of rain fell. This was due to a Bermuda high pressure in the western Atlantic and a trough to the west leading to a tropical moisture plume pulling up from the south, creating heavy rainfall across the region. Five days later, a cold frontal passage dumped a couple more inches on Wilmington. To close the month out, over 4 inches of rain fell on May 28th, as a deep plume of tropical moisture streamed into the Carolinas as Subtropical Storm Alberto moved into the northeast Gulf of Mexico.

During July 2018, Wilmington received 17.10 inches of rain, making it the 4th wettest July on record in the city. After a coastal front moved through the area between the 20th and the 21st, the east coast was characterized by a high pressure system offshore and a trough to the west, leading to tropical moisture being pulled northward, bringing days of showers and storms to the eastern Carolinas. The consistent rainfall between July 22nd and August 4th tied the record for consecutive days with measurable rainfall at 14 days (had also occurred the summers of 1886, 1945, and 1950). On August 2nd, the total rainfall for 2018 in Wilmington surpassed the average annual rainfall with 58.00 in. measured for the year.



Water vapor imagery from July 24th, 2018. This pattern of a deep tropical moisture plume from the south was responsible for most of July's, and part of May's, record rainfall.

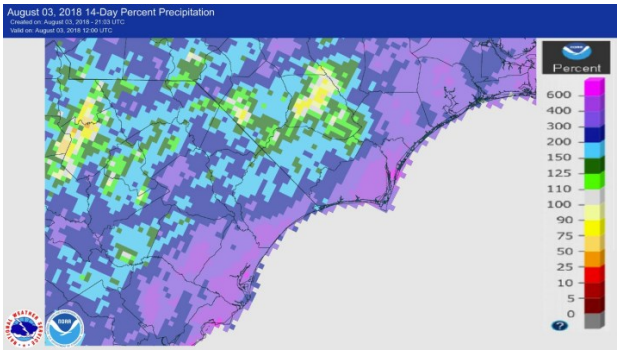
Continued on page 2….

September 2018 in the Carolinas was marked by the landfall of Hurricane Florence. A category 1 hurricane at landfall on September 14th, Florence maintained a slow motion of 2-3 mph west-southwestward for a couple of days, leading to heavy rainfall and catastrophic flooding. Wilmington began being affected by the outer bands of Florence on the 13th, with continuous rainfall through the 16th. Florence became the wettest event in Wilmington history at 23.03 in. of rainfall, with amounts up to 35 inches received elsewhere in NC. Prior to Florence, Wilmington was at 63.20 in. of rainfall for the year. Afterwards, 86.23 in. of rain had fallen in 2018, surpassing the previous 1877 rainfall record of 83.65 in. on September 16th. September's monthly rainfall total of 24.13 in. is both the wettest September in Wilmington history and the wettest month on record (previous record was 23.41 in. in 1999 due to Hurricane Floyd). With current annual rainfall at 86.70 in. as of October 1st, it is a possibility Wilmington could reach 100 inches of rain for 2018 if above average precipitation pattern continues, a record amount not typically seen in NC outside the mountain region!

Monthly Total Precipitation for Wilmington Area, NC (in.)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2018	6.82	1.83	3.25	5.37	14.36	8.41	17.10	5.43	24.13	M	M	M	86.70
Max	10.22 1991	11.22 1998	10.43 1936	8.21 1961	14.36 2018	12.87 1962	21.12 1886	18.83 2006	24.13 2018	15.91 2015	7.87 1972	8.86 2009	86.70 2018
Mean	3.76	3.62	4.21	2.82	4.49	5.18	7.48	7.41	7.84	3.89	3.29	3.62	57.61

While Wilmington is having a record-breaking rainfall year, other climate sites in our area are also having wet years, mostly due to Hurricane Florence. In Florence, SC, 42.31 in. of rain has fallen as of October 1st, and the normal annual rainfall for the city is 42.91 in. Records in Florence go back to 1948, and the current rainfall record is 64.71 in. set in 1959. Similar story in North Myrtle Beach, SC, where 50.89 in. has fallen as of Oct. 1st, with normal annual rainfall of 52.01 in. and current record is 64.83 in. set in 2015 (though records only go back to 2000). Prior to Hurricane Florence, Lumberton, NC measured 25.87 in. for 2018, with normal yearly value of 43.52 in. and record 58.20 in. set in 2003 (records going back to 1903). Unfortunately, the ASOS (Automated Surface Observing System) at Lumberton, NC went down on September 14th as Hurricane Florence hit the area, and rainfall data during the 3 heaviest rain days of the storm were lost. Therefore, Lumberton's 2018 yearly total will go down in the books as a missing year.



Graph shows % of normal precipitation that fell between July 20th and August 2nd. Coastal areas in our region, including Wilmington, received between 300 and 600% of normal rainfall amounts.

Flooding in Wilmington along New Center Drive during Hurricane Florence.

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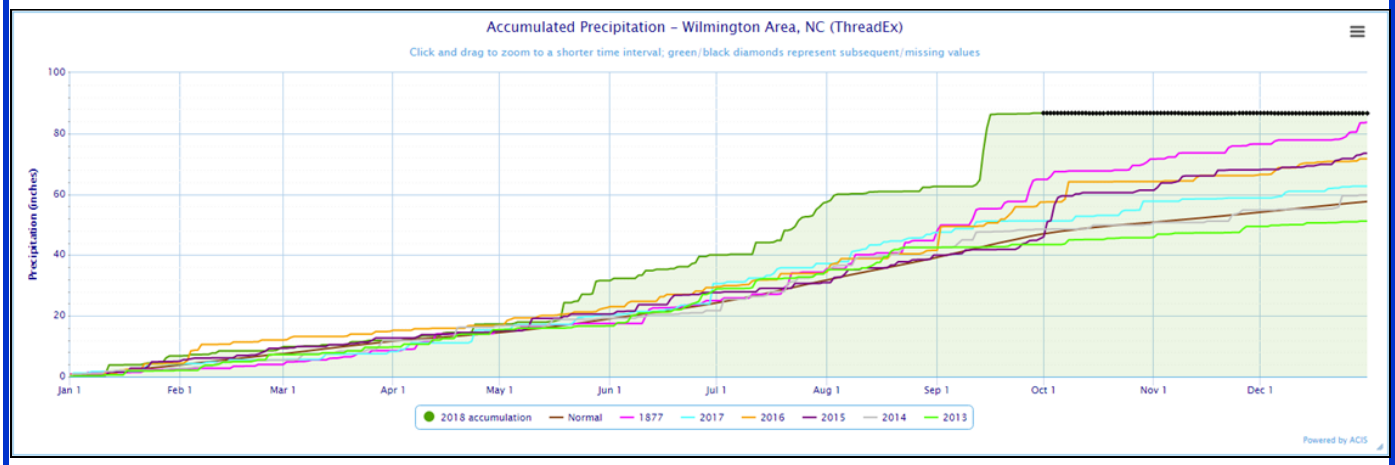
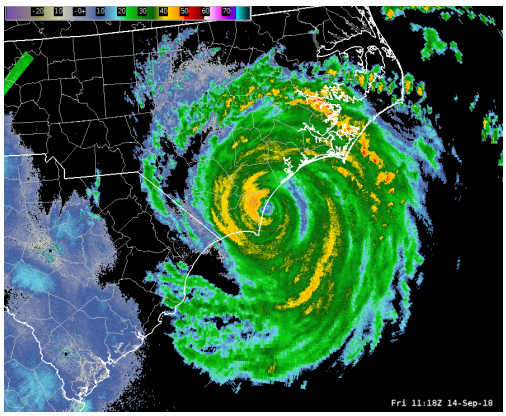


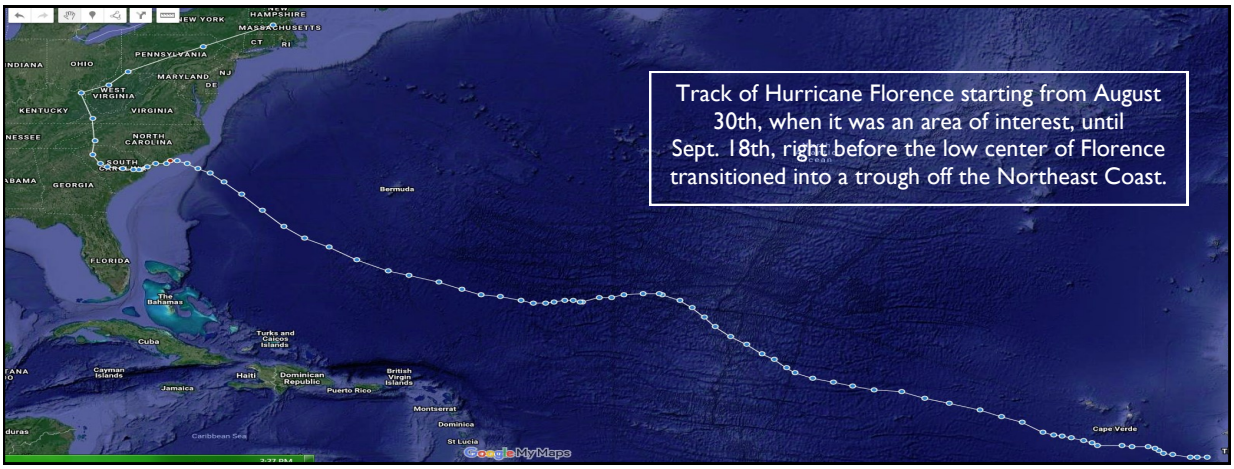
Accumulation graph for precipitation in Wilmington, NC. 2018 rainfall (green), the previous record annual rainfall (1877—pink), and the normal precipitation (brown) lines are plotted, along with the past 5 years, for comparison.

A Quick Glance at Hurricane Florence

Hurricane Florence began as Tropical Depression Six about 550 miles west of Africa on August 31,2018. After two weeks of strengthening and weakening, Florence made landfall at Wrightsville Beach at 7:15am on September 14th as a Category 1 Hurricane. Due to the slow movement of the storm, Florence lingered over the Carolinas for several days, leading to heavy rainfall, widespread flooding, and spawning multiple tornados in both North and South Carolina, as well as Virginia. Florence broke numerous records, including state records in NC and SC for most rainfall from a tropical system and 2nd highest wind gust ever recorded at Wilmington, NC. The highest inland wind gust measured was 105mph at the Wilmington Airport, and most rainfall recorded during Florence was at a CoCoRaHs station in Elizabethtown, NC with 35.93 inches. Due to widespread heavy rainfall, many rivers across the Carolinas had record crests that surpassed those from Hurricanes Matthew and Floyd. Due to extensive impacts, we will not know full damage details from Florence for some time. A more detailed article on Hurricane Florence will be included in our Spring 2019 issue of the Wilmington Wave newsletter.



Radar image 9/14/18 at 7:18am as Florence made landfall.



Track of Hurricane Florence starting from August 30th, when it was an area of interest, until Sept. 18th, right before the low center of Florence transitioned into a trough off the Northeast Coast.

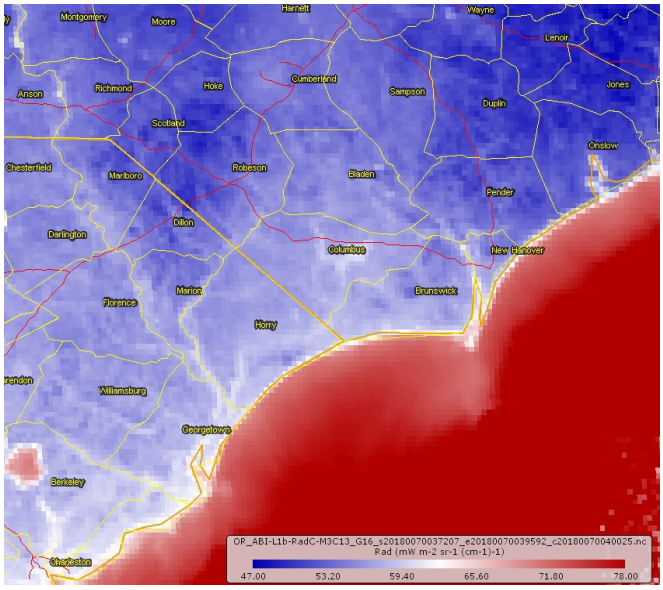
The Snow and Extreme Cold of January 2018

By Tim Armstrong

The first half of January was one of the coldest periods on record for eastern North and South Carolina. Nighttime temperatures fell into the lower teens and single digits, readings not often seen here since the brutal winters of the 1980s. The persistence of the extremely cold weather, lasting over a week, is equaled only by similar occurrences in January 1918 and February 1899.

As if the cold weather wasn't enough, strong low pressure developed off the coast and created an ice and snow storm across the area on January 3rd. This storm system met the meteorological definition of a *bomb* -- rapid strengthening where atmospheric pressure fell by 24 millibars in 24 hours. Satellite data suggested wind speeds well offshore may have reached 90 mph! Local snowfall totals averaged 2 to 5 inches, with up to a quarter of an inch of freezing rain along the Grand Strand from Myrtle Beach to Georgetown, SC. Snow was reported as far south as Tallahassee, FL.

Local impacts from the extreme cold unfortunately included frozen water pipes, some of which burst in schools and beneath city streets. Thick ice developed on local ponds and creeks. Amazingly, ice even developed on salt water in some tidal creeks and marshes. The ocean water temperature at Cherry Grove Pier near North Myrtle Beach fell to 39.3 degrees. At Johnnie Mercer Pier in Wrightsville Beach the water temperature fell to 42.5 degrees, the coldest measured since that station was established in 2004.



Infrared Satellite image from early morning Sunday, January 7, 2018. Darker blue colors indicate colder surface temperatures which generally occurred over snow cover.

Local Climate Data during the January 2018 Arctic Blast

Wilmington, North Carolina

Day	High Temp	Low Temp	Avg Temp	Departure from Normal	Precip (in.)	Snowfall (in.)	Snow Depth (in.)
1	32	19	26	-20	0.00	0.0	0
2	35	17	26	-20	0.00	0.0	0
3	35	17	26	-20	0.67	3.4	0
4	35	24	30	-16	0.07	0.4	4
5	35	15	25	-21	0.00	0.0	3
6	31	11	21	-25	0.00	0.0	3
7	33	12*	23	-23	0.00	0.0	2
8	54	14*	34	-12	0.00	0.0	2

**Wilmington's low temperatures on January 7th and 8th set new daily records*

Wilmington's low of 11 degrees on January 6th was the coldest since February 5, 1996. From January 1st through 7th the average high temperature in Wilmington was 33.7 degrees, the coldest seven-day stretch since January 1918.

Continued on page 5….

Florence, South Carolina

Day	High Temp	Low Temp	Avg Temp	Departure from Normal	Precip (in.)	*Unofficial Snowfall (in.)*
1	31	20	26	-19	0.00	*0.0*
2	35	15*	25	-20	0.00	*0.0*
3	32	18	25	-20	0.10	*2.5*
4	37	18	28	-17	trace	*trace*
5	35	10*	23	-21	0.00	*0.0*
6	32	16	24	-20	0.00	*0.0*
7	32	8*	20	-24	0.00	*0.0*
8	54	17	36	-8	0.00	*0.0*

** Florence's low temperatures on January 2nd, 5th, and 7th set new daily records*

The low temperature of 8 degrees on January 7th was the coldest recorded in Florence since January 21, 1985. Eight consecutive nights of temperatures 20 or colder had never occurred before in Florence.

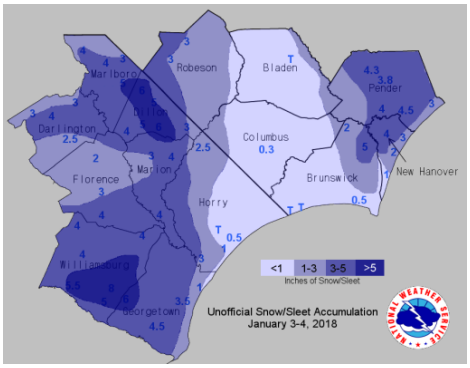
North Myrtle Beach, South Carolina

Day	High Temp	Low Temp	Avg Temp	Departure from Normal	Precip (in.)
1	31	20*	26	-20	0.00
2	35	18*	27	-19	0.00
3	34	23	29	-17	0.06
4	39	23	31	-15	trace
5	38	18*	28	-18	0.00
6	34	18*	26	-20	0.00
7	32	16*	24	-22	0.00
8	53	20	37	-9	0.00

** North Myrtle Beach's low temperatures on January 1st, 2nd, 5th, 6th, and 7th set new daily records*

Nighttime low temperatures in the Grand Strand area did not become as cold as other portions of the eastern Carolinas due to a lack of snow on the ground. Even without snow cover, the average low temperature for the first seven days of January was 19.4 degrees, the coldest such period on record.

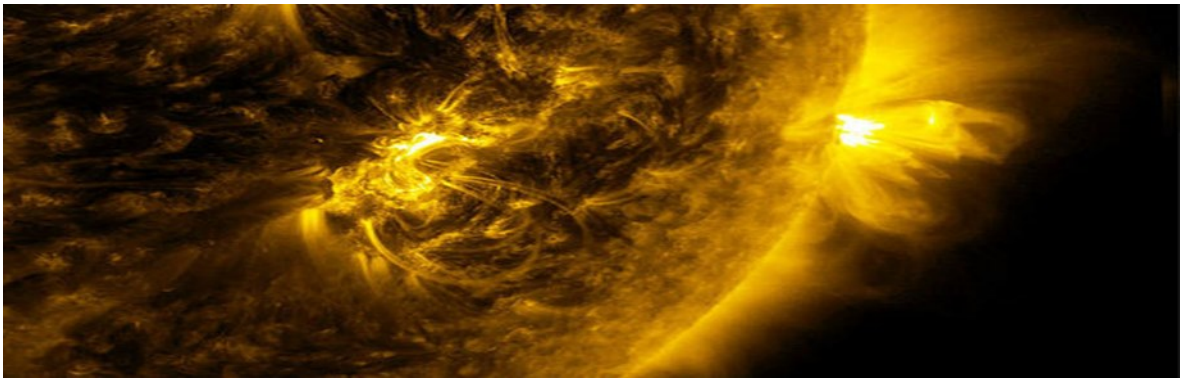
Snow covered the palm trees at the National Weather Service Office. Officially we measured 3.8 inches of snow and temperatures as low as 11°F in Wilmington.



Snowfall accumulation map from the storm of January 3-4, 2018. The highest total was 8 inches near Andrews, South Carolina.

Why We Monitor the Sun

By Michael Colby



Our nearest star is dependable, its rise predictable to the micro-second, yet, this life giving furnace is not without abrupt changes in behavior. Outbursts of electromagnetic energy at the speed of light can shoot out solar flares, produce geomagnetic storms and strong solar winds. Coronal Mass Ejections can hurl tons of coronal material and carry an embedded magnetic field. These changes, and the 'personality' of our Sun, is called **Space Weather**.

Space Weather Can Impact Earth in The Following Ways:

Electric Power Grids

The electric power grid and the electricity to your home or work can be disrupted from strong solar activity.

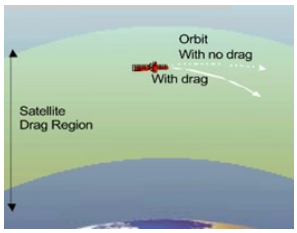
Navigation Systems

GPS systems in cars, airplanes, ships, and trains can be also be adversely affected by bursts and streams of solar energy.

Satellite Communications

Satellites use high frequencies to communicate, and are impacted by strong pulses of solar wind and charged electrons in the ionosphere.

Satellite Drag

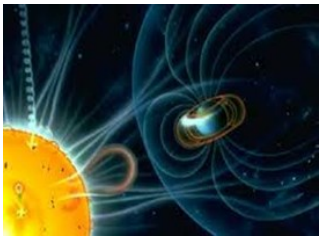


Think of running against the wind, feeling the 'drag' pushing you back. Satellites and strong solar wind are as a similar comparison.

Radio Communications

Several Government agencies and ham radio operators use HF radio communications, which can be in 'blackout' with radio static during strong solar events.

The Earth's Climate



Variance in the Sun's energy, which includes a wide spectrum of wavelengths, brings changes to Earth's climate, All of which are not fully understood.

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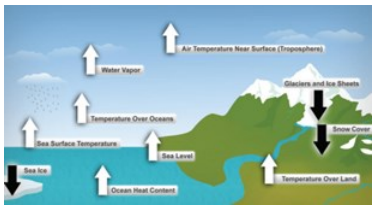
Local Drivers of Climate



- Latitude
- Elevation
- Ocean Currents
- Topography
- Vegetation
- Nearby Water

Factors That Can Change Climate

- Solar Energy
- Volcanoes
- Upper Air Patterns
- Greenhouse Gases
- El Niño / La Niña
- Deforestation

SPACE WEATHER PREDICTION CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

The Space Weather Prediction Center (SWPC) located in Boulder , Colorado, continually monitors and forecasts Earth's space environment, providing solar-terrestrial information.

3 Space Weather Impacts Are Color Coded Around the Clock by Severity

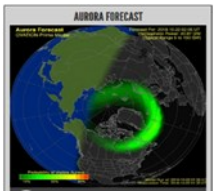
R	S	G
none	none	none
Radio Blackouts	**Solar Radiation Impacts**	**Geomagnetic Storm Impacts**

Scale	Description
R 5	Extreme
R 4	Severe
R 3	Strong
R 2	Moderate
R 1	Minor

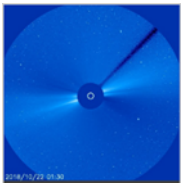
The SWPC Also Monitors:

Solar Cycle

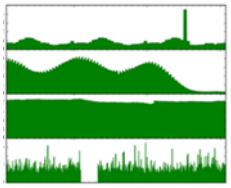
Aurora Activity



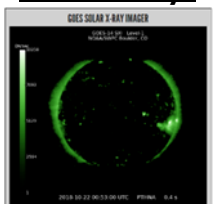
Coronal Mass Ejections



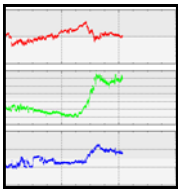
Satellite Environment



Solar X-Rays



Solar Wind

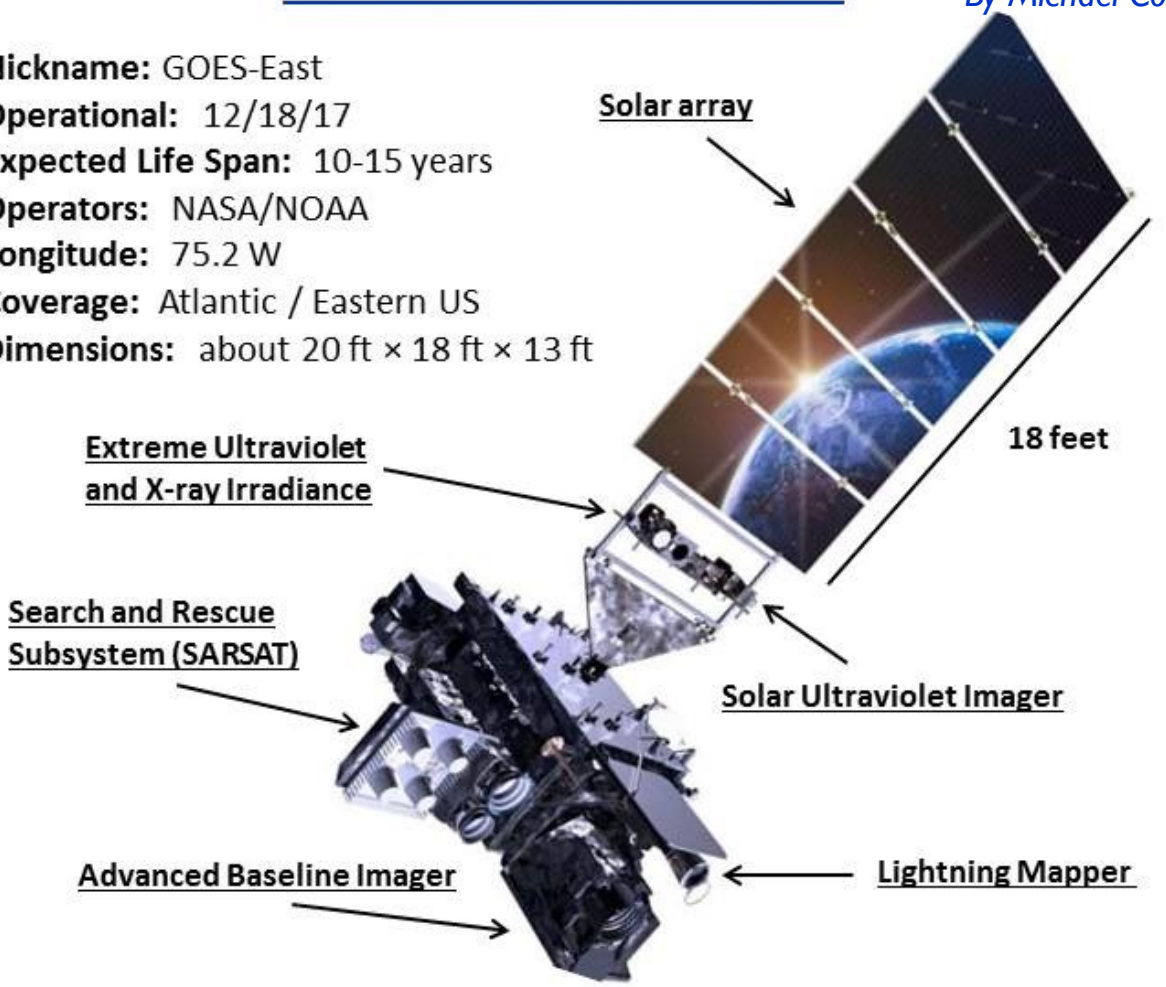


Visit www.swpc.noaa.gov for current space weather conditions, forecasts, and other information.

Meet GOES-16!

By Michael Colby

Nickname: GOES-East
Operational: 12/18/17
Expected Life Span: 10-15 years
Operators: NASA/NOAA
Longitude: 75.2 W
Coverage: Atlantic / Eastern US
Dimensions: about 20 ft × 18 ft × 13 ft



Unique Payloads

Data Collection System (DCS)

20,000 environmental data platforms transmit to GOES-East

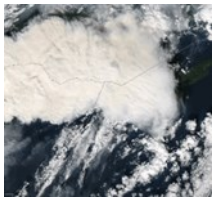
Search and Rescue Satellite Aid Tracking (SARSAT)

Emergency Manager's Weather Info Network (EMWINS)

Continued on page 9….

Interesting GOES-16 Facts

The satellite follows an orbit that matches exactly the speed at which the planet rotates, allowing the satellite to remain over one fixed point on the Earth's surface, from 22,369 miles in the sky. This gives the satellite a consistent view of half the planet for it's entire service life of 10-15 years.



GOES-East takes detailed full Earth disk images every 15 minutes, and a higher resolution image of the United States every 5 minutes. If there is an active storm, it will take two images every 60 seconds.

GOES-East is the first satellite to track lightning flashes from a fixed orbit. The Geostationary Lightning Mapper (GLM) provides a near real-time look at almost every thunderstorm within the satellite's range of sight.

The satellite has sensors to monitor activity around the Sun, some of which can have serious implications here on Earth. The Extreme Ultraviolet and X-Ray Irradiance Sensors (EXIS) helps track solar flares that could disrupt communications, or even damage satellites.

Links

You can access current GOES-16 imagery at:
https://www.goes.noaa.gov/Atlantic.html

A nice portal to GOES data from Colorado State University:
http://rammb-slider.cira.colostate.edu

Additional detailed Information on GOES-16:
https://en.wikipedia.org/wiki/GOES-16

Winter Weather Outlook

By Jordan Baker

A major driving force of the Northern Hemisphere winter pattern is actually due to waters in the South American Pacific Ocean, nearly 3,000 miles away. The temperature of these waters can greatly impact the weather patterns in their region which has a ripple effect that impacts billions of people in the northern hemisphere. The term for this pattern is the El Niño-Southern Oscillation (ENSO) cycle. Many have heard the term, but very few actually understand what it is or its potential impacts.

El Niño-Southern Oscillation (ENSO)

El Niño and La Niña are phases of the El Niño-Southern Oscillation (ENSO) cycle. The ENSO cycle describes the differences in temperature between the ocean and atmosphere, which in the tropics, essentially relies on differences in sea surface temperatures (SSTs). These ENSO phases last for about a year and can have variable intensity from month to month and year to year.

El Niño

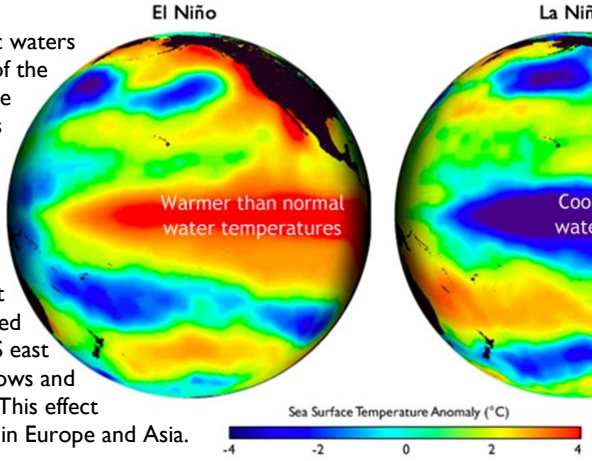
The term El Niño refers to the large-scale ocean-atmosphere climate interaction linked to a periodic warming in sea surface temperatures across the central and east-central Equatorial Pacific. In Ecuador and northern Peru, locals describe the warming of the offshore waters as El Niño which means "the child" due to its timing around Christmas in November and December.

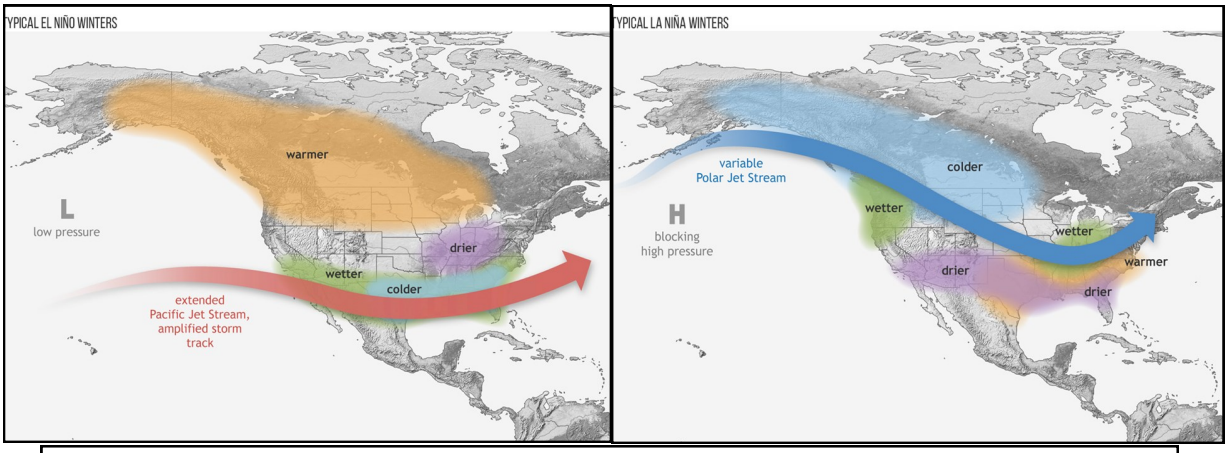
Warmer equatorial Pacific waters disrupt the natural cycle of the global atmosphere. For the northern hemisphere, this leads to a stronger Pacific jet. This jet splits off of the west coast of the United States. When the Pacific Jet splits, the southern branch of the jet stream can lead to amplified storm tracks along the US east coast and create coastal lows and other extreme weather. This effect can lead to perturbations in Europe and Asia.

La Niña

La Niña episodes represent periods of below-average sea surface temperatures across the east-central Equatorial Pacific. Global climate La Niña impacts tend to be opposite those of El Niño impacts. Cooler than normal waters also have an impact on the economy as upwelling brings millions of fish to the surface, and fisherman out to sea, in Ecuador and Peru.

During a La Niña year, colder sea surface temperatures develop in the equatorial Pacific due to easterly winds and coastal upwelling. This creates a weaker Pacific jet and a subsequent high pressure system over the mid-latitude Pacific. With the high in place, a blocking pattern is created and cold temperatures are observed in the Great Plains and Canada with warmer temperatures and drier conditions in the south and southeast.





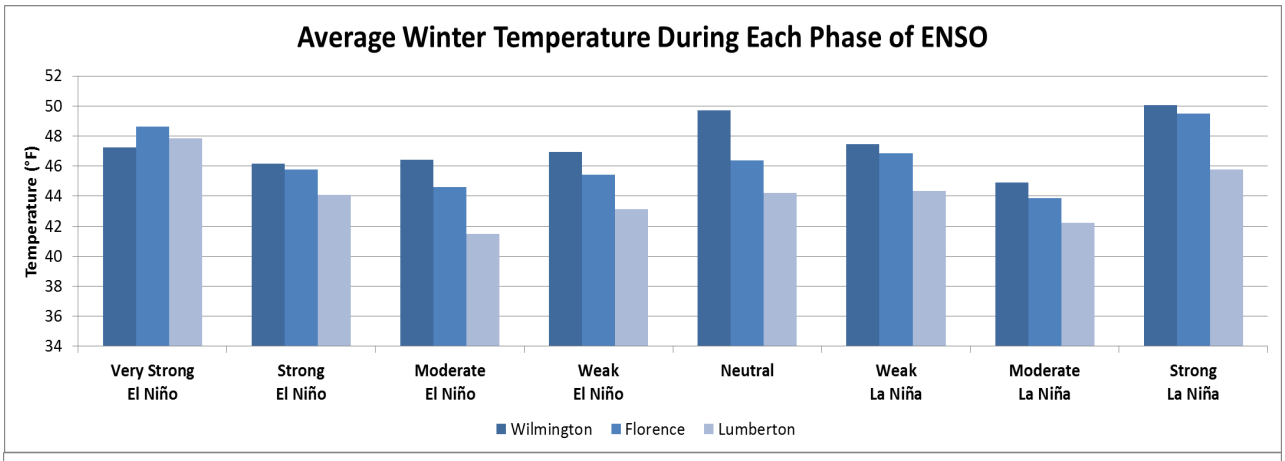
Setup of ENSO events (top) and impacts of ENSO events (bottom) during the Northern Hemisphere winter.

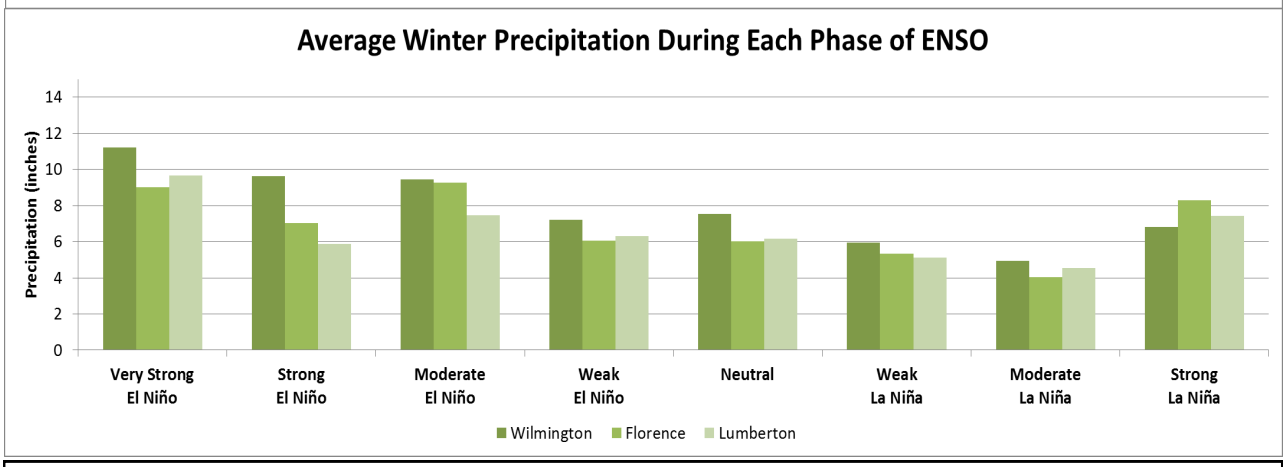
Continued on page 11….

Local ENSO Impacts

Locally, the impact of ENSO events can vary dramatically. Due to the proximity of the Gulf Stream, our weather can have deviations from the expected climatic conditions. Two inland locations and one coastal location are included in the ENSO analysis that follows. Overall, weak and moderate ENSO events tend to lead to lower average temperatures throughout the winter. In fact, 15 of the 20 coldest winters (at all three locations) occurred during either weak or moderate ENSO events. Seven of these events occurred during a weak El Niño, like the one forecast for the winter of 2018-2019. The coldest winter ever recorded occurred during a weak El Niño at Lumberton and Florence. However, temperature patterns are much more variable than precipitation patterns due to many small-scale factors. Precipitation patterns show a clear trend. During El Niño winters, the amplified storm track resulting from warm Pacific waters produces coastal lows that can bring the Carolinas inches of rain at a time. Stronger El Niños tend to lead to more precipitation while La Niñas lead to below average precipitation.

Winter Averages (Through DJF)				
	Wilmington	Florence	Lumberton	Myrtle Beach
Max Temp	57.8	57.1	55.6	57.9
Min Temp	36.6	35.6	32.4	36.8
Avg. Temp	47.2	46.4	44.0	47.4
Precip.	7.33	6.39	6.21	5.86
Snowfall	1.6	-	-	-





Depiction of average winter (December, January, and February) temperatures (top) and total average winter precipitation (bottom) during different intensity ENSO events in Wilmington, NC, Florence, SC, and Lumberton, NC.

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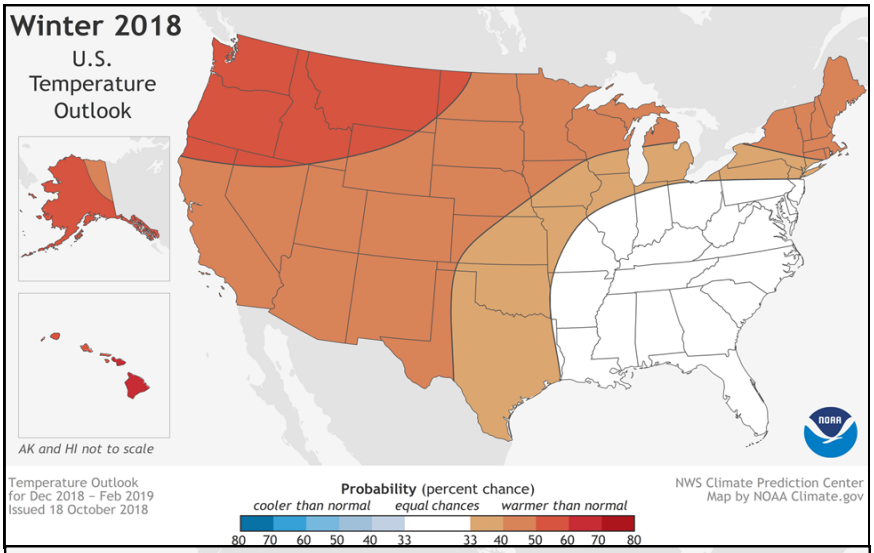
Outlook Overview

NOAA's Climate Prediction Center (CPC) monitors ENSO conditions throughout the year and release their Winter Outlook based on the ENSO phase and intensity. The CPC expects weak El Niño conditions to develop by late autumn and early winter. Their predictions of national temperature and precipitation anomalies can be seen below, but what does this mean for us?

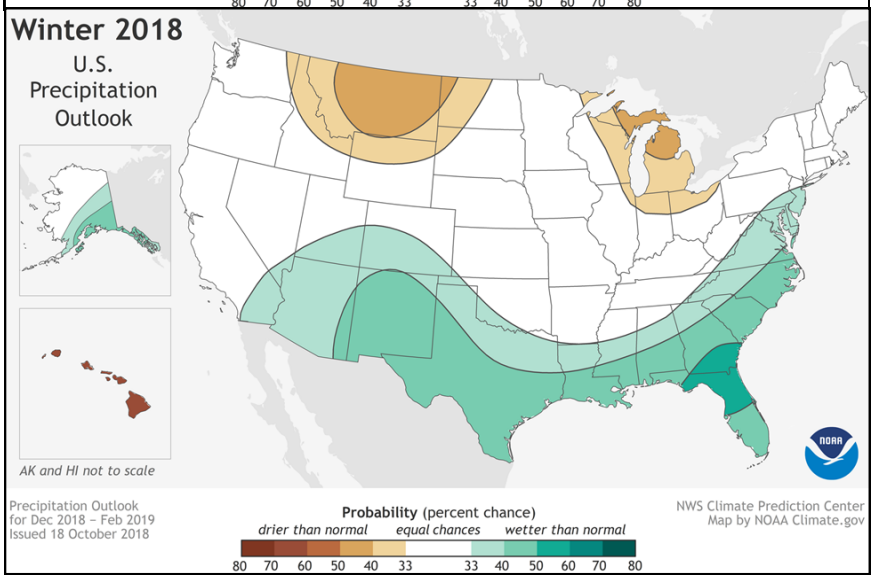
For starters, temperature patters during weak El Niño events will be expected to be near normal or only slightly below. Wilmington typically sees near normal temperatures with the inland locations at Florence and Lumberton seeing anomalies of about a half a degree or less. Despite climate predictions, it is important to be ready for all the weather hazards that we could possible see in the coming months. This includes severe weather, ice storms, snow storms, drought, flooding, and excessive cold weather. Weather is instantaneous; climate is a long-term average.

According to past statistics from our area, precipitation will be near normal. Averages of weak El Niño events of the past show an average difference of –0.11 inches below normal total winter precipitation. The outlook predicts that there is a 40-50% chance of precipitation above the normal, and past statistics show that this is indeed likely. Despite the average difference at each station being 0.11 inches below the normal, variability in weak El Niño events is very high. At Wilmington, the average precipitation during weak El Niño events is 7.2 inches with a standard deviation of 2.2 inches. A high of 10.14 inches occurred due to multiple coastal lows making their way up the coast in 2014-2015. Unfortunately, snowfall is too variable from year-to-year to reliably compare, but weak El Niño patterns average about 1.8" of snow which is about 0.2" above the annual average.



Temperature

- Warmer-than-normal conditions are anticipated across much of the northern and western U.S., with the greatest likelihood in Alaska and from the Pacific Northwest to the Northern Plains.
- The Southeast, Tennessee Valley, Ohio Valley and Mid-Atlantic all have equal chances for below-, near- or above-average temperatures.
- No part of the U.S. is favored to have below-average temperatures.



Precipitation

- Wetter-than-average conditions are favored across the southern tier of the U.S., and up into the Mid-Atlantic. Northern Florida and southern Georgia have the greatest odds for above-average precipitation this winter.
- Drier-than-average conditions are most likely in parts of the northern Rockies and Northern Plains, as well as in the Great Lakes and northern Ohio Valley.

Winter Weather Safety Tips

By Jordan Baker

While southeast NC and northeast SC have relatively mild winters, we still have extreme weather events that may affect our area such as ice storms, extreme long-duration cold snaps, and nor'easters that bring snow, rain, and wind. It is important to be ready for these events because it only takes one to cause loss of life and property.

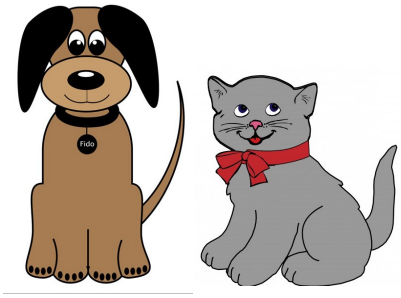
In preparation for a winter weather event, keep in mind that the primary concern will be the loss of heat, power outages, and shortage of supplies if storm or proceeding conditions persist for more than a couple of days.

Before winter weather strikes, be sure to take necessary precautions such as maintaining, cleaning, and annually inspecting chimneys and other heating equipment, and making sure your vehicle is prepared by having a full gas tank and inspecting the antifreeze levels, brakes, battery, and more!

For additional information, visit www.ready.gov

For Animals

Move animals to sheltered locations
Make heat available to animals (shelters, space heaters, etc.)
Have extra feed and water (stored inside) on hand



Disaster Kit Preparation

For Home/Work

- Flashlight and extra batteries
- Battery-powered NOAA Weather Radio
- Extra food and water (one gallon of water per person, per day)
- Prescription medicines
- Cash and a credit card, emergency phone numbers
- Important documents
- Blankets and change of clothing per person
- First aid supplies
- Fire extinguisher/smoke alarm/carbon monoxide detector
- Heating fuel
- Emergency heat source

For Vehicle

- Mobile phone, charger, batteries
- Windshield scraper or de-icing spray
- Flashlight with extra batteries
- Battery powered radio
- Compass and road maps
- Water and snack food
- Matches
- Extra hats, socks, mittens, and clothing
- First aid kit with pocket knife
- Necessary medications
- Blanket(s) & sleeping bags
- Tow chain and/or rope
- Jumper cables
- Emergency flares or Fluorescent distress flag

Traveling During Winter Events

In some cases, students and employees are still expected to go to work or school during adverse weather. If you must leave your residence, please take extra precautions!

- **If traffic lights are out, approach the intersection as a 4-way stop sign and yield to the person on your right!**
- Drive only if it is absolutely necessary.
- If you must drive: travel during the day and don't travel alone
- Stay on main roads and avoid back road shortcuts.
- If driving on snow or ice-covered roadways, reduce your speed. Driving at the regular speed limit will reduce your ability to control the car if you begin to slide.
- Leave plenty of room between you and other vehicles.
- If conditions worsen and you can no longer drive safely, pull off the highway. Do not set out on foot unless you can see a building close by where you know you can take shelter.
- Let someone know your destination, your route, and when you expect to arrive. If your car gets stuck along the way, help can be sent along your predetermined route.

Carbon Monoxide: The Invisible Killer

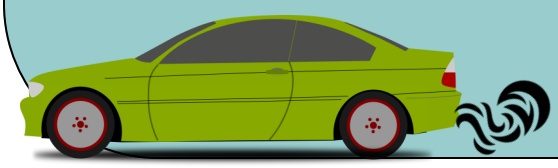
Carbon monoxide (CO) is a deadly odorless, colorless, and poisonous gas that is the cause of dozens of fatalities each year, especially during the winter season. Many fatalities occur due to running generators and vehicles in an enclosed space such as a garage or a room in your home. Exhaust from vehicles and generators must be able to escape to the environment.

Symptoms of CO poisoning:

- Dizziness, nausea, fatigue, headache, shortness of breath
- High level of CO poisoning: vomiting, mental confusion, loss of consciousness

Prevent CO poisoning:

- **Never leave car running in an attached garage (even with garage door open)**
- Never operate equipment such as generators in enclosed spaces, such as a garage or locations within a home.
- Never burn charcoal inside home, vehicle, garage
- Never use gas appliances to heat your home (ovens, clothes dryers, etc)
- Never use portable gas grills inside your home.
- Install carbon monoxide alarms in central locations on every level of your home
- If carbon monoxide alarm sounds, move quickly to fresh air outside of the home



Incident Meteorologist Program

By Terry Lebo

Not all National Weather Service meteorologists spend the day forecasting at a desk inside a weather service office. The Incident Meteorologist (IMET) program has been helping incident management teams battle wildfires since 1929. Once onsite, an IMET provides site specific forecasts which are used by the team to develop strategies and tactics that will allow them to battle the wildfire safely and efficiently. The IMET is also responsible for firefighter safety, issuing warnings for thunderstorms, shifting winds, and occasionally debris flows due to excessive rainfall over recently burned areas.

Although the IMET program began in support of wildfires, it has been expanded to provide support during other disasters. IMETs supported the Space Shuttle Columbia recovery efforts in Texas and Louisiana in 2003, the Deepwater Horizon spill cleanup efforts in 2010, and Hurricane Sandy recovery in 2012 - just to name a few.

When at an incident, an IMET is not just responsible for providing a daily forecast for the incident action plan or IAP. There are several briefings throughout the day where they brief current weather and any hazards to the fire crews as well as planning meetings where weather expected during the next several days is discussed, highlighting significant weather like gusty winds, extremely hot and dry conditions, or thunderstorms. Sometimes crews will intentionally light a small fire to burn fuel ahead of the main fire as a way to control the fires movement or contain the fire. This is called a burnout. The IMET is tasked with doing a very specific hour by hour forecast, called a spot forecast, prior to the crews starting the burnout to ensure conditions will be favorable and the controlled burning will not become a new wildfire. IMETs are frequently asked to attend public meetings to discuss the weather and receive requests from the media for interviews.

There are a wide range of tools that help the IMET produce accurate and timely forecasts and forecast updates. IMETs have a laptop where we can view radar, satellite, and model data and use chat software to discuss potential forecast problems with local forecast offices and other IMETs in the area. Portable weather stations can be ordered to deploy in and around the fire that provide real-time data. IMETs launch and track weather balloons and receive daily weather observations from many of the crews after each shift.

In more recent years, the National Weather Service has begun using a model similar to that of the IMET program called DSS (Decision Support Services) to provide support to local, county, and state officials during major events and natural disasters. The National Weather Service Office in Wilmington, NC has been providing support to the emergency management community for many years. The office issues routine briefings twice a week and unscheduled briefings during times of dangerous weather. Prior to and during Hurricane Florence the office issued a total of 85 briefings. In spring of 2018 the office provided remote support to the US Coast Guard during the delivery of 2 cargo cranes to the Port of Wilmington. Another example of the support the office in Wilmington, NC provides is on-site or embedded support. During high profile events or large incidents the office will send meteorologists to county Emergency Operations Centers (EOCs). The NWS meteorologists work closely with county and state emergency management officials with public and first responder safety in mind. As an example, each year the Wilmington, NC office sends a meteorologist to the Darlington County EOC to support Darlington County Emergency Management during the Labor Day Weekend NASCAR race and in the spring of 2017 the office supported New Hanover County Emergency Management during the PGA Wells Fargo Championship.

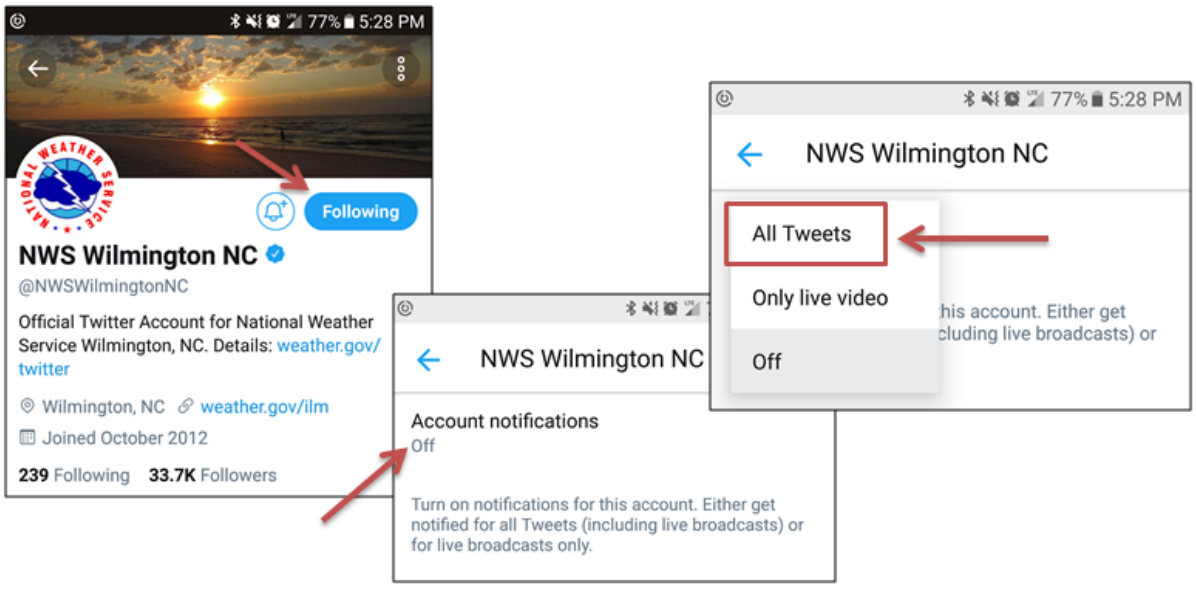
Picture taken at the Ferguson Fire in July 2018 during an IMET deployment.

Social Media Notifications

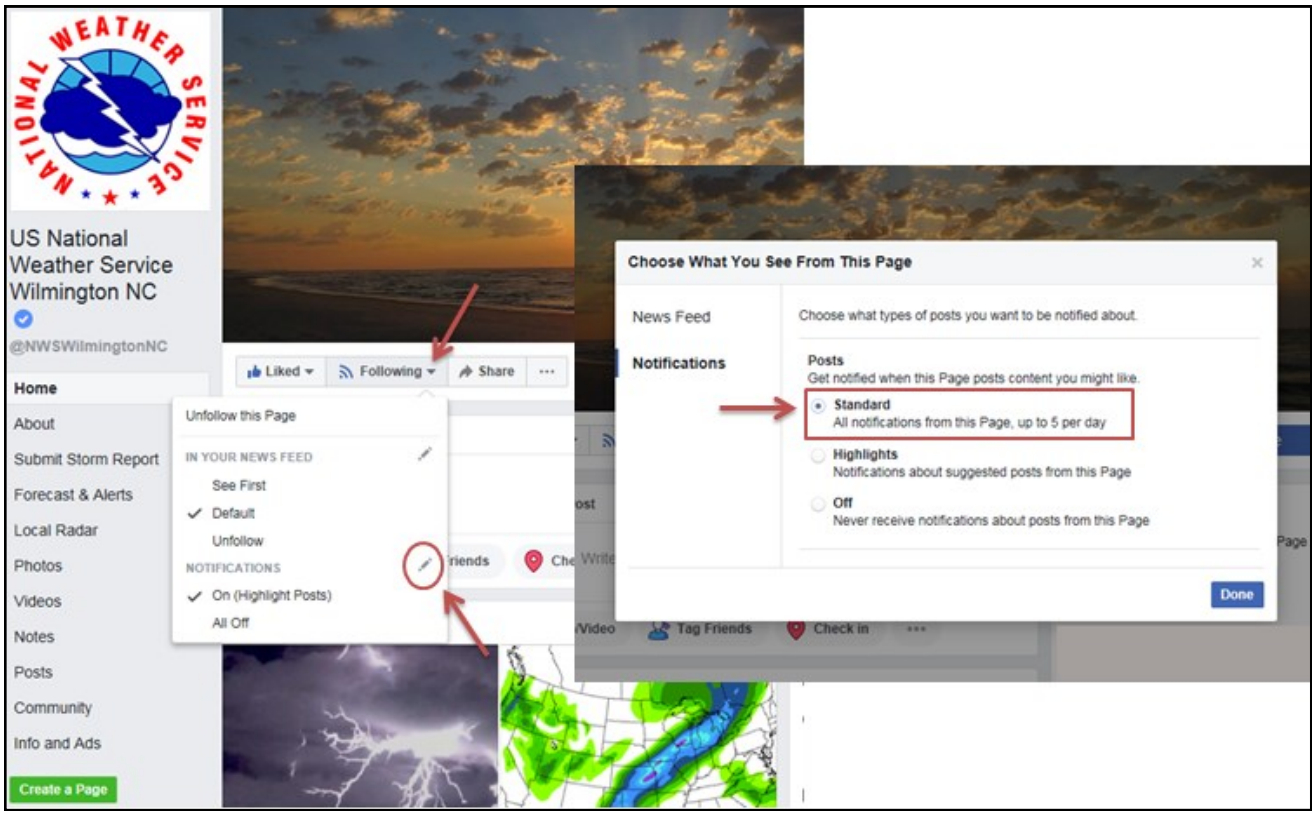
Whether it's during active weather, storms in your area, or you are just interested in information from the National Weather Service, you can turn on social media notifications from your local NWS office to stay notified of ongoing weather in your area. For Twitter, you can turn on mobile notifications alerting you of new tweets from your NWS office. For Facebook, you can choose to turn on Notifications for the NWS page that will send you a notification within Facebook for new posts, up to 5 a day.

Twitter via Desktop

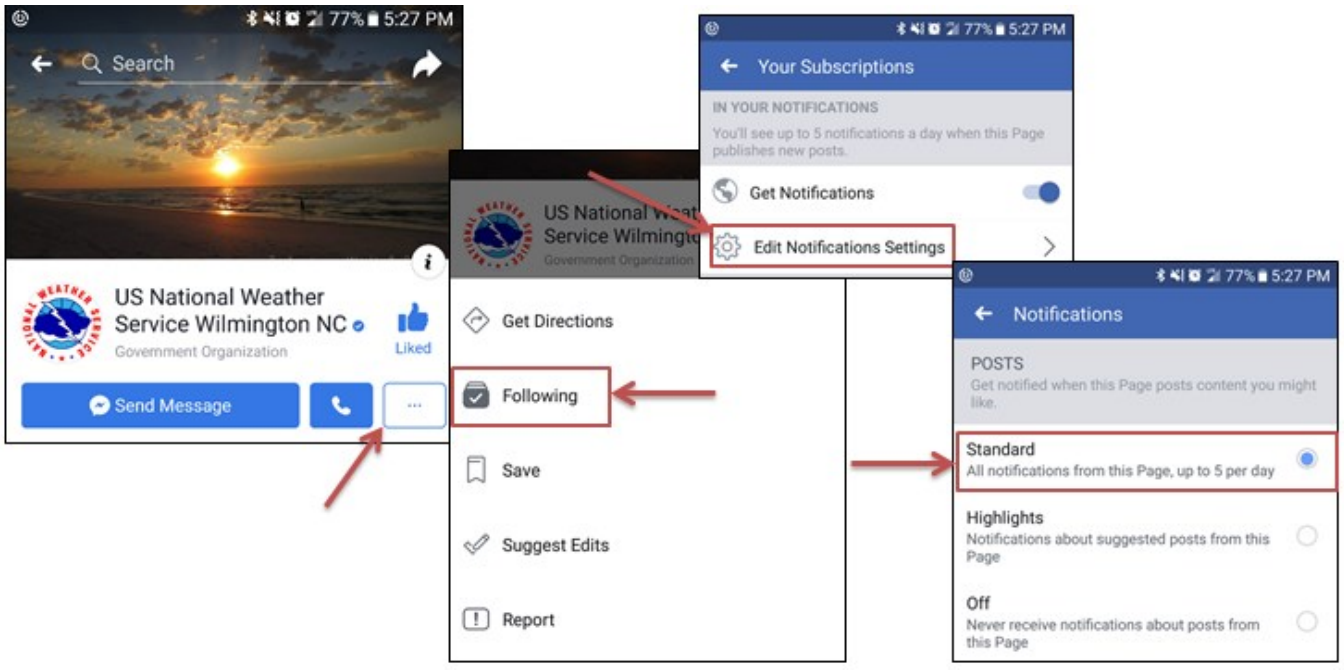
Twitter via Mobile



Facebook via Desktop



Facebook via Mobile



Want to Become a Weather-Ready Nation Ambassador?

By Steve Pfaff

It's no surprise for many that live in southeast NC and northeast SC that we are susceptible to a wide variety of weather impacts. In fact, our part of the country is like no other when it comes to the different hazards we have to prepare for including wind driven wildfires, hurricanes, ice storms, flooding, tornado outbreaks, severe thunderstorms, drought, etc. Although many of these events do not occur routinely, if we fail to plan for them then many will become caught off guard by their impacts. The National Weather Service (NWS) is responsible for doing storm survey assessments of areas hit hard by severe weather, and a common theme we hear from those who were hit hardest is – "I can't believe this happened to me". While most people agree that we have an exposure to hazardous weather, only a small segment of the population is ideally prepared to deal with extreme weather events.

During a typical year the United States has 100,000 severe thunderstorms, 5,000 floods and flash floods, 1,000 tornadoes, and 2 land-falling hurricanes. It's no wonder why our Nation needs to be Weather-Ready. While there have been advancements in weather related technology and research that have led to the increased accuracy and warning lead time over the last decade, people are still being killed in great numbers. For instance, during 2011 there were 549 fatalities from tornadoes – almost 300 people during the Alabama outbreak on a single day! As a result, the NWS has started a new program called Weather-Ready Nation to enhance community resilience in the face of extreme weather events across the Nation.

The Weather-Ready Nation Ambassador program is the initiative that recognizes a wide variety of partners in their efforts to advocate weather safety and planning. The Ambassadors help to unify weather safety efforts, are action-oriented, inclusive, and help lead to new partnership opportunities with the NWS. The Ambassador program is open to any club, organization, company, civic group, or government agency (Local/State/Federal) and is free to join. There are no formal guidelines or requirements to become an Ambassador other than to sign-up and become integrated into the pipeline of weather safety information through the Weather-Ready Nation program. Consider the following - does weather potentially impact your family, friends, club members, staff or coworkers? If you answered yes then consider joining to become a Weather-Ready Nation Ambassador. Help the NWS to better serve our local communities by signing up!

For more information, and to apply to become a WRN Ambassador, visit: https://www.weather.gov/wrn/about

AMBASSADOR™

WRN

WEATHER-READY NATION

National Weather Service
Weather Forecast Office
Wilmington, NC

2015 Gardner Drive
Wilmington, NC 28405
Phone: (910) 762-4289
www.weather.gov/ilm

Webmaster's Email:
ILM.webmaster@noaa.gov

Prepare for the worst before the cold!

Hurricane Florence has taught us that waiting until the last minute can be very stressful and, in some cases, dangerous. Prepare for potential winter events before they are an immediate threat.

Home Winter Preparedness Checklist

- ☐ Select Foods — weather.gov/dmx/wintersafety
- ☐ Disposable Dishware — Plates, Bowls, Utensils
- ☐ Specialty Items — Meds, Infant Formula, etc.
- ☐ Portable Radio — AM/FM/Wx Radio & Batteries
- ☐ Warm Clothing — Hats, Mittens, Parkas, Boots
- ☐ Extra Blankets
- ☐ Matches — For Candles & Gas Fireplaces
- ☐ Shovel/Snow Blower — Check condition & maintain
- ☐ Flashlights — & Extra Batteries
- ☐ First Aid Kit
- ☐ Cell Phone — Fully Charged
- ☐ Firewood — For Wood Fireplaces

The Wilmington Wave

Volume VIII, Issue I

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