RESPONDING TO EXTREMES

2016 - 2017 Carolinas Weather and Climate Events

Established in 2003, the Carolinas Integrated Sciences & Assessments (CISA) team is 1 of 10 NOAA Regional Integrated Sciences & Assessments (RISA) teams. CISA works to increase resilience in the Carolinas through applied climate research in collaboration with a wide range of stakeholders. In addition to ongoing research and engagement efforts, the CISA team works to respond to stakeholder and decision maker information needs as they arise. These requests are often prompted by specific weather and climate events in the region. Below are a few of these events that occurred in the last year which have influenced various parts of our work.

CISA
A NOAA RISA TEAM

RISA
Regional Integrated Sciences and Assessments


Courtesy of Fayetteville Observer

2016

JUNE-AUG 2016
3rd warmest summer on record in Raleigh, NC. Temperatures exceeded 100°F 21 times in Columbia, SC during the 2016 summer months.

MAY

JUNE

JULY

JULY 2016
Hottest July on record in Charleston,SC.

AUG

OCT 8, 2016
Hurricane Matthew makes landfall on the SC coast.

SEPT

OCT

NOV 2016
D4 drought conditions observed in the western Carolinas.

NOV

DEC

OCT 23-DEC 5 2016
Wildfires caused by severe drought conditions spread across the western Carolinas.

2017

JAN

FEB

JUNE 2016-MAY 2017
Drought conditions persist through the Carolinas.

MAR

APR

SC King Tides

NC King Tides

MAY

King Tides

King Tides, a non-scientific term to describe the highest seasonal tides, are a regular occurrence along the Carolinas' coastline, but can cause major flooding issues in coastal communities. There were 65 days between June 2016 and May 2017 where King Tides were recorded in the Carolinas. King Tides also provide insight into future impacts of sea level rise.

Increasing Coastal Resilience

CISA works with the SC Sea Grant Consortium through the Coastal Carolinas Climate Outreach Initiative to help local governments and stakeholders address issues related to sea level rise and coastal flooding. Examples of this work include:

- Collaborations with Beaufort County and the City of Folly Beach to develop sea level rise adaptation strategies.
- Support for a Resilience Program Coordinator to help organize efforts of the Charleston Resilience Network.
- Collaboration with the Charleston Resilience Network on a NOAA Regional Coastal Resilience Grant to understand the capacity of the Charleston region's infrastructure to handle nuisance and severe flooding.

Hurricane Matthew

Matthew made landfall on the South Carolina coast on October 8, 2016 as a Category 1 hurricane with 75 mph winds. Between 10-17 inches of rain fell from Savannah, GA through eastern NC. Heavy rains forced rivers in SC and NC above major flood stage. The storm caused severe beach erosion, thousands of downed trees, and damage to roads, bridges, homes, and businesses.

Supporting Regional Adaptation Networks to Increase Resilience

CISA leads planning efforts for the biennial in-person meeting of the Southeast & Caribbean Climate Community of Practice. Because of Hurricane Matthew's impacts throughout the region, it served as a focal point for the April 2017 meeting which included discussions about the changing frequency and intensity of extreme events and associated impacts, bridging climate resilience and disaster planning, effective communication strategies during extreme events, and examples of successful resilience partnerships.

Courtesy of Fayetteville Observer

Wildfire

October 23-December 5, 2016: Over 34 wildfires burned 60,000+ acres in the fall of 2016, mostly in the western Carolinas, where drought conditions were the most severe.

Understanding Impacts of Wildfire

The smoke from the fall 2016 wildfires spread across the Carolinas, greatly reducing air quality. In order to understand the public health implications of the degraded air quality, CISA is conducting a pilot study comparing respiratory health impacts with air quality levels in affected areas.

CISA is supporting work by the State Climate Office of North Carolina to understand the risk of fire in organic soils in the coastal Carolinas. Organic coastal soils can reach depths of up to 12 feet in some parts of the pocosin region in North Carolina and can support long-lived and intense fires underground as the organic material smolders. Data from new organic soil moisture monitoring stations will be used to better monitor fire risk in these areas and help resource managers consider ways to reduce this risk.

High Heat Days

Temperatures exceeded 100°F in Columbia, SC 21 times in 2016. Charleston, SC recorded the hottest July on record. Raleigh, NC had the 3rd warmest summer in the past 130 years.

Reducing Health Vulnerabilities to Climate Impacts

The Heat Health Vulnerability Tool is an early-warning decision support tool designed to predict increased days of heat-related illness risk. The tool utilizes a five-day forecasted rate for emergency department visits for heat-related illness to help emergency managers and public health officials across North Carolina better prepare for days with increased risk of heat-related illness. The tool is available through the Convergence of Climate, Health, and Vulnerabilities website, which houses a wealth of resources about public health impacts of various extremes.

Courtesy of Amanda Farris

Drought

Drought conditions were predominant between June 2016 and May 2017, with the most severe drought during November 2016 when exceptional drought (D4) was observed in the western Carolinas.

Supporting Drought Planning & Preparedness

Spurred by impacts from this most recent drought, CISA is working with the SC State Climatology Office to improve drought planning documents and raise awareness about potential impacts. A drought and water shortage tabletop exercise provided an opportunity for members of the emergency management community, water utility operators, and other impacted sectors to consider the challenges extreme drought and potential water shortages would pose to the state.

Expanding on this work to help communities prepare for extremes, CISA, the SC State Climatology Office, and the SC Water Resources Center are hosting a series of three Climate Connections workshops in Greenville, Columbia, and Charleston, SC. Each event will include presentations and discussions about localized impacts of extremes and how recent events, such as the October 2015 heavy rainfall and flood event and Hurricane Matthew, have provided learning opportunities to improve preparedness for future extremes.

For more information, visit us online at www.cisa.sc.edu.