April 2016

CISA & CoCoRaHS Condition Monitoring Newsletter

Dear CoCoRaHS Observer,

Aside from the regular regional climate update, this month's newsletter features a drought decision maker that CISA has been partnering with to implement some of the new reporting changes: the National Drought Mitigation Center (NDMC). We also highlight how condition monitoring varies in coastal areas by featuring two CoCoRaHS Condition Monitoring Observers of the Month-Carl Cole from Charleston County, SC and Karen Schuck from McIntosh County, GA. Spring tides are happening this season and these observers have good insight about the tides' influence along the coast.

We hope you enjoy this newsletter, and as always, do not hesitate to reach out to us at cisa@sc.edu.

The CISA Team - Amanda, David, Henrik, Kirsten, Kirstin, Meghan and Sumi

Regional Climate Update

According to the March Climate Overview, released by NOAA, temperatures continue to be above average in most of the Southeast United States while precipitation was below average. Below are some additional highlights:

- The mean temperatures were 2-8°F higher than average across the Carolinas and Virginia this spring. In South

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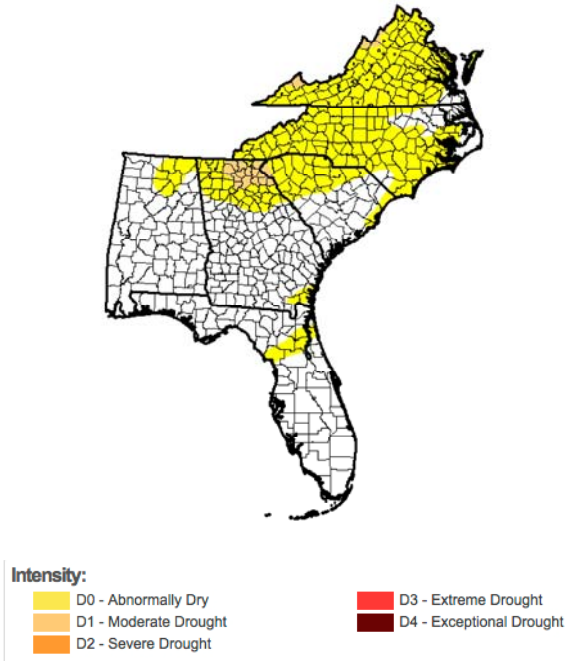
Carolina, the Greenville-Spartanburg area tied its greatest number of March days, 19, with a maximum temperature of at least 70°F. In North Carolina, the Wilmington area had its greatest number of maximum 80°F days with 10 days.

- Precipitation was below average across most of the Southeast in March, and the driest locations were in central and western North Carolina, upstate South Carolina and northeastern Georgia. In these locations, the recorded precipitation totals were 3 to 4 inches below normal. However, Alabama and parts of Florida had precipitation totals that were 3 to 8 inches above normal.
- In March, the southeast region had 207 severe weather reports. The median monthly frequency of severe weather reports, between 2010 and 2015, is 253.
- Drought conditions (D1 and above) were not observed in March in the southeast region. This was good news for the farmers who were busy preparing fields for their spring planting.

However, the US Drought Monitor discussed how a dry weather pattern has settled in the East, bringing dry conditions to much of the eastern region. In the Carolinas, the accumulated dryness patterns have persisted as the average rainfall has been 4-8 inches below normal in the last 90 days.

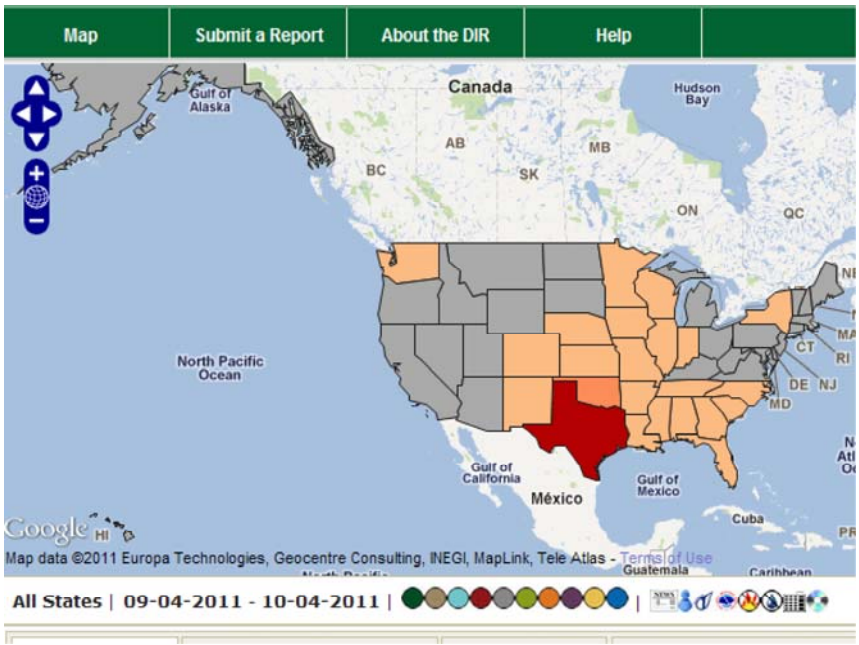


U.S. Drought Monitor map for the Southeast released on April 28, 2016. The U.S. Drought Monitor is published every Thursday at 8 a.m. EDT.

Drought Impacts and the National Drought Mitigation Center

Another stakeholder involved in federal and state drought monitoring is The National Drought Mitigation Center (NDMC) based out of the School of Natural Resources at the University of Nebraska-Lincoln. The NDMC was created in 1995 with a mission to "help people and institutions develop and implement measures to reduce societal vulnerability to drought, stressing preparedness and risk management rather than crisis management." The NDMC plays an active role in developing many drought monitoring products including the Vegetation Drought Response Index, Daily Gridded Standardized Precipitation Index, and the US Drought Monitor, which is produced in partnership with federal agencies and expert observers throughout the U.S.

The NDMC has also been a leader in evaluation of drought impacts, with the launch of the Drought Impact Reporter in 2005. This tool regularly pulls information about drought impacts from a variety of sources including media releases, government agencies, and independent volunteer observers. The creation of the Drought Impact Report Form on the CoCoRaHS site actually started out of a collaboration with NDMC and CoCoRaHS to increase the number of ground-level drought impact reports.



Screenshot of Drought Impact Reporter from the NDMC website

Currently, any CoCoRaHS condition monitoring reports that contain drought impact information are also included in the

Drought Impact Reporter and additional impact report statements issued by the NDMC in conjunction with the U.S. Drought Monitor. For example, the March 2016 Drought and Impact Summary that describes on-the-ground impacts relating to the dryness and drought classifications for areas in the U.S. Drought Monitor features CoCoRaHS condition monitoring reports as sources of information for dry conditions in parts of North and South Carolina.

In addition to conducting research on drought monitoring and impacts, the NDMC is also involved in supporting drought planning and educational outreach through a variety of activities to increase drought preparedness and planning in various sectors.

Condition Monitoring Stars of the Month: Carl Cole and Karen Schuck

This month we selected two of our observers, Carl Cole and Karen Schuck, as our Condition Monitoring Stars of the Month because of their detailed condition monitoring reports that include information about coastal climate and weather conditions, such as king tides. Twice each month, during full or new moons, the average tidal range increases. When the gravitational pull of the moon and the sun combine, and cause extremes in high and low tides; these are called king tides. In Charleston, SC, the average high tide is 5.5 ft but that increases to 7 ft or higher during a king tide!

King tides are a unique feature of coastal areas, and we have had a variety of reports on conditions during king tides. Carl noted that:

> ***10/26/2015:*** *With a moderate amount of rainfall this week, soil moisture in the vegetable garden and the area remains good, neither too wet (as earlier in the month) nor too dry. At this location, we're not affected by tides but elsewhere in the Charleston area King tides caused shallow coastal flooding at midweek. Sampling for Charleston Waterkeeper at high tide Wednesday morning, I had to wear my muck boots to even attempt to reach some of the docks that we routinely sample from. At many locations, the floating docks were as high or higher than the stationary dock.*

Carl sampling water during a King Tide event. Photo taken by Cheryl Carmack, submitted by Carl Cole.

Karen made the following observations:

> *10/11/2015: We had another dreary week in coastal Georgia. We were teased a little bit with some sun on two days but it drizzled and rained for the other 5 days for a recorded total of 0.62 inches. We are still experiencing higher high tides this week with the water coming up into the yard on some of the higher tides. The high tides are not as high as they were the previous week. Fall is progressing here. I noticed that the Cypress leaves are browning on the tree and the Sweet Gum leaves are starting to turn yellow.*

Photo submitted by Karen Schuck

We reached out to both Carl and Karen in order to learn a little more about their background and what experiences they have with king tides while living in coastal areas.

Carl began volunteering as a condition monitoring observer in December 2013. He has lived in the Charleston area for almost half of his life, and became a Master Naturalist in 2012 following his retirement. Carl understands the importance of data-based observations, and spends time volunteering for CoCoRaHS and other environmental societies.

When did you first start noticing King Tides or documenting the impacts of extremely high tides in your community and yard?I have probably only been paying close attention to extreme tides in the last few years, in part perhaps because the tides are higher but probably mostly because becoming a Master Naturalist has made me more attentive. Where we live is less than a mile from the Stono River and we're only 11.5 feet above sea level but that's still far enough and high enough that we don't experience any high tide effects in our yard. Moving around the Charleston area - for example, on the Charleston peninsula - during high tide events, one routinely encounters shallow street flooding. Extreme tides can complicate preservation efforts. For example, when I spoke at a DHEC OCRM public hearing last year to argue for preservation of the Charleston peninsula's Gadsden Creek as a protected wetland, other folks spoke to complain about street flooding in the Gadsden Creek area.

If you have lived in or visited other places, what is unique about coastal areas based on your precipitation observations? I grew up inland in the Arkansas Ozark and Ouachita mountains. The high water table and well-draining sandy soils along the coast seem to make us especially sensitive to extremes of water availability: high water has a hard time finding any place to go once the soil above the high water table is saturated but, in times of drought, the limited available water quickly drains down to the water table and leaves plants stressed.

Karen became a CoCoRaHS observer in February 2009, and started condition monitoring in May 2014. She has been in the McIntosh County coastal region of Georgia for about a decade. While the king tide does not directly impact Karen, she has observed how the kind tides impact the environment around her.

What impacts caused by king tides or extremely high tides during storms have you noticed in your area or community?We live on the White Chimney River with approximately a half mile of marsh between us and the other side of the river. The White Chimney River feeds into the Sapelo Sound. The King Tide does not have a direct impact on us but what does happen during King Tides, strong easterly winds, or storms off the coast is that the marsh surrounding the river starts to look like a lake. One year shortly after we moved here, we had a sub-tropical storm off the coast of Georgia. There was nothing but one big lake where the river and marsh would normally be. You could see very little Marsh Grass the water was so high. We had a family of otters camped out on our neighbors dock during that very high tide.

What do you find unique about coastal areas based on your precipitation observations? We have lived all over the United States. It was hard to tell at first to tell if we were in a drought or dryness because you don't have your normal visual signals. Now I watch the grass and the Resurrection Fern (Pleopeltis polypodioides) because they are my first indicators of drier or drought conditions. What I found interesting is that the ocean winds play a big part on how much or little rain we get. If there is a breeze coming off the ocean, the rain will fall further inland or the storm breaks up before it gets to us. The rain usually tracts in our area from Hinesville to Savannah totally bypassing us.

The next predicted king tide is forecasted for May 5-8. If you would like to learn more about initiatives to document king

tides, you can visit the SC King Tides Initiative or the NC King Tides Project. Both websites provide information about king tides and information on how to help submit photos and document the impacts of these events.

Thank you again, Karen and Carl, for your dedication to citizen science, CoCoRaHS, and participating in the condition monitoring project!

Feel free to contact us with any questions.

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