Special Guest Lectures

Hurricanes Ivan (2004) and Ida (2009): A Tale of Two Gulf Coast Landfalling Hurricanes

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Digital Media Center 1034
September 09, 2013 - 10:00 am

Abstract:

Hurricane Ivan made landfall on the Alabama coast at approximately 0600 UTC (1 a.m. CDT) on 16 September 2004. A strong category 3 storm on the Saffir-Simpson scale at the time of landfall, Ivan caused tremendous amounts of damage along the north-central Gulf coast. The strongest winds were concentrated in a swath near Perdido Bay, Alabama. These strong surface winds were coincident with an area of vigorous convection. While stronger wind speeds and convection (due to low-level convergence) are expected to the right of the track of a landfalling storm, it is hypothesized that dry air intrusion enhanced the convection in Hurricane Ivan. Strong convective down-drafts subsequently advected high winds to the surface. Results from a Weather Research and Forecasting (WRF) simulation will be presented to substantiate this hypothesis.

Hurricane Ida made landfall on the Alabama coast at 1200 UTC (6 a.m. CST) on 9 November 2009, officially classified as an extra-tropical system. However, the wind field associated with this late-season storm was large and the cyclone produced tropical storm force winds, mostly in gusts, to portions of the Gulf coast from eastern Louisiana to the Florida Panhandle. Localized heavy amounts of rainfall occurred in Baldwin County leading to flash flooding. Results from an observational analysis will be presented. These reveal that the rainfall was caused by a small-scale warm front that formed offshore as this extra-tropical system made landfall. As the warm front moved inland, warm most air overran colder air ahead of the front leading to the production of heavy rainfall.

Speaker's Bio:

Dr. Sytske (Seets-kah) Kimball is a Professor in Meteorology in the Department of Earth Sciences. She received her B.S in Applied Mathematics from the Delft University of Technology in Delft, The Netherlands; her M.S from Monash University in Melbourne Australia; and her Ph.D. in Meteorology from the Pennsylvania State University in 2000. She joined the University of South Alabama in Mobile in 1999. Her research interests revolve around hurricanes and local north-central Gulf Coast meteorology. Her early research focused on numerical simulation of hurricanes, but after joining South Alabama she diversified into observational studies of landfalling hurricanes.

Dr. Kimball founded the University of South Alabama Mesonet in 2006 using funding from NSF (CAREER) and NOAA. The Mesonet is a network of 26 weather stations that observe a wide variety of weather parameters in the north-central Gulf Coast area. Real-time, archived-, and meta- data are available on (http://chiliweb.southalabama.edu/). Weather station data are used by local forecasters, in K-12 and college teaching, in university research, and for various purposes in the community. Research topics using Mesonet data include sea breezes, nocturnal inversions, wind reduction factors, hurricane landfall, and local rainfall and wind climatologies. Dr. Kimball has published peer-reviewed papers and given numerous presentations at professional conferences. She has received grants from NASA, SUN Microsystems, NSF, NOAA, and private companies to support hurricane and Mesonet data research. She has served on the American Meteorological Society's Measurement Committee since 2012.

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