

research.noaa.gov

NOAA Oceanic and Atmospheric Research (OAR) or "NOAA Research" would like to welcome the 114th Congress to office with our first quarterly congressional newsletter. NOAA Research provides the foundation to NOAA's mission of protecting life and property in each and every state and district. Significant research and activities that occurred in the last few months of 2014 are highlighted in this quarter's newsletter.



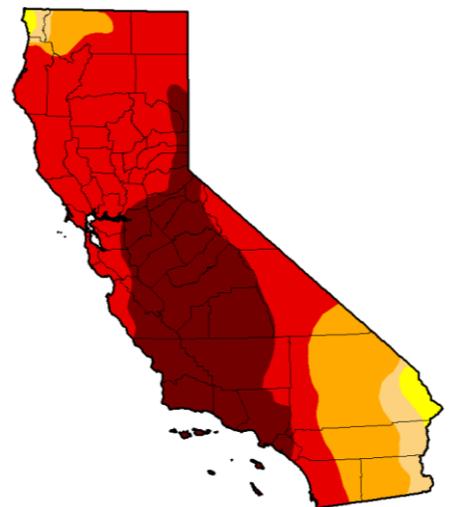
GREAT NEWS: Craig McLean has recently been selected as OAR's new Assistant Administrator. As a member of the NOAA family for more than three decades, Craig is no stranger to many of you on the Hill. He served in NOAA's Commissioned Corps for 25 years and, most recently, as Deputy Assistant Administrator for OAR's Programs and Administration. Please join OAR in congratulating Craig next time you see him on the Hill!

Craig McLean, Assistant Administrator for NOAA Research
(Source: NOAA)

Featured Research You Should Know About:

Researchers Offer New Insight into Predicting Future Droughts in California

A new NOAA study, sponsored by OAR's Climate Program Office, shows that natural variations in oceanic and atmospheric patterns were the primary drivers behind California's 2011-2014 drought. The drought resulted from a persistent high pressure atmospheric ridge off the West Coast that blocked important wet-season storms from hitting California. The study found that the persistent atmospheric high pressure was caused by unusual Pacific Ocean surface temperature patterns. Therefore, additional studies on these oceanic conditions and their association to atmospheric conditions are needed to advance drought early warning systems. Read more and download the full report at the [Climate Program Office website](#).



Drought monitor for December 16, 2014. Red (extreme drought) and dark red (exceptional drought) persisted over much of the state. (Source: droughtmonitor.unl.edu and accessible via drought.gov)

NOAA Releases Unmanned Aircraft inside a Hurricane

For the first time, NOAA deployed an unmanned aircraft directly inside a hurricane from a NOAA hurricane hunter airplane. Funds provided through the Disaster Relief Appropriations Act of 2013 made this initial test flight possible. Scientists from NOAA's Atlantic Oceanographic and Meteorological Laboratory (AOML) launched a Coyote unmanned aircraft into Hurricane Edouard in September 2014 to collect temperature, pressure and wind observations below 3,000 feet, where manned aircraft cannot fly safely. Because the Coyote can fly near the surface of the ocean for up to two hours, it will help provide vital information needed to better understand and predict hurricane intensity and potentially offer more complete data than possible with traditional air-deployed weather instruments. AOML scientists are currently working to assess the value of adding data from these and other instruments to forecast models to improve hurricane track and intensity. Please visit the [OAR news story](#) for more information.



Joe Cione of NOAA's Atlantic Oceanographic and Meteorological Lab is leading the research project with the Coyote unmanned aircraft. (Source: NOAA)

Study Reveals New Pattern of Tornado Activity in Recent Years

Research recently published in *Science* by OAR's National Severe Storms Laboratory and National Weather Services' Storm Prediction Center analyzed all tornadoes in the U.S. from 1954-2013. These scientists found that the number of tornadoes remained relatively constant over time, however, a pattern of more tornadoes on fewer days emerged in more recent years. The next step will be for climate scientists and tornado researchers to work together to identify what specific large scale pattern variations in climate may cause, or are related to, clustering of tornado activity. Please visit the [OAR news story](#) for more information.

IN DEPTH LOOK: Research to Operations Success Stories

NOAA puts Multi-Radar Multi-Sensor System into Operation to Improve Forecasts

Developed at OAR's National Severe Storm Laboratory, a new system to manage weather data in order to provide a clearer picture of a storm's intensity recently went operational at NOAA's National Weather Service. The Multi-Radar Multi-Sensor (MRMS) system is capable of combining data streams from multiple radars, satellites, and surface observations to allow forecasters to quickly diagnose severe weather and issue more accurate and earlier forecasts and warnings. Researchers at NOAA and NOAA's Cooperative Institute for Mesoscale Meteorological Studies in Oklahoma designed the MRMS system to improve decision making within NOAA and other agencies. This research to operations success story was funded in part by the Disaster Relief Appropriations Act of 2013. Please visit the [OAR news story](#) for more information.

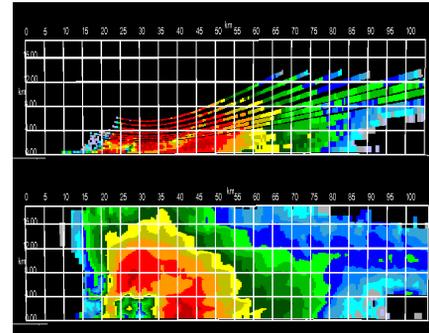
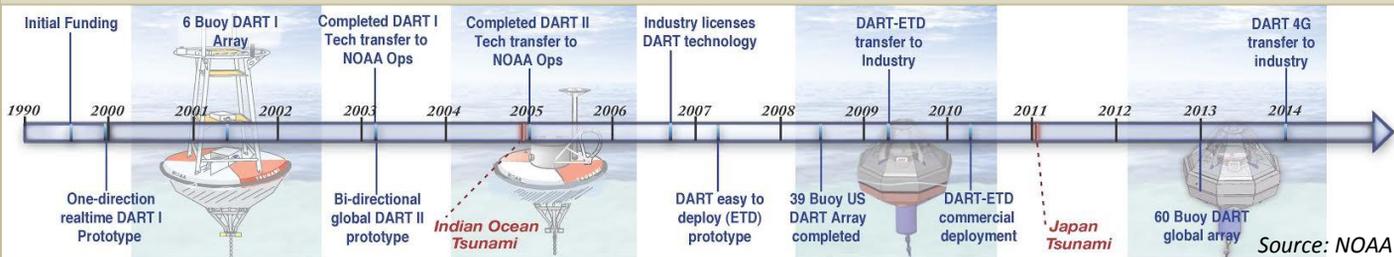


Image of thunderstorm data from a single radar (top) compared to data from the MRMS system providing a more detailed picture of a thunderstorm's intensity (bottom), which can ultimately help protect lives and property. (Source: NOAA)

Indian Ocean Tsunami Fuels Decade of Research to Operations Progress



December 26, 2014 marked the 10-year anniversary of the Indian Ocean tsunami. At the time, no warning systems were in place and this tsunami event killed nearly 240,000 people. Since then, the President and Congress have supported an effort to build a global tsunami warning system that now protects all U.S. Coastlines and tsunami prone regions around the globe. Advancements in U.S. tsunami warning capabilities are due in part to the research being conducted at OAR's Pacific Marine Environmental Lab (PMEL). Researchers and engineers at PMEL have tested and designed sophisticated tsunami detection buoys that can measure a tsunami in the open ocean. Advanced forecast system models, also developed at PMEL, then use the buoy data to predict exactly when a tsunami wave will arrive, how big it will be, and what the impact will be on individual communities. The U.S. tsunami detection array is operational with 39 buoys managed by the National Weather Service's (NWS) National Data Buoy Center and operational tsunamis forecast models are continuously in use by NWS' Tsunami Warning Centers. Please visit the [OAR news story](#) for more information.