

## 2018 CACIWC Keynote Presentation:

### **Examining Climate Trends in the Northeast and their Impacts on Riverine and Coastal Flood Behavior**

**David R. Vallee, Hydrologist-in-Charge,**  
National Oceanic and Atmospheric Administration (NOAA)/  
National Weather Service (NWS)/Northeast River Forecast Center  
Norton, Massachusetts

Much of New England has been experiencing an increasing trend in annual average temperature, annual average precipitation, and the number of heavy rainfall events over the past several decades. During this same time period, the region has experienced an increasing number of moderate to major flood episodes. These episodes have been associated with a variety of storm types and have affected the region at different times of the year. Events have included the record floods of March 2010, the spring snowmelt floods which sent Lake Champlain to record elevations, the catastrophic flooding associated with the passage of Tropical Storm Irene in western New England, and the remarkable thirteen inch rainstorm that struck Long Island, New York in the summer of 2014. The common threads in each episode were a persistent storm track and the ability of each storm system to tap a tropical moisture source which resulted in very rainfall on already saturated ground.

The vulnerability of our coastline to tropical cyclones has never been greater. Tropical Storm Irene and Hurricane Sandy struck the region during the late summer and early fall of 2011 and 2012 respectively. The impacts along the shoreline were devastating and provided an ever present reminder of the tremendous impacts these types of storms can bring in the face of rising sea levels and a retreating coastline.

This presentation will put into perspective the impacts from these recent and in some cases record breaking events and will do so with respect to our changing climate and its impact on storm behavior, rainfall intensity and changes in flood frequency.



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David Vallee is the Hydrologist-in-Charge of the National Weather Service's Northeast River Forecast Center. The center provides detailed water resource and life-saving flood forecasting services to National Weather Service Forecast Offices and the hundreds of federal, state and local water resource entities throughout the Northeast and New York.

David has worked for the National Weather Service for 30 years, serving in a variety of positions including Intern Meteorologist from 1987-1993 at both the Boston and Providence offices, Senior Service Hydrologist at the Taunton Weather Forecast Office from 1993-2000 and as Science and Operations Officer from 2001-2006. David has extensive experience leading hydrometeorological forecast and warning operations and directing weather research and training programs. David

has served as the NWS lead investigator with the State University of New York, at Albany, on a multi-year project addressing Land Falling Tropical Cyclones in the Northeastern United States. This has improved the forecasting of heavy precipitation associated with these land falling tropical cyclones as well as developing a better understanding the mechanisms which lead to the recurvature and rapid acceleration of tropical cyclones as they approach the Northeast. David led the initiative to develop a short-range ensemble river forecast system which leverages short range numerical weather prediction guidance to drive a suite of probabilistic river forecasts for the region. Recently, David has been leading an effort at the Northeast River Forecast Center to examine changes in precipitation and temperature patterns across New England and its impact on flood behavior.

David is most known locally for his outreach and education work on the behavior of New England Hurricanes, including many appearances on local radio and T.V. networks as well as the Weather Channel, the History Channel and the Discovery Channel. David has been the recipient of numerous regional and national awards including the prestigious National Isaac Cline Award for Leadership.

David is a graduate of Lyndon State College. He is a life-long resident of the Rhode Island, living in the northeast part of Cumberland. He considers it a tremendous privilege to be serving the people of the very region he calls home.