Using NMME in Region-Specific Operational Seasonal Climate Forecasts

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Introduction
Recent regional climate extremes, including the ongoing drought in California (Seager et al. 2015) and extreme cold outbreaks across the northeast United States (Cittas et al. 2014), have directed national attention to the importance of understanding and anticipating climate variability (Herring et al. 2014). Decision-making processes adopted by various sectors require reliable climate prediction resources to better anticipate, adapt to, and respond to changes and extremes in climate (Kerr 2011).

The National Oceanic and Atmospheric Administration’s Climate Prediction Center (NOAA – CPC) has been the leader in providing seasonal climate outlooks for the U.S. (O’Lenic et al. 2008). A recent multi-agency effort to fill some gaps in regional seasonal climate forecasting. The NMME is still very much in a research and testing phase, with limited examples of regional applications. For many regions of the country, the NMME has not been employed by regional decision makers.

Here, we leverage the NMME to advance current regional climate forecasting methods with the development of a region-specific seasonal climate forecast tool over the North Great Lakes region. We present the application of the regional forecast tool specifically for use by the U.S. Army Corps of Engineers, Detroit District (USACE-Detroit), a regional agency responsible for the operational production and release of seasonal water level projections.

Skill Assessment
Lake Superior Basin-wide 3-Month Temperature Forecasts vs. Observations

Distribution of archived three-month NMME temperature forecasts (black line, middle tercile in thick black) and verification observations (green dot) overlaid on historical observation range. Historical climatology range captures the observed temperature value 76% of the time. The NMME forecast distribution of forecast anomalies models, will adjust the basin-averaged temperature and precipitation anomalies are calculated by taking an area-weighted mean of all the NMME grid cells that partially or entirely reside within the basin’s watershed boundaries. The web tool defaults to show the full range of NMME forecasts.

References


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