Climate Prediction Applications Science Workshop

Forecasting Florida Dry Season Storminess from the ENSO Signal and Communicating Likelihood of Impacts to Decision Makers

Bart Hagemeyer
National Weather Service Melbourne
421 Croton Road Melbourne, Florida
Email: bart.hagemeyer@noaa.gov

Since 1997 the authors have been investigating the ability to forecast the impact of the El Nino-Southern Oscillation (ENSO) on Florida dry season weather (1 November through 30 April). Most recently Hagemeyer (2000a-b) and Hagemeyer and Almeida (2002, 2003, and 2004) have focused on refining the definition of storminess, improving the storminess climatology, and forecasting dry season storminess from the ENSO signal using multiple linear regression techniques. Their work has led to the development of an experimental web page that includes an experimental forecast of storminess for the Florida dry season.

Experimental predictions of storminess were made for the 1999-00, 2000-01, and 2001-02 Florida Dry Seasons, but were not released to potential users. The successful verification of these forecasts was encouraging, but they were during a period of largely La Nina/neutral conditions. The 2002-2003 Dry Season forecast was the first issued well in advance on the WWW based on long-range predictions of the development of moderate El Nino conditions from the Climate Prediction Center. The deterministic forecast for an above normal 9 storms was first released in January 2002 (10 month leadtime) and updated monthly through March 2003 on the Web. The forecast verified, and the number of storms was actually higher (11 storms) than might be expected from an El Nino of the magnitude of the 2002-03 event.

The authors have since developed a conditional probabilistic seasonal forecast of storminess given a certain range of Pacific SST's and an ensemble forecast from 16 linear regression equations in addition to the original deterministic forecast based on the best MLR equation. The authors are now seriously turning their attention to how this seasonal forecast information can be presented to decision makers in a more useful way. The forecasts for storminess have been very skillful during El Nino's and La Nina's when ENSO dominates and a quasi-linear relationship is observed, but neutral conditions (NINO 3.4 between ± 0.50 C) are more problematic, and appear to be the most likely conditions for non-linear relationships among other teleconnections such the PNA, MJO, and NAO resulting in a greater probability for missed deterministic forecasts. Work continues on two major fronts and will be presented at the conference: 1) quantifying the impacts on society of dry season storminess, and 2) combining impact information with probabilistic dry season forecasts of storminess to provide guidance for action to decision makers.