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Title: Beyond Two-week Predictions of Tropical Cyclone Events in Western North Pacific and Atlantic
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Abstract:
In cooperation with the European Center for Medium-range Weather Forecasts (ECMWF), we have explored the extended-range (5-30 day) forecastability of tropical cyclone events (formation and subsequent track) in the western North Pacific and in the Atlantic from the 51 member ECMWF 32-day ensemble prediction system. Elsberry et al. (2010, 2011 APJAS) and Tsai et al. 2013 APJAS) have documented that the ECMWF 32-day ensemble was able to predict out to 3-4 weeks in advance most of the typhoons and even many of the tropical storms and tropical depressions during the 2009 and 2010 seasons. Evaluations during the 2012 and 2013 seasons in the western North Pacific continue to document this extended-range forecastability.^M
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During the 2012 and 2013 seasons, the ECMWF also provided their twice weekly 32-day ensemble forecasts for the Atlantic region. In contrast to the western North Pacific, only a few of the Atlantic tropical cyclones forming from the African easterly waves are predictable out to four weeks. Other tropical cyclones (e.g., Sandy) may be generally forecast out to two weeks in advance, but their interactions with mid-latitude troughs that determine their later tracks are not well-predicted. A major conclusion is that the ECMWF 32-day ensemble had a very limited capability (< 1 week) in predicting and important class of baroclinically-influenced tropical cyclone formations (tropical transitions or subtropical-origin) and subsequent tracks in the Atlantic. In addition, the ECMWF 32-day greatly over-predicted the number of tropical cyclones originating near the northern coast of South America, the western Caribbean, and over the U. S. east coast and Gulf of Mexico coast.^M

In summary, approaching the goal of subseasonal forecasting of tropical cyclone events (formations and subsequent tracks) by an extension beyond the extended-range (5-30 day) is more likely to be successful in the western North Pacific than in the Atlantic. ^M

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