OPENING ADDRESS

Contemporary Challenges in Short-Term Climate Forecasting

David G. DeWitt

Climate Prediction Center, NOAA/NWS/NCEP, College Park, MD

The Climate Prediction Center (CPC) continues to work to improve our suite of products and services in support of the National Weather Service (NWS) mission of protection of life and property and enhancement of the national economy. Demand from stakeholders for short-term climate prediction and monitoring products is steadily increasing and CPC is proactively meeting these new requests. Here I highlight some of the major initiatives that CPC is undertaking in order to meet stakeholder requests:

- Exploring the feasibility of producing prediction products in the week 3-4 timescale. Forecasts at this timescale are characterized by a small signal, large noise and have low predictability due to the decaying influence of atmospheric initial conditions and marginal influence from boundary conditions such as sea surface temperature, soil moisture, sea ice, *etc*. Consequently, forecasts of opportunity are likely to serve as the backbone for these outlooks. Currently, CPC is exploring the scientific potential and feasibility for producing week 3-4 outlooks for temperature and precipitation, Arctic sea ice forecasts, severe weather, tropical cyclone activity, and excessive heat.

- Development of user-friendly interactive tools for the temperature and precipitation outlooks. Two types of tools are being developed. The first allows stakeholders to view the three tercile categories for our probabilistic outlooks, while the second gives stakeholders the ability to tailor outlooks to their own risk profile.

- Exploring improvements to week two through seasonal precipitation forecasts in order to provide improved decision support services to the water resources community. Accurately forecasting precipitation is an incredibly difficult problem even on short-range weather timescales let alone longer timescales. CPC is exploring the potential for hybrid dynamical-statistical forecast techniques to improve over existing precipitation forecast tools.

- Forecasts for El Niño and its associated impacts during the 2015-216 period deviated in many ways from canonical patterns, especially for precipitation over the western United States. Understanding why this occurred and if it indicates lower predictability than previously assumed or missing or misrepresented processes in the dynamical models is an area of active research as CPC seeks to provide the most accurate and reliable prediction products to stakeholders.

_____

Correspondence to: David DeWitt, 5830 University Research Court, Climate Prediction Center, NOAA/NWS/NCEP, College Park, Maryland; E-mail: david.dewitt@noaa.gov