Data and Parameter Requirements

General Idea of Post Processing

Fact: Post processing techniques are used broadly in government, academia, and industry for prediction globally.

Finding: Post processing plays a critical role in producing more accurate forecasts for the world.

Recommendation: NOAA should increase its investment in post processing to meet needs.

Reforecasts

Fact: NOAA has an existing reforecast dataset

Finding: Community recognizes generation of future complete reforecasts will be expensive and would likely come at the expense of other services/sciences/critical priorities.

Recommendation: NOAA should invest more in research how to thin the data and realize methods to use the condensed data. Lighten footprint. A condensed footprint plan should be based on evidence gathered from research.

Regional Reforecasts

Fact: There are currently not reforecasts on regional/hi-res model such as the HRRR.

Finding: Insufficient evidence of whether reforecasts of regional models add value.

Recommendation: Research should be undertaken to determine value of such reforecasts. Short range forecasts from global ensembles should be used to determine value of reforecasts at regional levels. Compare to post processing products based on short training regional model datasets (e.g. MOS)

Deterministic vs. Probabilistic Forecasts

Fact: Many of the products that NOAA currently generates are deterministic or have limited probabilistic content.

Finding: There is a growing need for probabilistic content to serve the nation's needs in weather, water, and climate forecasting information to make decisions, protect property, and save lives.

Recommendation: Investment in ensemble prediction systems and their post processing needs to be an essential focus.

Rapidly Updating 3-D High-Res Analysis/Reanalysis

Fact: Current RTMA/URMA analysis/re-analysis is deficient in these respects:

a)   Only provides surface data.
b)   Biased and inaccurate to such an extent that its use in post processing is
     questionable.

Finding: A high resolution rapidly updating analysis is necessary for accurate post
processing.

Recommendation: Develop improved methods that substantial reduce bias and
expand dataset to 3 dimensions and cover a broader suite of variables.

Product Coordination/Sharing of Expertise

Fact: Many NOAA organizations produce their own post processing products with differing methodologies which creates overlap and there is limited information on which methods are most valuable.

Finding: There is not optimal use of post processing resource due to this duplication of effort.

Recommendation: Increased collaboration between organizations to promote flow of information and reduce duplicative efforts. Senior scientific leadership is needed to coordinate this effort.

Concentration on Foundational Data

Fact: Numerous post processing techniques have been developed by a vast array of people from government centers to academia and industry

Finding: Much of existing post processing is duplicative and could be centralized

Recommendation: A NOAA organization (MDL or EMC?) should focus on applying post processing to the foundational data so that it can be used for general application elsewhere across NOAA and the broader enterprise.

Global Post Processing Focus

Fact: Currently, global post processing products provided by NOAA are incomplete.

Finding: With increased globalization, there is an increased national interest in high quality weather, water and climate services for the globe.

Recommendation: NOAA should, to the extent reasonable, design and implement post processing services to serve a global mission and the datasets necessary for their development (ie unbiased reanalysis).

Other Notes

- NOAA should move all weather data archives to accessible place (e.g. cloud)
  - Satellite, radar, model data, point data, etc.
- NOAA as an institution needs to embrace use of cloud computing to meet its mission
- Survey forecasters more broadly to make sure we are saving off the relevant predictor information.