IFPS Science Steering Team (ISST) Activities Update

March 7, 2006

RTMA Assessment

The ISST continues to stay involved with efforts to move the development of a Real-time Mesoscale Analysis (RTMA) toward operational use, including initial field assessment of the utility of these data. RTMA products will be available hourly and with approximately 30-minute latency for the entire CONUS. This analysis will help improve forecasters' situational awareness, provide a vision of the forecast grid representation (i.e., what the forecast should look like), and facilitate real-time feedback through local gridded verification efforts (e.g., BOIverify). In addition, the RTMA will serve as a proof-of-concept toward the final development of a state-of-the-science, archive-quality "analysis of record" (AoR) used for long-term verification and historical records (including re-analysis and climatology grids).

NCEP/EMC has begun making experimental RTMA grids available via ftp and displayed on a web site (see below), with the goal of making these grids available to all offices in D2D with OB7.2, and within GFE by OB8. Alpha site testing (2 per CONUS region) will begin by April 1, with beta site evaluation at many more offices during the summer. The experimental grids will be provided to these alpha test sites via the Western Region LDM server.

The ISST is also in the process of developing the RTMA assessment plan, which the alpha and beta test sites will use to provide initial subjective assessment of the RTMA's operational value. This effort will include a comparison of the analysis with observations and meteorological features (i.e., terrain or lake/ocean influences). Other goals of the assessment include learning the RTMA's utility with improving forecasters' situational awareness, the analysis' use with improving the starting point of the gridded forecast, and a means for providing an initial critique of gridded forecasts. The RTMA grids will be available both in D2D and GFE for the alpha sites at the start of the evaluation, thanks to efforts by Kirby Cook, WRH, and Tim Barker, WFO Boise. The assessment will also include comparisons with other analysis sources, such as RUC, LAPS, "MatchObs." The evaluation will include a way to communicate the RMTA's possible shortcomings in identifying local effects, particular elements, and weather regimes.

The purpose of the assessment is to provide direct feedback to developers on important enhancements that may be needed before the RTMA becomes operational, and to identify future enhancements that will be required for the AoR. The assessment will likely continue through operational implementation, but the focus may change to the evaluation of specific use within GFE.

Current access of experimental RTMA analyses:

The hourly RTMA analyses of temperature, dew point and wind are being displayed at http://www.emc.ncep.noaa.gov/mmb/rtma/

The hourly RTMA analyses of temperature (grib2 format), dew point and wind can be retrieved via anonymous ftp from: ftp://ftpprd.ncep.noaa.gov/pub/emc/mmb/mmbpll/rtma

The hourly RTMA analyses of precipitation (based on operational Stage II analysis product) can be retrieved via anonymous ftp from:
ftp://ftpprd.ncep.noaa.gov/pub/data/nccf/com/hourly/prod/nam_pcpn_anal.YYYYMMDD

Gridded MOS

The ISST continues to advocate the need for gridded statistical guidance at the resolution of the NDFD. The Meteorological Development Laboratory (MDL) is now producing developmental gridded Model Output Statistics (MOS) guidance from the GFS at a grid spacing of 5 km. The initial test area for gridded MOS is across the western U.S.; with expansion to the rest of the CONUS planned by the end of 2006 or early 2007. In mid-February, WFOs Missoula, Medford, and Monterey started testing the delivery and display of gridded MOS.

The ISST is facilitating an evaluation of gridded MOS through a field assessment of the guidance. This assessment will address the deliverability, utility and application of the dataset in operations. The physical representation of the gridded MOS forecast elements and their correlation with other guidance sources and observational datasets will also be assessed.

Finally, it is important that observational data used as input for gridded MOS be representative of the surrounding area. WFOs should advise MDL of unrepresentative sites to ensure their removal from the MOS input.

Centralized Smart Init and Bias Correction

The ISST approached NCEP/EMC at the EMC Annual Review in December with the idea of producing Centralized Smart Initializations and Bias Correction of model grids for field use. The initial discussions on this topic were with developers from ESRL/GSD (formerly FSL) at the ISST meeting in Boulder last fall. By taking advantage of all the output available in the EMC model suite, these centrally produced grids would be more complete and comprehensive than the current suite of internally derived elements, while also reducing internal system load at the WFO.

This year EMC will be developing a unified post-processor for the GFS, RR-WRF (Rapid Refresh – RUC), Ensembles, and NAM (WRF-NMM). Developers at EMC have expressed interest in incorporating a smart initialization process of surface forecast elements as part of this post-processor. This routines would incorporate the principles used in generating the RTMA and eventually will contain bias correction. Additionally, the ISST discussed some details with the STSIT (Smart Tool and Smart Initialization Team), who stressed on making this an OSIP priority to ensure dedicated individuals to

this endeavor. The STSIT, ERH, and EMC have offered to take the lead in the OSIP process. In the meantime, the ISST and STSIT will continue to converse with EMC regarding development details and establishing requirements for the OSIP documentation.

Day 4-7 Assessment

The ISST continues to advocate a Day 4-7 assessment of forecast and guidance grids through the development of a suite of objective evaluation schemes. The goal of this assessment is to determine the most accurate and most representative initialization grids to be used for the Day 4-7 gridded forecast; ultimately making the medium range forecast process more efficient by reducing the number of grid edits- thus shifting focus toward the shorter range forecast process. The assessment should be performed on the various grid initialization sources including HPC grids, smart initializations from various medium range models such as GFS and DGEX, spreading point-based MOS to the grids using the serp approach ("ADJMOS"), and eventually medium range gridded MOS when available from MDL. The assessment should also include NDFD medium range grids to evaluate the value added by WFOs beyond the guidance options. We recommend that the assessment period last for one year, to include all seasons and as many weather regimes as possible.

The assessment should be coordinated by the National Performance Management Committee. Appropriate resources will need to be made available for such an evaluation to take place; but it should be a high priority since it will lead to more accurate medium range gridded forecasts, better collaboration, and more attention on the shorter ranges in the gridded forecast process. The ISST will continue to communicate this important need to the Corporate Board - Science and Technology Subcommittee and Digital Services Planning and Action Committee (DSPAC), and through this update is also asking for support from the Regions as well.

ISST Membership

Greg Mann – Chair	CR	WFO Detroit
Jim Nelson – Vice Chair	AR	WFO Anchorage
Lee Anderson – Facilitator	NWSHQ/OST	
Dan St Jean	ER	WFO Gray
Steve Keighton	ER	WFO Blacksburg
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Ken Falk	SR	WFO Shreveport
Tom Salem	WR	WFO Glasgow
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