Western Region Technical Attachment
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WR Digital Services Verification Project - Using Verification to Support Service Evolution – Getting Started

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The gridded forecast program is an important component of the NWS service program, yet there is virtually no real time gridded verification data available to the forecast offices. Western Region (WR) is embarking on a multi-year project that uses verification software to examine the performance of forecast and model guidance in real time. Verification data provides a golden opportunity to evolve our services and introduce change to operations. The Service Evolution goals for the verification project are:

- Provide feedback on the performance of forecasts and major impact events
- Use this feedback to provide information to help forecasters modify forecast practices/priorities and emphasize major impact events
- Help focus local forecast improvement studies and introduce new science, such as distributions-oriented approach to verification

The project has been implemented as a series of steps:

Suite of verification applications:

- **Observation Database, Hanford QC tool and gridded analysis**: WR currently supplements the conventional surface observations with nearly 12,000 mesonet observations from the joint WR and University of Utah MesoWest project. Larry Griess, Hanford SOO, wrote an application that provides the forecast office with the capability to quality control the observational data base. Most offices quality control their data 3 to 4 times a day. The Matchobsall application, written by Tim Barke, Boise SOO, then generates an hourly gridded analysis. At some point in the future, WR will substitute the Real Time Mesoscale Analysis (RTMA) for the MatchObs analysis. WR/SSD is currently conducting an evaluation of the RTMA.
- **Verification Software** – BOIVerify. Tim Barker developed a powerful analytical tool to compare the model and/or forecast grids against the gridded analysis. The application works similar to a database query program where the user can produce various analyses over varying time ranges.
- The applications are packaged as a series of Mod-notes:
    - WR Mod-Note WR06-003: MesoWest Decoding Upkeep.
    - WR Mod-Note WR06-004: ObsQC Tool - First Install.
    - WR Mod-Note WR06-005: BOIVerify - First Install.

Training - To help the offices understand the software applications and begin the transition to the new gridded verification paradigm, a series of Articulate training modules were developed:

- Background Science Training Modules:
  - Quality Control Basics, by Dave Myrick (SSD)
  - Representativeness Errors, by Dave Myrick (SSD)
  - Understanding How Objective Analyses Are Created, by Dave Myrick (SSD)

- ObsQC Tool Training:
  - PQR Obs QC Tool Training, by Tiffani Brown (PQR)

- BOIVerify Training:
  - Intro training for the BOIVerify Tool, by Tim Barker (BOI), Kirby Cook (SSD), and Aaron Sutula (SSD)
  - Generating some simple Impact Statistics using BOIVerify Tool, by Kirby Cook (SSD)
  - Examples of how to investigate Dewpoint and MaxT fields using BOIVerify, by Dave Myrick (SSD)
  - SLC WFO BOIVerify Training Page, contains Camtasia training modules developed by Randy Graham and Linda Cheng (requires Internet Explorer)

Conference Calls with SOOs and Verification Focal Points: To help ease the office transition, WR/SSD used the GOTOMeeting collaboration software to conduct a series of 6 conference calls to help the offices install and use the software. GOTOmeeting meeting allows offices to quickly share their screen display (i.e. show the output of an application) with up to 25 offices. The last 3 sessions where recorded and can be downloaded:

- May 18, 2006 - How to get started using the BOIVerify Application, led by Aaron Sutula (SSD)
  Upcoming additions/fixes/etc. to BOIVerify (Powerpoint slides), presentation by Tim Barker (BOI)

- May 31, 2006 - How to analyze TD/RH fields for the upcoming fire weather season using BOIVerify, led by Kirby Cook (SSD) Powerpoint slides and Assignment

- June 7, 2006 - Linear Regression/Bias Correction using BOIVer, led by Tim Barker (BOI) GoToMeeting (.wmv file)*** Powerpoint slides only

Case Studies: Each WR WFO is currently conducting an evaluation on their performance of the gridded TD/RH forecast in support of the fire weather program. Each office will produce a case study for each summer month i.e. June, July and August. Five of the better gridded verification case studies were presented during the July 12 conference call and can be viewed at:

- July 12, 2006 - Highlights from BOIVerify Assignment Part 1 on RH and Td, with presentations by Billings, Missoula, Tucson, Boise, and Great Falls
  GoToMeeting (.wmv file)***

Whats Next? - WR/SSD is forming a small team of SOOs to explore how to evaluate major impact events in preparation for this winter season. The goal is to share these results with the forecasters and begin to make adjustments to shift priorities and editing practices. We plan to conduct a series of GOTOMeeting conference calls on a regular basis with the SOOs to share results and best practices among all 24 WR Forecast Offices.

Summary: A complete package of the training, software and GOTO sessions can be found at http://ww2.wrh.noaa.gov/ssd/digital_services/projects/verification.php.