



NWS Hydrology Forecast

Verification Team:

Kick-off Meeting

11/29/2007 – 12pm EST



Outline

- Context and Vision
- Team Charter
 - Mission
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- Getting started
 - Archiving survey
 - Selection of case studies
- Next Meetings



Hydrologic Verification: Context

- Limited verification of river forecasts
- Verification results not communicated to most user groups
- Newly developed verification tools with great potential:
 - **IVP** for deterministic forecasts
 - **EVS** for ensemble forecasts
- 2 Verification Teams to work on verification case studies:
 - **WR Team** w/ 3 RFCs and 1 WFO; Summer 07 - Spring 08
 - **NWS Team** w/ 13 RFCs; Nov. 07 - Jan. 09



Hydrologic Verification: Vision

- **Verification helps us answer these questions:**
 - How good are the forecasts?
 - What are the strengths and weaknesses in the forecasts?
 - What are the sources of uncertainty?
 - How is new science improving the forecasts?
 - What should be done to improve the forecasts?



Hydrologic Verification: Vision

- **Verification supports:**
 - **Research** by identifying needs to improve forecasting system and measuring value of results
 - **Operational agencies** by defining acceptable methods and satisfying user demands
 - **Users** by quantifying forecast skill and uncertainty for better decision making



Hydrologic Verification System: Vision

- **Target Capabilities:**

1. Data archiving (forecasts, observations, attributes)

2. Computing metrics (forecast aggregation/stratification)

3. Displaying data and metrics (data mining)

} IVP
} EVS

4. Disseminating data and metrics (to understand quality & usefulness of forecasts)

5. Near real-time access to metrics (to understand uncertainties in recent forecasts and over long term)

6. Uncertainty analysis (including hindcast experiments)

7. Performance measure tracking (level of success)



NWS Verification Team: Website

http://www.nws.noaa.gov/oh/rfcdev/projects/rfcHVT_chart.html

NOAA's National Weather Service

RFC Development Management

Site Map News Organization

Draft Team Charter for NWS Hydrology Forecast Verification

Team Charter

Documents

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Team Members

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Contact Us
RFC Development Manager

Draft Team Charter for NWS Hydrology Forecast Verification June 26, 2007

Vision: River forecast verification tools and information will be readily available to users including forecasters, service hydrologists, managers, and the general public. Verification information will be meaningful to each user group. RFC forecasters will generate and communicate river forecast verification results and identify shortcomings to be addressed through software, system, or information enhancements. Ultimately, forecast verification will be successful when its results determine actions within each user group.

Statement of the Problem: Currently, information on NWS river forecast performance is limited in scope and generally not communicated to most user groups. In recent years, nationally supported verification software has been developed which has great potential to address user needs. However, this software remains largely untapped.

Mission: To communicate meaningful river forecast verification information to user groups including forecast users, forecasters, service hydrologists, and management using existing software (IVP and EVS). This mission includes three major components: (1) developing



Kick-off Meeting, 11/29/2007

NWS Verification Team: Mission

- **3 goals:**
 - Develop understanding of **verification concepts and metrics**
 - Develop **expertise with IVP and EVS software**
 - Develop **standardized verification strategies** to effectively communicate verification results to identified end users



NWS Verification Team: Members

- Julie Demargne (OHD/HSMB) - lead
- Mary Mullusky (OCWWS/HSD)
- Kevin Werner (WRH/SSD)
- 13 RFC Verification Focal Points: Tom Adams, Brenda Alcorn, James Coe, Mike DeWeese, Joe Intermill, Larry Lowe, Bill Marosi, Christine McGehee, Julie Meyer, Kai Roth, Rob Shedd, Alan Takamoto, and Greg Waller
- Technical advisors: James Brown (OHD/HSMB) and Hank Herr (OHD/HSEB)



NWS Verification Team: Deliverables

- RFC Verification Workshop in Aug. 07 to gain verification expertise on concepts and metrics
- Survey results on archiving practices and issues to be integrated in the archiving requirements report
- Exercises for IVP and EVS for the RFC focal points to gain expertise on software and verification metrics
- Report on required enhancements for IVP and EVS to meet all the RFC needs
- Interim report on RFC verification case studies
- 2nd RFC Verification Workshop
- Final report to propose verification strategies with standardized metrics and graphics for identified customers, and performance tracking measures



NWS Verification Team: Agenda

- **Nov. 07:** Kick-off meeting to review team charter and deliverables
- **Dec. 07-Jan. 08:** Archiving survey and selection of verification cases (users, questions, forecasts)
- **Winter-Spring 08:** Exercises with IVP ob8.2 and EVS prototype
- **Mar.-Aug. 08:** verification case studies presented by each RFC; list of required enhancements for IVP and EVS
- **Sep. 08:** Interim report on RFC verification case studies
- **Oct.-Dec. 08:** develop standardized verification strategies for chosen user groups
 - 2nd RFC Verification Workshop
- **Jan. 09:** Final report to propose verification strategies with standardized metrics and graphics for identified customers, and performance tracking measures



Getting Started: Archiving Survey

- RFC archiving practice and issues:
 - Data type (forecasts/re-forecasts, observations, MODs, rating curves...)
 - Forecast locations (number, up/down-stream)
 - Forecast lead time, time step, single-valued/probabilistic, frequency of issuance
 - Period of record
 - Format
 - Software/Hardware (frequency, QC, back up, interactions w/ IVP or EVS...)
- Survey results:
 - to be integrated in the archiving requirements report (Julie D. & James B.)
 - to support the RFC Archive Database Team led by Julie Meyer



Getting Started: Selection of Case Studies

- 1 case study for each RFC
- Selection of verification case studies:
 - Key users for specific forecast products
 - Verification questions to address
 - Forecasts to be verified (input & output, lead time, time period, pooling basins/events)
- Examples of questions:
 - How good are my forecasts (peak & volume) when flooding occurs?
 - How good are my forecasts for 30-day minimum flow? Any seasonality?
 - Do QPF forecasts improve flow forecasts? for which lead time? for which type of flows?
 - Do the MODs improve flow forecasts?



Next Meetings

- **2nd Meeting** on 12/18/07 at 11am EST
 - Fill out the archiving survey by Thu. 12/13
 - Meeting agenda:
 - Review results from archiving survey
 - Discuss and coordinate verification case studies: examples from WR team, other RFCs
- **3rd Meeting** in January 08:
 - Potential dates: Jan. 22-24
 - Ready to install and use IVP ob8.2 for exercises





Thank you!

Questions?

