WR Hydrology Verification Final Report

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Outline

- Methodology
- Results
- Recommendations

Methodology

- One case study per field office
- Apply new Interactive Verification Program (IVP)
  - AWIPS 8.2 version
- Goals:
  - Build verification expertise in field offices
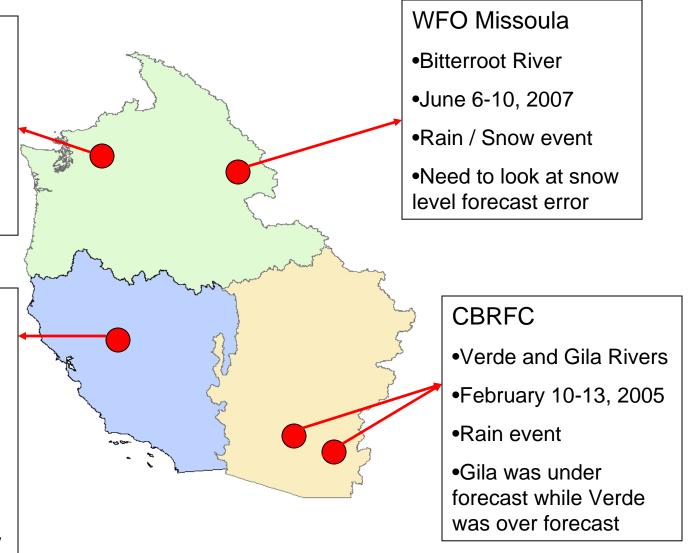 - Assess IVP functionality
  - Identify gaps in system

Methodology - Cases

NWRFC
- Stehekin River
- Nov 7, 2006
- Snowmelt important
- QPF, Temperature, and streamflow errors

WFO Missoula
- Bitterroot River
- June 6-10, 2007
- Rain / Snow event
- Need to look at snow level forecast error

CNRFC
- Truckee River
- New Years event, 2005/2006
- Large Rainfall event
- Generally underforecast both rainfall and streamflow

CBRFC
- Verde and Gila Rivers
- February 10-13, 2005
- Rain event
- Gila was under forecast while Verde was over forecast

Common Threads from Cases

- Forecast Improvement – How can forecasts be improved through verification?
- Comparisons – Compare performance between basins, forecast runs, etc.
- QPF – Need to verify QPF; ideally address totals, intensity and timing
- Forecaster MODs – Need to measure impact of MODs
- Temperature – Need to verify MATs
- Hydrograph – Ideally need to assess timing, magnitude and shape

Case Study Results

- Full Results available here…
- orange.wrh.noaa.gov/drupal/ssd/hydroscience/verificationteam

Recommendation #1: Routine Verification

- Recent verification – How well have recent forecasts performed? Time series and scatter plots

- Event verification – How well did forecasts do for specific events? Time series and scatter plots

- Long term verification – How well has the forecast system performed over time? Mean error and categorical statistics
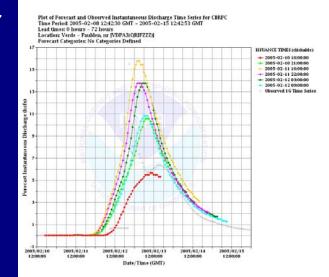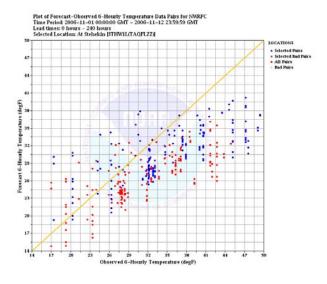
Routine Verification Mock-up

SPOKANE--AT SPOKANE (SPOW1)

Archived Events:

Nov 3-5, 2007

Jan 3-8, 2007

Etc

Long Term Verification

Recent Verification (last two weeks)

Recommendation #2: Software Enhancements

- A systematic diagnostic tool that can re-run the model in different configurations to assess error sources is needed.

Recommendation #3: Training / Outreach

- Web pages and documentation should be developed to support the routine verification recommended in #1.

Recommendation #4: Archive Database

- A robust archive system is required for any systematic verification system. The NWS needs both a short term and long term strategy:
  - Short term: Address specific problems identified by team through existing archive database efforts
  - Long term: Consider a complete redesign to include abilities to archive multiple model types.

Summary of Recommendations

1. Routine Verification

2. Enhance Tools

3. Training / Outreach

4. Archive Database

Discussion

- Reaction to recommendations?
- Where do we go from here?