

# 2nd RFC Verification Workshop

## What to Expect

Julie Demargne and Mary Mullusky



*2nd RFC Verification Workshop, November 18-20 2008*

# Outline

- Goals for hydrologic forecast verification
- Forecasting and verification systems
- Issues in hydrologic forecast verification
- Recent progress in NWS
- Workshop goals
- Workshop agenda
- Verification Questions
- Logistics



# Goals for Hydrologic Forecast Verification

- **Goal: verify our forecast and uncertainty information.**
- Develop a **comprehensive national system** to help us answer questions such as
  - What forecast products/services is the NWS providing and where?
  - How good are the forecasts?
  - What are the strengths and weaknesses in the forecasts?
  - What are the sources of uncertainty in the forecasts?
  - How is new science improving the forecasts?
  - What should be done to improve the forecasts?

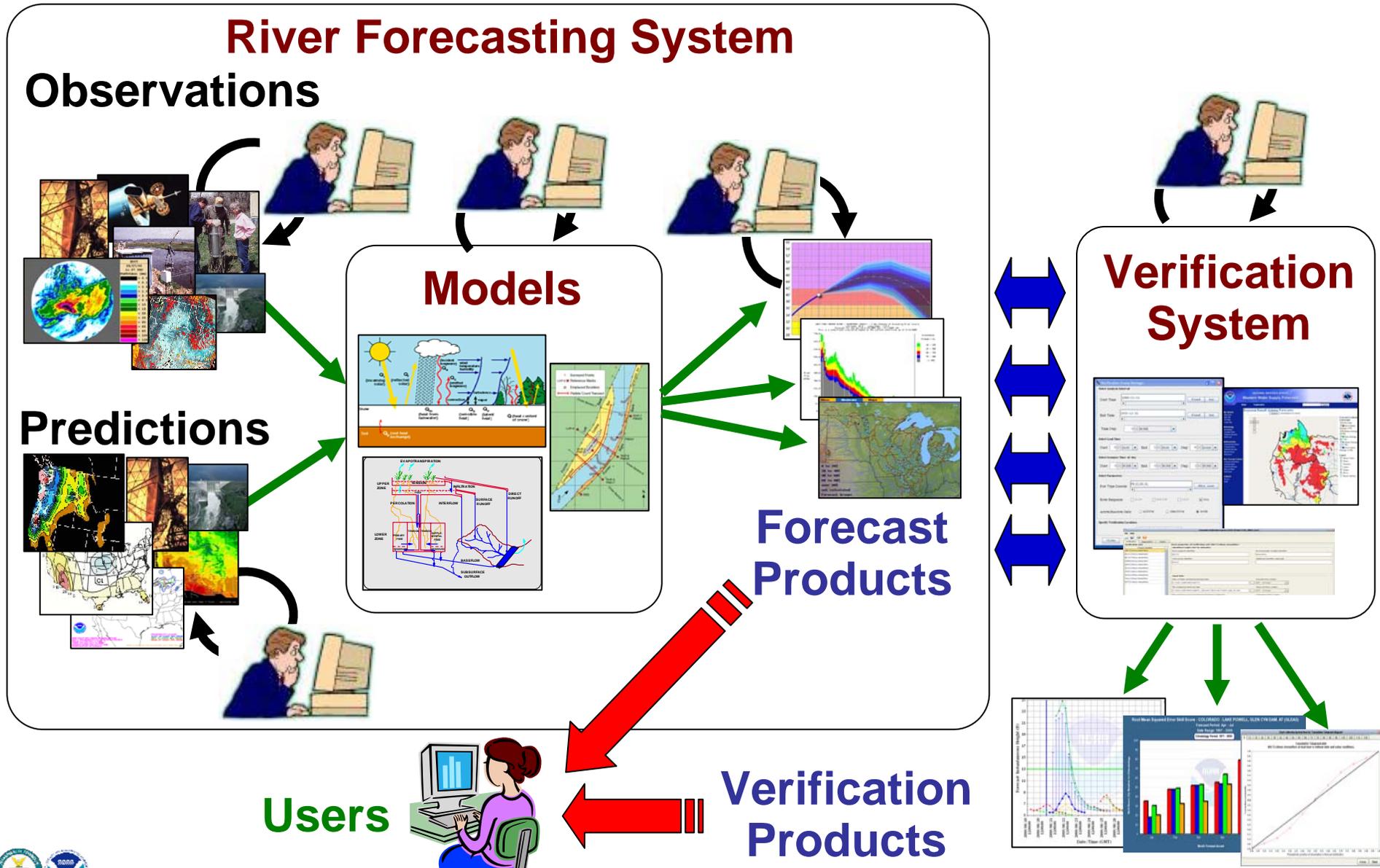


# Goals for Hydrologic Forecast Verification

- **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 reliability for better decision making



# Forecasting and Verification Systems



# River Forecast Verification System

- **Target System Capabilities:** *Available Tools*

1. **Data archiving** ➔ *IHFS db, Archive db, Files, WR website*

2. **Computing metrics**

3. **Displaying data & metrics**

} *IVP ob8.3, EVS,  
WR website*

4. **Disseminating data & metrics**

5. **Real-time access to metrics**

} *Stats on demand,  
WR website*

6. **Uncertainty analysis**

➔ *Studies w/ Hindcaster*

7. **Performance measure tracking**

IVP: Interactive Verification Program (deterministic verification)

EVS: Ensemble Verification System (ensemble verification)

Hindcaster: capability to retroactively generate forecasts using a fixed system



# River Forecast Verification System

- **Target System Capabilities:**

1. **Data archiving**
2. **Computing metrics**
3. **Displaying data & metrics**
4. **Disseminating data & metrics**
5. **Real-time access to metrics**
6. **Uncertainty analysis**
7. **Performance measure tracking**

*Unified Service*

**CHPS  
Verification  
Service  
(CHPS-VS)  
coupled with  
CHPS-FEWS  
Forecasting System**



# River Forecast Verification System

- Different potential users
  - => system needs to be modular, flexible and configurable
  - => system needs to include different levels of sophistication for verification metrics and 'self learning' modules

# Issues in Hydrologic Forecast Verification

- **Issues:**
  - Most techniques pioneered in *meteorology*
  - Difficult to apply in *operational hydrology*
    - multiple scales and multiple users
    - real-time setting
  - Need to translate *weather/climate forecast skill* into *river/water forecast skill*
  - Need to quantify *uncertainties from many sources* (forcing inputs, initial conditions, models, etc.)
    - hindcasting as supporting application

# Recent Progress in NWS

- Verification is **one of the 3 highest priorities** for Hydrology Program
- Verification requirements system plan (Oct. 06)
- Verification Planning Team for AHPS (Sep. 07 - )
- WR Hydrology Verification Team (June 07 – July 08)
- 1<sup>st</sup> RFC verification workshop with RFC Verification Focal Points (Aug. 07)
- NWS Hydrologic Forecast Verification Team (Nov. 07 - )
- 2<sup>nd</sup> RFC verification workshop now!



# Workshop Goals

- Review difficulties with verification concepts and methodologies
- Present RFC verification activities/case studies and discuss unmet needs with current software
- Present progress on verification projects/capabilities within NWS and in academia
- Discuss effective strategies to communicate verification info to users, both within and outside the NWS
- Discuss interim and final reports of NWS Verif. Team
- Discuss future verification activities and training needs



# Workshop Agenda: Highlights

- Day 1
  - Refresher on verification concepts and metrics
  - RFC verification activities (including 4 case studies)
  - WR Verif. Team recommendations
- Day 2
  - Existing verification services
  - Verification done in academia
  - IVP and EVS demos
  - Key metrics and graphics -> group exercise
- Day 3
  - Grid-based verification
  - Future verification capabilities and training



# Verification Questions

- List of questions provided
- Strategy: Questions answered during the session. Review questions at the end of the day to be certain questions were answered. Remaining questions will be placed on a list for NWS Verification Team.



# Workshop Logistics

- Locations:
  - Days 1 & 3: Hotel Conference Room
  - Day 2: CBRFC
- GoToMeetings for all sessions => start on time!
- To eat
  - Lunch
  - Dinner at Squatters Brew Pub at 6:30pm tonight (head count)
- Carpool

**CBRFC staff: thank you!**





**Let's start!**