Welcome to the Colorado Basin RFC

Logistics & Introductions

Office layout
Breaks
Lunch (please fill out lunch order early)
Tuesday evening at Squatters
Introductions

Name
Agency
What you hope to get out of this meeting
Overview of Meeting and Goals

Address responses to the questionnaire
Improve our understanding of your needs and operations
Improve your understanding of our abilities and services
Asking the proper questions to help the CBRFC:

- Identify where to focus future development activities
- Identify the best products and delivery method
- Identify where we can best improve our services

Opportunities:
- Meet with staff members
- View our operational procedures & model interaction
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Stakeholder Forum

Overview of Meeting and Goals

Agenda

• Overview of Meeting and Goals
• Summary: recent changes and roadmap
• CBRFC Model Review
• CBRFC Product Review
• Forecast Product Dissemination/Accessibility
• Verification
• Customer Survey Results
• Stakeholder Presentations
• New Technologies / Wrap-Up
Overview of Meeting and Goals
Shaping the Agenda

Summary of comments from questionnaire:

Discuss the methods used to generate forecasts
Soil moisture, precipitation impacts in the model
Discuss new products (Daily ESP, etc.)
Verification statistics availability
Website changes, simplification, consistency
How are others using forecasts (stakeholder presentations)
Update on new technologies / forecast tools
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Summary of product and web page changes

ESP Daily Updates
Web Page Changes:
- Google map
- Search
- Easy zoom
- Reorganized header
- Still lots to do...
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Roadmap: Incorporating New Science and Improving Services

Development work done through:

- Collaborations
- National Resources
- Local resources

Main goals are to meet stakeholder needs and improve our forecasts and services.
Collaborations - Goals:

1. Improve CBRFC forecast skill for water supply and snow melt through focused work on areas of our forecast process that have been shown to be deficient (e.g. Werner and Yeager, 2013). These include:
   - Snow modeling
   - Incorporating ensemble weather and climate forecasts

2. Improve decision support including connectivity with reservoir decision support systems
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Incorporating New Science - Collaborations

NASA JPL
Remote sensed snow information (MODIS)

Investigate how remote sensed gridded snow covered area and snow contamination can be used to improve our forecasts
Western Water Assessment (WWA) –

- Impacts of dust on snow and beetle kill on forecast water supply
- Analysis of Information Use by Stakeholders of the CBRFC
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Incorporating New Science - Collaborations

Utah State University – Dr Tarboton

Evaluate Utah Energy Balance Snow Model within CHPS to improve streamflow prediction
Integrating Climate Forecasts and Reforecasts into Decision Making – Demonstrate potential usefulness of climate forecasts for Public utility planning and create an appropriate framework for their applications.
Incorporating New Science – NWS Efforts

Hydrologic Ensemble Forecast System, HEFS
Provides short to long term probabilistic forecasts by incorporating climate and weather forecast information.

CBRFC is one of 5 test sites nationwide.
An ESP Upgrade: The NWS Hydrologic Ensemble Forecast Service (HEFS)

- Weather
  - Pre-processor
  - Input Ensembles
  - Verification system
    - Verification products
    - Product generation system

- Input flow data
  - Streamflow
  - Operational Forecast System
    - Ensemble Streamflow Prediction System
      - Also, Data Assimilator
        - "Raw" flow ensembles
        - Post processor
          - Post processed

- Hindcaster/reforecast

Verification products:

- Ensemble products
Incorporating New Science and Improving Services – CBRFC local efforts

Web page improvements

New products, new ways to display information and forecasts

**Based on your feedback**
Questions To Consider

What are 2-3 key products and services you wish you had but don’t from the CBRFC?

Where would you like to see CBRFC invest its development and operational energies?

What key upcoming decisions points do you have that you would like the CBRFC to be aware of?