California Nevada River Forecast Center

Updates

Alert Users Group Meeting

Riverside County Flood Control and Water Conservation District

October 16th, 2014

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California-Nevada River Forecast Center
Sacramento, CA
CNRFC Update

- Big picture – what’s happening in the NWS
- Summary of past year’s hydrology and forecast issues
- CNRFC operations overview & changes for WY 2015
- CNRFC development activities
Massive Computational Changes

- peak of 208 teraflops in FY13 to 1900 teraflops by end of FY15 – a 900% increase in capacity!

- This will enable implementation of higher resolution models

- NWS GFS model horizontal resolution going to ~10km in Dec 2014 (currently 27km)

- Expect further improvements in model physics, data assimilation, boundary layer, and additional resolution improvements

- Improvements should translate into improved hydro model inputs
National Water Center

• Construction of National Water Center
  • Building completed Feb 2014, occupied Apr 2014
  • Initial operating capability expected by Apr 2015 (45 people)
  • Baseline operating capability expected by FY 2019 (165 people)
  • Full Operational capability expected by FY 2024 (244 people)
  • Facilitate NWS hydrologic services vision to address challenges
    • Summit-to-sea & treetop-to-bedrock hydrologic analysis
    • deliver integrated products and services
Have We Been in a Drought?
Cumulative Effects on Storage

SHASTA DAM (USBR) (SHA)

Date from 10/16/2011 10:49 through 10/15/2014 10:49 Duration: 36 Months
Max of period: (04/01/2012 00:00, 4440094.0) Min of period: (09/01/2014 00:00, 1157094.0)

Oct 2011
4440094.0

Oct 2012

Oct 2011
1157094.0

RESERVOIR STORAGE - AF (5583)
Drought-Related Requests

- Media requests (info, interviews, outlooks, etc)
- More calls, meetings, presentations
- Close scrutiny of data and forecasts for low flows
- Increased interest in water balance information
- Expanded interest in ensemble forecasts
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This period better characterizes uncertainty to the degree that there is skill in the human and numerical model forecasts.
Sketch of Operations

Feather River – Lake Oroville
5-Day Inflow forecast

Feather River – Lake Oroville
2015 WY Accumulate Volume
| A1 | B1 | C1 | D1 | E1 | F1 | G1 | H1 | I1 | J1 | K1 | L1 | M1 | N1 | O1 | P1 | Q1 |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| GMT | 9/24/2012 12:00 | 0.1122053 | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME |
| 9/25/2012 12:00 | 0.1048666 | 0.1084666 | 0.1084666 | 0.1084666 | 0.1084666 | 0.1084666 | 0.1084666 | 0.1084666 | 0.1084666 | 0.1084666 | 0.1084666 | 0.1084666 | 0.1084666 | 0.1084666 | 0.1084666 | 0.1084666 |
| 9/26/2012 12:00 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 | 0.10471859 |
| 9/27/2012 12:00 | 0.10127541 | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME |
| 9/28/2012 12:00 | 0.09790286 | 0.09790286 | 0.10347232 | 0.08816066 | 0.0826926 | 0.0792096 | 0.0734551 | 0.0734551 | 0.0734551 | 0.0734551 | 0.0734551 | 0.0734551 | 0.0734551 | 0.0734551 | 0.0734551 | 0.0734551 |
| 9/29/2012 12:00 | 0.09646431 | 0.09646431 | 0.10274824 | 0.08543383 | 0.0810624 | 0.0782067 | 0.0736074 | 0.0736074 | 0.0736074 | 0.0736074 | 0.0736074 | 0.0736074 | 0.0736074 | 0.0736074 | 0.0736074 | 0.0736074 |
| 9/30/2012 12:00 | 0.09112582 | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME |
| 10/1/2012 12:00 | 0.0853741 | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME |
| 10/2/2012 12:00 | 0.0831341 | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME |
| 10/3/2012 12:00 | 0.07956415 | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME |
| 10/4/2012 12:00 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 | 0.0764642 |
| 10/5/2012 12:00 | 0.07342138 | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME |
| 10/6/2012 12:00 | 0.06853741 | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME |
| 10/7/2012 12:00 | 0.06512034 | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME |
| 10/8/2012 12:00 | 0.06212034 | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME |
| 10/9/2012 12:00 | 0.05912034 | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME |
| 10/10/2012 12:00 | 0.05612034 | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME | SOME |

*Note: The data in the table represents Ensemble Traces in csv Format.*
Burn Areas - 2014

- Burn scars can affect runoff
- Debris flows are biggest threat
- Intensity-driven
- Scale of burn impacts usually sub-resolution
- Impacts wear off over time
Changes for WY 2015 Operations

• Calibration focus areas were:
  • Yuba & Feather
  • Southern California
• New Middle and South Fork of Yuba sub-basins
• New Santa Ana & Santa Margarita sub-basins
• New Reservoir Inflows
• New simulation points
New Reservoir Inflows

- Jackson Meadows
- Bowman Reservoir
- Fordyce Lake
- Lake Spaulding
- Scott’s Flat Reservoir
- Merle Collins Reservoir
- Rollins Reservoir
- Vail Lake
New Simulation Points

- EB of North Fork Feather River
- Middle Fork of Yuba River at Our House
- South Fork of Yuba River at Jones Bar
- Deer Creek at Smartville
CNRFC Development Activities

• HEFS – Hydrologic Ensemble Forecast System
  • Hindcasts: computationally intensive – will allow us to evaluate reliability of ensemble forecasts
  • Exploring improved handling of extreme events
  • GraphGen – new tool for visualizing probabilistic forecasts
Other Activities

• ARkStorm@Tahoe Simulation
  • Used ARkStorm meteorology to run simulations using CNRFC modeling system (CHPS)
  • Generated hydrographs to support tabletop exercise

• Experimental flood notification service

• Russian River IWRSS Pilot Project
Experimenting with New Flood Notification Paradigm
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Questions?
California Nevada
River Forecast Center

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