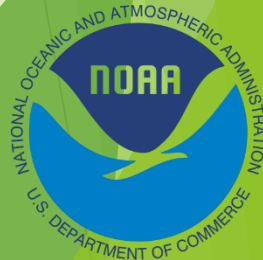


NWS Western Region Interaction and Collaboration with RISAs

Jeff Zimmerman

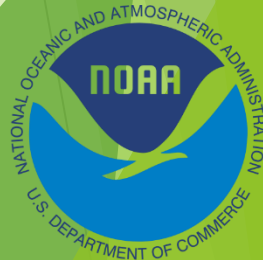
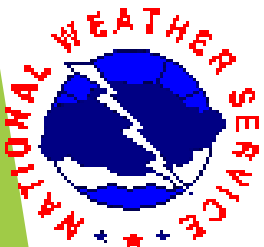
NWS/WR Integrated Services Division Chief

February 23, 2016



NWS WR and RISA Collaborations

- ▶ Monthly Dashboard for FEMA Region IX
 - ▶ NWS/WRH and CLIMAS collaborated with FEMA Region IX
 - ▶ Region IX requirements for a monthly outlook to support operations planning
 - ▶ CLIMAS supported prototype dashboard design and development
 - ▶ Transition to WRH for on-going operations



Hydro-climate Dashboard

Hydro-Climate Context for February

Updated on January 27, 2015. Text valid for January 27 - February 23

Most impacts from strong El Niño events occur during the heart of the winter season.

Climatologically, February is a key month for receiving winter precipitation in much of CA, especially for the northern half of the state and the Sierra mountains (Figure 1). Flash flooding does happen in February, as shown in the historical count of local storm reports, especially in southern CA, southern NV, and central AZ (Figure 2). Climatologically, mainstem February river flooding (Figure 3) happens throughout CA, and to a lesser extent, southern AZ and southern NV. Of all 12 months, FEMA disaster declarations due to flooding have occurred most often for CA during January and February (Figure 4).

Several winter storms moved across portions of CONUS FEMA Region IX the past month, with healthy rainfall/snowfall totals, across the northern 2/3rds of CA, parts of southern NV, and southern AZ (Figure 5). Conversely, western and northeastern NV, parts of southern CA, and northern AZ, saw less precipitation with passing storms, resulting in several areas of below 50% of normal precipitation. Recent storms have helped boost snowpack conditions (Figure 6) and streamflow conditions (Figure 7), especially in northern CA and northern NV. There are some improvements reflected in reservoir capacities, but many have a long way to go, given the deficits from 4.5 years of drought (Figure 8).

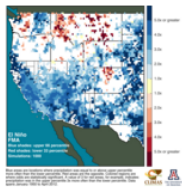
Currently, very strong El Niño conditions persist across the tropical Pacific Ocean. NOAA's Climate Prediction Center (CPC) continues to strongly favor El Niño to continue through the winter and then gradually weaken during the late spring/early summer months (Figure 10). At this time, the peak in strength for this event has occurred, but impacts will continue. There have been 6 previous strong El Niño events in recorded history, and this event is even in strength with the 5700 El Niño event. The 3 strongest El Niño events prior to the current event, occurred in: 1972/73, 1962/63, and 1997/98. Impacts from El Niño tend to be felt most during the winter (January - March) in CONUS FEMA Region IX. A good correlation does exist that would favor wetter than normal conditions for most of CONUS FEMA Region IX during the Feb-Mar-Apr season (Figure 9). Reflecting this correlation, the latest 3-month outlook for Feb-Mar-Apr from CPC strongly favors above average precipitation for southern CA and southern AZ, and slightly favors above average precipitation for much of the rest of the region (Figure 11).

Climate Outlooks

Figure 09. ENSO Precipitation Risk

Figure Updated:
Last Thursday of month
Figure Source and Data:
CLIMAS;

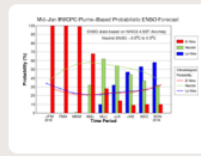
NOAA Climate Prediction Center



Interpretation All Months

Figure 10. ENSO Forecasts

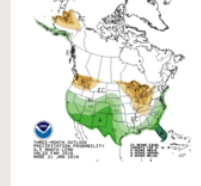
Figure Updated:
1st and 3rd Thursdays of month
Figure Source and Data:
International Research Institute for
Climate and Society



Interpretation

Figure 11. Precipitation Forecast

Figure Updated:
3rd Thursday of month
Figure Source and Data:
NOAA Climate Prediction Center



Interpretation Future Maps

Figure 12. Seasonal Flood Forecasting

Figure Updated: Daily
Figure Source and Data:
NOAA National Weather Service

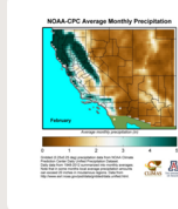


Interpretation

Historical Averages

Figure 01. Precipitation Climatology

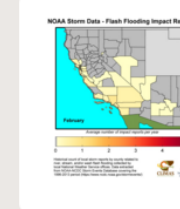
Figure Updated:
Last Thursday of month
Figure Source and Data:
NOAA-Climate Prediction Center



Interpretation All Months

Figure 02. NWS Flash Flood Climatology

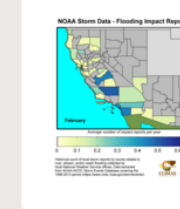
Figure Updated:
Last Thursday of month
Figure Source and Data:
NWS Local Storm Reports



Interpretation All Months

Figure 03. NWS Flood Climatology

Figure Updated:
Last Thursday of month
Figure Source and Data:
NWS Local Storm Reports



Interpretation All Months

Figure 04. FEMA Flood Disaster Climatology

Figure Updated:
Last Thursday of month
Figure Source and Data: FEMA

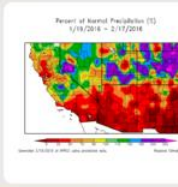


Interpretation All Months

Current Conditions

Figure 05. Precipitation in previous 30 days

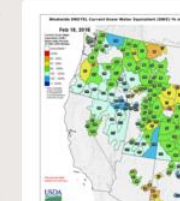
Figure Updated: Daily
Figure Source and Data:
High Plains Regional Climate Center



Interpretation

Figure 06. Snow Pack Conditions

Figure Updated: Daily
Figure Source and Data:
Nat. Res. Con. Service



Interpretation

Figure 07. Streamflow Conditions

Figure Updated: Daily
Figure Source and Data:
US Geological Survey



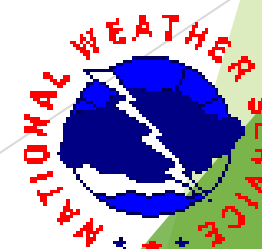
Interpretation

Figure 08. Reservoir Conditions

Figure Updated:
Last Thursday of month
Figure Source and Data:
Nat. Res. Con. Service
CA Dept Water Resources

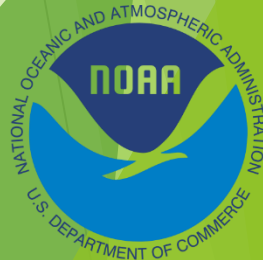
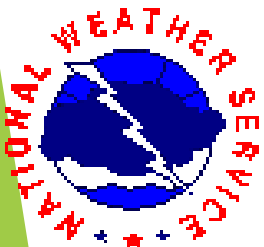


Interpretation



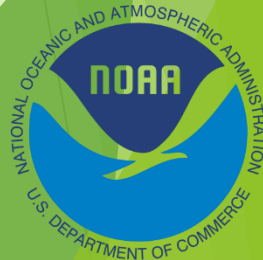
NWS WR and RISA Collaborations

- ▶ CBRFC has worked significantly with RISAs
 - ▶ Western Water Assessment has staffed a position at CBRFC to focus in Utah-specific hydroclimate issues
 - ▶ Snowmelt Perturbations and Water Supply Forecast Errors (WWA)
 - ▶ The CBRFC and the Decision Making Process (WWA)
 - ▶ Developing Useful Science: Methods for Engaging Stakeholders and Evaluating Integrated Climate Tools (CLIMAS)
- ▶ WFO Tucson has worked with CLIMAS to develop a better understanding of agricultural users and their needs
- ▶ CNRFC is engaged with CNAP in the development of tools for drought termination assessment



NWS WR and RISA Collaborations

- ▶ NWS WR Offices have used fact sheets and other resources developed by various RISAs to support general outreach and education
 - ▶ Take advantage of social science expertise available at the RISAs to simplify complex climate information for consumption by a broad audience
 - ▶ These resources are valuable to our outreach efforts—would like to see more of these resources and have them updated with more recent information as appropriate



Use of NWS/CPC Products

- ▶ WR ROC and Field offices use existing CPC suite of products to communicate and message with existing partners
- ▶ It is a challenge to effectively “tease out” actionable information to support partners’ decision making in those time frames
- ▶ Decision support services for meteorological and hydrologic events are fairly well understood. How can the RISA community assist the NWS Regions and NCEP/CPC to better define decision support services for climate-scale events.

