



March 2016 Water Supply Briefing

National Weather Service/Northwest River Forecast Center



Telephone Conference : 1-888-819-6075

Pass Code : 79838

2016 Briefing Dates:

April 7 - 10am PST

May 5 - 10am PST

Presentation available after brief at:

www.nwrfc.noaa.gov/presentations/presentations.cgi

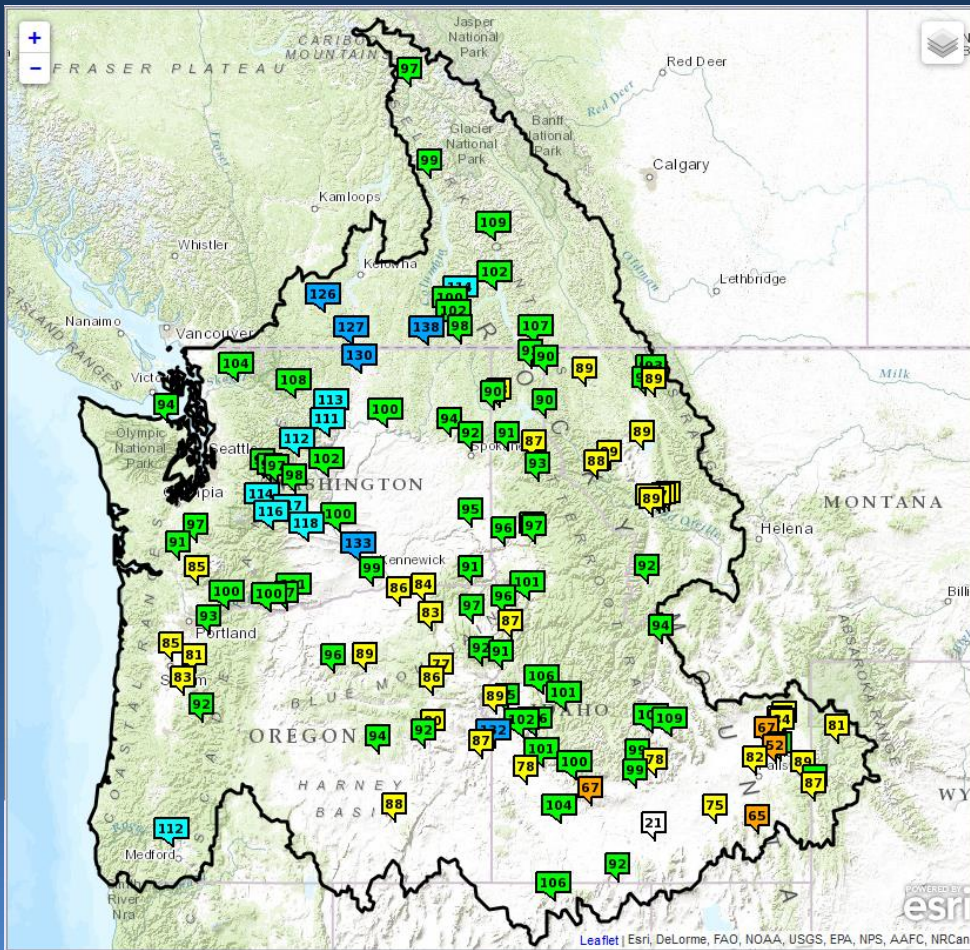
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Northwest River Forecast Center Water Supply Forecasts



River and Hydrology	Water Supply	Observations	Weather Forecasts	Climate	NWRFC
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- **ESP: Ensemble Streamflow Prediction**
- Official ESP water supply products include:
 - 10 days of quantitative precipitation forecast (QPF)
 - 10 days of quantitative temperature forecast (QTF)
 - Historical climate forcings appended thereafter
- NWRFC also offers 5 and 0 day QPF/QTF products
- Forecasts are updated daily
- Forecasts are compared to 30 year observed runoff normals (1981-2010)



Water Supply Forecast Briefing Outline



- **Observed Conditions WY2016:**

- Precipitation
- Temperature
- Snowpack
- Runoff

Hydrologic
model states

- **Future Conditions:**

- 10 days of quantitative forecast precipitation (QPF)
- 10 days of quantitative forecast temperature (QTF)
- Historical climate forcings appended thereafter
- Climate Outlook

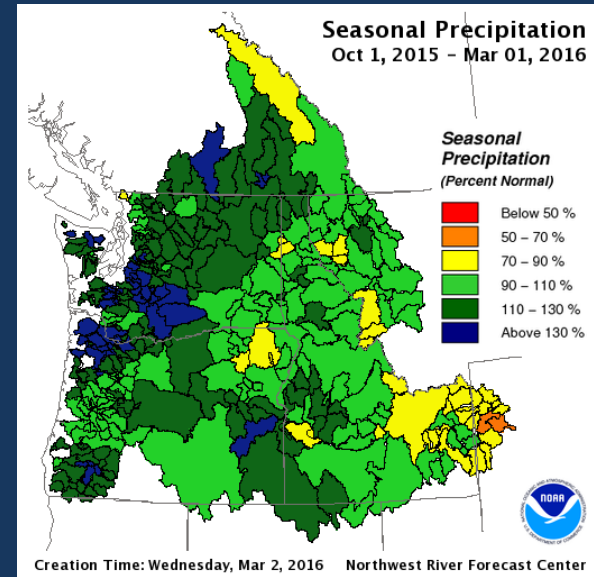
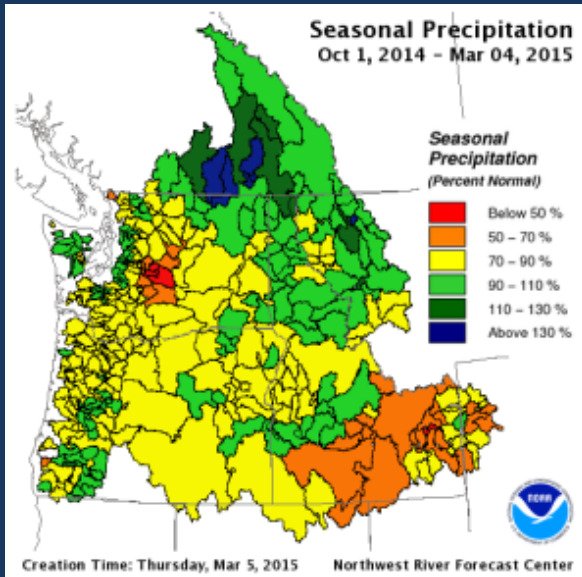
Climate
Forcings

- **Modeling Changes, new products**



Observed Seasonal Precipitation

www.nwrfc.noaa.gov/water_supply/wy_summary

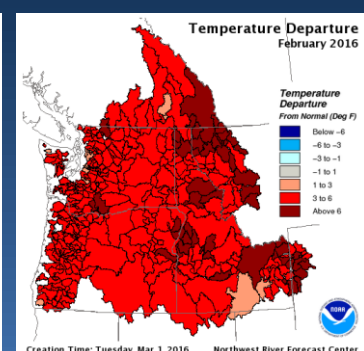
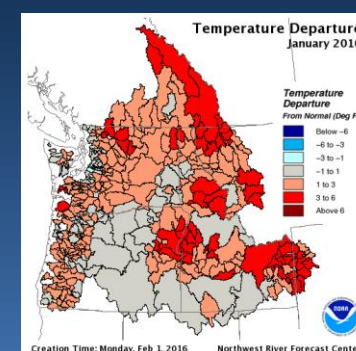
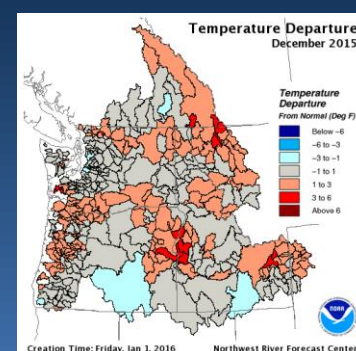
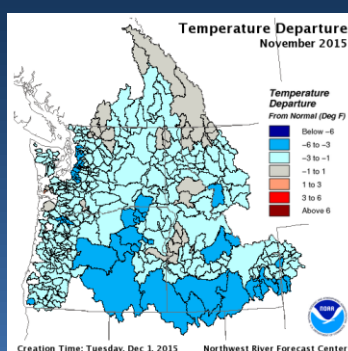
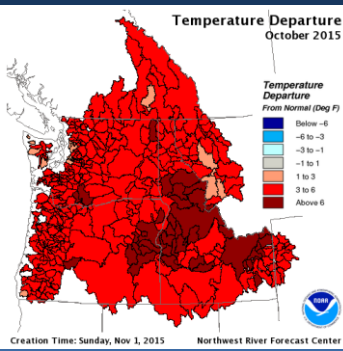
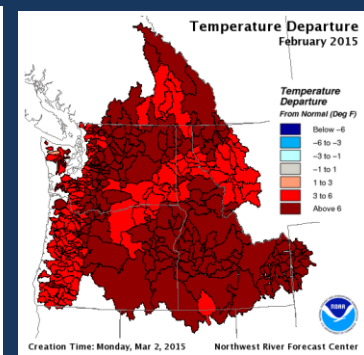
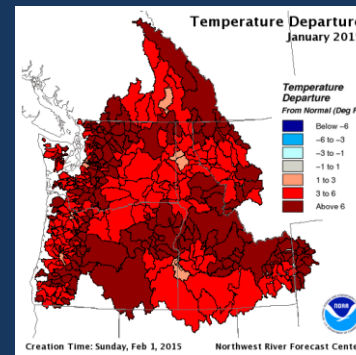
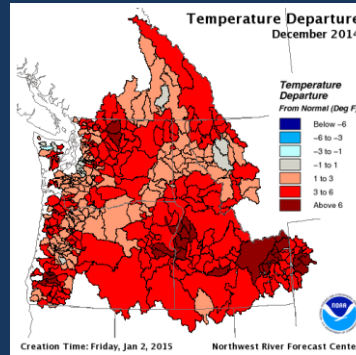
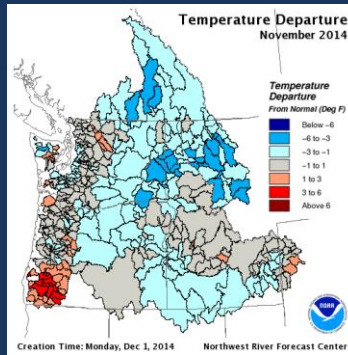
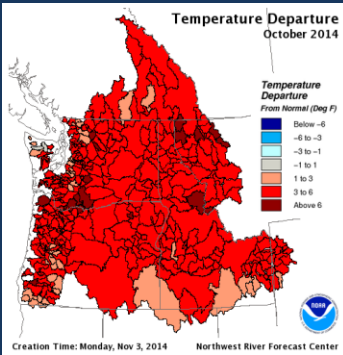


DIVISION NAME	WY 2015 % NORM	WY 2016 % NORM	WY 2016 OBS
Columbia River Basin above Grand Coulee Dam	105	104	20.4
Snake River Basin above Ice Harbor Dam	84	101	11.6
Middle Columbia Lower Tributaries	83	111	15.4
Columbia River Basin above The Dalles Dam	91	105	15.5
*Western Washington	86	120	70.9
*Western Oregon	86	117	51.1
*Average of contributing divisions			



Temperature Departures

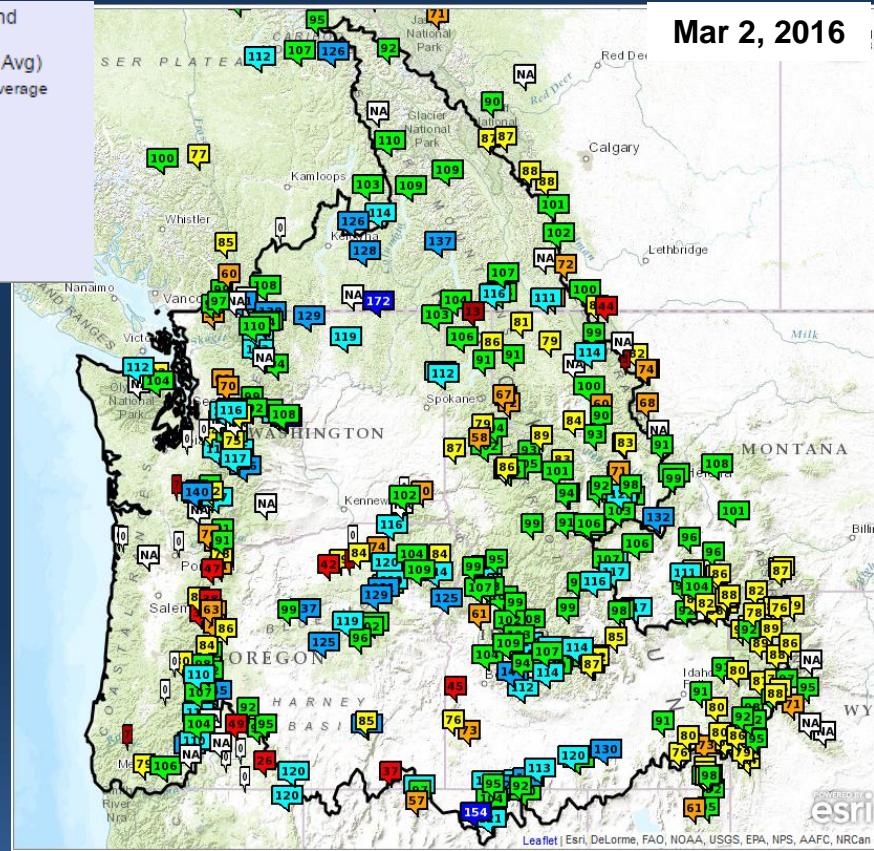
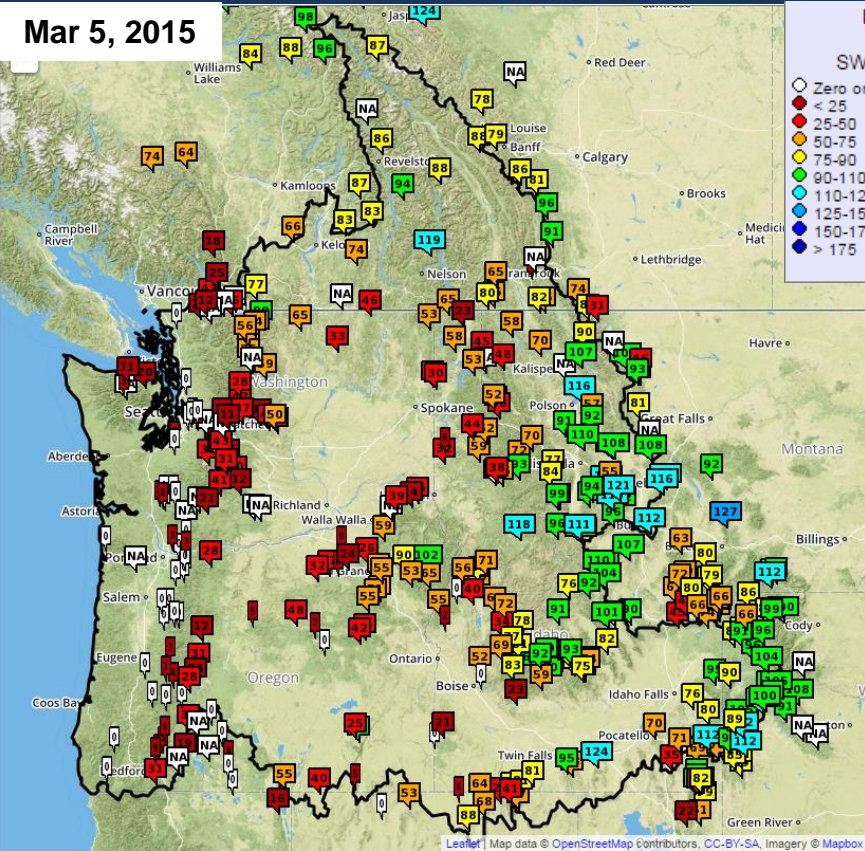
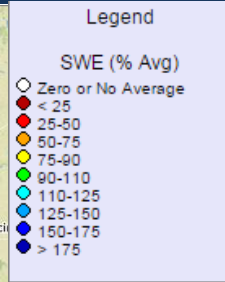
Water Year 2015/2016 comparison



Observed Snowpack Conditions

Mar 5, 2015

Mar 2, 2016

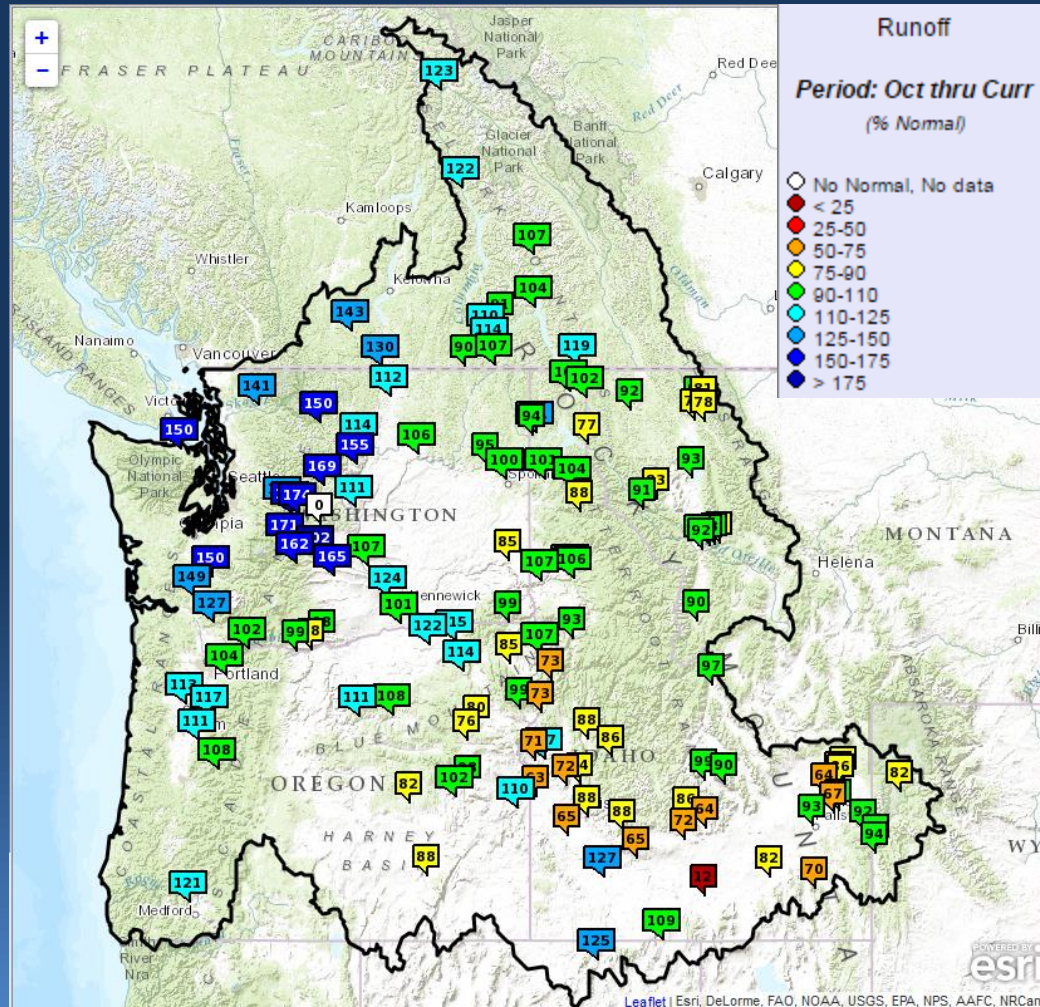


- Observed snow water equivalent (SWE) values provided by:
 - Natural Resources Conservation Service (NRCS) SNOTEL network
 - Environment Canada (EC) Automated Snow Pillow network



Current Observed Runoff Conditions

Adjusted for upstream storage



Percent of Normal
Oct 1– Mar 2

UPPER COLUMBIA BASIN

MICA	123
DUNCAN	107
QUEENS BAY	104
LIBBY	92
HUNGRY HORSE	78
GRAND COULEE	106

SNAKE RIVER BASIN

JACKSON LAKE	82
PALISADES	92
DWORSHAK	103
LOWER GRANITE	85

LOWER COLUMBIA BASIN

THE DALLES	99
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Water Supply Forecast Briefing Outline



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Hydrologic
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- 10 days of quantitative forecast precipitation (QPF)
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Climate
Forcings

- **Modeling Changes, new products**



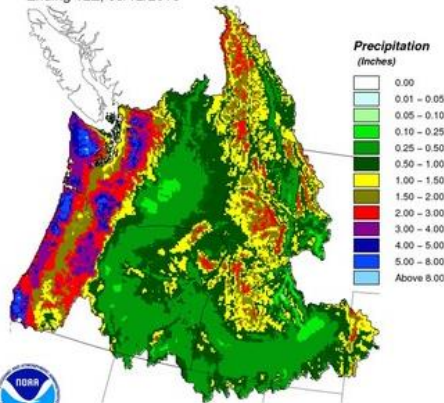
Short-Range Weather Forecasts

www.nwrfc.noaa.gov/water_supply/wy_summary



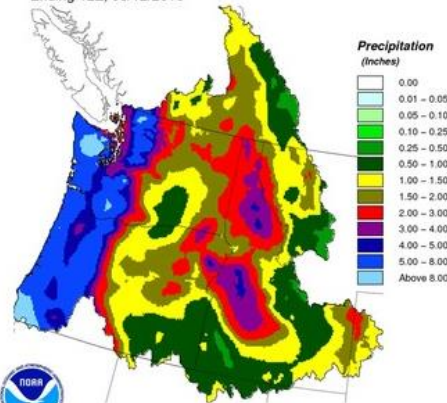
10 Day Forecast Precipitation: Volume Analysis

10 Day Precipitation Climatology
Ending 12Z, 03/12/2016



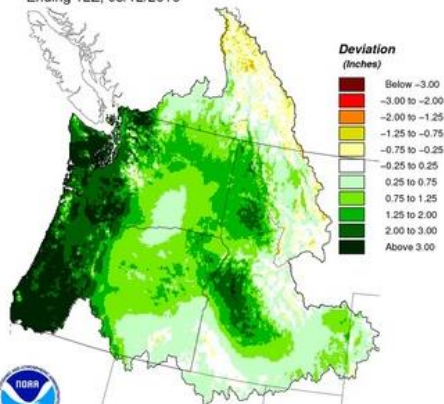
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10 Day QPF
Ending 12Z, 03/12/2016



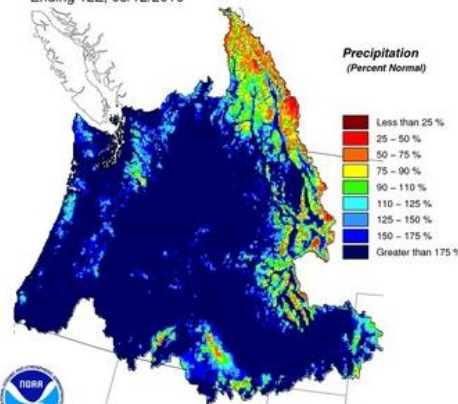
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10 Day QPF (Deviation from Climatology)
Ending 12Z, 03/12/2016



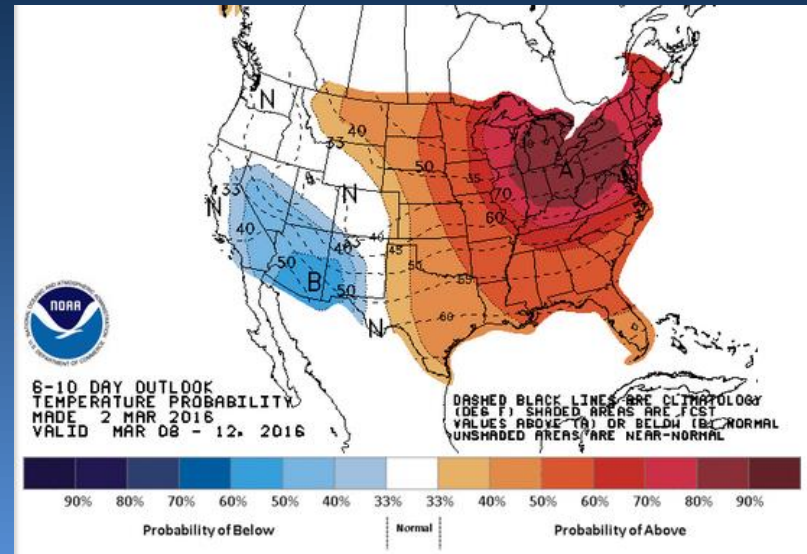
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10 Day QPF (Percent of Climatology)
Ending 12Z, 03/12/2016



Creation Time: Wed Mar 2 18:32:26 UTC 2016

- Relatively wet conditions forecasted over much of the basin
- No clear signal for temperature anomalies





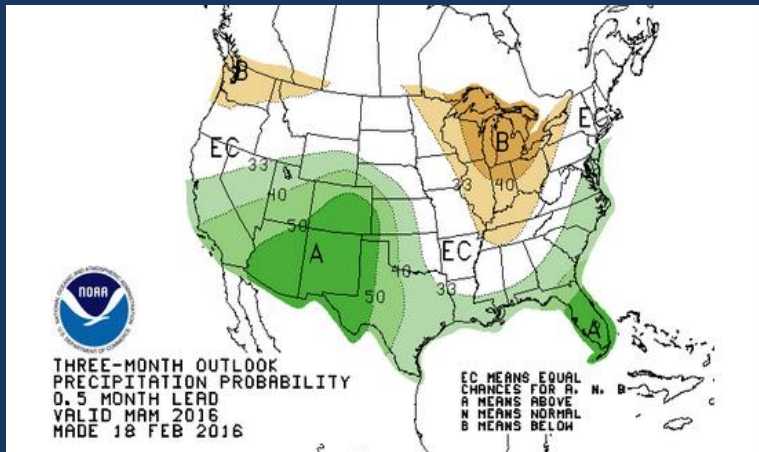
Climate Outlook

www.cpc.ncep.noaa.gov



Three Month Outlook

Precipitation



Temperature

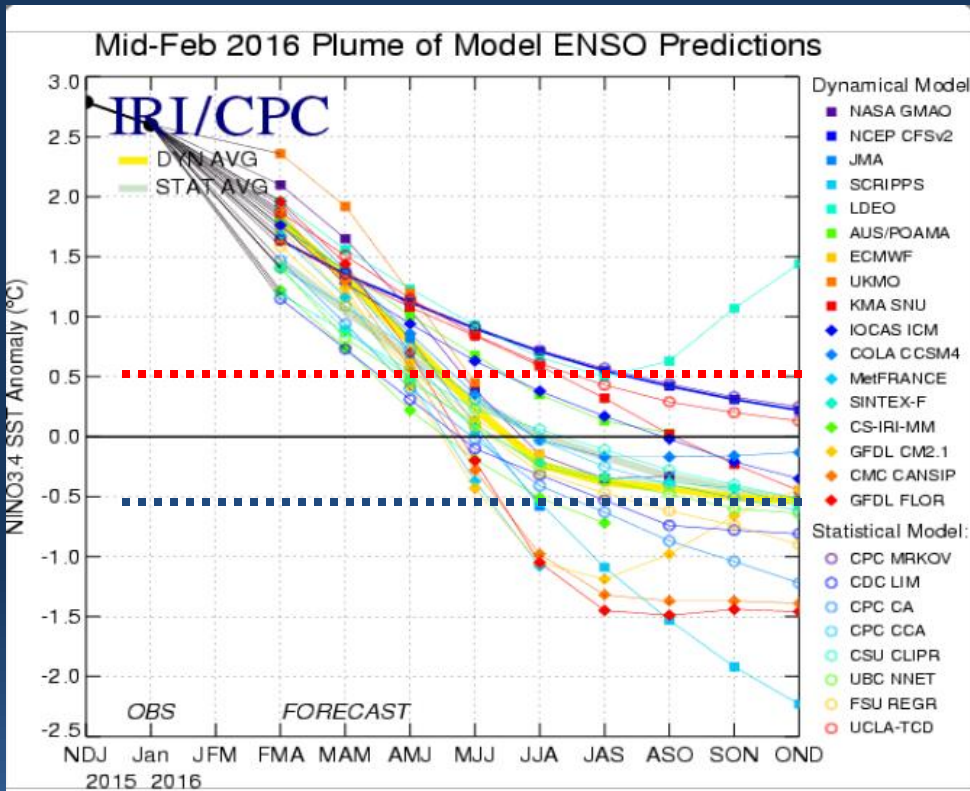
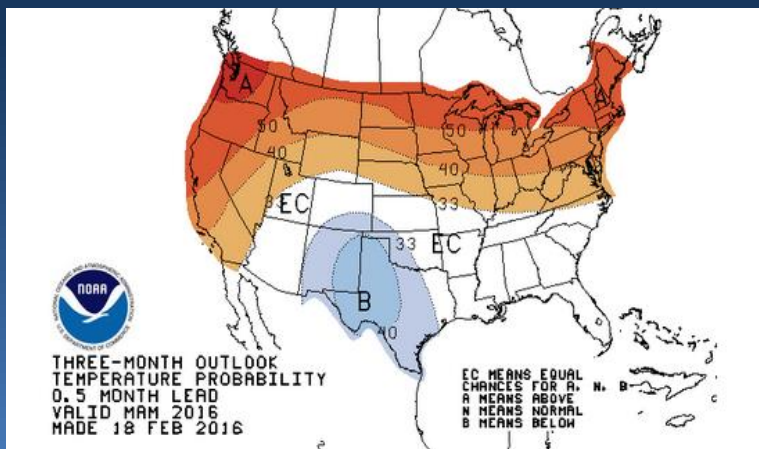


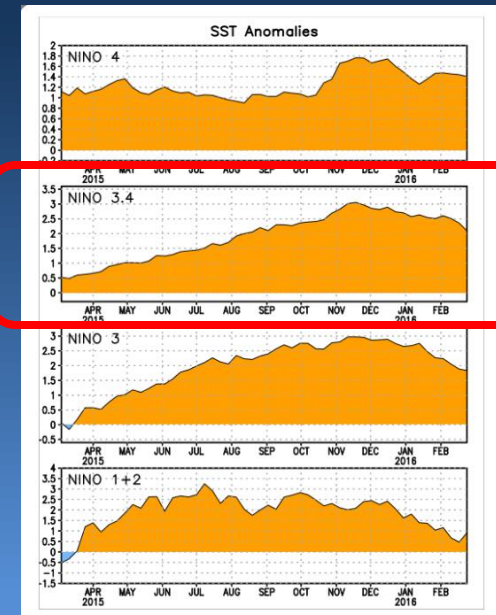
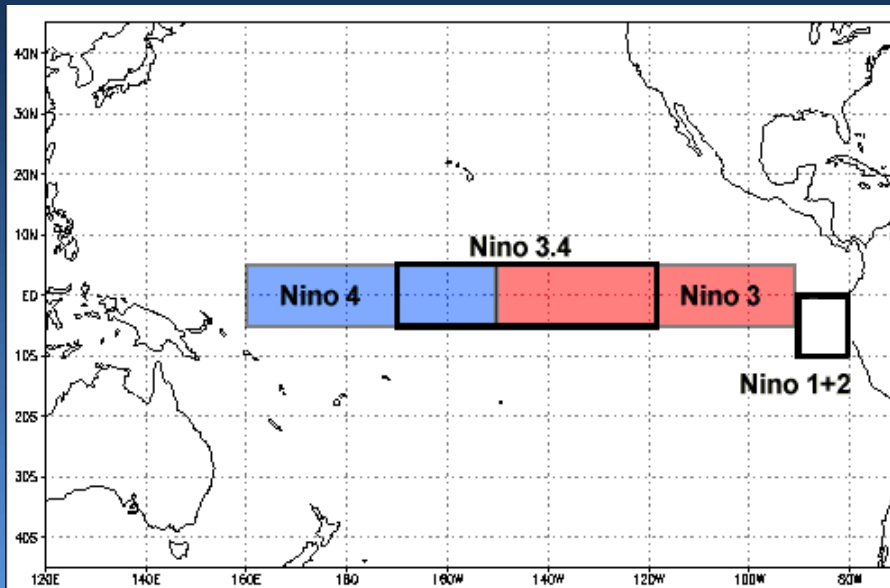
Figure provided by the International Research Institute (IRI) for Climate and Society (updated 17 February 2016).

- Increased probability that warm temperatures will continue
- Precipitation may be light along northern tier
- El Niño conditions still present, transition to ENSO-neutral likely in spring/early summer 2016

Current ENSO Discussion

ENSO Alert Status: El Nino Advisory

- Positive equatorial sea surface temperature (SST) anomalies continue across most of the Pacific Ocean
- Transition to ENSO neutral is likely during Northern Hemisphere spring with possible transition to La Nina conditions during the fall



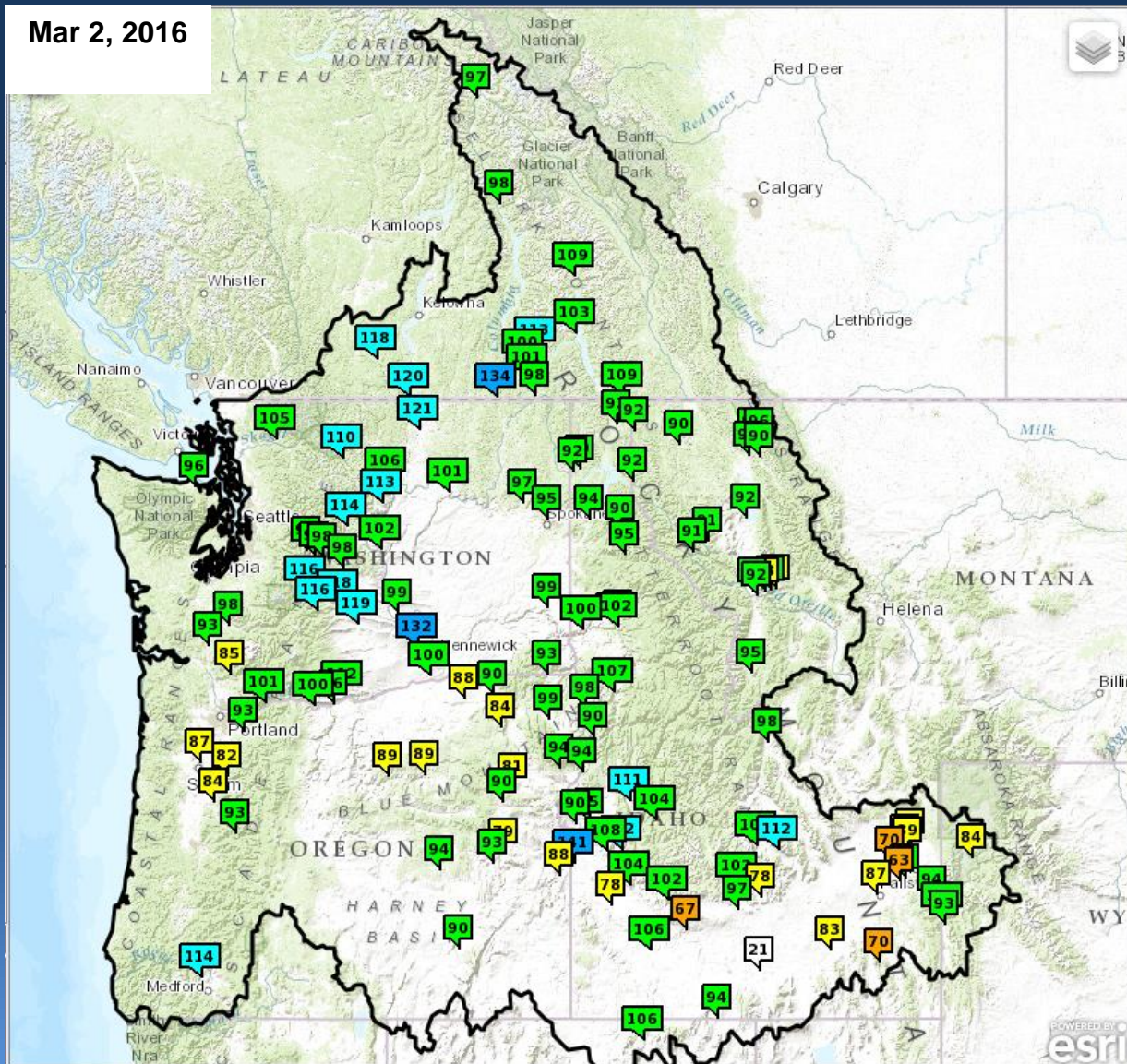


Official Water Supply Forecasts

www.nwrfc.noaa.gov/ws/



Mar 2, 2016



EAST-SIDE LOCATION

APR – SEP % NORM

Columbia River – Mica Dam	97
Kootenai River – Libby Dam	90
Flathead River – Hungry Horse Dam	90
Spokane River – Coeur D Alene Lake	94
Columbia River – Grand Coulee Dam	<u>101</u>
Snake River – Near Irwin	94
Snake River – American Falls	83
Clearwater River – Dworshak Dam	96
Snake River – Lower Granite Dam	<u>99</u>
Columbia River – The Dalles Dam	<u>100</u>



Water Supply Forecasts

Western Oregon and Washington Cascades



2016 Apr – Sep Forecast



Skagit River
- near Concrete 105%

Cowlitz River
- Mayfield Reservoir 98%

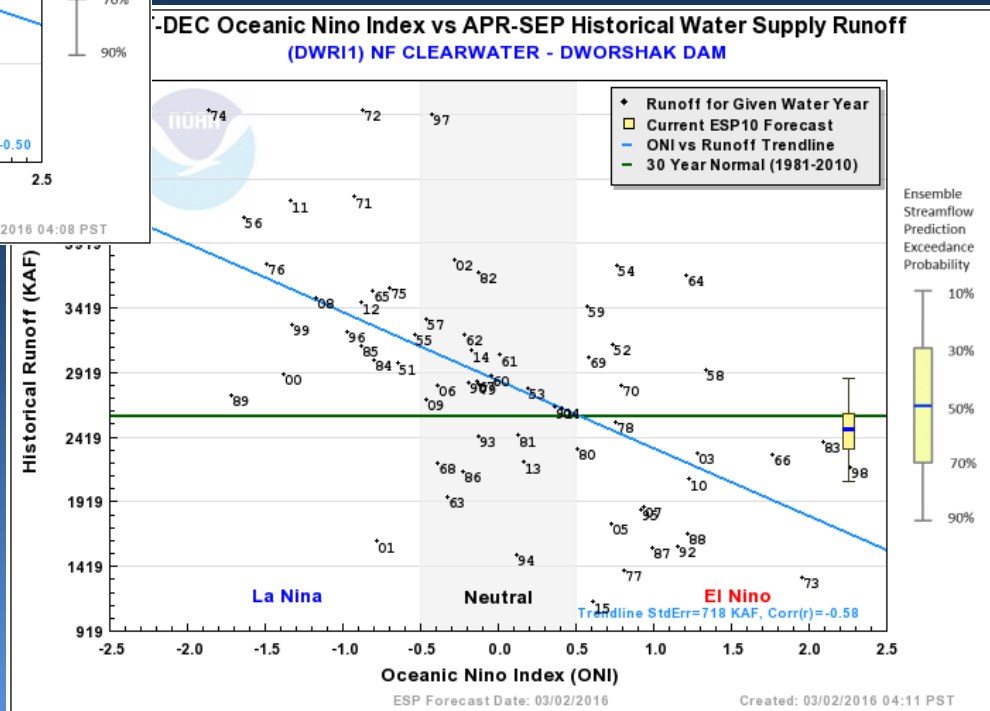
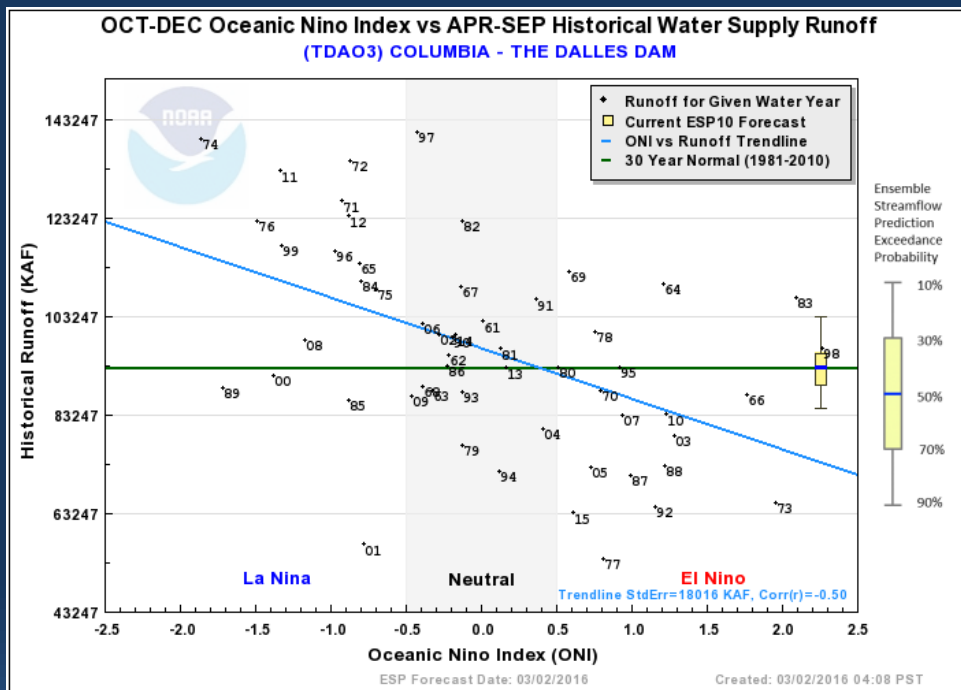
North Santiam
- At Mehama 82%

Willamette River
- At Salem 87%



NWRFC Water Supply Product

Oct-Dec ONI vs Apr-Sep Runoff Volume





ESP Natural Normals Update

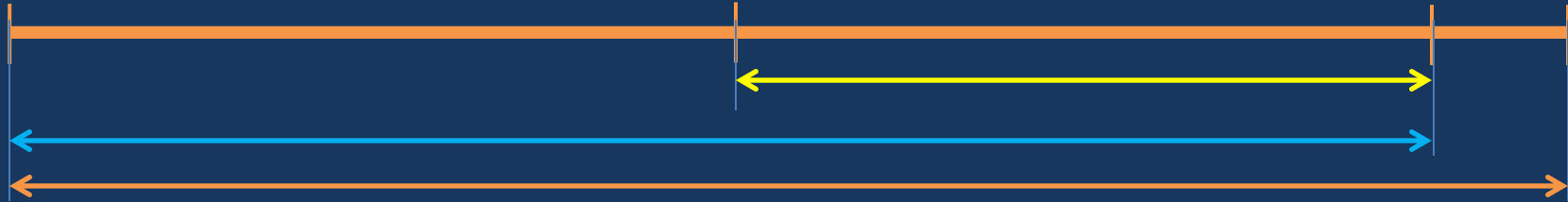


1949

1981

2010

2015

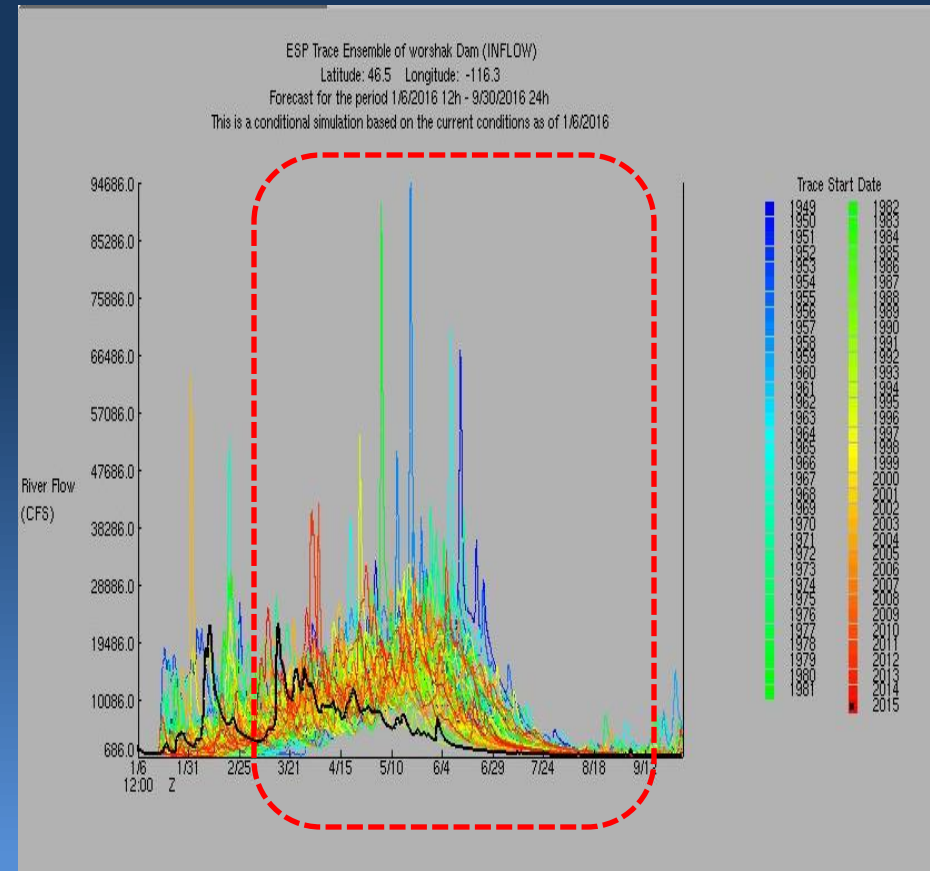


1981 - 2010

- 30 year Natural Normals

Climate Forcings Period of Record

- Previously used 1949 – 2010
- Now using 1949 – 2015





NWRFC Water Supply Webpage

http://www.nwrfc.noaa.gov/water_supply/ws_schd.cgi?version=20160107v1



2016 Schedule for <i>Live Water Supply</i> Briefings					
Jan	Feb	Mar	Apr	May	Jun
7	4	3	7	5	TBD
<i>All presentations held at 10am PDT/PST, unless noted otherwise</i>					
Click here for Registration Information					

<http://www.nwrfc.noaa.gov/presentations/presentations.cgi>

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Questions?

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