



NOAA West Watch

*Reporting Regional Environmental
Conditions & Impacts in the West*

January 23, 2018

Call Agenda



- **Project Recap & Updates (Polly Hicks)**
- El Niño and Regional Climate brief (Dan McEvoy)
- Guest Speaker: Observations of California's Epic 2017 Water Year from Satellite and a 21st Century Ground-based Observing Network (Allen White)
- IOOS Nearshore Conditions brief (Marine Lebrech, Clarissa Anderson, Alex Harper)
- Environmental conditions and impacts reporting and discussion (Polly Hicks)
- Discussion

Project Recap and Updates



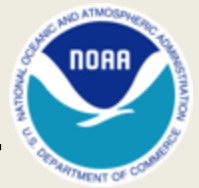
- NOAA West Watch bi-monthly webinars are a project of the NOAA West Regional Coordination Team
- Goals of the project:
 - **Document and share** environmental conditions information and impacts on human systems and NOAA mission at the regional scale
 - **Improve awareness** of environmental observations and human system impacts across NOAA mission lines
 - **Improve regional communication and coordination**
 - **Improve external communication** of regional impacts
- Next webinar: March 20th, 1-2PM PDT/ 2-3PM MDT

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Precipitation and Temperature

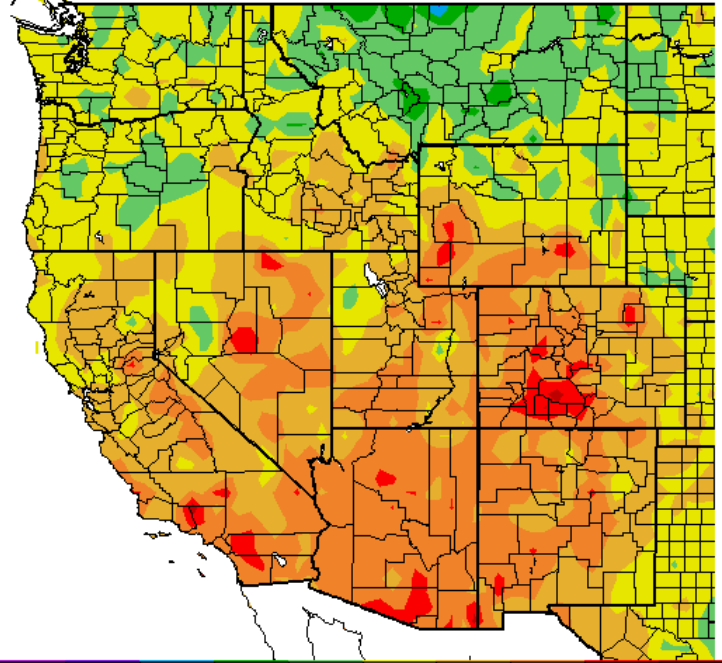
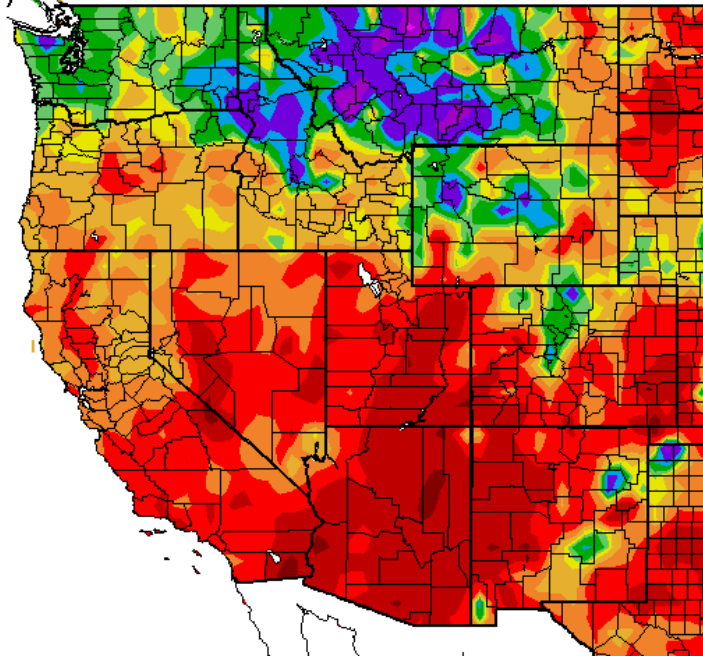


**Water Year To Date
% of Average Precipitation**

**Water Year To Date
Mean Temperature Departure From Average**

Percent of Average Precipitation (%)
10/1/2017 - 1/21/2018

Ave. Temperature dep from Ave (deg F)
10/1/2017 - 1/21/2018

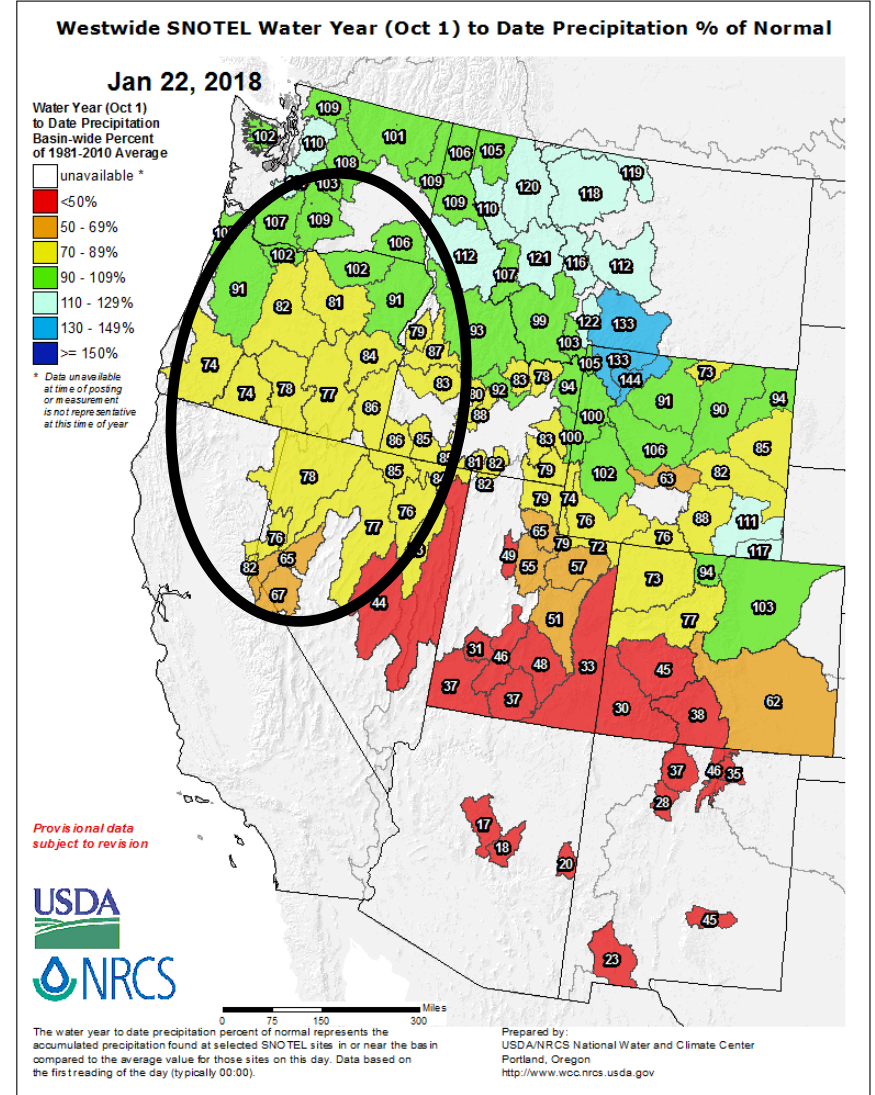
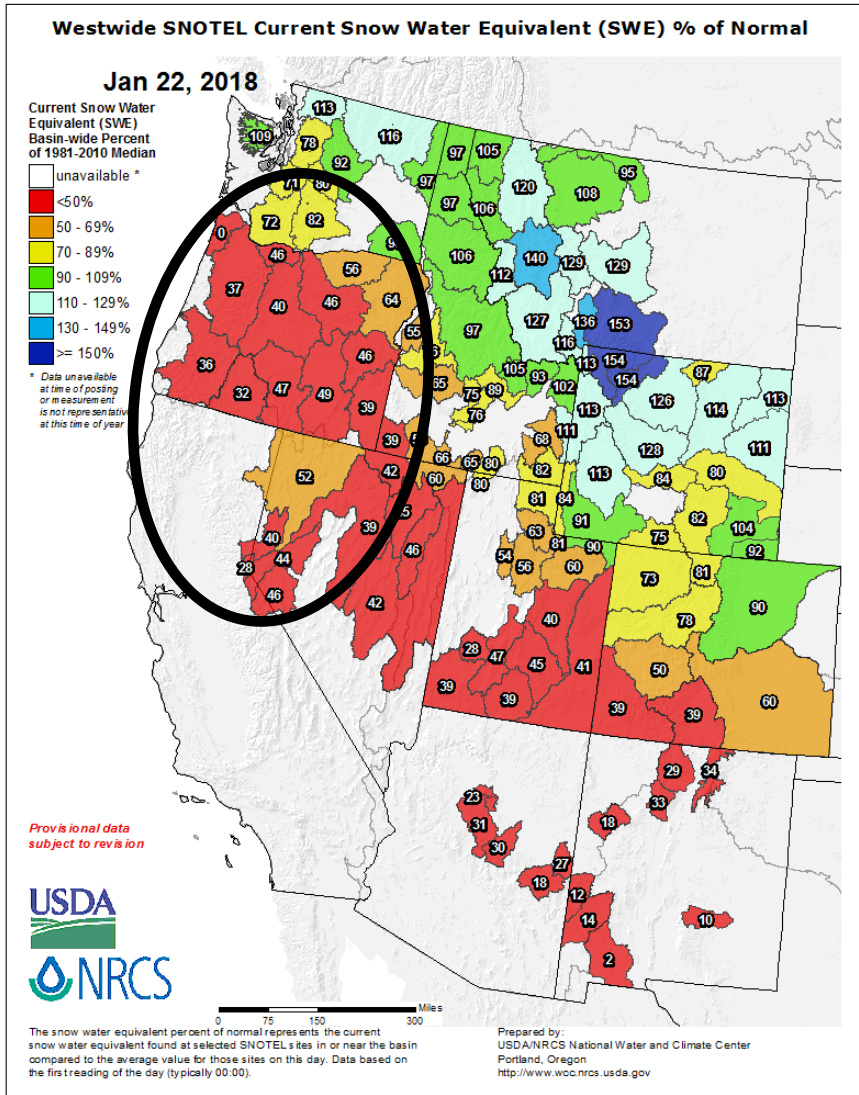


Snow Drought: OR, CA, NV, UT, CO, AZ, NM



Snow Water Equivalent

Precipitation



Snow Drought: California



Current Regional Snowpack from Automated Snow Sensors

Statewide Average: 23% of Average

% of April 1 Average / % of Normal for This Date



NORTH	
Data as of January 22, 2018	
Number of Stations Reporting	31
Average snow water equivalent (Inches)	3.0
Percent of April 1 Average (%)	11
Percent of normal for this date (%)	20

CENTRAL	
Data as of January 22, 2018	
Number of Stations Reporting	45
Average snow water equivalent (Inches)	4.3
Percent of April 1 Average (%)	14
Percent of normal for this date (%)	26

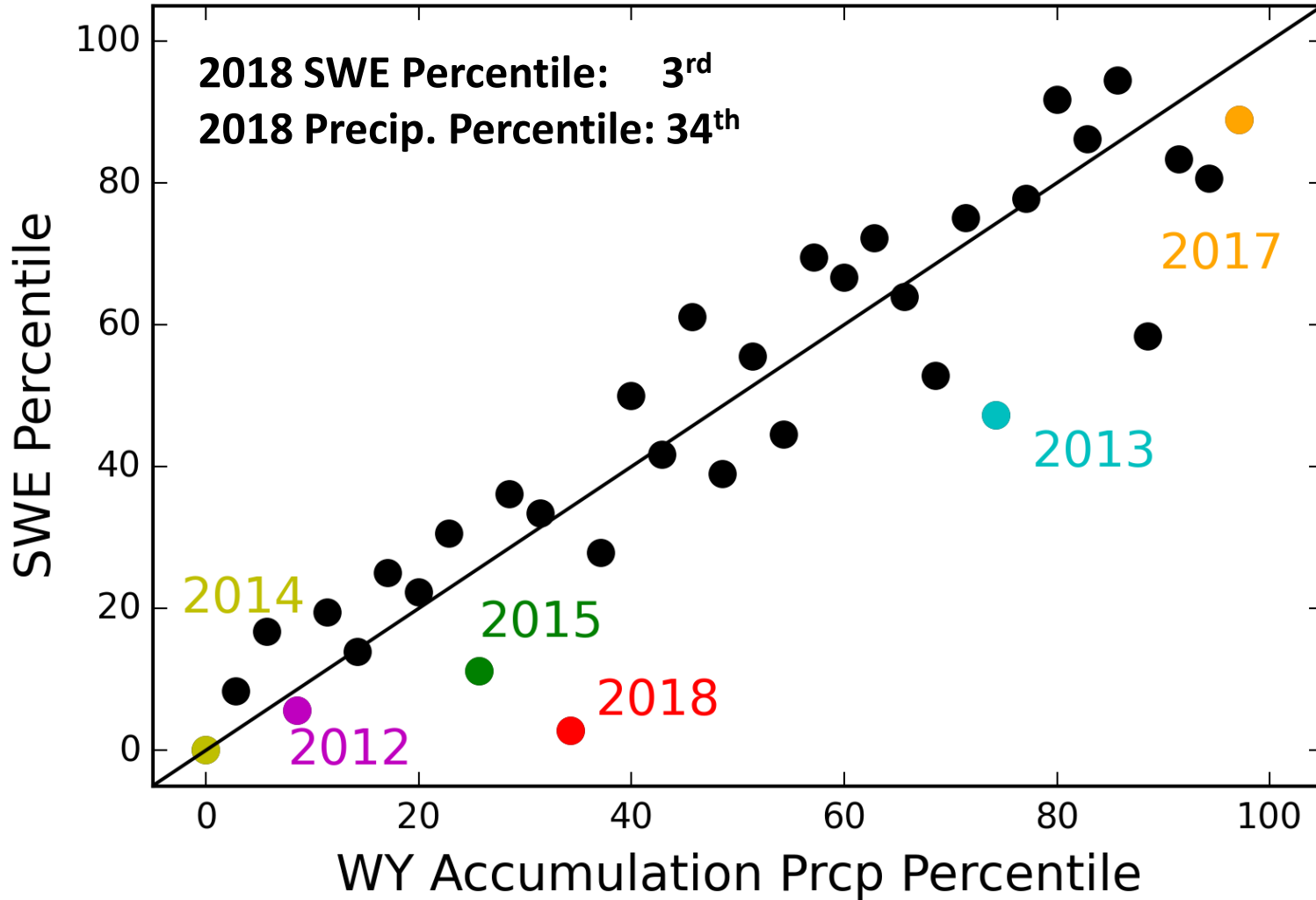
SOUTH	
Data as of January 22, 2018	
Number of Stations Reporting	29
Average snow water equivalent (Inches)	2.6
Percent of April 1 Average (%)	10
Percent of normal for this date (%)	20

STATE	
Data as of January 22, 2018	
Number of Stations Reporting	105
Average snow water equivalent (Inches)	3.5
Percent of April 1 Average (%)	12
Percent of normal for this date (%)	23

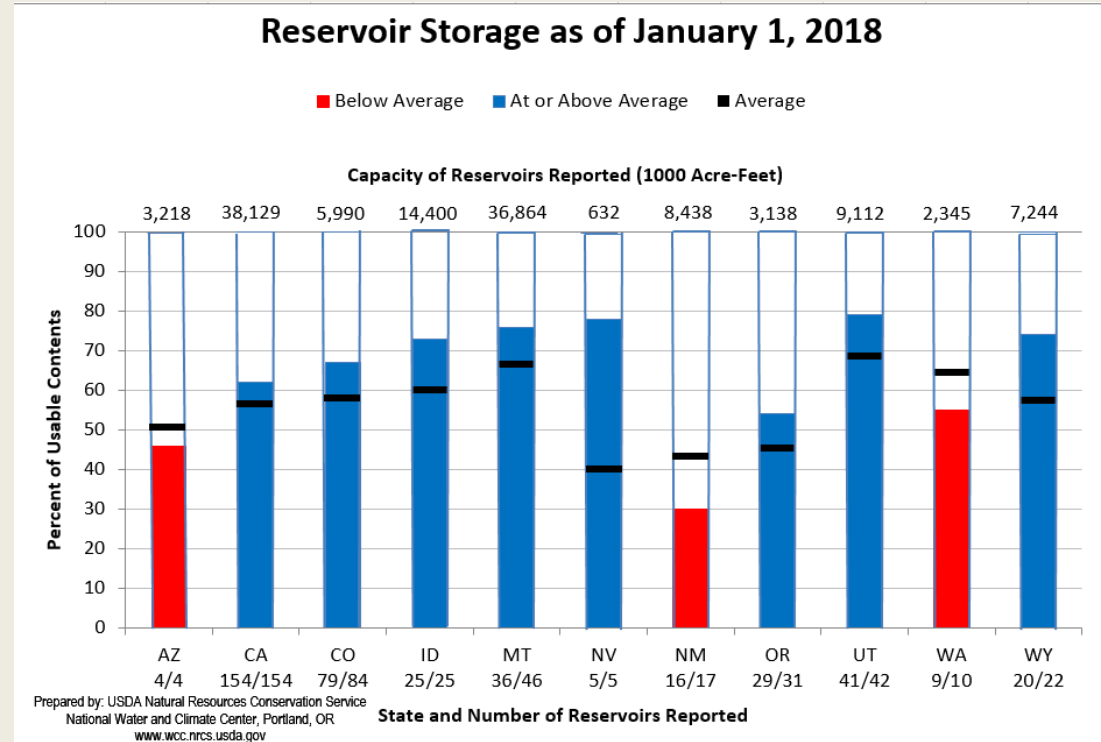
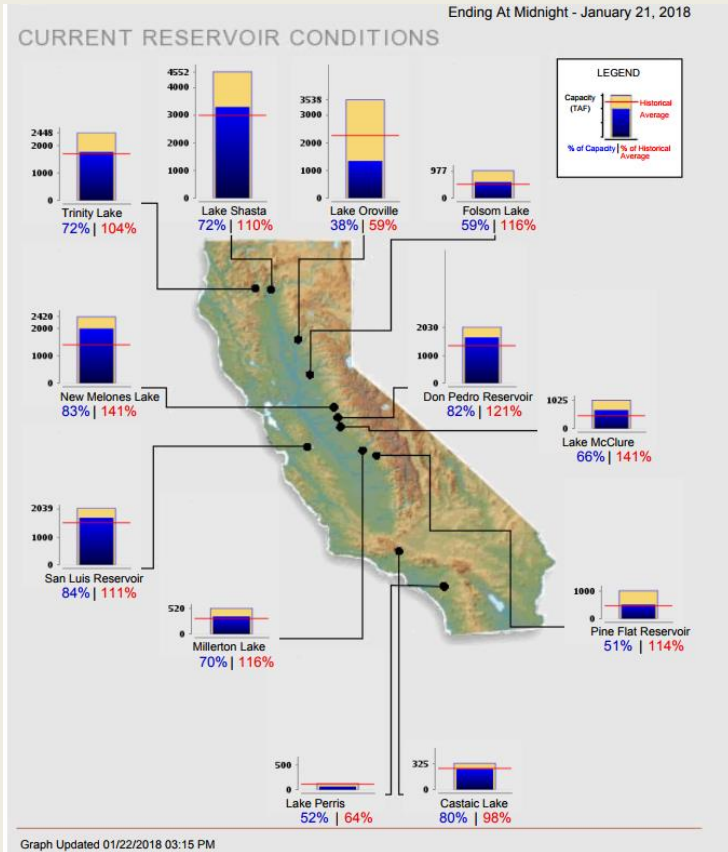
Snow Drought: Donner Pass, CA



CSS Snow Lab as of January 22, 2018



Reservoir Storage



- With exception of AZ, NM, and WA all of the West shows above average reservoir storage
- Exceptionally wet last winter (2016/2017); filled many reservoirs across the West

ENSO Status



- ENSO Alert System Status: **La Niña Advisory**
- La Niña conditions are present. *
- Equatorial sea surface temperatures (SSTs) are below average across the central and eastern Pacific Ocean.
- La Niña is likely (~85-95%) through Northern Hemisphere winter, with a transition to ENSO-neutral expected during the spring.*

Credit: CPC

* Note: These statements are updated once a month (2nd Thursday) in association with the ENSO Diagnostics Discussion, which can be found here:

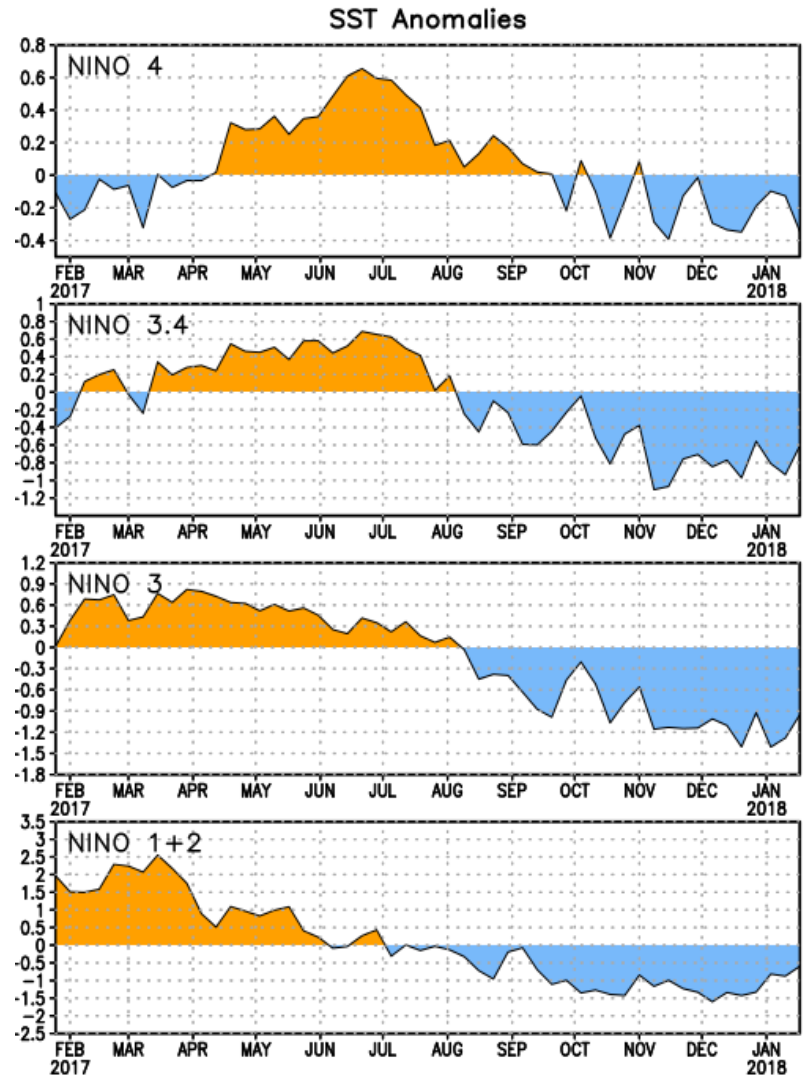
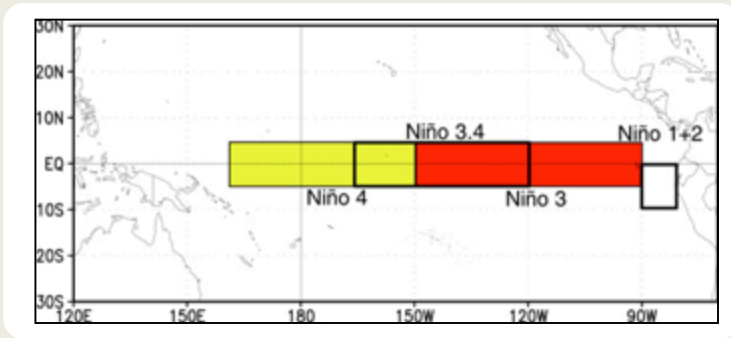
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/.

Niño Region SST Departures (°C) Recent Evolution

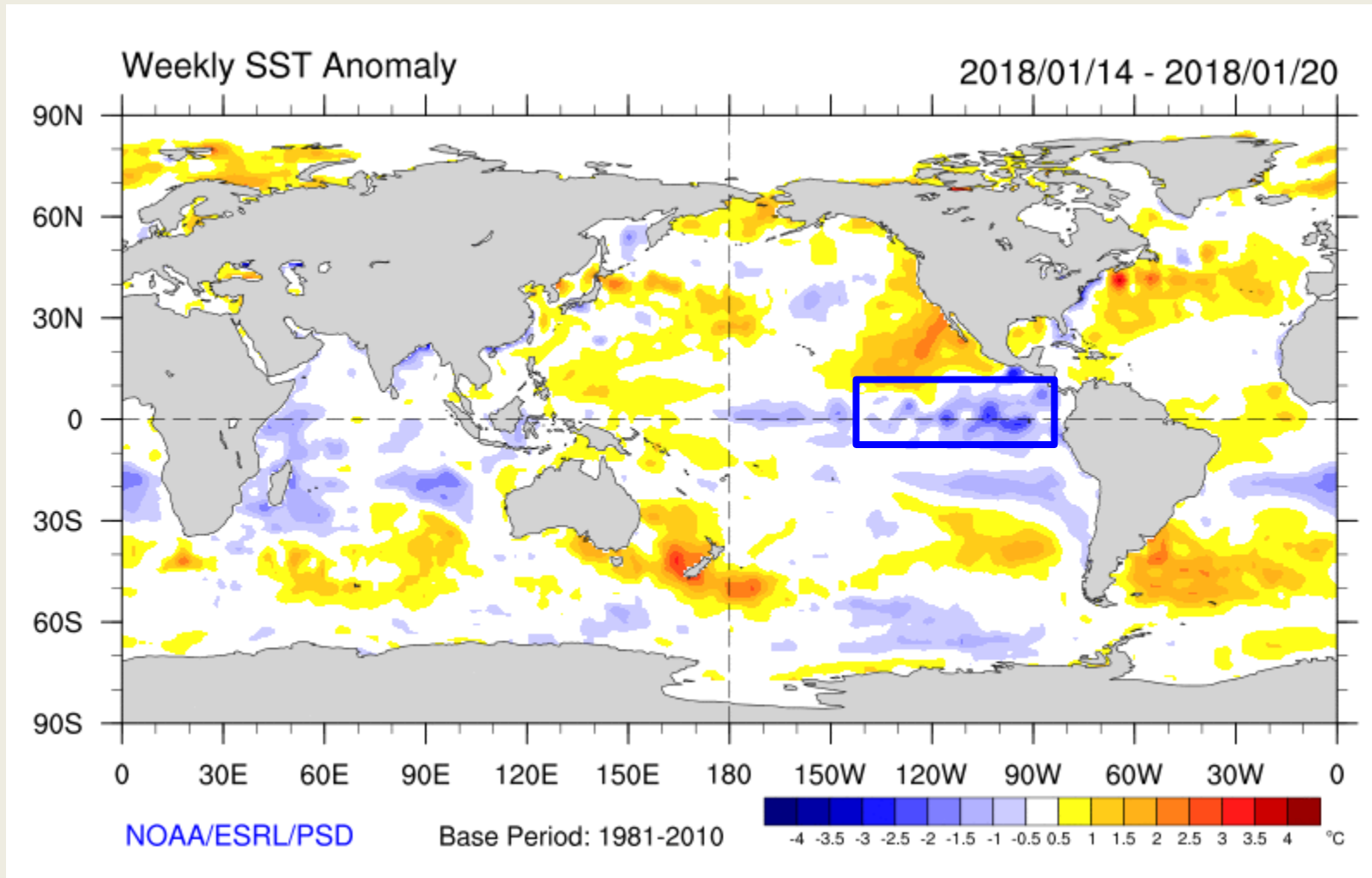
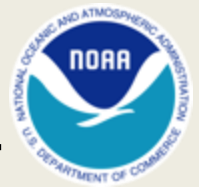


The latest weekly SST departures are:

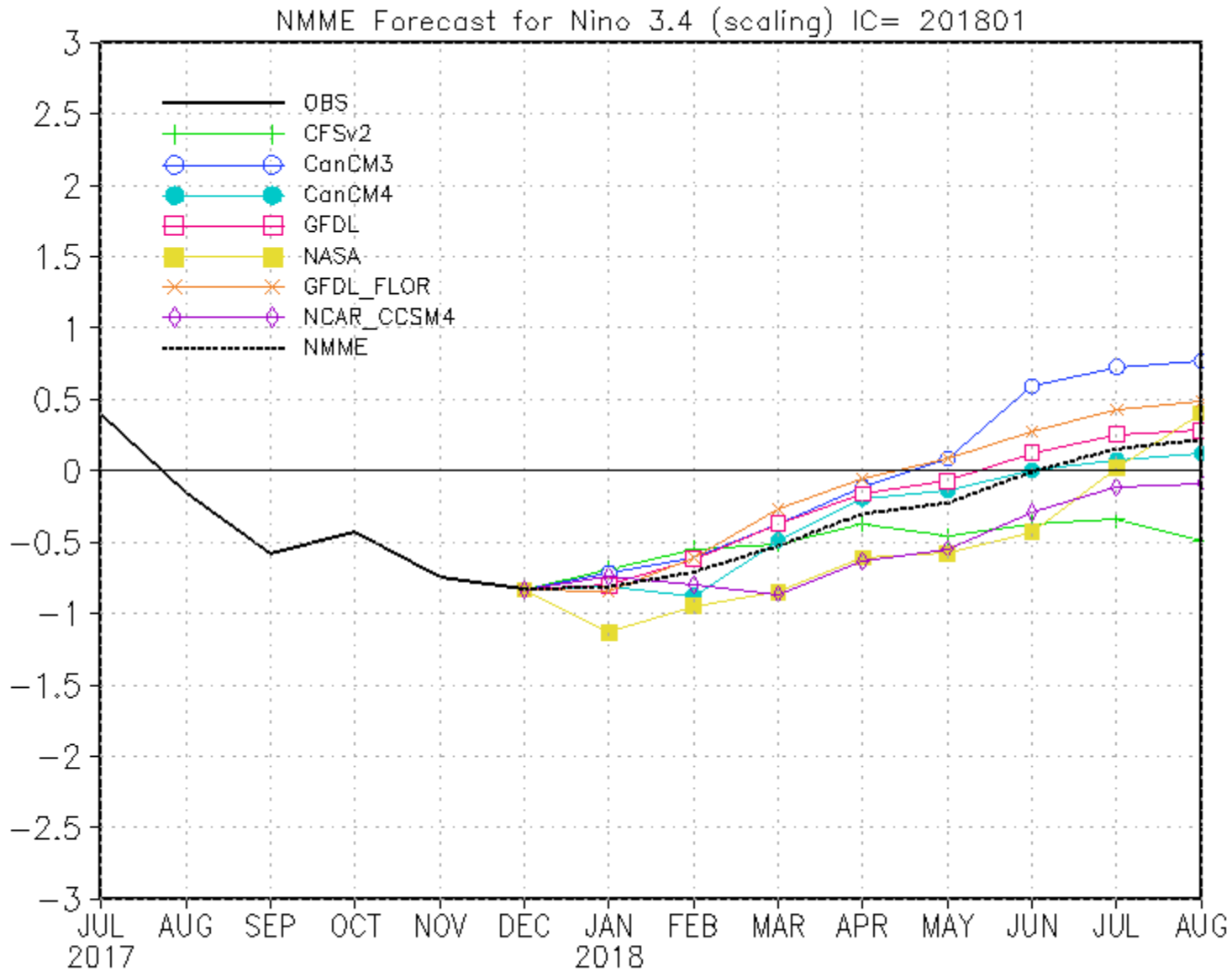
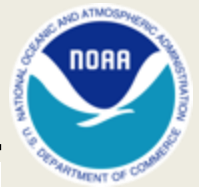
Niño 4	-0.3°C
Niño 3.4	-0.6°C
Niño 3	-0.9°C
Niño 1+2	-0.6°C



Current Sea Surface Temperatures



ENSO Forecasts

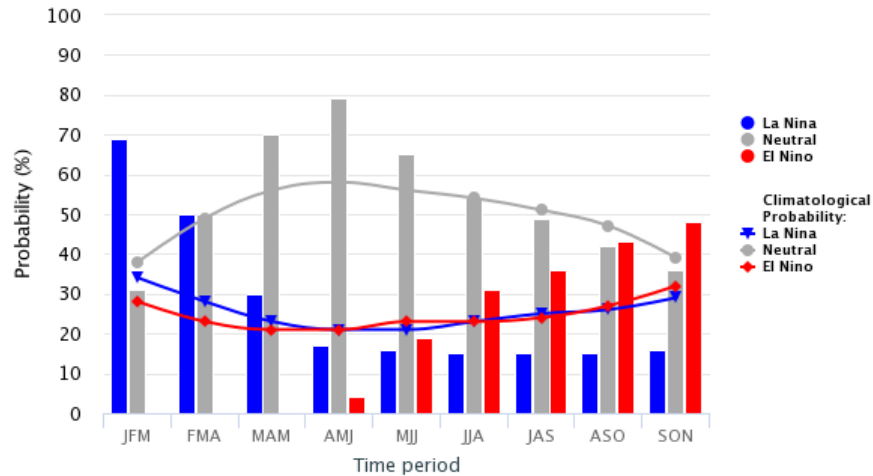


ENSO Forecasts



Mid-Jan IRI/CPC Model-Based Probabilistic ENSO Forecasts

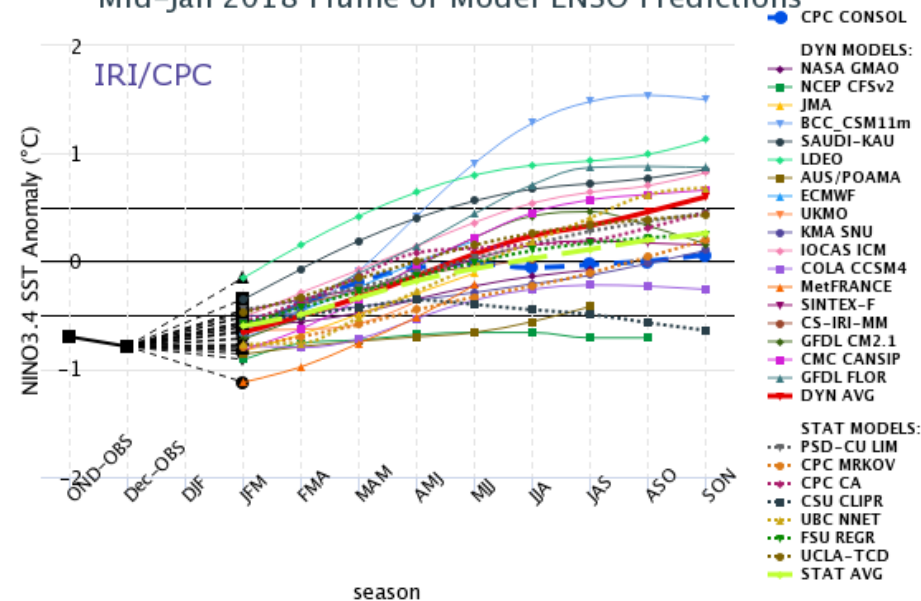
ENSO state based on NINO3.4 SST Anomaly
Neutral ENSO: -0.5 °C to 0.5 °C



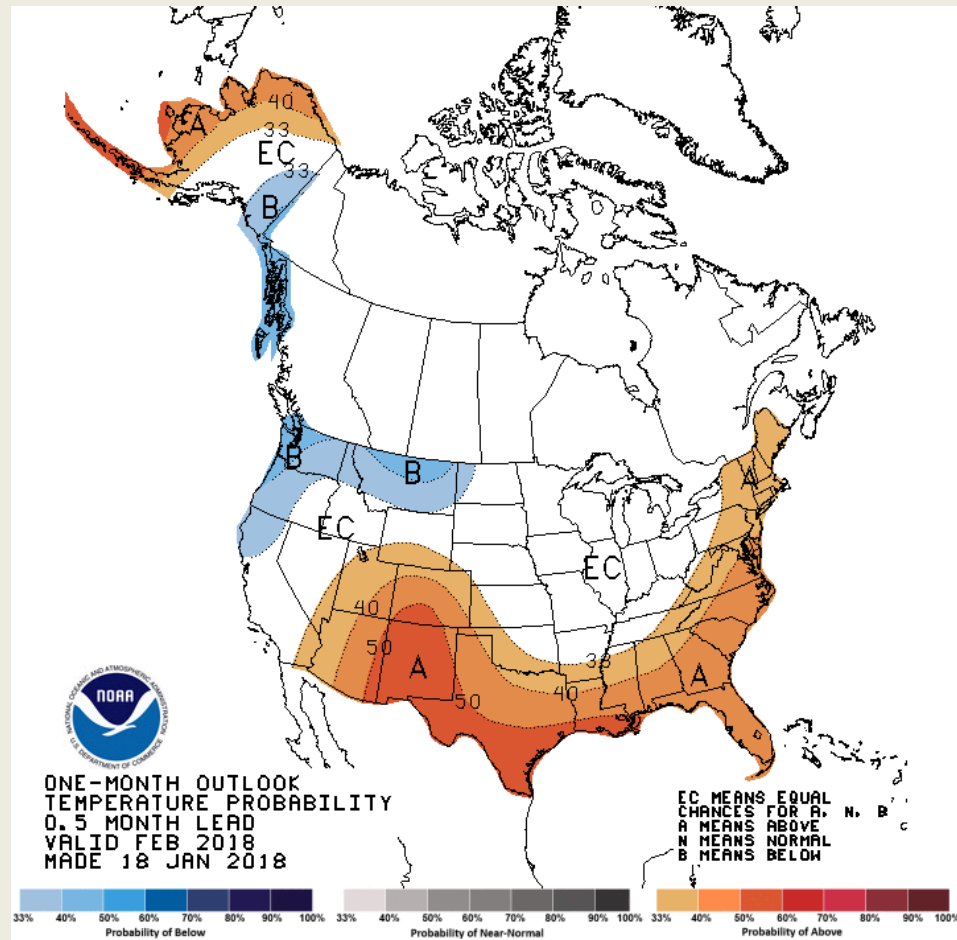
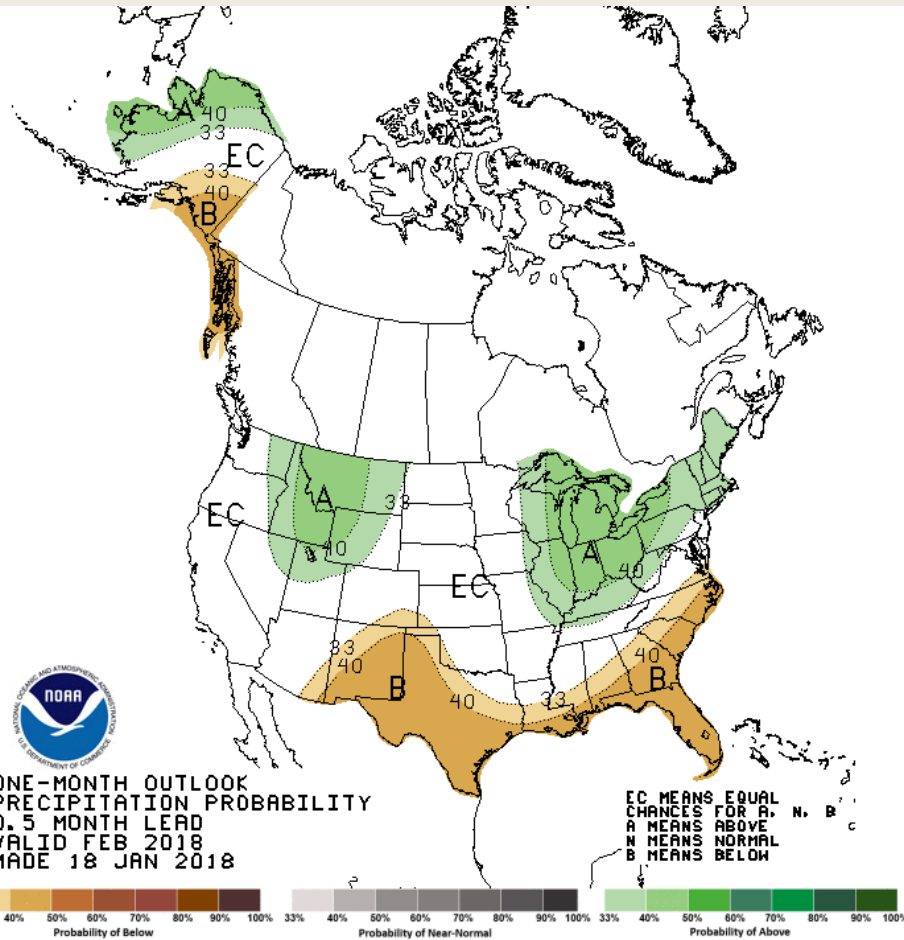
CPC/IRI El Nino forecast:

NMME models + other dynamical models + statistical models

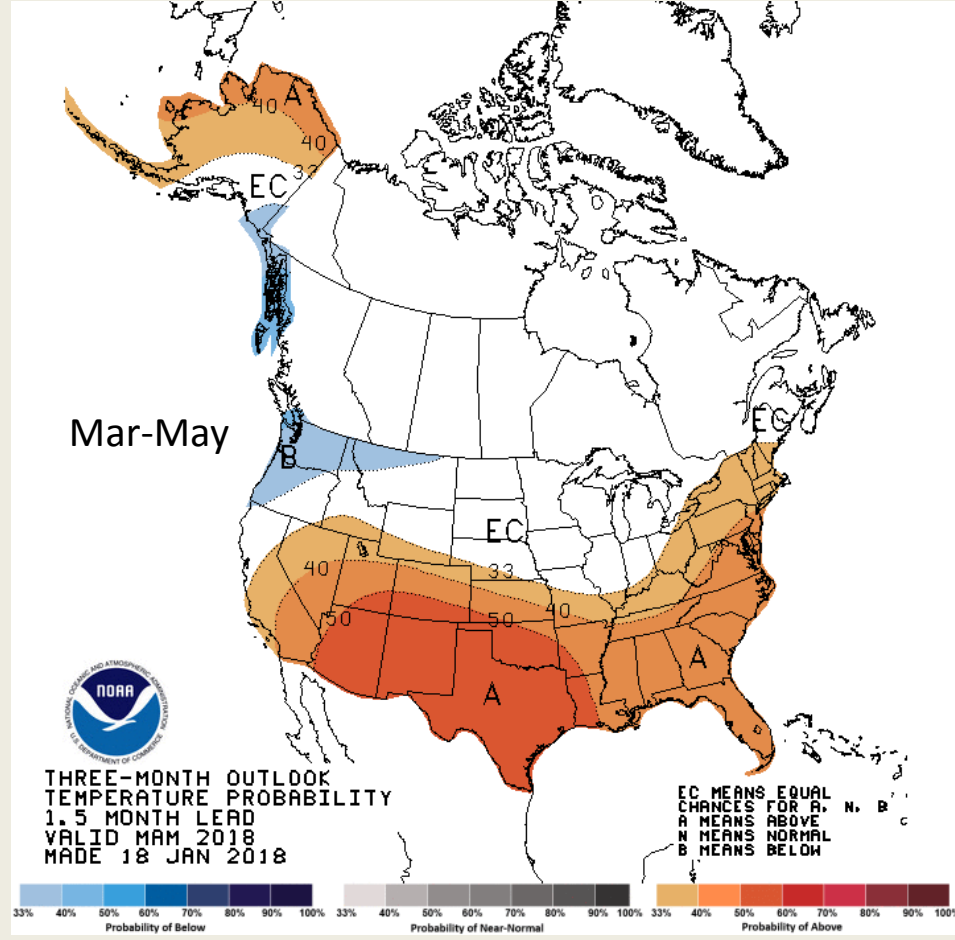
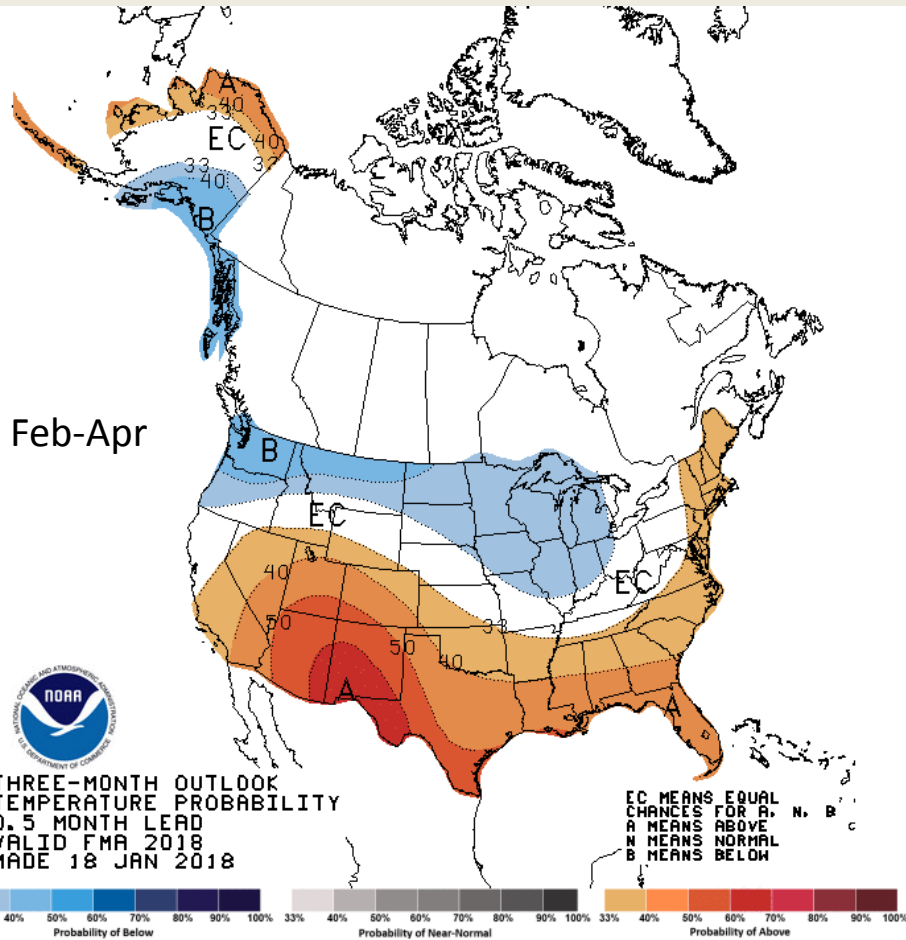
Mid-Jan 2018 Plume of Model ENSO Predictions



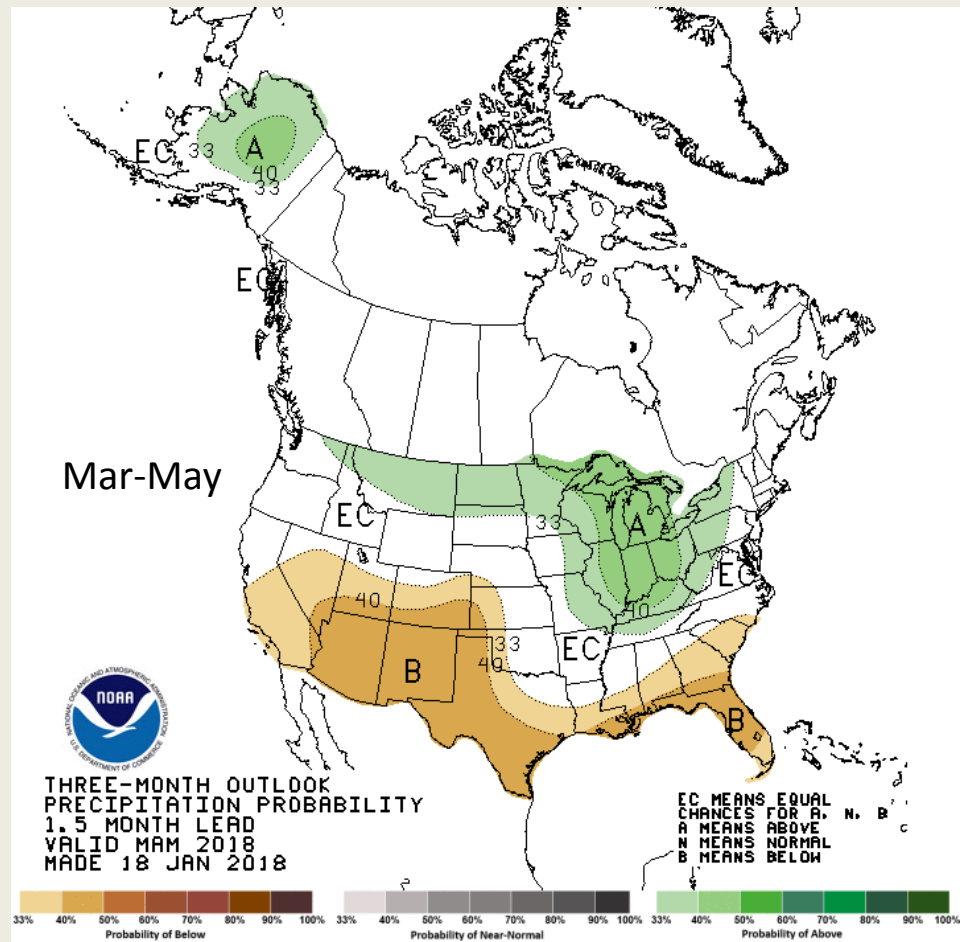
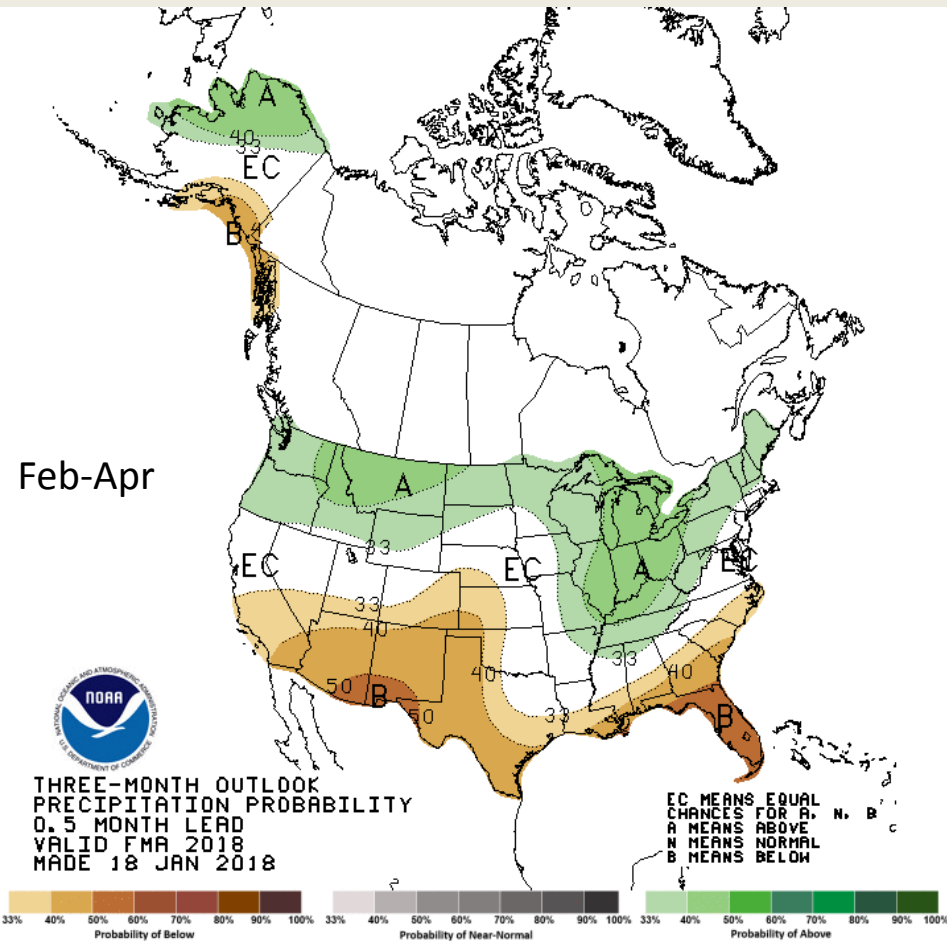
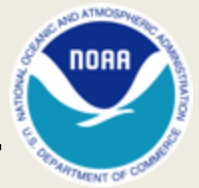
February U.S. Forecasts



U.S. Seasonal Temperature Forecasts



U.S. Seasonal Precipitation Forecasts



Call Agenda



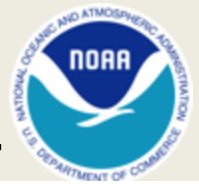
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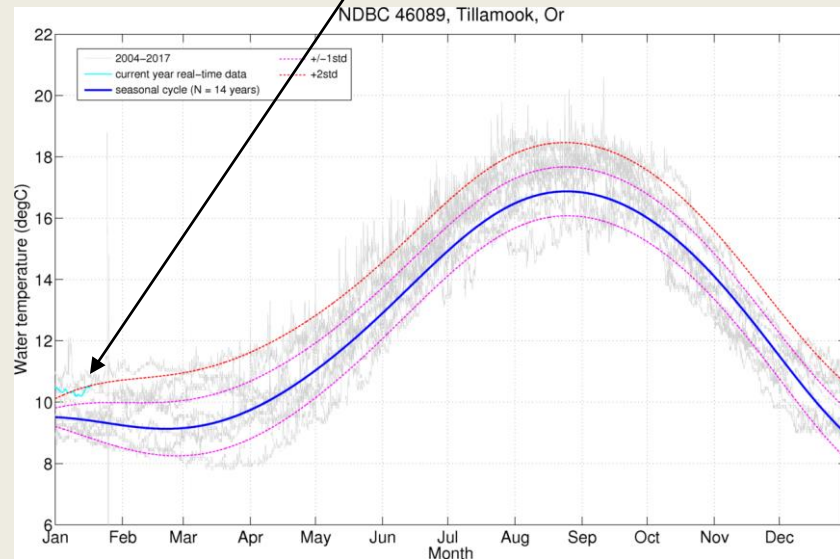
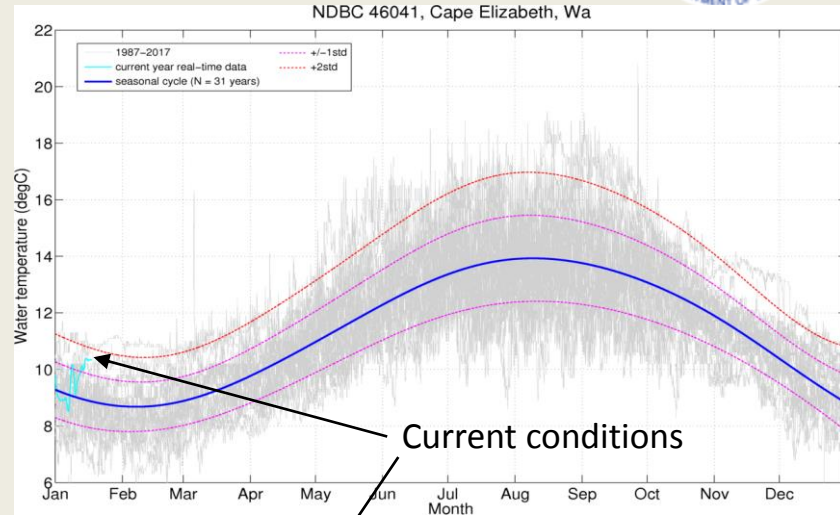
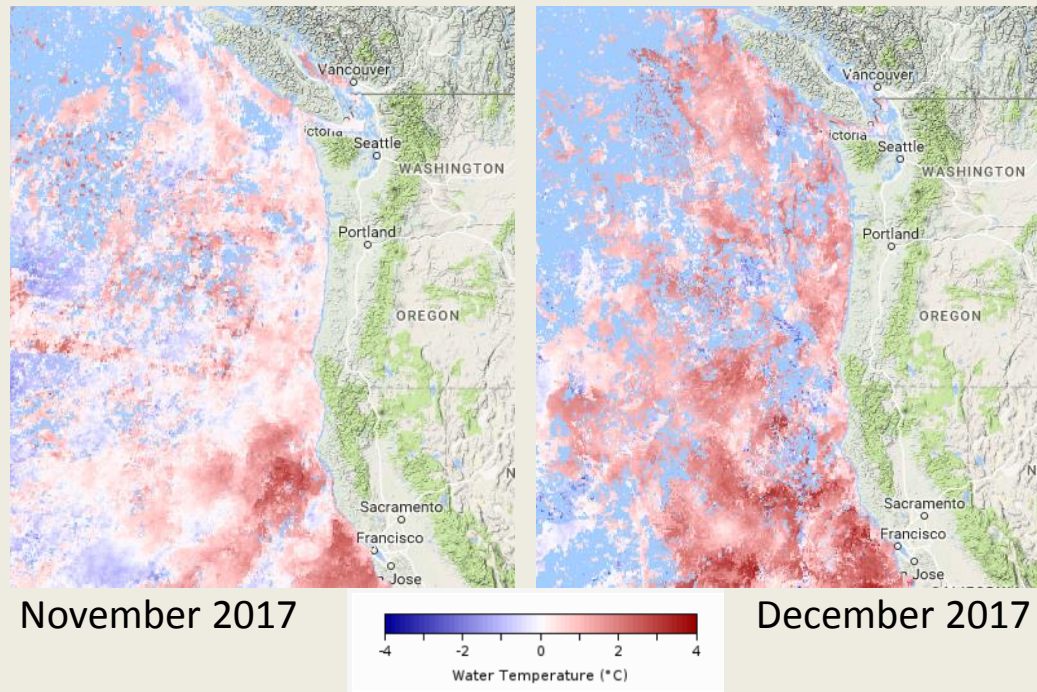


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NANOOS Update: Climatology App



Water temperature anomalies from offshore buoys and NOAA-NCDC satellite



NANOOS Update: Climatology App

Seattle area: We just experienced a wildly record-breaking series of days in January

Originally published January 16, 2018 at 6:27 pm | Updated January 16, 2018 at 11:15 pm

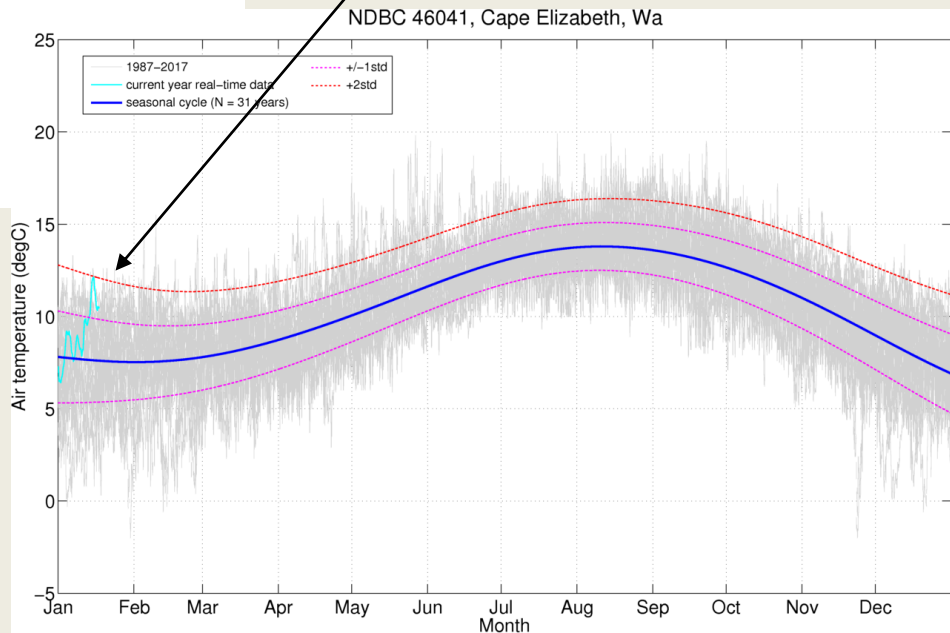
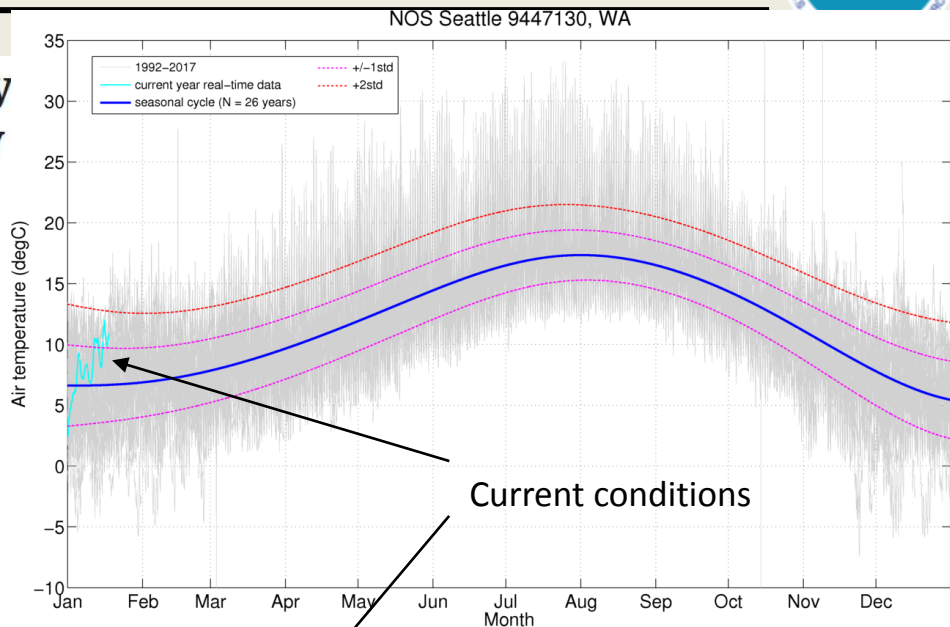


People of all ages get a great view of The Brothers peaks, part of the Olympic Mountains, from Myrtle Edwards Park on Sunday. (Ken Lambert / The Seattle Times)

Thermometers on Monday, for instance, tallied the highest temperature ever recorded by the National Weather Service in January.

Around 1 p.m., thermometers at Seattle-Tacoma International Airport recorded a high temperature of 56 degrees, 1 degree higher than the day's previous record set in 2011.

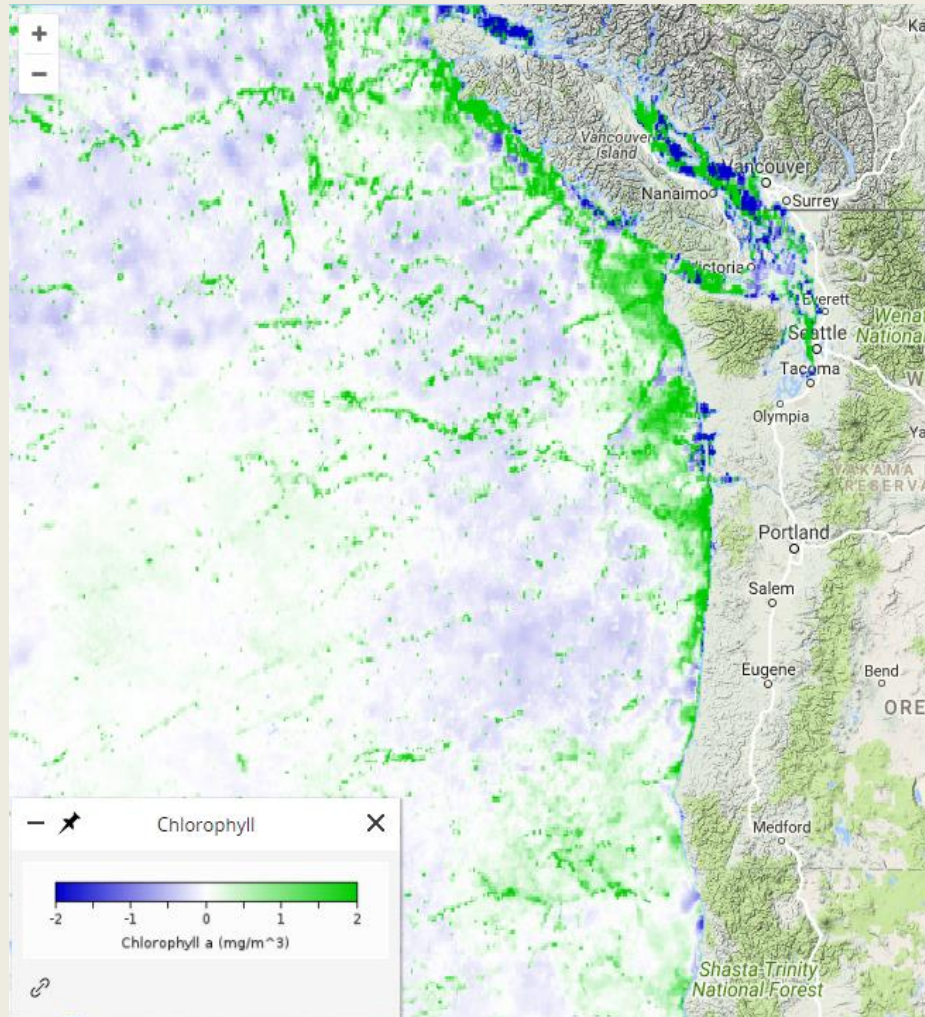
www.nanoos.org



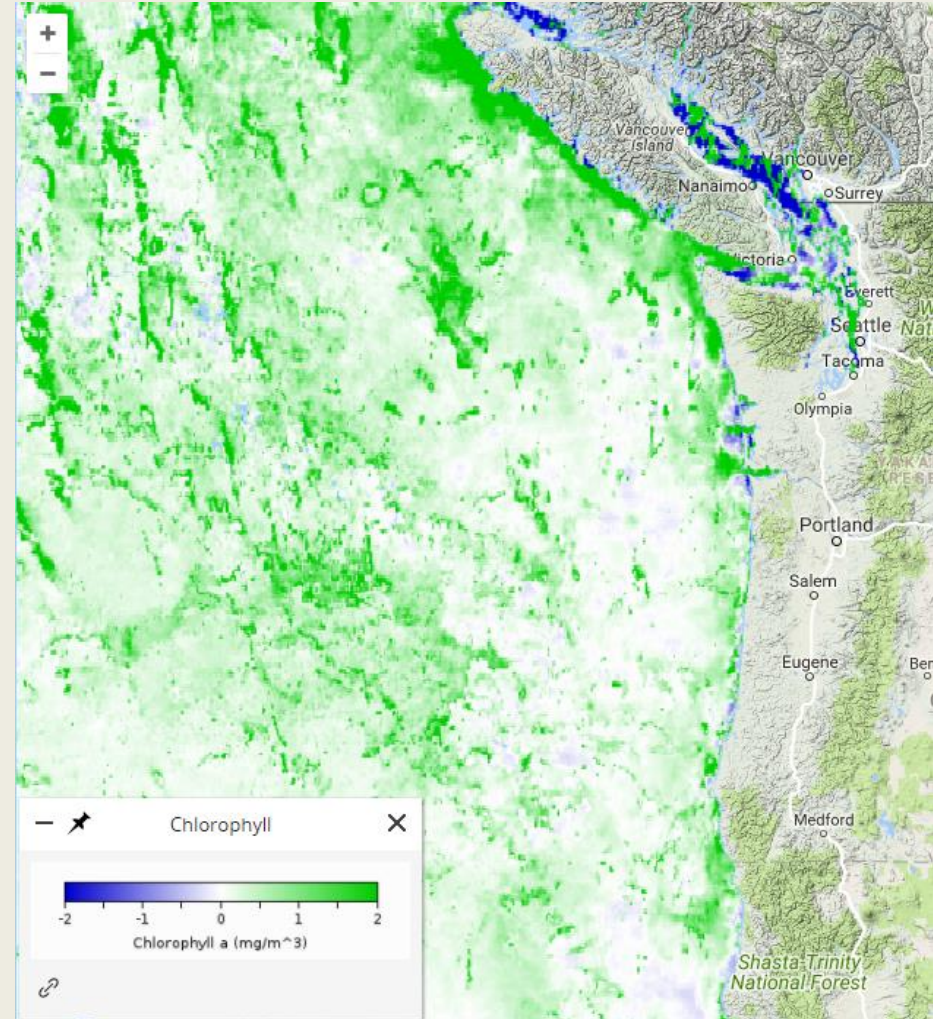
NANOOS Update: Climatology App



Chlorophyll Anomalies from MODIS Satellite: *Winter 2016 vs Winter 2017*



December 2016

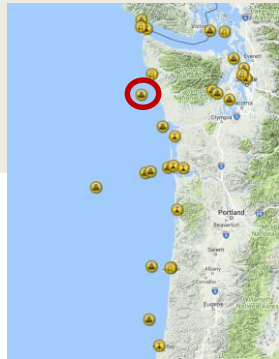


December 2017

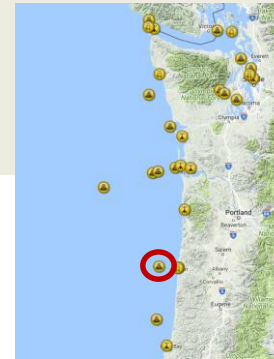
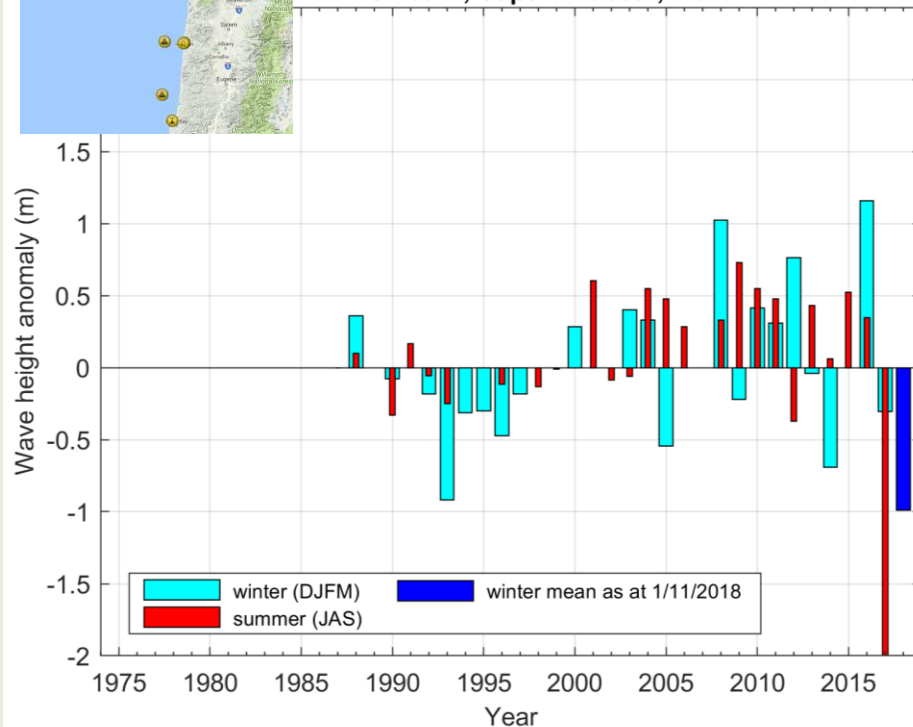
NANOOS Update: Climatology App



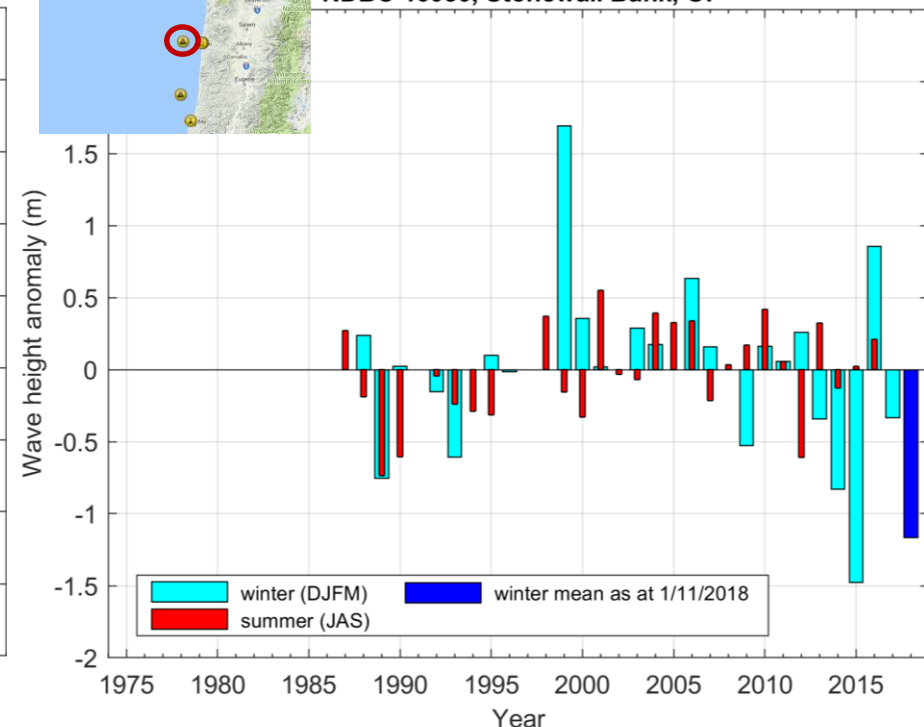
Another year of low wave height: *offshore Washington and Oregon*



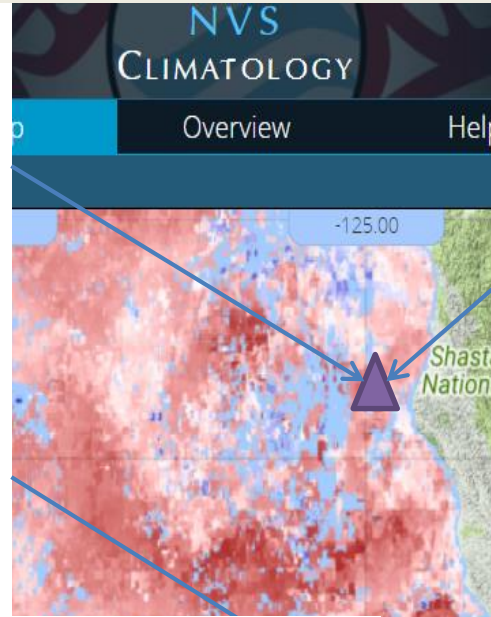
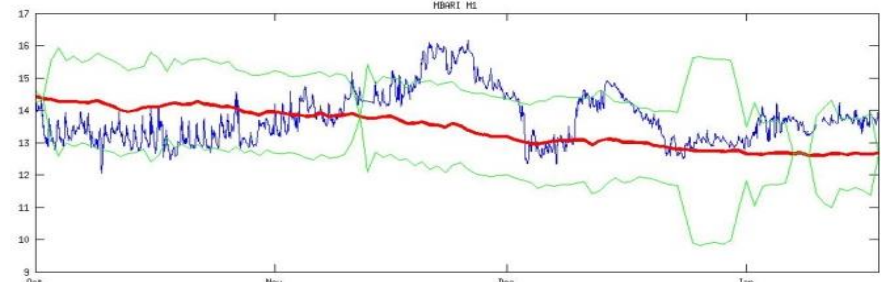
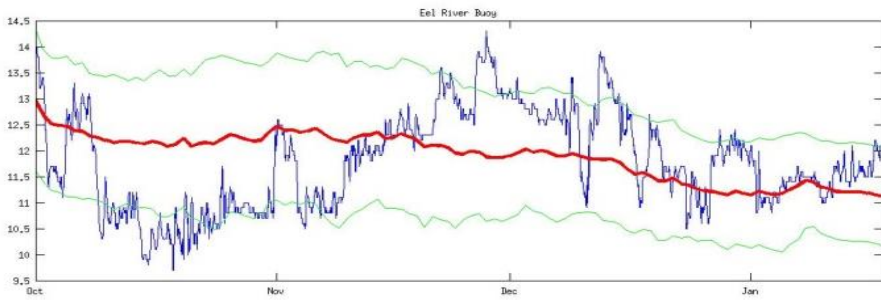
NDBC 46041, Cape Elizabeth, Wa



NDBC 46050, Stonewall Bank, Or



CeNCOOS Climatology Update: Regional assessments



CeNCOOS DATA LEARN

BUOY 46022 - EEL RIVER

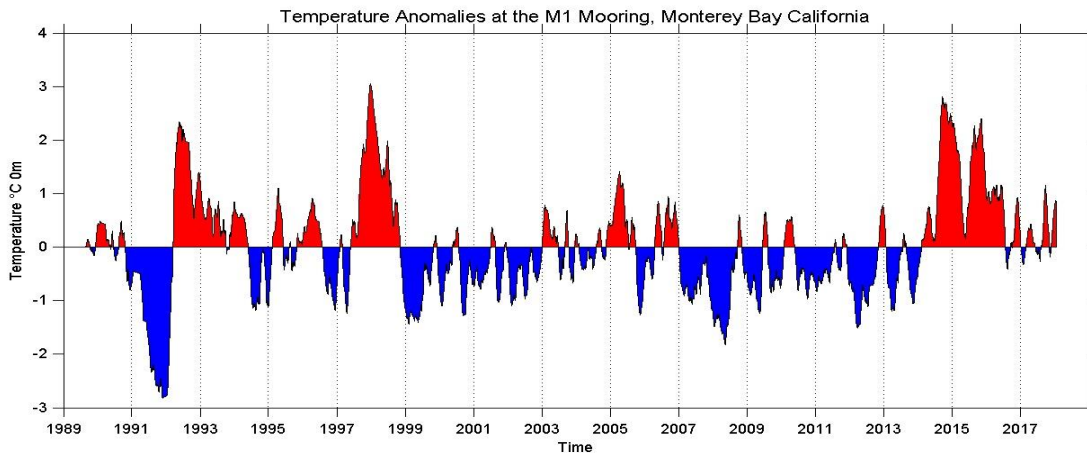
Water Temperature
 53.5 °F Sun, Jan 21
 52.1 °F 36 yr avg

Jan 21 was **3% WARMER** than usual
 Warmer than average **60%** of the past year

BUOY 46011 - SANTA MARIA

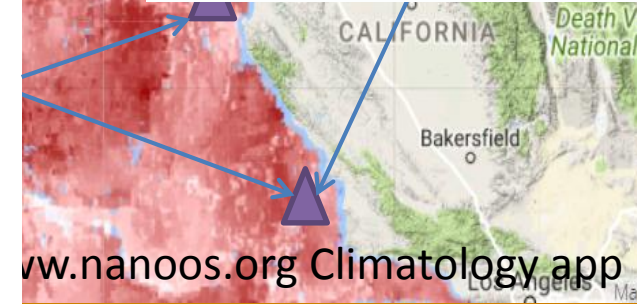
Water Temperature
 57.0 °F Sun, Jan 21
 56.1 °F 37 yr avg

Jan 21 was **2% WARMER** than usual
 Warmer than average **71%** of the past year



Note: 60 point moving average applied to daily averaged values.
 Monterey Bay Aquarium Research Institute

Updated: 21-Jan-2018



www.nanoos.org Climatology app

CeNCOOS Update: Significant Wave Height



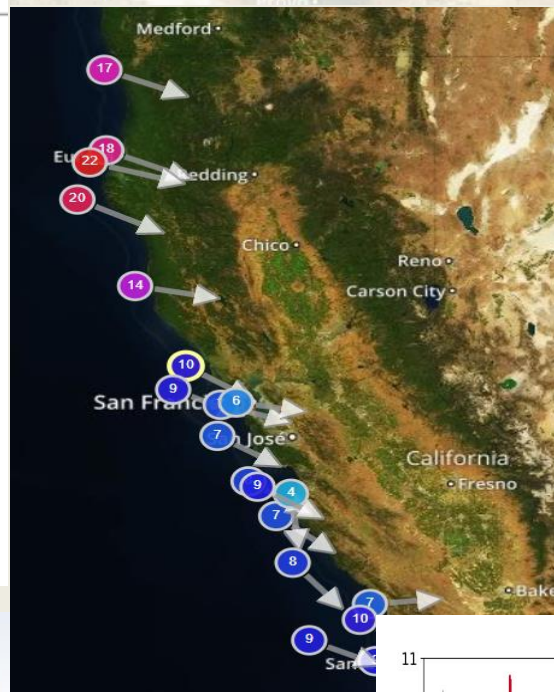
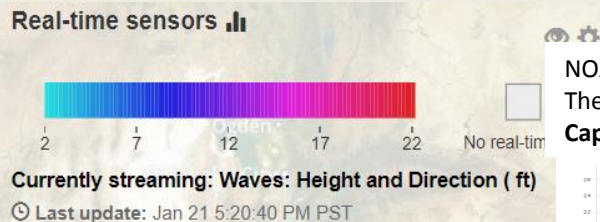
MONTEREY HERALD
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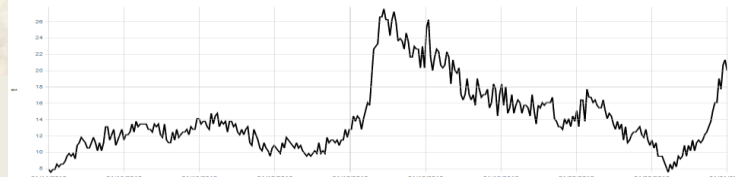
The Cannifornian Entertainment Lifestyle Obituaries Opinion

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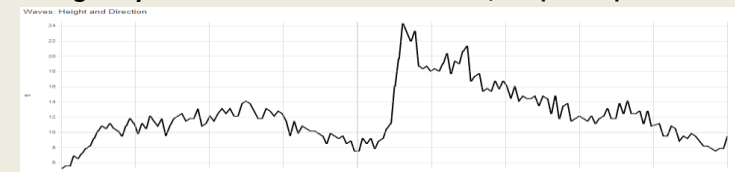
Big surf on Central Coast



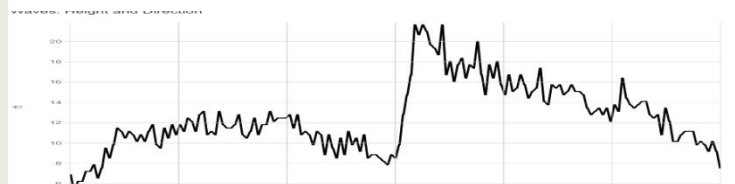
NOAA National Data Buoy Center (NDBC)
The Coastal Data Information Program
Cape Mendocino, CA - 094 (46213)



NOAA National Data Buoy Center (NDBC)
Bodega Bay - 48 NM NNW of San Francisco, CA (46013)



NOAA National Data Buoy Center (NDBC)
Monterey - 27 NM WNW of Monterey, CA (46042)



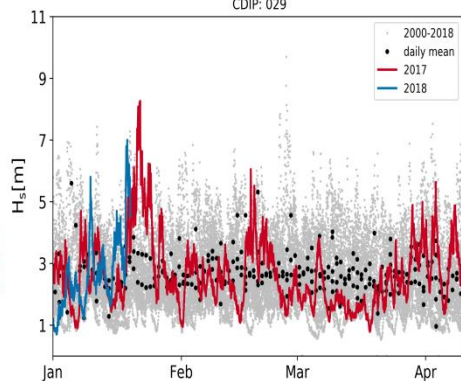
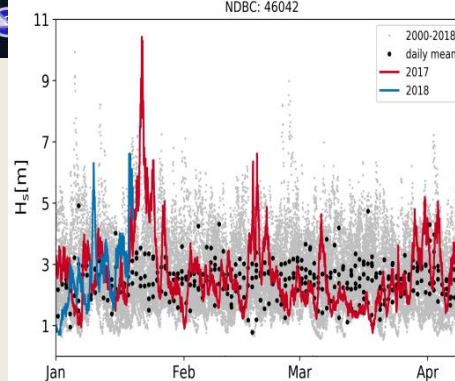
Santa Cruz Sentinel

RECREATION ACCIDENTS

News Sports The Cannifornian Entertainment Lifestyle Opinion Obituaries

Home Recreation accidents

Surfer rescued at Steamer Lane amid high surf advisory



CeNCOOS Update: Marine Mammal Migrations



Peak Gray Whale Migration

Gray whales travel 10,000-12,000 miles round trip every year between their winter calving lagoons in the warm waters of Mexico and their summer feeding grounds in the cold Arctic seas.



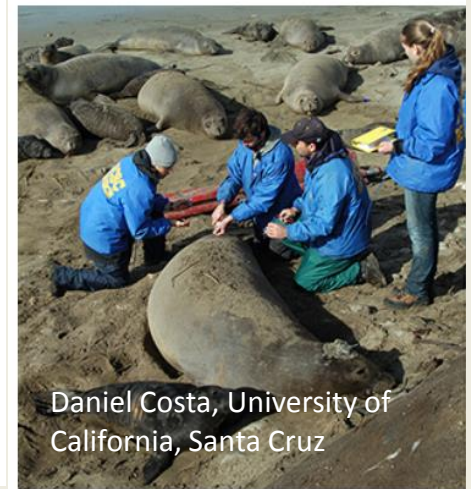
Gray Whales Are Migrating Now: See Them Close-Up In Monterey, California

Super whale-watching on the Pacific coast

FORBES.COM

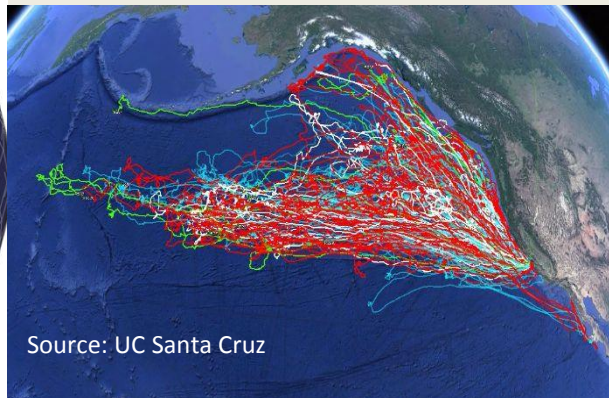
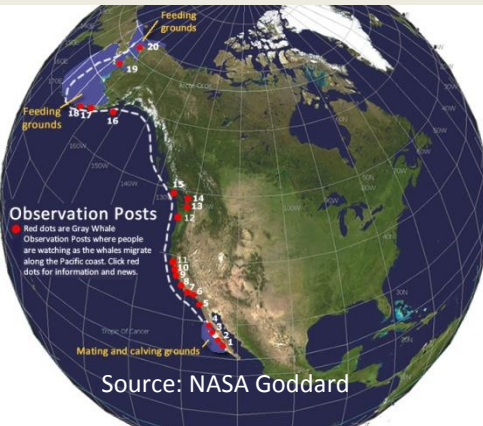
Elephant Seals Return to California

Every year tens of thousands of elephant seals return to the CA to breed, give birth, and molt their skin



Daniel Costa, University of California, Santa Cruz

Elephant seals forage over much of the North Eastern Pacific Ocean, routinely foraging to depths between 400-600 meters with a maximum depth of 1,761 meters. On average, their dives last 23 minutes with the longest recorded dive being 1.94 hours!



ACIDD: Across the Channel Investigating Diel Dynamics

Graduate student-led cruise

NSF RAPID grant to change research direction towards **ash deposition from the Thomas Fire**

Co-PIs Kelsey Bisson and Nick Huynh, UCSB

Thomas Fire Smoke Plume, 5 Dec 2017

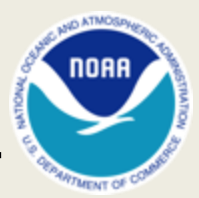


California wildfires December 5th, 2017 - Mixed natural color-NIR/SWIR view, enhanced contrast and saturation
Terra MODIS data through NASA Worldview
Processed by Pierre Markuse



*Results TBD – hopefully next NOAA West Watch Webinar

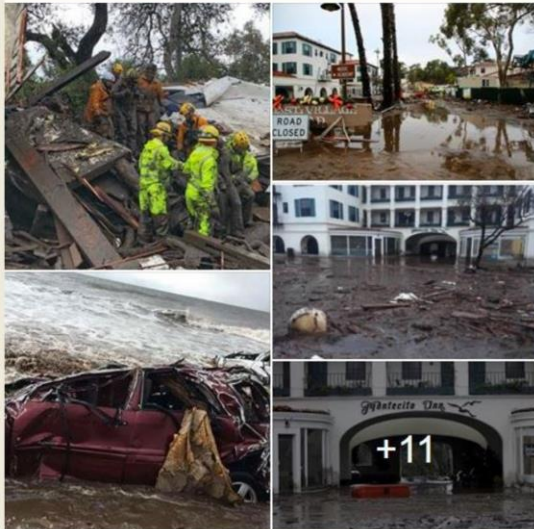
Montecito Mudslides *Cleanup Debates*



Heal the Ocean

Montecito Mud, Take 2; And a Big Oil
Cleanup Gets Ready to Roll!

MONTECITO MUDSLIDE, TAKE 2



Mike Eliason photo collage from David Diamant post on Facebook

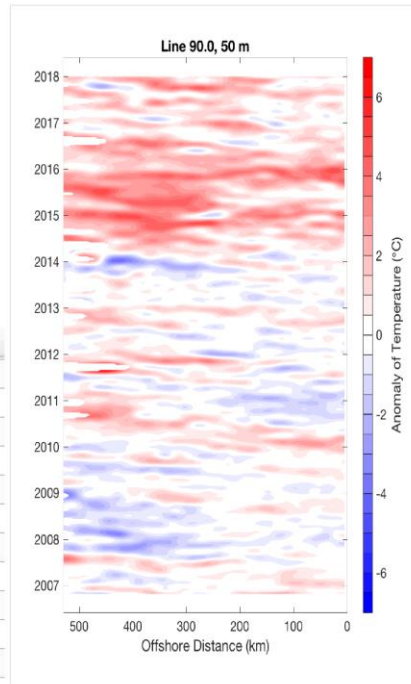
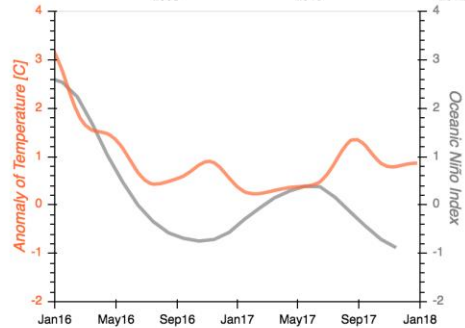
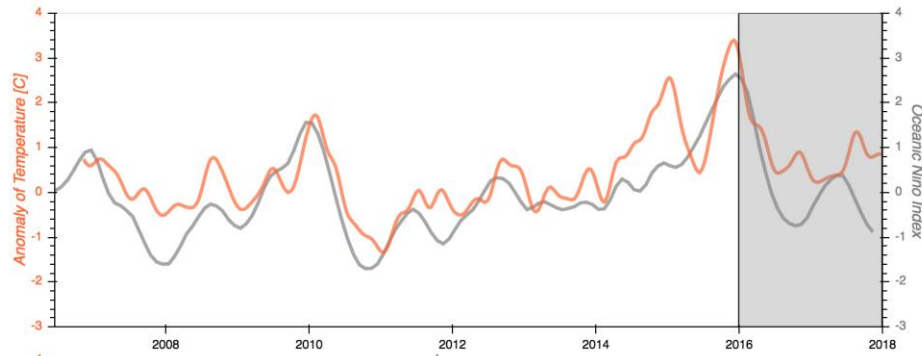
<https://www.healtheocean.org/htoblog/2018/1/17/montecito-mud-take-2-and-a-big-oil-cleanup-gets-ready-to-roll>

Goleta Beach

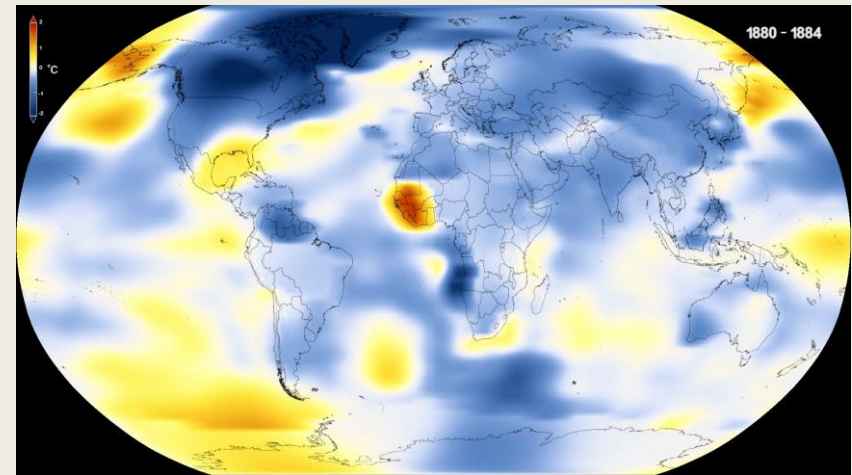


Photo credit: Linda Burns

Southern California Temperature Index



#	Date	Oc. Niño Index	So. Cal. Index
127	Apr 2007	-0.23	0.48
128	Mar 2007	-0.03	0.60
129	Feb 2007	0.31	0.73
130	Jan 2007	0.71	0.72
131	Dec 2006	0.95	0.60
132	Nov 2006	0.90	0.69
133	Oct 2006	0.71	NaN
134	Sep 2006	0.48	NaN
135	Aug 2006	0.27	NaN
136	Jul 2006	0.12	NaN
137	Jun 2006	0.04	NaN



This color-coded map in Robinson projection displays a progression of changing global surface temperature anomalies from 1880 through 2017. Higher than normal temperatures are shown in red and lower than normal temperatures are shown in blue. The final frame represents the global temperatures 5-year averaged from 2013 through 2017. Scale in degree Celsius.

-from NASA's Scientific Visualization Video

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Regional Impacts Summary



Reporting Status:

- 43 entries since October 25, 2017

Environmental Conditions

- Fire including in combination with wind and mudslides
- Flood
- Snow pack
- Algae bloom
- Cold
- Drought
- Fisheries
- Multiple weather disasters

Human & Environmental Impacts

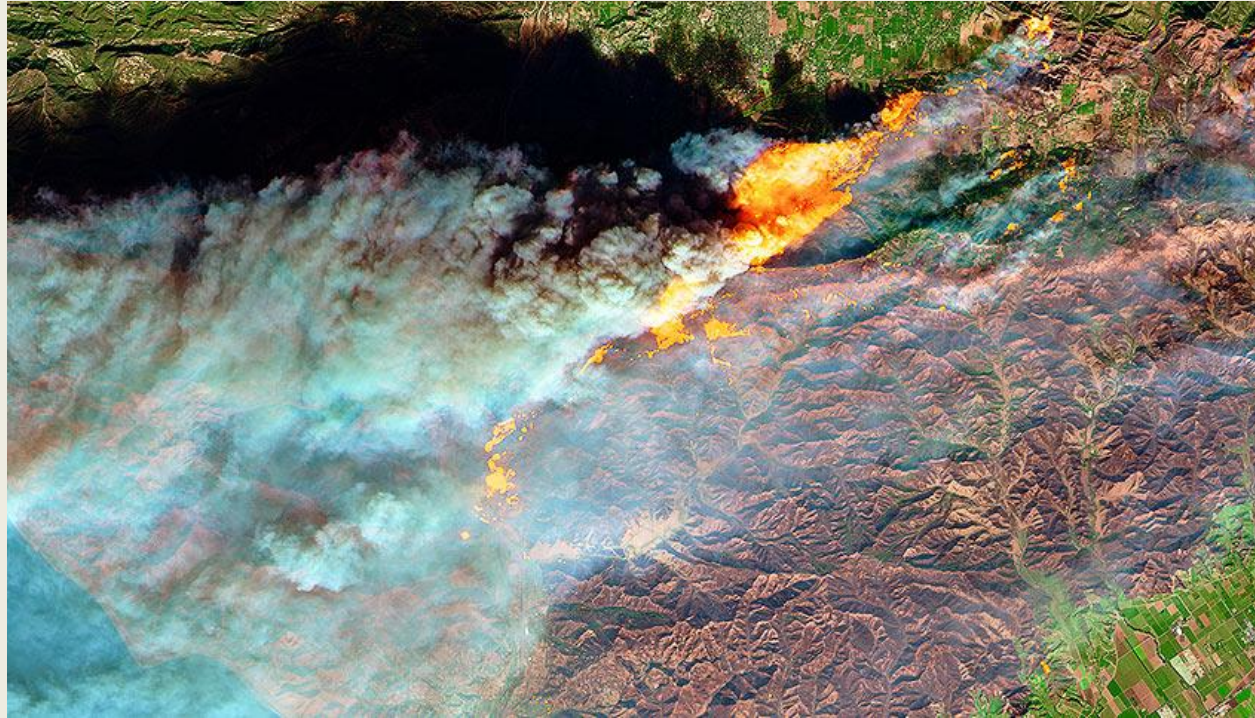
- Loss of life
- Loss of property & property damage
- Evacuations
- Tree mortality
- Damage to agriculture including loss of crops or livestock
- Infrastructure damage

CA Wildfires Set Grim Records

Thomas Fire became the largest Fire in CA's modern history burning over 281,900 acres in Southern California was reported contained on Jan 12 after burning since Dec 4, 2017. The Thomas Fire was fueled by strong Santa Ana winds and dry fall conditions.

The Northern CA wildfires from the previous month had an estimated \$3B in economic impacts in addition to taking 40 lives.

Climate Wire noted that data compiled by the nonprofit group Climate Nexus showed that 14 of California's 20 largest wildfires on record have occurred since 2000.



NASA Earth Observatory image by Joshua Stevens/Processed by the European Space Agency

Impacts in Pictures



Fires + Heavy Rains = Mudslides

The series of California wildfires were devastating to the landscape. The destabilization of soils from charred root systems and heavy rains in mid-January resulted in mudslides. The death toll from the mudslides was at 20 on Jan 15th with four additional people missing. The mudslides destroyed homes and impacted infrastructure.



Los Angeles Times

Impacts in Pictures



Coastal Flooding in WA & OR

Coastal flooding and large waves battered the WA and OR coasts from an off-shore storm. There are reports of property damage and 1 person being washed out to sea by a large wave.



Jay Cline @ClineNorthwest

Impacts in Pictures



Fisheries

Sport abalone dives in CA were cancelled due to the population being in severe decline and concerns over a population collapse.

Eight West Coast Senators asked for disaster aid for fisheries after losses in each state have resulted in over \$400M in direct impacts.



Call Agenda



- Project Recap & Updates (Polly Hicks)
- El Niño and Regional Climate brief (Dan McEvoy)
- Guest Speaker: Observations of California's Epic 2017 Water Year from Satellite and a 21st Century Ground-based Observing Network (Allen White)
- IOOS Nearshore Conditions brief (Marine Lebrech, Clarissa Anderson, Alex Harper)
- Environmental conditions and impacts reporting and discussion (Polly Hicks)
- **Discussion (all)**
 - Additional impacts to report?
 - Observations on recent environmental anomalies?

Next NOAA West Watch: March 20th, 1-2pm PDT/ 2-3pm PDT