Regional Environmental Conditions & Impacts Coordination

NOAA West

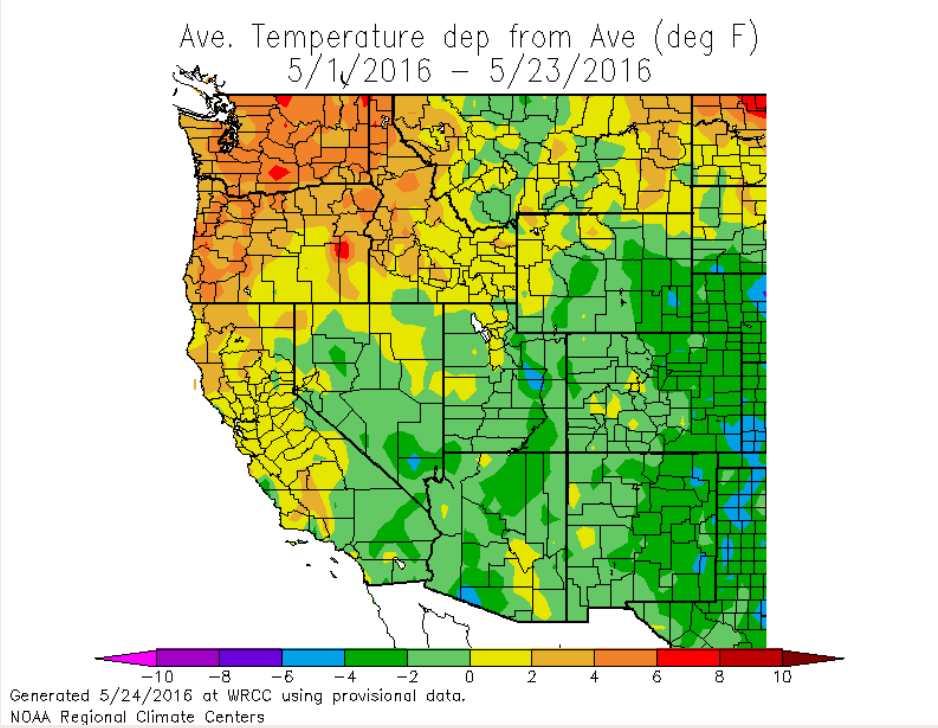
May 25, 2016

Call Agenda

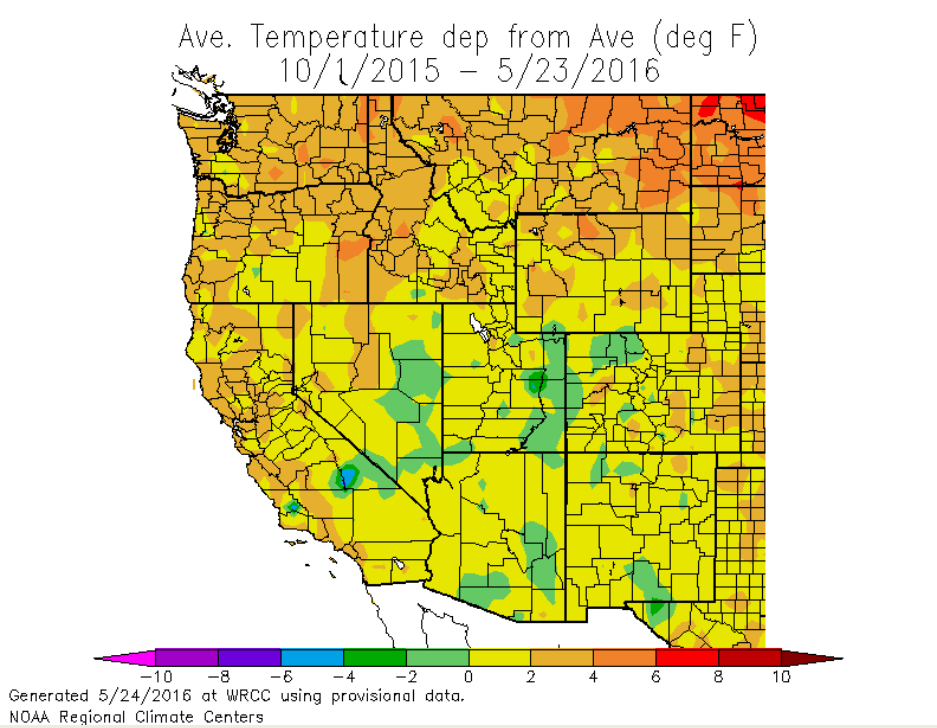
- Welcome
- El Niño and Regional Climate brief (D. McEvoy)
- Climatology Application (NANOOS)
- Environmental conditions and impacts update (T. Vann)
- NOAA West Watch Update (M. Milstein/T. Vann)
- Project Survey & Wrap – Discussion (T. Vann)

Temperature

May 1 – May 23, 2016



Oct 1, 2015 – May 23, 2016

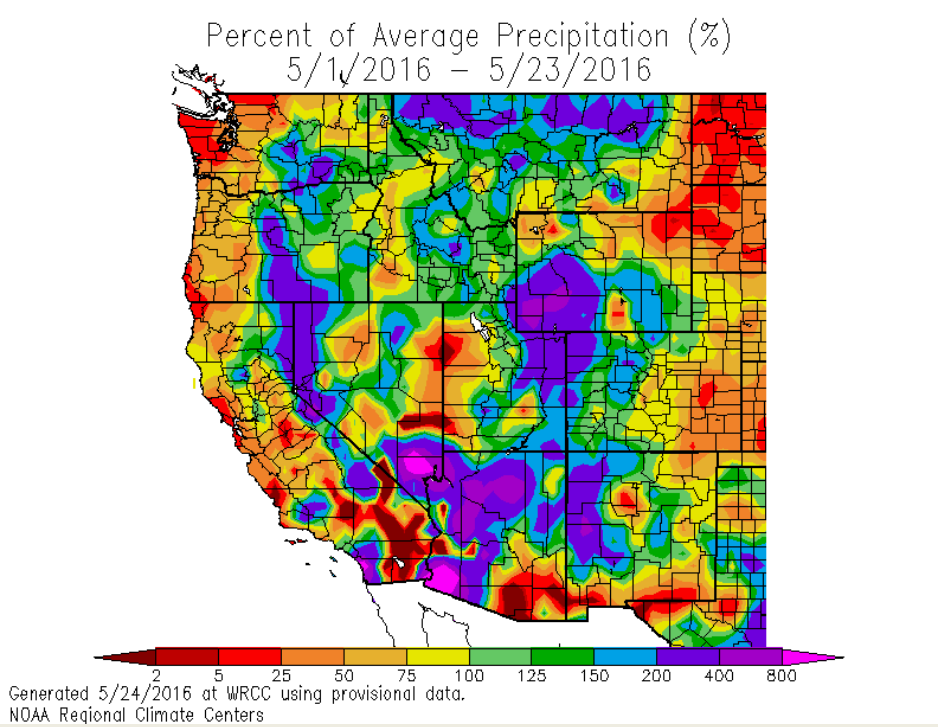


water year to date

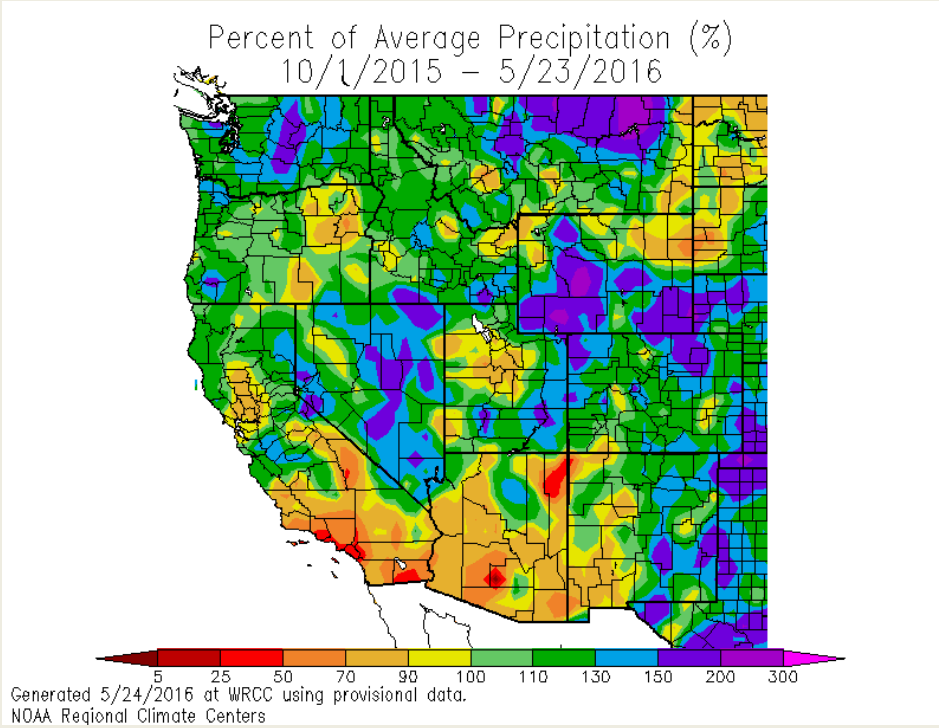
wrcc.dri.edu

Precipitation

May 1 – May 23, 2016



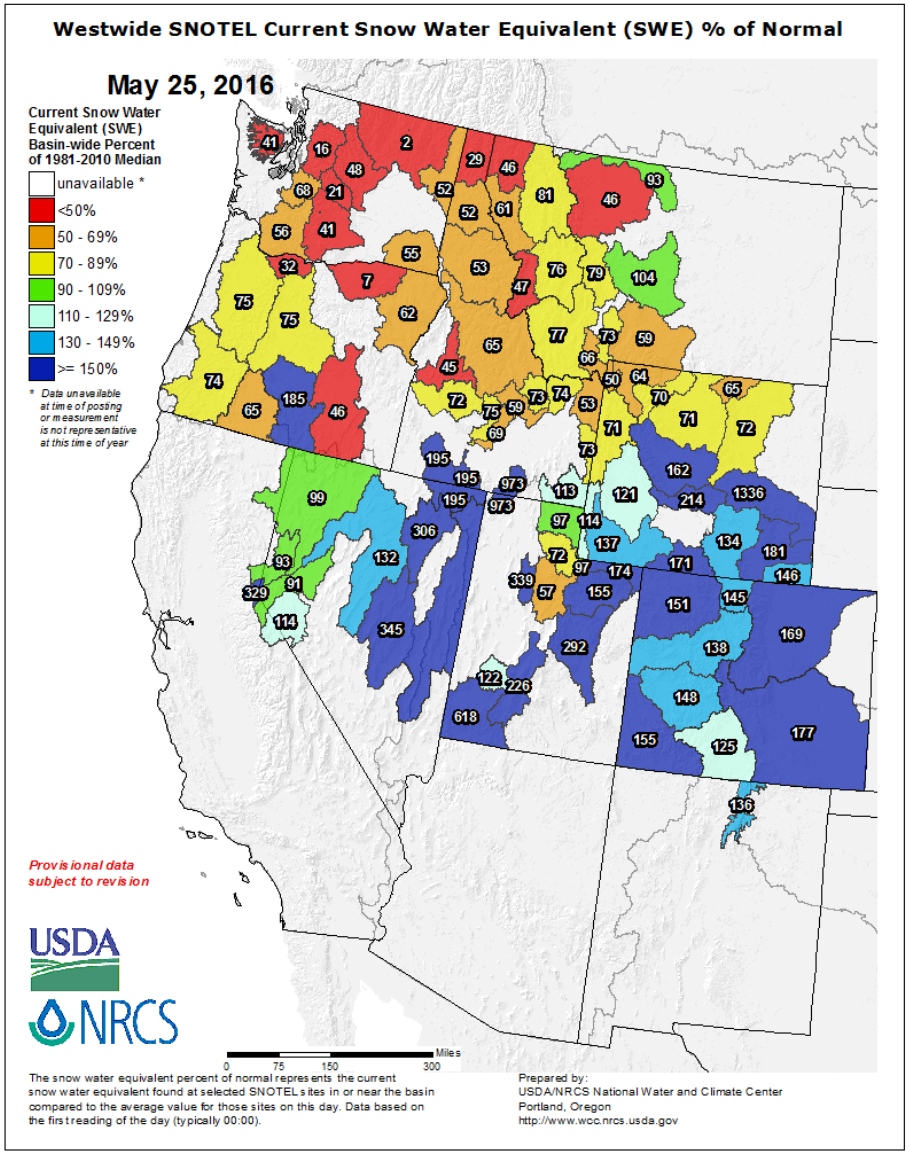
Oct 1, 2015 – May 23, 2016

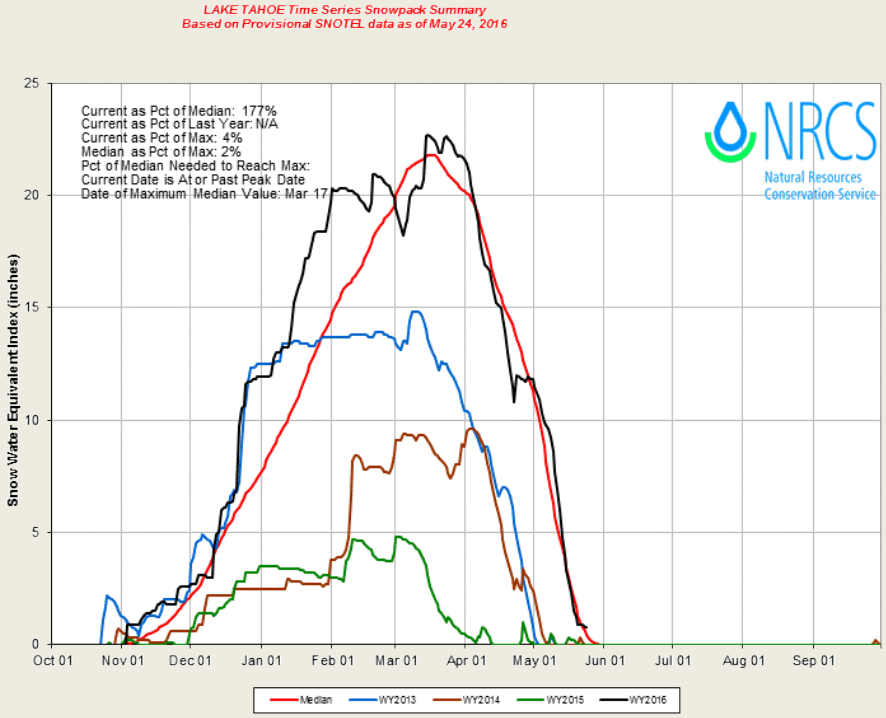


water year to date

wrcc.dri.edu

Snow Water Equivalent



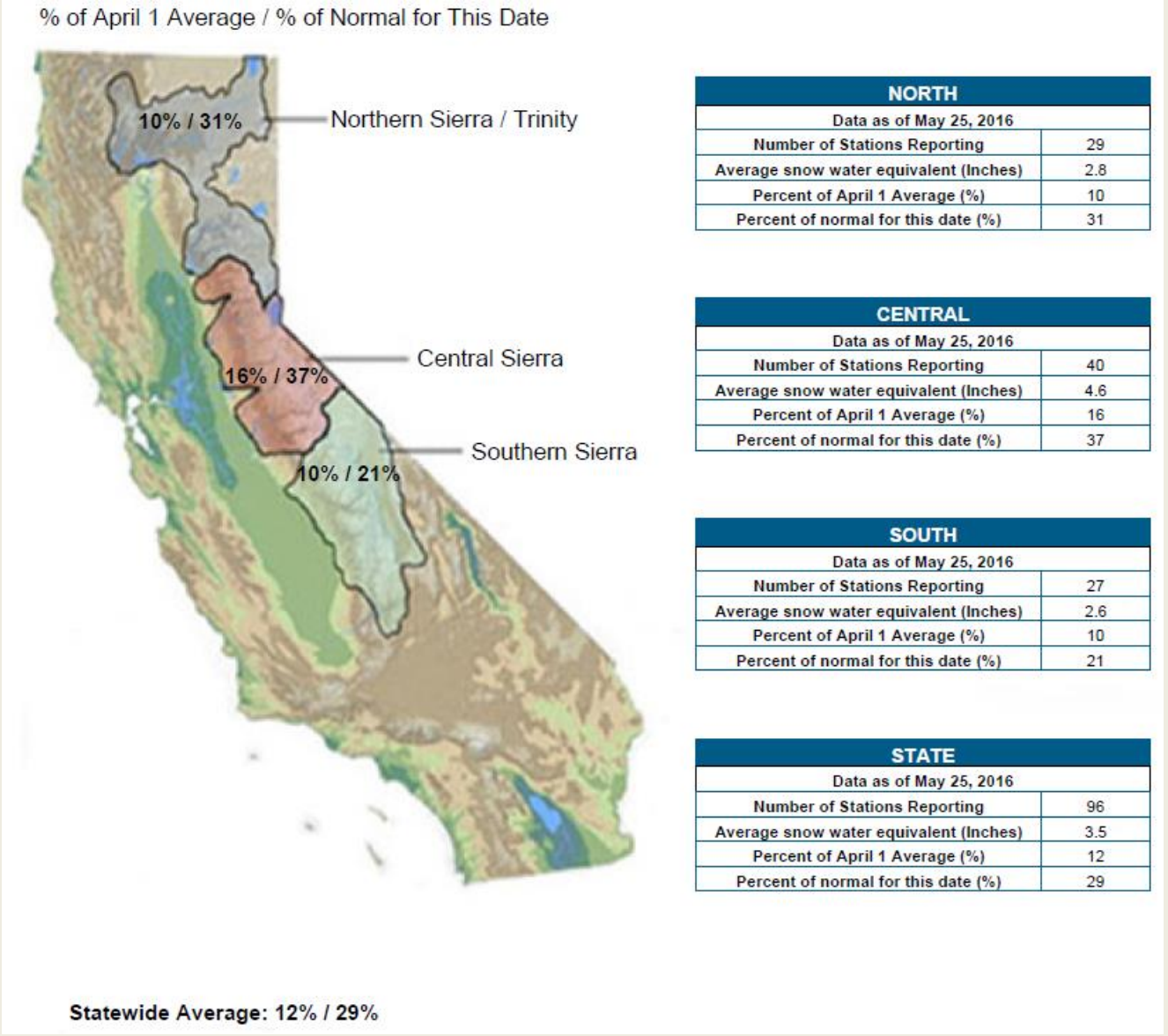


- % of average SWE less meaningful late in the snow season

Example:

Lake Tahoe Basin: 177% of normal
May 24 normal: slightly above zero (<1 inch)
May 24 value: ~1 – 1.5 inches

Snow Water Equivalent



NORTH	
Data as of May 25, 2016	
Number of Stations Reporting	29
Average snow water equivalent (Inches)	2.8
Percent of April 1 Average (%)	10
Percent of normal for this date (%)	31

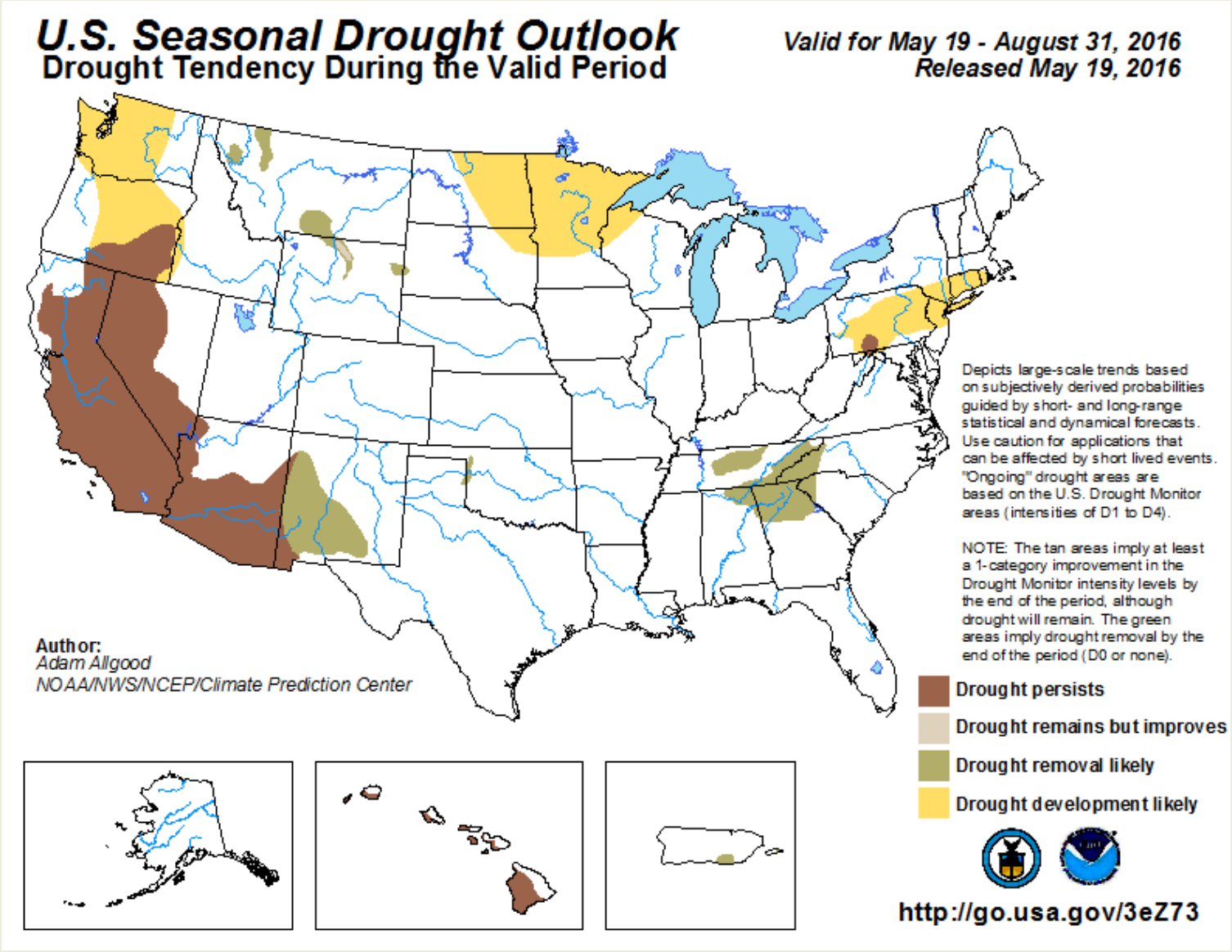
CENTRAL	
Data as of May 25, 2016	
Number of Stations Reporting	40
Average snow water equivalent (Inches)	4.6
Percent of April 1 Average (%)	16
Percent of normal for this date (%)	37

SOUTH	
Data as of May 25, 2016	
Number of Stations Reporting	27
Average snow water equivalent (Inches)	2.6
Percent of April 1 Average (%)	10
Percent of normal for this date (%)	21

STATE	
Data as of May 25, 2016	
Number of Stations Reporting	96
Average snow water equivalent (Inches)	3.5
Percent of April 1 Average (%)	12
Percent of normal for this date (%)	29

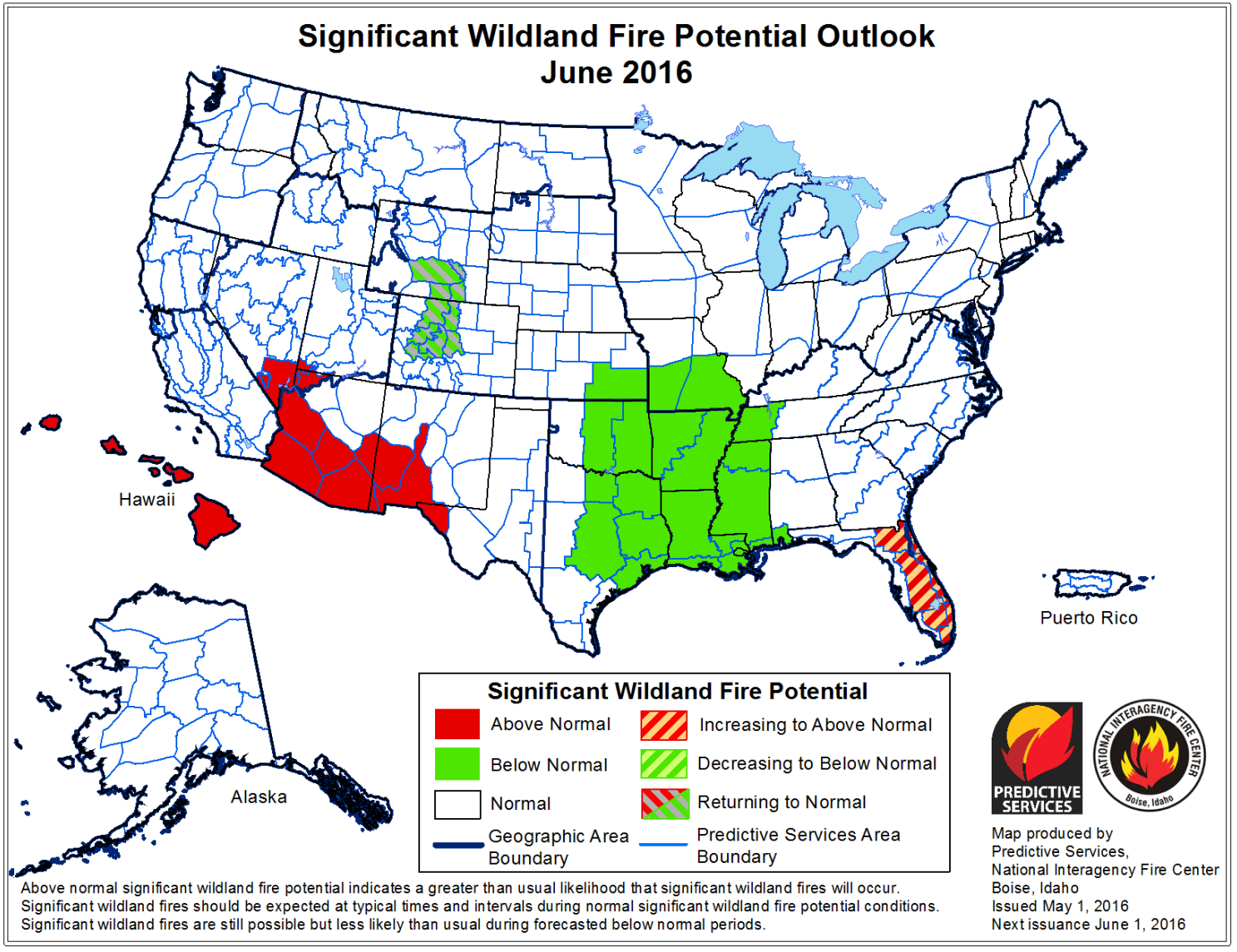
Source: CDEC/CA DWR

Seasonal Drought Outlook



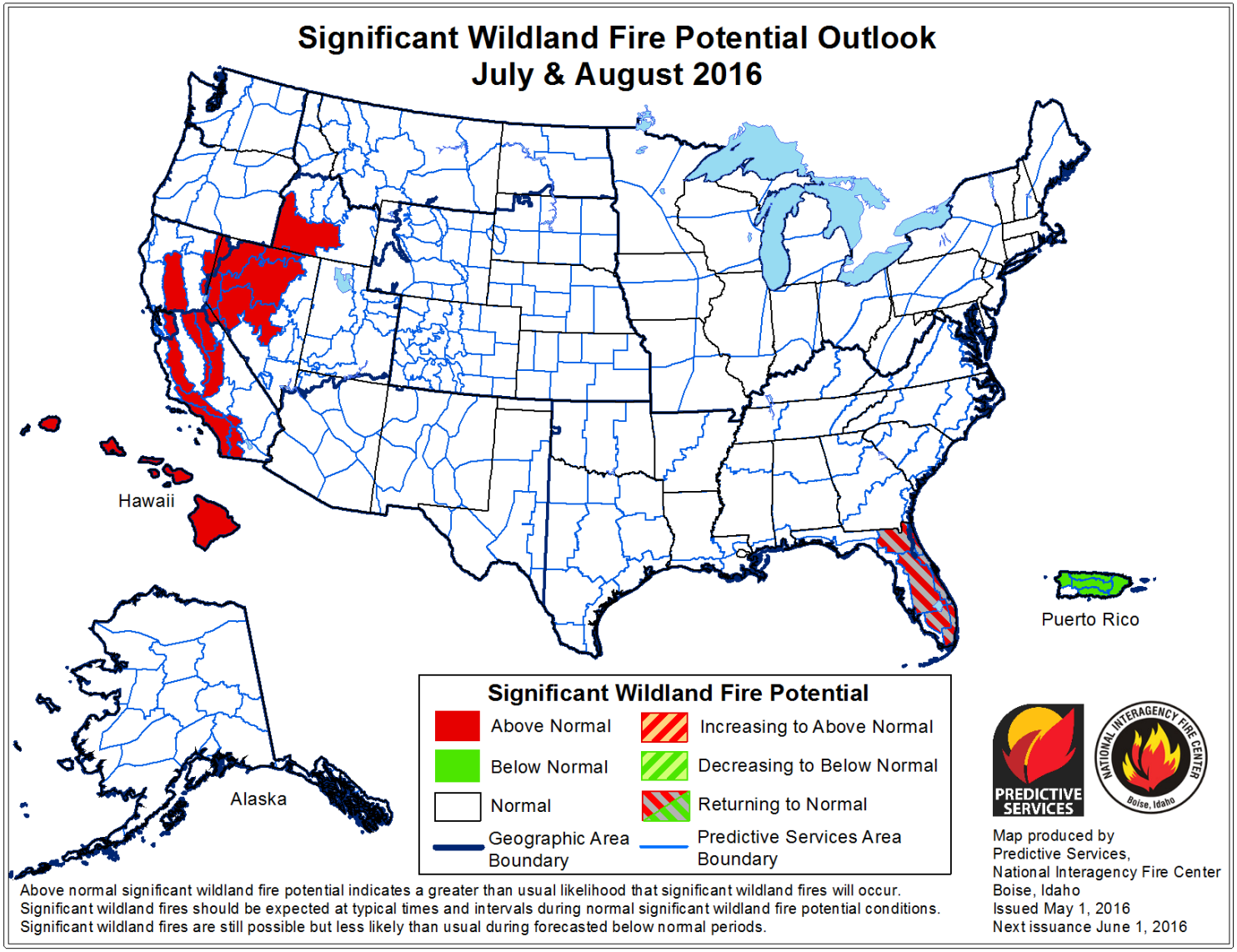
Source: CPC

Significant Wildland Fire Potential Outlook



http://www.predictiveservices.nifc.gov/outlooks/outlooks.htm

Significant Wildland Fire Potential Outlook



"A massive die off of heavy timber is occurring in the high country, especially the Sierra Foothills where over 50 percent of the old growth long needle pines are dying or are dead."
-Predictive Services

http://www.predictiveservices.nifc.gov/outlooks/outlooks.htm

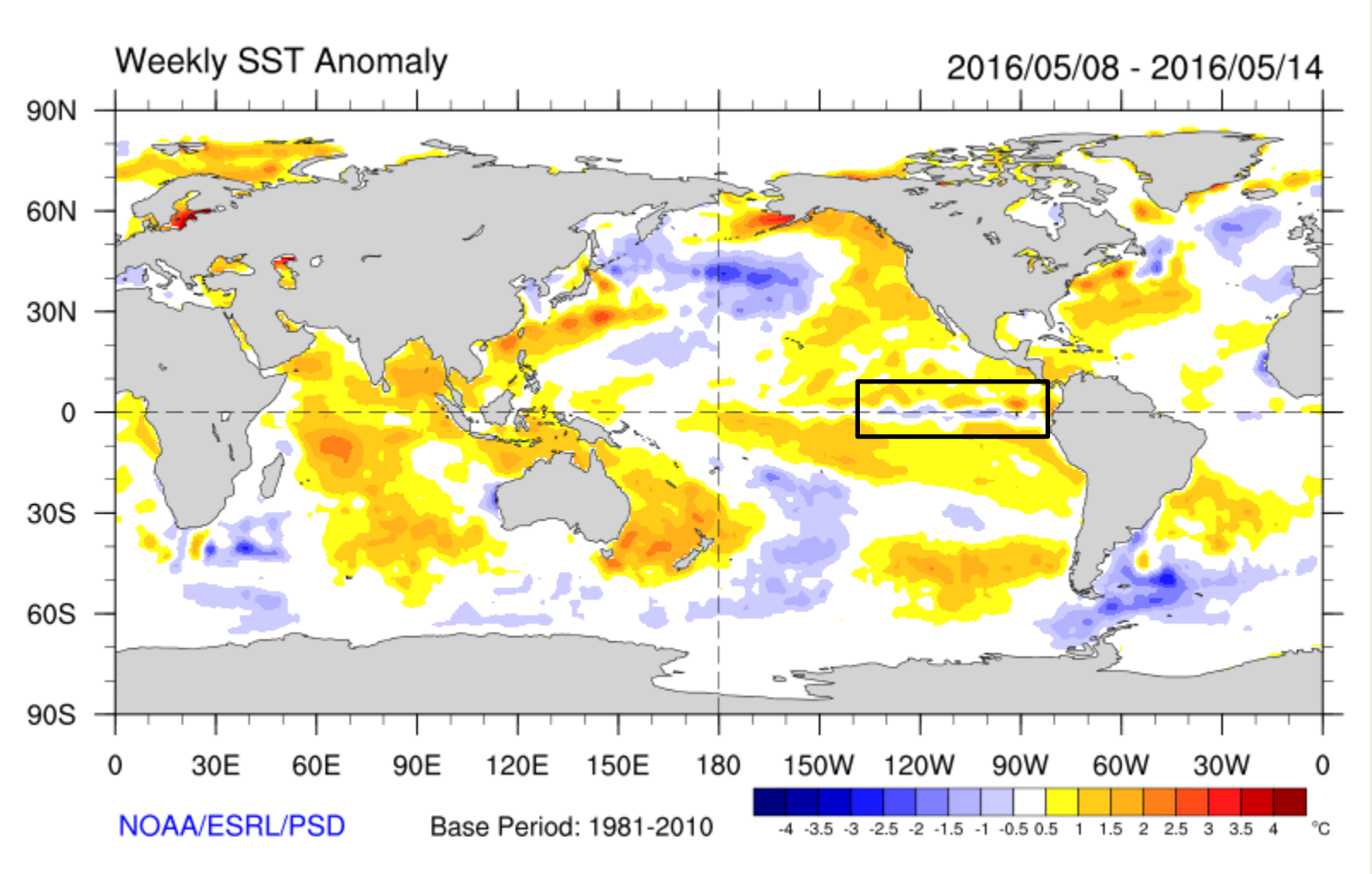
El Nino Status

- ENSO Alert System Status: El Niño Advisory/La Niña Watch
- El Niño is weakening
- Positive equatorial sea surface temperature (SST) anomalies are diminishing across the equatorial Pacific Ocean.
- La Niña is favored to develop during the Northern Hemisphere summer 2016, **with about a 75% chance of La Niña during the fall and winter 2016-17**.*

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/.

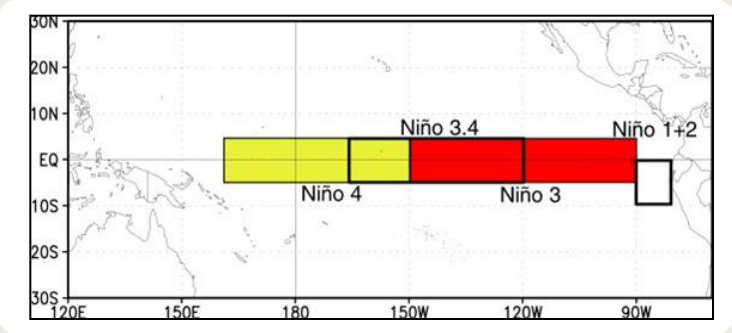
Current Sea Surface Temperatures

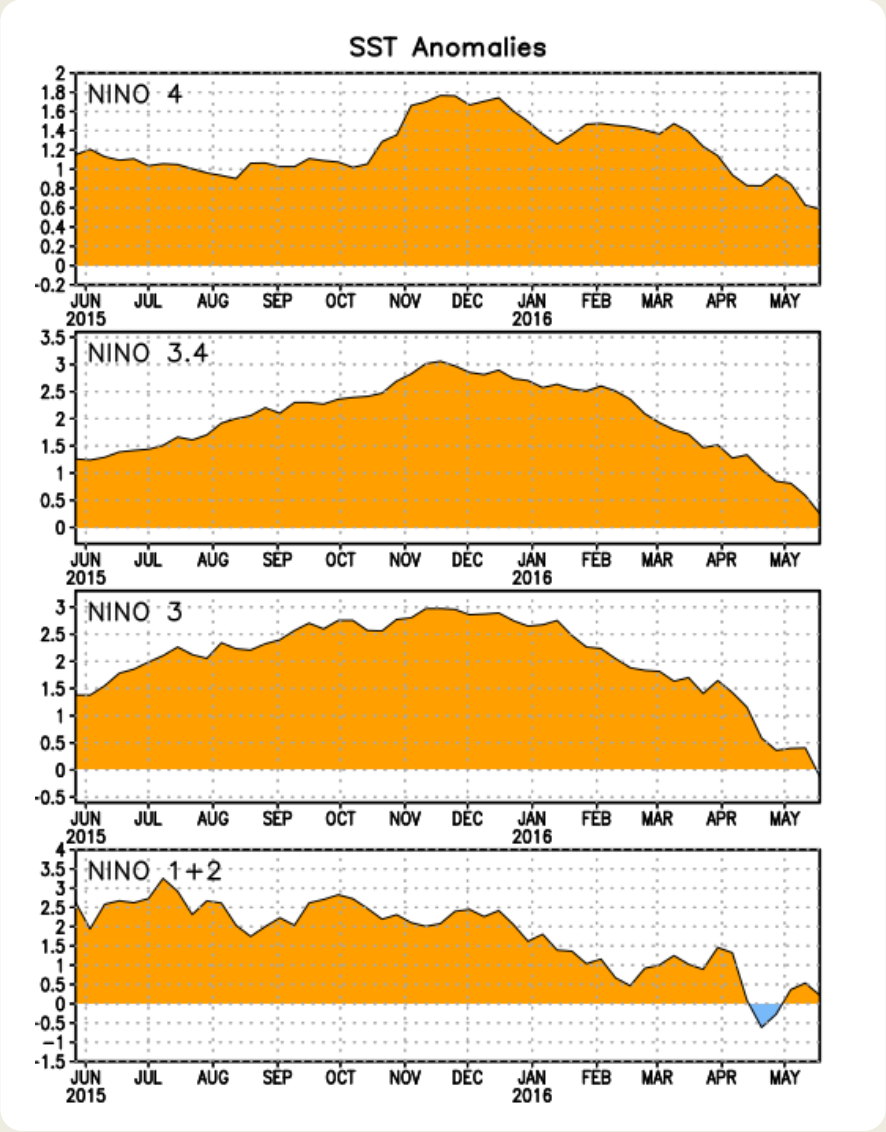


Niño Region SST Departures (ºC) Recent Evolution

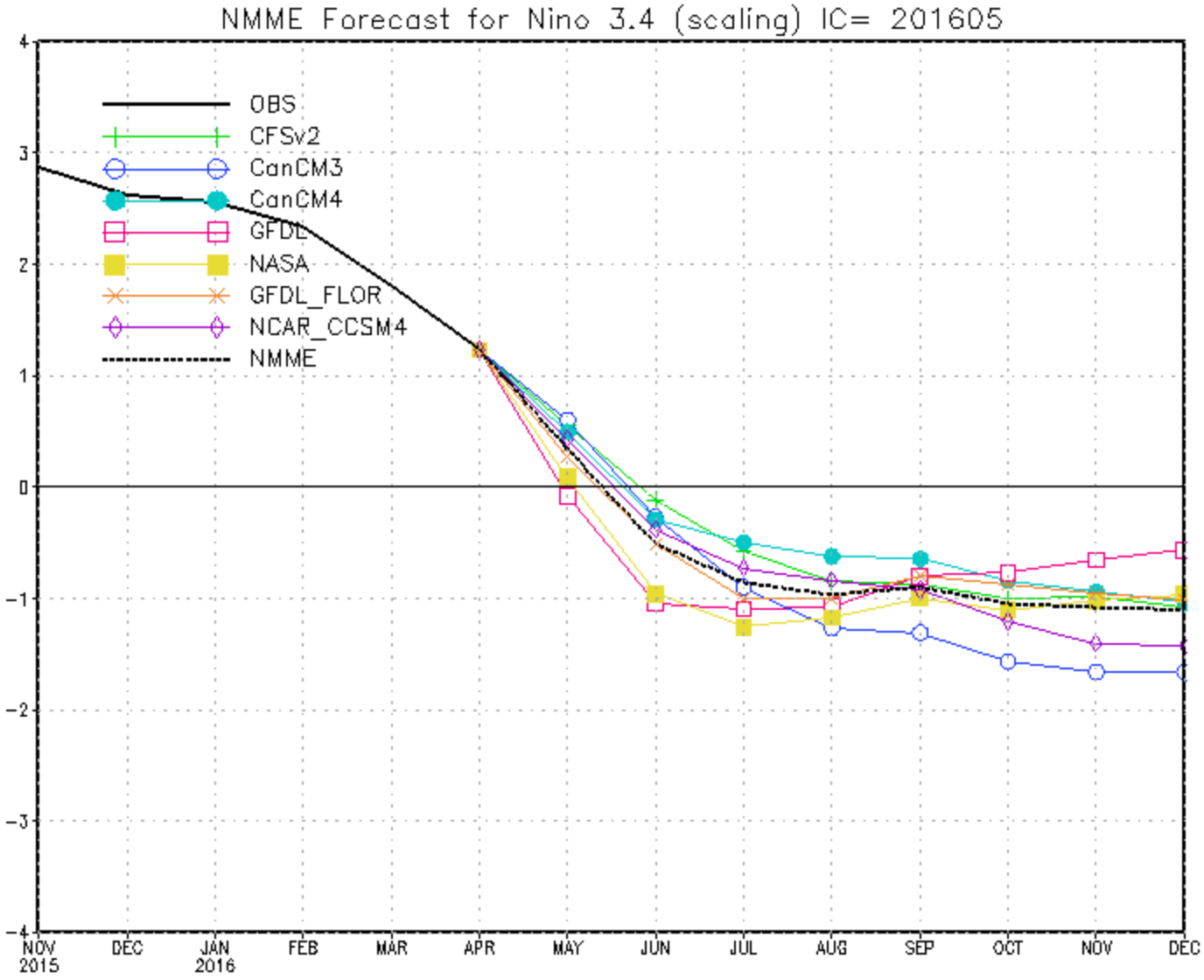
The latest weekly SST departures are:

Niño 4	**0.6ºC**
Niño 3.4	**0.2ºC**
Niño 3	**-0.1ºC**
Niño 1+2	**0.2ºC**



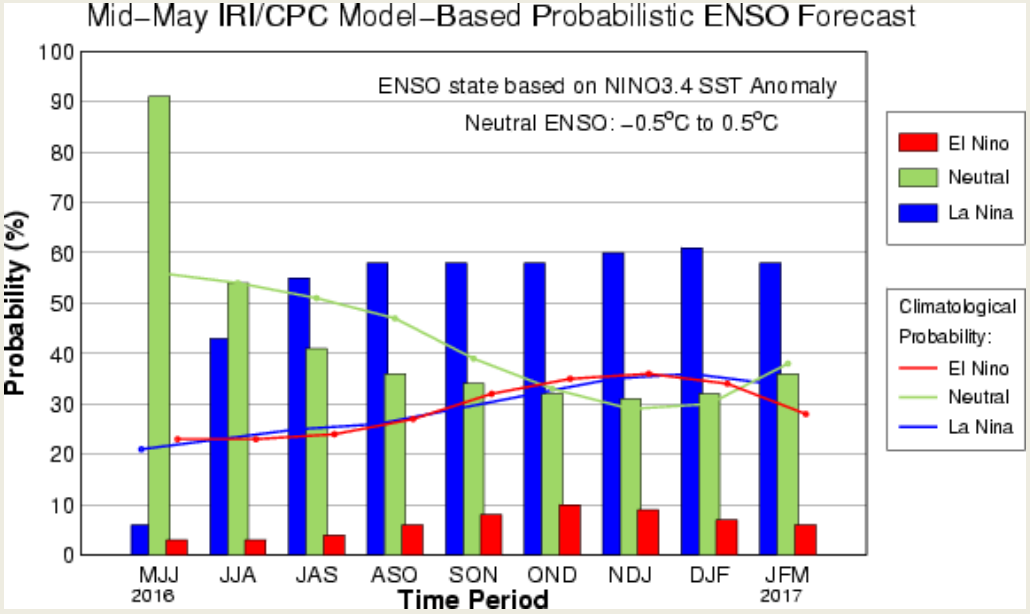


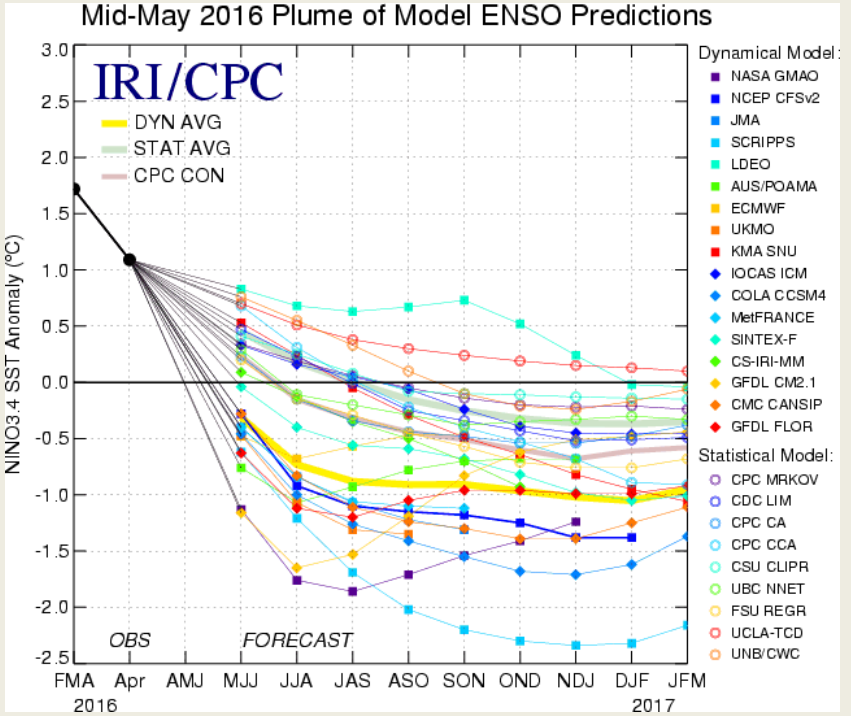
ENSO Forecasts



Source: NOAA/CPC

ENSO Forecasts



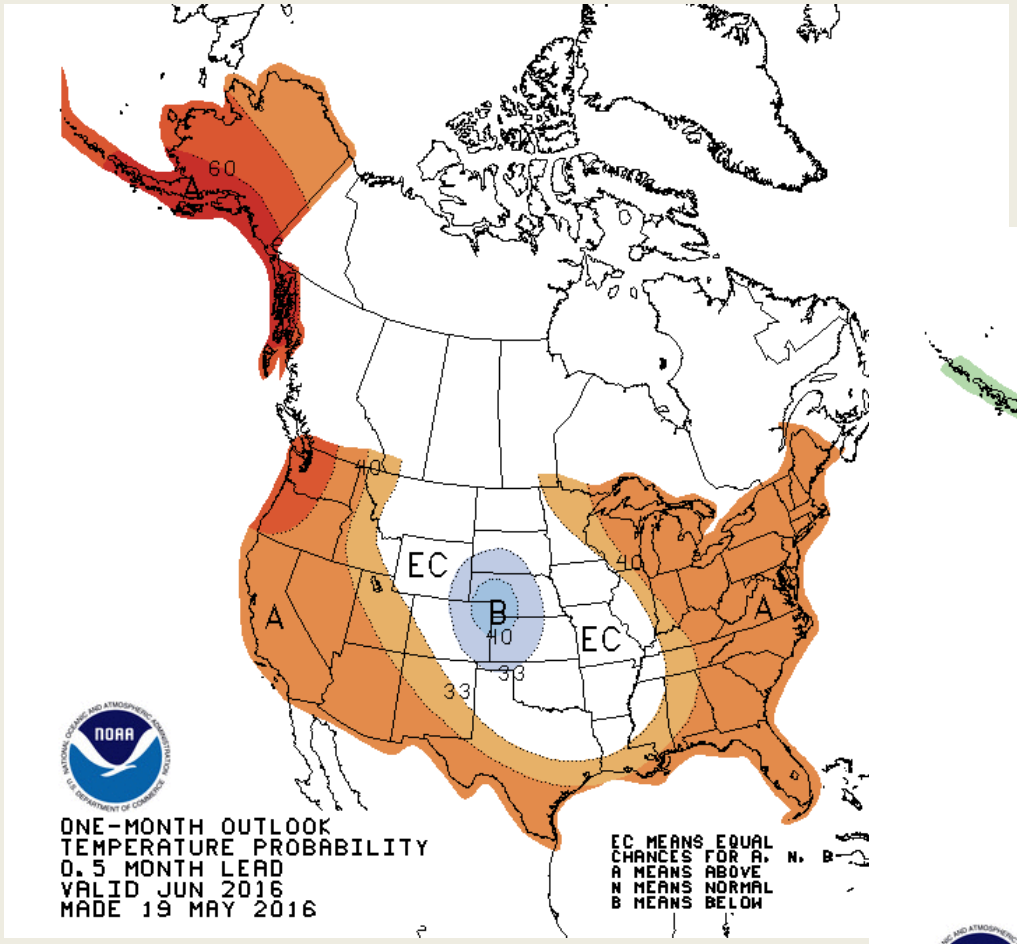


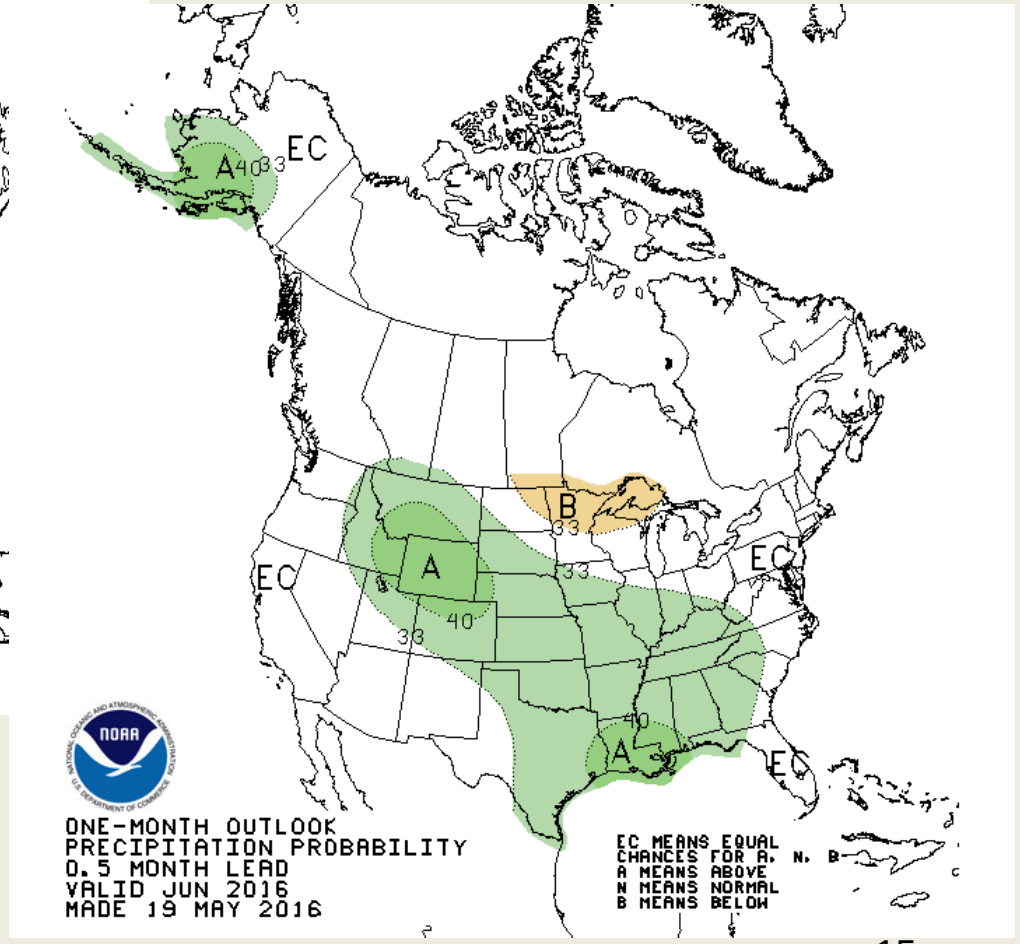
CPC/IRI El Nino forecast:

NMME models + other dynamical models + statistical models

Source: CPC/IRI

June U.S. Forecasts

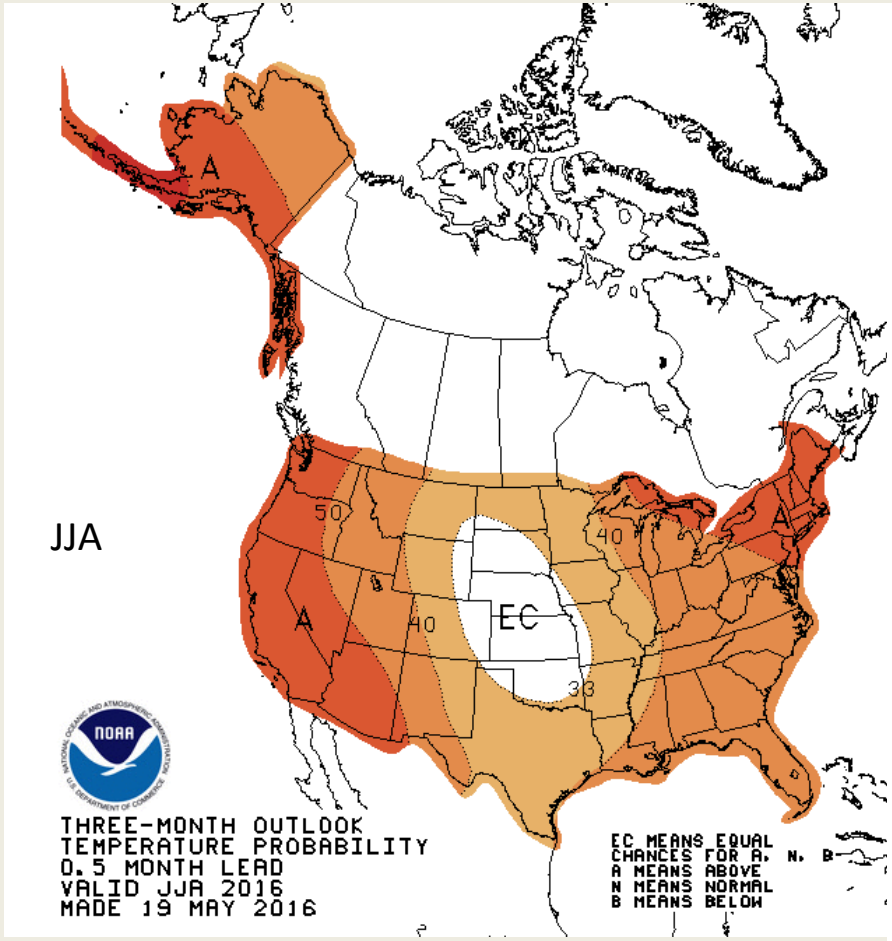




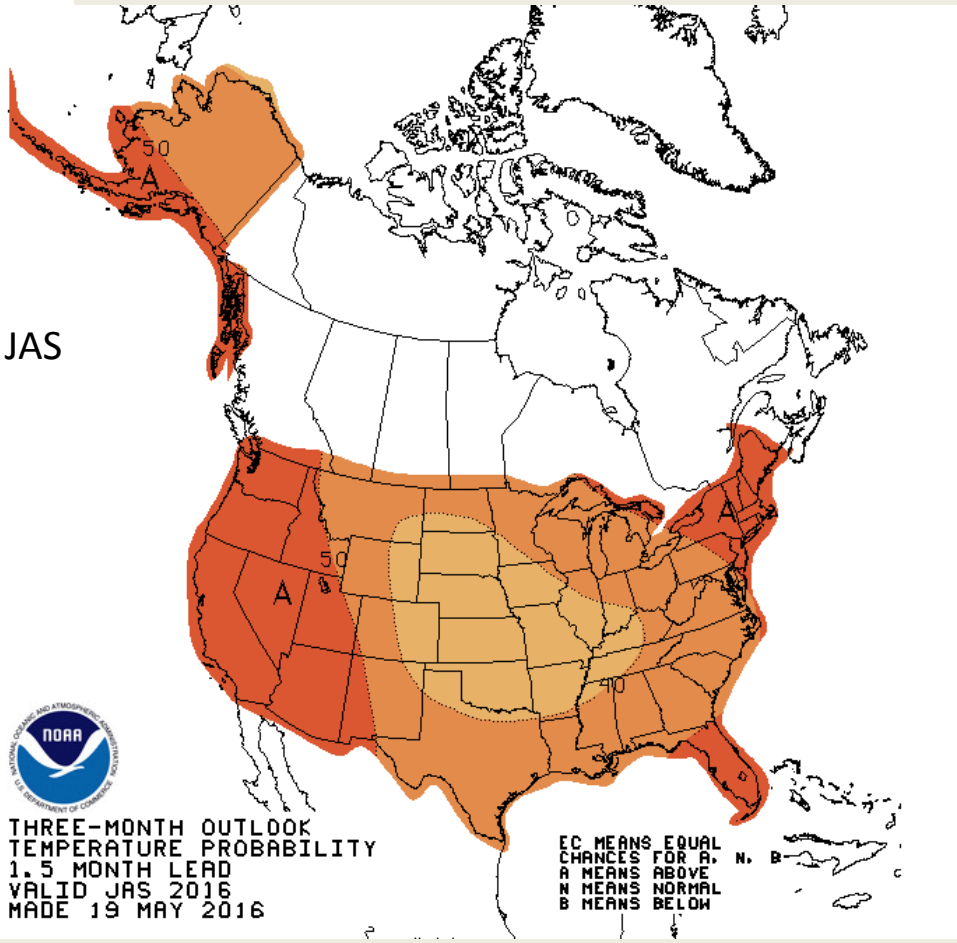
Source: NOAA/CPC

U.S. Temperature Forecasts

JJA

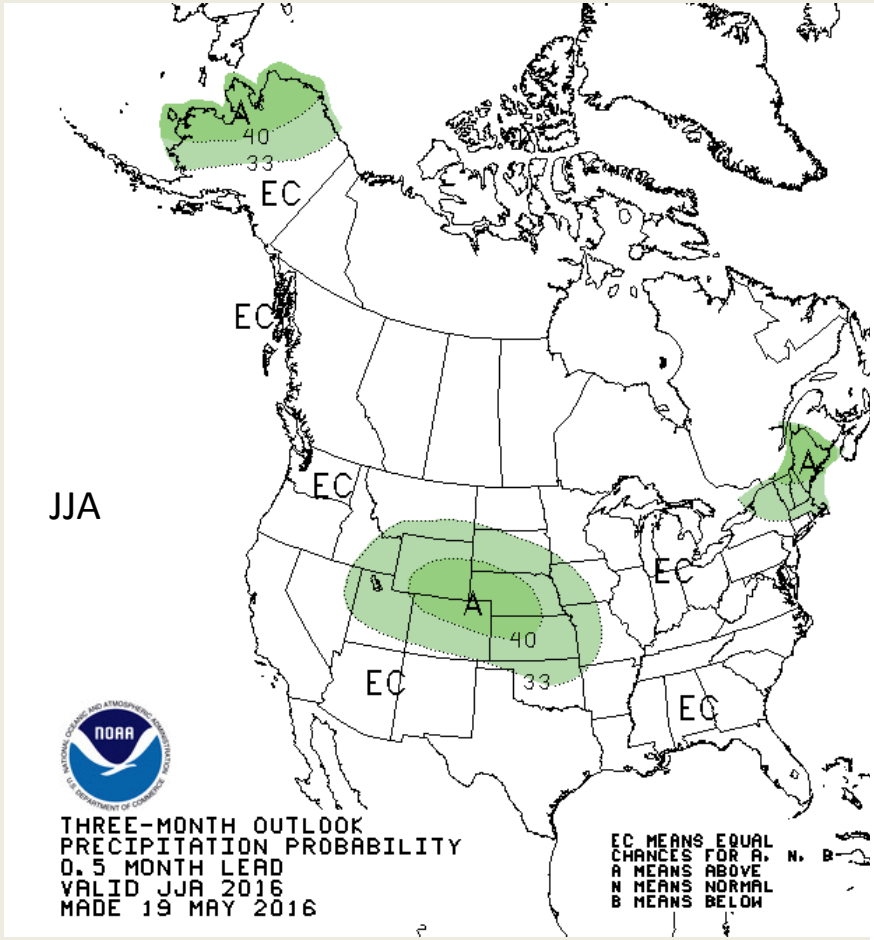


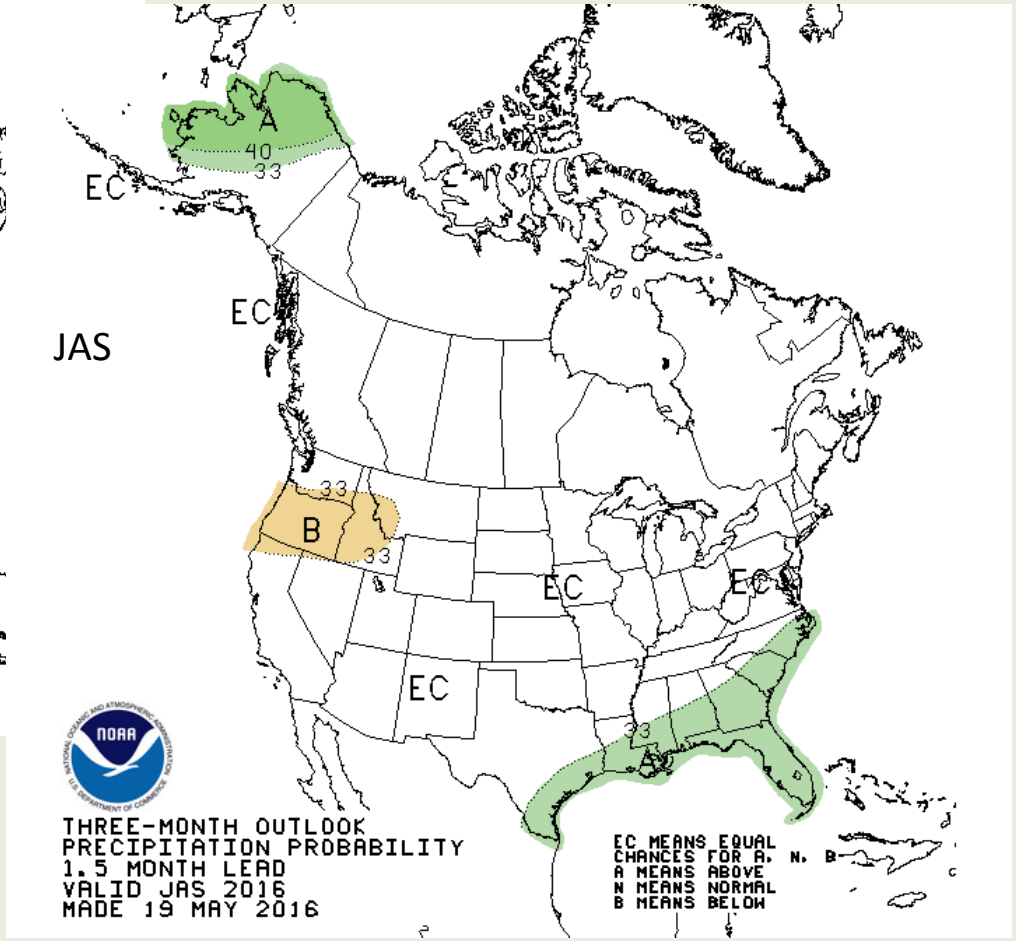
JAS



Source: NOAA/CPC

U.S. Precipitation Forecasts

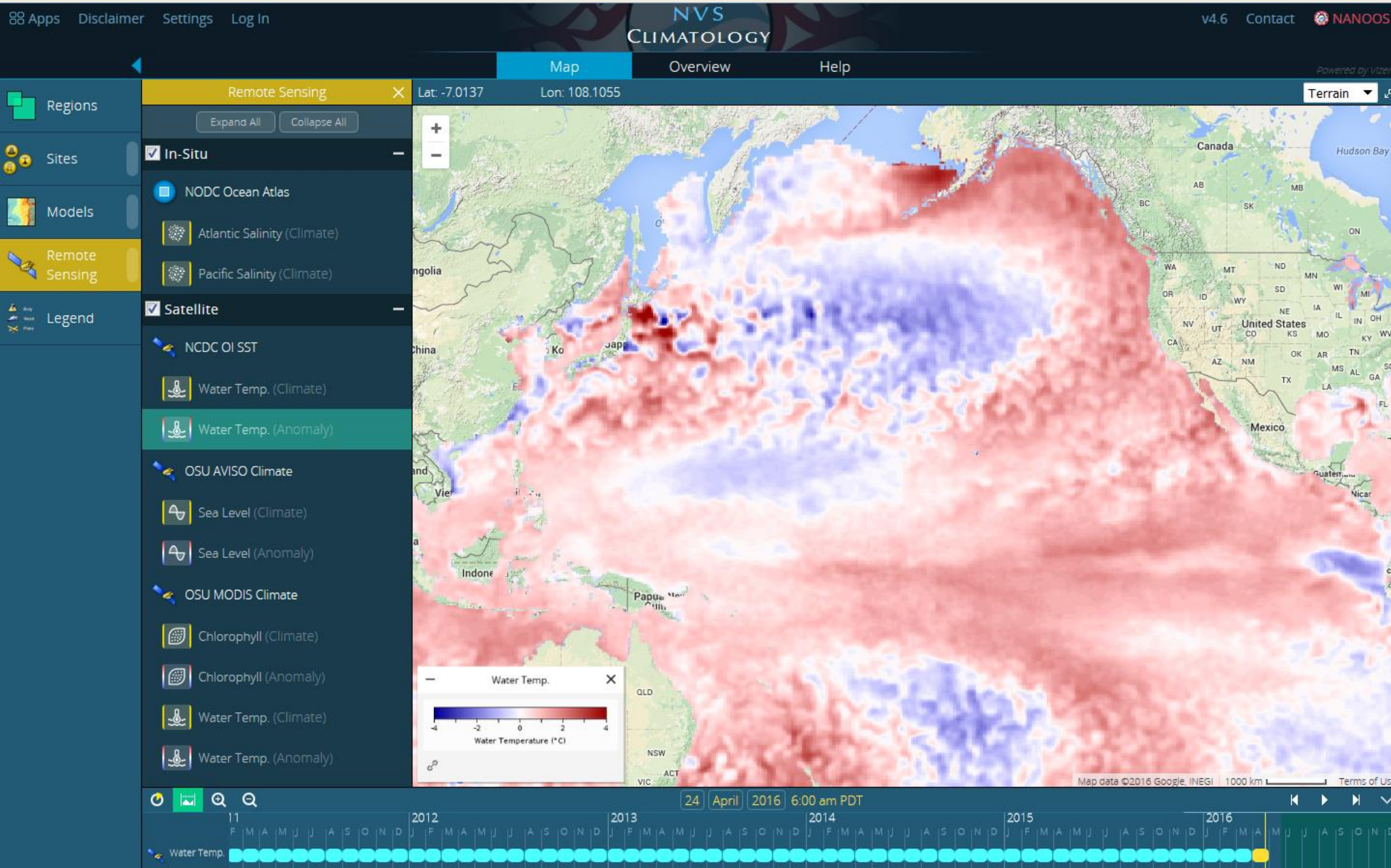




Source: NOAA/CPC

NANOOS: www.nanoos.org Climatology app

Sea Surface Temperature: April 2016



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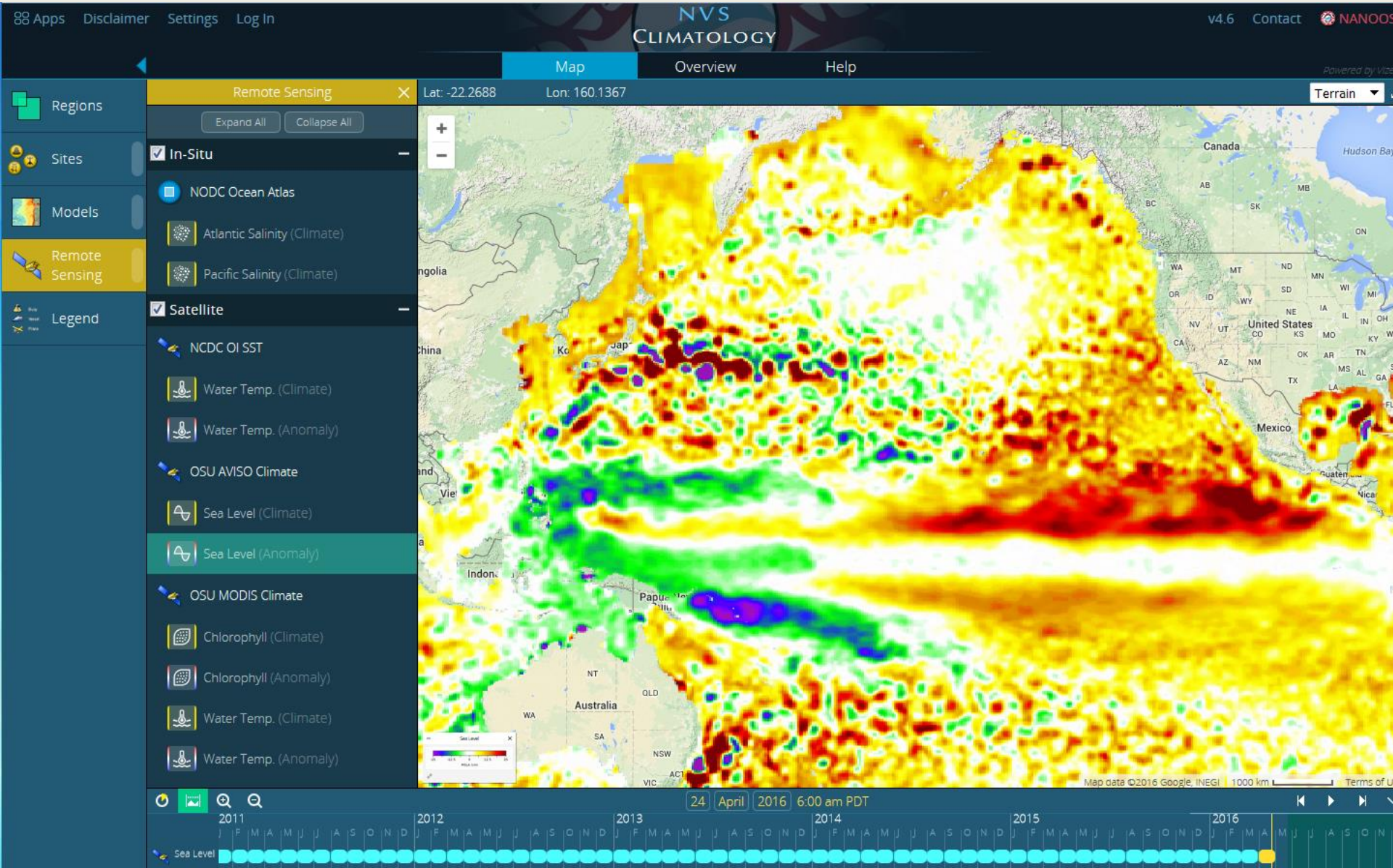
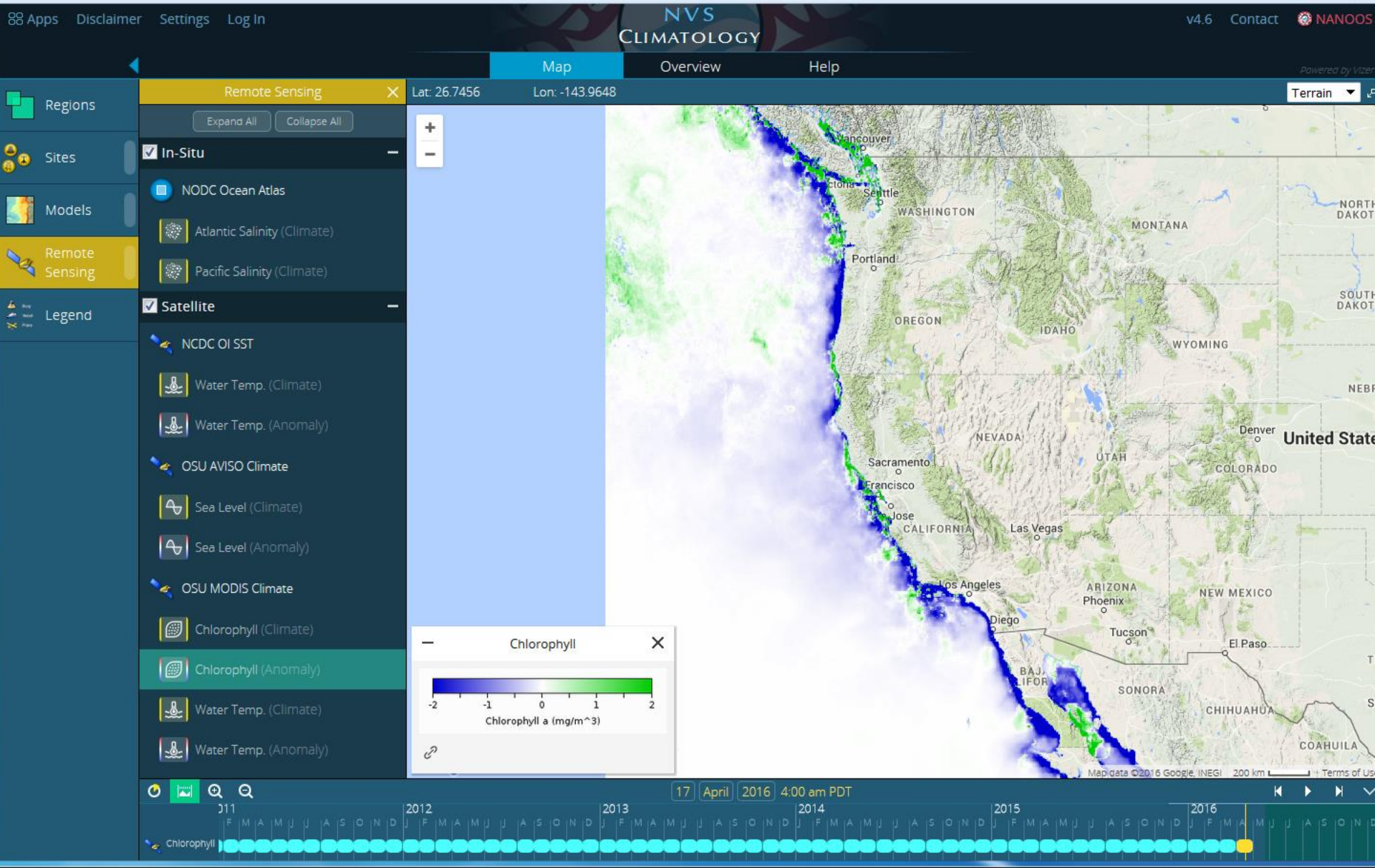
Mean Sea Level: April 2016



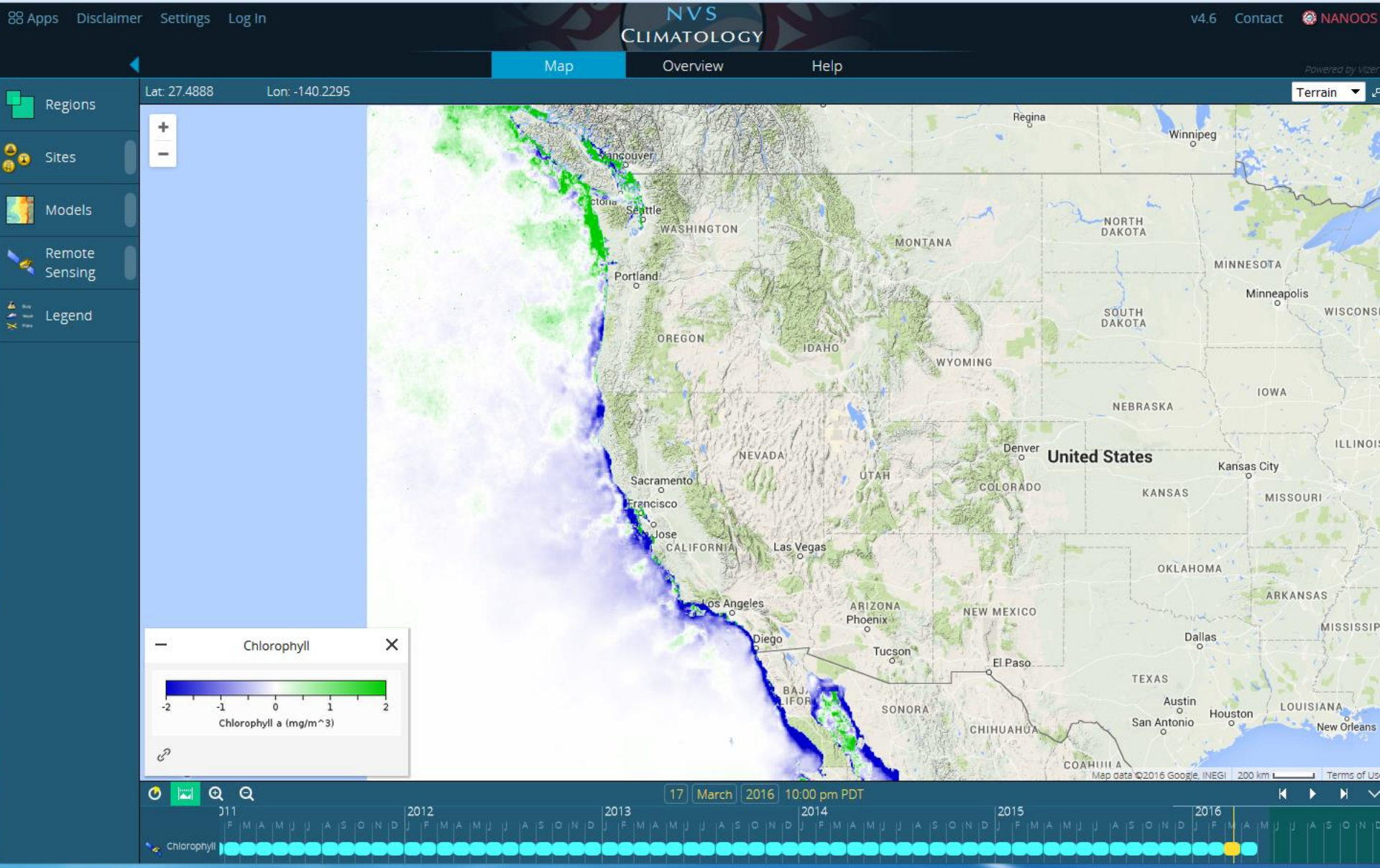
NANOOS: www.nanoos.org Climatology app

Mean Chlorophyll: April 2016



NANOOS: www.nanoos.org Climatology app

Mean Chlorophyll: March 2016



New ESP in coastal ocean for HABs!!

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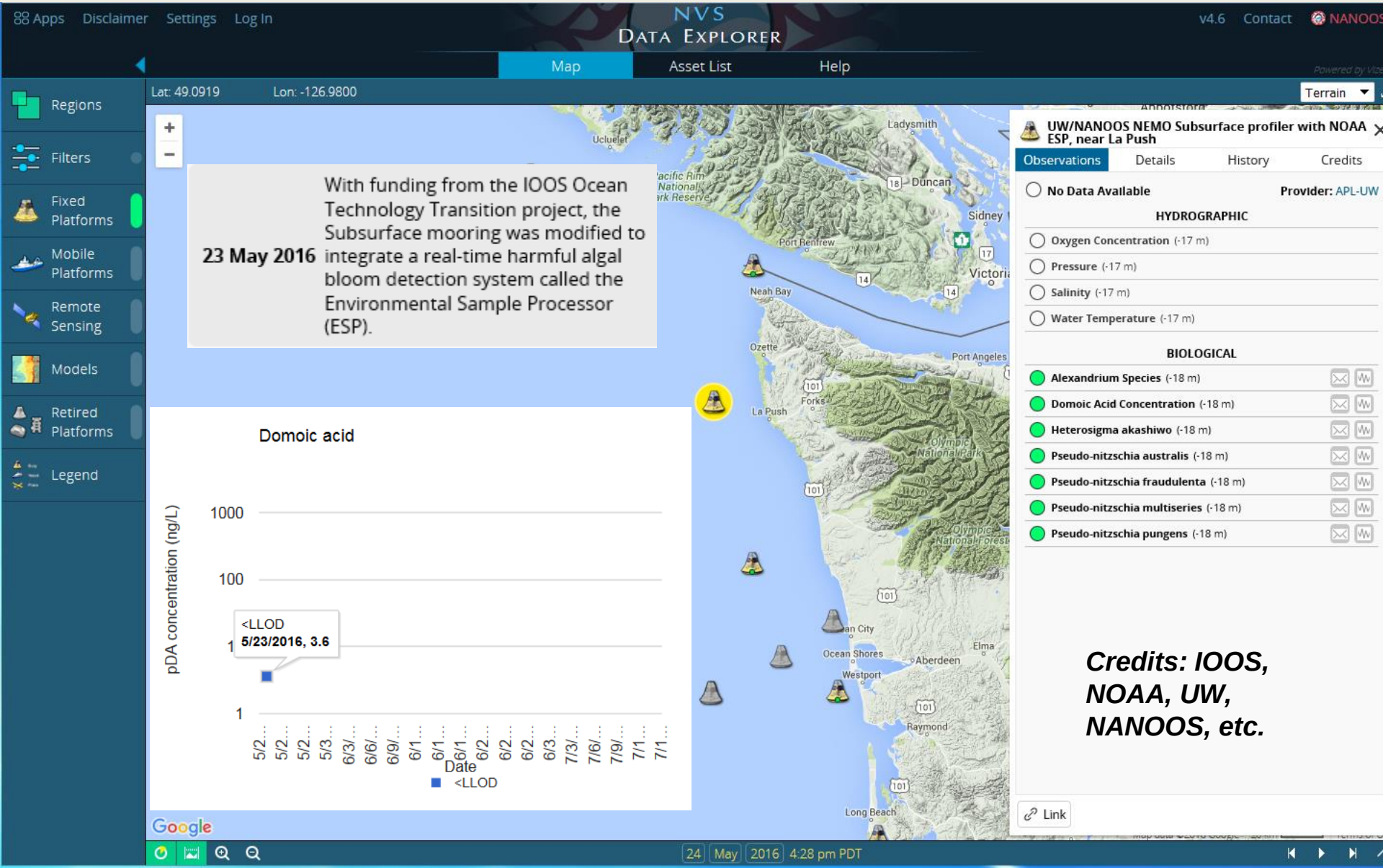
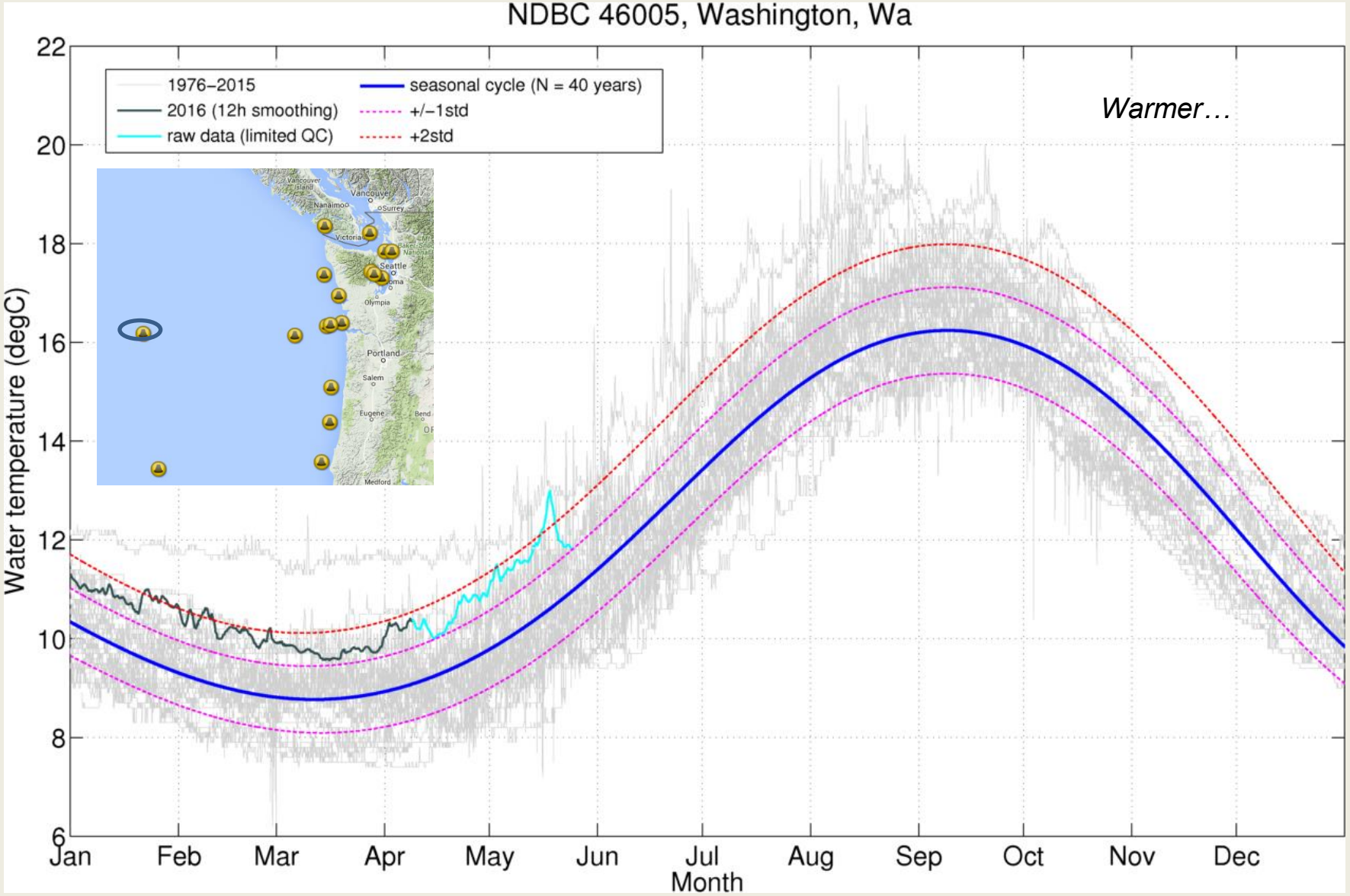
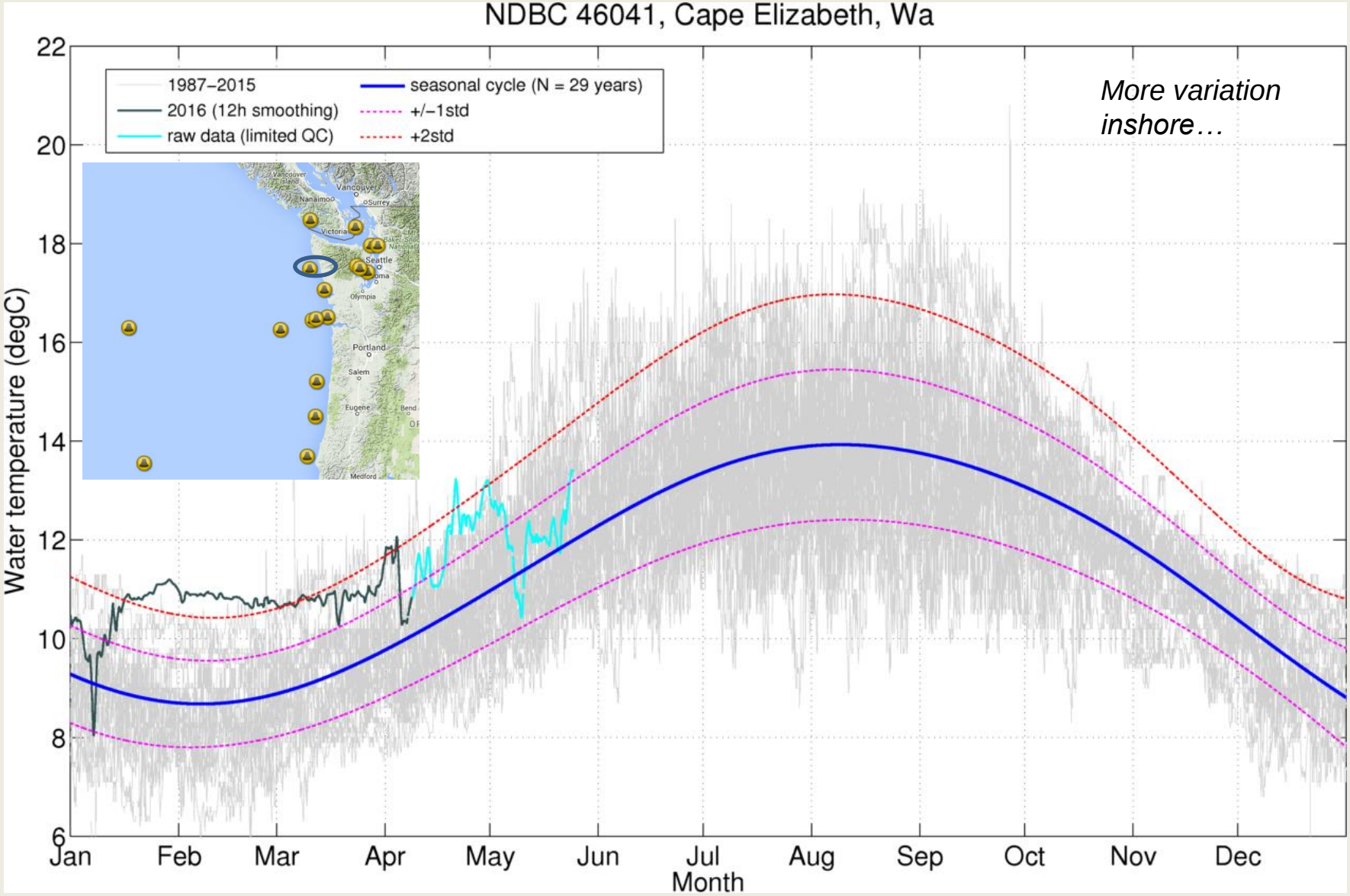
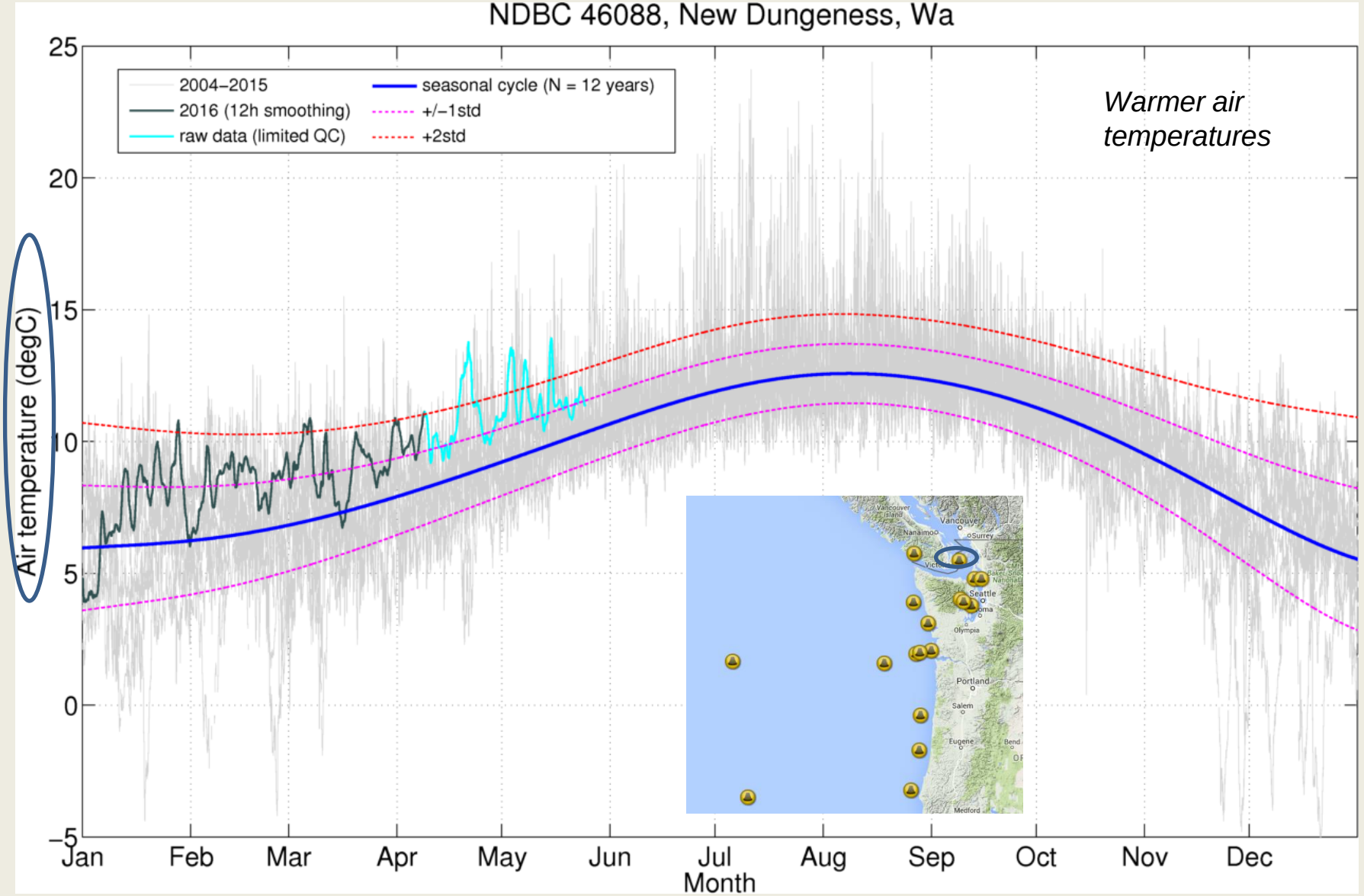
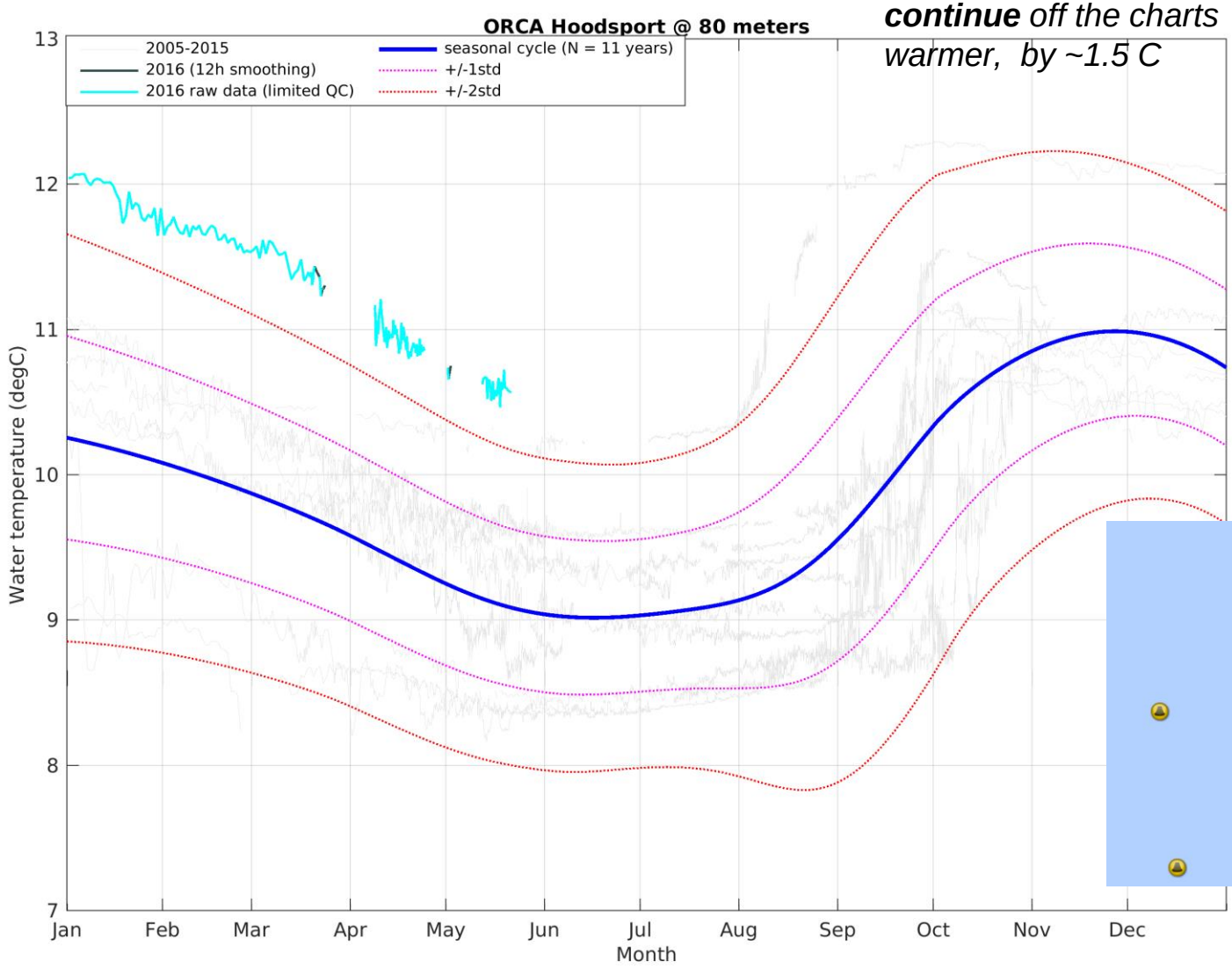


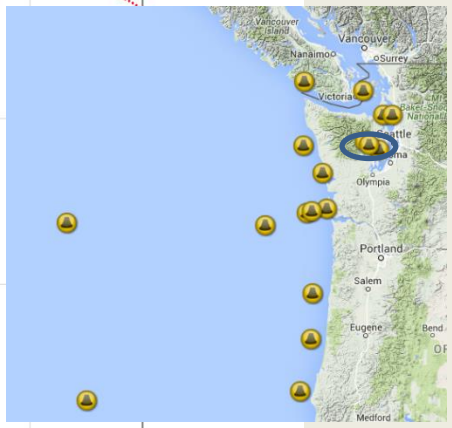

NDBC 46005, Washington, Wa
1976–2015
2016 (12h smoothing)
raw data (limited QC)
seasonal cycle (N = 40 years)
+/−1std
+2std
Warmer…
Water temperature (degC)
Month
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
6
8
10
12
14
16
18
20
22
Vancouver
Nanaimo
Victoria
Seattle
Olympia
Portland
Salem
Eugene
Bend
Medford

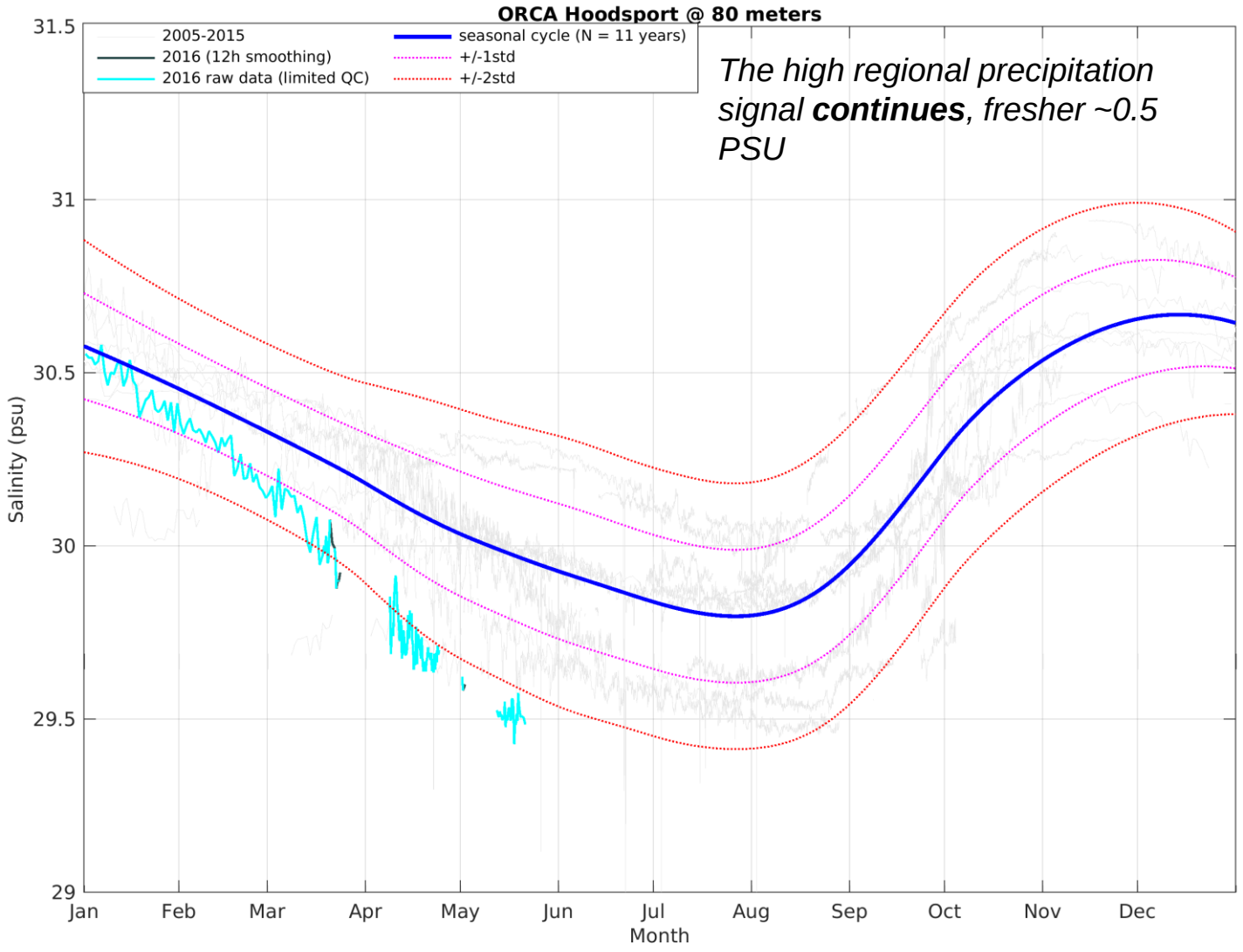

NDBC 46041, Cape Elizabeth, Wa
1987–2015
2016 (12h smoothing)
raw data (limited QC)
seasonal cycle (N = 29 years)
+/–1std
+2std
More variation inshore…
Water temperature (degC)
22
20
18
16
14
12
10
8
6
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Vancouver
Victoria
Seattle
Olympia
Portland
Salem
Eugene
Bend
Medford

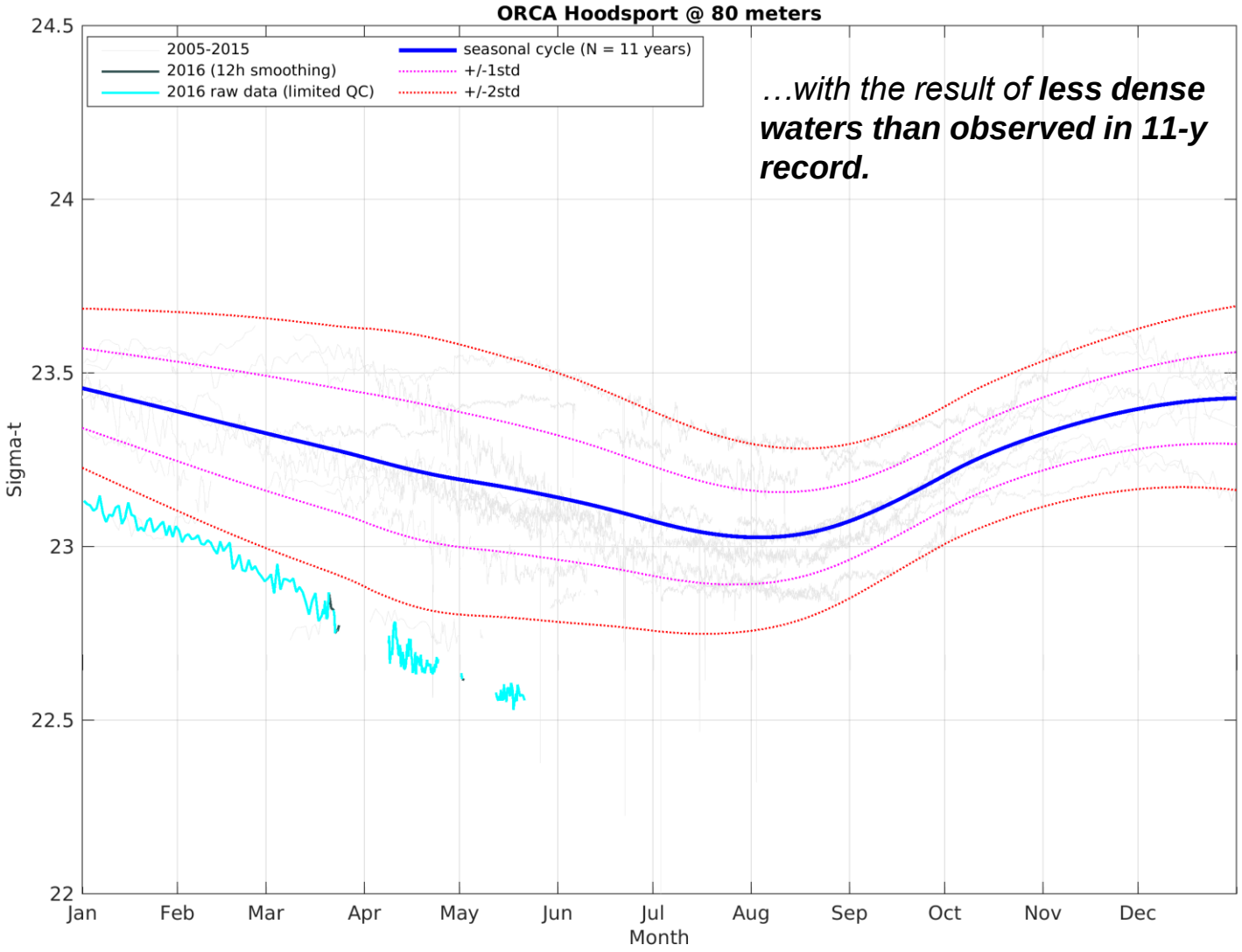

NDBC 46088, New Dungeness, Wa
2004–2015
2016 (12h smoothing)
raw data (limited QC)
seasonal cycle (N = 12 years)
+/–1std
+2std
Warmer air temperatures
Air temperature (degC)
25
20
15
10
5
0
−5
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Vancouver
Nanaimo
Surrey
Seattle
Olympia
Portland
Salem
Eugene
Medford

Puget Sound deep waters ***continue*** *off the charts warmer, by ~1.5 C*






ORCA Hoodsport @ 80 meters
2005-2015
2016 (12h smoothing)
2016 raw data (limited QC)
seasonal cycle (N = 11 years)
+/-1std
+/-2std
The high regional precipitation signal **continues**, fresher ~0.5 PSU
Salinity (psu)
31.5
31
30.5
30
29.5
29
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month


ORCA Hoodsport @ 80 meters
2005-2015
2016 (12h smoothing)
2016 raw data (limited QC)
seasonal cycle (N = 11 years)
+/-1std
+/-2std
…with the result of less dense waters than observed in 11-y record.
Sigma-t
24.5
24
23.5
23
22.5
22
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month

Regional Impacts Summary – 04/21 to 05/22

Reporting Status:

- 284 entries since July 1, 2015
- Last reporting period: 21 environmental conditions & regional impacts reported

Environmental Conditions Capture:

- El Niño
- Warm ocean temperature
- Domoic acid
- Record air temperatures
- Drought

Human & Ecosystem Impacts Capture:

- Energy sector - “normal” water year
- CA increases water allocations
- West Coast kelp forest collapse (coverage down 93%)
- Adverse impacts to ocean salmon productivity
- Salmon fishery closures (Puget Sound)
- Tribal fishery closures (Yurok)
- Shellfishery closures (razor clam)
- Changes to marine food web
- Species displacement
- Accelerated seasonal snowpack melt
- Tree mortality

Headlines - May

PD Editorial: The alarming emergence of 'urchintopia'

"Normal" Water Year So Far In The Northwest

Warm Pacific continues to chop salmon numbers, affecting Idaho, Northwest

Snowpack hit hard by record warmth
Seasonal melt begins weeks earlier than normal

WESTERN WATER:
Calif. hikes deliveries to highest level in 4 years

Razor clam fishery closed

Water regulations ease, but drought still dominates in California

State Water Project increases allocations to 60 percent

Sick Animals Again Crowd Marine Center

Dry La Niña period likely to follow El Niño

SeaWorld releases 9 rehabilitated sea lions

Warmer waters bring loggerhead turtles to Southern California

Tree deaths rise steeply in Sierra; drought and insects to blame

CALIFORNIA:
Tiny crabs invade state beaches

Yuroks widen fishing closures

Humpbacks in San Francisco Bay give whale watchers a rare thrill

La Niña is coming! Forecasts reveal massive pool of deep water moving across the Pacific could cause fall weather chaos

- NOAA animation shows pool of deep, cool water moving east in Pacific
- Researchers say this 'slow-motion wave' could signify developing La Niña
- La Niña brings unusually cold temperatures in the Equatorial Pacific
- Could create higher chance of dry winter in drought-stricken California

Impacts in Pictures

NOAA scientists look at a juvenile loggerhead turtle found in the Loggerhead Conservation Area off the coast of Southern California. (NOAA)

Humpback whales have been swimming into San Francisco Bay in unprecedented numbers during the past two weeks.

Tuna crabs washed up onto the beach at Shaw's Cove in Laguna Beach, Calif. Pelagic red crabs are usually found off Baja California but currents that are part of the El Nino weather pattern are sweeping them north

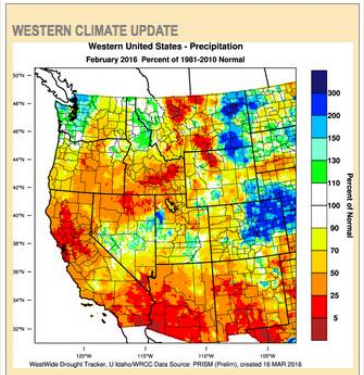
Intense ponderosa pine mortality is seen in the Bass Lake area from an aerial survey by the U.S. Forest Service in August 2015. The trees likely died in 2014 but the mortality became evident a year later. U.S. Forest Service.

Telling Regional Stories – NOAA West Watch

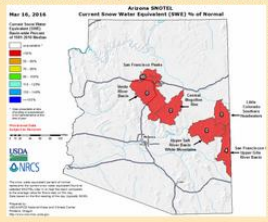
Second issue

This is the second edition of NOAA-West Watch, a periodic collection of stories documenting how environmental change is affecting people and places in the western United States. If you have a story suggestion, please contact Michael Milstein (michael.milstein@noaa.gov) or Timi Vann (timi.vann@noaa.gov).

In this issue:



An abrupt transition from active, wet weather in December and January to mild and dry in February was found over much of the western United States. This change was most dramatic over central and northern California, the northern Great Basin, and parts of the northern Rockies where less than 25% of normal precipitation occurred in February (see above). In southern California and Arizona winter dryness persisted despite hopeful seasonal forecasts all indicating above normal winter precipitation in this region due to a strong El Niño signal. Arizona snowpack plummeted from above normal at the end of January to zero by mid-March in many locations. At the Promontory Arizona SNOTEL site (at an elevation of 7,930 feet) major early winter storms boosted precipitation and snow water equivalent values well above the historical averages, but flat lined precipitation for nearly 45 days has decimated the snowpack that usually peaks in mid-March (below).



El Niño storms boost California ski areas

Western ski areas are cheering the best ski season they have recorded in three to four years, with crowds early on boosted by the buzz of El Niño-fueled snowpack and subsequently by some of the greatest snowfall totals for this point in the season in several years. California's Mammoth Mountain recorded more than eight feet of snow in less than a week in early March, and has already attracted more skiers than it did in all of last season. Skiing is expected to last into the June or even July.

The nine largest ski resorts in the Lake Tahoe area contribute $584 million to the economy in a good year, according to a 2014 assessment, and California ski areas together generate more than $1.3 billion in economic activity each year, a statewide assessment found. A good snow year boosts California ski area business by more than $100 million, according to a 2012 study.

Heavy snow falls at Mount Rose, at 8,260 feet near Lake Tahoe. Photo courtesy Mount Rose Ski Tahoe.

Just as important as precipitation to ski areas is the level of the snow line - the elevation of freezing temperatures - which appears to have gradually shifted uphill during many recent winters, said John Gifford, president of the Pacific Northwest Ski Areas Association. "Freezing levels are definitely higher than they used to be," he said. "For ski areas and the quality of snow, the lower the snow level the better," said Michael Reitzell, president of the California Ski Industry Association. Higher elevation resorts such as Mount Bachelor in Oregon, Mount Rose in the Lake Tahoe area and mountain resorts in Colorado have had some of the most reliable snow because they experience cold temperatures more frequently. Many resorts at lower elevations have aggressively diversified their recreational offerings and invested in sophisticated snowmaking so they are less dependent on snowfall to attract visitors throughout the winter, ski industry officials said.

December snowfall started out very strong with a series of strong winter storms and very low snow levels, most ski areas reported. Snow continued in January, though with slightly warmer temperatures. February was unseasonably warm and dry in California but skier visits remained strong. March and April typically are some of the biggest snow months of the winter because they can bring heavy precipitation along with still-freezing temperatures. For some resorts spring temperatures will determine how long the season lasts, while others will look to stay open well into spring.

Record waves batter West Coast shorelines

Some of the largest waves recorded on the West Coast have battered and flooded shorelines, including some populated areas and homes, and eroded beaches in the last few months. The waves are riding on elevated sea levels that remnant heat from the "warm blob" combined with El Niño temperatures already pushed roughly a third to a half-foot higher than usual, with the sea level increase especially pronounced off California.

That has translated into approximately 45 percent more wave energy than normal hitting West Coast beaches, with about 40 percent more erosion than the average for the similar winter time frame, said Patrick Barnard, a U.S. Geological Survey researcher who tracks erosion on the West Coast. "Everything is in line with what we expect during strong El Niño conditions like we're experiencing," he said. In a few anecdotal cases a few beaches have largely been swept clean of much of their sand.

High waves at La Jolla Shores, Calif., March 8, 2016. Photo courtesy Randy Bucciarelli.

Barnard is leading an interagency effort to survey the entire Pacific Coast from the Mexican border north to Canada with Lidar, a precision mapping system that uses airborne lasers to very accurately measure elevations. NOAA, USGS and the U.S. Army Corps of Engineers are helping to fund the effort. The goal is to document the topography of West Coast beaches when they are at or near minimum levels because of El Niño-driven erosion, so scientists can then track subsequent changes.

In February NOAA's National Geodetic Survey deployed a NOAA aircraft to collect more than 3,000 geo-referenced oblique images of the West Coast from the Mexican border to Cape Flattery, Wash. The imagery will help assess impacts of El Niño through comparison with earlier baseline images collected in September 2015. Oblique imagery provides views of a wider area and improves the visibility of vertical structures, such as the sides of buildings. The oblique imagery is publicly available online, and will support assessments and decisions by NOAA agencies and mission partners such as the U.S. Geological Survey, U.S. Army Corps of Engineers, Federal Emergency Management Agency and other state, local and academic interests.

Rough conditions slow Columbia ship traffic

Strong December storms powered by El Niño repeatedly shut down commercial shipping traffic into and out of the Columbia River west of Portland, according to the pilots that guide ships across the treacherous Columbia River Bar where the river meets the sea near Astoria, Oregon.

"The frequency of the fronts through December was really something," said Dan Jordan of the Columbia River Bar Pilots and a pilot himself. "They just kept coming day after day. It seemed like every other day we'd have to suspend service because the bar was so rough." He said the pilots suspended shipping traffic across the Columbia River Bar nearly 10 times in the month of December, among the most closures in a single month that most pilots could remember. Conditions were not nearly as rough in January and February, with only a few scattered closures.

According to the Merchants Exchange of Portland, the bar has been closed 15 times so far this winter, compared to nine closures in the winter of 2014-15, nine in 2013-14, six in 2012-2013 and 14 times in 2011-12.

A cargo ship crosses the Columbia River Bar in high seas. Photo courtesy Columbia River Bar Pilots.

All large commercial ships crossing into or out of the Columbia River must be guided between the open sea and Astoria by a Columbia River Bar pilot, and pilots may suspend service when conditions become too rough for a safe transit across the Columbia Bar. At times when the weather forced closures in December, as many as eight large ships remained in a holding pattern offshore while they waited for a pilot to guide them inland, Jordan said. About $24 billion worth of cargo transits the Columbia each year, and past estimates have put the cost of river closures at about $10 million for three days.

Ships traveling down the river from Portland may take close to eight hours to reach Astoria, and conditions on the bar can change so quickly that bar pilots sometimes have to close the bar while the ships are still in transit. Jordan said the pilots often consult with National Weather Service forecasters and use NOAA's online weather, real-time buoy data and other forecasting resources to advise departing ships whether they should start the trip downriver or hold back in Portland if threatening conditions are likely to close the bar before they can cover the distance to the river mouth.

Distant algae bloom drives up U.S. salmon prices

A long-distance impact of the unusually warm ocean conditions associated with El Nino is driving up salmon prices in the United States.

El Niño warmth has fueled an especially severe algae bloom that is wreaking havoc on salmon farms in Chile, killing more than 27 million fish at an estimated cost of close to $500 million and putting pressure on salmon prices worldwide. A Nordic bank predicted the losses will lead to a "global supply shock" in salmon, according to Undercurrent News. Chile is by far the largest source of salmon imported to the United States, accounting for more than a third of U.S. salmon imports worth more than $1 billion last year.

Salmon farming officials in Chile estimate that the bloom will depress salmon production in Chile by 20 percent or more, depending on how long the algae bloom lasts. Seafood wholesalers in the United States said prices for both farmed and wild salmon have risen as much as 20 percent in recent weeks as the impacts of the Chilean algae bloom became increasingly apparent.

Thanks for reading NOAA-West Watch

This is a project of NOAA's Western Regional Collaboration Team (NOAA West) with contributions from many regional partners. The 10-month project will document changing environmental conditions in the Western U.S. and how they are affecting the public and NOAA mission. We invite suggestions and contributions. These reports will be consolidated into a season-end wrap-up. For submissions, questions or comments, please contact Michael Milstein at michael.milstein@noaa.gov or Timi Vann at timi.vann@noaa.gov.

Western Climate Update graphics provided by West Wide Drought Tracker, North American Freezing Level Tracker and NRCS Snow Telemetry and Snow Course Data and Products.

Weblink:
http://campaign.r20.constantcontact.com/render?m=1113800373012&ca=8b476ef2-9b94-4107-98de-437421865cd2

Issue #3 in Draft.

Themes:

- Shrinking Western Snowpack
- Wildfire connections
- Stressed & dying forests
- Insects
- Fire potential

Survey Results

WRECIC Webinar Average Monthly Attendance (August – April): 26

Survey Distribution: 88

Survey Respondents: 28

- NOAA: 10
  - 7 NMFS
  - 2 OAR
  - 1 NOS
- Partner: 8
- Industry: 1
- No Info: 10

How many monthly WRECIC webinars did you attend?

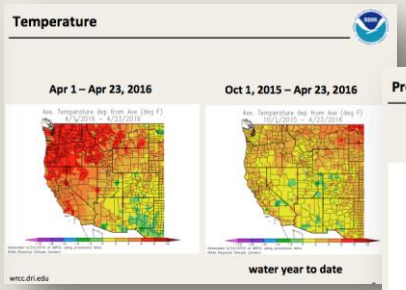
	Webinar Attendance		
	1-3	**4-6**	**7-9**
NOAA	2	3	5
PARTNER & INDUSTRY	5	3	1
UNIDENTIFIED	5	3	1

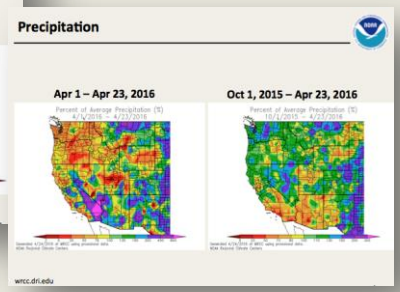
Monthly Webinar

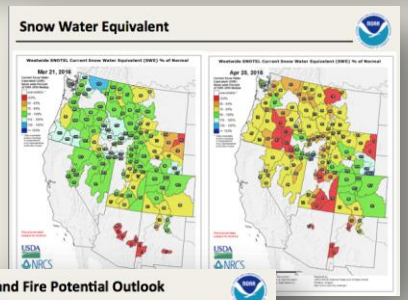
Regional Environmental Conditions & Impacts Coordination

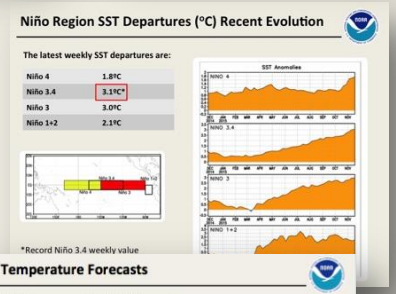
NOAA West
April 25, 2016

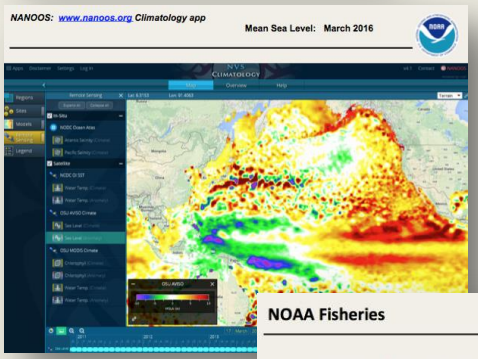
- 10 monthly briefings (Aug-May)
- Distribution list ~ 88. Average monthly attendance: 26

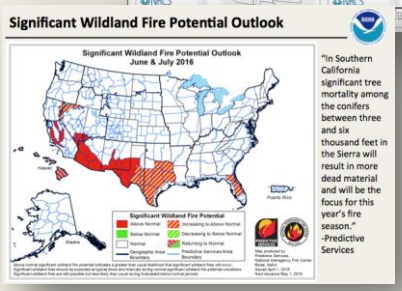


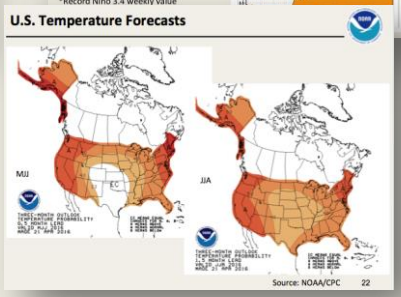






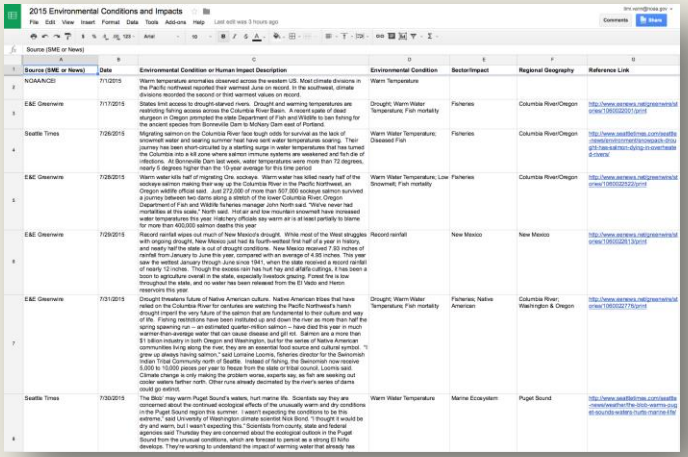






4 Elements: Regional climate summary; Regional impacts summary; special highlights; open discussion

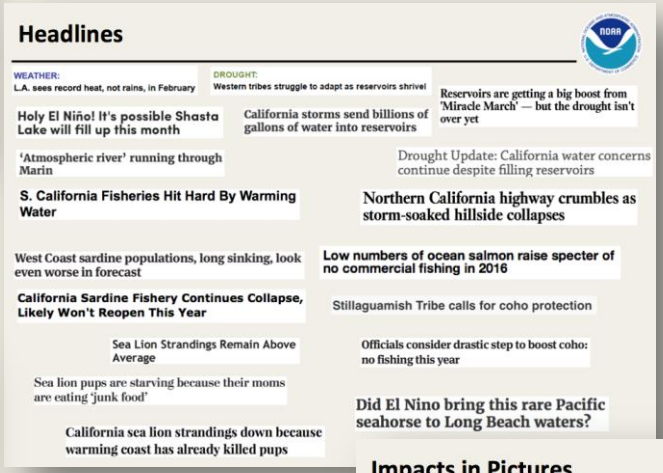
Monthly Webinar


2015 Environmental Conditions and Impacts

Source (SME or News)	Date	Environmental Condition or Human Impact Description	Environmental Condition	Sector/Impact	Regional Geography	Reference Link
NOAA/NCEI	7/1/2015	Warm temperature anomalies observed across the western US. Most climate divisions in the Pacific northwest reported their warmest June on record. In the southwest, climate divisions recorded the second or third warmest values on record.	Warm Temperature			
E&E Greenwire	7/17/2015	States limit access to drought-starved rivers. Drought and warming temperatures are restricting fishing access across the Columbia River Basin. A recent spate of dead sturgeon in Oregon prompted the state Department of Fish and Wildlife to ban fishing for the ancient species from Bonneville Dam to McNary Dam east of Portland.	Drought; Warm Water Temperature; Fish mortality	Fisheries	Columbia River/Oregon	http://www.eenews.net/greenwire/stories/1060059201/print
Seattle Times	7/26/2015	Migrating salmon on the Columbia River face tough odds for survival as the lack of snowmelt water and soaring summer heat have sent water temperatures soaring. Their journey has been short-circuited by a startling surge in water temperatures that has turned the Columbia into a kill zone where salmon immune systems are weakened and fish die of infections. At Bonneville Dam last week, water temperatures were more than 72 degrees, nearly 5 degrees higher than the 10-year average for this time period	Warm Water Temperature; Diseased Fish	Fisheries	Columbia River/Oregon	http://www.seattletimes.com/seattle-news/environment/stronger-drought-has-salmon-dying-in-overheated-rivers/
E&E Greenwire	7/28/2015	Warm water kills half of migrating Ore. sockeye. Warm water has killed nearly half of the sockeye salmon making their way up the Columbia River in the Pacific Northwest, an Oregon wildlife official said. Just 272,000 of more than 507,000 sockeye salmon survived a journey between two dams along a stretch of the lower Columbia River, Oregon Department of Fish and Wildlife fisheries manager John North said. "We've never had mortalities at this scale," North said. Hot air and low mountain snowmelt have increased water temperatures this year. Hatchery officials say warm air is at least partially to blame for more than 400,000 salmon deaths this year	Warm Water Temperature; Low Snowmelt; Fish mortality	Fisheries	Columbia River/Oregon	http://www.eenews.net/greenwire/stories/1060059253/print
E&E Greenwire	7/29/2015	Record rainfall wipes out much of New Mexico's drought. While most of the West struggles with ongoing drought, New Mexico just had its fourth-wettest first half of a year in history, and nearly half the state is out of drought conditions. New Mexico received 7.93 inches of rainfall from January to June this year, compared with an average of 4.95 inches. The year saw the wettest January through June since 1941, when the state received a record rainfall of nearly 12 inches. Though the excess rain has hurt hay and alfalfa cuttings, it has been a boon to agriculture overall in the state, especially livestock grazing. Forest fire is low throughout the state, and no water has been released from the El Vado and Heron reservoirs this year.	Record rainfall	New Mexico	New Mexico	http://www.eenews.net/greenwire/stories/1060059281/print
E&E Greenwire	7/31/2015	Drought threatens future of Native American culture. Native American tribes that have relied on the Columbia River for centuries are watching the Pacific Northwest's harsh drought imperil the very future of the salmon that are fundamental to their culture and way of life. Fishing restrictions have been instituted up and down the river as more than half the spring spawning run — an estimated quarter-million salmon — have died this year in much warmer-than-average water that can cause disease and gill rot. Salmon are a more than $1 billion industry in both Oregon and Washington, but for the series of Native American communities living along the river, they are an essential food source and cultural symbol. "I grew up always having salmon," said Lorraine Loomis, fisheries director for the Swinomish Indian Tribal Community north of Seattle. Instead of fishing, the Swinomish now receive 5,000 to 10,000 pieces per year to freeze from the state or tribal council, Loomis said. Climate change is only making the problem worse, experts say, as fish are seeking out cooler waters farther north. Other runs already decimated by the river's series of dams could go extinct.	Drought; Warm Water Temperature; Fish mortality	Fisheries; Native American	Columbia River; Washington & Oregon	http://www.eenews.net/greenwire/stories/1060027776/print
Seattle Times	7/30/2015	The Blob' may warm Puget Sound's waters, hurt marine life. Scientists say they are concerned about the continued ecological effects of the unusually warm and dry conditions in the Puget Sound region this summer. 'I wasn't expecting the conditions to be this extreme,' said University of Washington climate scientist Nick Bond. 'I thought it would be dry and warm, but I wasn't expecting this.' Scientists from county, state and federal agencies met on Tuesday to discuss their concerns about the ecological effects in the Puget Sound from the unusual conditions, which are forecast to persist as a strong El Niño develops. They're working to understand the impact of warming water that already has	Warm Water Temperature	Marine Ecosystem	Puget Sound	http://www.seattletimes.com/seattle-news/weather/the-blob-warms-puget-sounds-waters-hurts-marine-life/

Conditions and Impacts Reporting Status

- 284 entries since July 1, 2015
- ~ 27 entries per month
- Primary source is E&E Newswire, followed by a review of NMFS media clips for impacts gaps


Headlines

WEATHER:
L.A. sees record heat, not rains, in February

DROUGHT:
Western tribes struggle to adapt as reservoirs shrivel

Holy El Niño! It's possible Shasta Lake will fill up this month

California storms send billions of gallons of water into reservoirs

Reservoirs are getting a big boost from 'Miracle March' — but the drought isn't over yet

'Atmospheric river' running through Marin

Drought Update: California water concerns continue despite filling reservoirs

S. California Fisheries Hit Hard By Warming Water

Northern California highway crumbles as storm-soaked hillside collapses

West Coast sardine populations, long sinking, look even worse in forecast

Low numbers of ocean salmon raise specter of no commercial fishing in 2016

California Sardine Fishery Continues Collapse, Likely Won't Reopen This Year

Stillaguamish Tribe calls for coho protection

Sea Lion Strandings Remain Above Average

Officials consider drastic step to boost coho: no fishing this year

Sea lion pups are starving because their moms are eating 'junk food'

Did El Nino bring this rare Pacific seahorse to Long Beach waters?

California sea lion strandings down because warming coast has already killed pups

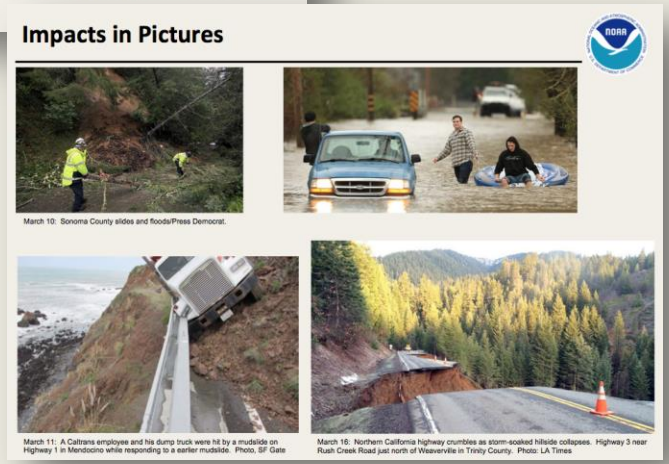
Regional Impacts Summary – 02/27 to 03/18

Reporting Status:
- 231 entries since July 1, 2015
- Last reporting period: 35 environmental conditions & regional impacts reported

Reminder: To report an impact email Timi Vann or Michael Milstein

Environmental Conditions Capture:
- Changing ocean conditions
- Warm ocean temperatures
- El Niño
  - CA dry & hot February but wet March
- Flooding
- Drought

Human & Ecosystem Impacts:
- Adverse marine food web (forage fish) impacts
- Commercial fishery harvests down or closed (sardines, coho, squid)
- Marine mammal strandings & reproduction
- Species displacement
- Water supply; reservoir storage improvements
- Flooding & transportation
  - Train derailments, road closures
- Tribal subsistence impacts:
  - Fallon Paiute-Shoshone (NV) – drought & water supply impacts on hunting & fishing
  - Stillaguamish (WA) – ocean conditions & fishery harvest


Impacts in Pictures

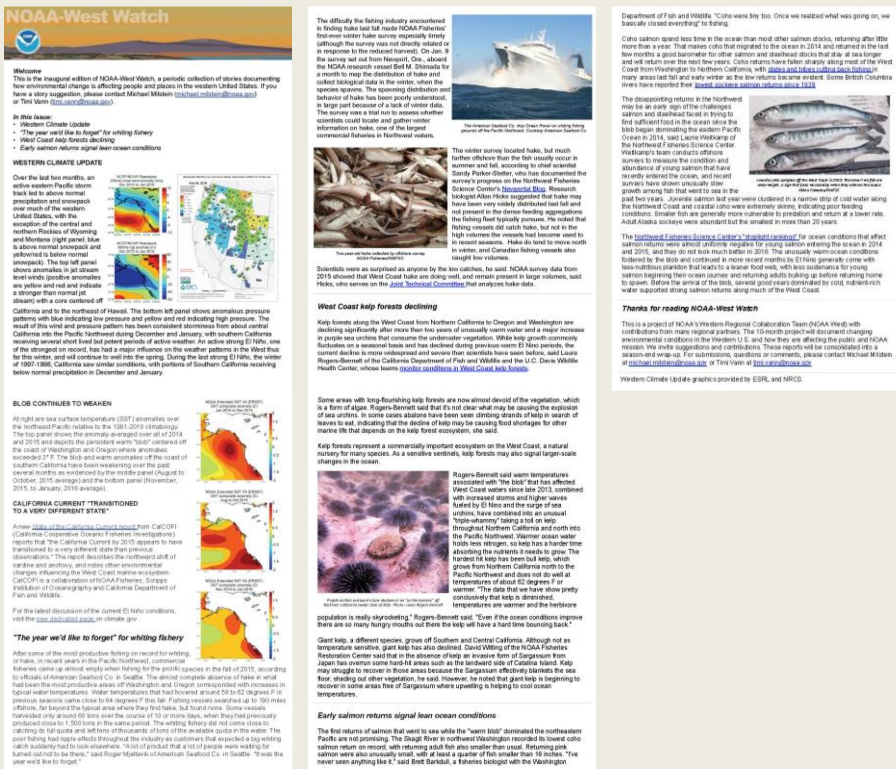
March 10: Sonoma County slides and floods/Press Democrat.

March 11: A Caltrans employee and his dump truck were hit by a mudslide on Highway 1 in Mendocino while responding to a earlier mudslide. Photo, SF Gate

March 16: Northern California highway crumbles as storm-soaked hillside collapses. Highway 3 near Rush Creek Road just north of Weaverville in Trinity County. Photo: LA Times

Communication

Storytelling may seem like an old-fashioned tool, today — and it is. That's exactly what makes it so powerful. Life happens in the narratives we tell one another. A story can go where quantitative analysis is denied admission: our hearts. Data can persuade people, but it doesn't inspire them to act; to do that, you need to wrap your vision in a story that fires the imagination and stirs the soul. -Harvard Business Review, 3/2014


NOAA-West Watch

Welcome

WESTERN CLIMATE UPDATE

BLOB CONTINUES TO WEAKEN

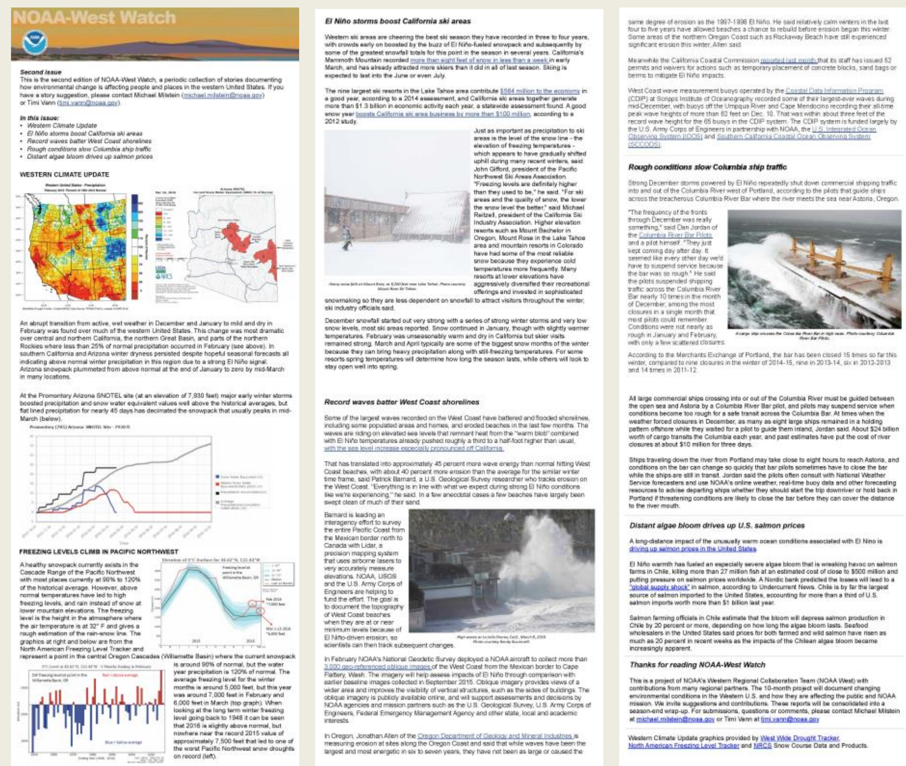
CALIFORNIA CURRENT "TRANSITIONED TO A VERY DIFFERENT STATE"

"The year we'd like to forget" for whiting fishery

West Coast kelp forests declining

Early salmon returns signal lean ocean conditions

Thanks for reading NOAA-West Watch


NOAA-West Watch

Second issue

WESTERN CLIMATE UPDATE

FREEZING LEVELS CLIMB IN PACIFIC NORTHWEST

El Niño storms boost California ski areas

Record waves batter West Coast shorelines

Rough conditions slow Columbia ship traffic

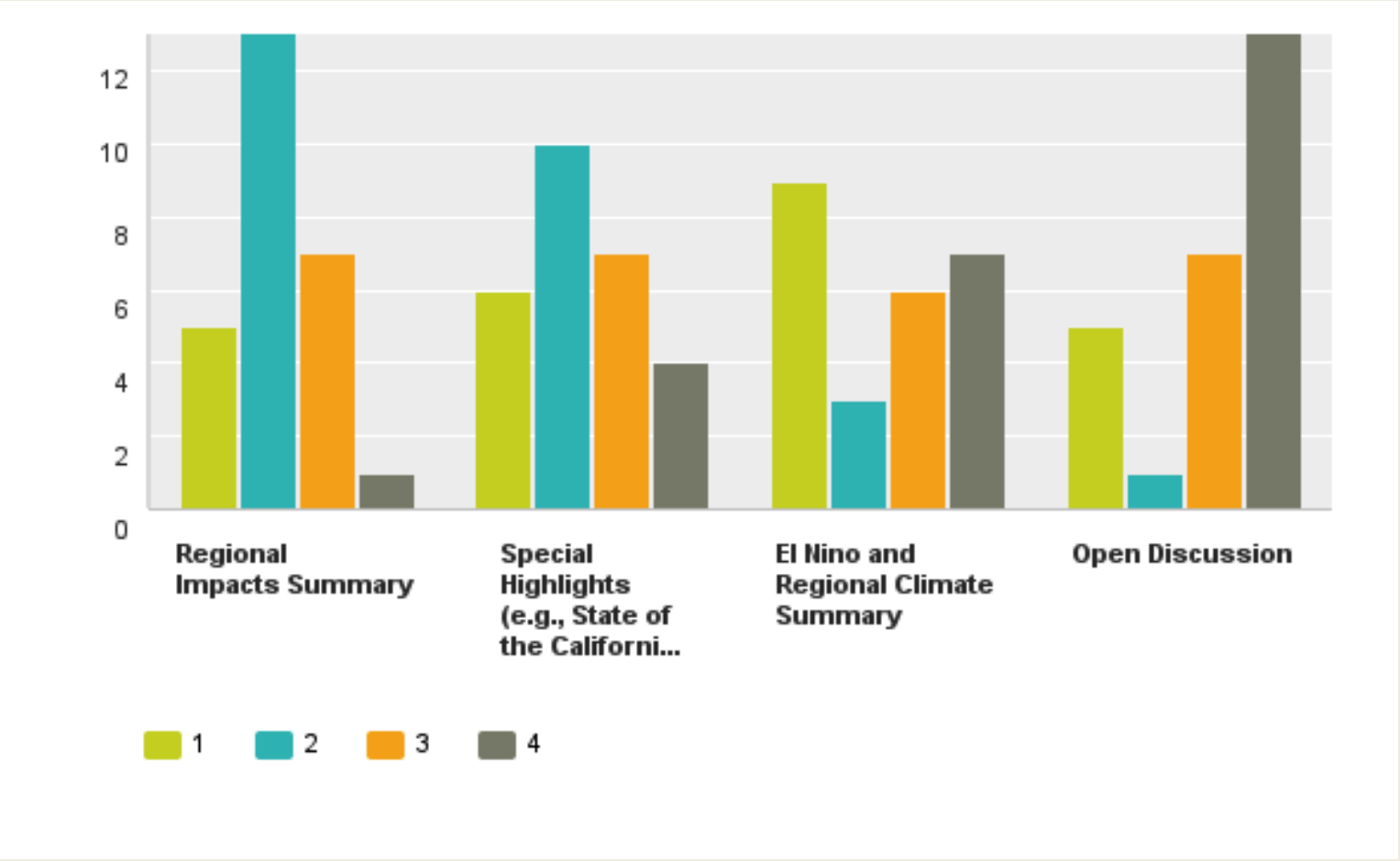
Distant algae bloom drives up U.S. salmon prices

Thanks for reading NOAA-West Watch

What aspects of the WRECIC webinars are most important to you? (1 most important; 4 least important)

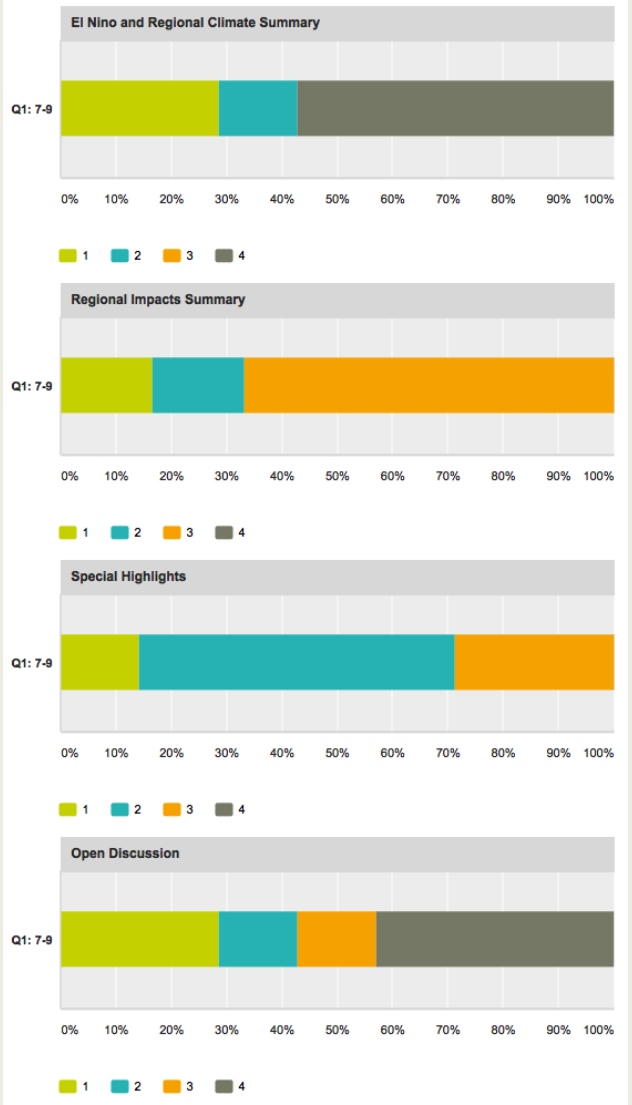
Answered: 27

Skipped: 1

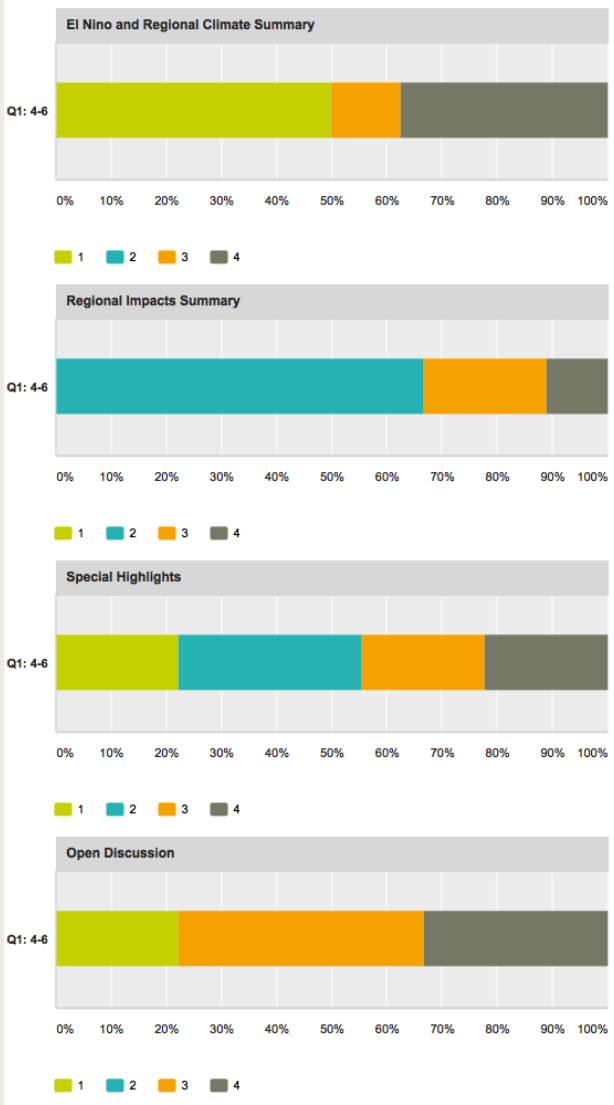


What aspects of the WRECIC webinars are most important to you? (1 most important; 4 least important)

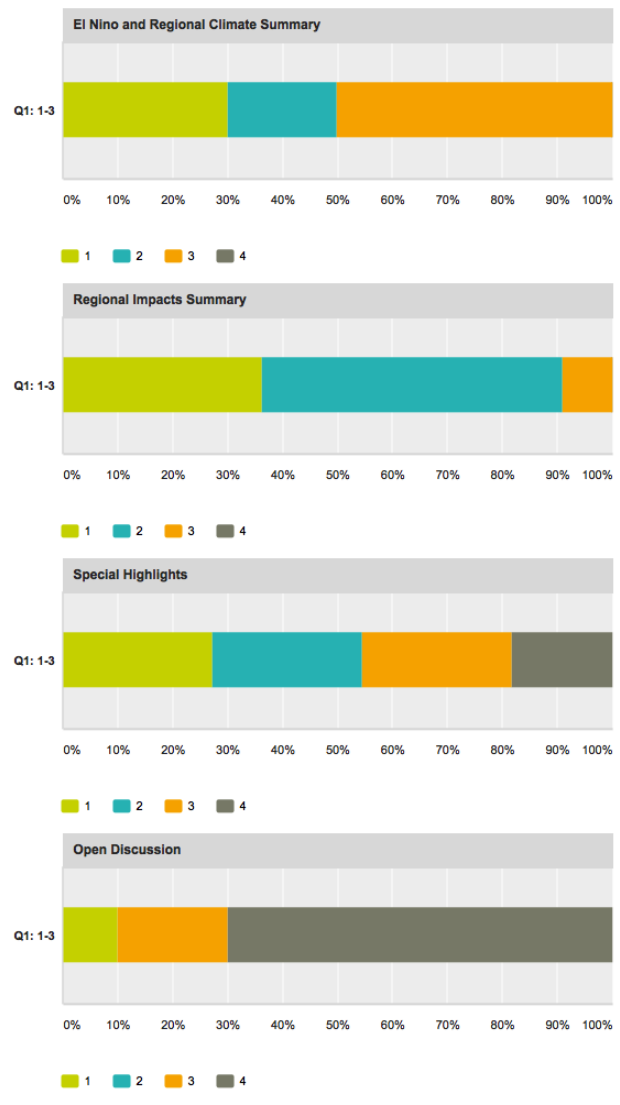
Of the respondents that attended 7-9 webinars



Of the respondents that attended 4-6 webinars



Of the respondents that attended 1-3 webinars



Other comments…

I know where to find the regional impacts and ENSO summaries, so I enjoyed any added value provided on these calls. Most of it came from the special highlights or discussion.

I really appreciated the special topics, and the impacts summaries.

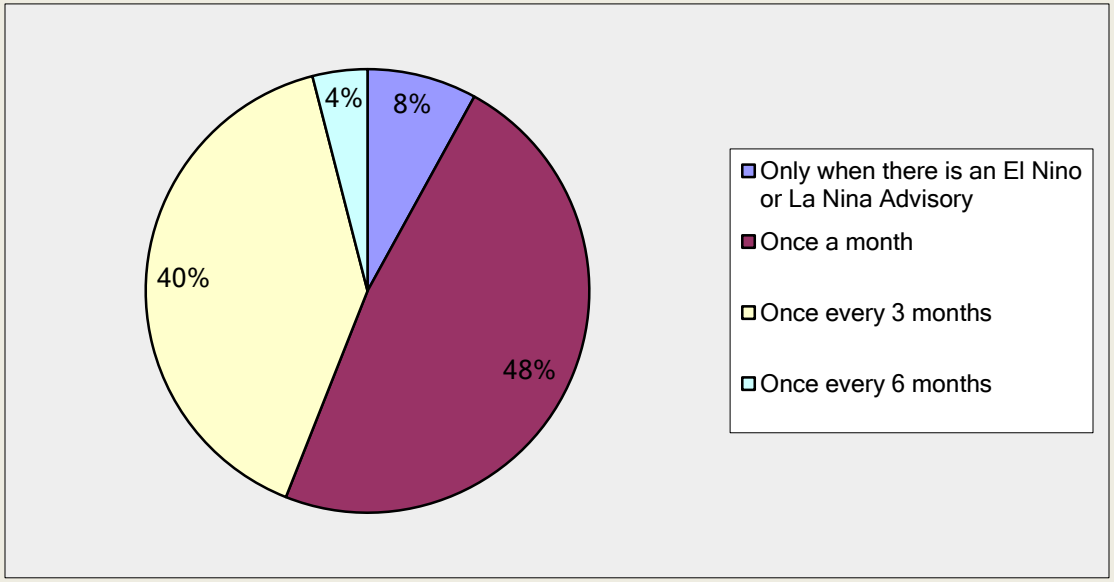
I liked the engagement across offices and the development of shared perspective of what was going on.

I like the mix of it all the best. That is, the mix of regional and local. The mix of climate summary and impacts.

[Liked] *People telling the story of their livelihood impacted by environmental changes, AND their approach to adapting, monitoring, and innovating their affiliated industry.*

If the WRECIC webinars are continued in the future, how often should they be held?

Answered: 25
Skipped: 3

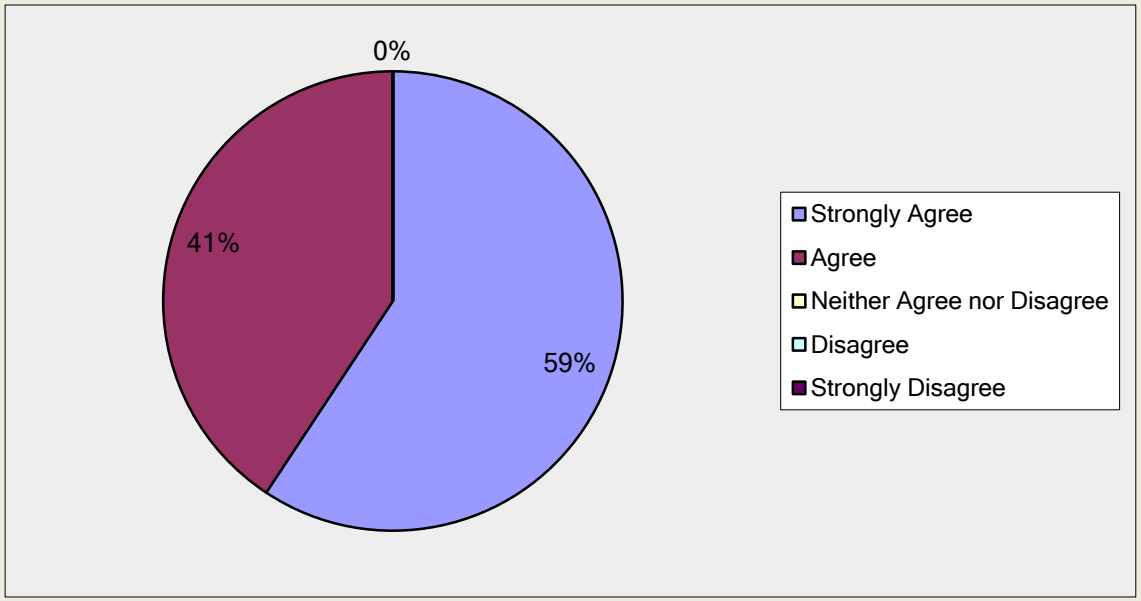


During a time of climate anomalies like the last 1.5 yrs, meeting monthly was extremely helpful as conditions were shifting relatively rapidly. As a member of the side of NOAA where impacts are felt (Fisheries), rather than the side who are observing climate conditions (Weather), it was extremely helpful to have a preview of likely future impacts to the resources.

It is important to tell stories, like those in the NOAA West Watch, that describe how people and places in the region are experiencing changing environmental conditions.

Answered: 27

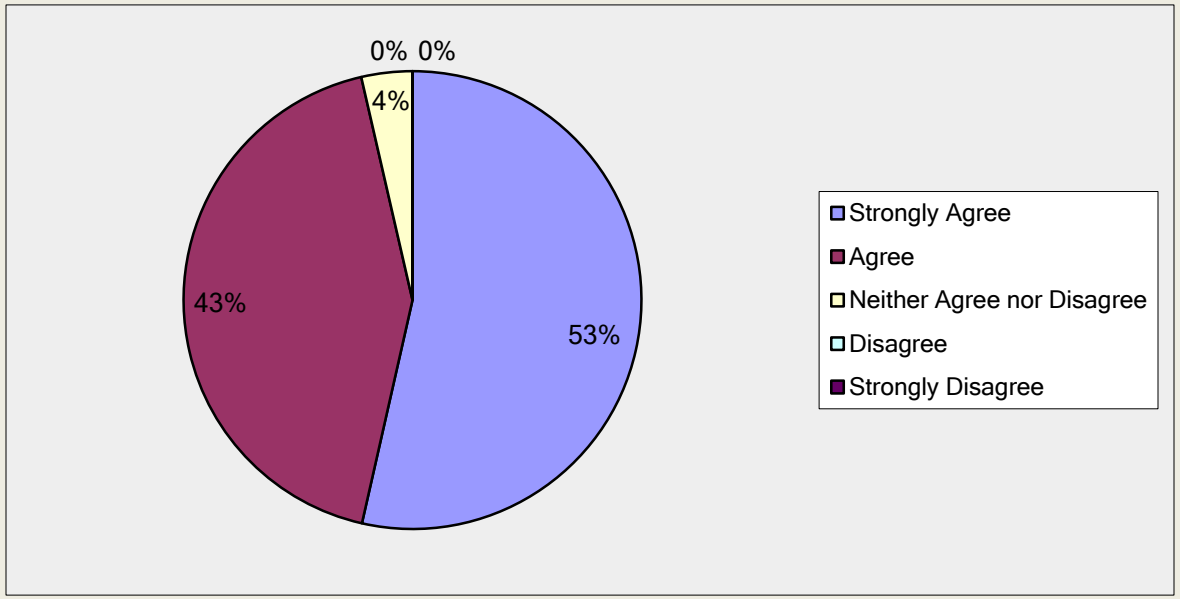
Skipped: 1



The WRECIC effort to tell stories from the information resulting from this group just short of revolutionary when it comes to NOAA, and I'd love to see the work repackage and shared with a broader external audience. Videos and infographics would enhance the story telling and describe the value of NOAA, as well as cautionary tales increasing environmental awareness and safety, better than many of our current methods. In my mind this effort was a necessary first step to gain the raw materials for that One-NOAA story telling. Would be visionary to find support to continue this effort.

Overall, the WRECIC project is a good model for improving regional communication and coordination across NOAA and partner networks involved in monitoring and communicating changing environmental conditions and impacts, particularly during significant events.

Answered: 28



I do hope we're able to find some group within NOAA who has the time, resources, and mission to continue support for this. The demand is evident in how the attendance and content grew over time. I can see this building into an extremely informative venue for internal NOAA staff, and possibly fueling extremely valuable external communications for stakeholders.

Thank you all for organizing/hosting this series. It would be a shame to lose it.

I learned a lot from these webinars and hope they can continue.

Synthesis & Recommendations

Synthesis:

- The El Niño and Regional Climate Summary element is the most important part of the call overall; Open Discussion least important. Rankings differed across attendance groups making clear cut priorities hard to distinguish.
- Most respondents want a monthly webinar.
- NOAA West Watch type stories are relevant and needed.
- There is consensus that the WRECIC is a good model for improved communication in the region.
- Feedback included suggestions to expand outside of NOAA (and partners) to more stakeholders or the general public.

Recommendations:

- Reinstate the WRECIC seasonally, with calls every other month (3 Fall/Winter; 3 Spring/Summer).
- Provide supplemental funding to the Western Regional Climate Center to implement the WRECIC effort.
- Focus on regional climate summaries – particularly departures from normal, and El Niño/La Niña advisories; and region specific special highlights.
- Issue a NOAA West Watch – type communication focused on how people and places are experiencing environmental conditions 2X/year (e.g., Seasonally - 1 Fall/Winter retrospective and 1 Spring/Summer retrospective).
- **Longer-term:** If resources are available, consider increasing webinars to monthly and expanding to broader stakeholder group(s).

It's a wrap!

Questions, Comments or Parting Thoughts?

Housekeeping:

- Project archive: http://wrcc.dri.edu/data-projects/ or email timi.vann@noaa.gov
- BAMS Essay abstract accepted: *The NOAA Western Region Environmental Conditions and Impacts Coordination: Making Sense of Regional Environmental Change.* Target for draft: end of June.
- NOAA West Watch #3 expected to release by month's end.

THANK YOU FOR YOUR PARTICIPATION!