



Changing Climate Conditions & Regional Impacts Coordination

NOAA West

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August 24, 2015

Outline



- Proposed Activity
- Environmental anomalies and impacts
- El Niño and Regional Climate brief
- Discussion

Regional Coordination Proposal Goals



Changing Climate Conditions & Regional Impacts Coordination Goals:

1. Share and document anomalous environmental information and their impacts on human systems.
2. Improve internal awareness of unusual environmental observations across NOAA mission lines
3. Improve communication and coordination between NOAA in the region (e.g. NMFS science centers and region, NWS region, NOS OCM and OCS, NESDIS NCEI, and OAR PMEL and ESRL) and NOAA funded regionally based partner entities involved in monitoring and communicating about changing climate conditions and impacts (e.g., IOOS, Sea Grant, RISA, State Climatologists, Western Regional Climate Center, etc)
4. Improve external communication of changing climate conditions, including but not limited to El Niño

We don't need or want to "reinvent" the wheel or just add to El Niño "communication noise".

Regional Coordination Action Plan



Monthly webinars (starting with this one)

- Brief on regional climate conditions/forecast. NWS, NESDIS and OAR experts are asked to report on terrestrial observations; NMFS and NOS are asked to report out on coastal and marine observations with additional information provided by our partner network (WRCC, IOOS, RISA, Sea Grant, etc)
- Discuss known deviations from “normal”
- Exchange information on terrestrial and coastal-marine impacts

Monthly communication

- Information will feed existing products such as the [State of the Climate](#) monthly summaries
- Email/communication to in-region elected officials (in coordination with NOAA OLIA). Less frequent than the weekly drought update and more frequent than the quarterly outlook and impacts product
- An NRAP assignment has been submitted to recruit communications expertise and additional coordination capacity.

Event documentation

- When the ENSO event phases out, the regionally specific updates and observed changes in the terrestrial and coastal and marine environments will serve as a summary of the event as informally observed and reported. This could inform retrospective analysis of the drivers of anomalous environmental phenomena.

Regional Anomalies and Impacts



Goal: Share and document information on regional anomalies and impacts. Propose leveraging existing (routine) observations NWS (for terrestrial) and NMFS (for marine) capabilities for monthly updates, with additions from all other participants. A [Google Doc](#) is created for capturing information:

2015 Anomalous environmental events and impacts ☆

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

fx Fisheries; Endangered Species

	A	B	C	D	E	F
1	Source (SME/Affiliation or News)	Date	Anomaly or Impact Description	Anomaly	Sectoral Impact	Reference Link
2	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		
3	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	http://www.eenews.net/greenwire/stories/1060022001/print
4	Seattle Times	7/26/2015	Migrating salmon on the Columbia River face tough odds for survival as the lack of snowmelt water and searing 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	http://www.seattletimes.com/seattle-news/environment/snowpack-drought-has-salmon-dying-in-overheated-rivers/
5	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	http://www.eenews.net/greenwire/stories/1060022522/print
6	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. This 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	http://www.eenews.net/greenwire/stories/1060022613/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 species	Drought; Warm Water Temperature; Fish mortality	Fisheries; Native American	http://www.eenews.net/greenwire/stories/1060022776/print



Steve Pribyl, of the Deschutes River Alliance, holds a sockeye salmon in the Deschutes River. Pribyl found hundreds of the migratory fish dying of a bacterial infection that spreads in warm waters. (Photo courtesy of Steve Pribyl)

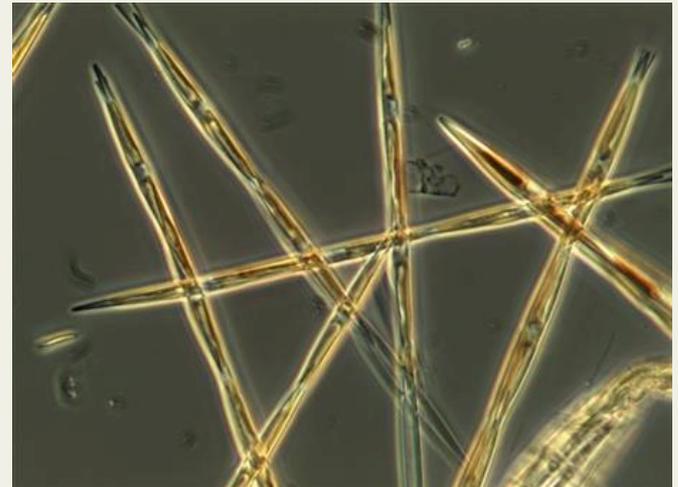


Monitoring suggests warm conditions are having negative consequences on the Puget Sound marine environment with increasing harmful algae blooms, increasing and early shellfish closures, lower dissolved oxygen levels, and unfavorable conditions for salmon and other cold-loving marine species. WA Dept. of Ecology <http://ecologywa.blogspot.com/2015/07>

Sockeye salmon veered off course to the Little White Salmon River to escape the heat of the Columbia River, but many died like the one in the foreground. In the background is a sockeye with large patches of white fungus. (Steve Ringman/The Seattle Times)



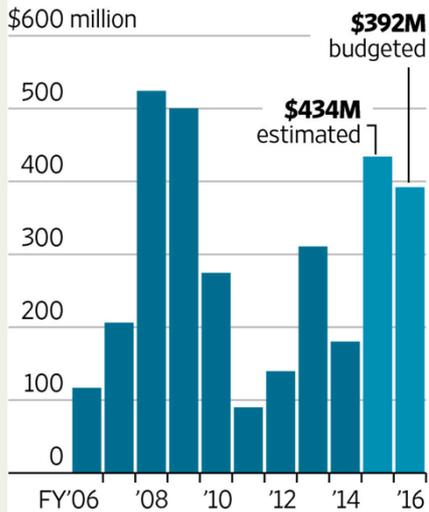
This is a California sea lion on Long Beach, Washington, apparently experiencing seizures from domoic acid poisoning in May 2015. Dan Ayres/Washington Department of Fish and Wildlife



The algae pseudo-nitzschia, which produces the toxic domoic acid, is seen from an algae bloom sample collected this summer on the West Coast. One of the largest toxic algae blooms recorded off the West Coast is much denser, more widespread and may go extend deeper than initially thought, say scientists who surveyed the event. (NOAA Fisheries via AP)

Cash Burn

Cost of fighting California wildfires



Note: Fiscal year ends June 30

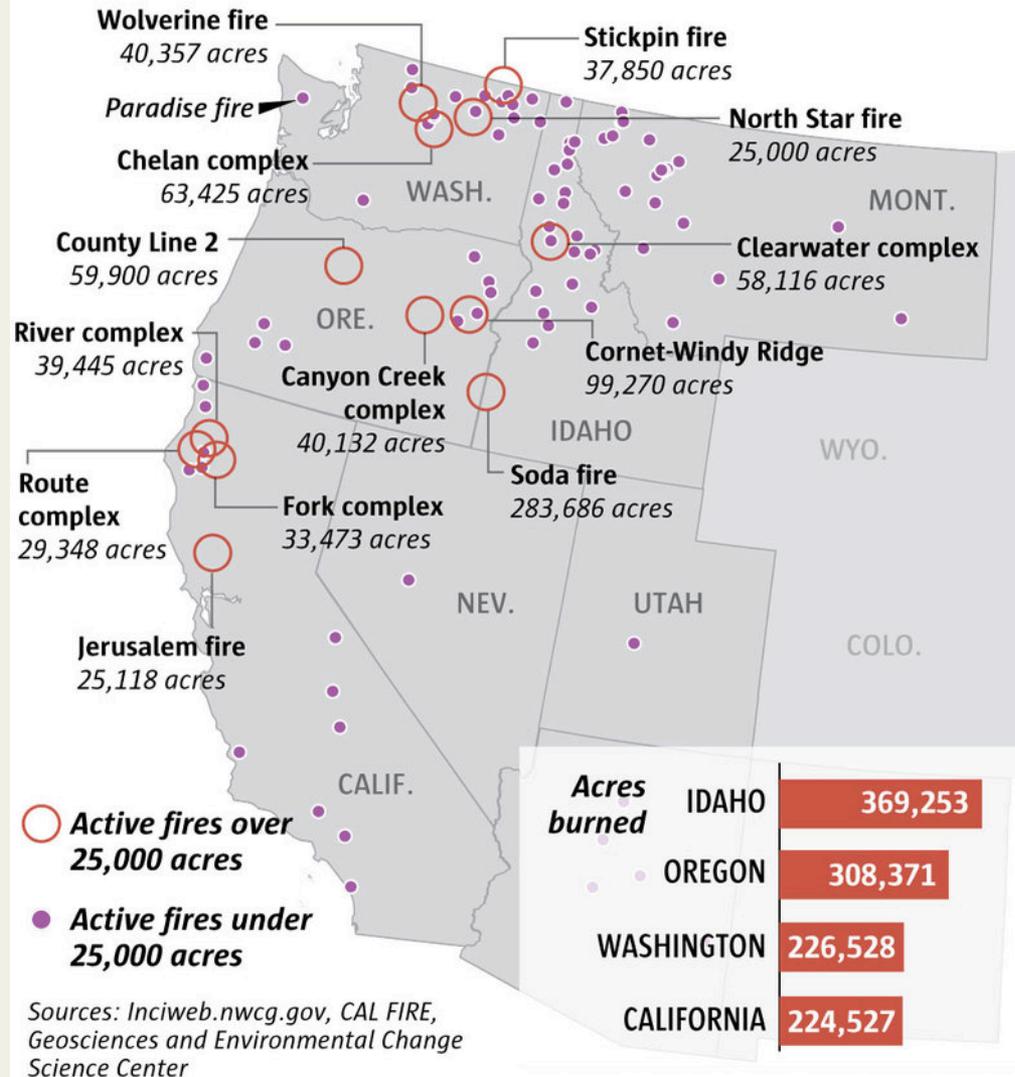
Source: state government

THE WALL STREET JOURNAL.



A plane drops fire retardant to help contain the Rocky Fire north of San Francisco, the largest of 21 blazes burning in California. Photo: Noah Berger/European Press Photo Agency

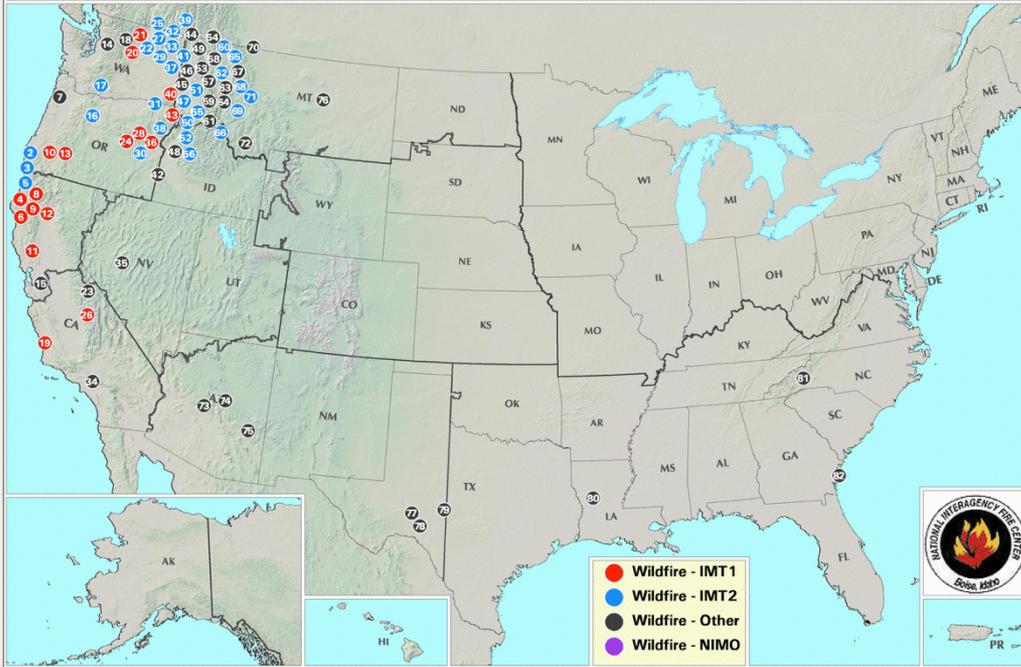
Major fires in the western U.S.



KELLY SHEA AND GARLAND POTTS / THE SEATTLE TIMES

Current Large Incidents

August 21, 2015



- | | | | |
|---------------------------|-------------------------|-------------------------------|----------------------------|
| 1 HORSE | 22 NORTH STAR | 43 CLEARWATER COMPLEX | 64 JAY PT |
| 2 COLLIER BUTTE | 23 WALKER | 44 PARKER RIDGE | 65 THOMPSON DIVIDE COMPLEX |
| 3 GASQUET COMPLEX | 24 CANYON CREEK COMPLEX | 45 BIG LOST | 66 BOBCAT |
| 4 ROUTE COMPLEX | 25 STICKPIN | 46 NOT CREATIVE | 67 BEAR CREEK |
| 5 NICKOWITZ | 26 ROUGH | 47 MOTORWAY COMPLEX | 68 MORRELL COMPLEX |
| 6 MAD RIVER COMPLEX | 27 ROY | 48 WEST SCRIVER | 69 SCOTCHMANS GULCH |
| 7 WILLAMINA CREEK | 28 ELDERADO | 49 GOLD HILL | 70 REYNOLDS |
| 8 RIVER COMPLEX | 29 CARPENTER ROAD | 50 TEEPE SPRINGS | 71 SUCKER CREEK |
| 9 FORK COMPLEX | 30 BENDIRE COMPLEX | 51 LAST INCH | 72 CABIN CREEK |
| 10 STOUTS CREEK | 31 GRIZZLY BEAR COMPLEX | 52 RAPID | 73 RATTLESNAKE |
| 11 JERUSALEM | 32 RENNER | 53 GRIZZLY COMPLEX | 74 GENERAL |
| 12 SOUTH COMPLEX | 33 MARBLE VALLEY | 54 TEEPE MOUNTAIN | 75 CREEK |
| 13 NATIONAL CREEK COMPLEX | 34 CABIN | 55 SLIDE | 76 TROPHY RIDGE |
| 14 FIRST CREEK | 35 COLD SPRINGS | 56 COUGAR | 77 COX RANCH |
| 15 TESLA | 36 CORNET-WINDY RIDGE | 57 MARBLE CREEK | 78 WEST FIRE |
| 16 COUNTY LINE 2 | 37 GRAVES MOUNTAIN | 58 POPLAR POINT | 79 TREADWELL LANE |
| 17 COUGAR CREEK | 38 EAGLE | 59 LOCHSA SOUTH COMPLEX | 80 LAFAYETTE |
| 18 WOLVERINE | 39 KANIKSU COMPLEX | 60 NORTHEAST KOOTENAI COMPLEX | 81 WOLF CREEK |
| 19 CUESTA | 40 MUNICIPAL COMPLEX | 61 WASH | 82 BUCKWHEAT |
| 20 REACH | 41 CLARK FORK COMPLEX | 62 NAPOLEON 1 | |
| 21 OKANOGAN COMPLEX | 42 SODA | 63 MELTON 1 | |



Hillside flames on Thursday near Twisp, Wash., where a 1,600-acre blaze has claimed the lives of three firefighters. Dozens of wildfires are burning across the drought-stricken Western U.S. Photo: Erika Schultz/Associated Press



Firefighters prepare to battle wildfire near Chelan, Washington, August 16, 2015. US Forest Service / Reuters

Status of Regional Climate Conditions



- ENSO Alert System Status: El Niño Advisory
- El Niño conditions are present
- Positive equatorial sea surface temperature (SST) anomalies continue across most of the Pacific Ocean.
- There is a greater than 90% chance that El Niño will continue through Northern Hemisphere winter 2015-16, and around an 85% chance it will last into early spring 2016.*

Credit: CPC

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

August 2015 El Niño update: Supercalifragilisticxpealidocious

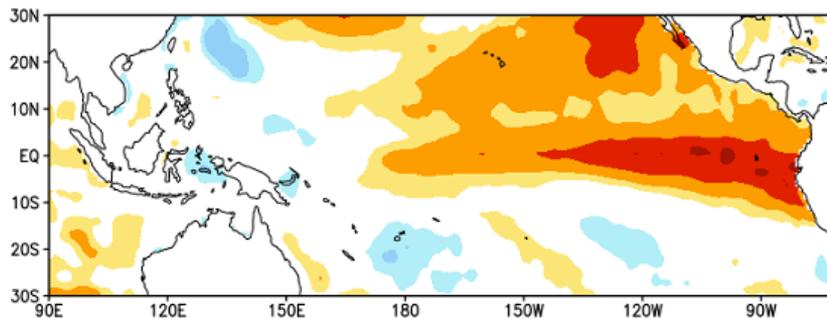
Author: Emily Becker
Thursday, August 13, 2015

As of August, NOAA and IRI forecasters are predicting this El Niño will peak in the late fall/early winter with 3-month-average sea surface temperatures in the Niño3.4 region near or exceeding 2.0°C (3.6°F) above normal. If this forecast comes true, it will place the 2015 event among the strongest El Niños in the (admittedly short) 1950-2015 historical record. What would this mean for expected impacts in the United States?

But first, this status update!

Sea surface temperature anomalies (departures from the long-term average) increased in much of the equatorial Pacific during July. The July average in the Niño3.4 region was +1.2°C above normal according to the ERSST monitoring datasets. The atmospheric features observed in the equatorial Pacific region during July show that the El Niño ocean-atmosphere coupling is cranking along: easterly winds near the surface were consistently weaker than normal, as were the westerly winds in the upper levels of the atmosphere, and satellites saw more clouds than average in the central and eastern Pacific.

Average SST Anomalies (°C)
15 JUL 2015–05 AUG 2015



ENSO Blog

A blog about monitoring and forecasting El Niño, La Niña, and its impacts.

Disclaimer:

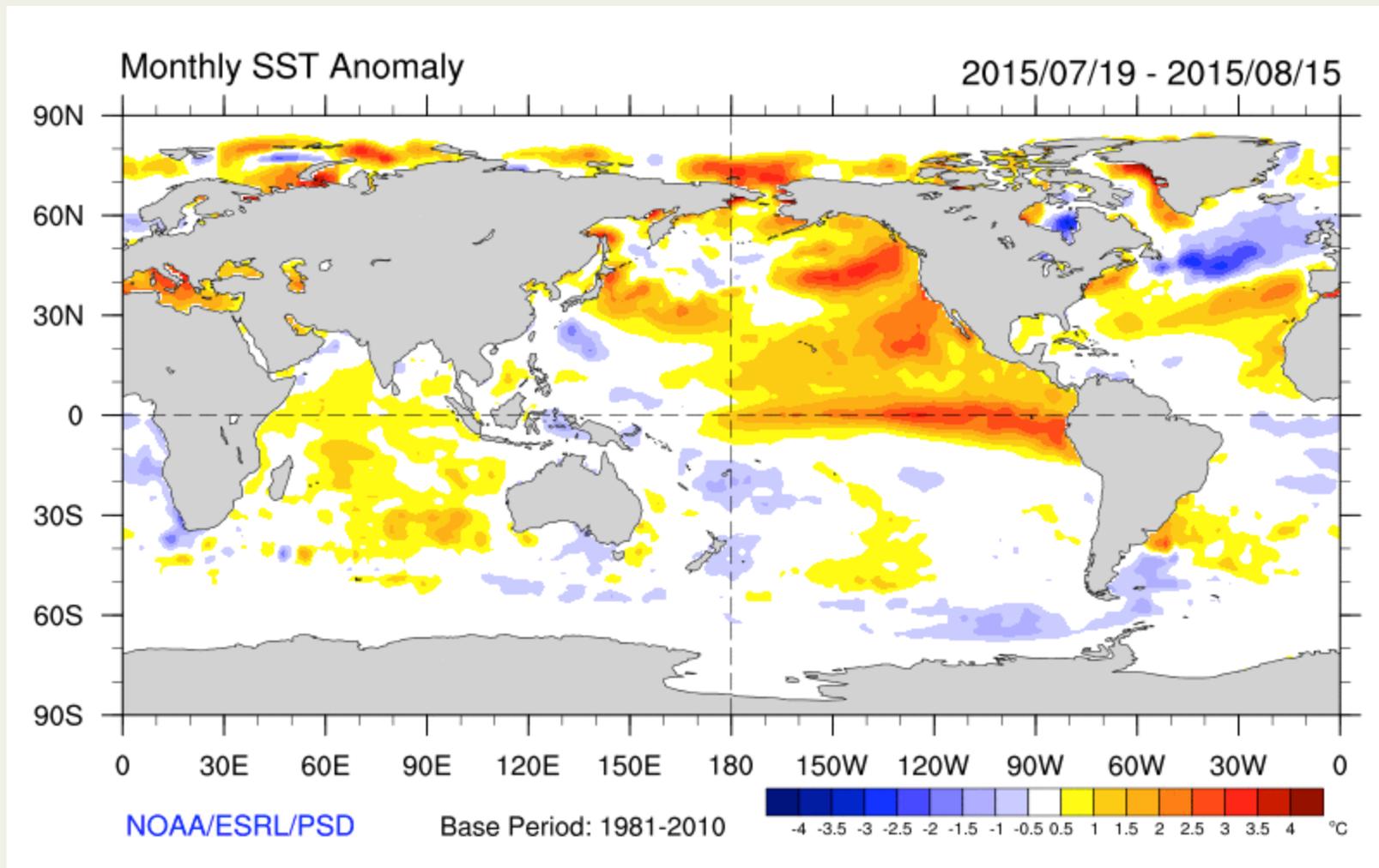
The ENSO blog is written, edited, and moderated by Michelle L'Heureux (NOAA CPC), Emily Becker and Tom DiLiberto (contractors to CPC), Anthony Barnston (IRI), and Rebecca Lindsey (contractor to NOAA CPO). Posts reflect the views of the bloggers themselves and not necessarily Climate.gov, NOAA, or Columbia University/IRI.



Rating:

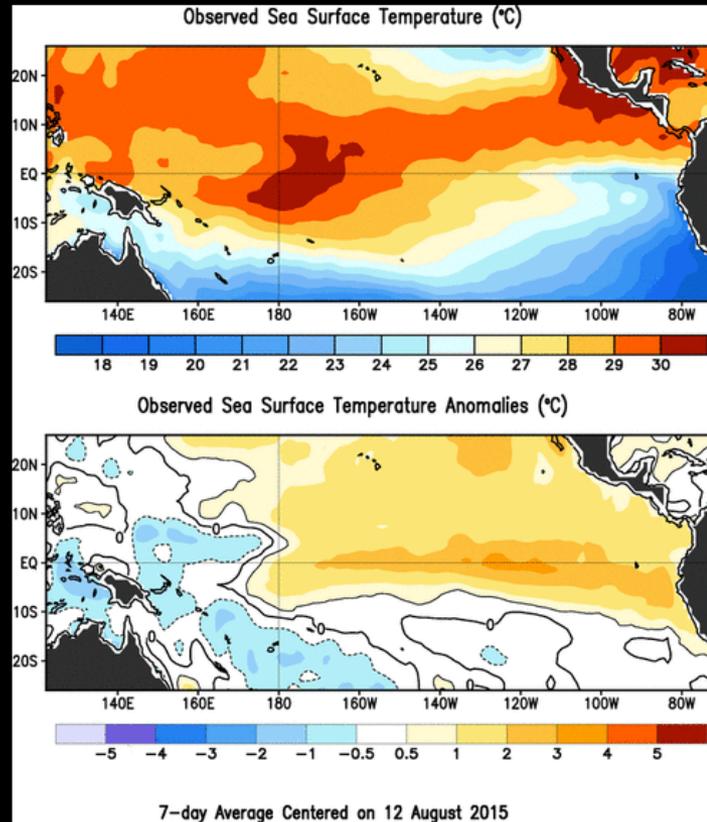
★★★★★
Average: 4.5 (8 votes)

Current Sea Surface Temperatures



Source: NOAA/ESRL

Current Sea Surface Temperatures



Source: NOAA/CPC

Niño Region SST Departures (°C) Recent Evolution



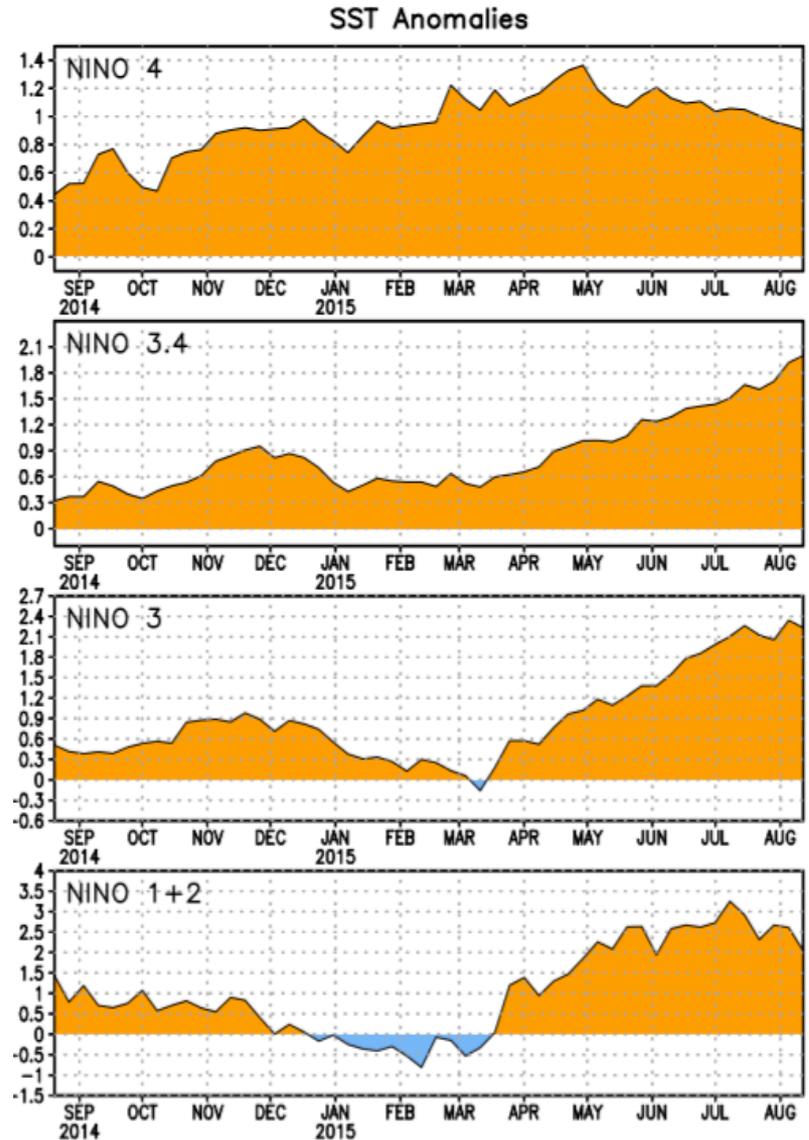
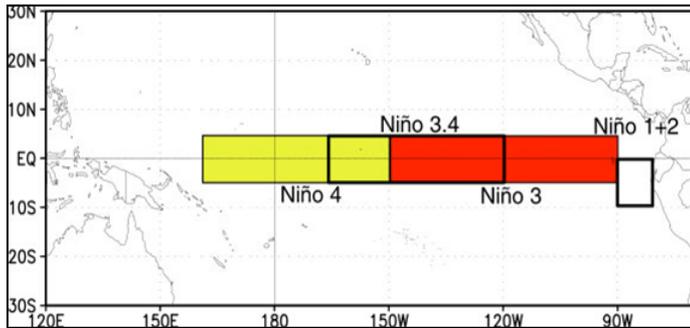
The latest weekly SST departures are:

Niño 4 **0.9°C**

Niño 3.4 **2.0°C**

Niño 3 **2.2°C**

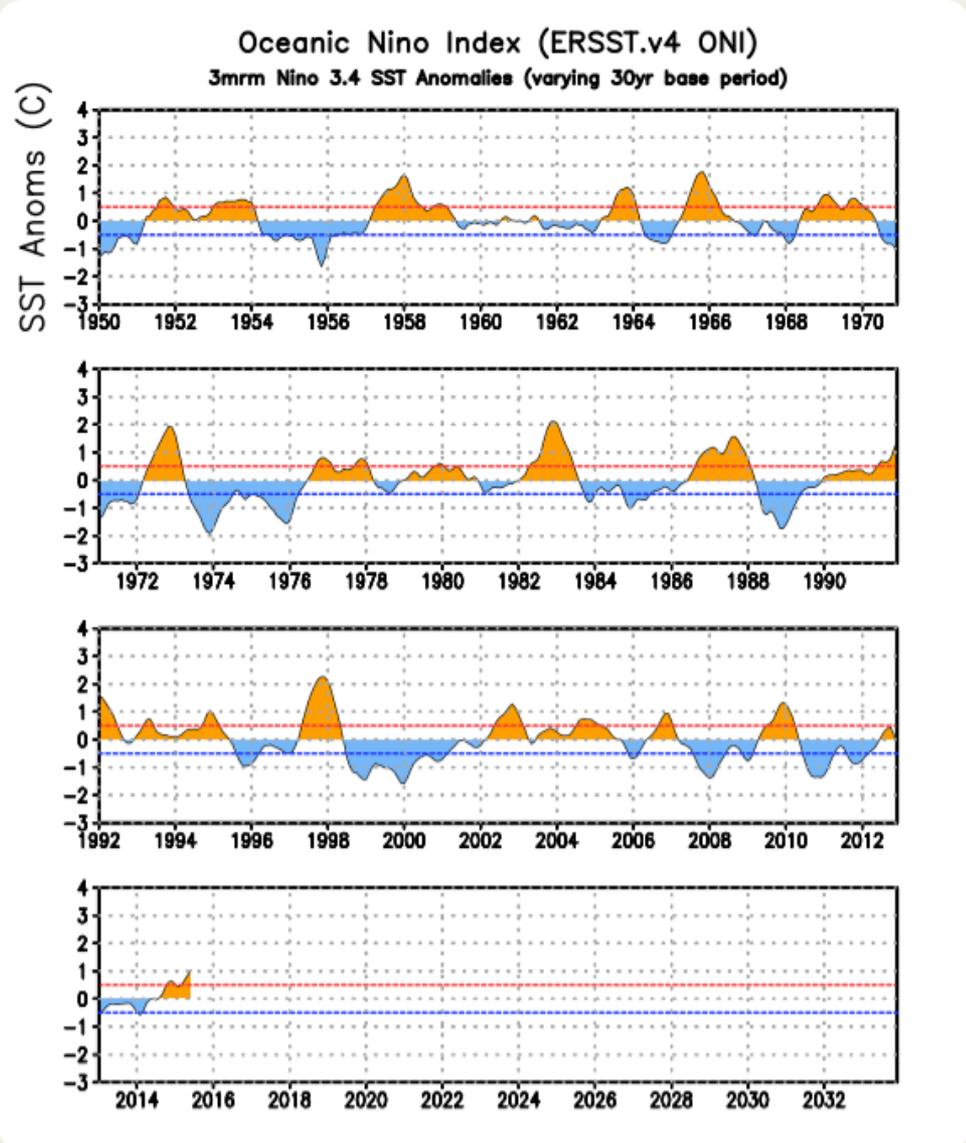
Niño 1+2 **2.0°C**



ONI (°C): Evolution since 1950



The most recent ONI value (May – July 2015) is 1.0°C.



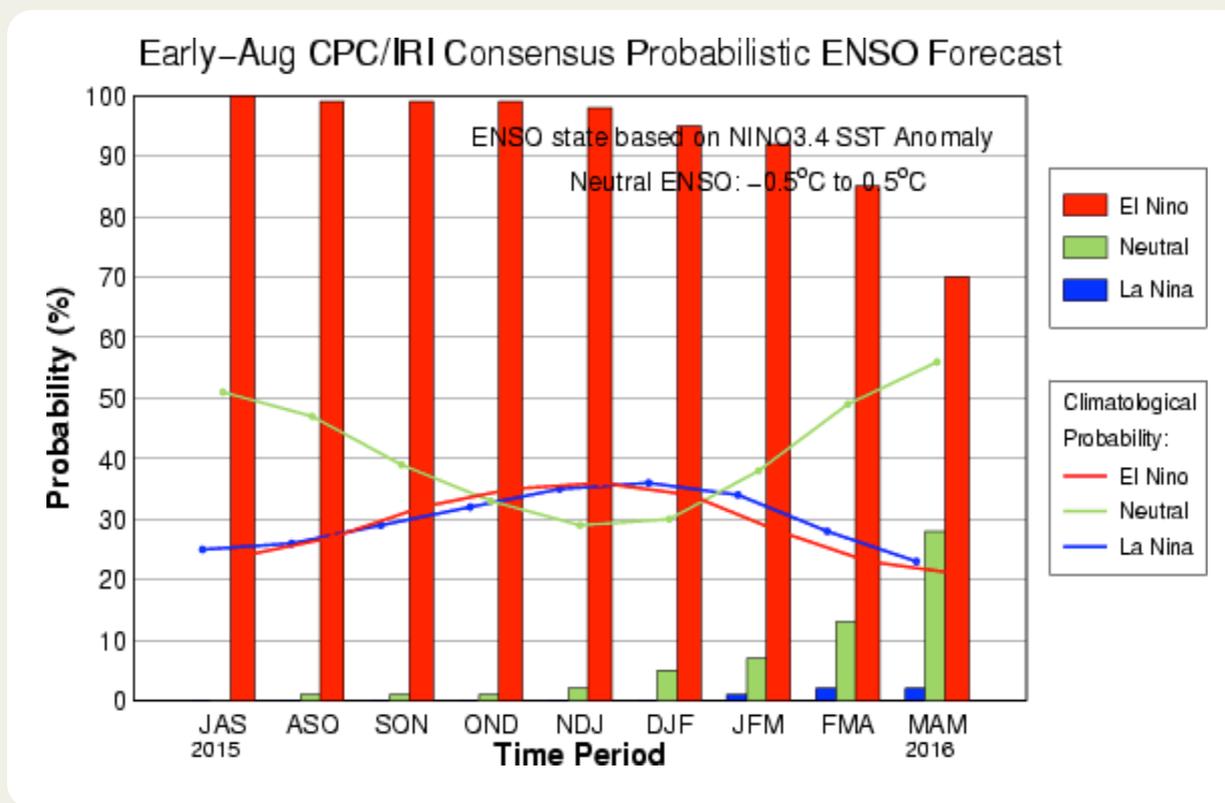
El Niño ↑
Neutral
La Niña ↓

CPC/IRI Probabilistic ENSO Outlook

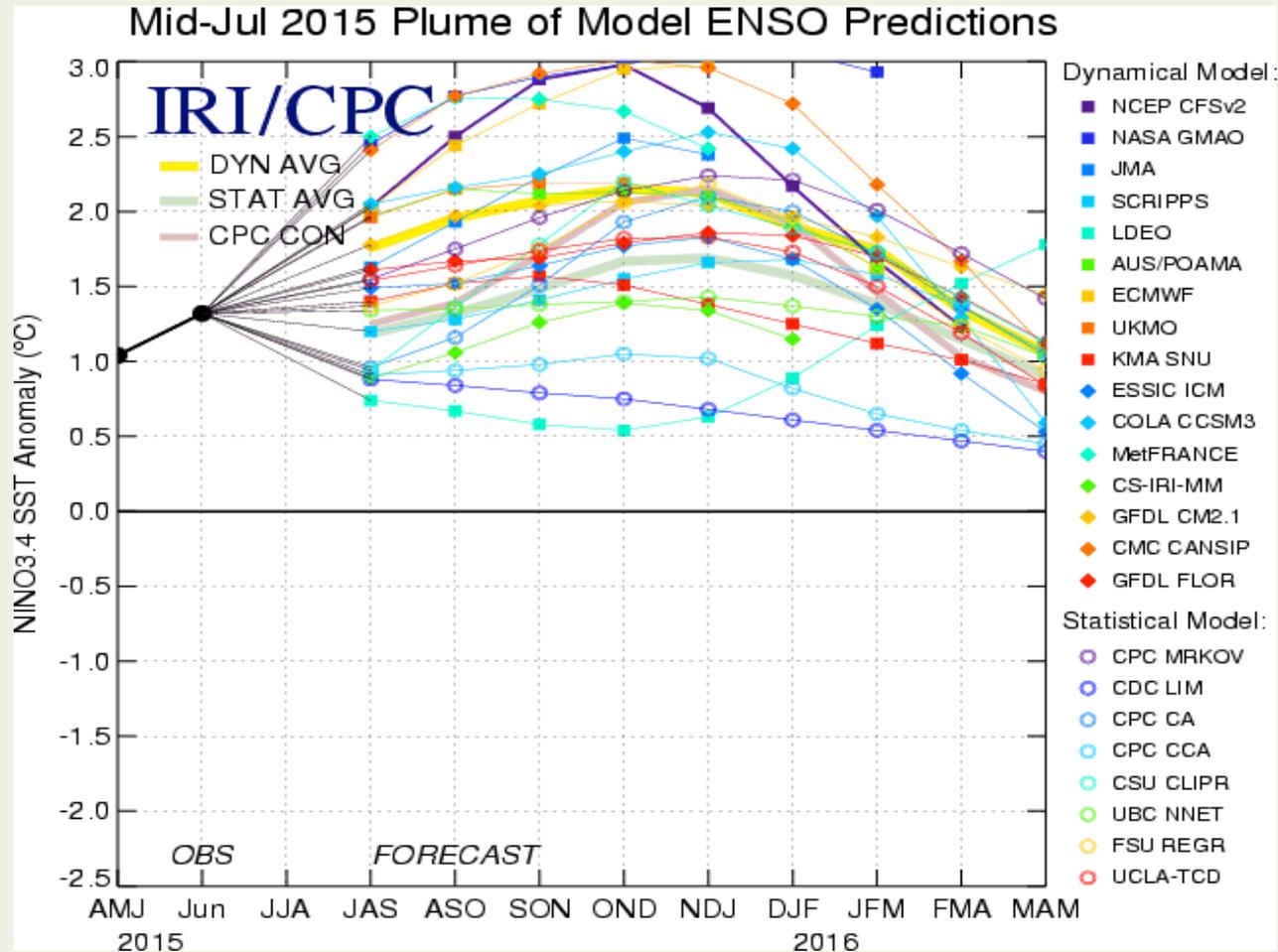
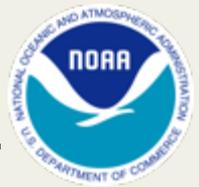


Updated: 13 August 2015

The chance of El Niño is greater than 90% through Northern Hemisphere winter and is near 70% through spring (MAM) 2016.



ENSO Forecasts



Source: NOAA/CPC and the International Research Institute

EL NIÑO/SOUTHERN OSCILLATION (ENSO)

DIAGNOSTIC DISCUSSION

issued by
CLIMATE PREDICTION CENTER/NCEP/NWS
and the International Research Institute for Climate and Society
13 August 2015

ENSO Alert System Status: El Niño Advisory

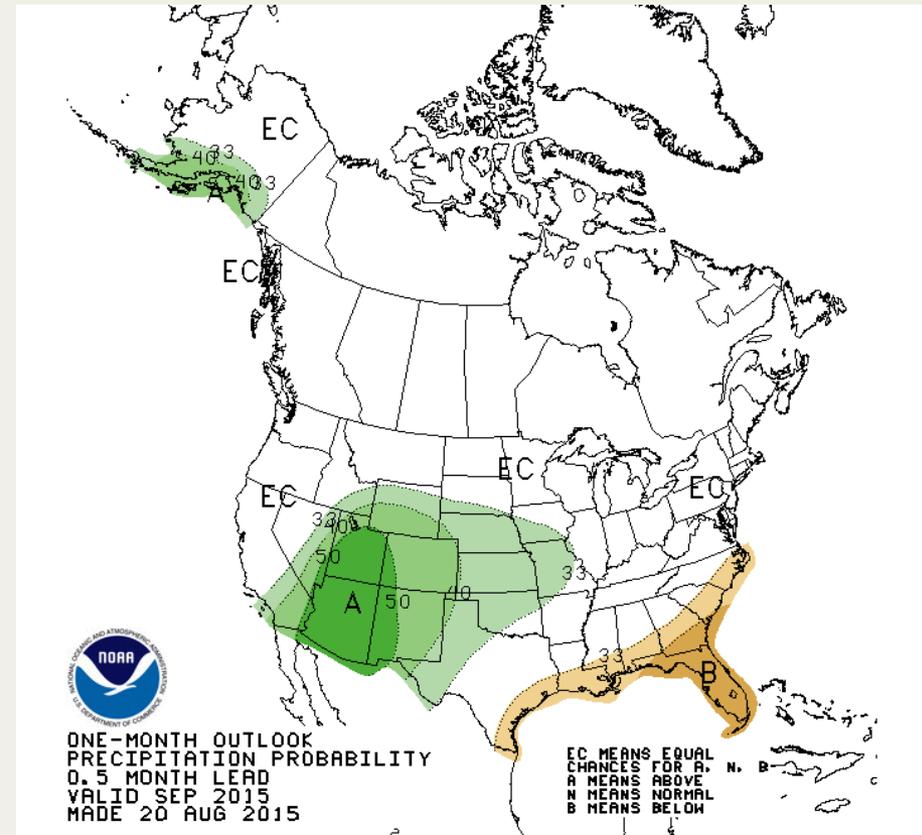
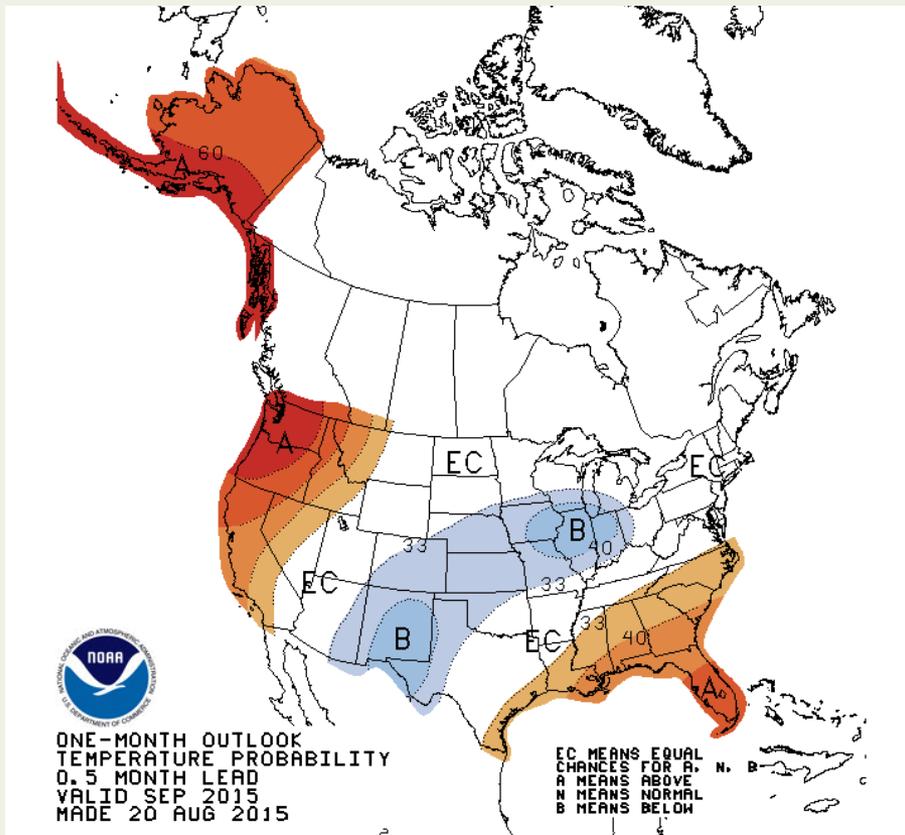
Synopsis: There is a greater than 90% chance that El Niño will continue through Northern Hemisphere winter 2015-16, and around an 85% chance it will last into early spring 2016.

During July, sea surface temperatures (SST) anomalies were near +1.0°C in the central equatorial Pacific Ocean, and in excess of +2.0°C across the eastern Pacific ([Fig. 1](#)). SST anomalies increased in the Niño-3 and Niño-3.4 regions, while the Niño-4 and Niño-1+2 indices decreased slightly during the month ([Fig. 2](#)). Positive subsurface temperature anomalies strengthened in the central and east-central equatorial Pacific during the month ([Fig. 3](#)), in association with the eastward movement of a downwelling oceanic Kelvin wave ([Fig. 4](#)). The atmosphere remained coupled to the oceanic warming, with significant low-level westerly wind anomalies continuing from the western to east-central equatorial Pacific, along with anomalous upper-level easterly winds. Also, the traditional and equatorial Southern Oscillation Index (SOI) were both negative, consistent with enhanced convection over the central and eastern equatorial Pacific and suppressed convection over Indonesia ([Fig. 5](#)). Collectively, these atmospheric and oceanic features reflect a significant and strengthening El Niño.

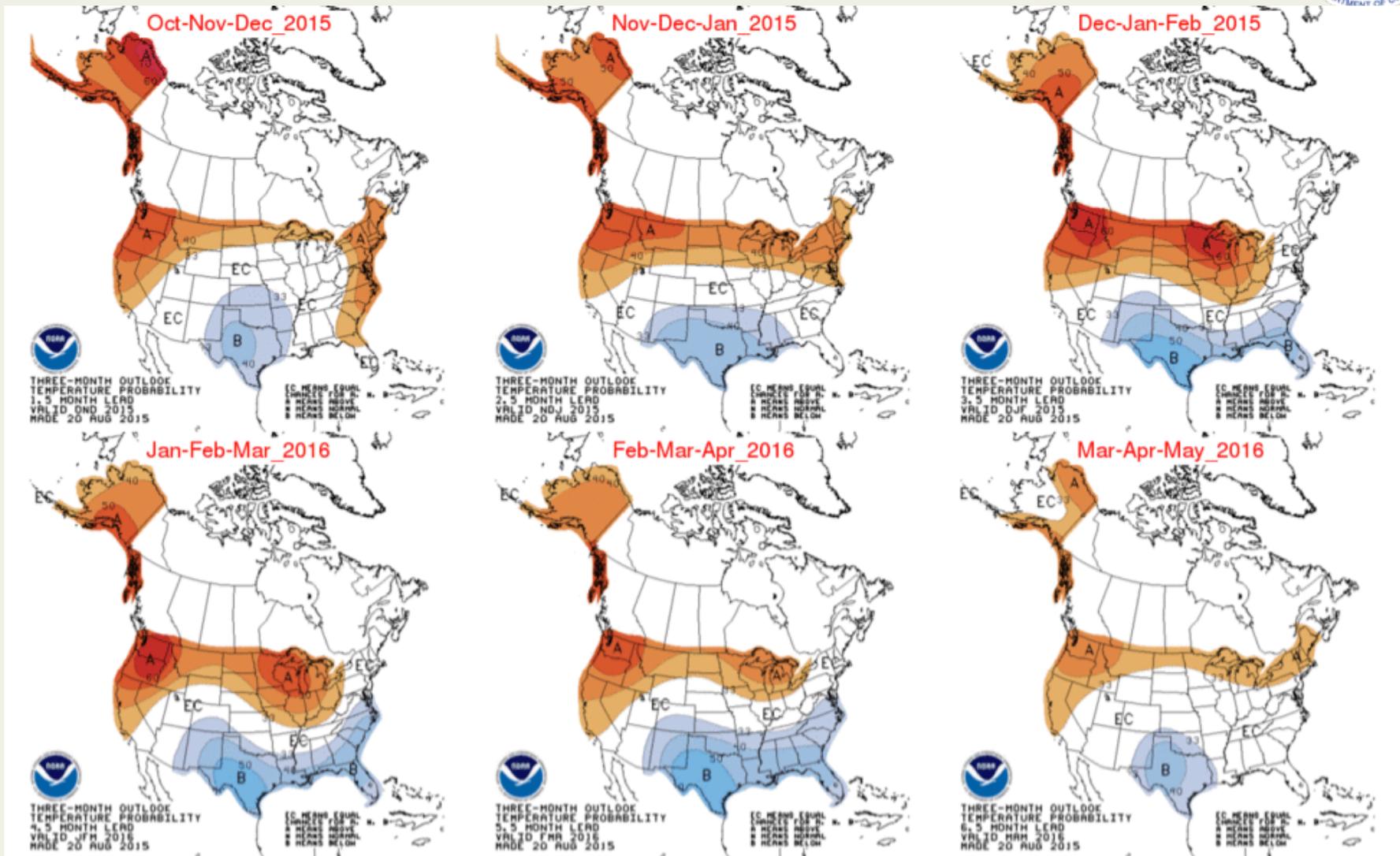
All models surveyed predict El Niño to continue into the Northern Hemisphere spring 2016, and all multi-model averages predict a strong event at its peak in late fall/early winter (3-month values of the Niño-3.4 index of +1.5°C or greater; [Fig. 6](#)). At this time, the forecaster consensus unanimously favors a strong El Niño, with peak 3-month SST departures in the Niño 3.4 region potentially near or exceeding +2.0°C. Overall, there is a greater than 90% chance that El Niño will continue through Northern Hemisphere winter 2015-16, and around an 85% chance it will last into early spring 2016 (click [CPC/IRI consensus forecast](#) for the chance of each outcome for each 3-month period).



September U.S. Forecasts



U.S. Temperature Forecasts

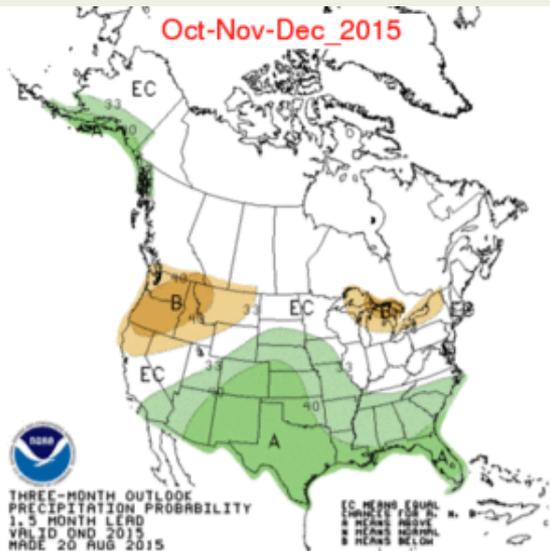


Source: NOAA/CPC

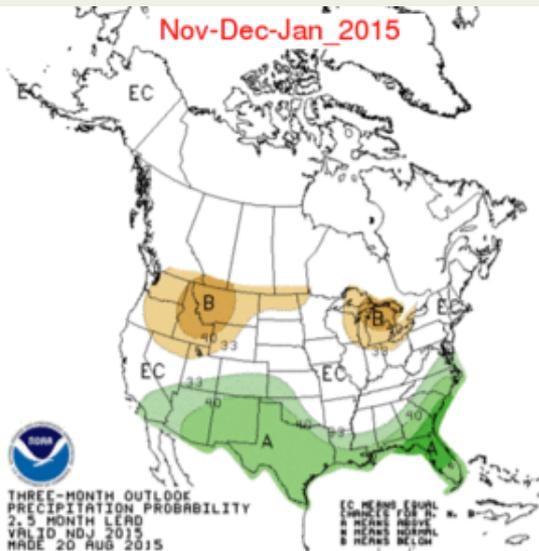
U.S. Precipitation Forecasts



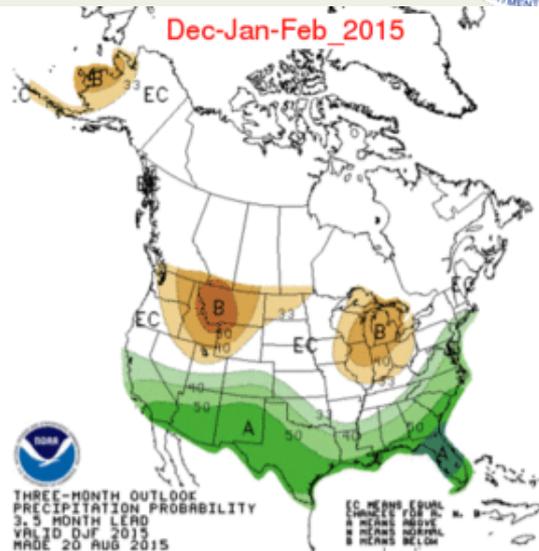
Oct-Nov-Dec_2015



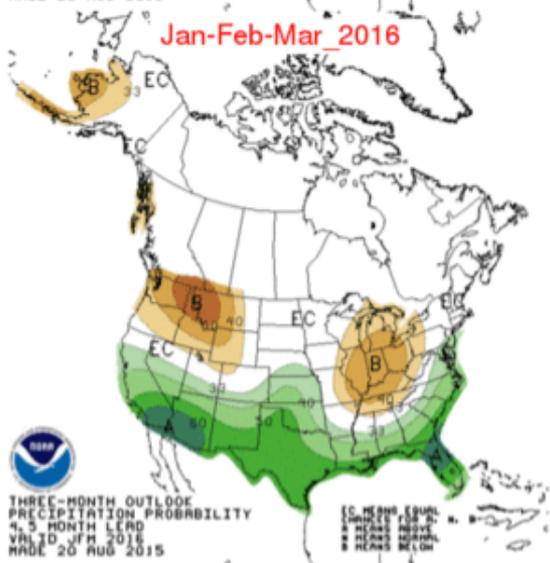
Nov-Dec-Jan_2015



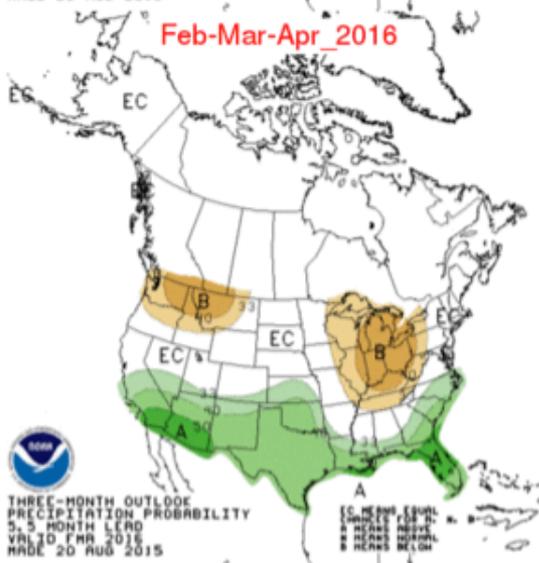
Dec-Jan-Feb_2015



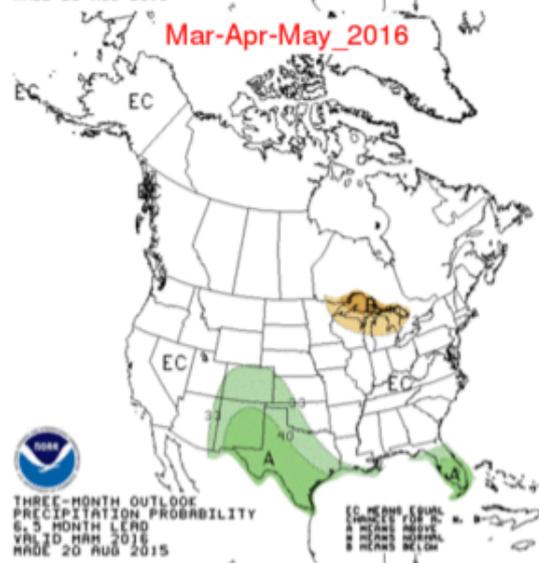
Jan-Feb-Mar_2016



Feb-Mar-Apr_2016



Mar-Apr-May_2016



Discussion



1. Thoughts on the utility of proposed action plan
2. Thoughts on collection and current climate anomalies / impacts?
3. Other observed impacts?
4. Who else should be included on these calls?

Proposed call schedule: noon PT Monday following 3rd Thursday of the month (next call would be September 21)