



NOAA West Watch

Reporting Regional Environmental Conditions & Impacts in the West

October 20, 2020



Call Agenda



- **Project Recap & Updates (Dan McEvoy)**
- Regional Climate and ENSO brief (Dan McEvoy)
- IOOS Nearshore Conditions brief (Jan Newton, Henry Ruhl, Ross Timmerman)
- Discussion - Environmental conditions and impacts reporting (All)
 - Additional impacts to share?

Project Recap and Updates



- NOAA West Watch webinars are run by the Western Regional Climate Center, in partnership with the NOAA Western Regional Collaboration Team (NOAA West) with standing contributions from the three Integrated Ocean Observing System Regional Associations.
- Project Goals:
 - Serve as forum for bringing together NOAA staff and partners from across the agency and region to share information about regional scale environmental observations and impacts on human systems.
 - Help facilitate interdisciplinary connections and the exchange of information among agency staff and partners on regional climatic and oceanic conditions, particularly departures from normal.

These webinars are not formal public releases of data.

Project Recap and Updates



- The Western Regional Climate Center has agreed to provide funding to support continued quarterly webinars in 2020 and will be reassessed again at the end of the year.
- Request: If you find these webinars helpful, or if you have ideas of in-region entities that may be open to taking on this webinar please let me know: (mcevoyd@dri.edu).

Call Agenda



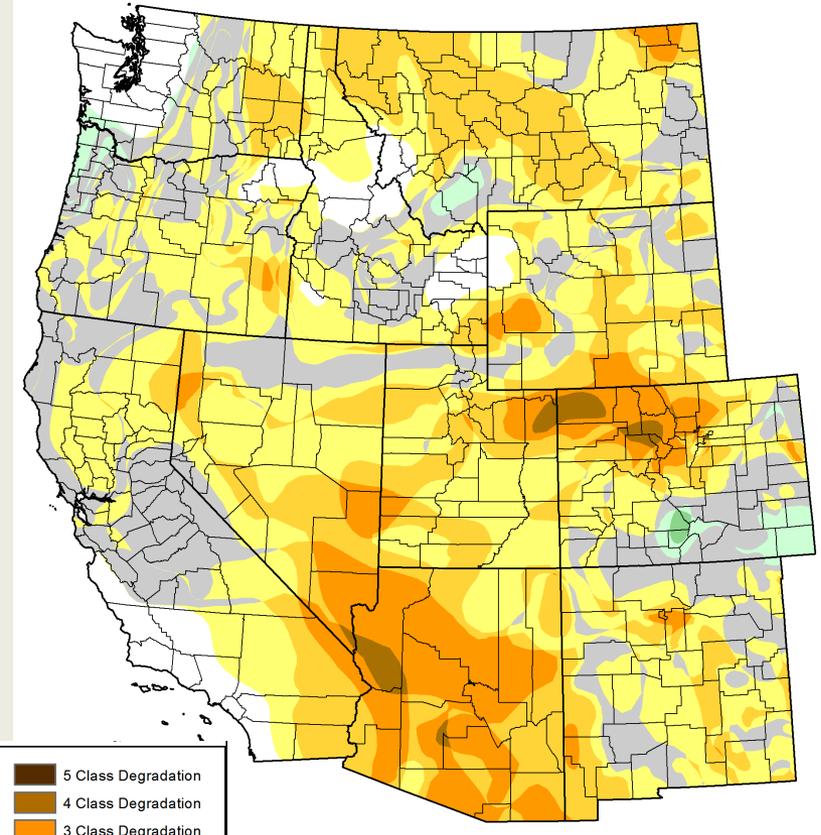
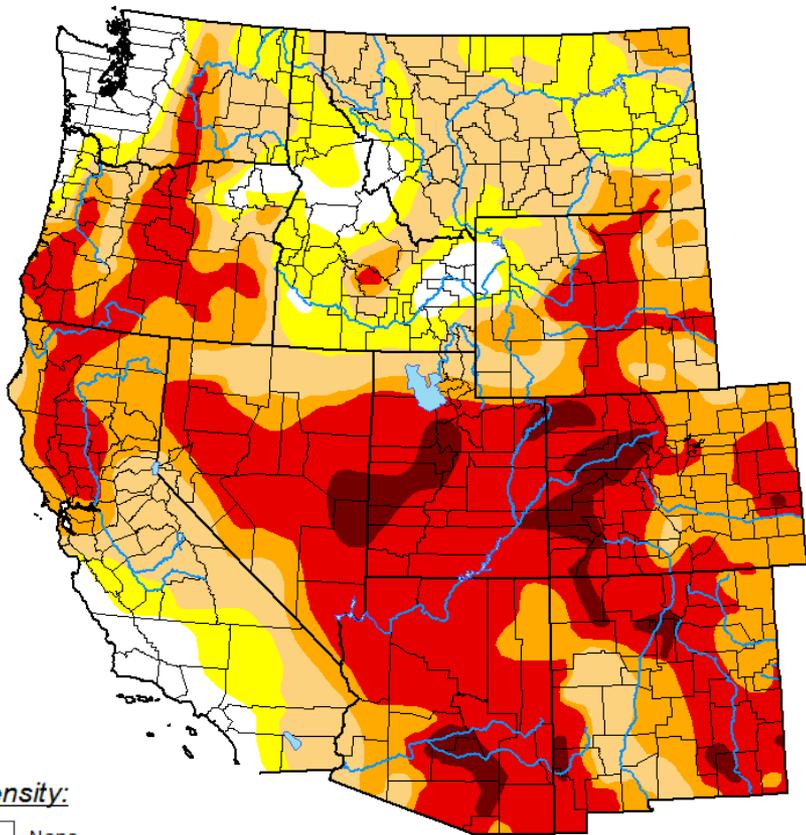
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Widespread Western US Drought



US Drought Monitor
October 13, 2020

US Drought Monitor 3 Month Change
October 13, 2020



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

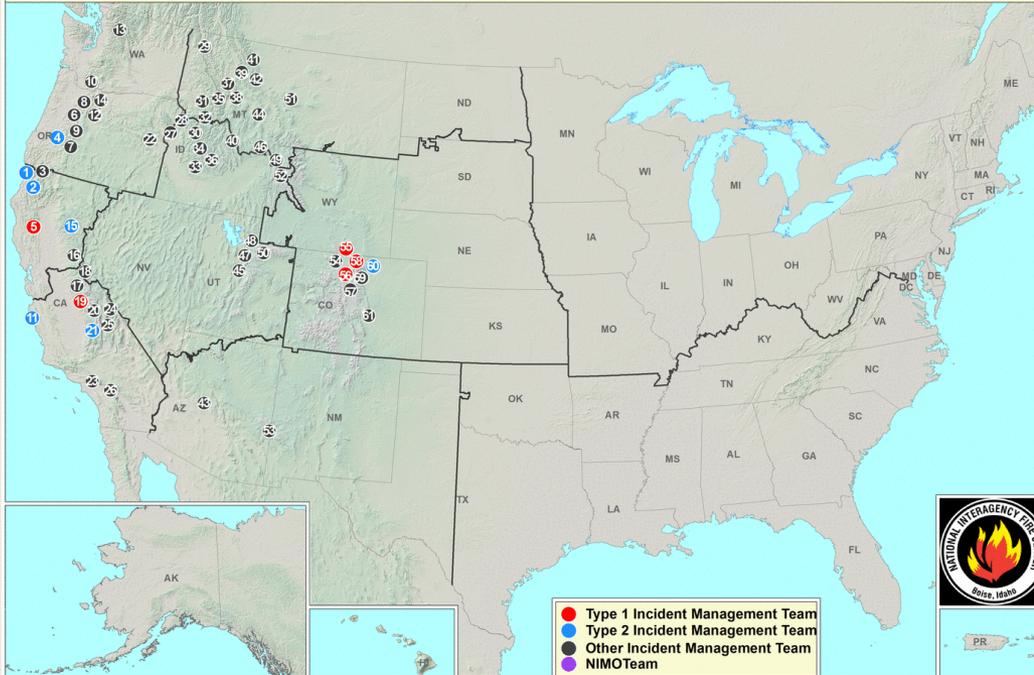
- 80% in drought (D1-D4)
- 5% in exceptional drought (D4)

- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

Current Large Wildfires



Current Large Incidents October 19, 2020



- | | | | |
|----------------------|-------------------|----------------|---------------------|
| 1 SLATER | 17 BLUEJAY | 33 GROUSE | 45 LONE STAR |
| 2 RED SALMON COMPLEX | 18 WOLF | 34 TRAP | 50 EAST FORK |
| 3 DEVIL | 19 CREEK | 35 MARION | 51 YOGO |
| 4 ARCHIE CREEK | 20 MORaine | 36 MERIDIAN | 52 PILGRIM CREEK 1 |
| 5 AUGUST COMPLEX | 21 SQF COMPLEX | 37 BEAVER | 53 COW CANYON |
| 6 BEACHIE CREEK | 22 ROSE CREEK | 38 CINNABAR | 54 MIDDLE FORK |
| 7 THIELSEN | 23 BOBCAT | 39 LION CREEK | 55 MULLEN |
| 8 RIVERSIDE | 24 BULLFROG | 40 BEAR CREEK | 56 EAST TROUBLESOME |
| 9 OR-WIF-200430 | 25 RATTLESNAKE | 41 DRUMMING | 57 WILLIAMS FORK |
| 10 BIG HOLLOW | 26 EL DORADO | 42 GARNET | 58 CAMERON PEAK |
| 11 DOLAN | 27 WOODHEAD | 43 HORSE | 59 LEFTHAND |
| 12 LIONSHEAD | 28 BRYAN MOUNTAIN | 44 STATE CREEK | 60 CALWOOD |
| 13 DOWNNEY CREEK | 29 CALLAHAN | 45 WILLIAM | 61 WILDHORSE |
| 14 WHITE RIVER | 30 BUCK | 46 LOBO MESA | |
| 15 NORTH COMPLEX | 31 DOUBLE | 47 RANGE | |
| 16 FORK | 32 SHISSLER | 48 FIRE CANYON | |

Climate plays a big role in setting up seasonal wildfire danger

Weather events (e.g., lightning, downslope winds) can start fires and drive fire behavior



Wildfire Setup, Climate: Antecedent Conditions

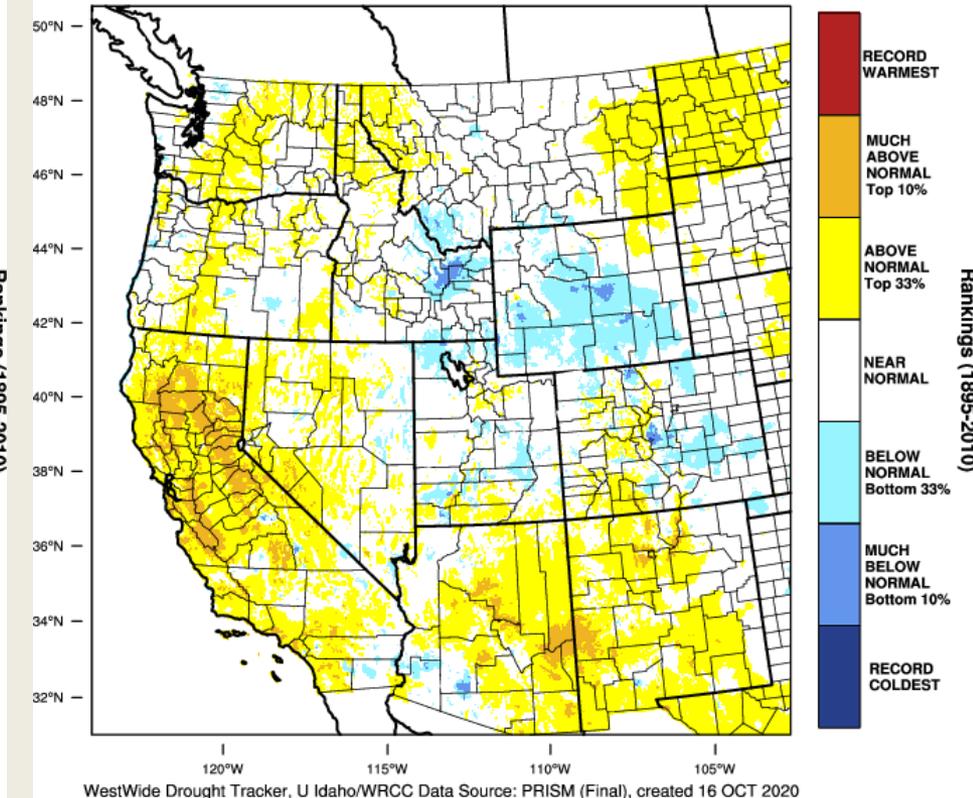
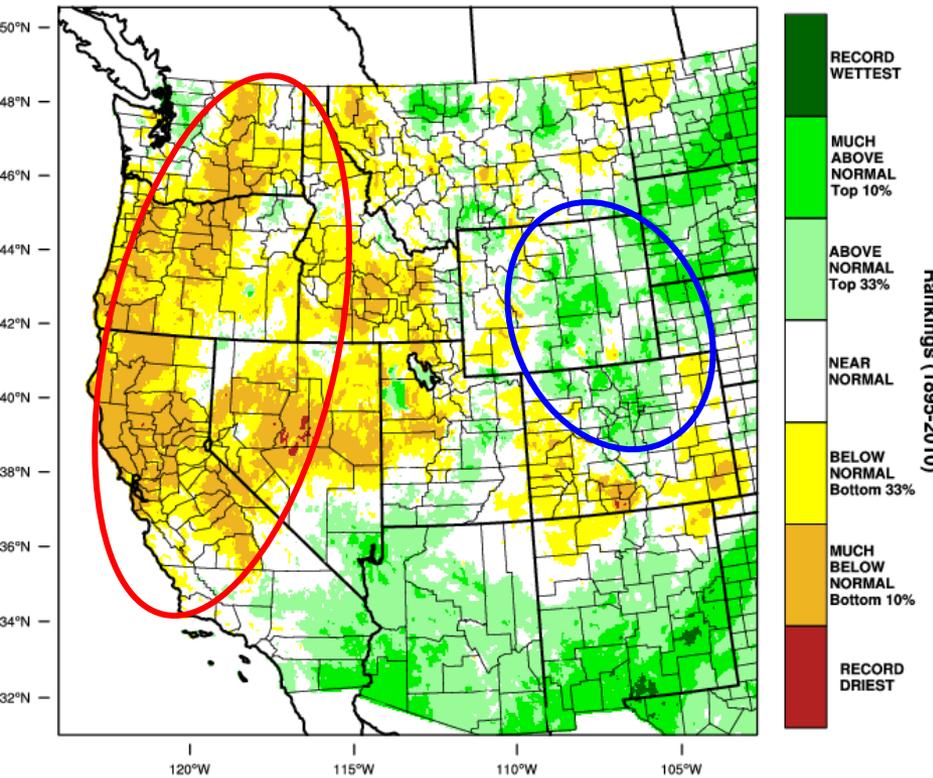


Total Precipitation Percentile October 2019-March 2020

Mean Temperature Percentile October 2019-March 2020

Western United States - Precipitation
October-March 2020 Percentile

Western United States - Mean Temperature
October-March 2020 Percentile



Wildfire Setup, Climate: July-September Extremes

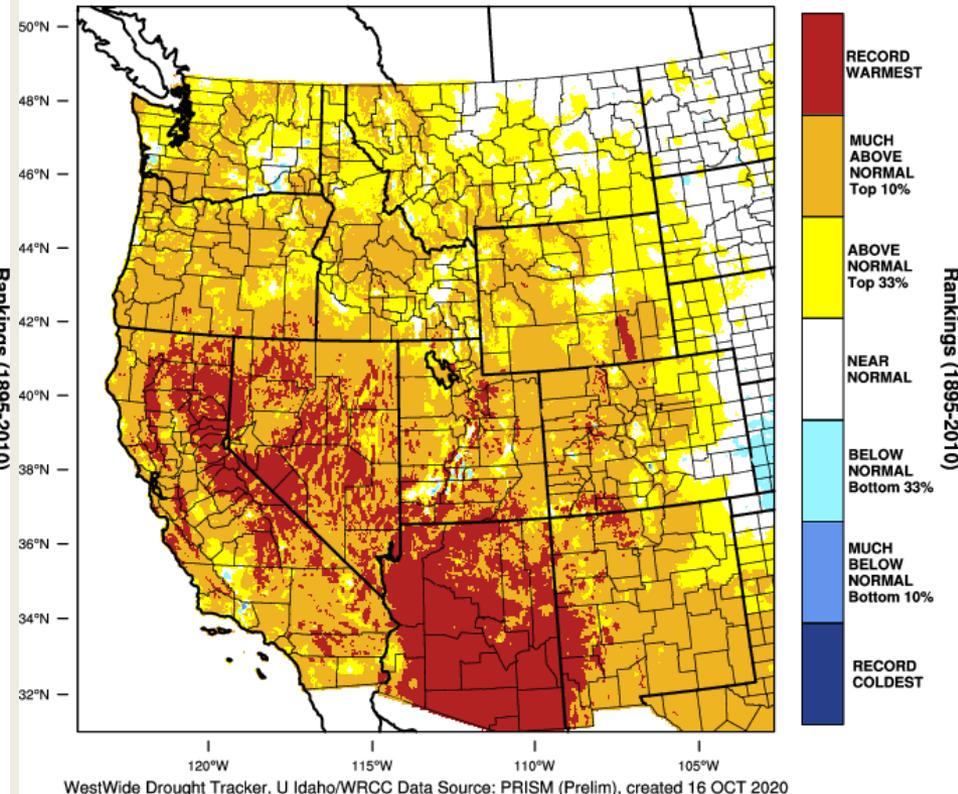
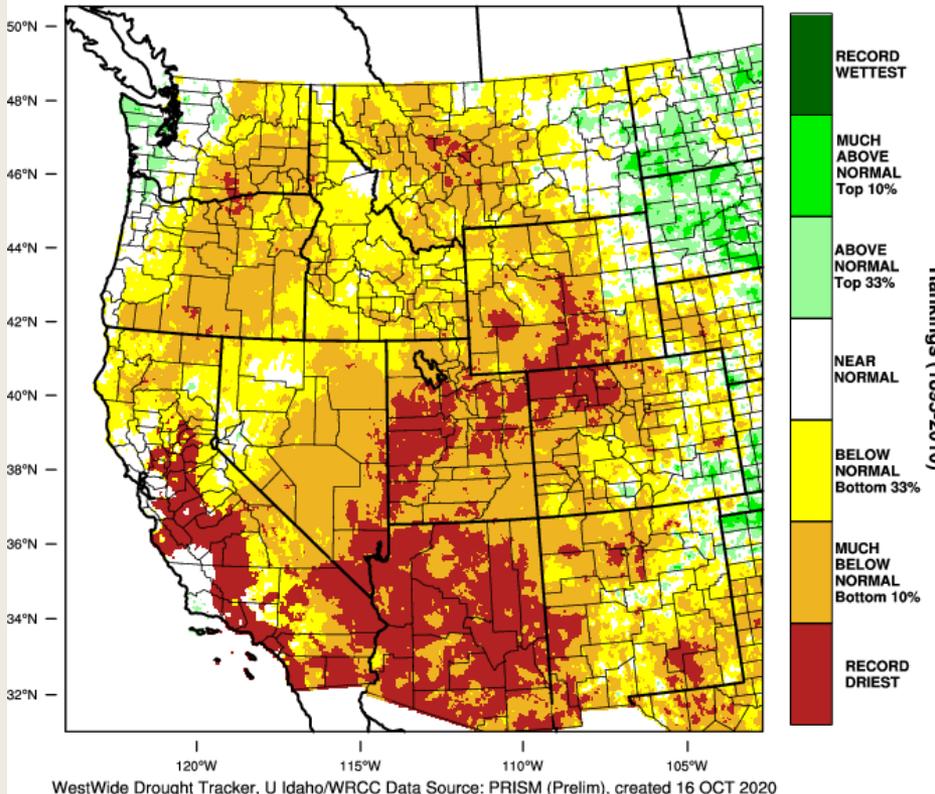


Total Precipitation Percentile July-September 2020

Mean Temperature Percentile July-September 2020

Western United States - Precipitation
July-September 2020 Percentile

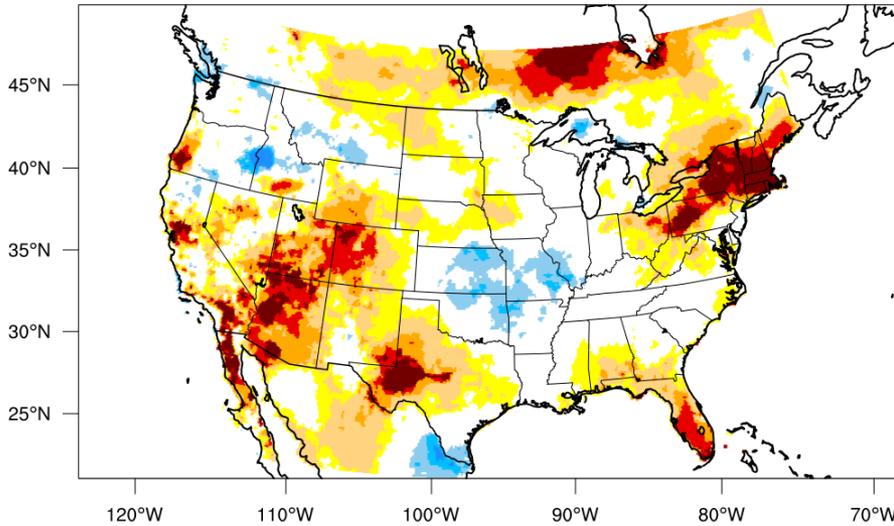
Western United States - Mean Temperature
July-September 2020 Percentile



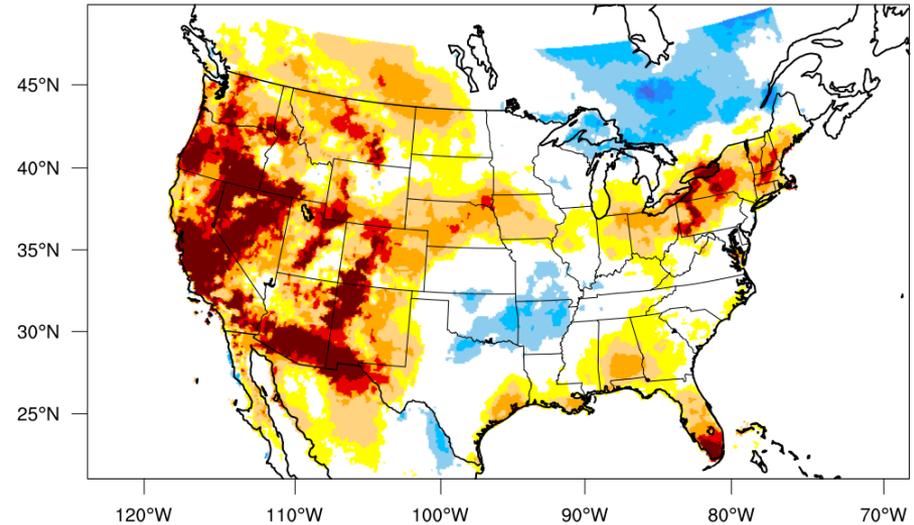
Wildfire Setup, Climate: Evaporative Demand Drought Index



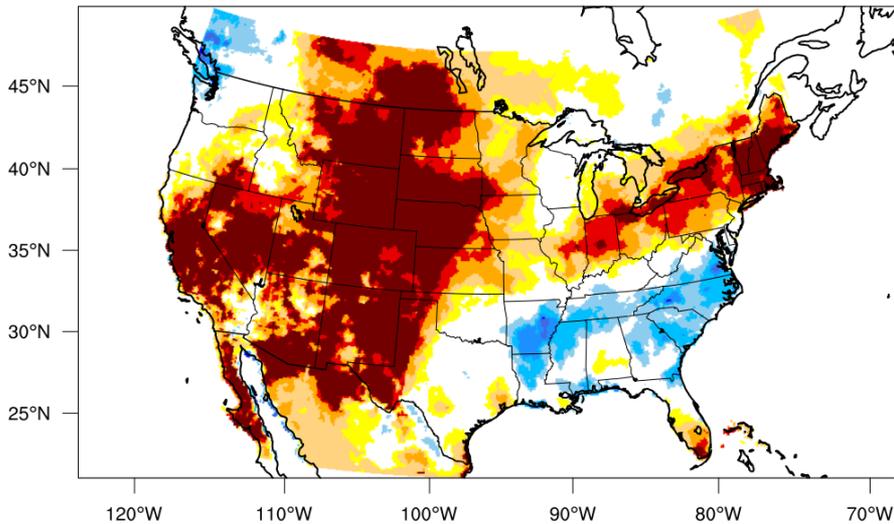
1-month EDDI categories for August 15, 2020



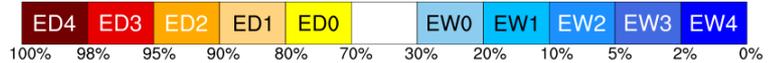
1-month EDDI categories for September 15, 2020



1-month EDDI categories for October 14, 2020



Drought categories



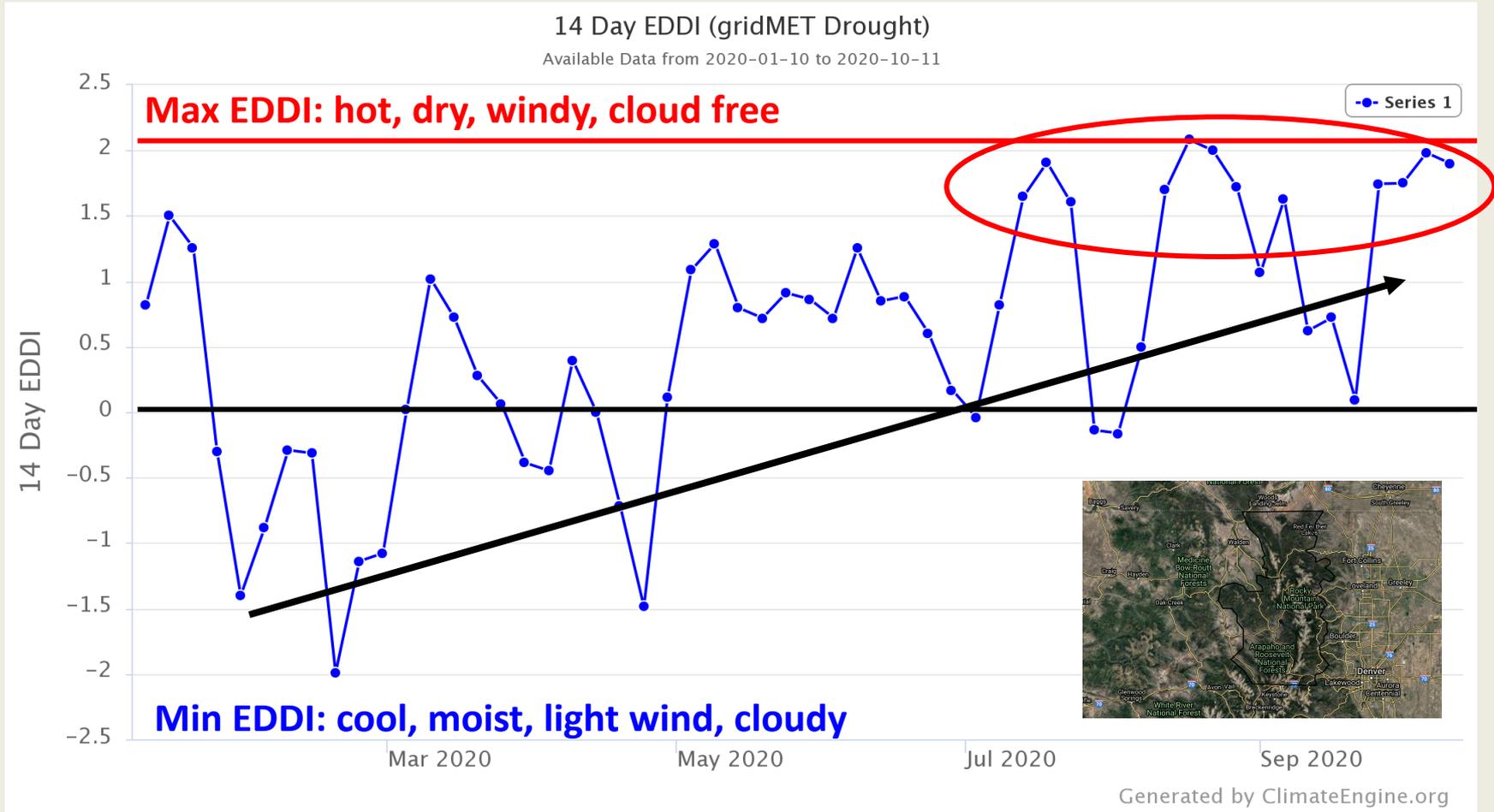
(EDDI-percentile category breaks: 100% = driest; 0% = wettest)

- EDDI inputs: temperature, wind, humidity, solar radiation
- Vapor pressure deficit part of EDDI calculations
- **Atmospheric Thirst**

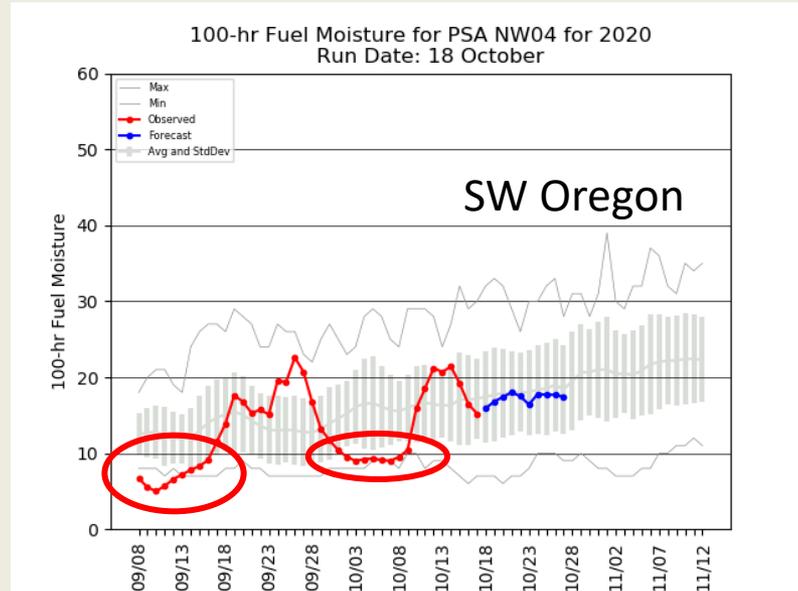
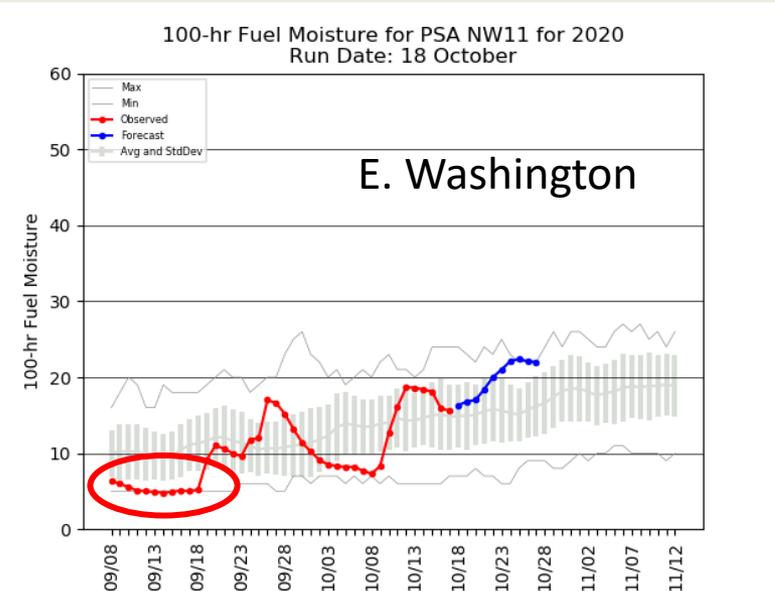
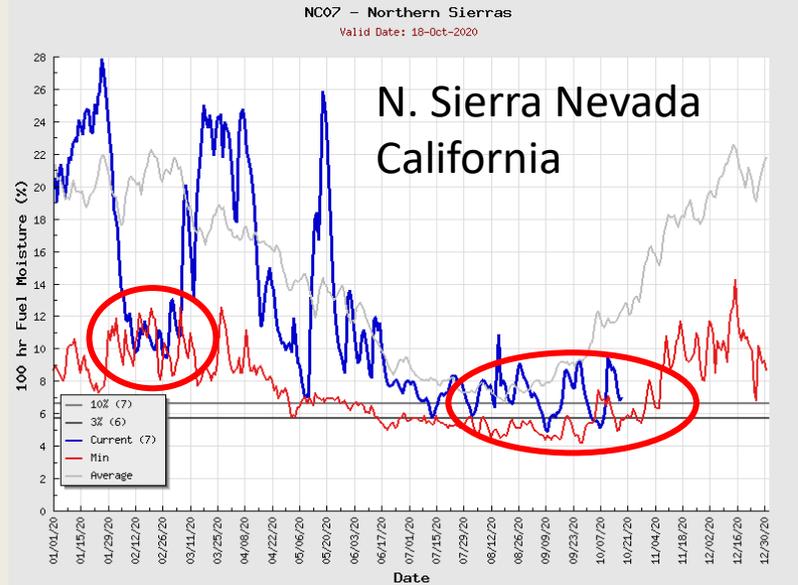
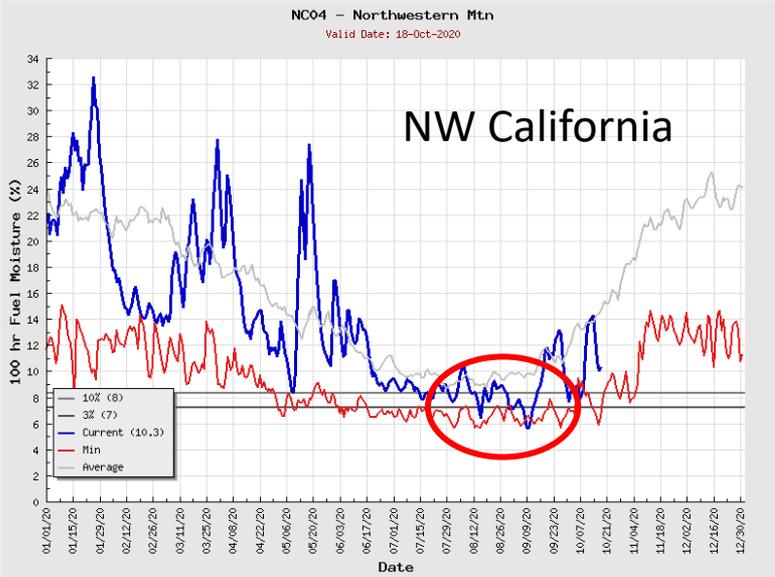
Wildfire Setup, Climate: Evaporative Demand Drought Index



North Front Range Mountains Predictive Service Area Pentad time series



Wildfire Setup: Fuel Moisture



California Lightning Siege: August 14-16



Mitchell's Cove, Santa Cruz, CA



Photo: Shmuel Thaler/Santa Cruz Sentinel

August 24, 2020

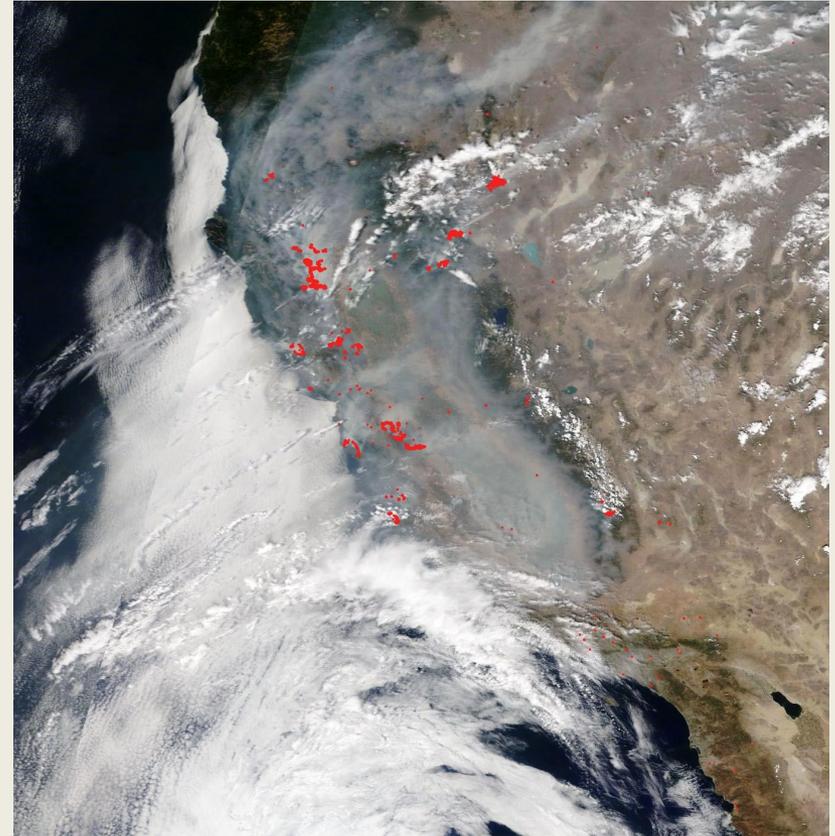


Image: NASA Worldview

- 8,532 lightning strikes
- 362 ignitions
- August Complex starts: now California's large fire

2020 Fire Season Stats



Nationwide through 10/19:

Fires:

- **2020:** **46,148**
- 2010-2019 average: 50,532

Acres burned:

- **2020:** **8,404,047**
- 2010-2019 average: 6,340,457

Source: NIFC

States with records set in 2020 for largest wildfire: California, Colorado, Washington

California:

Number of Fires and Acres:

Interval	Fires	Acres
January 1, 2020 through October 11, 2020	6,899	1,435,639
January 1, 2019 through October 11, 2019	4,668	52,695
5-Year Average (same interval)	5,035	396,491
2020 Combined YTD (CALFIRE & US Forest Service)	8,486	4,105,786

California Top 20 Largest Wildfires



Top 20 Largest California Wildfires

	<i>FIRE NAME (CAUSE)</i>	<i>DATE</i>	<i>COUNTY</i>	<i>ACRES</i>	<i>STRUCTURES</i>	<i>DEATHS</i>
1	AUGUST COMPLEX (<i>Under Investigation</i>)*	August 2020	Mendocino, Humboldt, Trinity, Tehama, Glenn, Lake, & Colusa	1,029,697	935	1
2	MENDOCINO COMPLEX (<i>Under Investigation</i>)	July 2018	Colusa, Lake, Mendocino & Glenn	459,123	280	1
3	SCU LIGHTNING COMPLEX (<i>Under Investigation</i>)*	August 2020	Stanislaus, Santa Clara, Alameda, Contra Costa, & San Joaquin	396,624	222	0
4	LNU LIGHTNING COMPLEX (<i>Under Investigation</i>)*	August 2020	Sonoma, Lake, Napa, Yolo & Solano	363,220	1,491	6
5	CREEK FIRE (<i>Under Investigation</i>)*	September 2020	Fresno & Madera	344,042	856	0
6	NORTH COMPLEX (<i>Under Investigation</i>)*	August 2020	Butte, Plumas & Yuba	318,930	2,352	15
7	THOMAS (<i>Powerlines</i>)	December 2017	Ventura & Santa Barbara	281,893	1,063	2
8	CEDAR (<i>Human Related</i>)	October 2003	San Diego	273,246	2,820	15
9	RUSH (<i>Lightning</i>)	August 2012	Lassen	271,911 CA / 43,666 NV	0	0
10	RIM (<i>Human Related</i>)	August 2013	Tuolumne	257,314	112	0
11	ZACA (<i>Human Related</i>)	July 2007	Santa Barbara	240,207	1	0
12	CARR (<i>Human Related</i>)	July 2018	Shasta County & Trinity	229,651	1,614	8
13	MATILIJA (<i>Undetermined</i>)	September 1932	Ventura	220,000	0	0
14	WITCH (<i>Powerlines</i>)	October 2007	San Diego	197,990	1,650	2
15	KLAMATH THEATER COMPLEX (<i>Lightning</i>)	June 2008	Siskiyou	192,038	0	2
16	MARBLE CONE (<i>Lightning</i>)	July 1977	Monterey	177,866	0	0
17	LAGUNA (<i>Powerlines</i>)	September 1970	San Diego	175,425	382	5
18	SQF COMPLEX (<i>Lightning</i>)	August 2020	Tulare	167,913	228	0
19	BASIN COMPLEX (<i>Lightning</i>)	June 2008	Monterey	162,818	58	0
20	DAY FIRE (<i>Human Related</i>)	September 2006	Ventura	162,702	11	0

California Top 20 Most Destructive Wildfires



Top 20 Most Destructive California Wildfires

	FIRE NAME (CAUSE)	DATE	COUNTY	ACRES	STRUCTURES	DEATHS
1	CAMP FIRE (Powerlines)	November 2018	Butte	153,336	18,804	85
2	TUBBS (Electrical)	October 2017	Napa & Sonoma	36,807	5,636	22
3	TUNNEL - Oakland Hills (Rekindle)	October 1991	Alameda	1,600	2,900	25
4	CEDAR (Human Related)	October 2003	San Diego	273,246	2,820	15
5	NORTH COMPLEX (Under Investigation)*	August, 2020	Butte, Plumas, & Yuba	318,930	2,352	15
6	VALLEY (Electrical)	September 2015	Lake, Napa & Sonoma	76,067	1,955	4
7	WITCH (Powerlines)	October 2007	San Diego	197,990	1,650	2
8	WOOLSEY (Under Investigation)	November 2018	Ventura	96,949	1,643	3
9	CARR (Human Related)	July 2018	Shasta County, Trinity	229,651	1,614	8
10	GLASS FIRE (Under Investigation)*	September 2020	Napa & Sonoma	67,484	1,520	0
11	LNU LIGHTNING COMPLEX (Under Investigation)*	August 2020	Lake, Napa, Sonoma, Yolo & Solano	363,220	1,491	6
12	CZU LIGHTNING COMPLEX (Lightning)	August 2020	Santa Cruz, San Mateo	86,509	1,490	1
13	NUNS (Powerline)	October 2017	Sonoma	54,382	1,355	3
14	THOMAS (Powerline)	December 2017	Ventura & Santa Barbara	281,893	1,063	2
15	OLD (Human Related)	October 2003	San Bernardino	91,281	1,003	6
16	JONES (Undetermined)	October 1999	Shasta	26,200	954	1
17	AUGUST COMPLEX (Under Investigation)*	September 2015	Mendocino, Humboldt, Trinity, Tehama, Glenn, Lake, & Colusa	1,029,697	935	1
18	BUTTE (Powerlines)	September 2015	Amador & Calaveras	70,868	921	2
19	CREEK FIRE (Under Investigation)*	September 2020	Fresno & Madera	344,042	856	0
20	ATLAS (Powerline)	October 2017	Napa & Solano	51,624	783	6

Colorado's Largest Wildfires



Year ↕	Size ▾	Name ↕
2020	203,253 acres (82,254 ha) ^[46]	Cameron Peak Fire
2020	139,007 acres (56,254 ha)	Pine Gulch fire
2002	137,760 acres (55,750 ha)	Hayman Fire
2013	110,405 acres (44,679 ha) ^{[32][33][34][35]}	West Fork Fire Complex
2018	108,045 Acres	Spring Creek Fire
2012	87,284 acres (35,323 ha)	High Park Fire
2002	71,739 acres (29,032 ha)	Missionary Ridge Fire
2018	54,129 Acres	416 & Burro Fire Complex
2008	46,612 acres (18,863 ha)	Bridger fire
2011	46,257 acres (18,720 ha)	Bear Springs Complex fire
2012	45,000 acres (18,000 ha) ^[26]	Last Chance fire
2018	42,795 acres (17,319 ha)	MM 117 fire
2016	38,380 acres (15,530 ha)	Beaver Creek fire
2018	36,520 acres (14,780 ha)	Bull Draw fire
2018	33,609 acres (13,601 ha)	Badger Hole fire
2017	32,564 acres (13,178 ha)	Logan fire
2020	32,431 acres (13,124 ha)	Grizzly Creek fire

Cameron Peak Fire, Friday, October 16, 2020

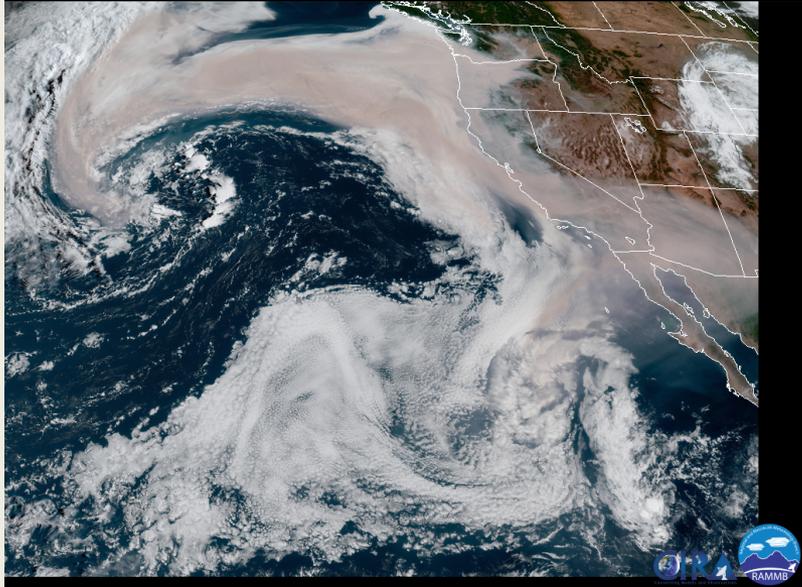


Photo: Bethany Baker/The Coloradoan

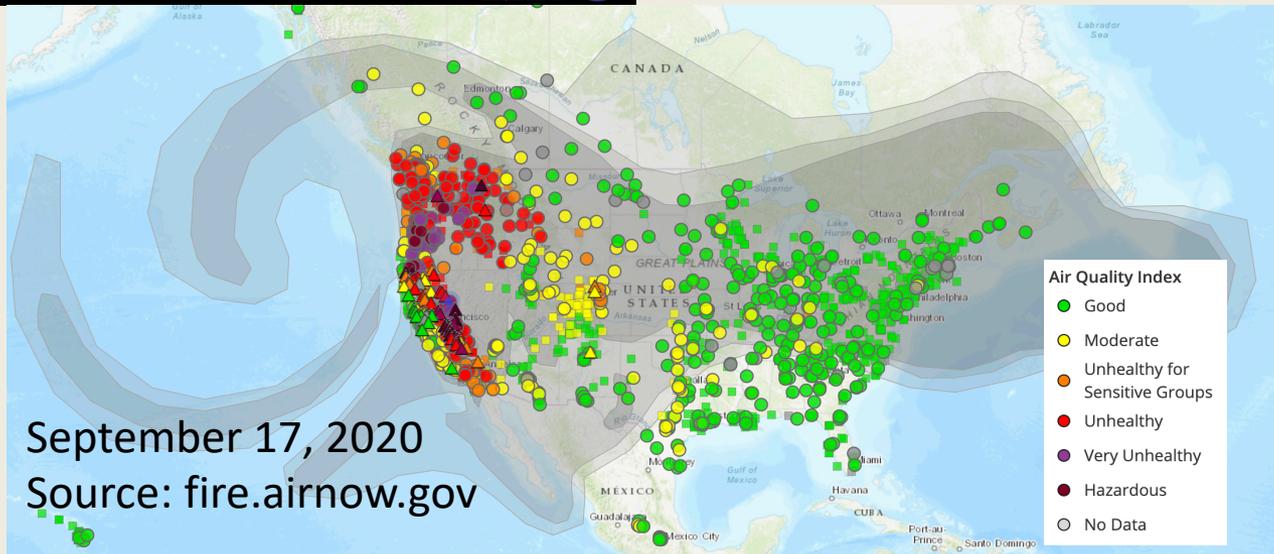
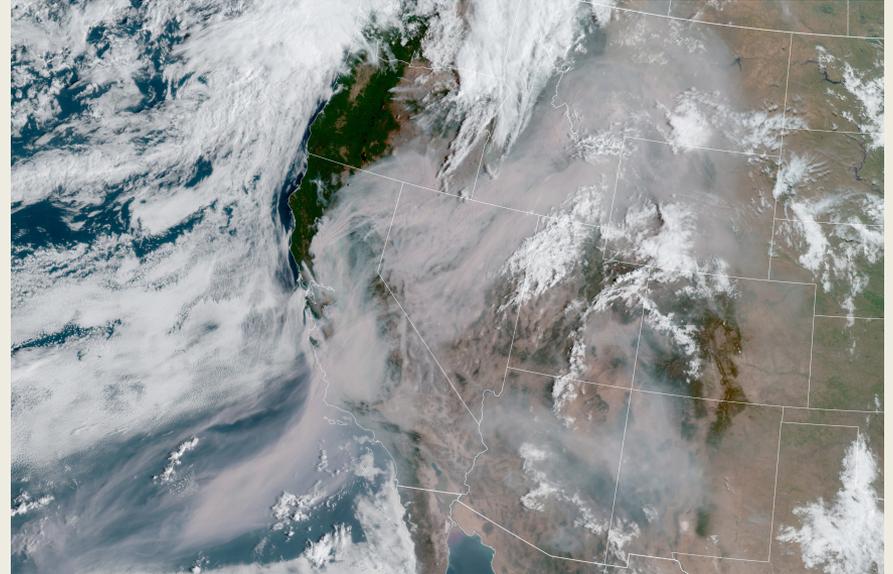
Smoke Impacts



September 11, 2020



August 20, 2020



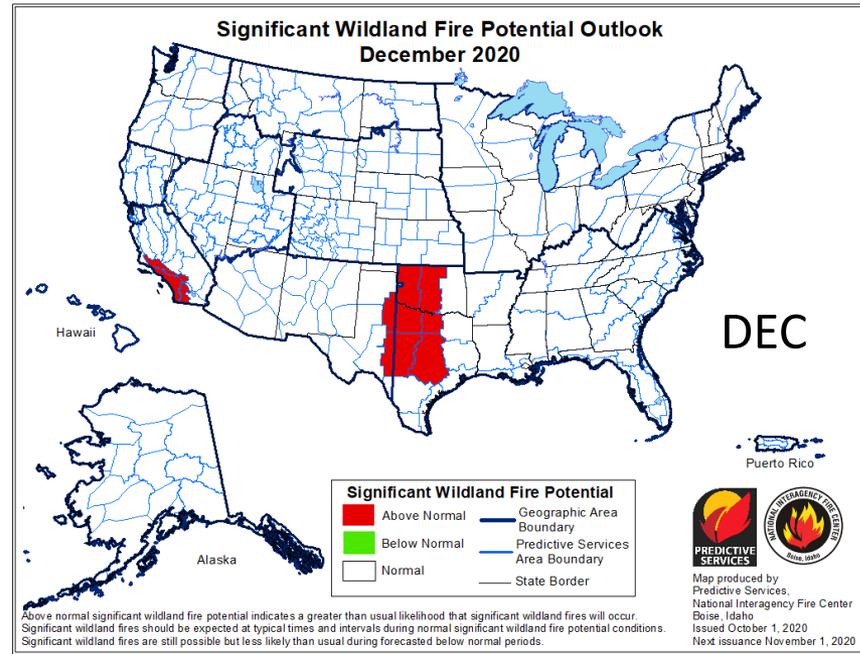
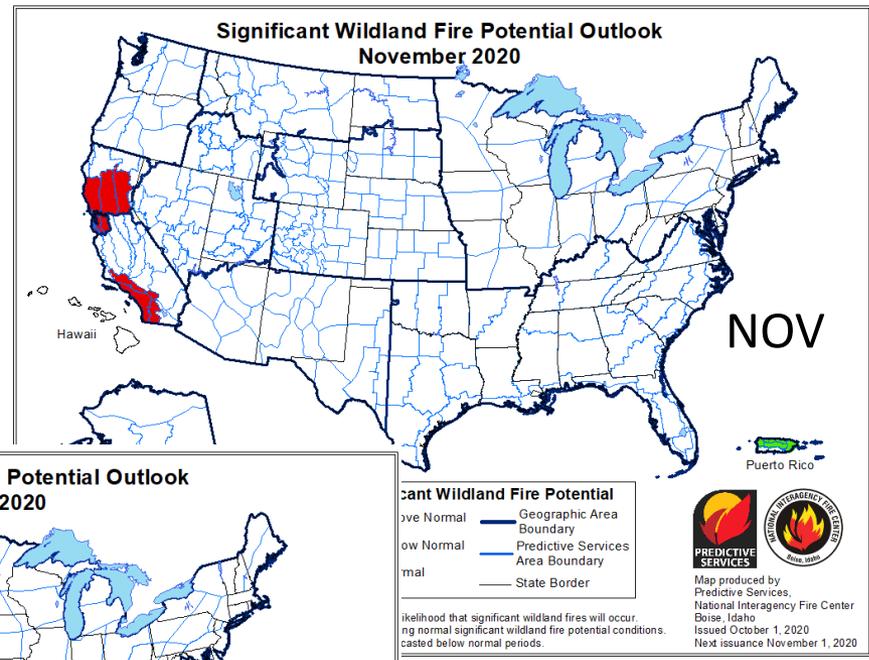
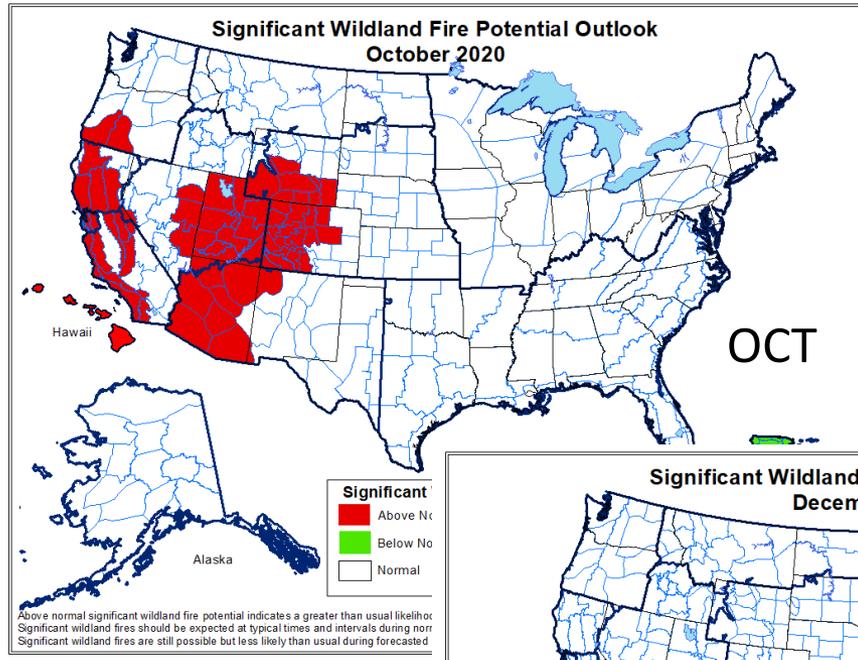
Creek Fire, California, September 5, 2020



- Not all fires are “bad” fire
- Post-fire analyses for 2020 are likely to reveal that not all of the area burned was harmful to the ecosystem (i.e., low severity burns). –Tim Brown, WRCC

Photo: Ryan Waugh, Incident Management Team

Significant Wildland Fire Potential Outlook





ENSO Alert System Status: **La Niña Advisory**

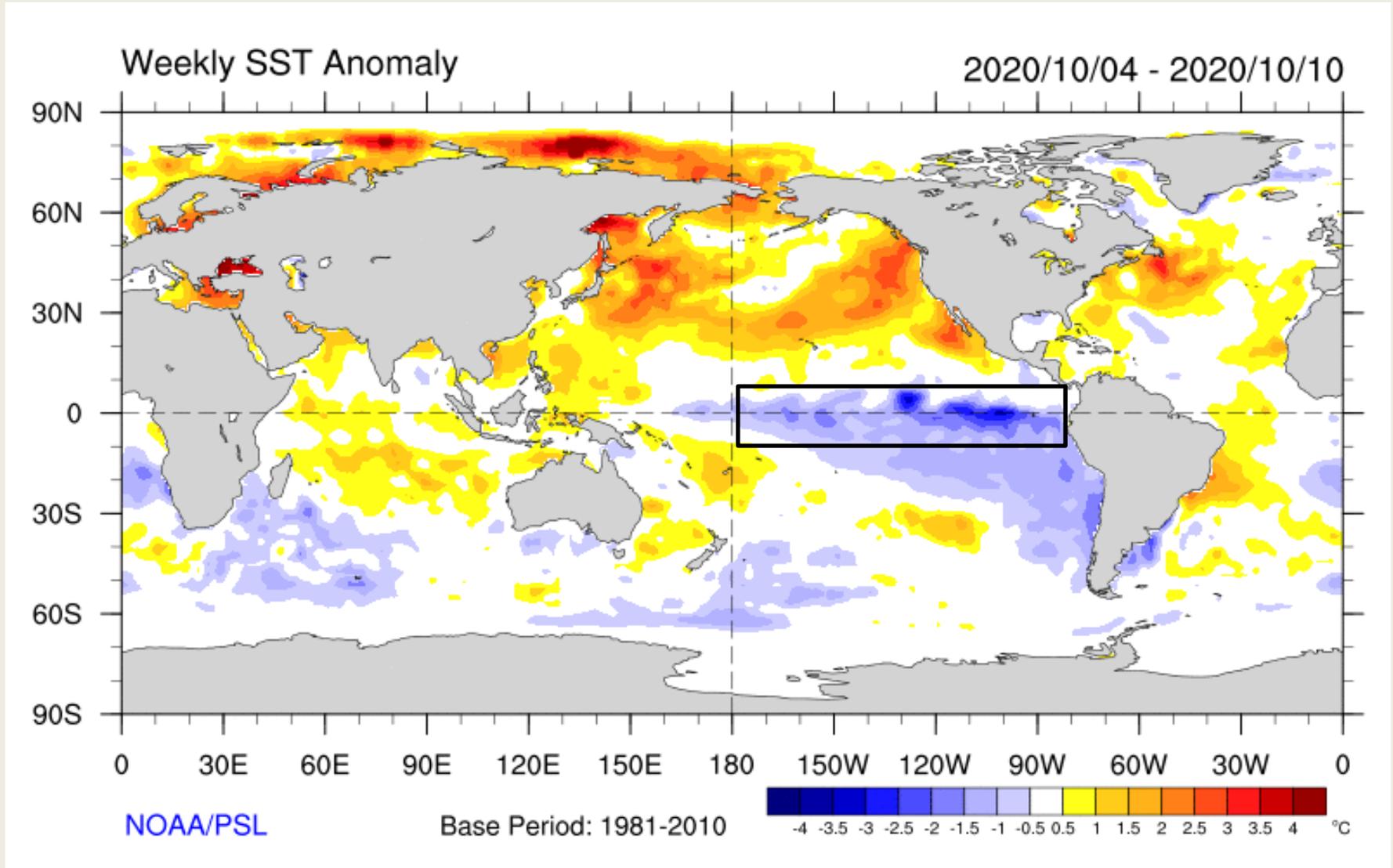
- La Niña conditions are present.*
- Equatorial sea surface temperatures (SSTs) are below average from the west-central to eastern Pacific Ocean.
- The tropical atmospheric circulation is consistent with La Niña.
- La Niña is likely to continue through the Northern Hemisphere winter 2020-21 (~85% chance) and into spring 2021 (~60% chance during February-April).*

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/.

Sea Surface Temperatures

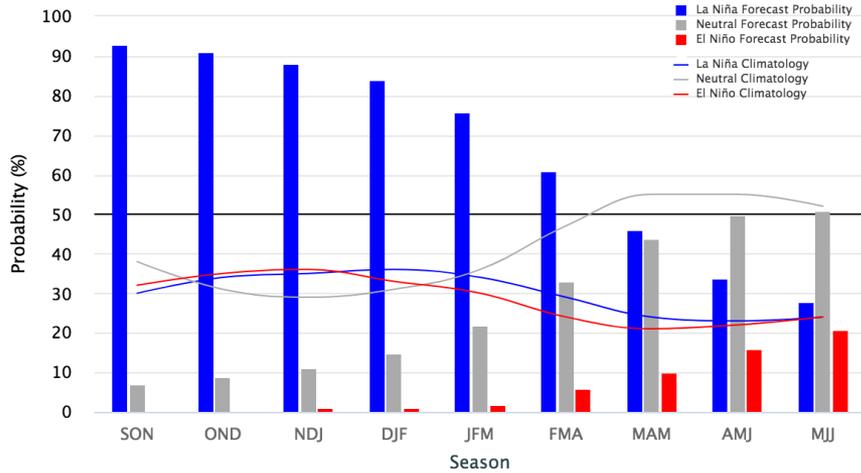


ENSO Forecasts



Early-October 2020 CPC/IRI Official Probabilistic ENSO Forecasts

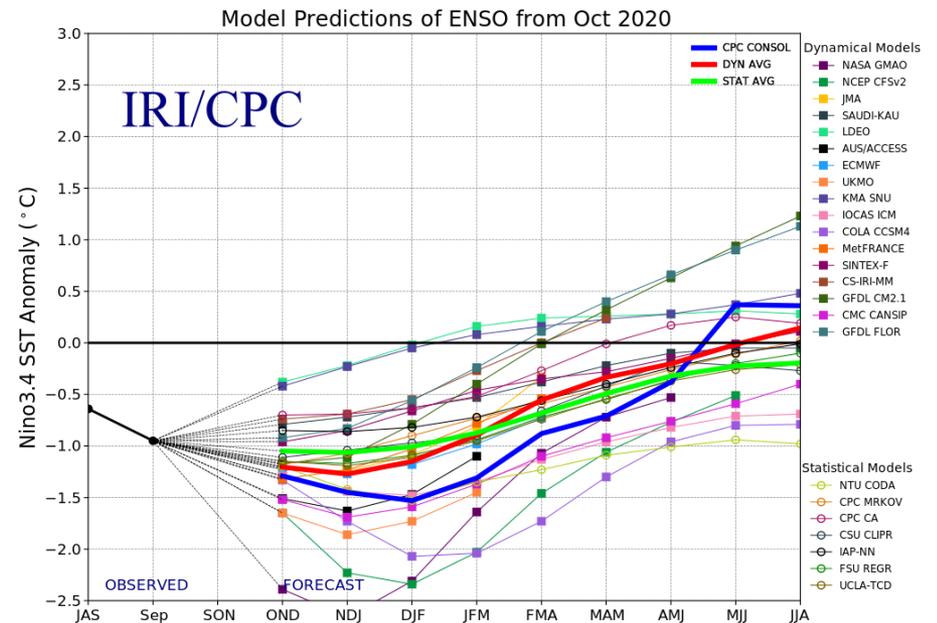
ENSO state based on NINO3.4 SST Anomaly
Neutral ENSO: $-0.5\text{ }^{\circ}\text{C}$ to $0.5\text{ }^{\circ}\text{C}$



From CPC: La Niña is likely to continue through the Northern Hemisphere winter 2020-21 (~85% chance) and into spring 2021 (~60% chance during February-April).

CPC/IRI El Nino forecast:

NMME models + other dynamical models + statistical models

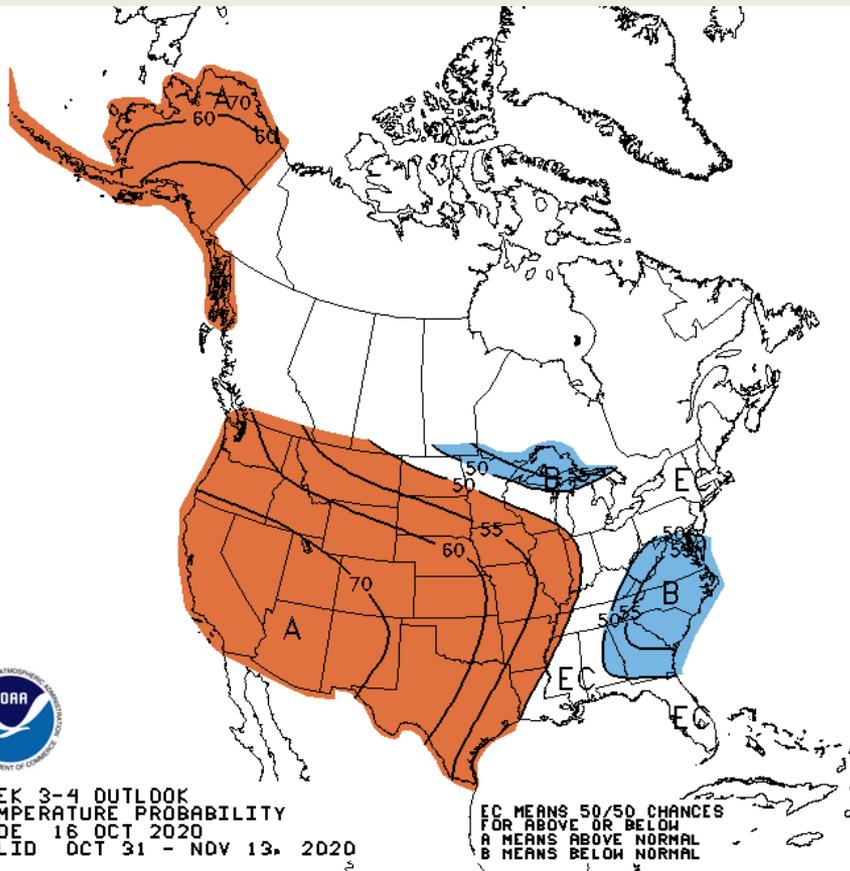


Source: CPC/IRI

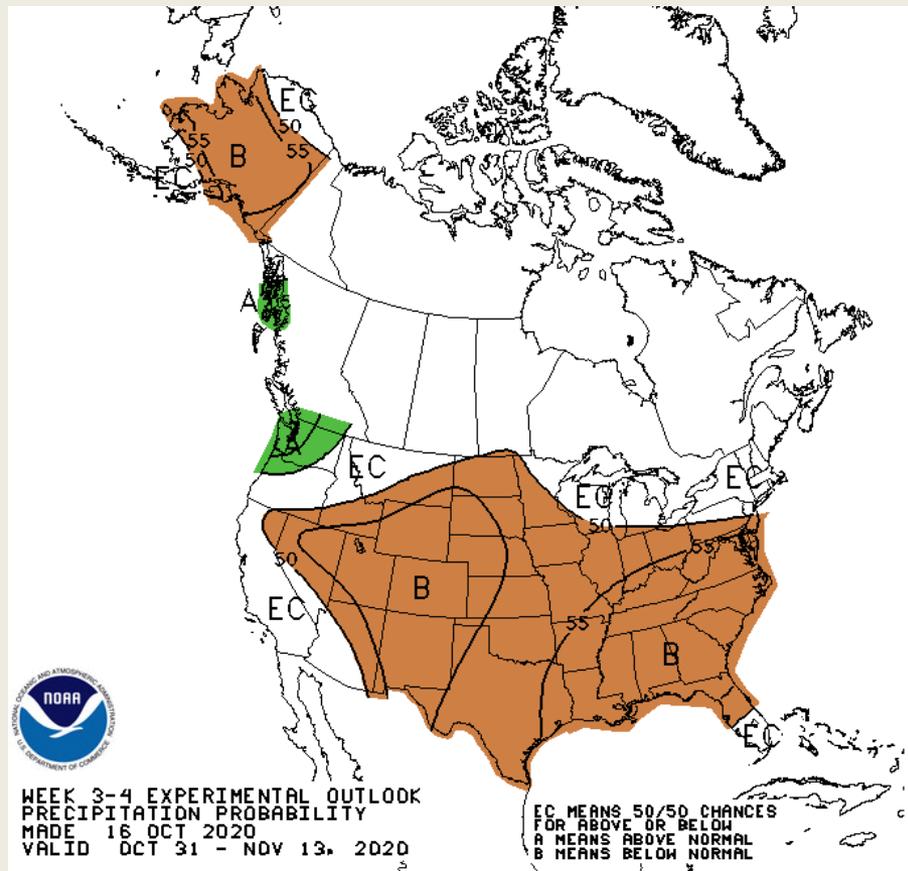
October 31st – November 13th 2020 U.S. Outlook



Temperature Probability



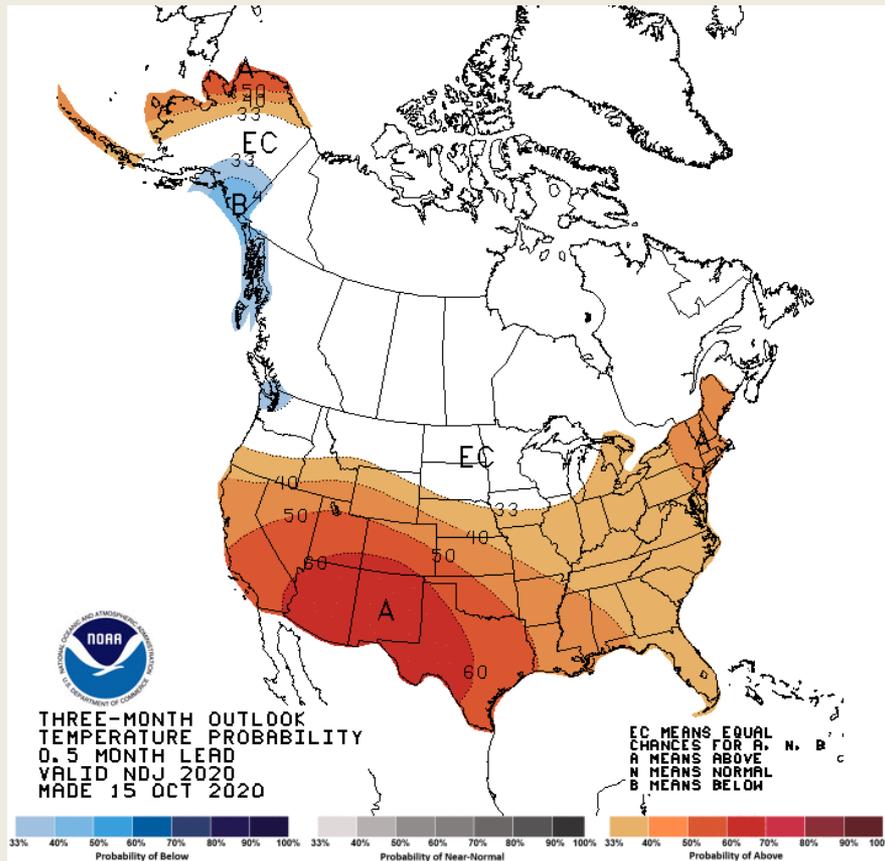
Precipitation Probability



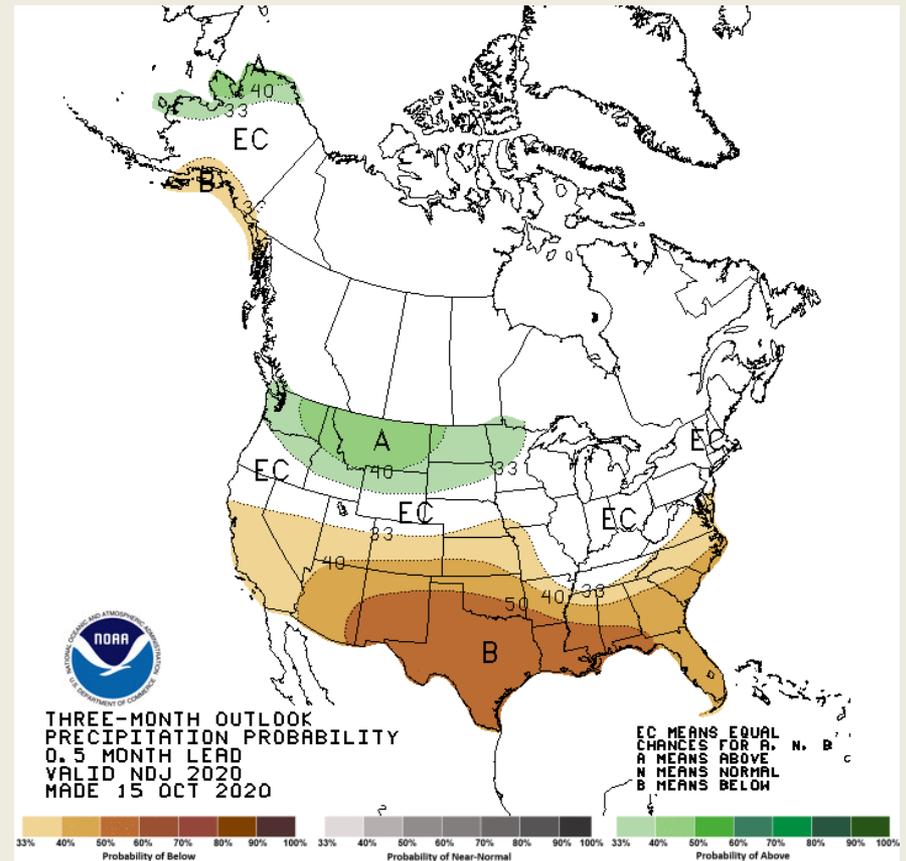
November 2020 - January 2021 Outlook



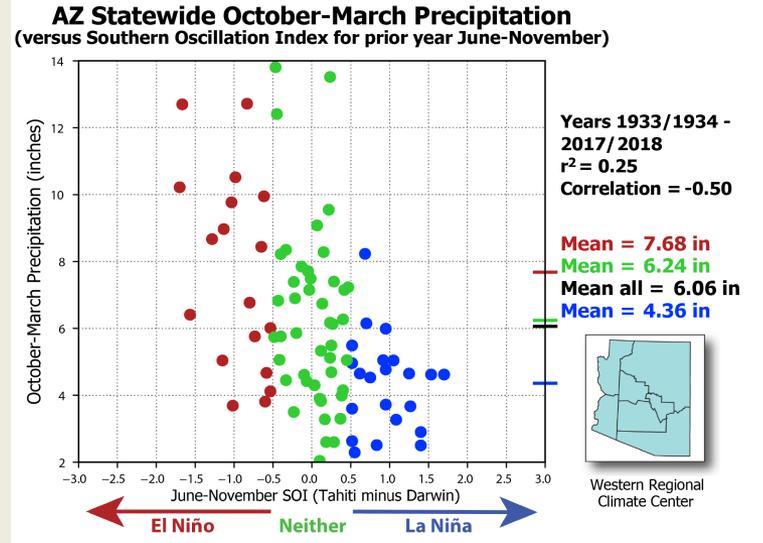
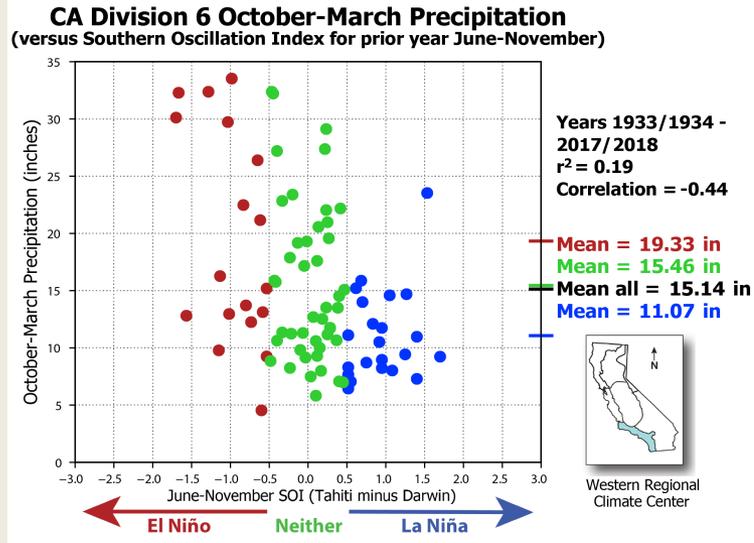
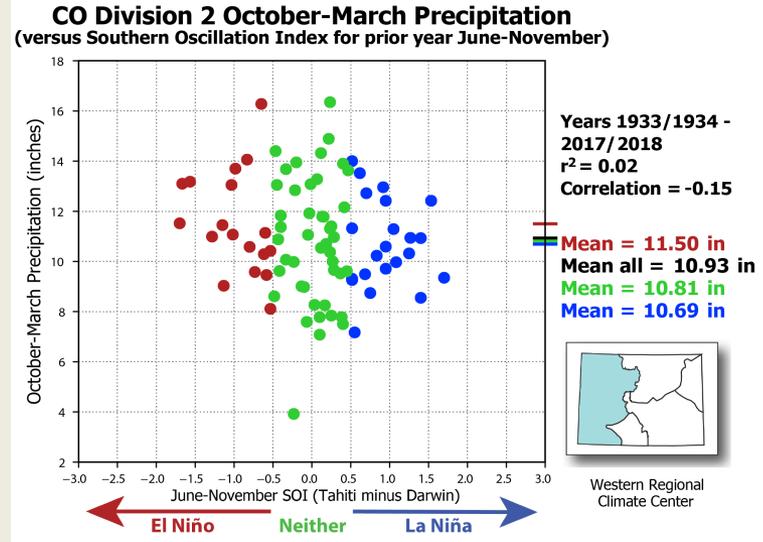
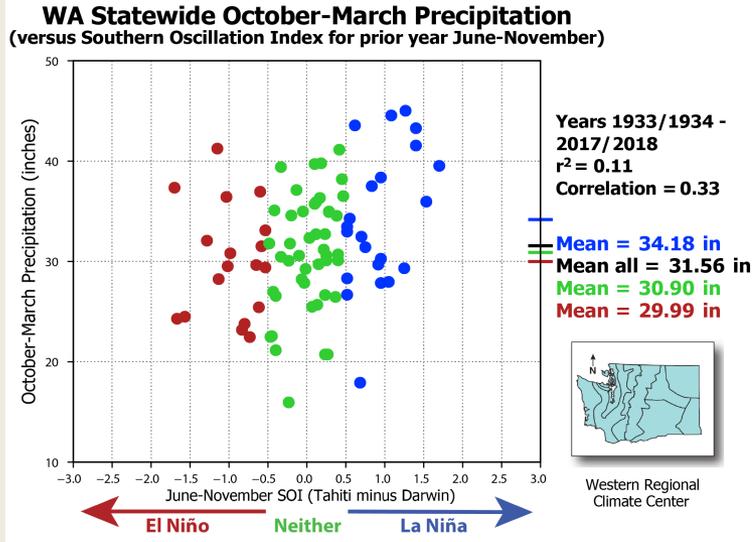
Temperature Probability



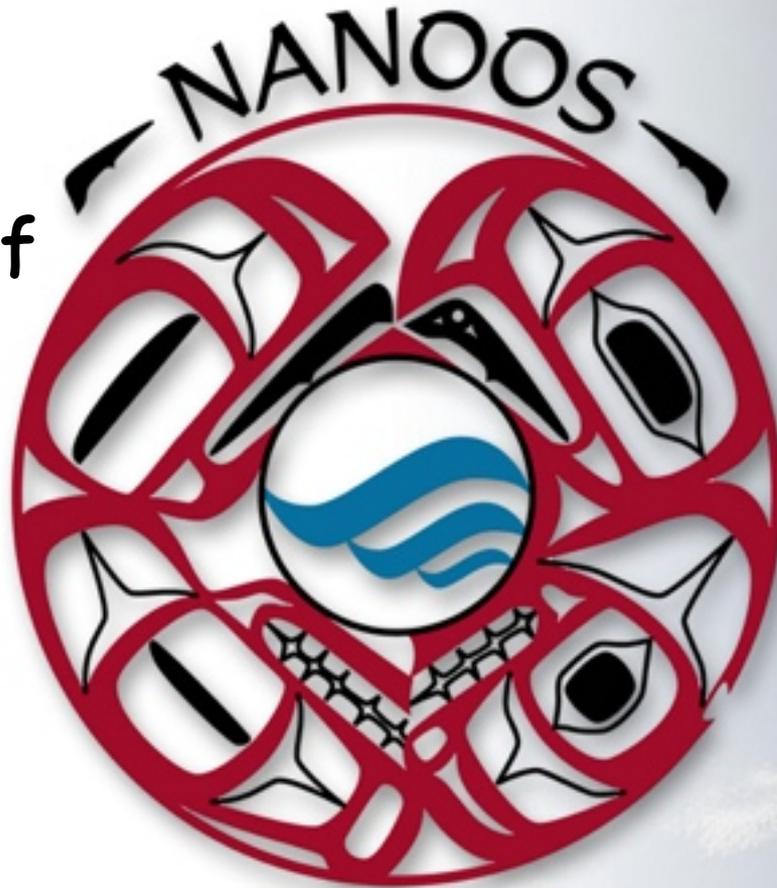
Precipitation Probability



Is La Nina a good predictor of precipitation?

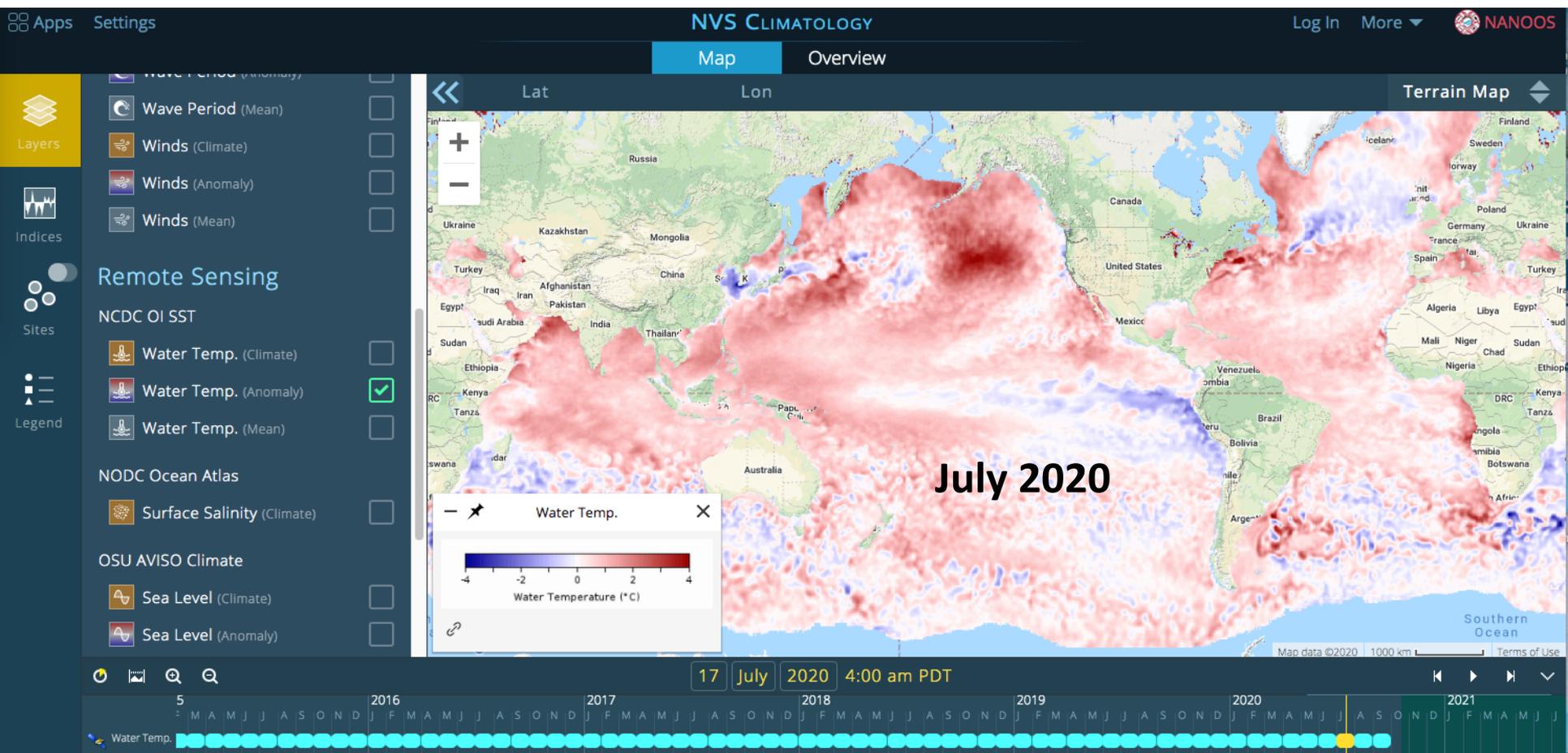


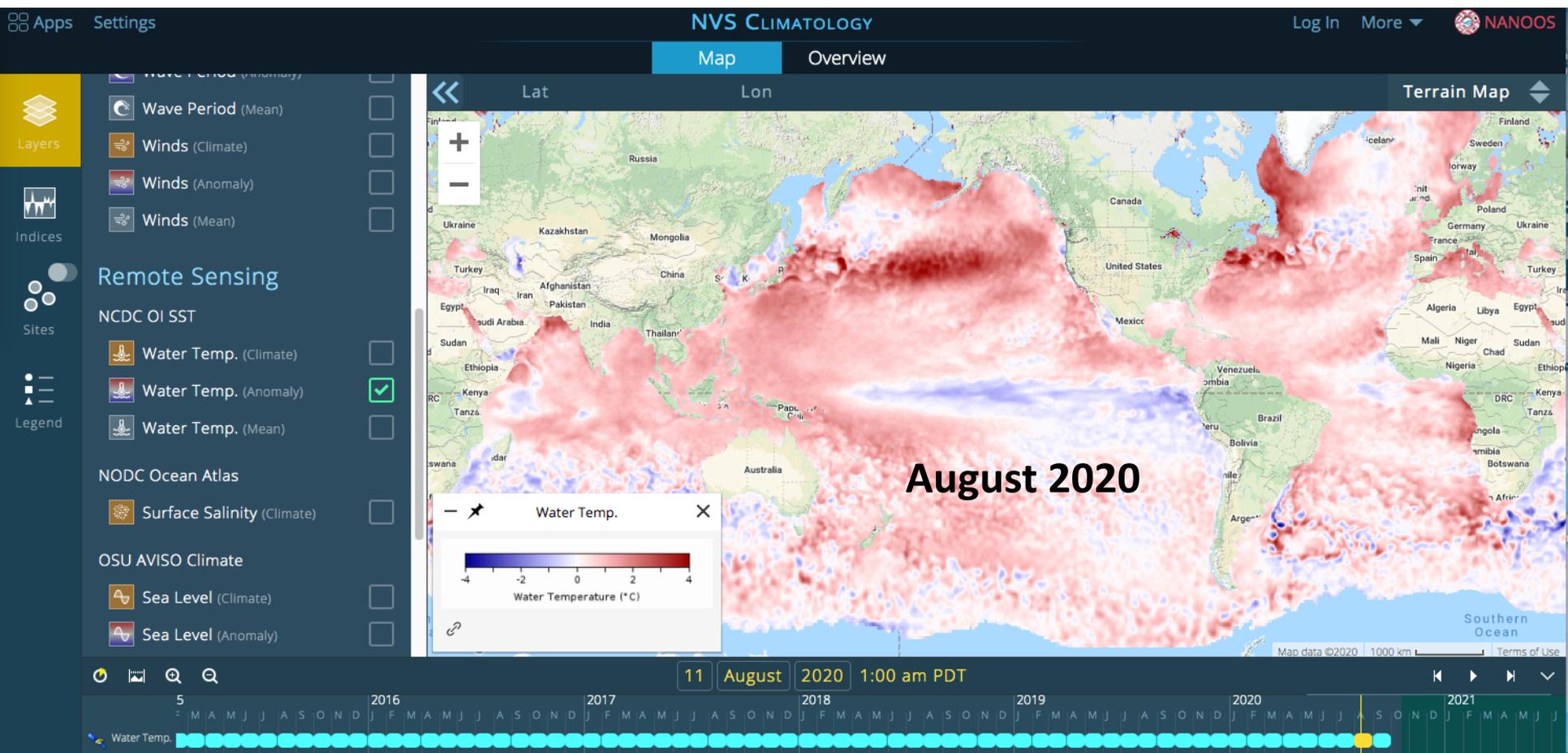
Northwest Association of Networked Ocean Observing Systems

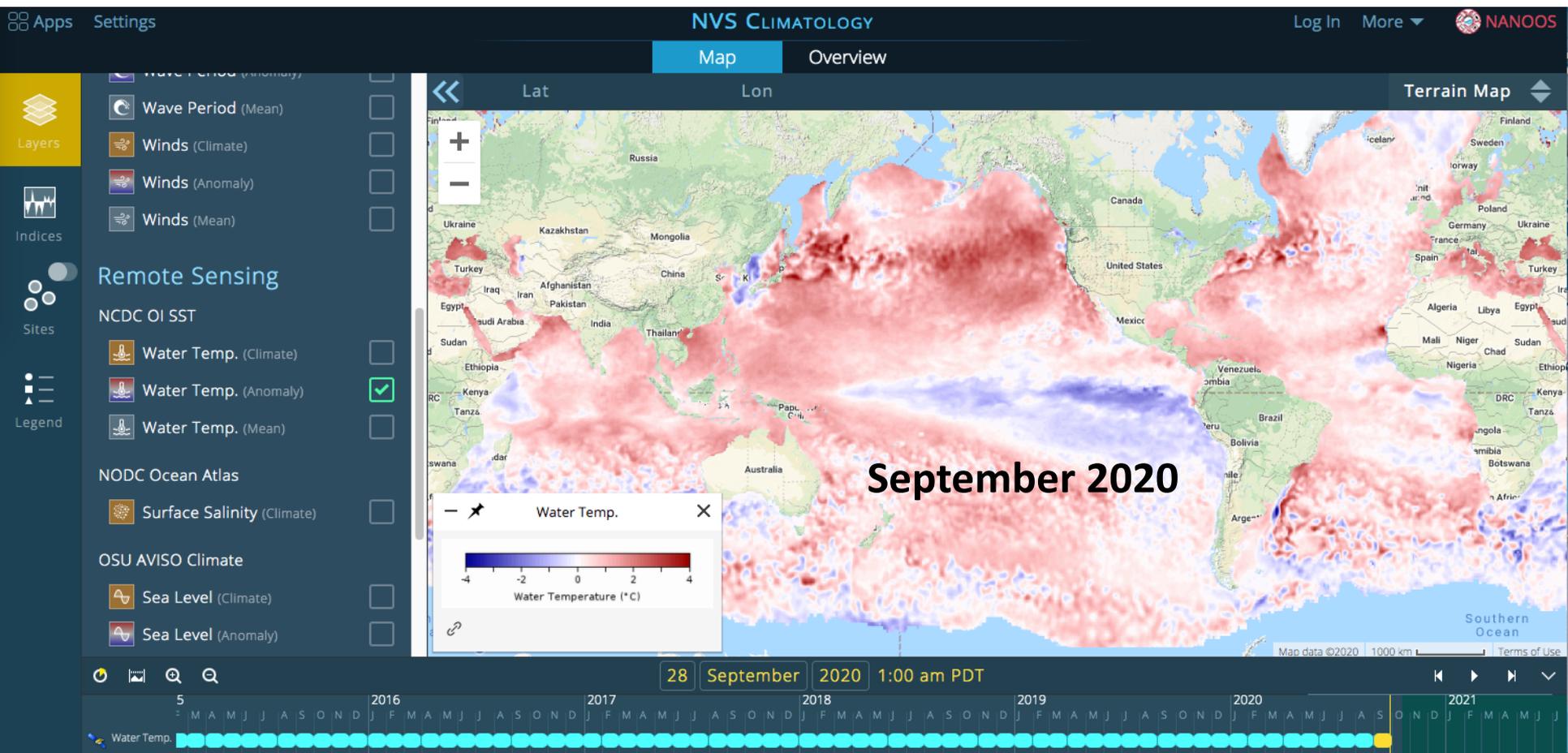


NOAA West Watch Update 20 October 2020:
Washington / Oregon Observations

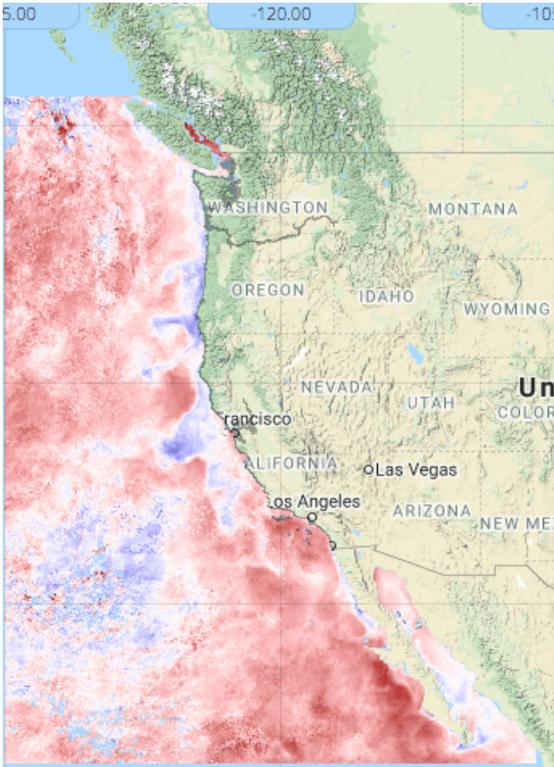
Jan Newton, NANOOS Executive Director



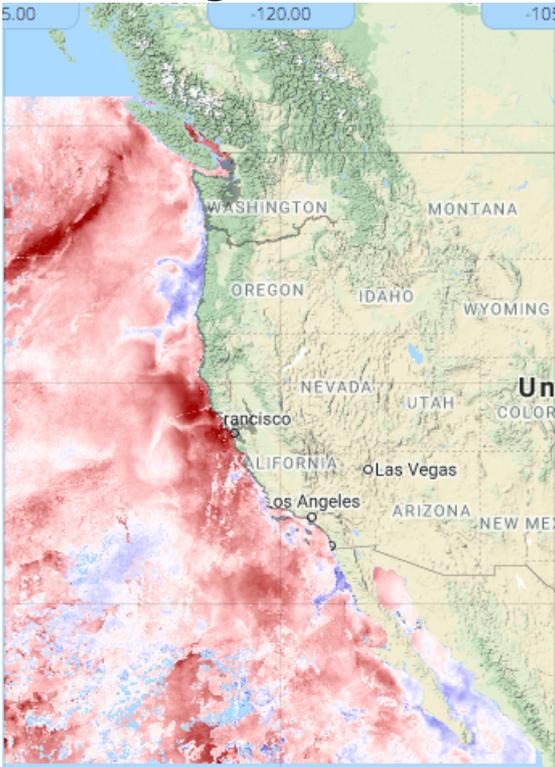




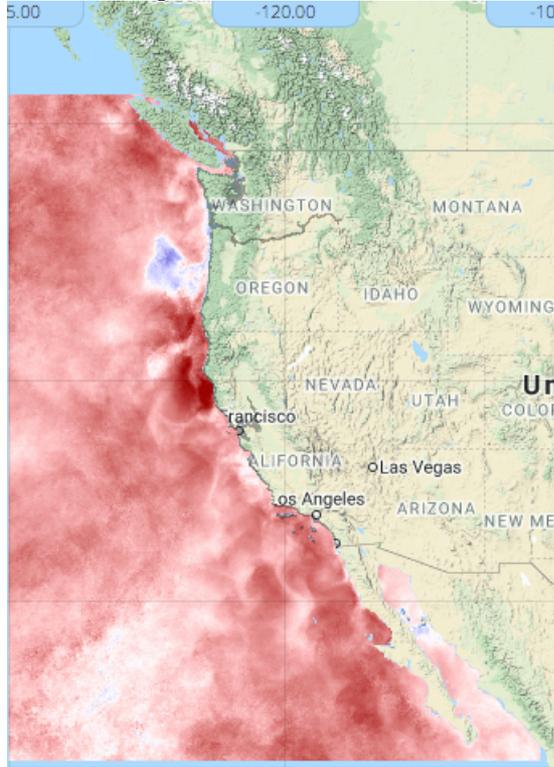
July 2020



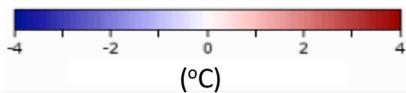
August 2020



September 2020

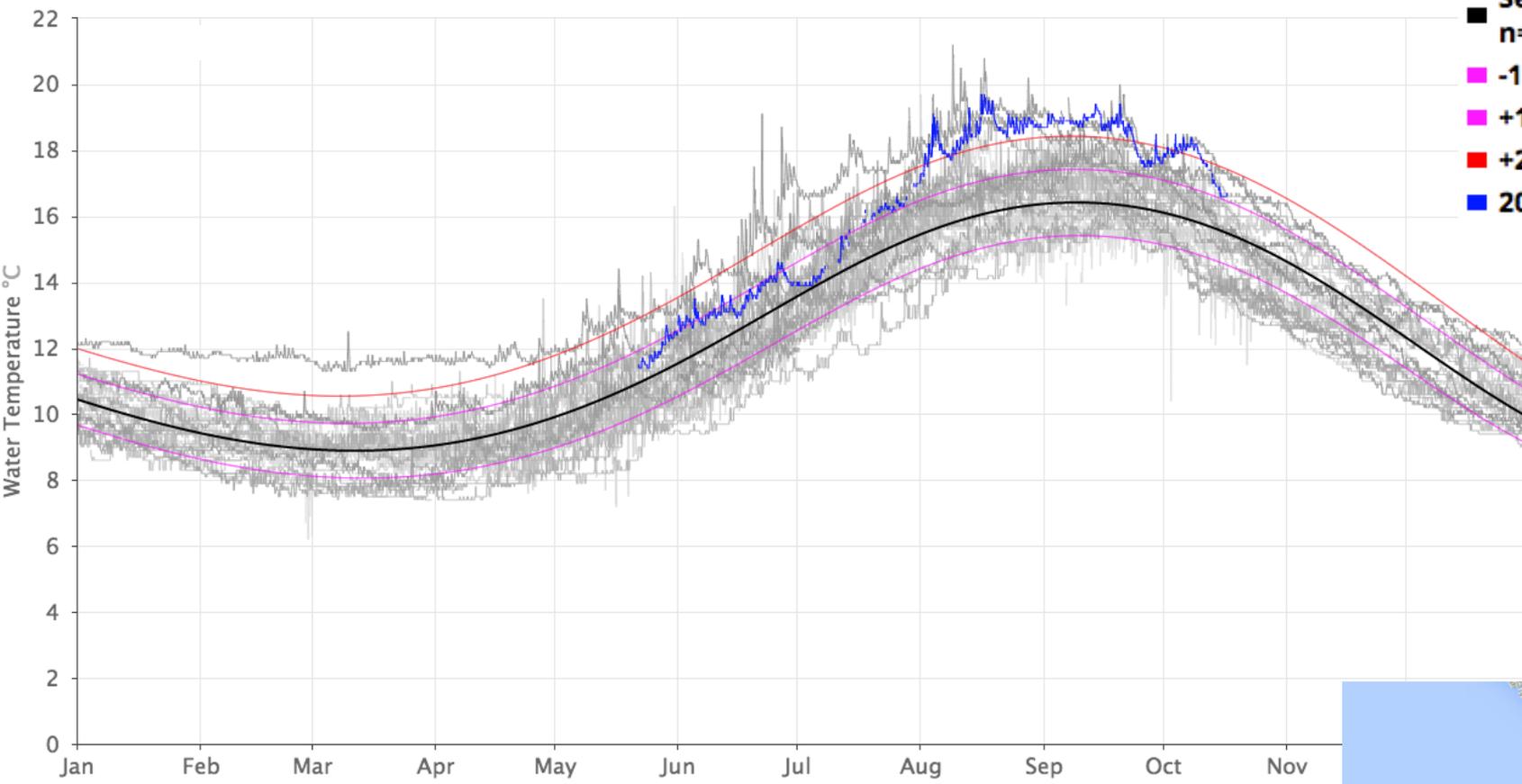


Water Temperature Anomaly

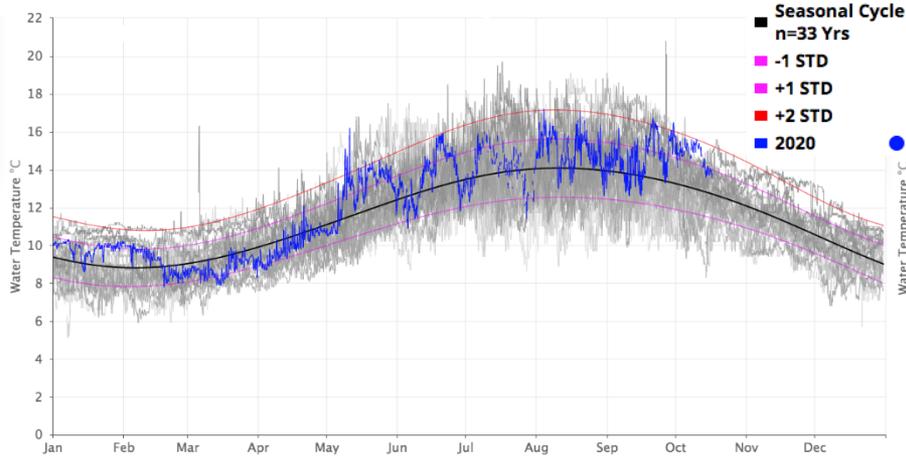


NDBC Washington

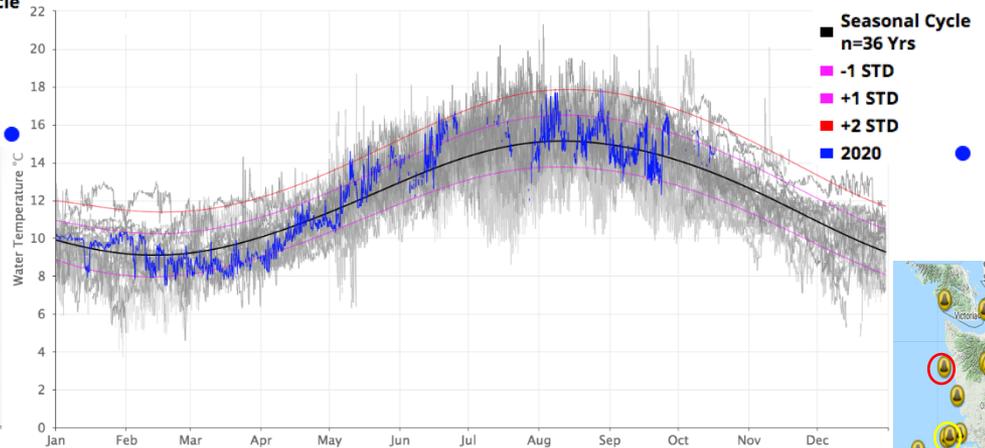
- Seasonal Cycle n=44 Yrs
- -1 STD
- +1 STD
- +2 STD
- 2020



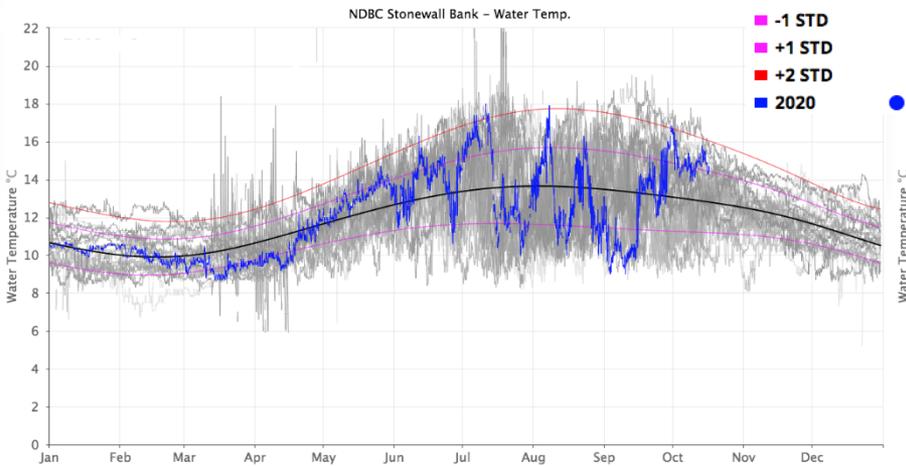
NDBC Cape Elizabeth ●



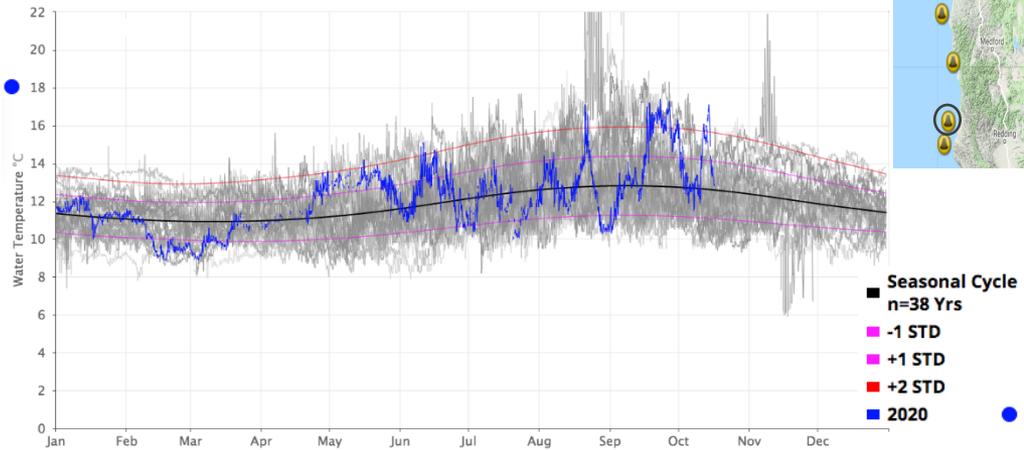
NDBC Columbia River Bar ●

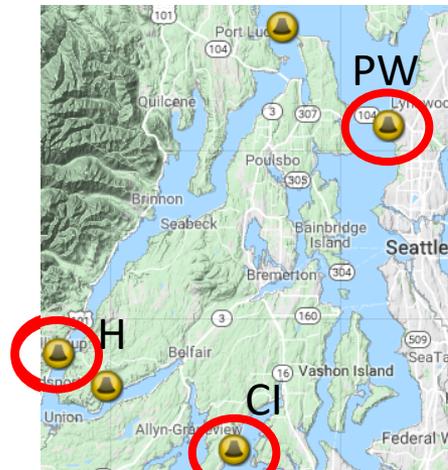
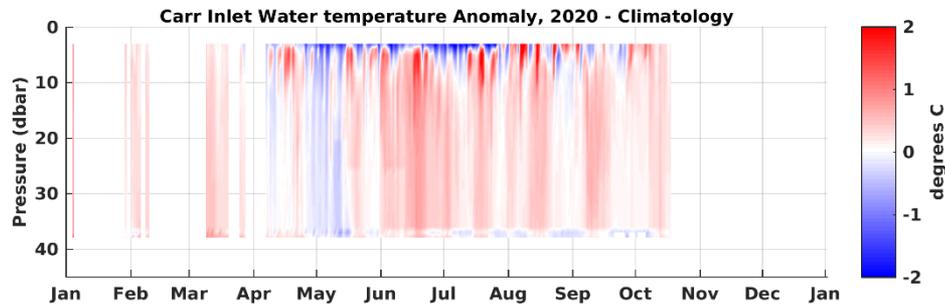
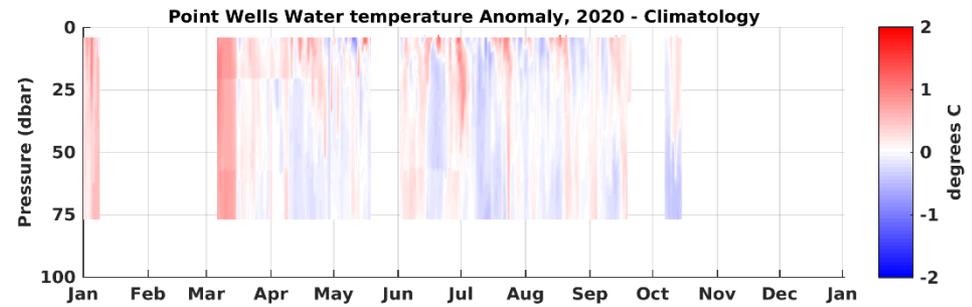
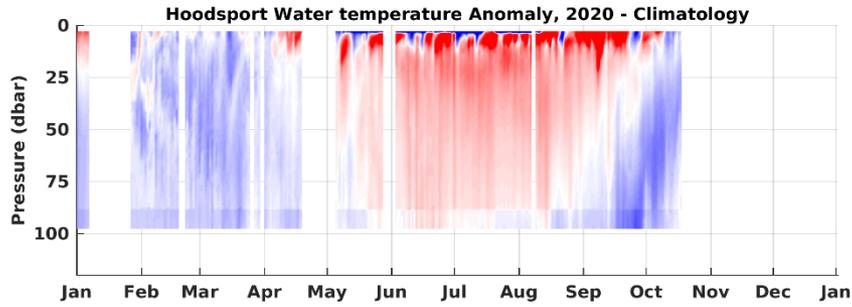


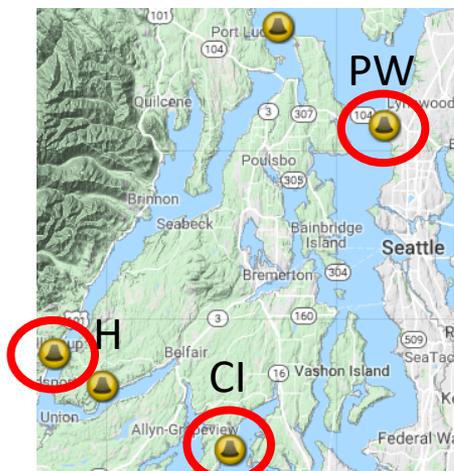
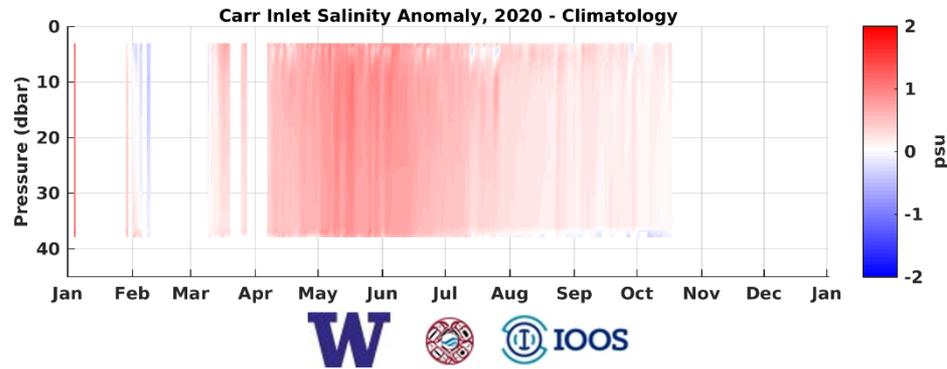
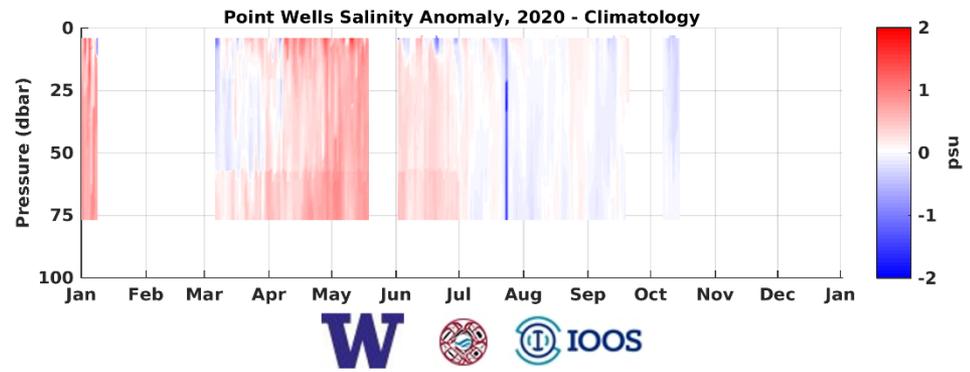
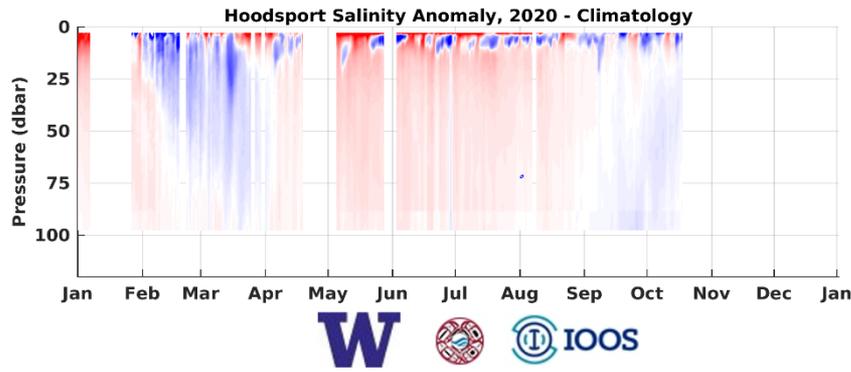
NDBC Stonewall Bank ●

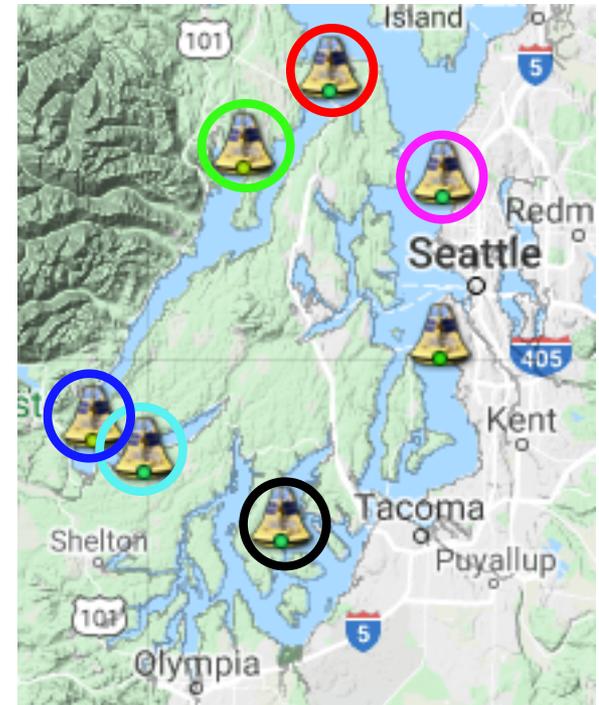
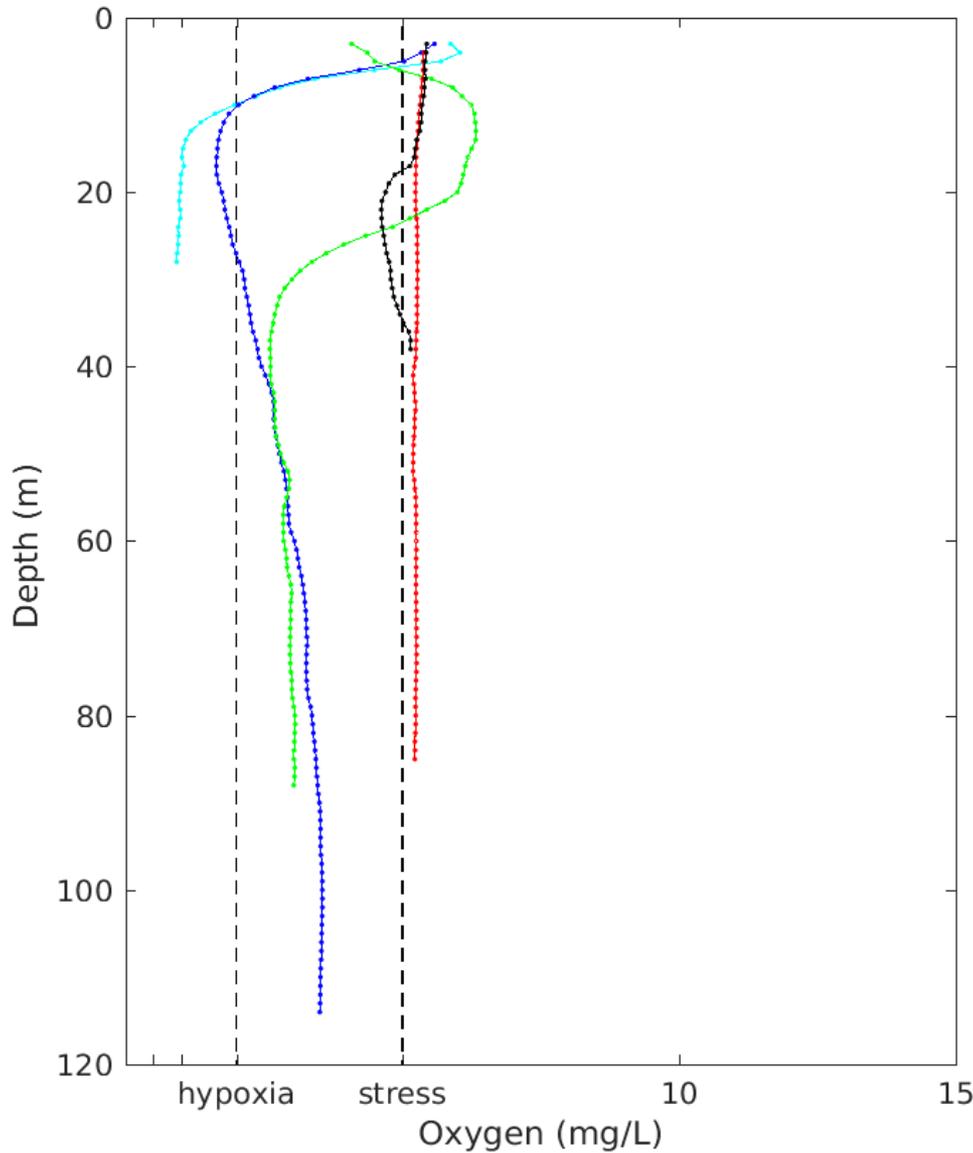


NDBC Eel River ●

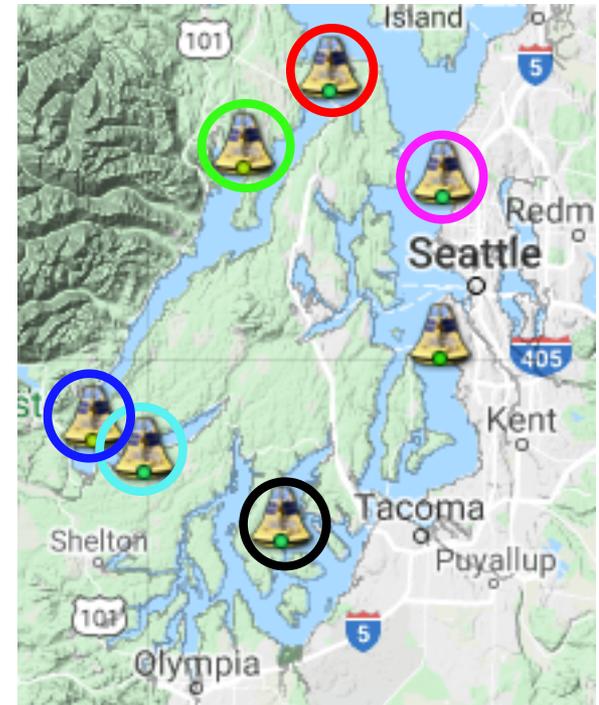
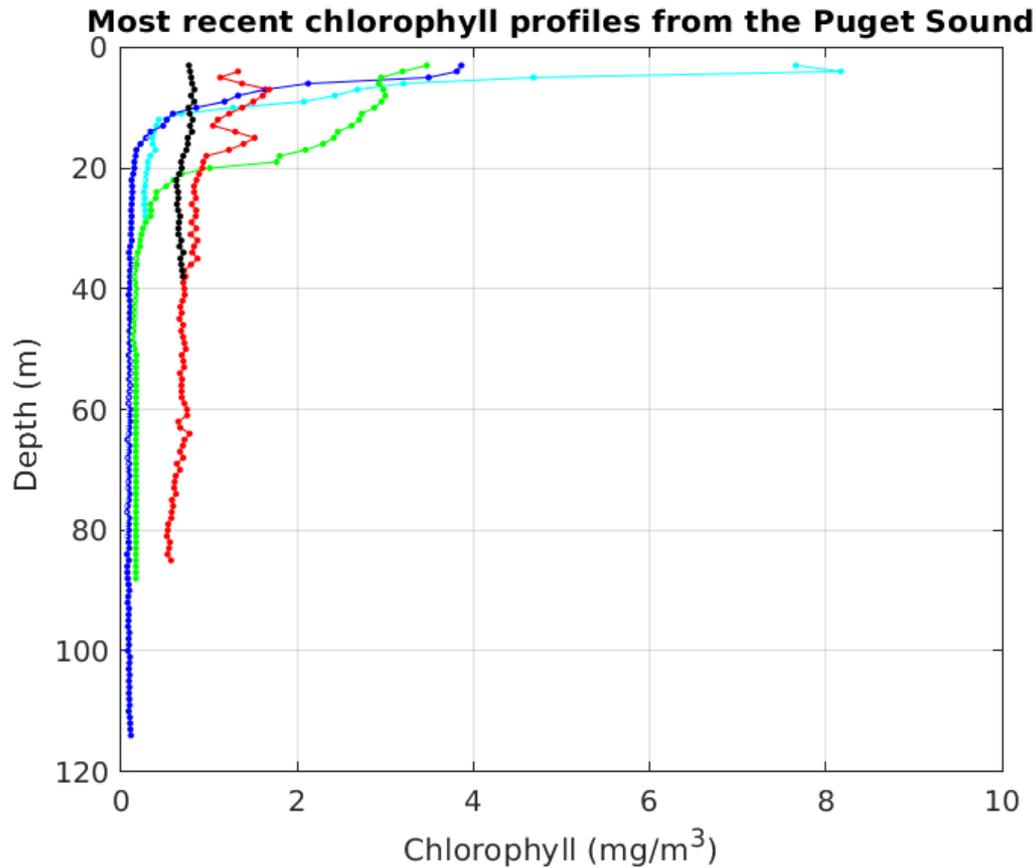








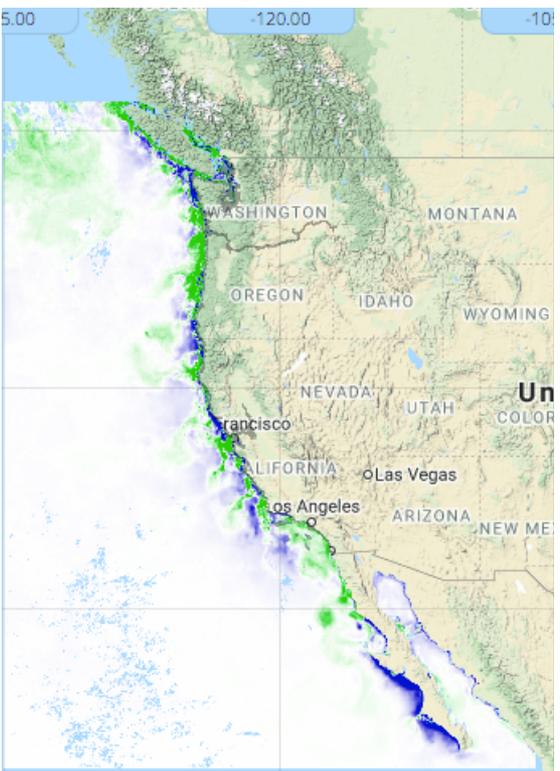
- hypoxia (2 mg/L)
- biological stress (5 mg/L)
- Twanoh (South Hood Canal), 18-Oct-2020 12:15:47
- Hoodsport (South Hood Canal), 18-Oct-2020 12:19:49
- Dabob Bay (North Hood Canal), 18-Oct-2020 12:22:02
- Hansville (near Admiralty Inlet), 18-Oct-2020 12:18:06
- Carr Inlet (South Sound), 18-Oct-2020 12:17:16
- No recent Point Wells (Main Basin) profile



- Twanoh, 18-Oct-2020 12:15:47
- Hoodsport, 18-Oct-2020 12:19:49
- Dabob Bay, 18-Oct-2020 12:22:02
- Hansville (North), 18-Oct-2020 12:18:06
- Carr Inlet, 18-Oct-2020 12:17:16
- No recent Point Wells profile

Chlorophyll Anomaly OSU Modis

July 2020



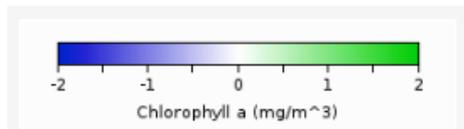
August 2020



September 2020



Chlorophyll



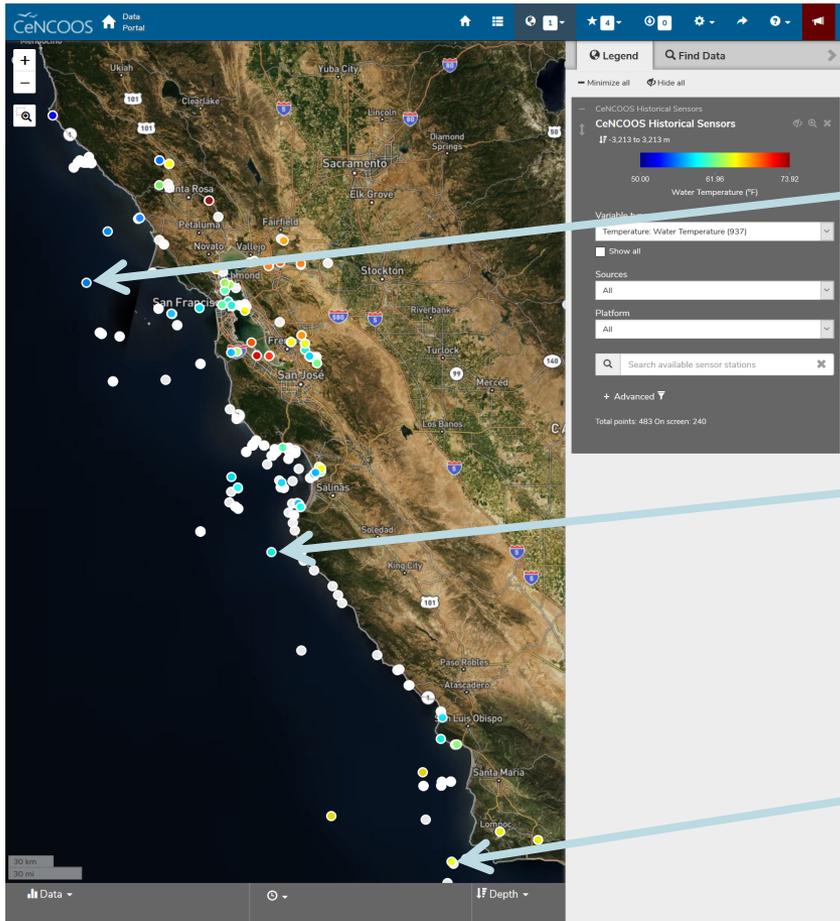


CeNCOOS West Watch Update

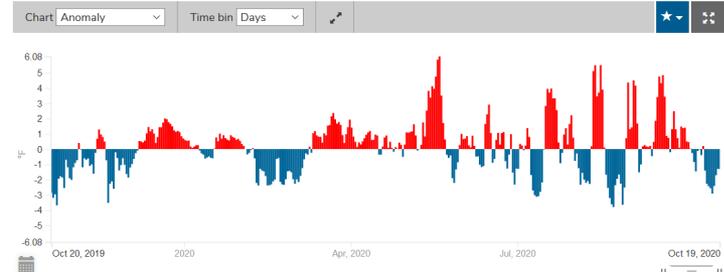
Henry Ruhl, Oct 20 2020



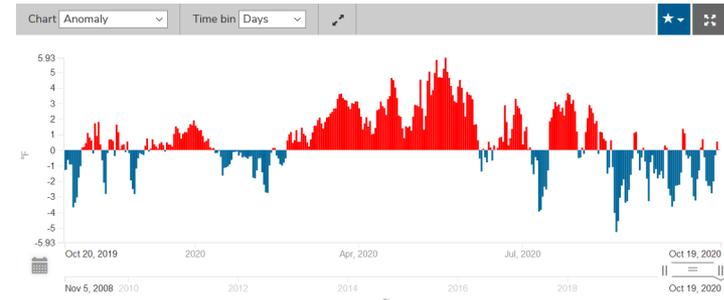
Offshore CDIP Station Variations



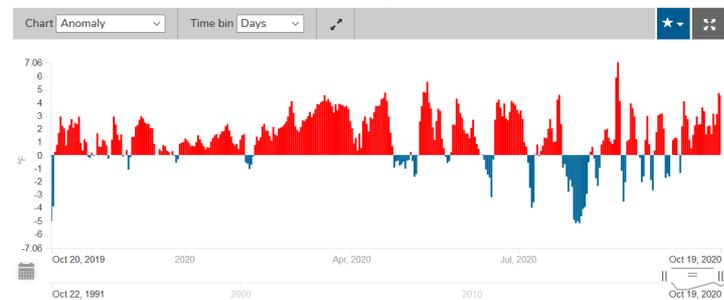
Previous 365 days



Pt Reyes
Since 1996



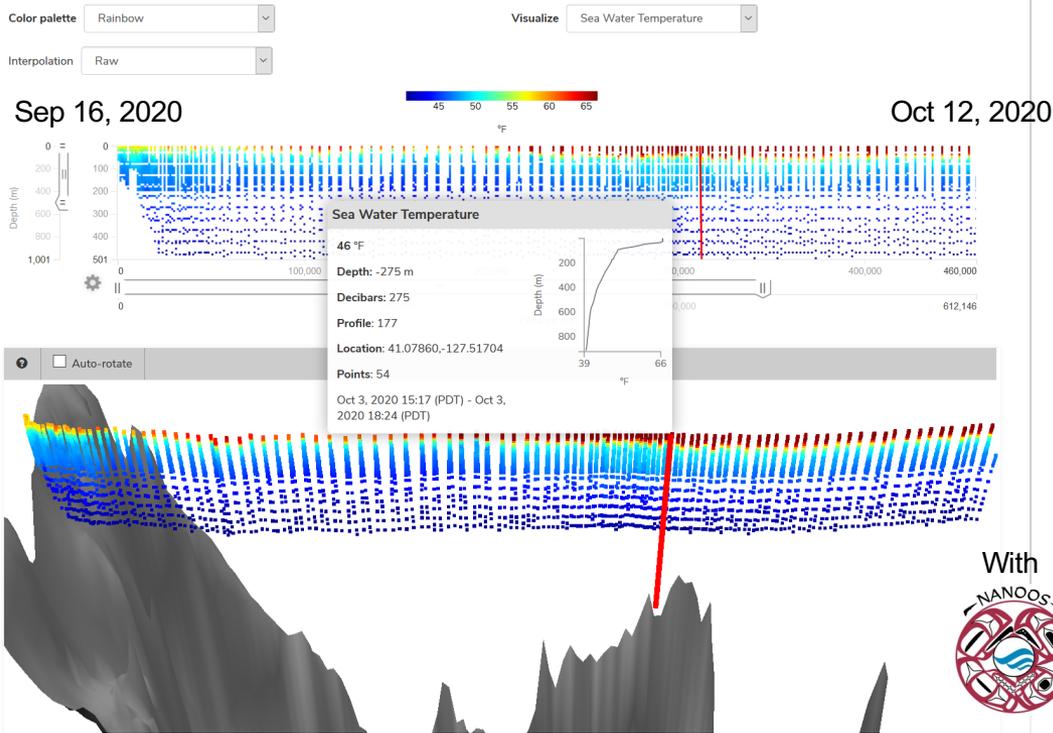
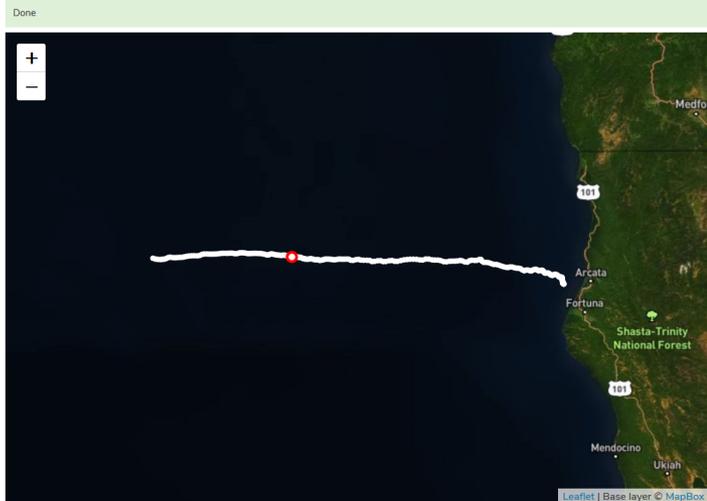
Pt Sur
Since 2008



Harvest
Since 1991

Trinidad Head Glider Line – Temp

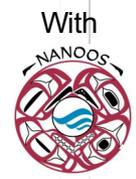
UW157-20200917T0000 (platform) Downloads ▾



UW157-20200917T0000

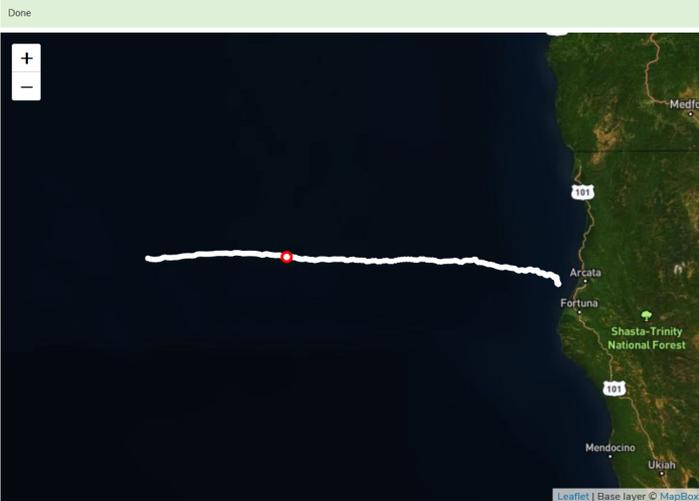
Date range	Sep 16, 2020 11:59 (PDT) - Oct 18, 2020 21:04 (PDT)
Metadata	https://data.iioos.us/gliders/erddap/info/UW157-20200917T0000.html
Depth range	-0.3993476927280426 (m) - 1001.3070068359375 (m)
Points	104,213
Institution	Oregon State University
Authority	edu.washington.apl

data.cencoos.org



UW157-20200917T0000 (platform)

Downloads

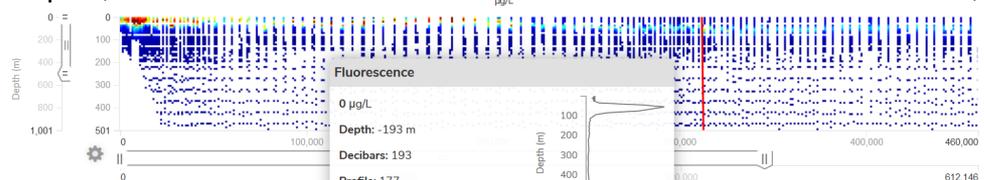


Color palette: Rainbow
Interpolation: Raw

Visualize: Fluorescence

Sep 16, 2020

Oct 12, 2020



Fluorescence

0 µg/L

Depth: -193 m

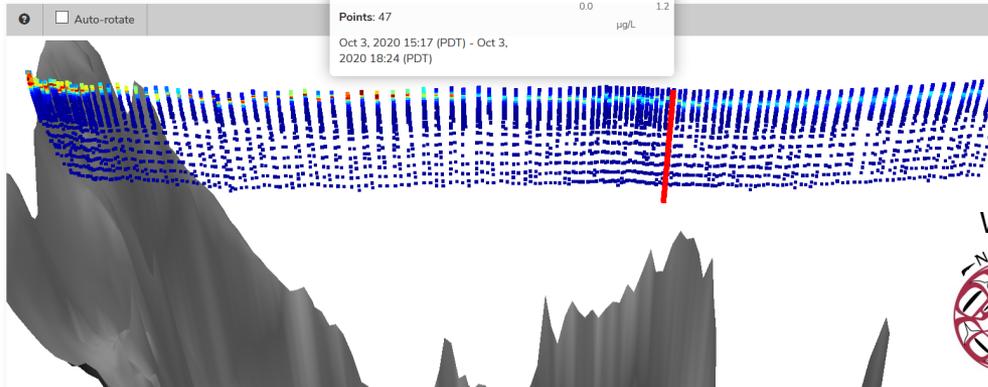
Decibars: 193

Profile: 177

Location: 41.07860, -127.51704

Points: 47

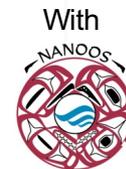
Oct 3, 2020 15:17 (PDT) - Oct 3, 2020 18:24 (PDT)



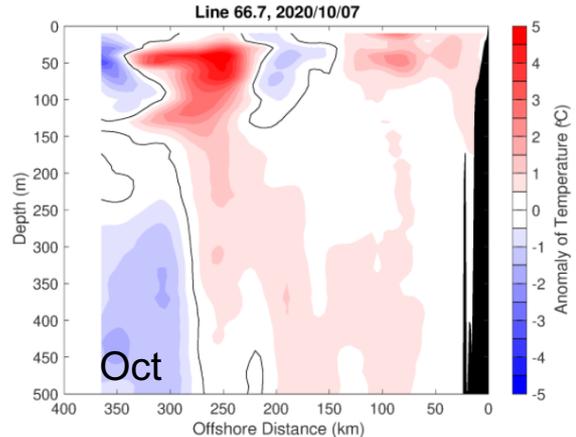
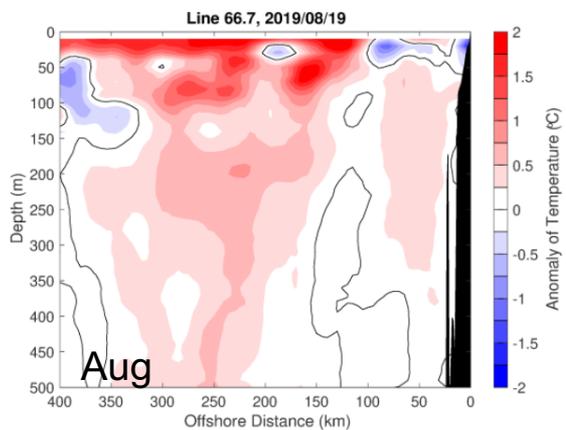
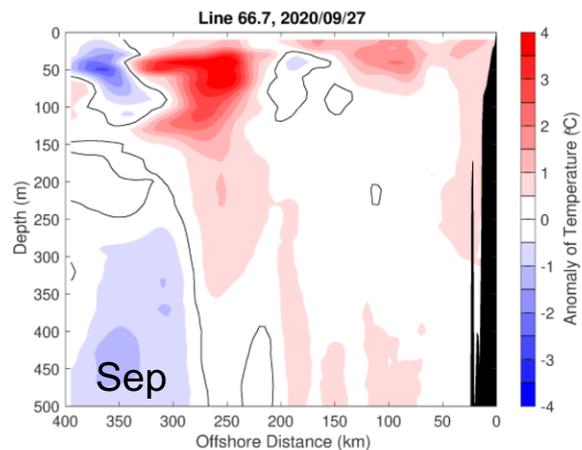
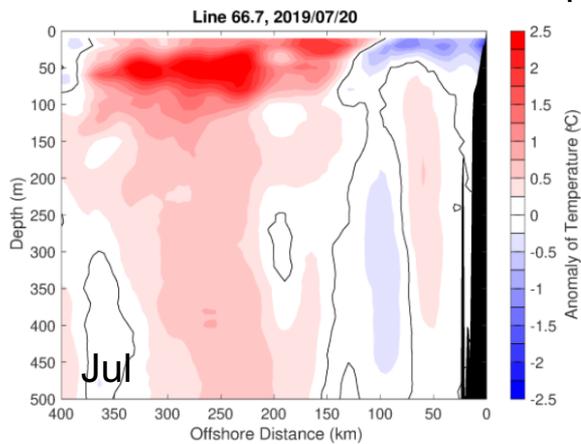
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Metadata	https://data.iocos.us/gliders/erddap/info/UW157-20200917T0000.html
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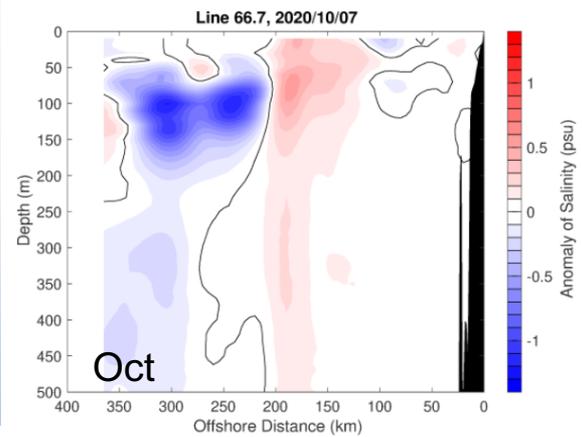
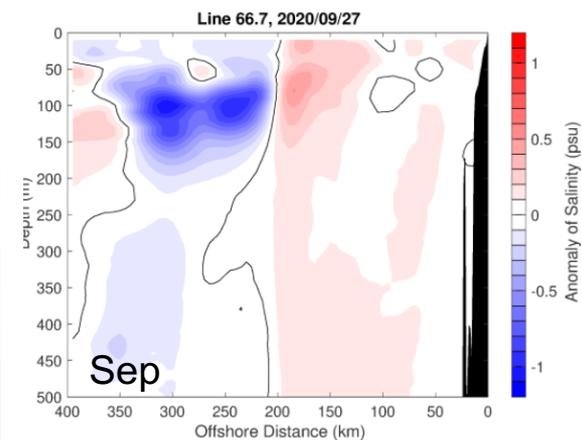
data.cencoos.org



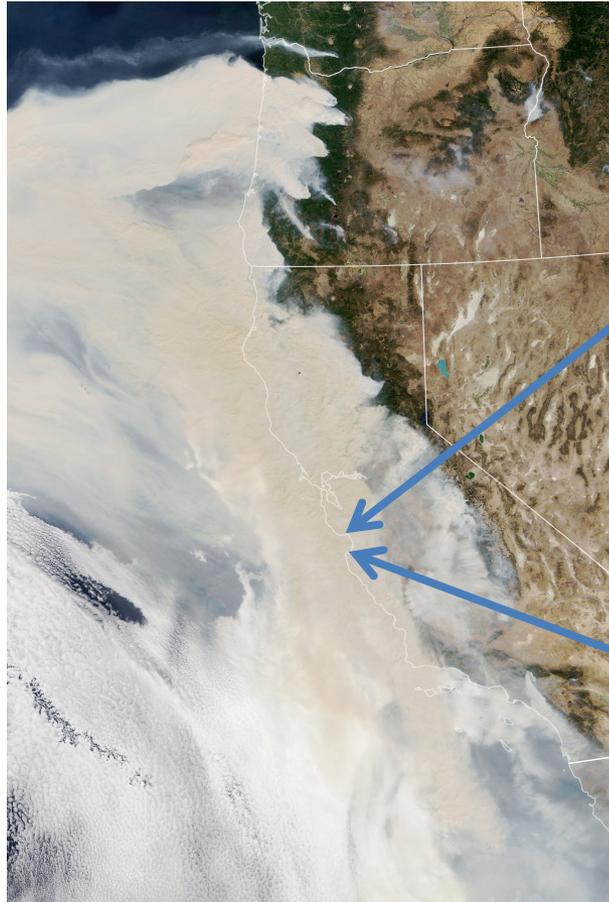
Temperature



Salinity

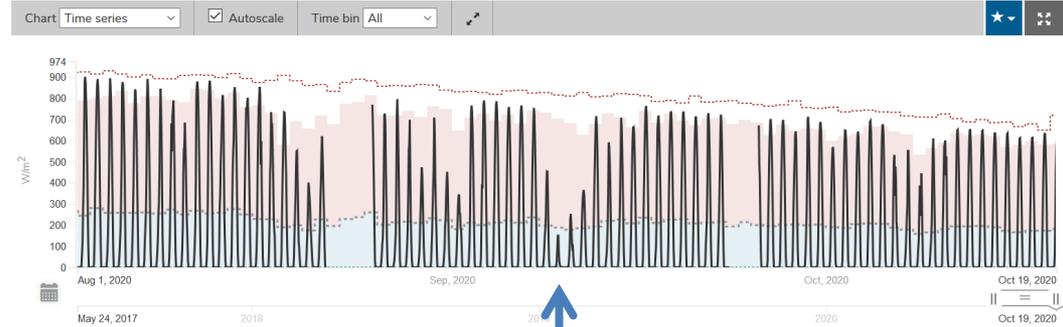


Smoke Limiting Solar Radiation



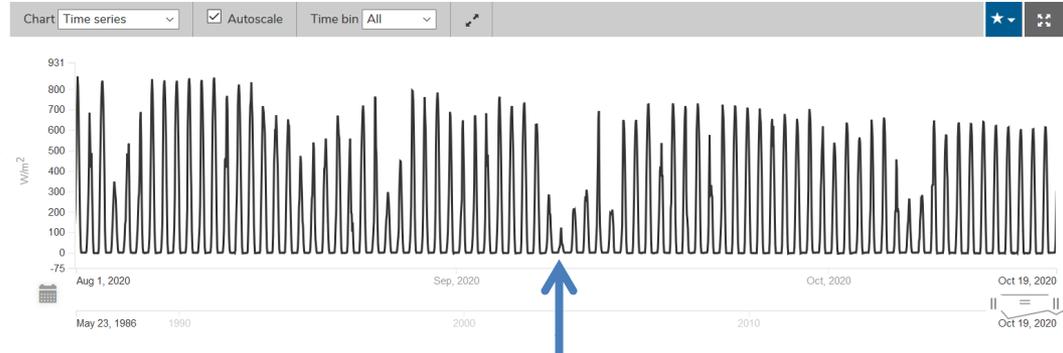
2 Radiation: Solar Radiation

University of California Santa Cruz (UCSC)
Santa Cruz Wharf Weather Station



Radiation: Solar Radiation

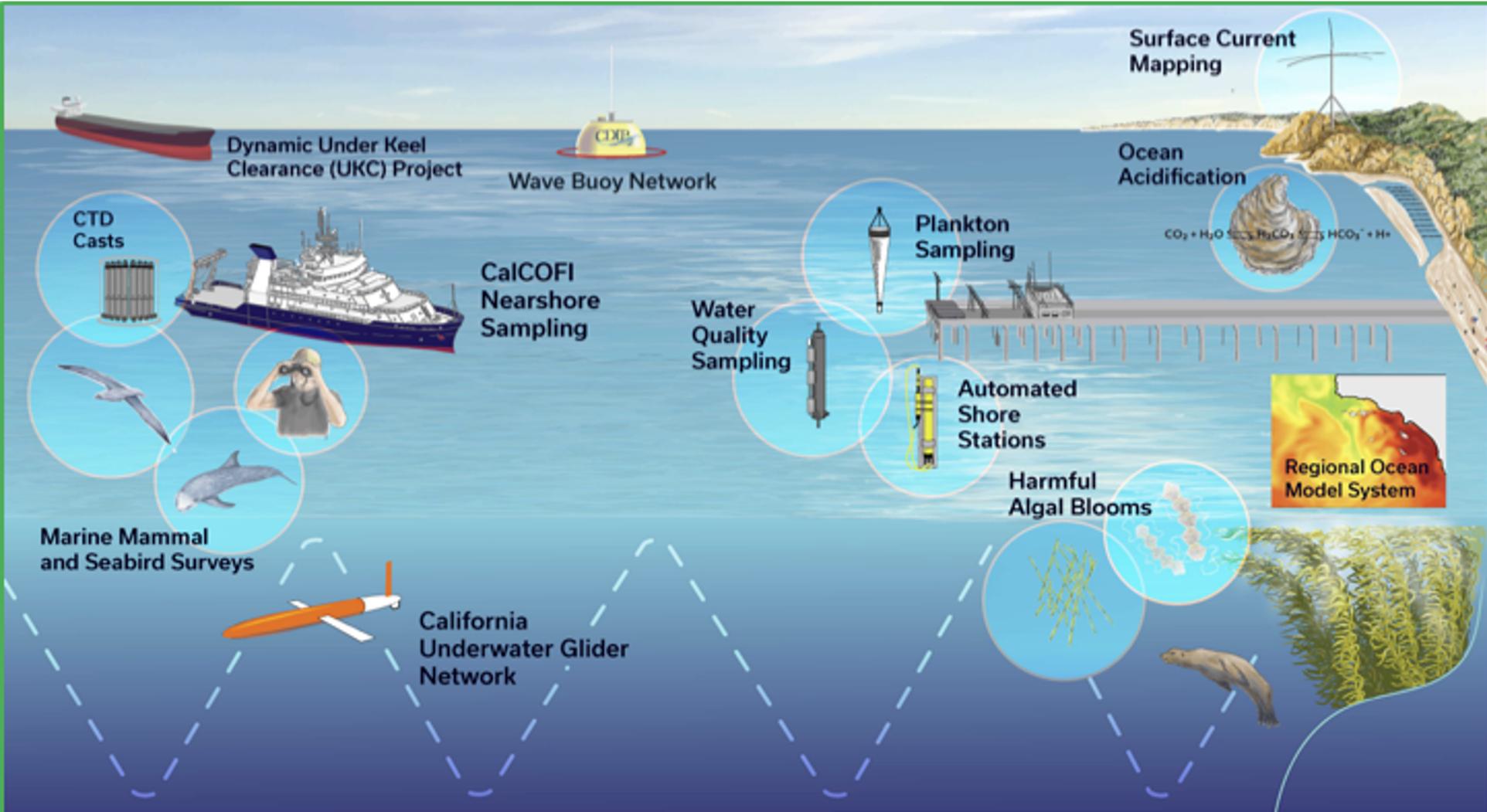
Monterey Bay Aquarium
Monterey Bay Aquarium Weather Station







SOUTHERN CALIFORNIA COASTAL OCEAN OBSERVING SYSTEM



NOAA West Watch Update: Southern California

Clarissa Anderson, Megan Medina, Ross Timmerman

20-October 2020

Jul-Oct Updates

- 5 year proposal to IOOS in progress
 - 50 EOI's received between SCCOOS and CeNCOOS
- NOAA HAB award
 - SCCOOS, Axiom, WHOI, UCSC, CeNCOOS
 - FY20 Funding: \$399,998
 - Total Funding: \$1,193,561
- Record SST measurements



NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce

Search NOAA sites

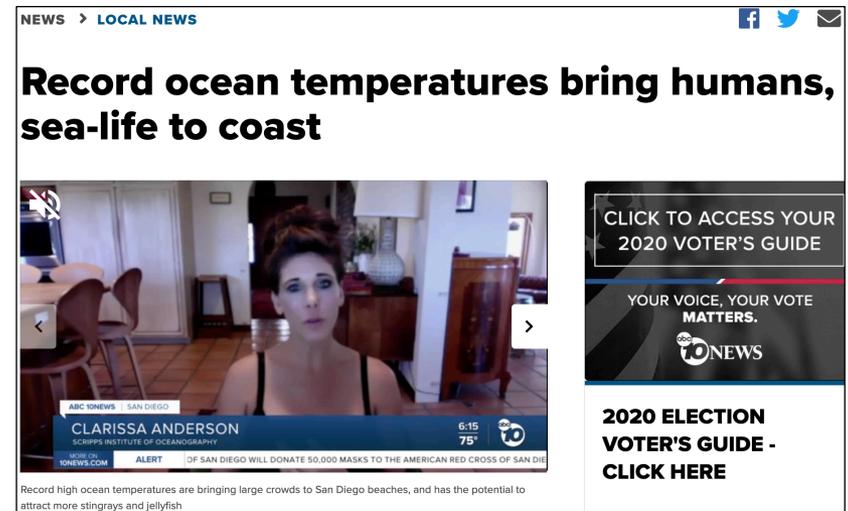
Home / News & Features

NOAA awards \$11.6 million for harmful algal bloom research

Projects will help enhance monitoring and determine socioeconomic impacts of blooms

Oceans & Coasts | harmful algal blooms (HABs)

October 6, 2020 —



NEWS > LOCAL NEWS

Record ocean temperatures bring humans, sea-life to coast

CLARISSA ANDERSON
SCRIPPS INSTITUTE OF OCEANOGRAPHY

6:15 75°

Record high ocean temperatures are bringing large crowds to San Diego beaches, and has the potential to attract more stingrays and jellyfish

CLICK TO ACCESS YOUR 2020 VOTER'S GUIDE

YOUR VOICE, YOUR VOTE MATTERS.

2020 ELECTION VOTER'S GUIDE - CLICK HERE

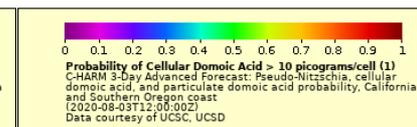
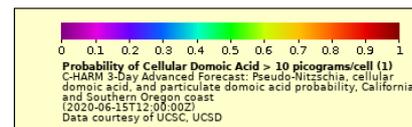
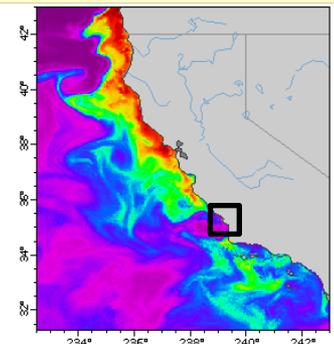
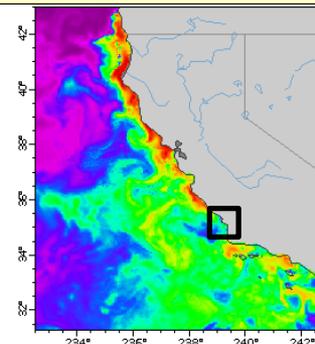
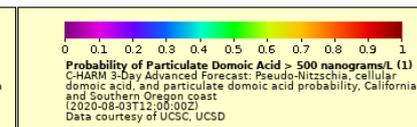
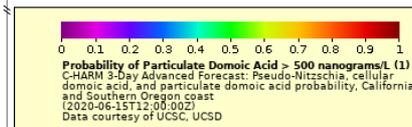
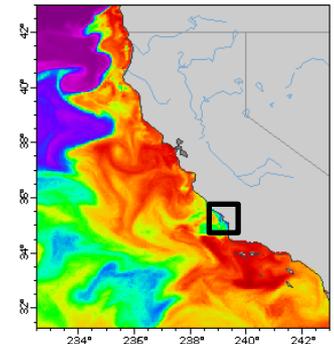
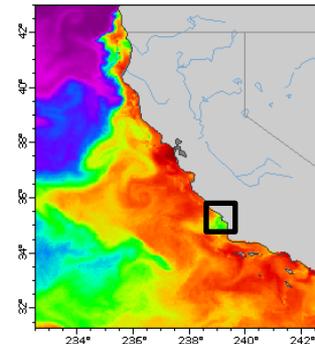
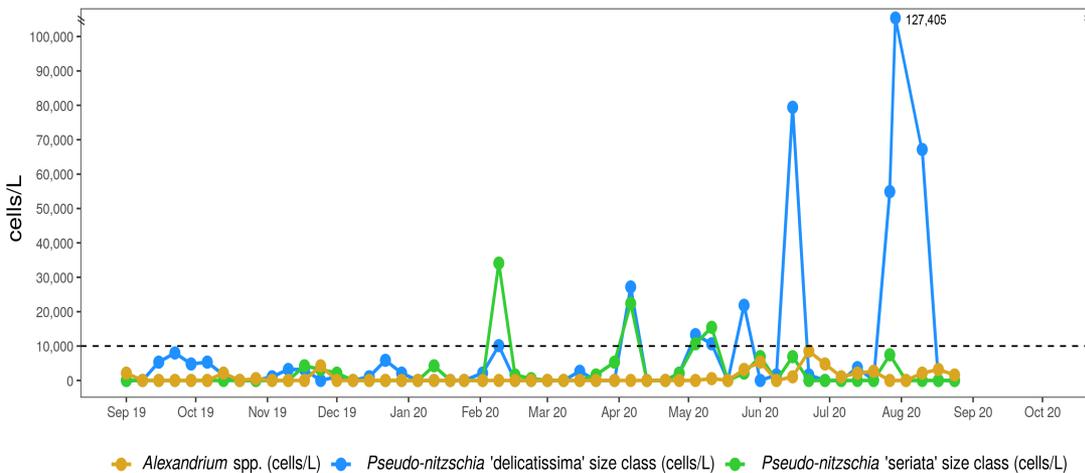
<https://www.noaa.gov/media-release/noaa-awards-116-million-for-harmful-algal-bloom-research?fbclid=IwAR0lu7nZVRh4TKKPbUIgIR9XZe9tUpdZSRWYwWNHV84vn-HHp8P8ZrZa6us>

Jul-Oct 2020 HABMAP Data

Potentially toxigenic *Pseudo-nitzschia* blooms detected at:

- Cal Poly Pier in June and July-August
- Santa Monica Pier in early June

Cal Poly Pier HAB and Domoic Acid Data

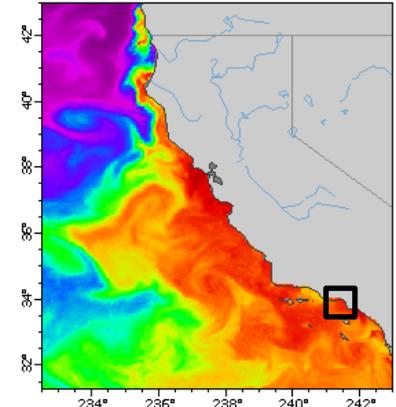
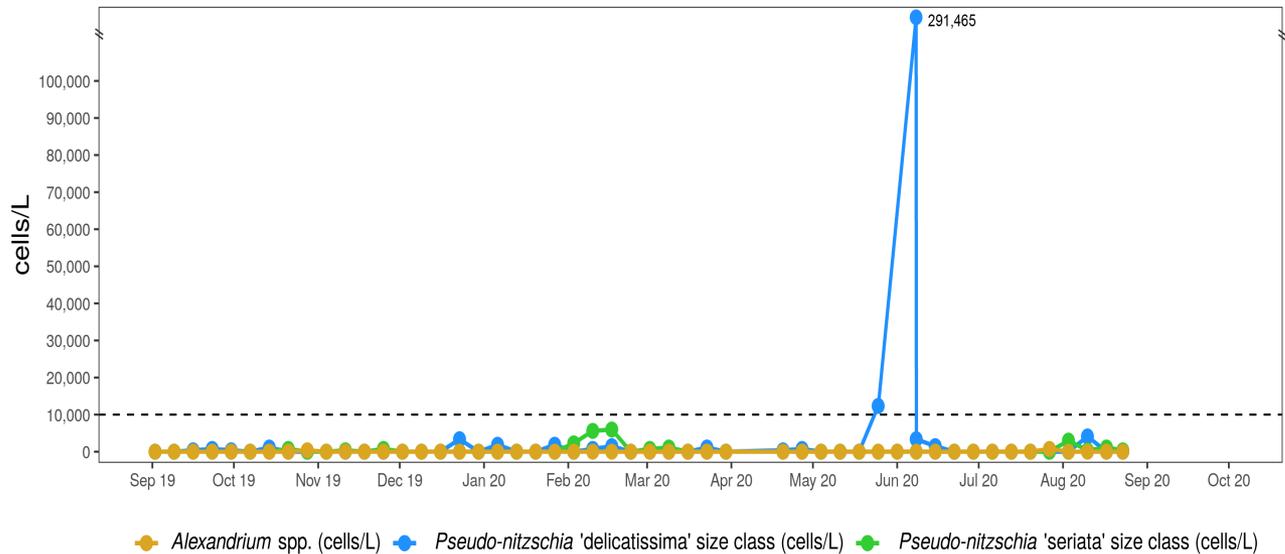


Jul-Oct 2020 HABMAP Data

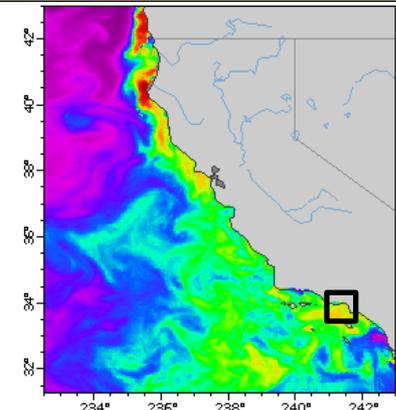
Potentially toxigenic *Pseudo-nitzschia* blooms detected at:

- Cal Poly Pier in June and July-August
- Santa Monica Pier in early June

Santa Monica Pier HAB and DA Data



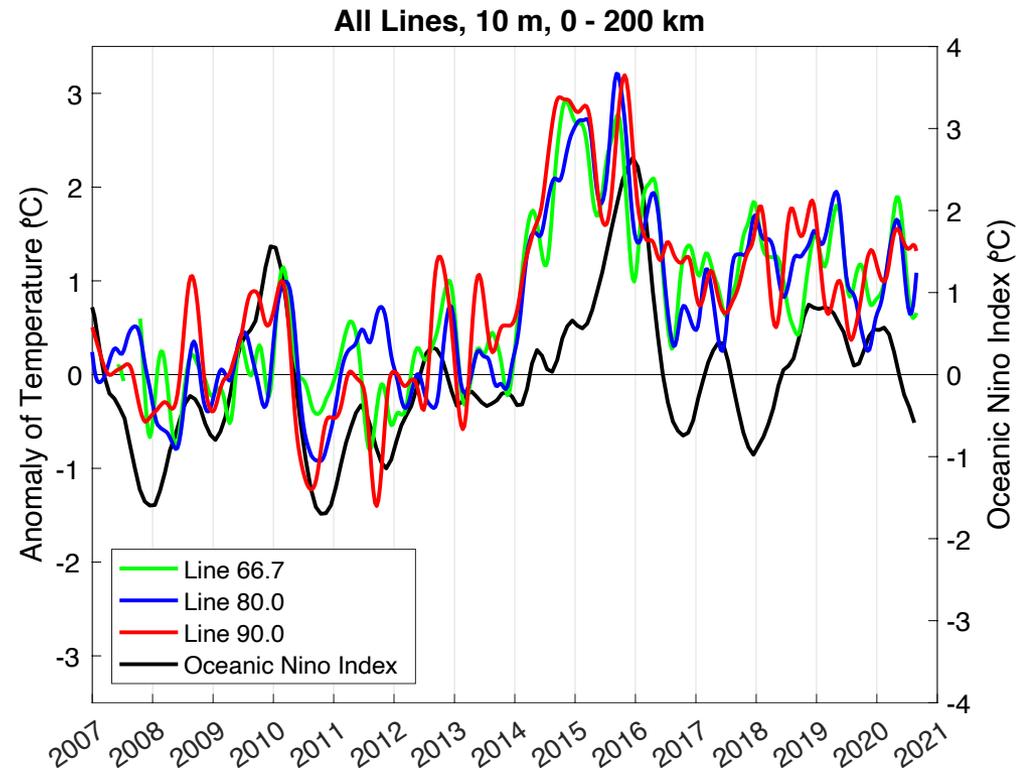
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
Probability of Particulate Domoic Acid > 500 nanograms/L (1)
 C-HARM 3-Day Advanced Forecast: Pseudo-Nitzschia, cellular domoic acid, and particulate domoic acid probability, California and Southern Oregon coast (2020-06-02T12:00:00Z)
 Data courtesy of UCSC, UCSD



0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
Probability of Cellular Domoic Acid > 10 picograms/cell (1)
 C-HARM 3-Day Advanced Forecast: Pseudo-Nitzschia, cellular domoic acid, and particulate domoic acid probability, California and Southern Oregon coast (2020-06-02T12:00:00Z)
 Data courtesy of UCSC, UCSD

Glider update

- Region remains anomalously warm, on trend since 2014.
- La Nina conditions continue building at the equator, which would normally lead to cooling off CA.
- Cooling appears to be occurring at depth, but temps aren't expected to be as cold as they would have been before 2014.



Recent Publications

Wilson JM, Carter ML, Muhle J, Bowman JS. (2020). Using empirical dynamic modeling to assess relationships between atmospheric trace gases and eukaryotic phytoplankton populations in coastal Southern California. *Marine Chemistry*.

doi.org/10.1016/j.marchem.2020.103896

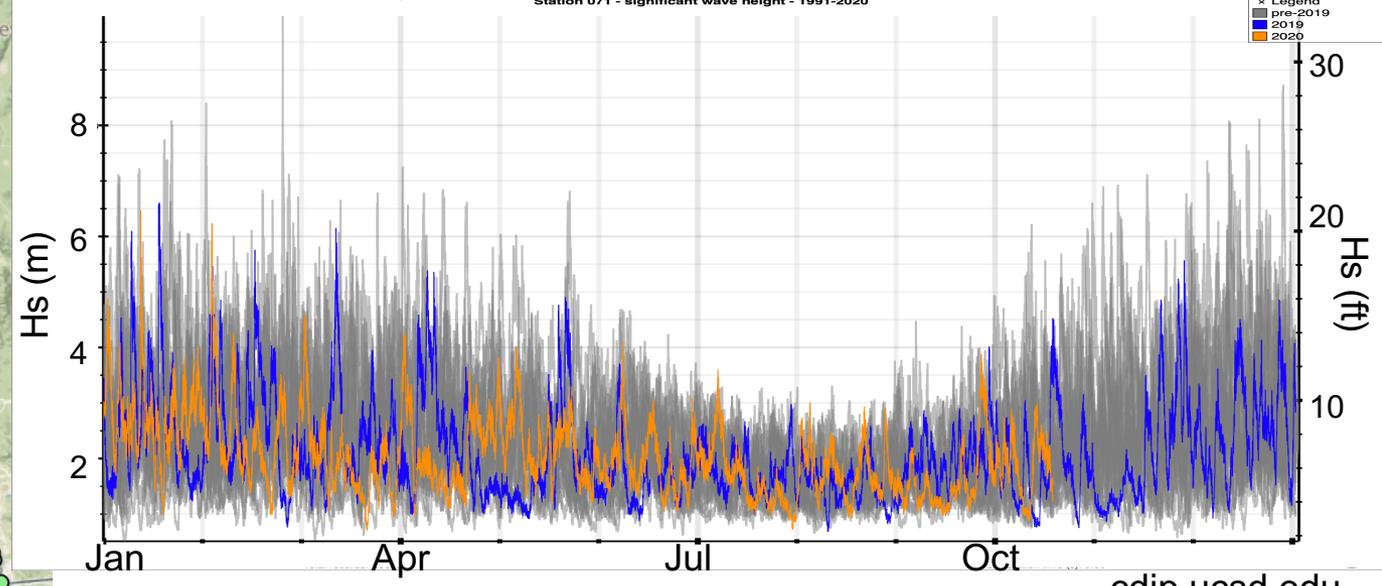
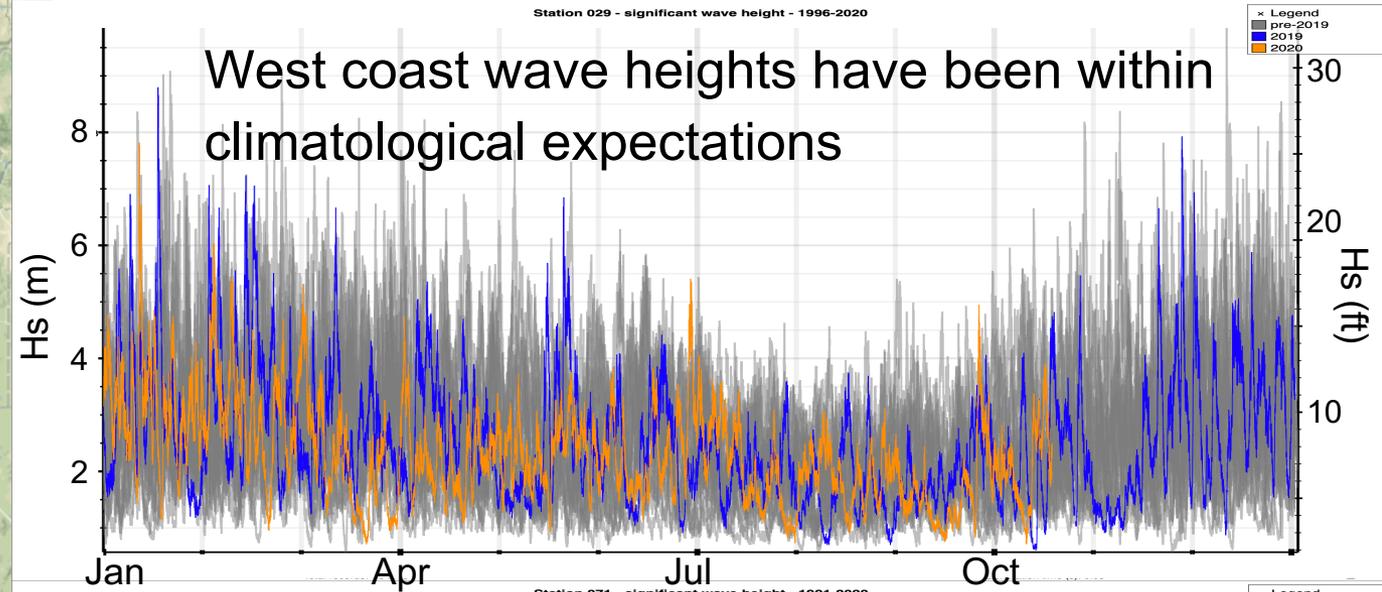
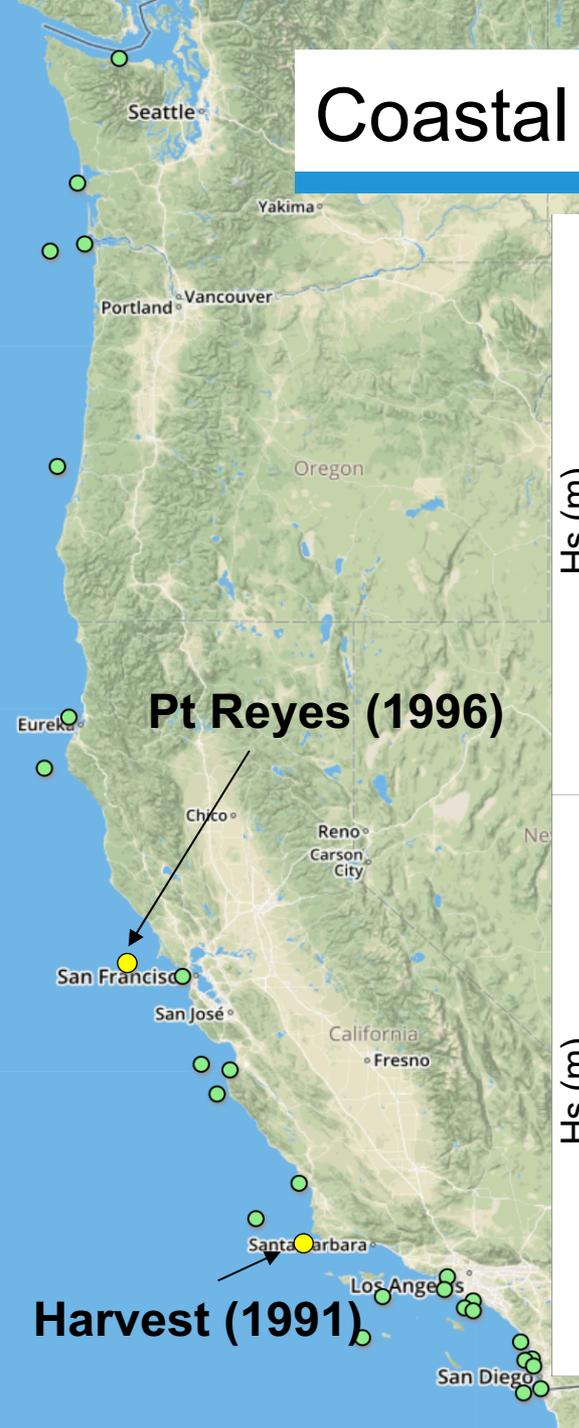
Kenitz KM, Orenstein EC, Roberts PLD, Franks PJS, Jaffe JS, Carter ML, Barton AD. (2020). Environmental drivers of population variability in colony-forming marine diatoms. *Limnol. Oceanogr.* doi.org/10.1002/lno.11468

Orenstein EC, Ratelle D, Briseno-Avena C, Carter ML, Franks PJS, Jaffe JS, Roberts PLD. (2020). The Scripps plankton camera system: A framework and platform for in situ microscopy. *Limnol. Oceanogr.* doi.org/10.1002/lom3.10394

Larkin AA, Moreno AR, Fagan AJ, Fowlds A, Ruiz A, Martiny AC. (2020). Persistent El Nino driven shifts in marine cyanobacteria populations. *PLOS One*.

doi.org/10.1371/journal.pone.0238405

Coastal Data Information Program



Coastal Data Information Program

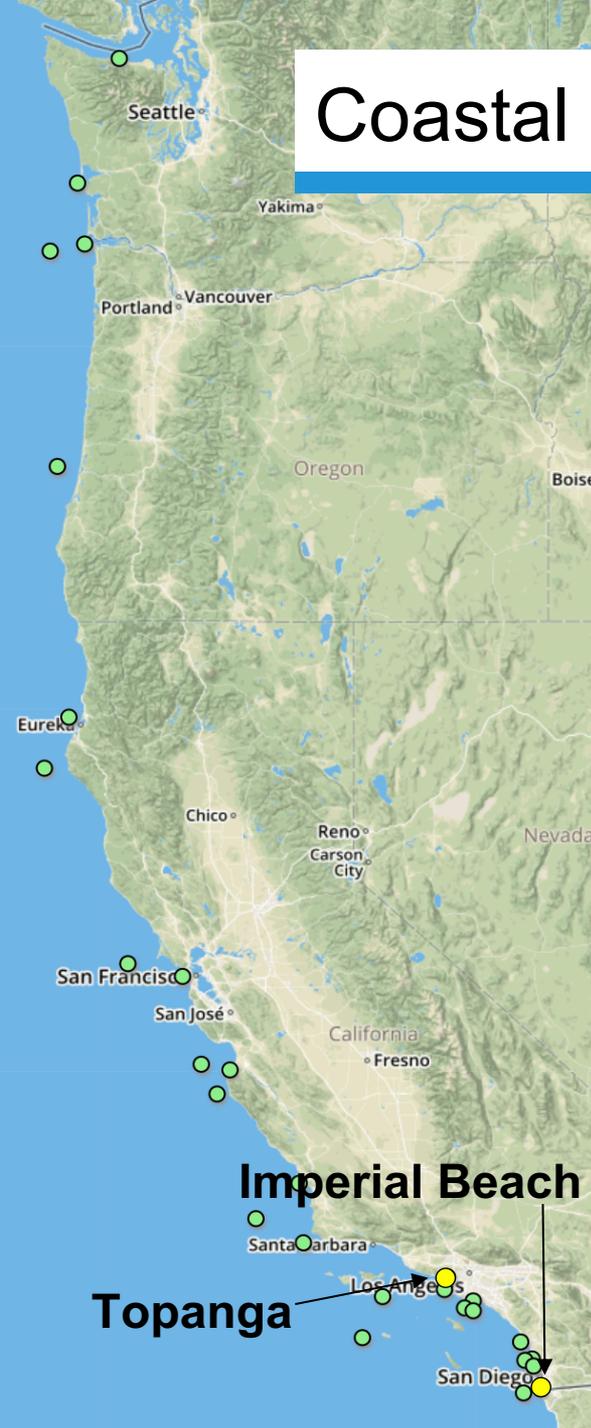


CDIP 103 Topanga Nearshore, CA

- “New” station
- 4th generation Datawell Waverider
- Wave data + surface current, SST, air temp
- In support of CA State Parks funded coastal inundation research

CDIP 155 Imperial Beach Nearshore, CA

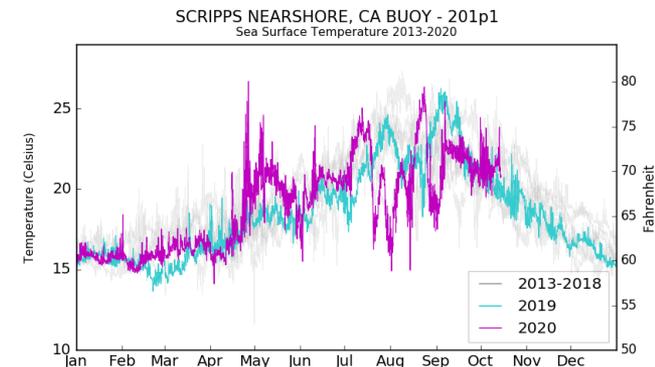
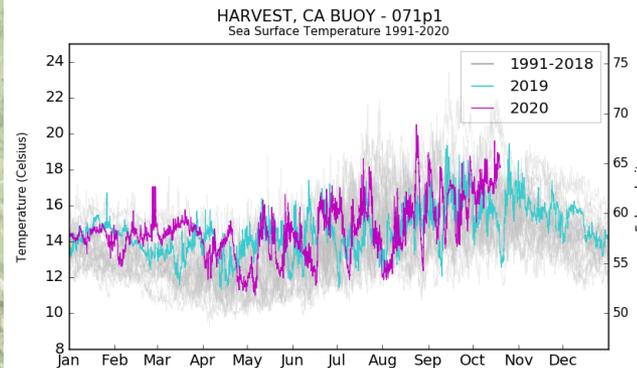
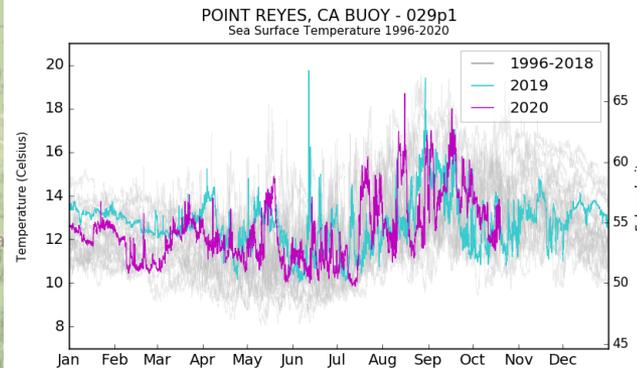
- Redeployed
- Wave data + SST, *air temp*



Coastal Data Information Program



Measured record high and record low sea surface temperatures in SoCal bight during spring and summer. North of Pt Conception, SST has been within climatological expectations.

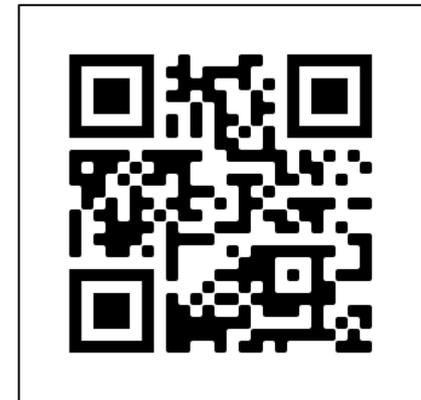
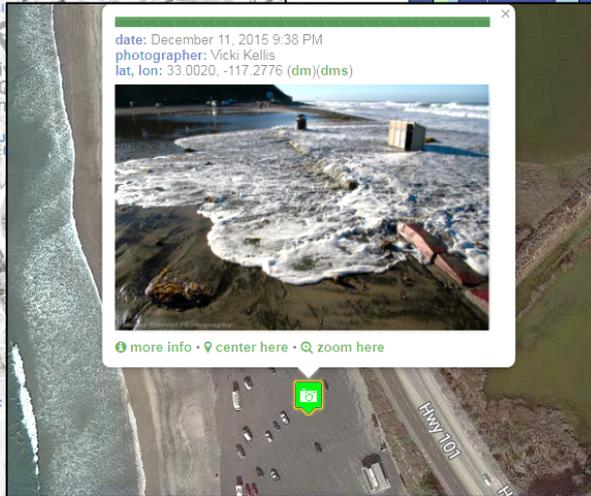
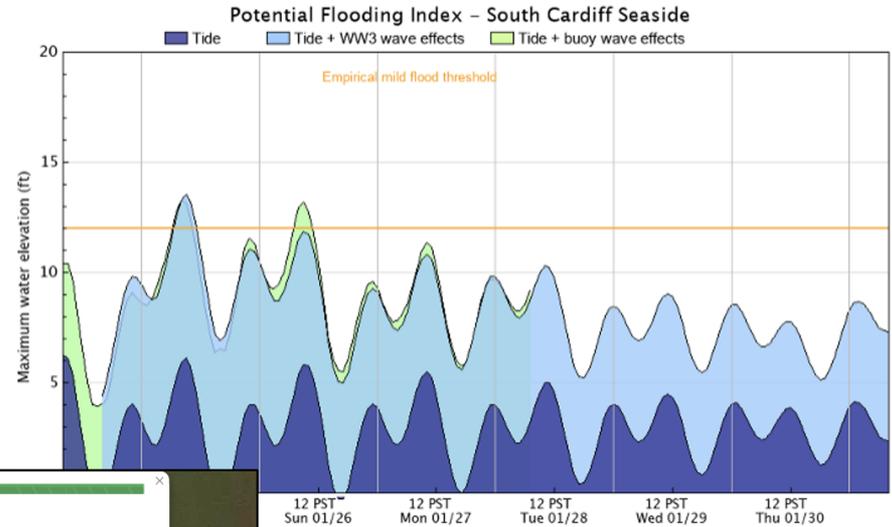


Coastal Data Information Program



CDIP - Coastal Flooding Reporting Tool

CDIP/SIO Water level elevation (relative to MLLW) forecasts use Stockdon (2006), are HIGHLY experimental, and should not be used as your primary forecast information.



cfrt.cdip.ucsd.edu



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- **Next webinar: Tuesday, January 26th 2020**

THANK YOU!