

CLIMATE NARRATIVE, October 2018

NORTH PACIFIC

At the end of October much of the Pacific north of 40°N had weakly positive SST anomalies. However, negative SST anomalies ($>-1.5^{\circ}\text{C}$) were found along the coasts of Mexico and the US. Some of these areas of weak negative anomaly extended westward as far as 130°W. Strongest positive SST anomalies ($<2^{\circ}\text{C}$) were observed in the Gulf of Alaska and west of 180°E/W between 30°-50°N.

<http://www.ospo.noaa.gov/Products/ocean/sst/anomaly/>
https://coastwatch.pfeg.noaa.gov/elnino/coastal_conditions.html

Positive **SEA LEVEL ANOMALY** (SLA), to 10 centimeters (cm) was seen along the coast of Central America (5°N-20°N) and across the equatorial Pacific.

The seemingly coupled trans-Pacific trough of negative SLA ($>-20\text{ cm}$), zonal at 10°N, persisted through October.

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ocean/weeklyenso_clim_81-10/wksl_anm.gif

During October, **Chlorophyll-a** (Chl-a) at 2 milligrams per cubic meter (mg/m^3) persisted in 200-400 km wide coastal areas off Central California. Chl-a concentrations of 0.3-1.0 mg/m^3 were found offshore. Areas with Chl-a exceeding 2 mg/m^3 were seen in localized inshore areas.

<https://coastwatch.pfeg.noaa.gov/coastwatch/CWBrowserWW180.jsp#>

WATER TEMPERATURES AT SHORE STATIONS

SANTA MONICA (34°N) Subtidal Water Temperature (STWT) was 16.7°-21.1°C during the month, and ended October between 19°-19.3°C. Southern MONTEREY BAY (36.6°N), STWT was between 13.8° and 17.5°C during October, with 31 October STWT 14.5°-15°C. ARENA COVE (38.9°N) STWT was between 10.2° and 14.3°C during the month with values of 12.5°-12.9°C at month's end. At the PORT ORFORD tide station (42.7°N), near Cape Blanco, STWT was at a minimum of 9.1°C on 14 October, dropping from 13.3°C on 3 October. Port Orford STWT was 14.0-14.5°C at the end of October. At NEAH BAY, WA (48.4°N) STWT during October was between 9.5° and 12.9°C, with STWT of 10.5°C at month's end.

<https://tidesandcurrents.noaa.gov/stations.html?type=Physical+Oceanography>

EQUATORIAL AND SOUTH PACIFIC

El Niño-Southern Oscillation (ENSO)-neutral conditions remained through October.

Neutral to positive SST anomalies persisted across Equatorial and Tropical Pacific.

Equatorial upper ocean (0-300m) heat content anomaly from 180-100°W increased during October. Positive sea level anomalies (SLA) to 10 cm occurred across the equatorial Pacific from 140°E to 100°W. Negative SST anomalies ($>-2^{\circ}\text{C}$) occurred south of Australia and around the Antarctic continent.

<http://www.ospo.noaa.gov/Products/ocean/sst/anomaly/>

The **NOAA OCEANIC EL NIÑO INDEX (ONI)** [3-month running mean of ERSST.v4 SST anomalies in the Nino 3.4 region (5N-5S, 120-170W)] was positive (0.4), but neutral for the fifth consecutive 3-month mean (ASO).

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

MULTIVARIATE ENSO INDEX (MEI)

The September-October MEI remained steady at 0.47, below the lowest El Niño rating. Of seven 'analogue' years: 1951, '52, '68, '69, '79, '90, and 2003, all remained in either high neutral or weak El Niño conditions through the following few seasons (updated 9 Nov). <https://www.esrl.noaa.gov/psd/enso/mei/>

The **NOAA / NCEI PACIFIC DECADAL OSCILLATION INDEX (PDO)**, calculated from ERSST.v4 data, had nine consecutive negative or neutral PDO values, including -0.71 (negative) for October. <https://www.ncdc.noaa.gov/teleconnections/pdo/>

PACIFIC / NORTH AMERICAN Teleconnection Index (PNA), computed from atmospheric pressure over the Pacific Ocean and North American Continent dropped from a high monthly value of 1.44 in September to 0.21 in October.

<http://www.cpc.noaa.gov/data/teledoc/pna.shtml>

During October 2018 the Bakun **ERD UPWELLING INDEX (UI)**, computed from monthly average sea level atmospheric pressure fields were weakly positive from 24°N to 42°N. Poleward of 51°N the monthly means UI values were negative.

<http://www.pfeg.noaa.gov/products/PFELData/upwell/monthly/table.1810>

PRECIPITATION and RUNOFF

Summer and fall rainfall in the Pacific States and southern Canada was 20 – 60% of average during 2018. The Fraser River was flowing at about 55,000 cubic feet per second (cfs) in October, 40-65% less than median-range seasonal discharge. At the Dalles, the Columbia river fluctuating near seasonal median. The lower Sacramento River was below median flow in October.

https://wateroffice.ec.gc.ca/search/real_time_results_e.html?

<https://waterdata.usgs.gov/ca/nwis/current/?type=flow>

<https://www.cnrfc.noaa.gov/awipsProducts/RNOWRKCLI.php>

NOTES

In September and October rockfish and other species were feeding on *Pleuroncodes planipes*) off Central California. Additional sightings and occasional stranding of *P. planipes* occurred around southern Monterey Bay through October 2018.

The commercial **Market Squid** (*Doryteuthis opalescens*) fishery landed 772 mt into Southern California ports in September and October combined. The **Northern Anchovy** (*Engraulis mordax*) fishery landed 3,733 mt during September and October combined for a season-total of 16,713 mt landed into California ports.

MARINE ALGAL TOXINS

During October 2018, California shellfish sport harvest advisories were related to domoic acid concentrations in recreational Dungeness crabs and bi-valve shellfish from areas north of Mendocino County (40°N) and in lobster fisheries around Anacapa Island and the eastern Santa Barbara Channel Islands.

<https://www.cdph.ca.gov/Programs/CEH/DRSEM/Pages/EMB/Shellfish/Marine->

Biotoxin-Monitoring-Program.aspx.

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