

An aerial photograph of a forest, where the color transitions from a deep blue at the top to a bright white at the bottom, suggesting a gradient of temperature or snow cover. The text is overlaid on this image.

ODA Climate Forecast Method

Pete Parsons, ODA Meteorologist
503-986-4701 pparsons@oda.state.or.us

ODA Climate Forecast Method

ODA Climate Forecast Method

- Find Past Years With Similar Characteristics (Analog Years).

ODA Climate Forecast Method

- Find Past Years With Similar Characteristics (Analog Years).
- Find Common Events or Trends During Those “Analog Years.”

ODA Climate Forecast Method

- Find Past Years With Similar Characteristics (Analog Years).
- Find Common Events or Trends During Those “Analog Years.”
- Use That Information to Predict Future Events and/or Trends.

Pete's Way of Doing Things (PWODT)

Pete's Way of Doing Things (PWODT)

- Analog method based on SOI/ONI from the previous winter to present.

Pete's Way of Doing Things (PWODT)

- Analog method based on SOI/ONI from the previous winter to present.
- Top analog years are identified taking into account ocean transitions and current ENSO forecast.

Pete's Way of Doing Things (PWODT)

- Analog method based on SOI/ONI from the previous winter to present.
- Top analog years are identified taking into account ocean transitions and current ENSO forecast.
- Forecast is typically “weighted” towards closest analog year’s weather.

Southern Oscillation Index (SOI)

Southern Oscillation Index (SOI)

- An index calculated based on the differences in air pressure anomaly between Tahiti and Darwin, Australia.

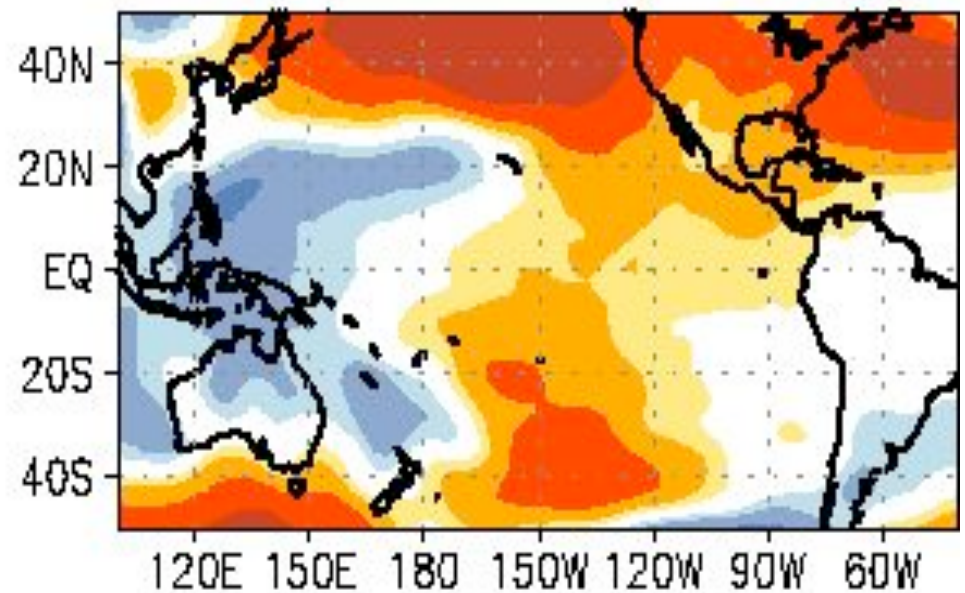
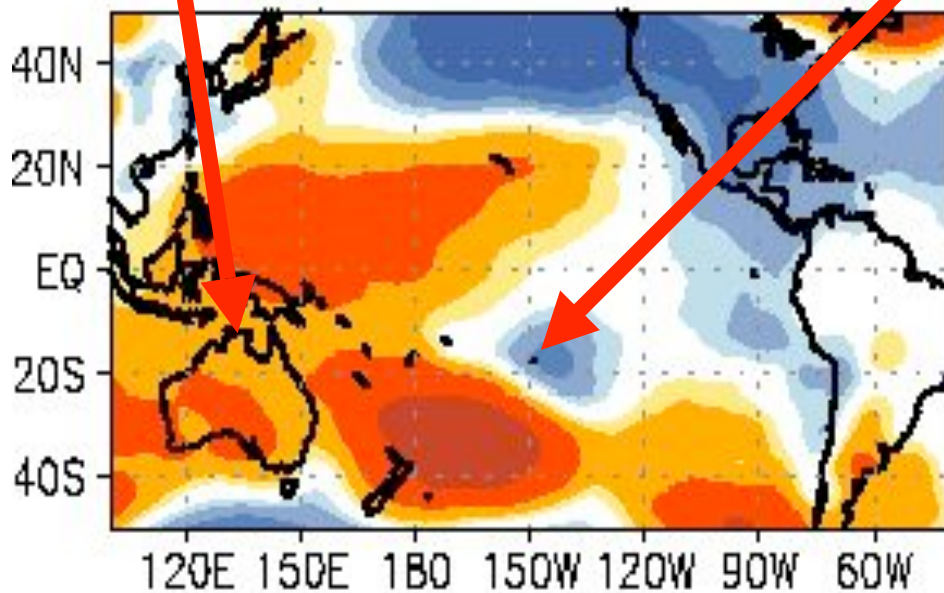
SOI Based On Pressure Anomalies of Two Sites

PRESSURE DEPARTURES (mb)

Darwin EL NIÑO Tahiti

Jan-Mar 1998

LA NIÑA Jan-Mar 1989



-4 -2 -1 -0.5 0.5 1 2 4

-4 -2 -1 -0.5 0.5 1 2 4

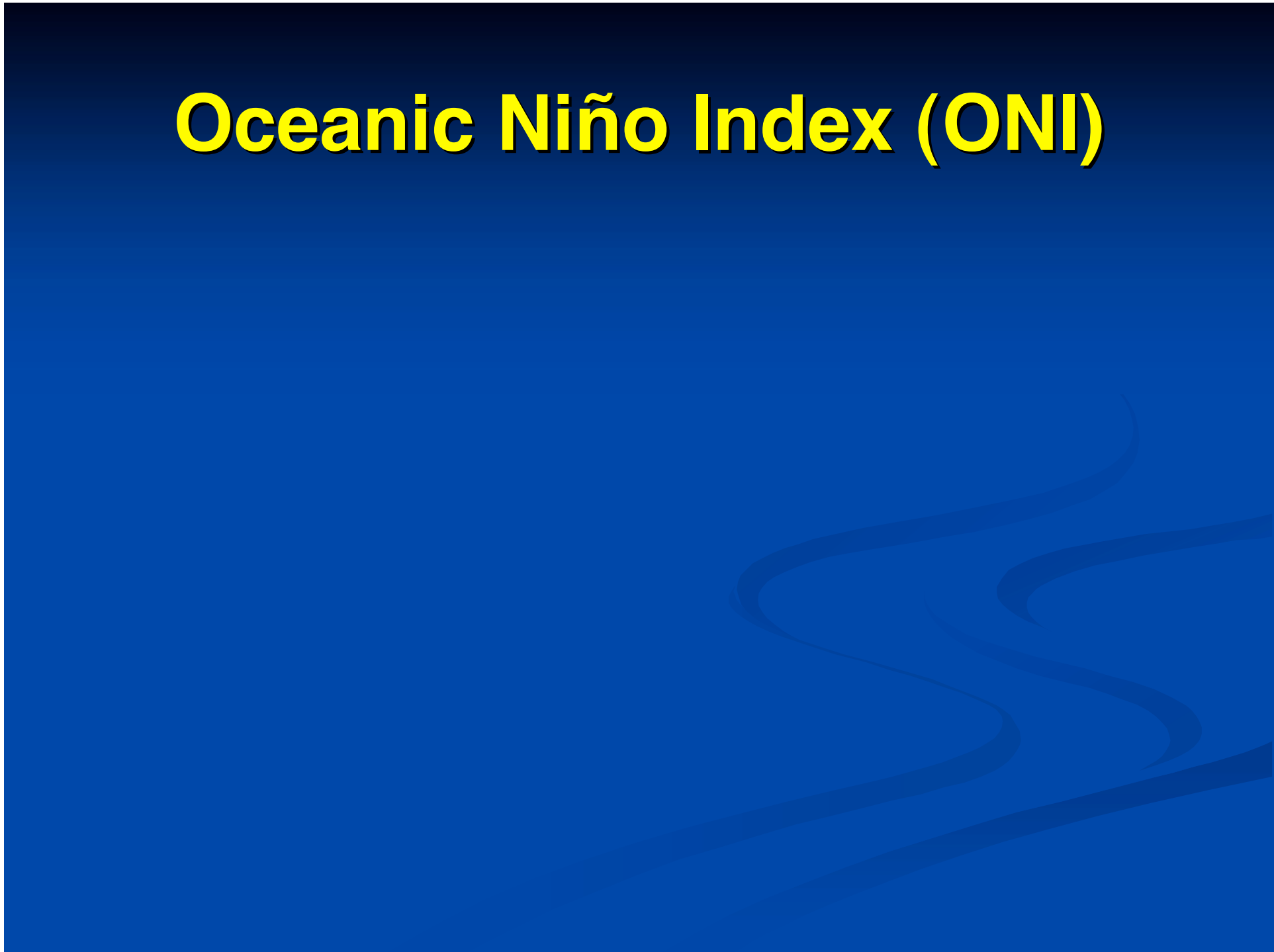
Southern Oscillation Index (SOI)

- An index calculated based on the differences in air pressure anomaly between Tahiti and Darwin, Australia.

Southern Oscillation Index (SOI)

- An index calculated based on the differences in air pressure anomaly between Tahiti and Darwin, Australia.
- Strongly related to temperature changes in the Tropical Pacific Ocean.

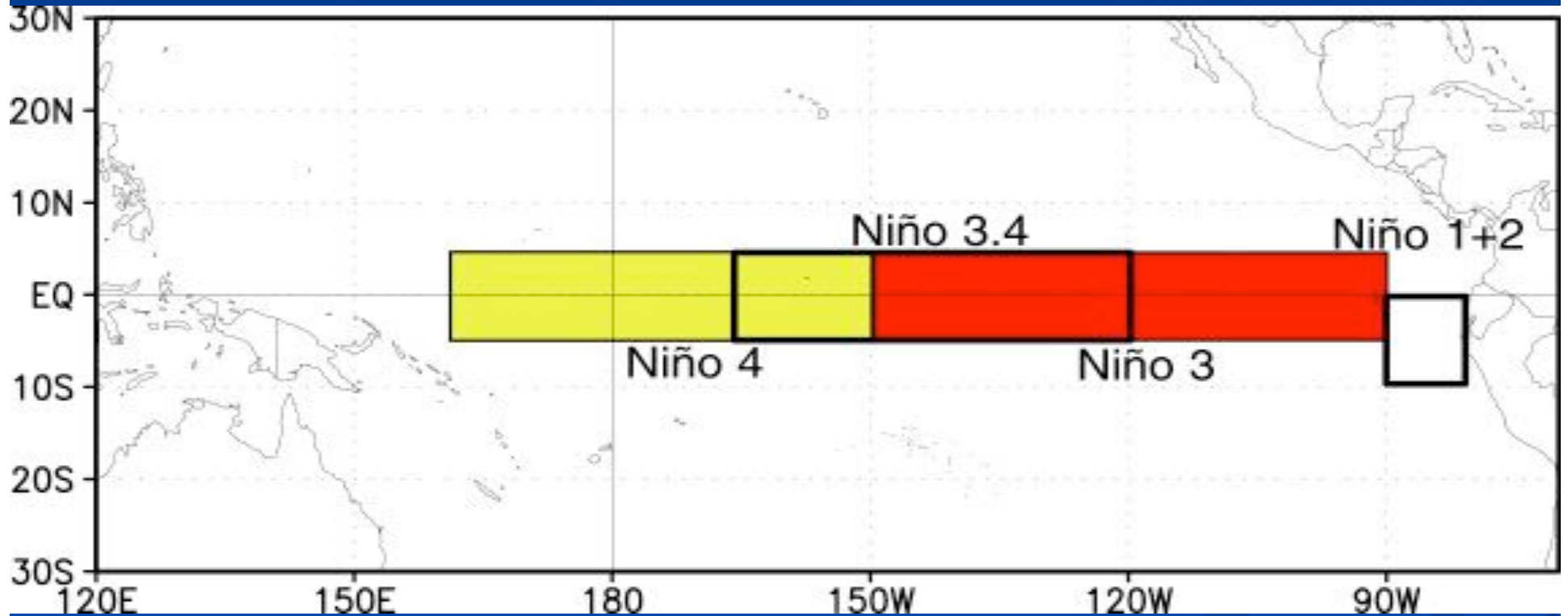
Oceanic Niño Index (ONI)



Oceanic Niño Index (ONI)

- Based on SST departures from average in the Niño 3.4 region

Niño Regions



Oceanic Niño Index (ONI)

- Based on SST departures from average in the Niño 3.4 region

Oceanic Niño Index (ONI)

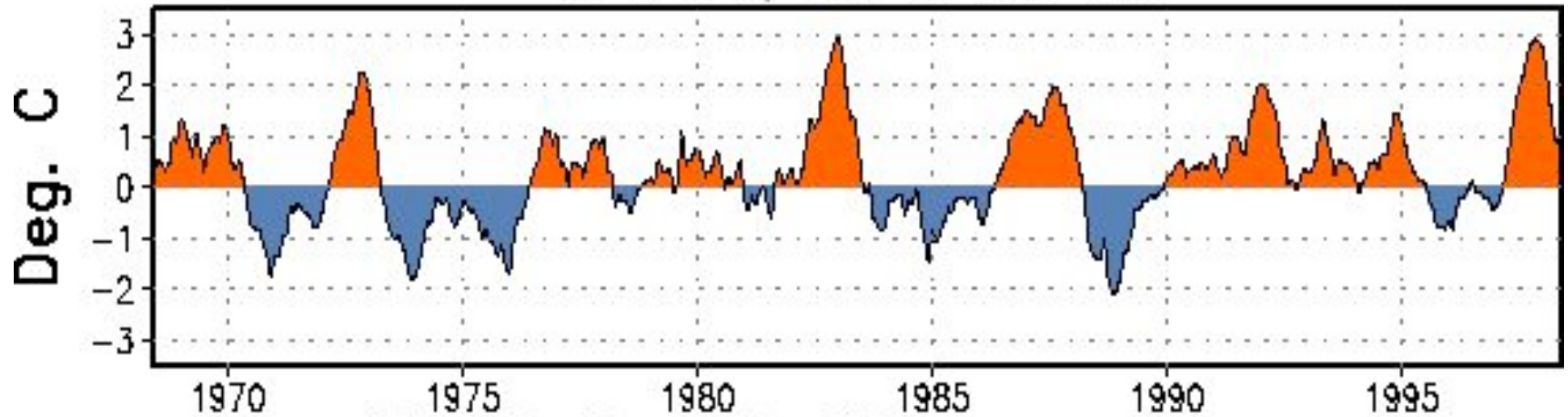
- Based on SST departures from average in the Niño 3.4 region
- Defined as the three-month running-mean SST departure.

Oceanic Niño Index (ONI)

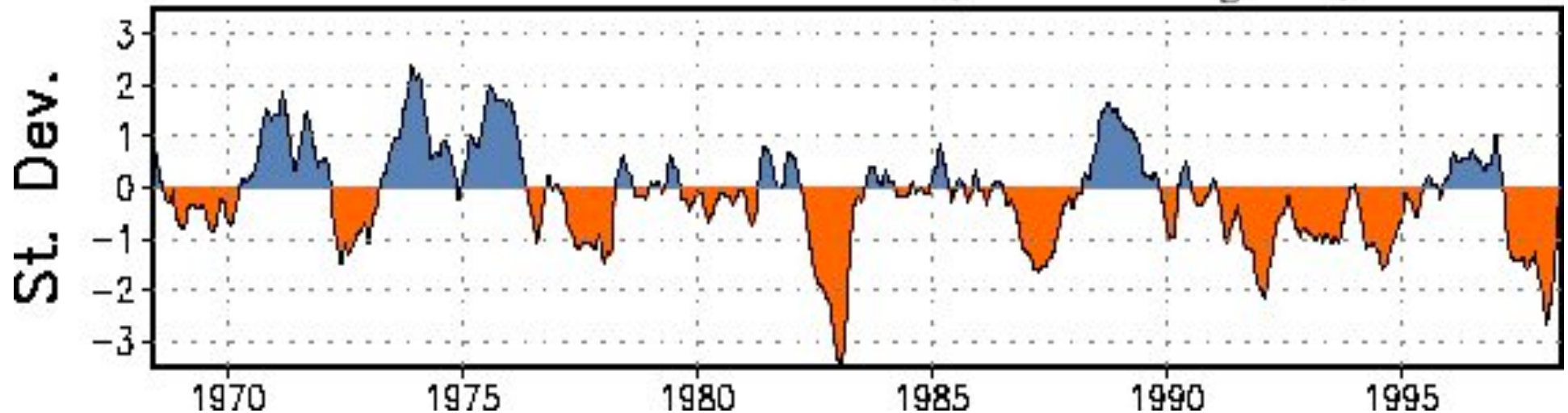
- Based on SST departures from average in the Niño 3.4 region
- Defined as the three-month running-mean SST departure.
- Closely linked to the SOI

The Link Between ONI and SOI

Ocean Temperature Departures ($^{\circ}\text{C}$) for Niño 3.4
(5°N - 5°S , 170°W - 120°W)



Tahiti - Darwin SOI (3 month-running mean)



El Niño / Southern Oscillation ENSO

El Niño / Southern Oscillation ENSO

- Year-to-year variations in sea-surface temperatures, convective rainfall, surface air pressure, and atmospheric circulation that occur across the equatorial Pacific Ocean.

El Niño / Southern Oscillation ENSO

- Year-to-year variations in sea-surface temperatures, convective rainfall, surface air pressure, and atmospheric circulation that occur across the equatorial Pacific Ocean.
- El Niño and La Niña represent opposite extremes in the ENSO cycle.

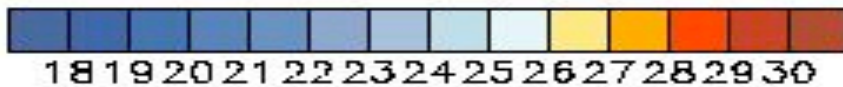
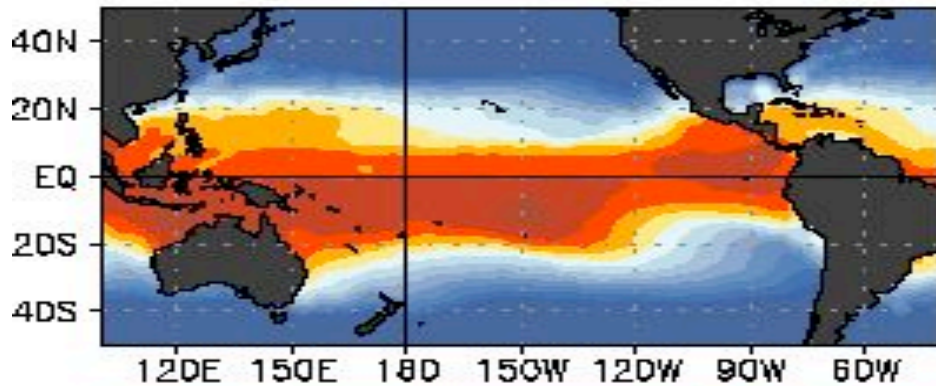
NOAA Operational Definitions for El Niño and La Niña

- El Niño: characterized by a *positive* ONI greater than or equal to $+0.5^{\circ}\text{C}$.
- La Niña: characterized by a *negative* ONI less than or equal to -0.5°C .
- To be classified as a full-fledged El Niño or La Niña episode these thresholds must be exceeded for a period of at least 5 consecutive overlapping 3-month seasons.
- *CPC considers El Niño or La Niña conditions to occur when the monthly Niño3.4 SST departures meet or exceed $\pm 0.5^{\circ}\text{C}$ along with consistent atmospheric features.*

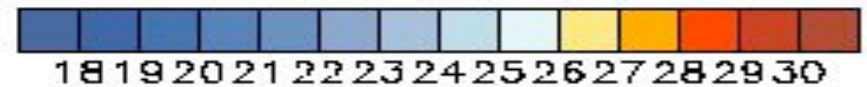
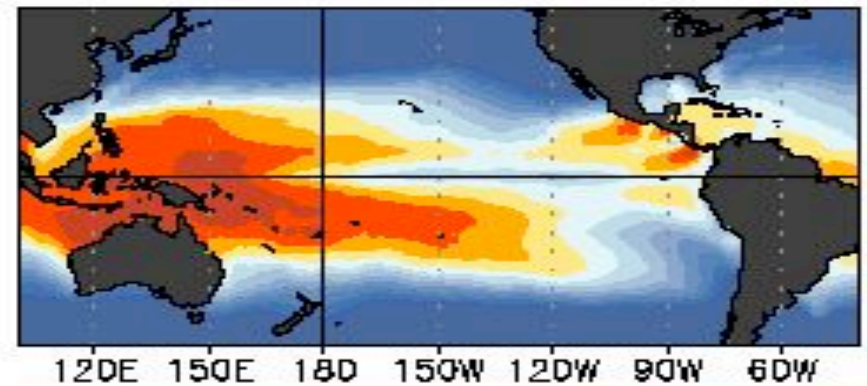
Typical ENSO Patterns

OCEAN TEMPERATURES (°C)

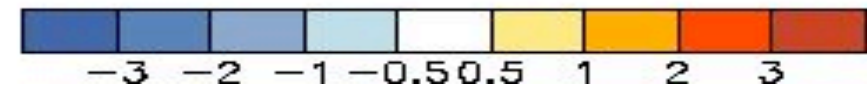
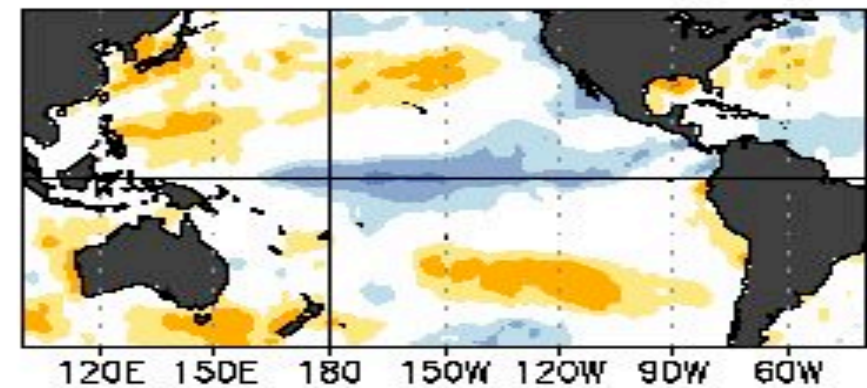
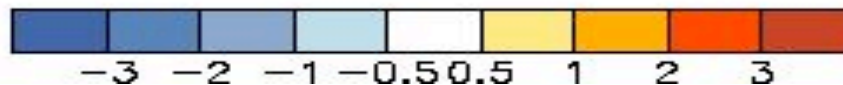
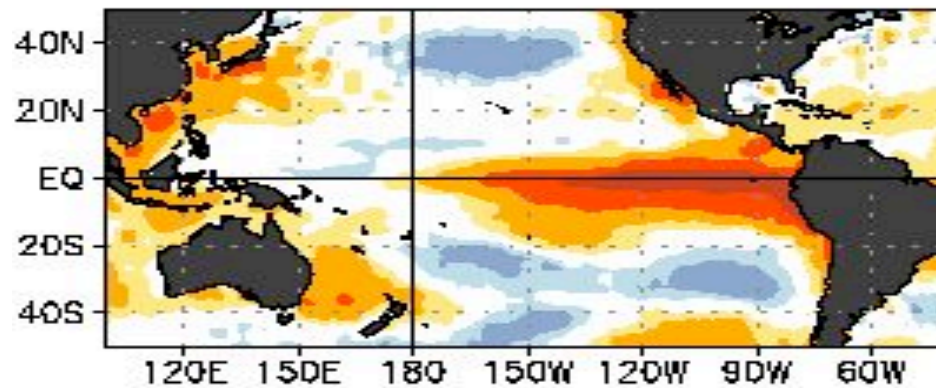
EL NIÑO
Jan-Mar 1998



LA NIÑA
Jan-Mar 1989



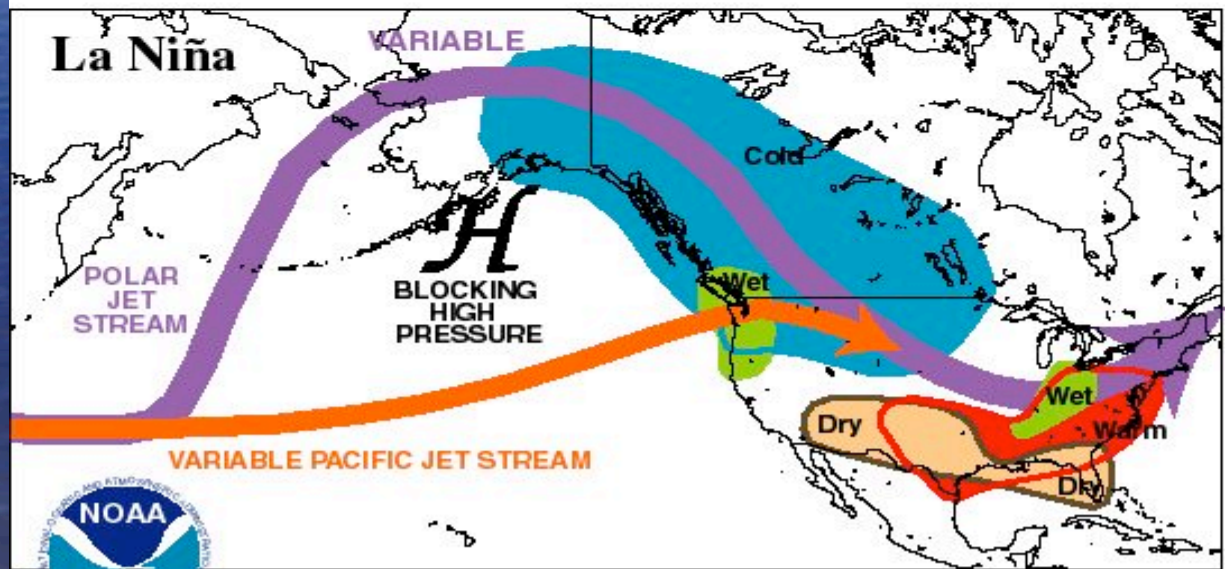
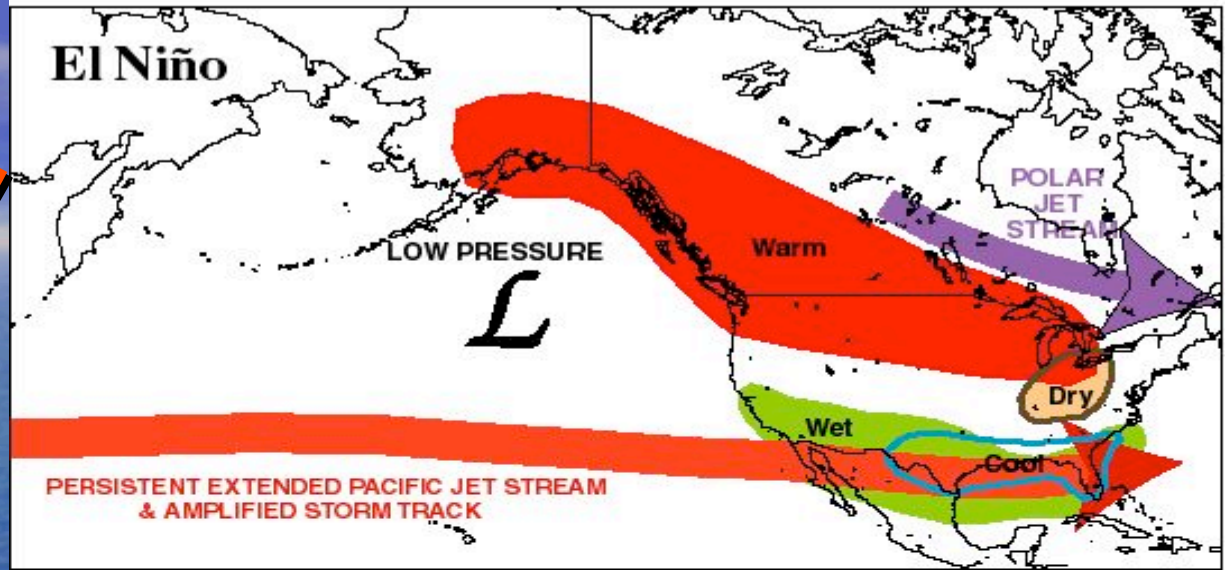
OCEAN TEMPERATURE DEPARTURES (°C)




Warm
Event

Cold
Event

TYPICAL JANUARY-MARCH WEATHER ANOMALIES
AND ATMOSPHERIC CIRCULATION
DURING MODERATE TO STRONG
EL NIÑO & LA NIÑA





**The ODA Climate
Forecast is usually
updated around the 10th
of each month**

Your Feedback is Welcome

Pete Parsons, ODA Meteorologist

503-986-4701 pparsons@oda.state.or.us