

Mystery of El Niño de Navidad



South American fishermen first noticed periods of unusually warm water in the Pacific basin of the ocean in the 1600s. They called it El Niño de Navidad (little boy of Christmas), because El Niño events typically peak around December. The warmer water off the west coast of the Americas impacted their fishing, but

what caused these events and how they impacted global climate were mysteries. Later, scientists discovered events of cold water building up off the west coast of the Americas. These were called La Niña (little girl).

Let's Investigate!

1. Explore the NOAA View Global Data Explorer: <https://www.nvdl.noaa.gov/view/globaldata.html>

- Click: **+ Add Data > Ocean > Temperature > At the Surface**

That will load the ocean surface temperature data at <https://www.nvdl.noaa.gov/view/globaldata.html#SURE>.


- Click the “Data Values” box in the lower-right of the legend to show temperatures when you point to the map.



2. Record data below or in science notebooks.

See the locations of national marine sanctuaries and monuments on these maps: <https://sanctuaries.noaa.gov/about/maps.html>

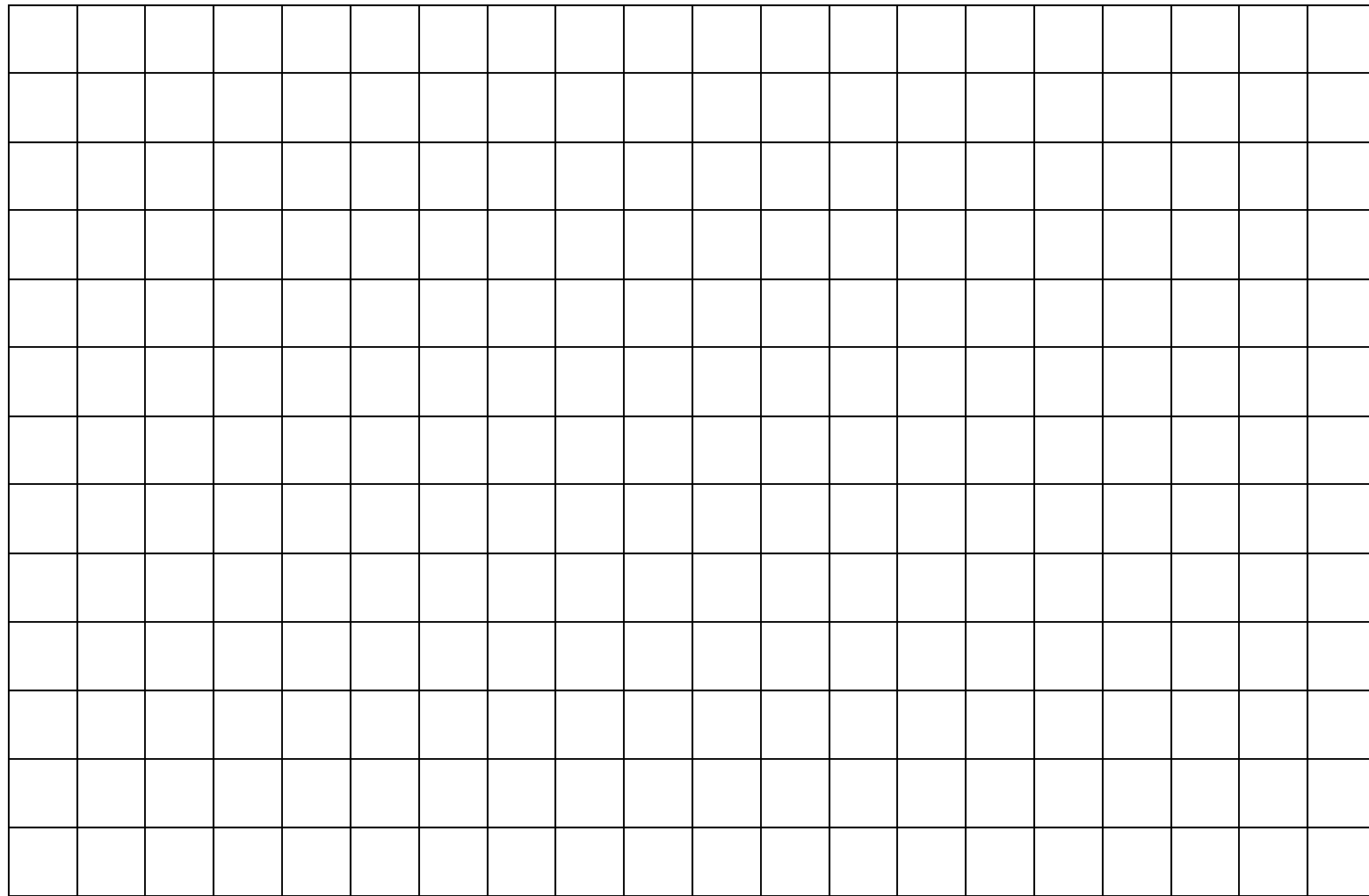
Name of National Marine Sanctuary or Monument	Location / State or Territory	Average Annual Sea Surface Temperature (SST) in 1982	Avg. Annual SST in 1983	Avg. Annual SST in 1988	Avg. Annual SST in 1997	Avg. Annual SST in 1998	Avg. Annual SST in 1999	Avg. Annual SST in 2022	Most Recent Weekly SST (Your Current Year)
Example: Papahānaumokuākea Marine National Monument	Northwestern Hawaiian Islands, Hawai'i	23.8 degrees Celsius (°C) = 74.8 °F (degrees Fahrenheit)	25.3 °C 77.5 °F	22.6 °C 72.7 °F	24.5 °C 76.1 °F	23.1 °C 73.6 °F	23.5 °C 74.3 °F	26.1 °C 79.0 °F	____ °C ____ °F

Name of National Marine Sanctuary or Monument	Location	Average Annual SST in 1982	Avg. Annual SST 1983	Avg. Annual SST 1988	Avg. Annual SST 1997	Avg. Annual SST 1998	Avg. Annual SST 1999	Avg. Annual SST 2022	Most Recent Weekly SST
Channel Islands National Marine Sanctuary		____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F
Note: Data for 1982 and other years is found by dragging the slider in the Time legend in the lower-left of the screen:									
Monterey Bay National Marine Sanctuary		____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F
Rose Atoll Marine National Monument		____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F	____ °C ____ °F

- Explore the Ocean Temperature Departure data/map: <https://www.nnvl.noaa.gov/view/globaldata.html#SSTA>. What interesting observations can you discover with that data and/or other maps with NOAA's Data Explorer?
- Explore the Chlorophyll Concentration data/map: <https://www.nnvl.noaa.gov/view/globaldata.html#ALGE>. How might wildlife found in national marine sanctuaries and monuments have been impacted by changing ocean temperatures and levels of producers in their ecosystems?
- What years do you think may have been El Niño years? Why? Graphing the data may help you identify them. (See the next page).
- Which years may have been La Niña years? Why? Again, graphing the data may help you identify them.

7. **Graph the sea surface temperature data** from question 2. Use the grid below or another method. Clarify what the graph is showing by adding a title. Fully label the X and Y axes.

Title: _____



Year

Legend