New NASA PO.DAAC Altimetry Data Products

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Summary

NASA's Physical Oceanography Distributed Active Archive Center (PO.DAAC) has added several new satellite altimetry data products. These include an along-track SSH dataset curated from reference missions and an accompanying global gridded product. Four sea level "Indicator" time series data products have also been added: global mean sea level (GMSL), El Nino/Southern Oscillation (ENSO), Indian Ocean Dipole (IOD), and Pacific Decadal Oscillation (PDO).

New SSH Data Products

Built on the multi-mission altimetry product produced by B. Beckley et al. at Goddard Space Flight Center, **NASA-SSH** provides user-friendly sea level products for scientific and public use. Combining data from TOPEX/Poseidon, the Jason-series missions and Sentinel-6, the new product levels all satellites to a common reference time-period with consistent processing across missions.

The **NASA-SSH** products provide additional quality control (flagging outliers, removing bad passes and using crossovers) to reduce long-wavelength (primarily orbit) errors, and smoothing along track to reduce altimeter noise.

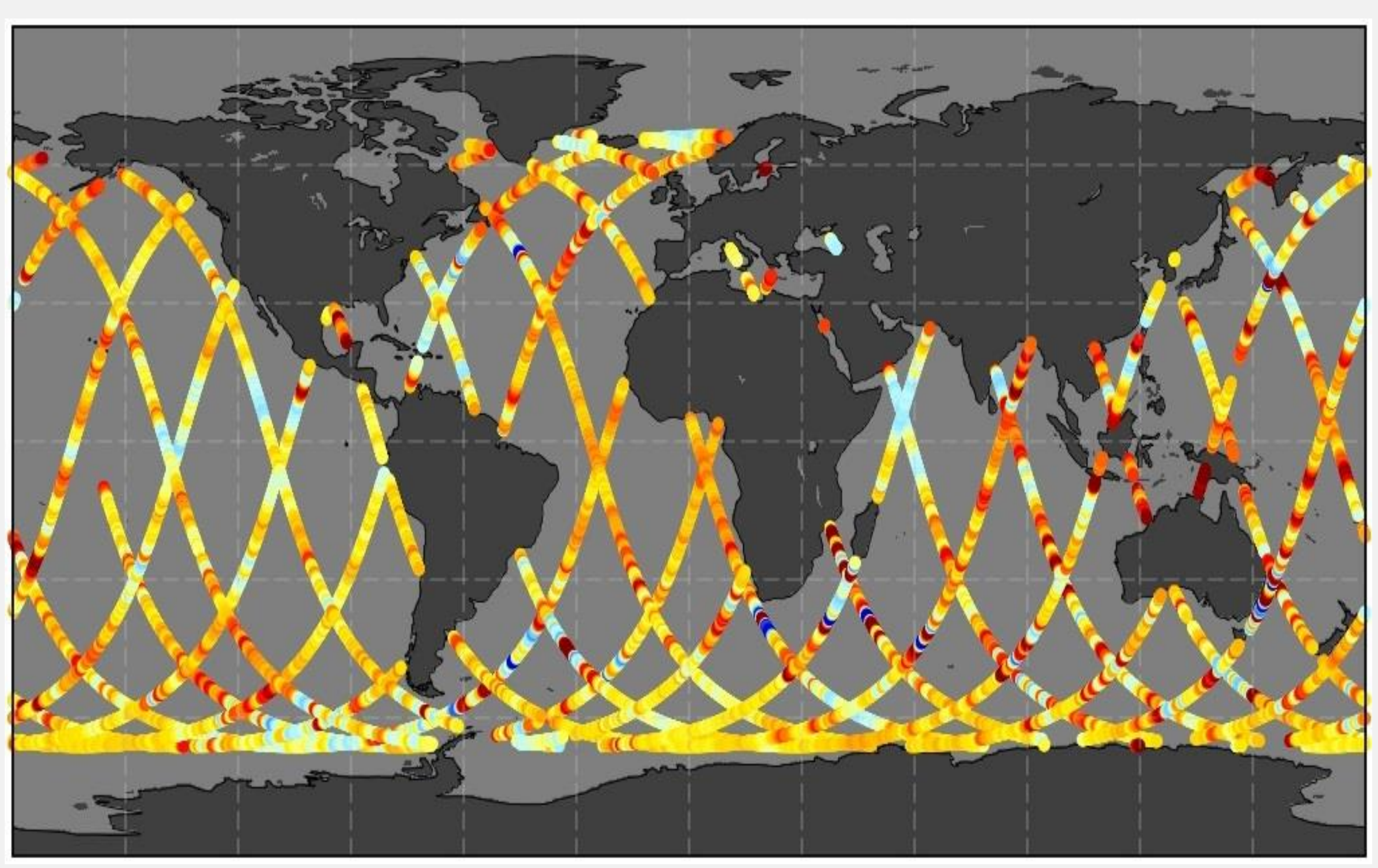
NASA-SSH provides user-friendly, daily netcdf files, as well as course resolution (0.5 degree) gridded maps and scalar indicators updatd on a weekly basis.

A new version of the **NASA-SSH** products (v1.1) will be released soon. Future versions will include data from high-latitude missions and more sophisticated gridding techniques to produce high-resolution mapped products.

NASA-SSH data is available at https://podaac.jpl.nasa.go/NASA-SSH

Along-track SSH Data

NASA-SSH Along-Track Sea Surface Height from Standardized Reference Missions Version 1



Along-track sea surface height, or sea level, anomaly measured using radar altimeter satellites in the reference mission orbit. These include TOPEX/Poseidon, the Jason series, and Sentinel-6. The data begin in Oct 1992, with data from TOPEX/Poseidon, and continues to the present. In this data set all missions have been referenced to a common baseline, additional quality control has been performed, and errors with wavelengths around one orbital cycle have been reduced.

The data consist of along-track observations of sea surface height, collected approximately once per second (1 Hz), and are parsed into files containing one day's worth of data per file. A flag variable is included to allow users to easily select only valid observations, and a variable containing sea surface height with the flag applied and a small amount along track smoothing (~20 km), is suggested for most users.

NASA-SSH Along-Track Sea Surface Height from Standardized Reference Missions Version 1
Short Name: NASA_SSH_REF_ALONGTRACK_V1
Collection Concept ID: C3309450672-POCLOUD

All NASA-SSH data products are updated weekly, using Sentinel-6 data directly from PO.DAAC!

All PO.DAAC data products are freely available for download or direct cloud access via the NASA Earthdata Cloud

NASA-SSH Sea Surface Height Datasets from
Joshua K. Willis, Séverine Fournier, Emmy Killett, Kevin Marlis and Julie Sanchez; Jet Propulsion Laboratory/California Institute of Technology

Questions related to these datasets?
Contact podaac@podaac.jpl.nasa.gov

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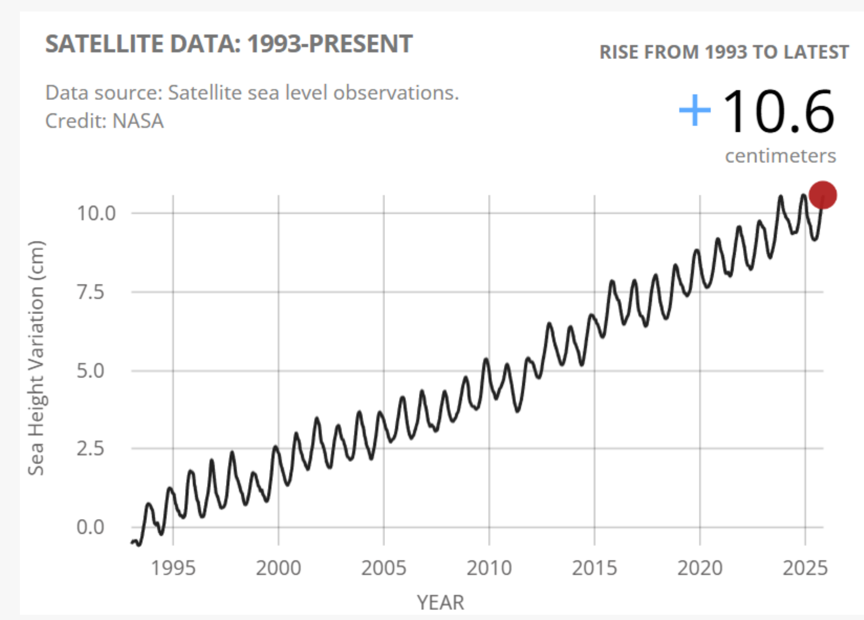
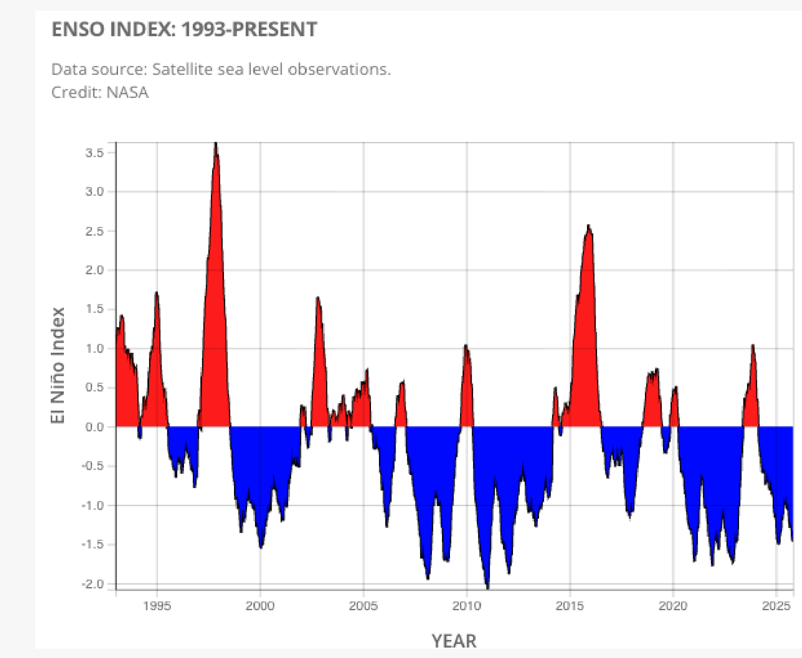
Ocean Climate Indicators

Global Mean Sea Level



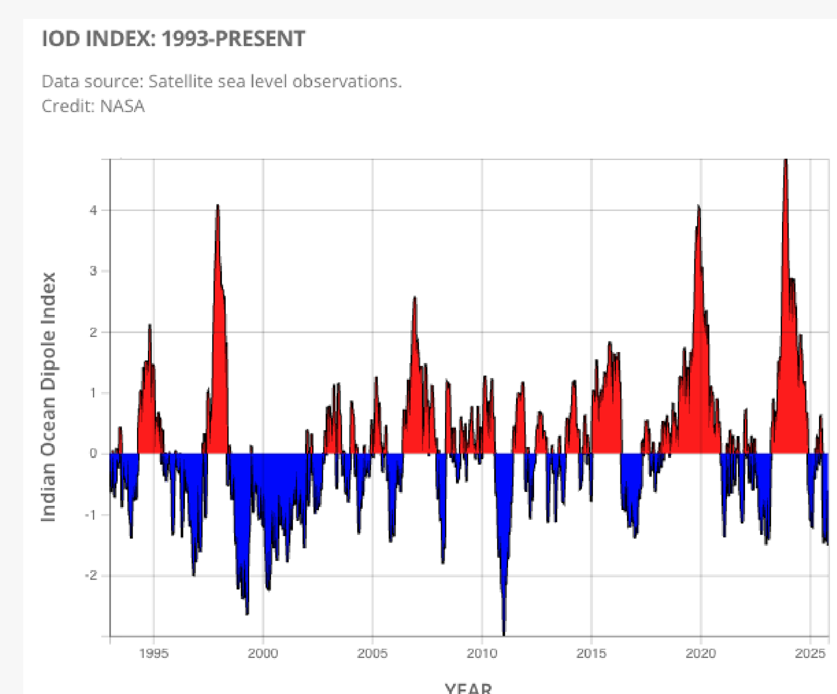
This is the average height of the entire ocean surface. Global warming is driving sea levels higher because of two different reasons: water is added when ice sheets and glaciers melt, and seawater expands as it warms.

El Niño-Southern Oscillation



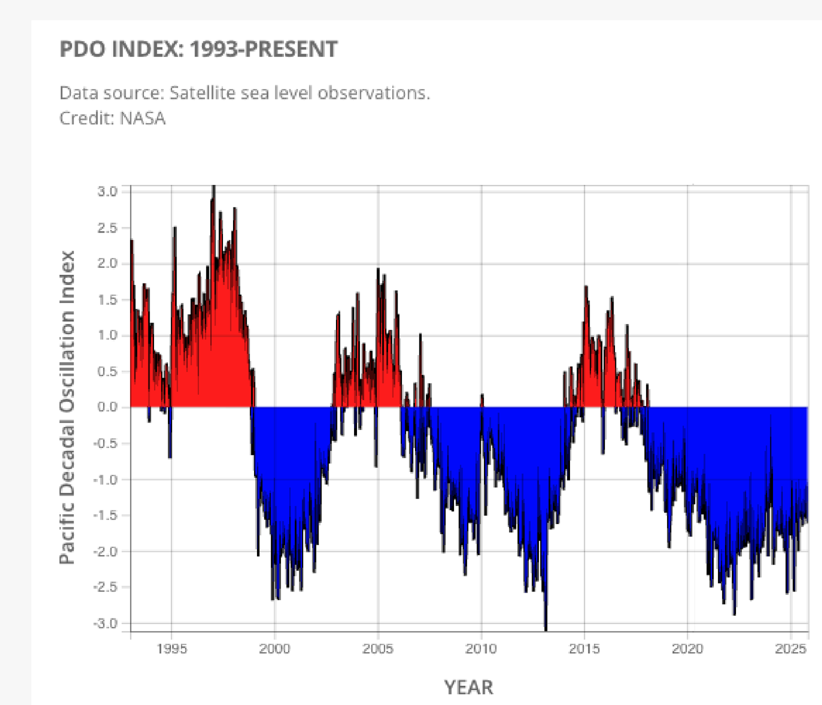
El Niño–Southern Oscillation (ENSO) is a Pacific Ocean climate pattern with two phases: El Niño and La Niña. The positive phase of ENSO is associated with sea level rise in the eastern and fall western tropical Pacific

Indian Ocean Dipole



The Indian Ocean Dipole (IOD) is a climate pattern affecting the Indian Ocean. During a positive phase, warm waters are pushed to the western part of the Indian Ocean, while cold deep waters are brought to the surface in the east.

Pacific Decadal Oscillation



*The **PDO** is a long-term (10-20 year) oscillation of the Pacific Ocean. During a warm (positive) phase, warm waters are brought in the Eastern Pacific Ocean and along the coast of North America and cool nutrient-rich waters in the western Pacific Ocean.*

NASA-SSH GMSL from Simple Gridded Sea Surface Height
Short Name: NASA_SSH_GMSL_INDICATOR
Collection Concept ID: C3478934705-POCLOUD

NASA-SSH IOD Sea Surface Height Indicator
Short Name: NASA_SSH_IOD_INDICATOR
Collection Concept ID: C3478941029-POCLOUD

NASA-SSH ENSO Sea Surface Height Indicator
Short Name: NASA_SSH_ENSO_INDICATOR
Collection Concept ID: C3473420592-POCLOUD

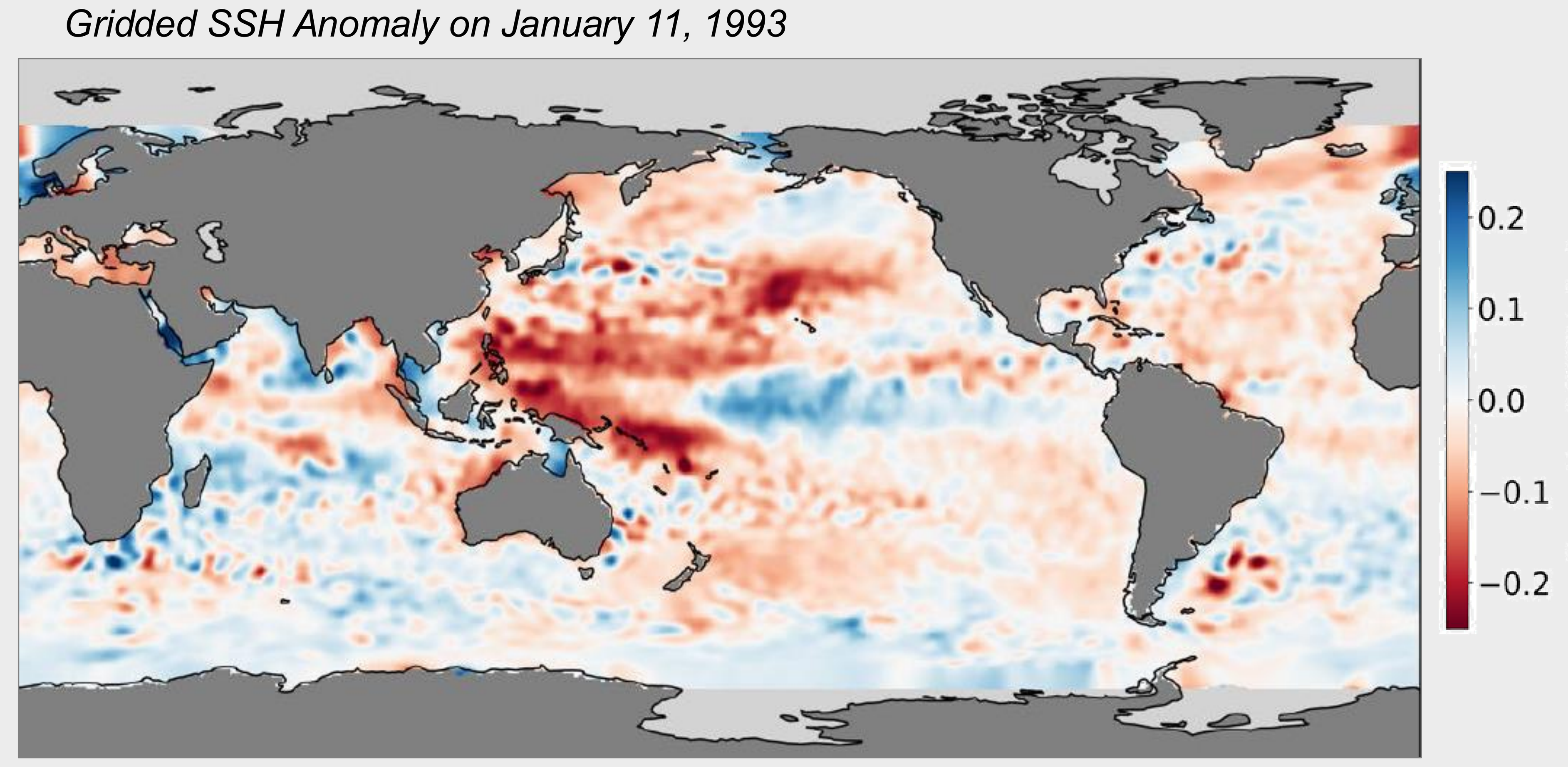
NASA-SSH PDO Sea Surface Height Indicator
Short Name: NASA_SSH_PDO_INDICATOR
Collection Concept ID: C3484829347-POCLOUD

* ENSO, IOD, and PDO indicator values were calculated using cyclostationary empirical orthogonal functions computed by decomposing the gridded sea surface height anomalies over the time-period from 1993 to 2019.

Gridded SSH Data

NASA-SSH Along-Track Sea Surface Height from Standardized Reference Missions Version 1

Gridded SSH Anomaly on January 11, 1993



The new 0.5 degree gridded SSH dataset uses 10 days of NASA-SSH Along-Track data from reference orbit missions spanning the period 1992-present to compute 2D maps of sea surface height, or sea level, anomaly once every 7 days. The mapping algorithm respects land boundaries and ensures that only along-track data from connected, adjacent basins are combined.

NASA-SSH Simple Gridded Sea Surface Height from Standardized Reference Missions Only Version 1
Short Name: NASA_SSH_SIMPLE_GRID_V1
Collection Concept ID: C3309442935-POCLOUD