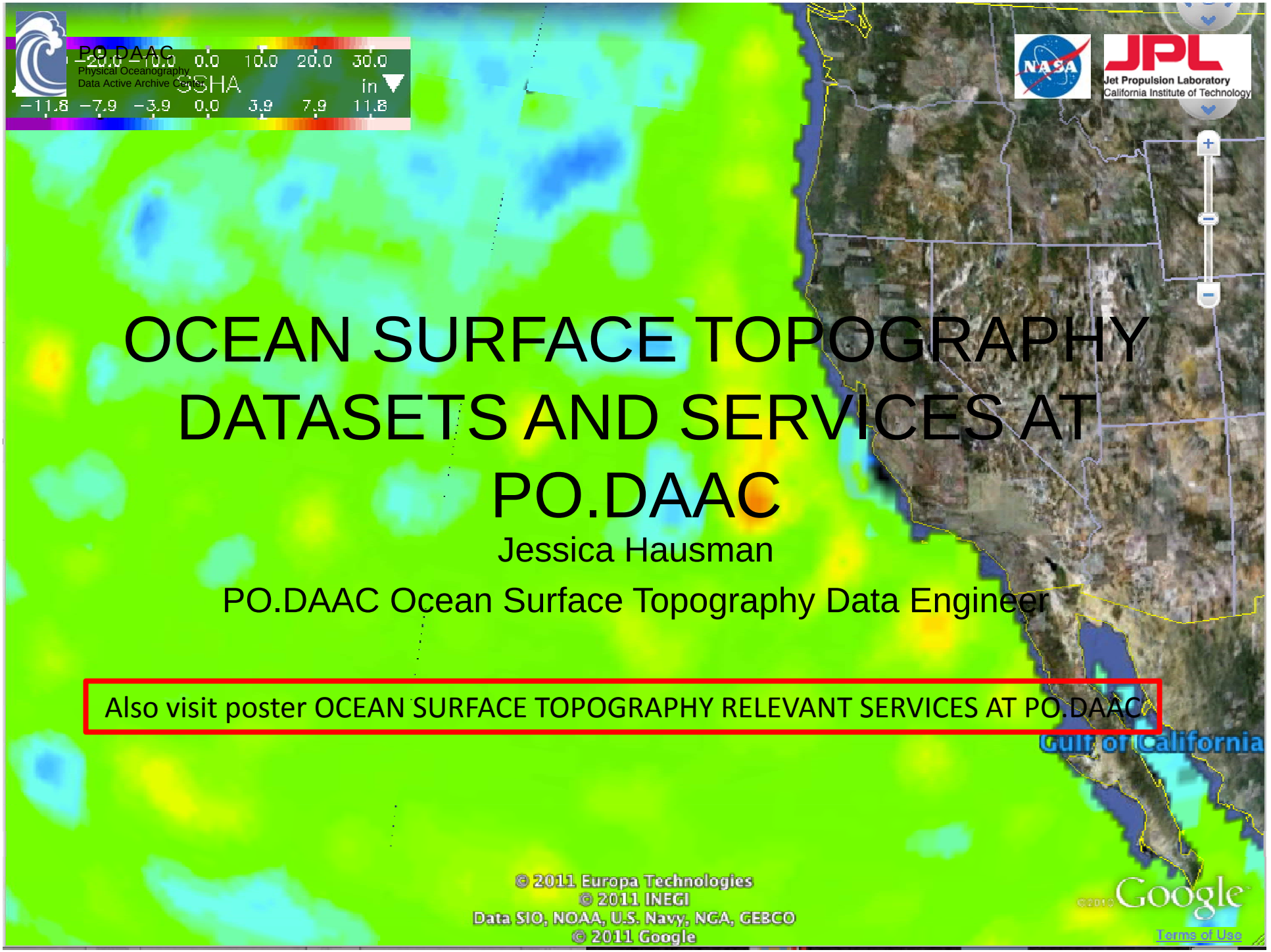


OCEAN SURFACE TOPOGRAPHY DATASETS AND SERVICES AT PO.DAAC

Jessica Hausman

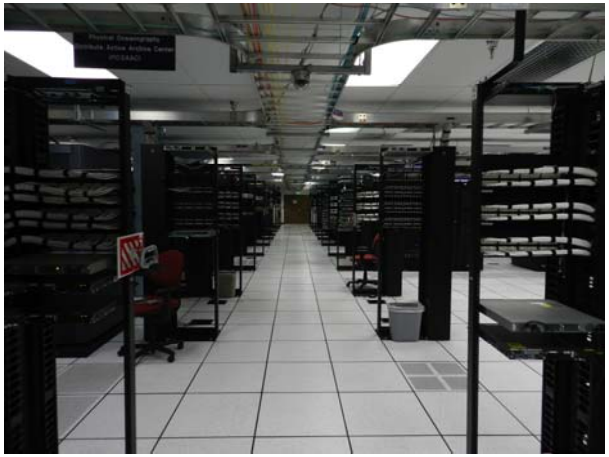
PO.DAAC Ocean Surface Topography Data Engineer

Also visit poster OCEAN SURFACE TOPOGRAPHY RELEVANT SERVICES AT PO.DAAC

Stewardship of Satellite Ocean Data

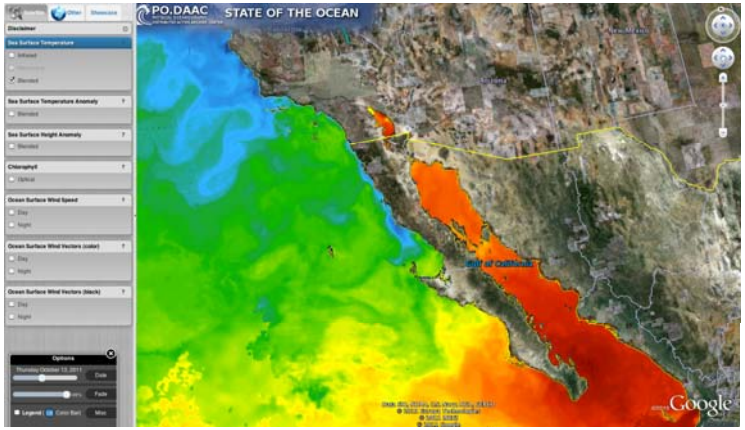
Data Management

Preserve NASA's data for the benefit of future generations



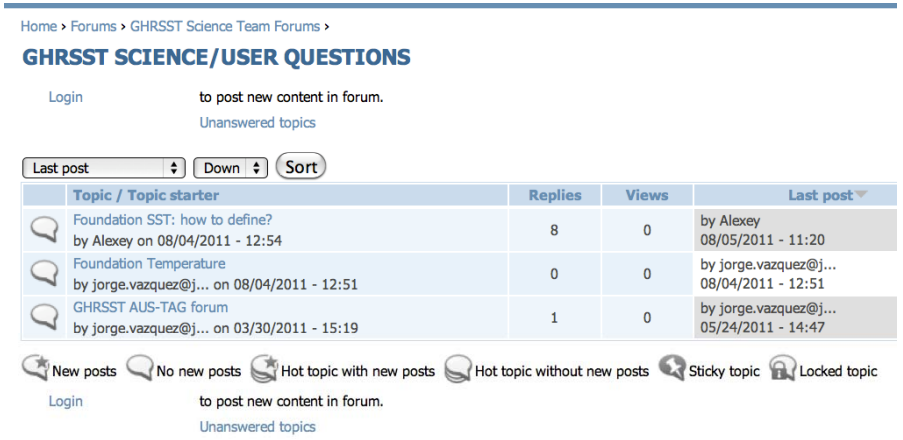
Data Access

Provide intuitive services to discover and utilize satellite ocean data



Science User Support

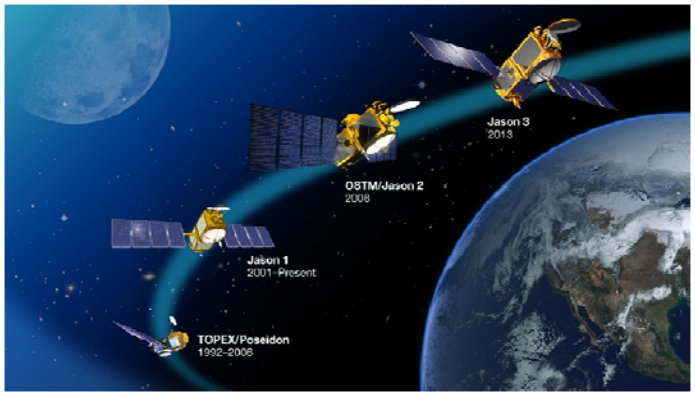
Provide a knowledgebase to help a broad user community interpret satellite ocean data and related information



PO.DAAC Data Holdings

NASA Missions & Projects

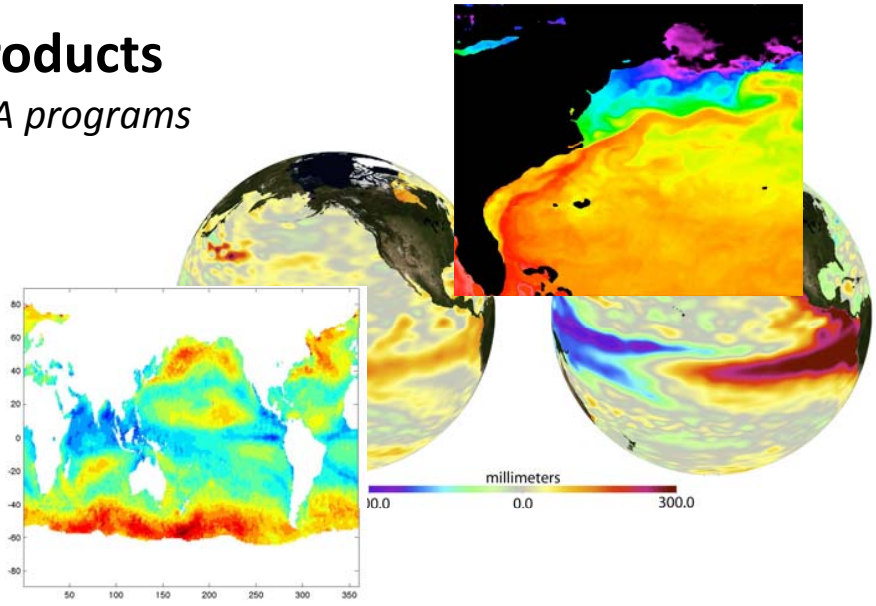
Seasat, TOPEX/Poseidon, Jason-1, NSCAT,
SeaWinds on ADEOS-II, QuikSCAT,
GRACE, GHRSST, MeASUREs, Aquarius



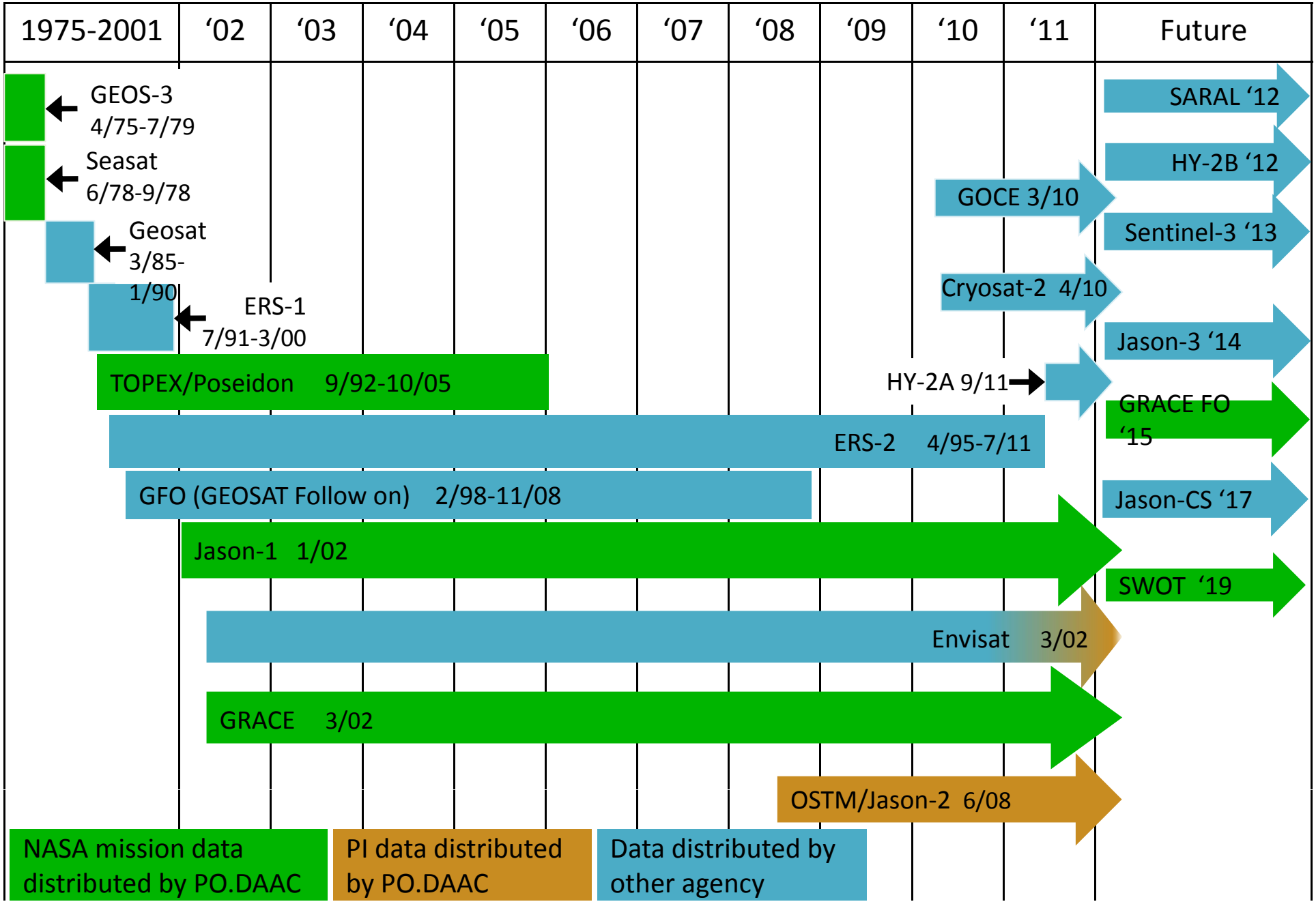
Ocean & Climate Science Products

Value-added datasets in support of NASA programs

Sea Surface Temperature
Ocean Vector Winds
Ocean Surface Topography
Gravity
Ocean Surface Salinity
Ocean Circulation & Currents
Sea Ice



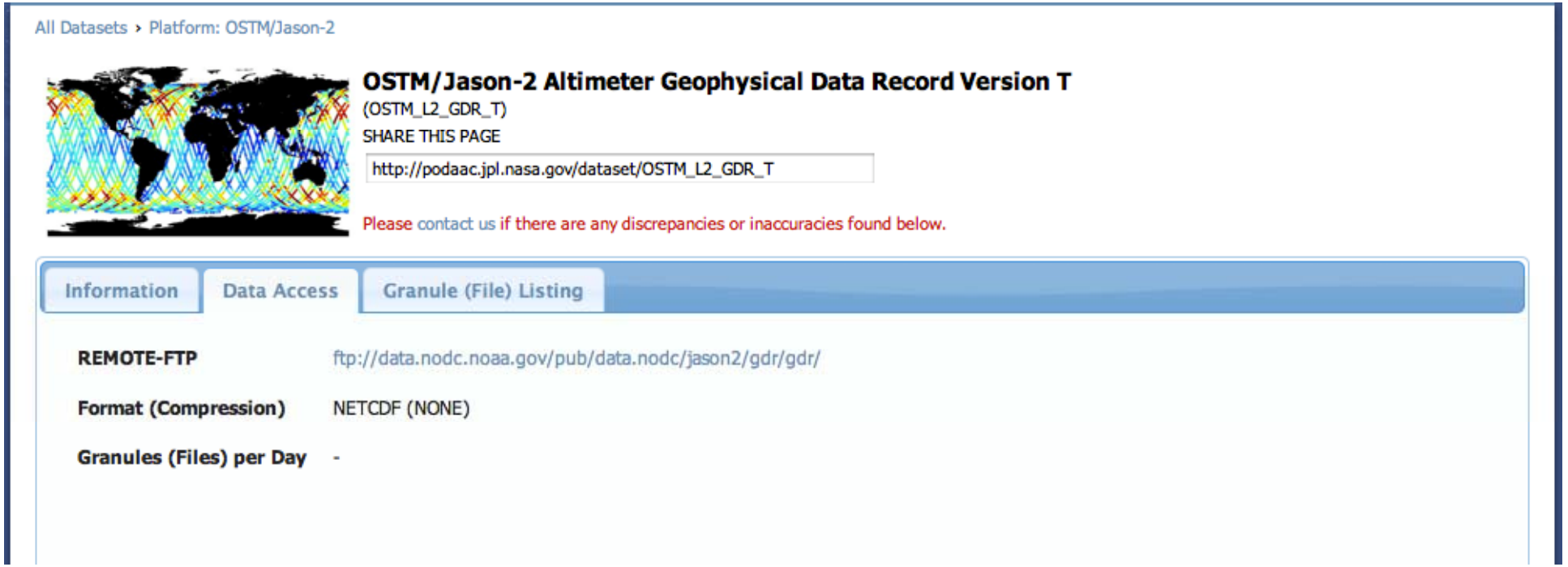
Missions Measuring Sea Surface Height



Building a Knowledge Base

PO.DAAC is striving towards providing users with a means to access (or link to) all available ocean related datasets derived from satellites

Please contact us to suggest relevant datasets



NRT GPS orbit based SSHA

Uses more accurate GPS orbit than DORIS, thus more accurate SSHA

Developed by the Orbiter and Radio Metric Systems group at JPL

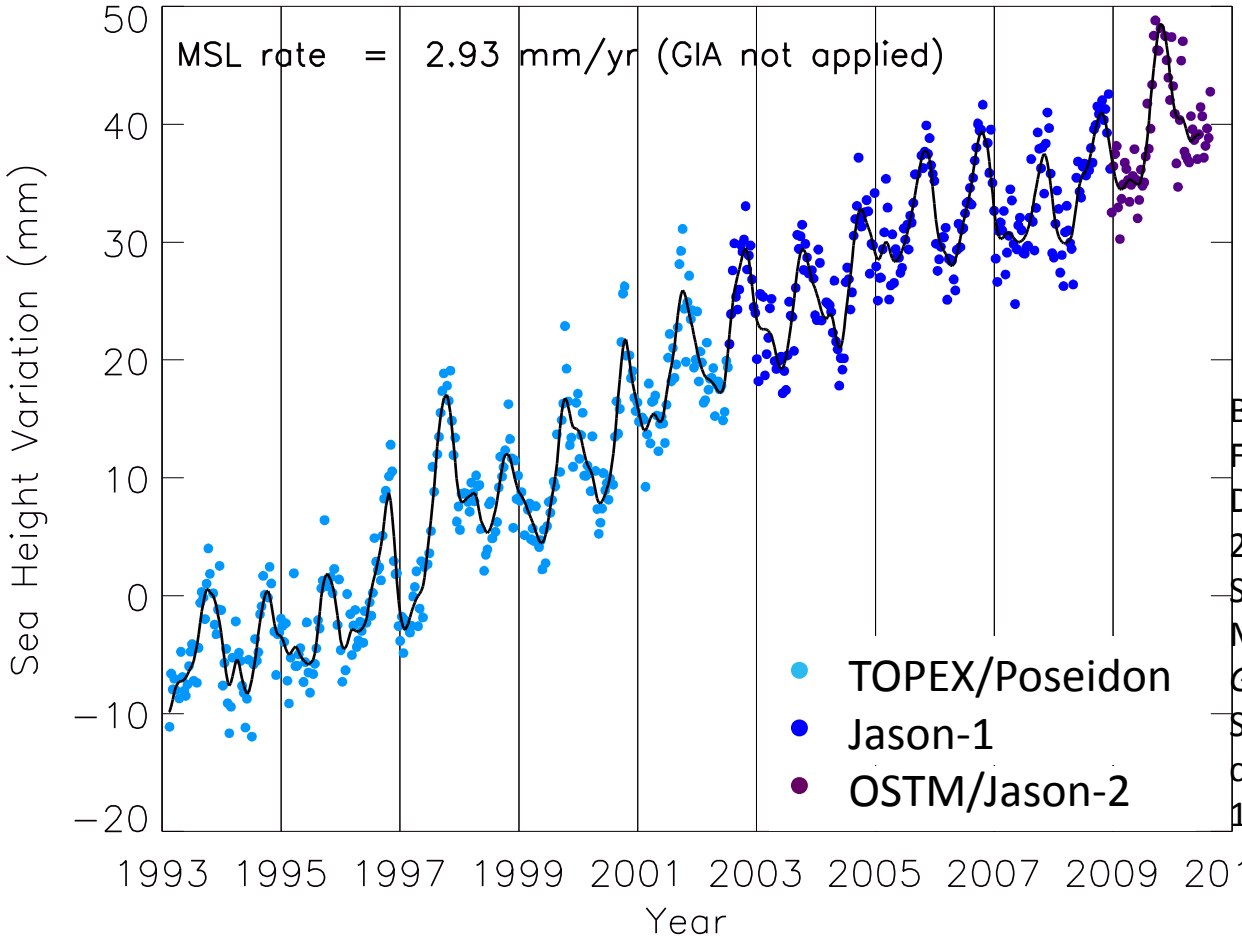
Mission	Time lag (hr)	Improved Radial orbital accuracy RMS (cm)	DORIS Radial orbital accuracy RMS (cm)	SSHA Accuracy (cm)
OSTM/Jason-2	3-5	1	3-5	<3.5
Jason-1	7-9	2	10-25	<4
Envisat	7-9	<3	10-25	<5

Integrated Multi-Mission Altimeter

Covers September 1992 to August 2010, updated every 6-12 months

Contains TOPEX/Poseidon, Jason-1 and OSTM/Jason-2 data

Instrument biases removed and applies cross calibration to orbits, uses the same atmospheric and geophysical corrections to all 3 missions to obtain a consistent altimetric time series

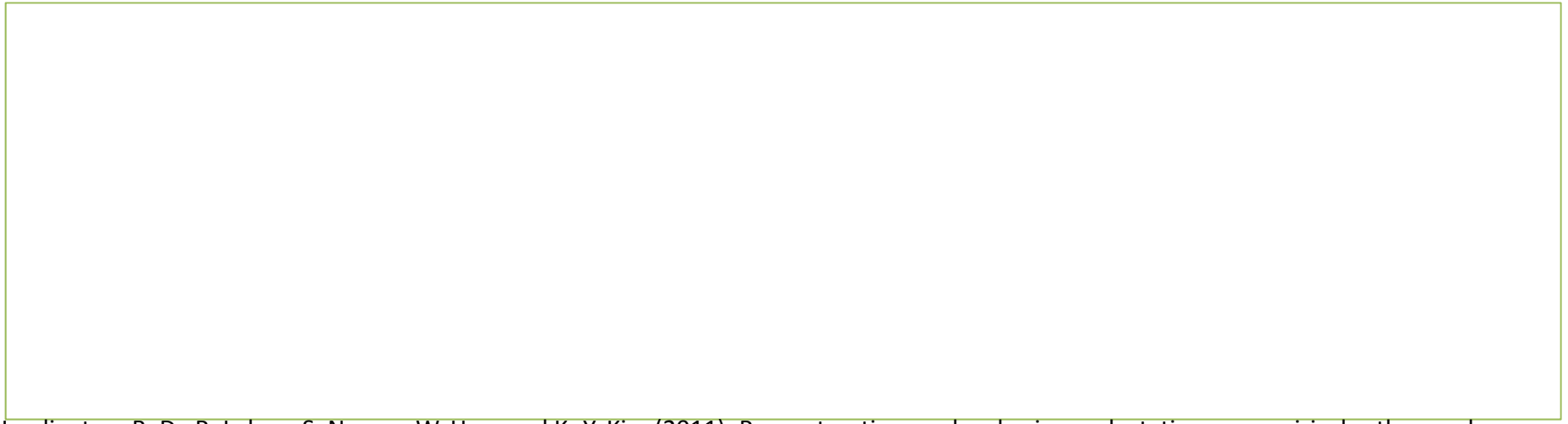


Beckley, B.D., N.P. Zelensky, S.A. Holmes, F.G. Lemoine, R.D. Ray, G.T. Mitchum, S. Desai, S.T. Brown, Assessment of the Jason-2 Extension to the TOPEX/Poseidon, Jason-1 Sea-Surface Height Time Series for Global Mean Sea Level Monitoring, *Marine Geodesy*, 33(S1): 447-471, 2010, Supplemental Issue on OSTM/Jason-2 calibration/validation, Vol. 1, DOI: 10.1080/01490419.2010.491029.

Reconstructed Sea Level

CCAR/CU Boulder (Ben Hamlington and Bob Leben)

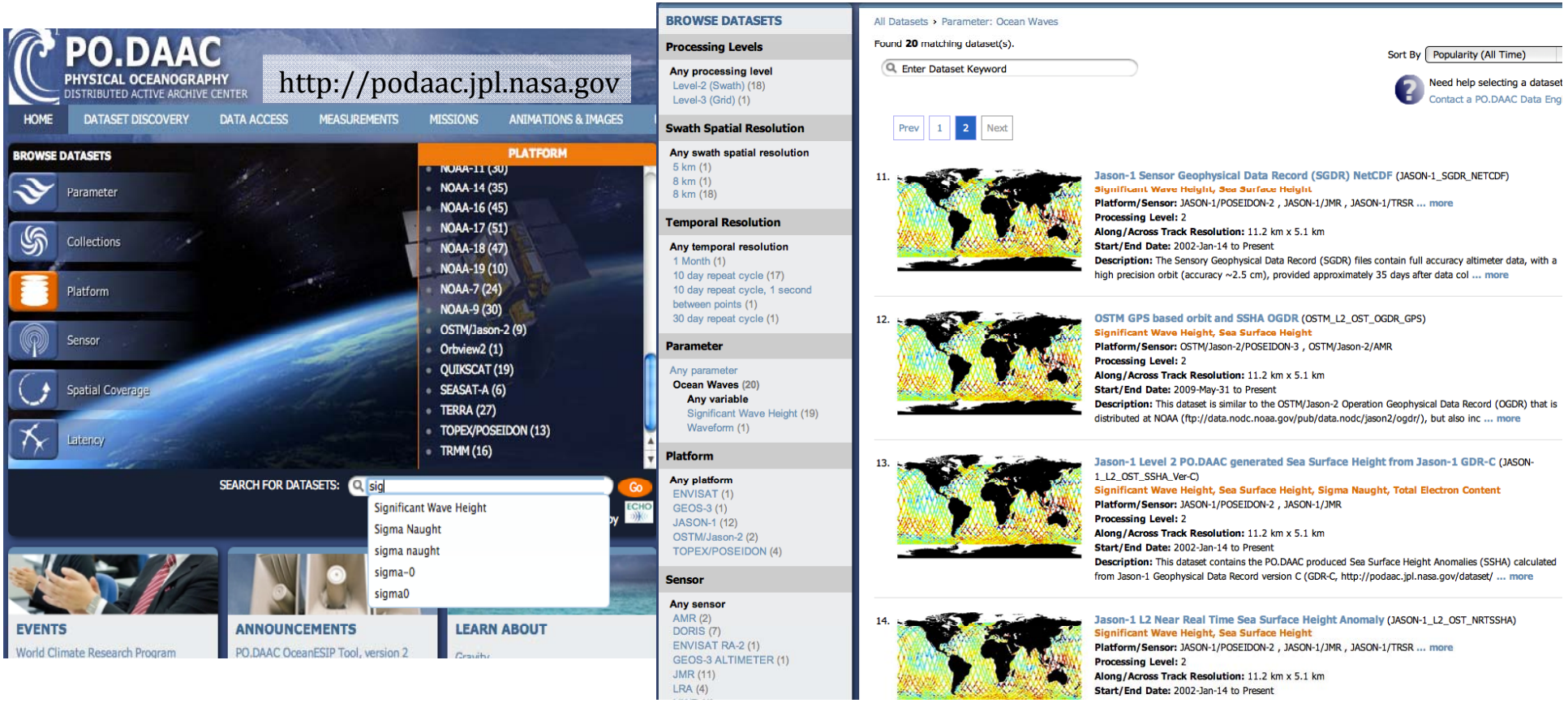
Cyclo-Stationary EOF tuned to AVISO ¼° grids, which is then applied to tide gauges to produce reconstructed sea levels back to 1950 (See poster by Ben Hamlington and Bob Leben)



Hamlington, B. D., R. Leben, S. Nerem, W. Han, and K.-Y. Kim (2011), Reconstructing sea level using cyclostationary empirical orthogonal functions, *J. Geophys. Res.*, doi:10.1029/2011JC007529, in press.

Data Access

Discovery – Find or sort through all datasets through PO.DAAC

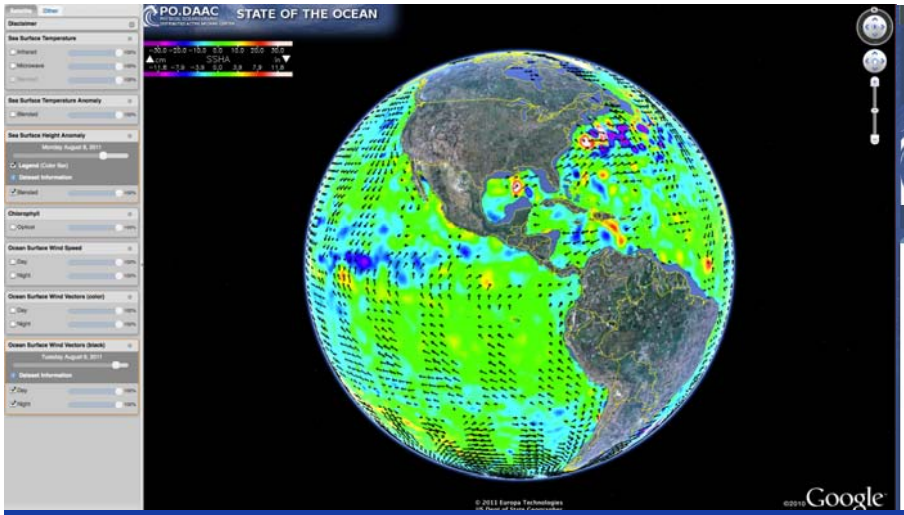


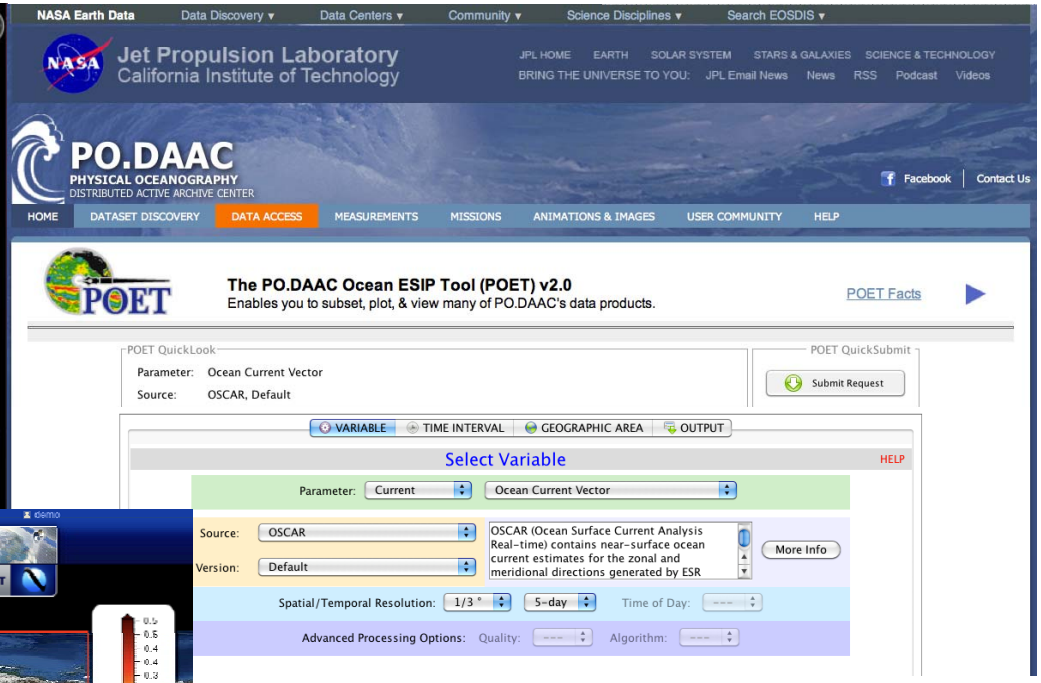
Download – Obtain data via FTP, OPeNDAP or THREDDS

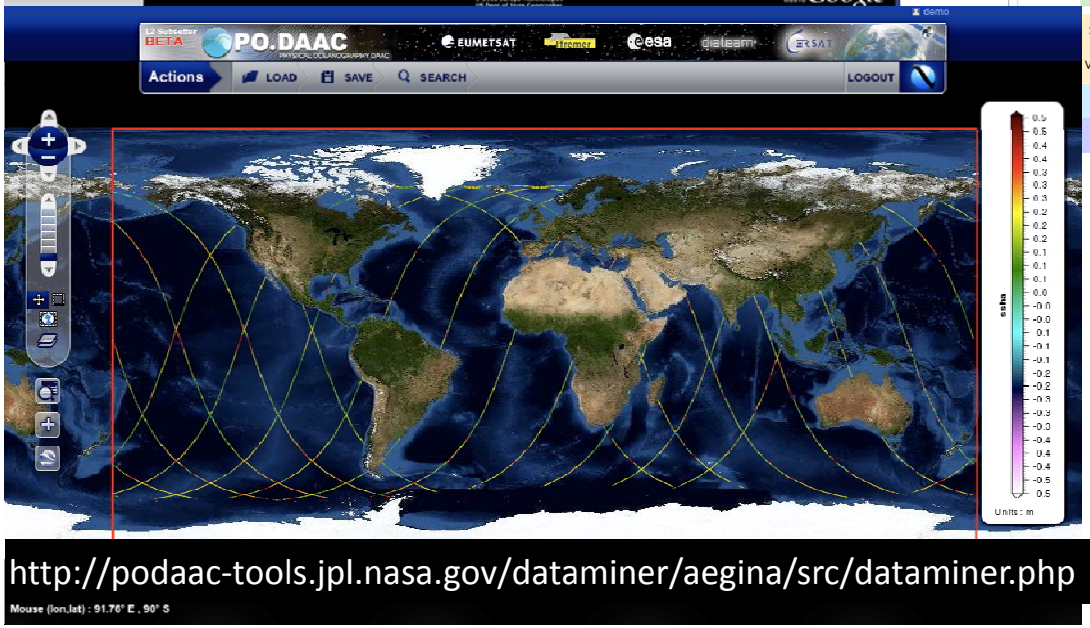
Visualize and Subset – PO.DAAC has developed it's own tools to visualize datasets and/or subset them temporally and spatially

http://podaac-tools.jpl.nasa.gov/soto/

http://poet.jpl.nasa.gov/







http://podaac-tools.jpl.nasa.gov/dataminer/aegina/src/dataminer.php

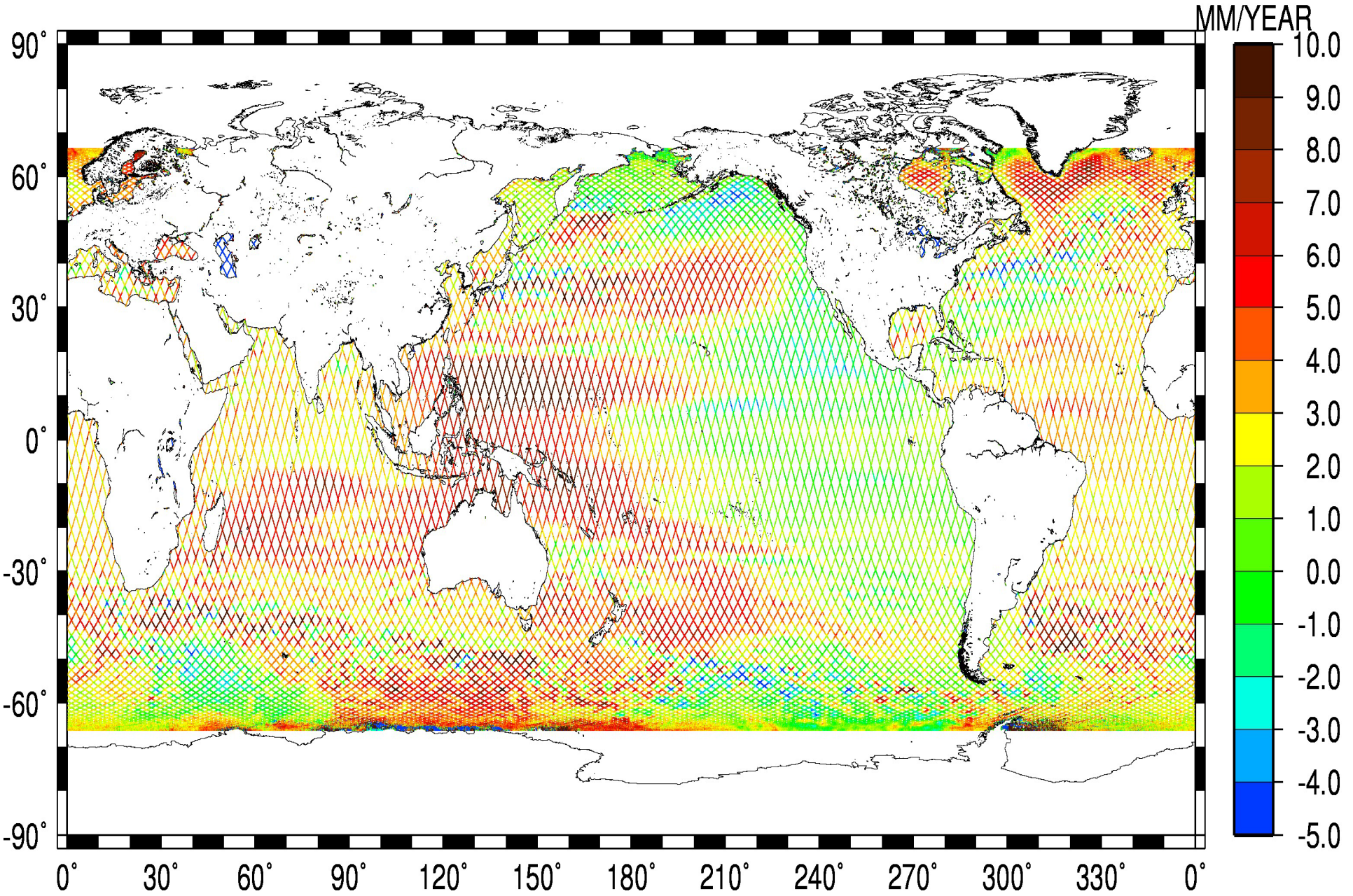
Webpage	http://podaac.jpl.nasa.gov
FTP	ftp://podaac.jpl.nasa.gov
OPeNDAP	http://opendap.jpl.nasa.gov
THREDDS	http://podaac.jpl.nasa.gov/podaac_thredds
SOTO	http://podaac-tools.jpl.nasa.gov/soto/
Dataminer	http://podaac-tools.jpl.nasa.gov/dataminer/
POET	http://poet.jpl.nasa.gov/
PODAAC Labs	http://podaac.jpl.nasa.gov/PODAAC_Labs

Questions, comments or to get on the PO.DAAC email list:

podaac@podaac.jpl.nasa.gov

Acknowledgments: Thanks to Michelle Gierach, Ben Hamlington, Bob Leben and Brian Beckley for contributing material.

Sea Level Trends October 1992-August 2010



Importance of Metadata

Search and Discovery – High quality metdata will allow datasets to be discovered through free technologies (OPeNDAP, THREDDS, LAS) or self generated and get down to a file/granule level that can allow for subsetting or browsing

Provenance – Audit trail of the dataset, history, how certain parameters are calculated, versioning, etc

Usability – Tells user the contents of the file, format and allows for various visualization and subsetting tools to operate on these datasets

Datasets at PO.DAAC

NASA missions swath (L0-L2) and mapped (L3)

Satellite ocean parameter datasets (L2 and higher)

- NASA PI generated datasets
- Others that support NASA science (ASCAT, GHRSST, …)

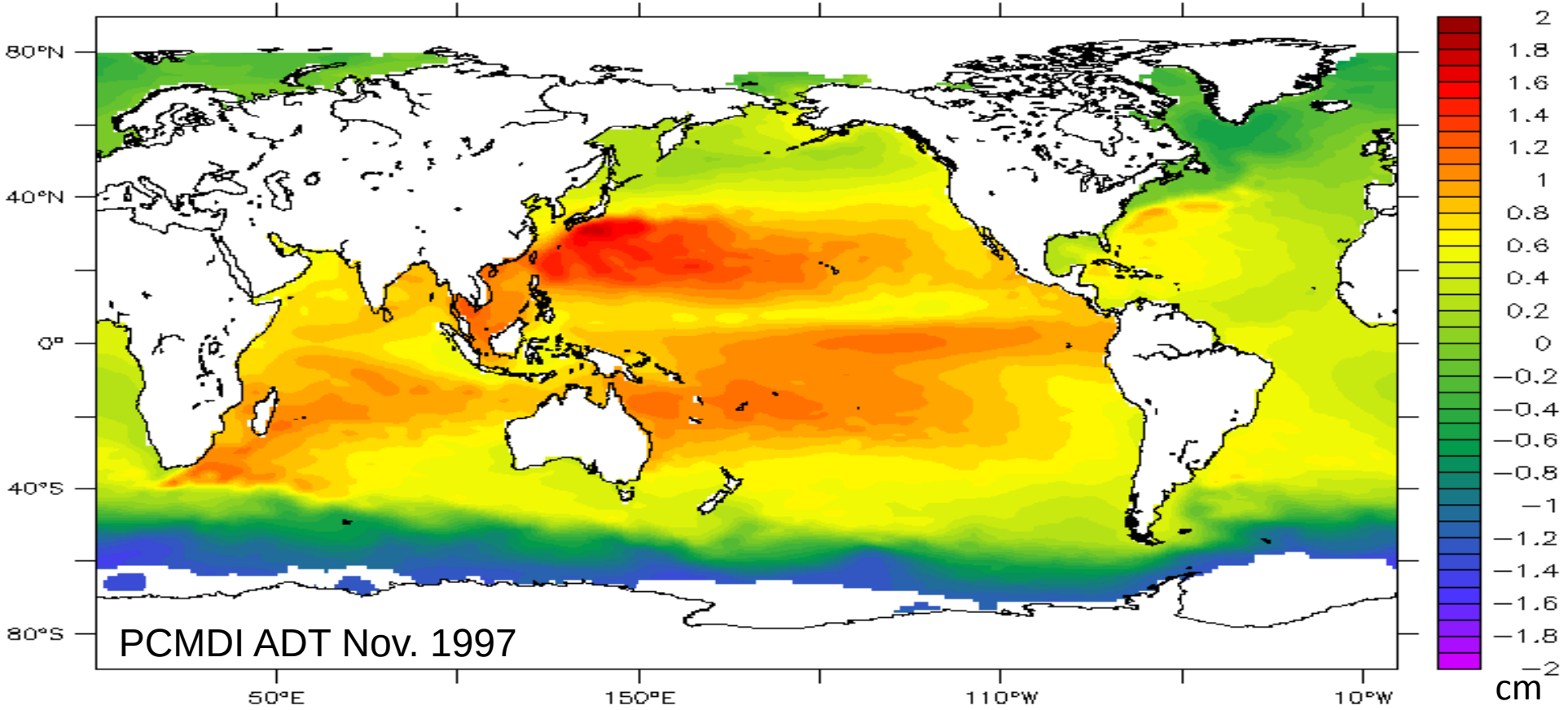
Earliest dataset dates back to 1975

Absolute Dynamic Topography Climate Data

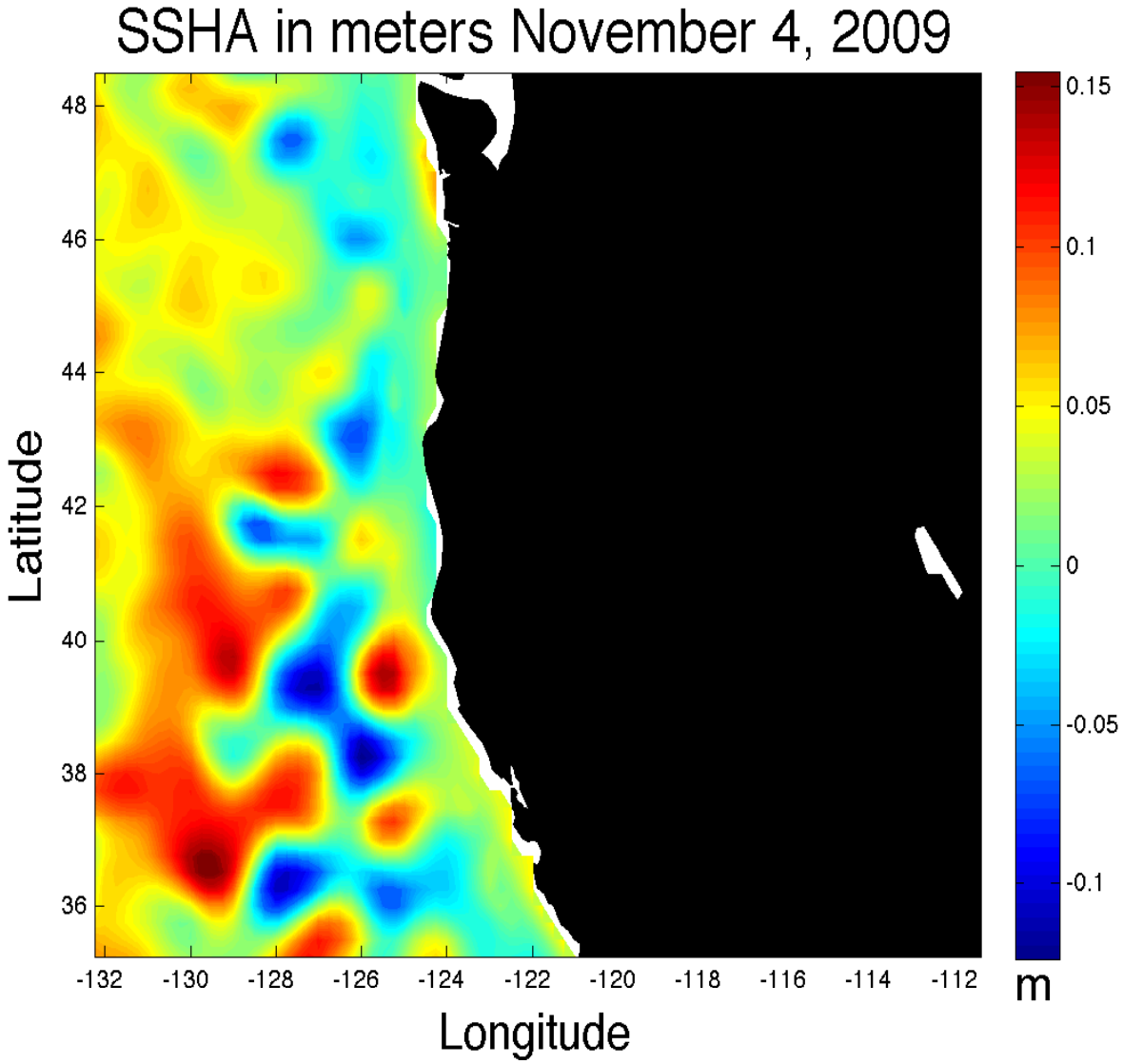
Program for Climate Model Diagnosis and Intercomparison (PCMDI) effort for IPCC climate model comparison

AVISO absolute dynamic topography (ADT) using ERS-1, TOPEX/Poseidon, ERS-2, GFO, Jason-1, Envisat, OSTM/Jason-2, covering 1992-2010

Data will soon be available on the Earth System Grid and at PO.DAAC



US West Coast SSHA and currents



OSU/COAS (Ted Strub)

Covers October 1992 to December 2009, and is updated annually

Sea Surface Height Anomaly (SSHA) and near shore currents are calculated using altimetry data and tide gauges 0.75° from the coast