National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
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State of the Ocean (SOTO): Oceanographic Visualization and Data Exploration

2017 Fall AGU Flash Talk

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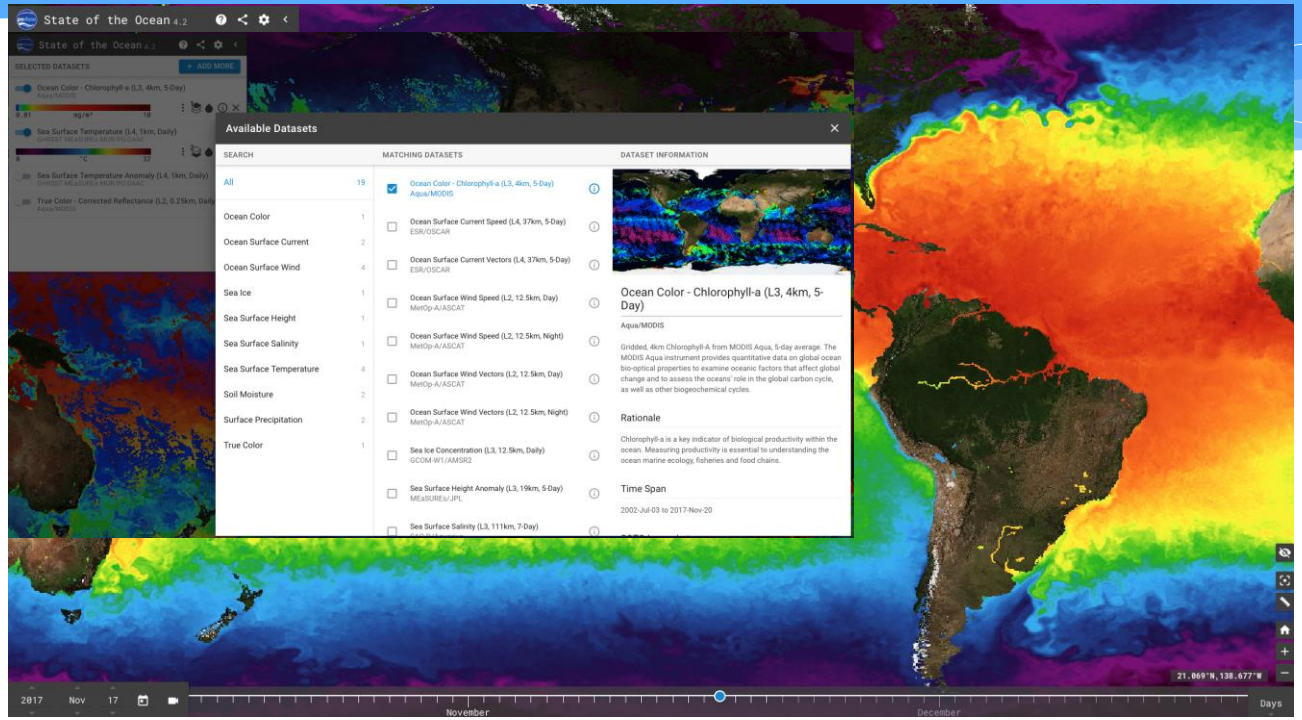
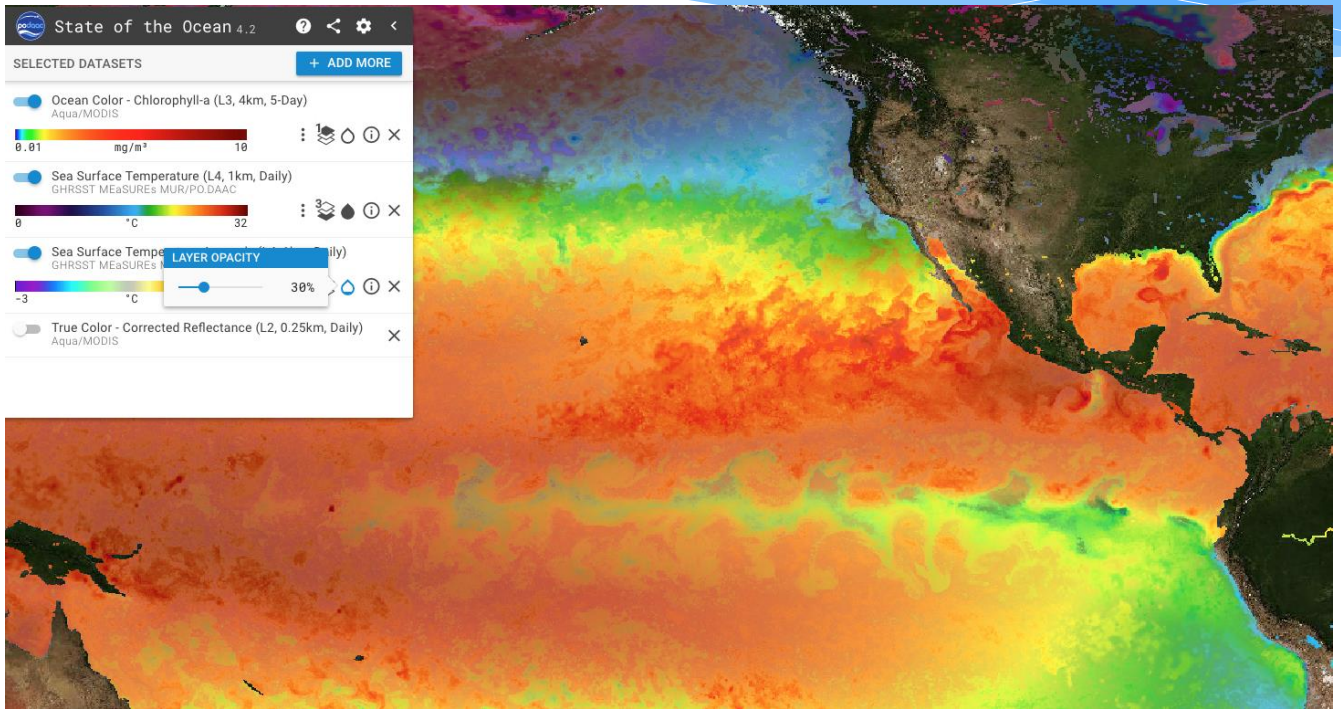
Introduction

- State of the Ocean (SOTO) is a web client for multi-layer visualization for ocean data of:
  - Temperature, Wind, Sea Level, Salinity, Currents
  - Biology and others
- What else can SOTO be used for ?
  - Image overlay and animation
  - Color manipulation
  - Data interrogation
- Leverages tiled images created by the NASA Global Imagery Browse System (GIBS)


State of the Ocean 4.2
Available Datasets
SEARCH
MATCHING DATASETS
DATASET INFORMATION
All 19
Ocean Color 1
Ocean Surface Current 2
Ocean Surface Wind 4
Sea Ice 1
Sea Surface Height 1
Sea Surface Salinity 1
Sea Surface Temperature 4
Soil Moisture 2
Surface Precipitation 2
True Color 1
Ocean Color - Chlorophyll-a (L3, 4km, 5-Day)
Aqua/MODIS
Ocean Surface Current Speed (L4, 37km, 5-Day)
ESR/OSCAR
Ocean Surface Current Vectors (L4, 37km, 5-Day)
ESR/OSCAR
Ocean Surface Wind Speed (L2, 12.5km, Day)
MetOp-A/ASCAT
Ocean Surface Wind Speed (L2, 12.5km, Night)
MetOp-A/ASCAT
Ocean Surface Wind Vectors (L2, 12.5km, Day)
MetOp-A/ASCAT
Ocean Surface Wind Vectors (L2, 12.5km, Night)
MetOp-A/ASCAT
Sea Ice Concentration (L3, 12.5km, Daily)
GCOM-W1/AMSR2
Sea Surface Height Anomaly (L3, 19km, 5-Day)
MEaSUREs/JPL
Sea Surface Salinity (L3, 111km, 7-Day)
Ocean Color - Chlorophyll-a (L3, 4km, 5-Day)
Aqua/MODIS
Gridded, 4km Chlorophyll-A from MODIS Aqua, 5-day average. The MODIS Aqua instrument provides quantitative data on global ocean bio-optical properties to examine oceanic factors that affect global change and to assess the oceans' role in the global carbon cycle, as well as other biogeochemical cycles.
Rationale
Chlorophyll-a is a key indicator of biological productivity within the ocean. Measuring productivity is essential to understanding the ocean marine ecology, fisheries and food chains.
Time Span
2002-Jul-03 to 2017-Nov-20
21.869°N,138.677°W
2017 Nov 17
November
December
Days

SST Imagery Overlay



Use case: El Nino warming

* 2015-2016 El Nino
* https://podaac-uat.jpl.nasa.gov/soto/#b=BlueMarble_ShadedRelief_Bathymetry&l=GHRSST_L4_MUR_Sea_Surface_Temperature(la=true),oscar_l4_oc_third_deg___oceancurrent_dir_color,MODIS_Aqua_CorrectedReflectance_TrueColor,modis_aqua_l3_chla_daily_4km_l___chlorophyll_a___8640_x_4320___daynight,jpl_l4_mur_ssta___ssta___36000_x_18000___daynight&ve=-238.1189827547034,-60.239082067731495,-8.844491150013852,57.67351361468028&pl=false&pb=false&d=2015-01-01&ao=true&as=2015-01-01&ae=2016-09-06&ass=1/month&afr=1000&tlr=months

Use case: Gulf of Tehuantepec gap winds

* Recent Gulf of Tehuantepec wind event
* https://podaac-tools.jpl.nasa.gov/soto/#b=BlueMarble_ShadedRelief_Bathymetry&l=jpl_l4_mur_ssta___ssta___36000_x_18000___daynight(la=true),ascata_l2_coastal___wind_dir_color_day_(la=true),ascata_l2_coastal___wind_dir_color_night_(la=true),GHRSST_L4_MUR_Sea_Surface_Temperature,MODIS_Aqua_CorrectedReflectance_TrueColor,modis_aqua_l3_chla_daily_4km_l___chlorophyll_a___8640_x_4320___daynight&ve=-111.072721483934,7.676522868408321,-85.44968512850639,21.60705065522726&pl=false&pb=false&d=2017-11-15&ao=false&as=2017-10-25&ae=2017-11-08&(censored-word)=1/day&afr=500&tlr=days