Sea Surface Current Measurements: What They Are and Why You Need Them

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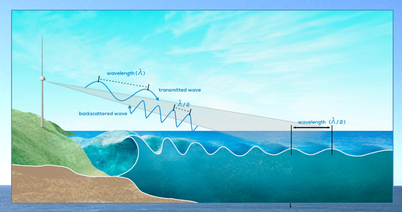
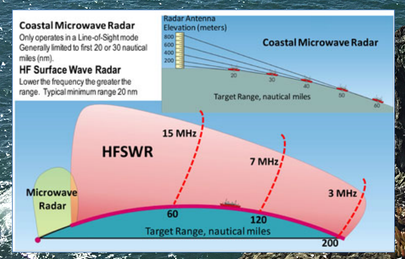
How are sea surface currents measured?

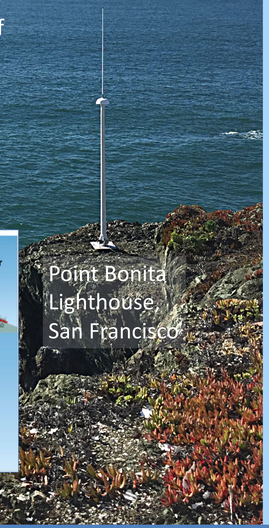


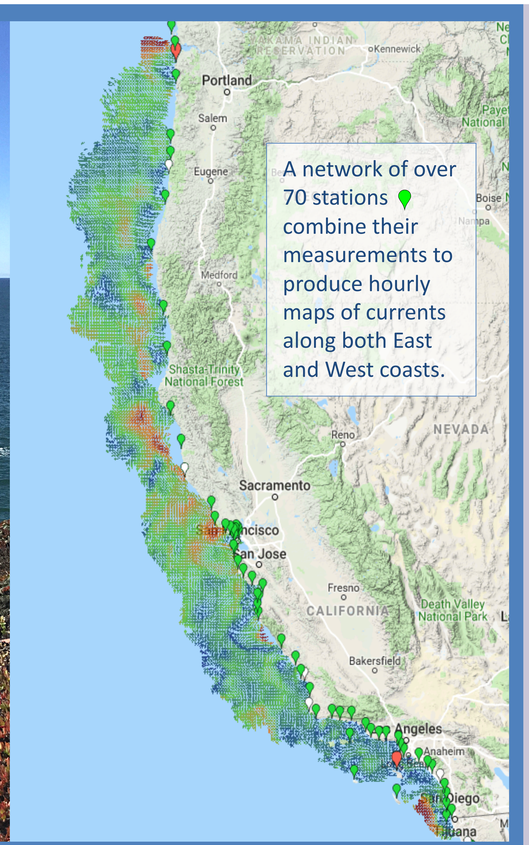
Radio waves are used to measure the speed of ocean waves within range of a station.

Variations in wave speed are used to calculate ocean currents.

One station can measure currents up to 200 miles offshore.





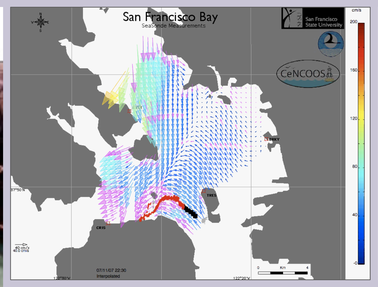


A network of over 70 stations combine their measurements to produce hourly maps of currents along both East and West coasts.

Why measure sea surface currents?

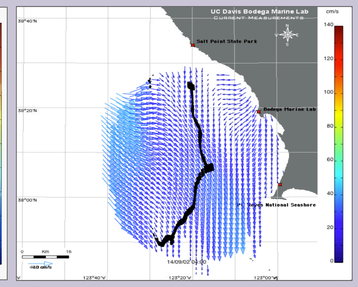
Use real-time measured current data for
- ➜ Ocean conditions
- ➜ Search and rescue
- ➜ Environmental response
- ➜ Beach safety warning

SF Bay November 7, 2007



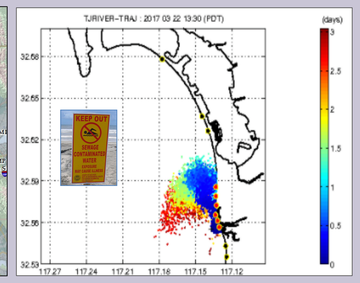
Predict the path of the Cosco Busan oil spill in San Francisco Bay

Understand long range effects of pollution on Marine Protected Areas



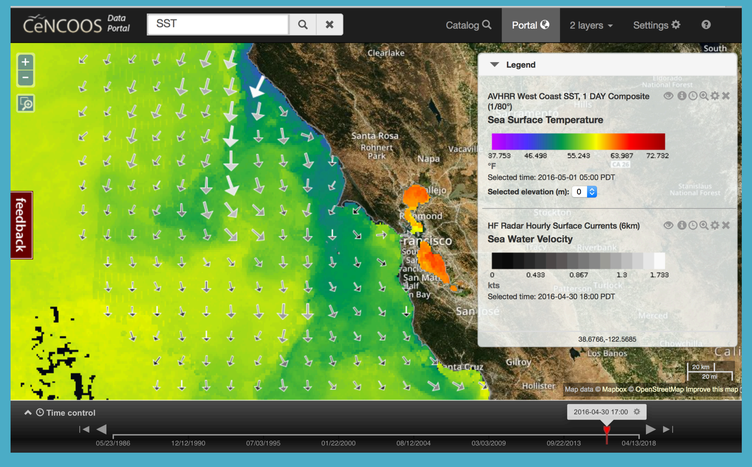
Map the path of an offshore spill, or check its potential source.

Anticipate hazardous coastal conditions from pollution point sources



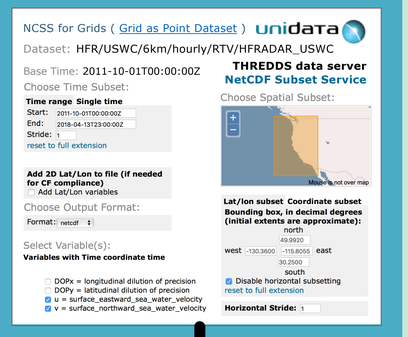
Where can I get data?

Browse the CeNCOOS Data Portal



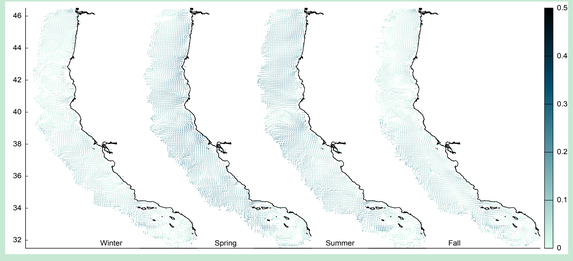
CeNCOOS Data Portal	data.cencoos.org
NetCDF Data Server	hfrnet-tds.ucsd.edu/thredds/catalog.html
BML Currents	boon.ucdavis.edu/currents.html
IOOS Data Portal	ioos.us

Download NetCDF Files

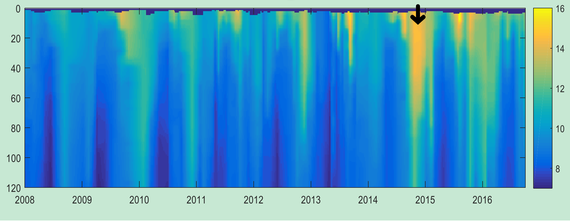


R SciPy ArcGIS MATLAB

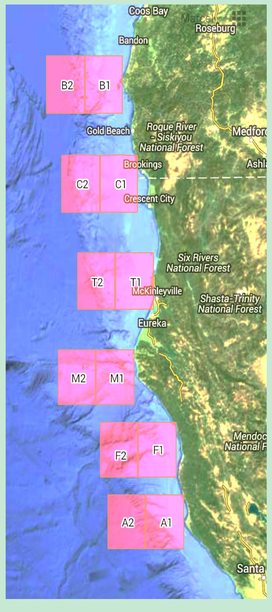
What can I do with the data?



Use the 10 year long dataset for
- ➜ Seasonal circulation maps
- ➜ Larval dispersion models
- ➜ Ecosystem management, MPAs
- ➜ Climate Events, e.g. Warm Blob



- ➜ Analyze current patterns
- ➜ Establish long-term oceanographic features
- ➜ Relate coastal currents to oceanic conditions



Under Development
- ➜ SF Bay Outflow Plume
- ➜ Wave Forecasting
- ➜ Sediment Plume Behavior
- ➜ Marine Debris Convergence Zones

Sea surface currents are measured by the Bodega Marine Laboratory (BML) as a member of the Central and Northern California Ocean Observing System (CeNCOOS), a regional organization of participating institutions. CeNCOOS, together with SCCOOS and NANOOS provide data from the US West Coast to the national network. Federal funding and administration is provided by the Integrated Ocean Observing System (IOOS) office, part of the National Oceanic and Atmospheric Administration (NOAA).