



National Centers for
Environmental Information (NCEI)

Application of Open-source Tools for Fisheries, Biodiversity & Conservation, and Coastal Erosion Applications in West Africa

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NOAA/ National Centers for Environmental Information, Stennis Space Center, MS
Northern Gulf Institute, Mississippi State University, Stennis Space Center, MS

Data Sources

National Centers for Environmental Information
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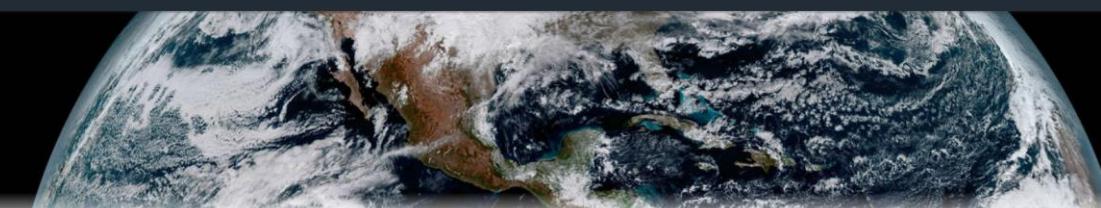
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NASA'S DATA PORTAL

This site is a continually growing catalog of publicly Available NASA Datasets, APIs, Visualizations, and More.

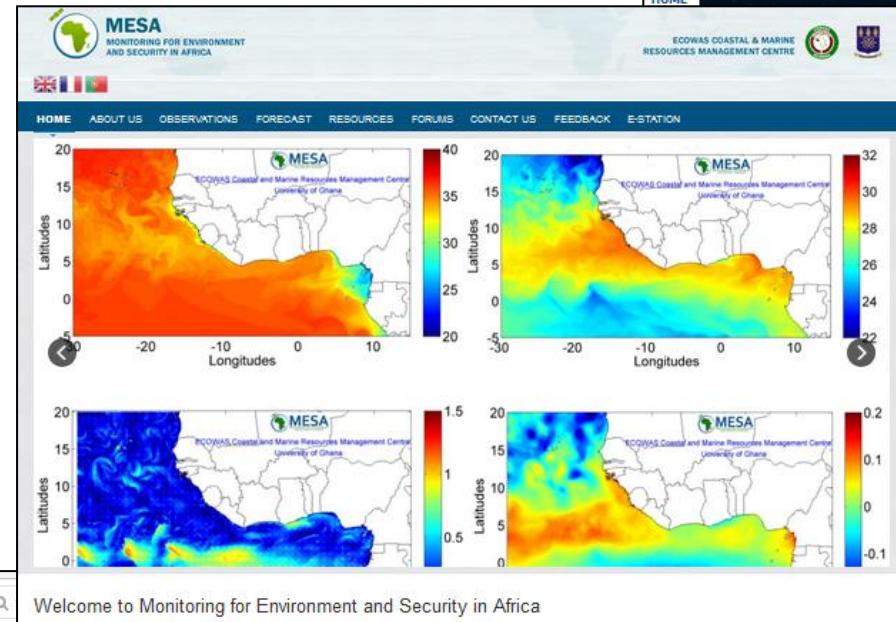
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Orion Test Flight: Next Step on #JourneyToMars Space Apps 2014 global winners are flying in from around the world to witness the historic Orion test launch.

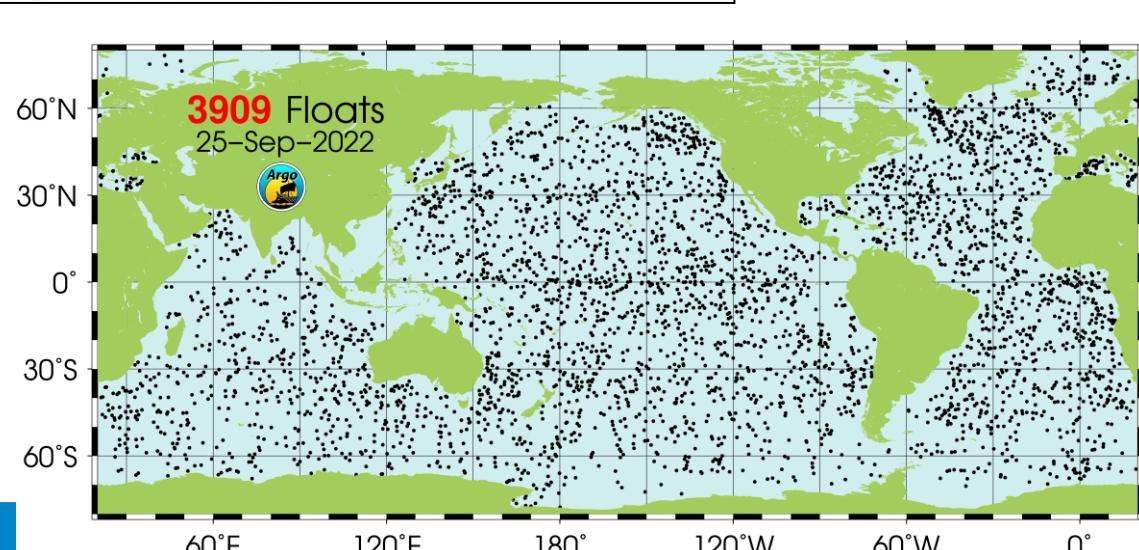
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NOAA



Data Sources

NASA: <ftp://podaac-ftp.jpl.nasa.gov/allData/>

CNES: <http://www.aviso.altimetry.fr/en/data/data-access.html>

NOAA: <http://www.ncdc.noaa.gov/data-access/satellite-data/satellite-data-access-datasets>

ESA: <http://marine.copernicus.eu/>

IFREMER: http://wwz.ifremer.fr/institut_eng/Marine-science/French-facilities/Data-Centres/Coriolis

SANSA: <http://www.sansa.org.za/>

Individual Universities and Labs

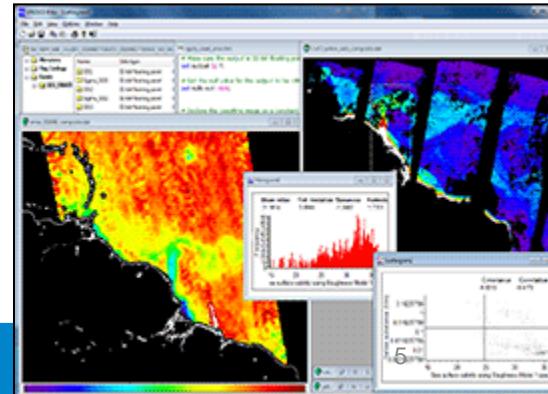
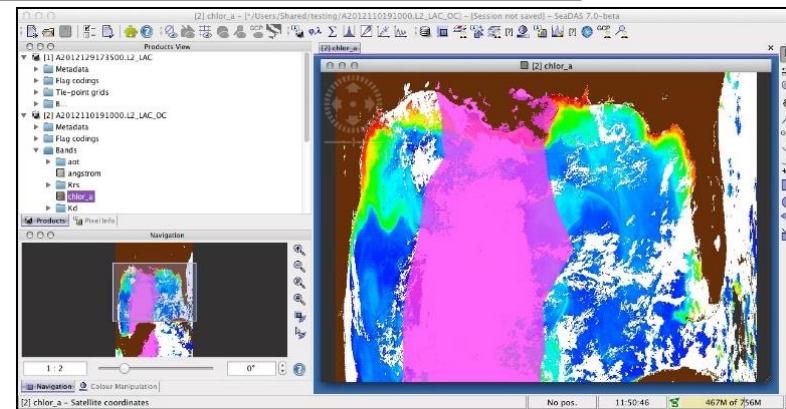
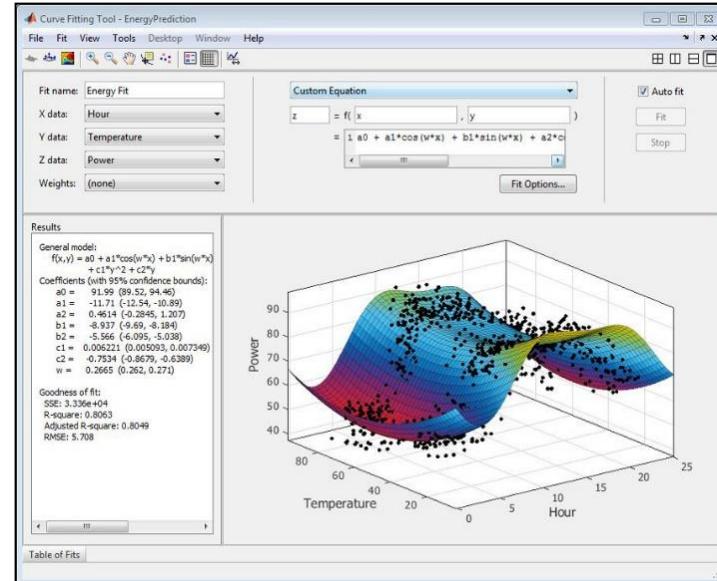
e.g. University of Hawaii

<http://apdrc.soest.hawaii.edu/data/data.php>



Data Processing

- ✓ Computer programing software:
Matlab, Python, Ocean Data View
- ✓ Specialized data software:
 - NASA's SeaDAS:
ocean color
 - ESA's BEAM –
ocean color, SAR, etc
 - UNESCO's Bilko -
ocean color, SMOS
 - ENVI, ERDAS, IDRIS

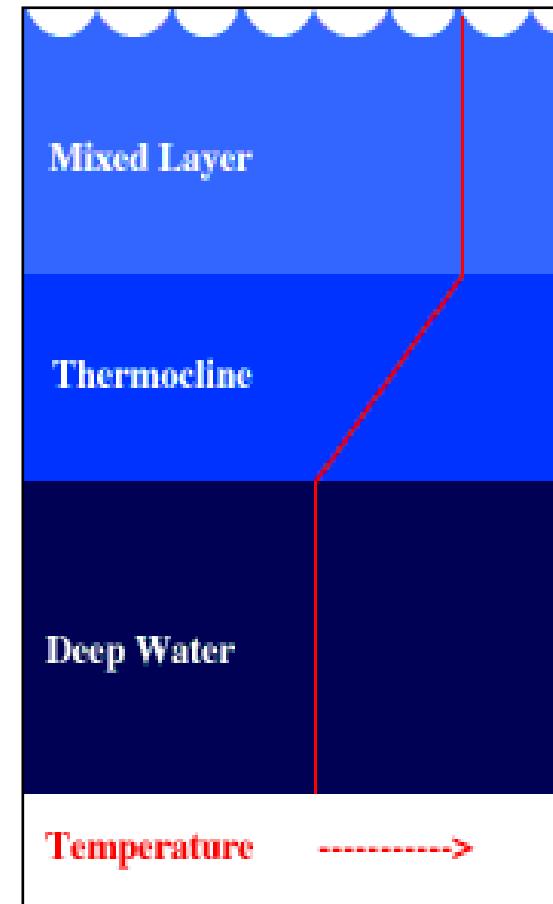
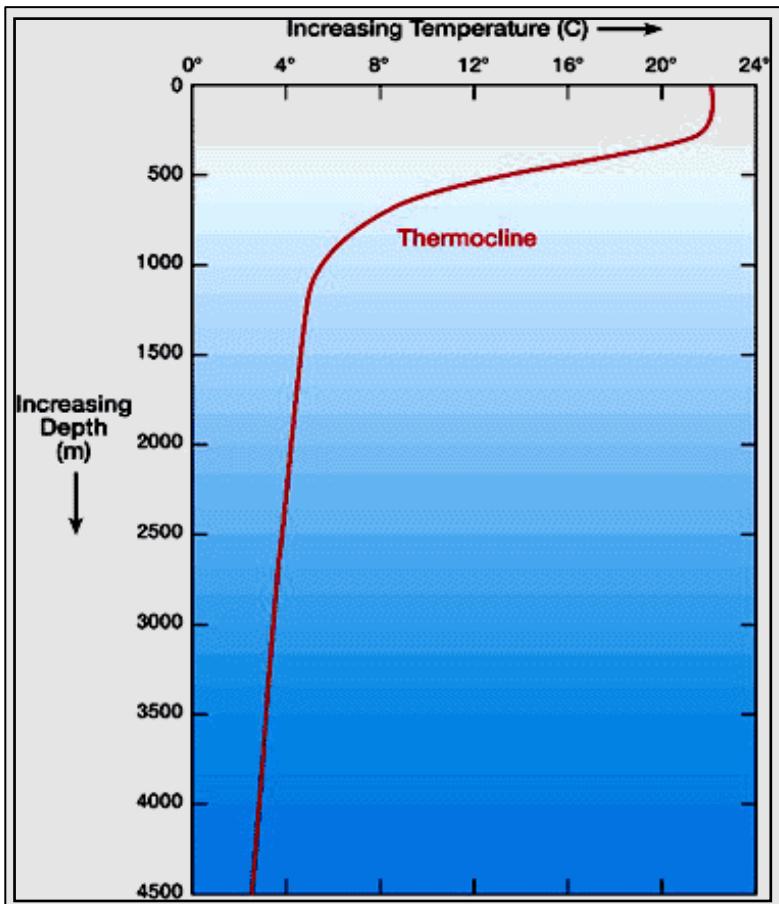


Application: Upwelling



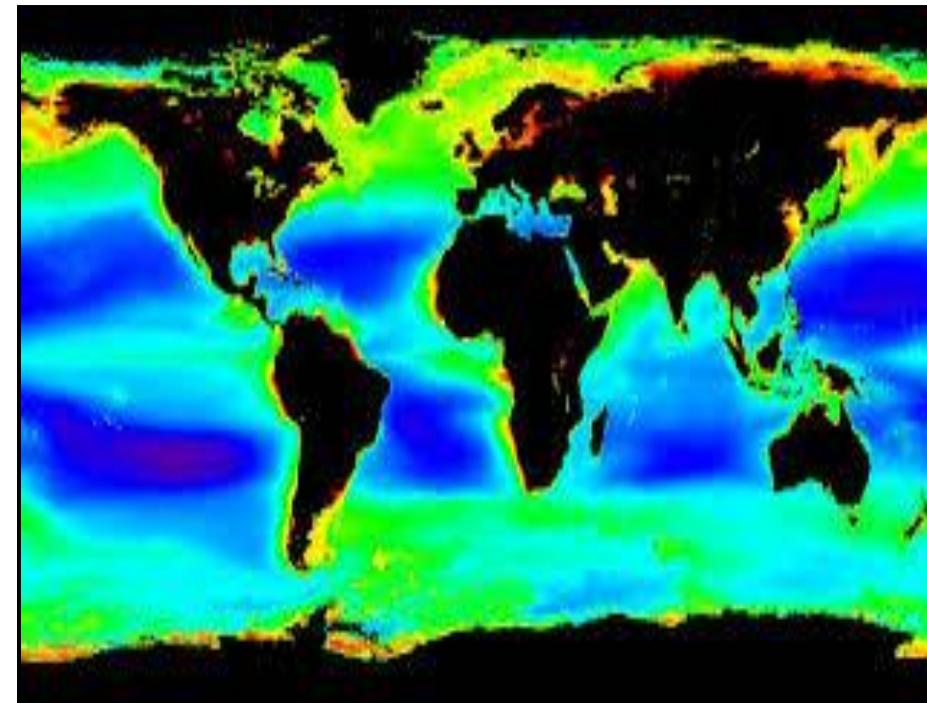
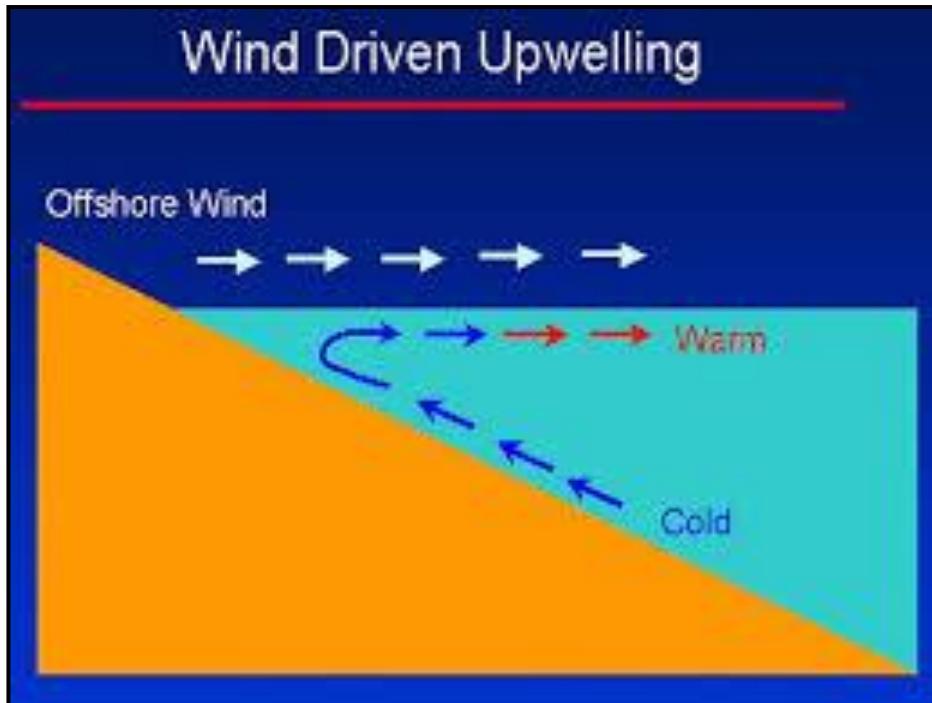
Background: Upwelling

- Thermocline inhibits exchange of surface and subsurface waters.
- High nutrient-rich waters are locked up in subsurface waters.



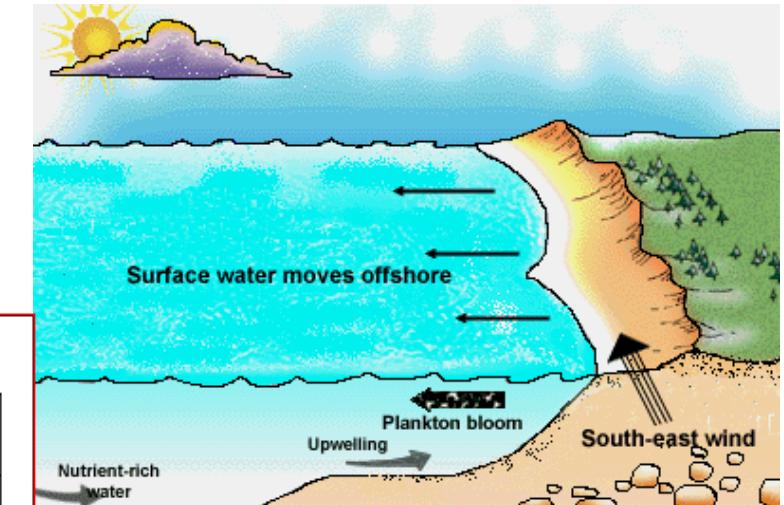
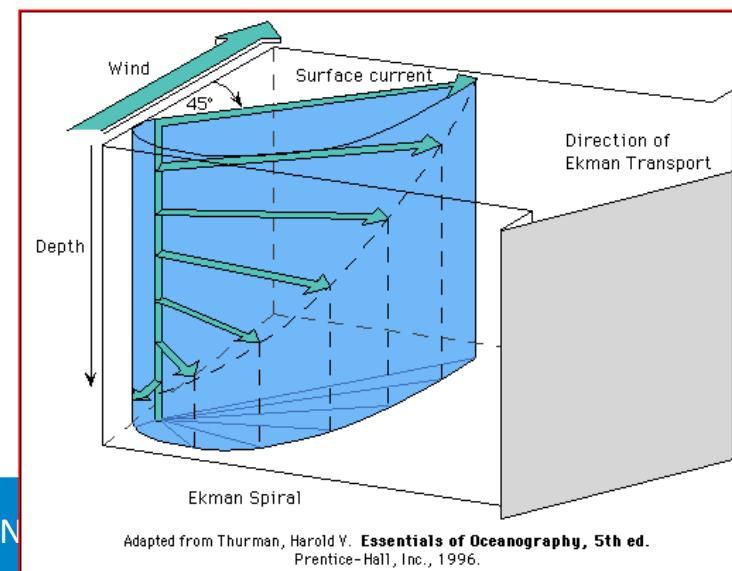
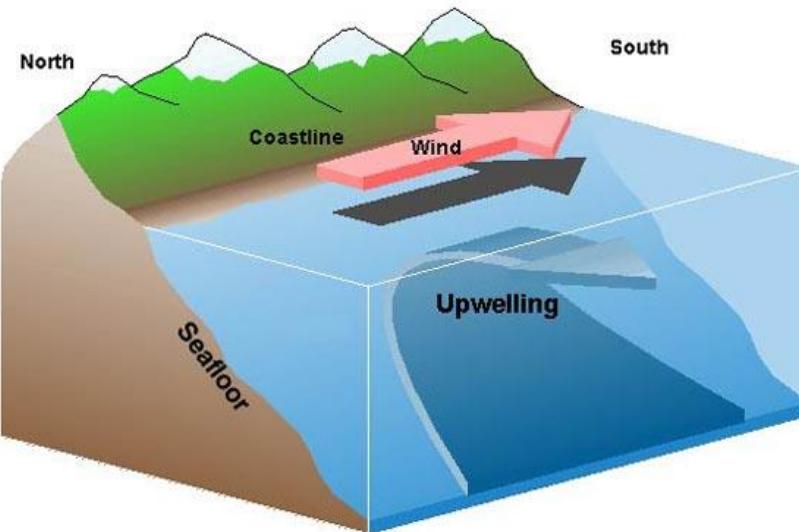
Background: Upwelling

- Cold nutrient-rich waters are brought into the surface ocean through upwelling.
- Indicators: low SST, low oxygen, high nutrients and increased primary productivity.



How it works

- Wind + Coriolis force
- N-hemisphere: right of wind direction
- S-hemisphere: left of wind direction
- “gaps” are filled with water from below: upwelling



Levels of data processing:

Level 0 – Raw data received from satellite, in standard binary form;

Level 1 – Image data in sensor coordinates, contain individual calibrated channels;

Level 2 – Derived oceanic variable, atmospherically corrected and geolocated, but presented in sensor coordinates;

Level 3 – Composite images of derived ocean variable resampled onto standard map base and averaged over a certain time period (may contain gaps);

Level 4 – Image representing an ocean variable averaged within each grid cell as a result of data analysis, e.g., modeling.

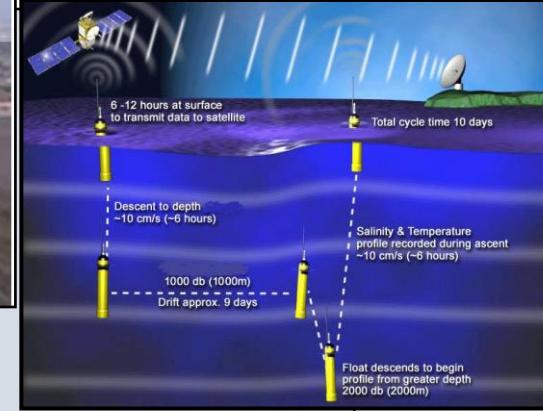


Remote sensing of the sea: Data usage

1. Sensor calibration



2. Atmospheric correction



3. Positional registration

4. Oceanographic sampling for “sea truth”

5. Image processing

6. Oceanographic applications of satellite
Remote sensing



Thank You

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