

SEOS* module on ocean currents

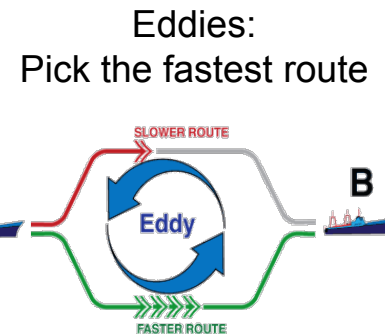
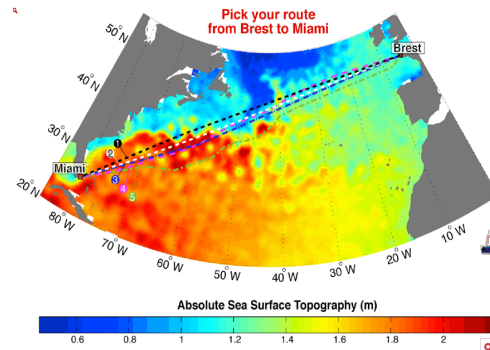
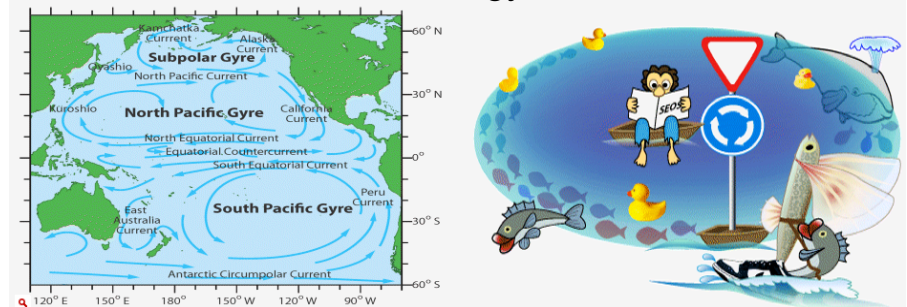
*Science education through *Earth Observation* for high Schools



*What are ocean currents?
Why are they important?
How do we measure them?
Background, activities, quizzes,
worksheets and notes for teachers.*

- Authors: Val Byfield, Paolo Cipollini and Colette Robertson, NOC.
- Year: 2010
- Audience: high school students
- Medium: www.seos-project.eu
- Languages: English, Dutch, French, German, Greek, Spanish, Arabic.

Ocean gyres



Euro-Argo education outreach



- Authors: Val Byfield, John Gould, National Oceanography Centre, UK
- Year: 2010, but ongoing
- Audience: schools, young people
- Medium: HTML and Google Earth
- Languages: English

Dynamic web pages making Argo data available in Google Earth and Google Maps, with background information and satellite derived maps to help young people explore the ocean and learn to interpret ocean data.

www.noc.soton.ac.uk/o4s/euroargo/

You are here: [Home Page](#) » [An Argo tour of the ocean](#) [Site map](#) [Teachers](#)

Use the buttons below to change the map on the right to see different views of the global ocean. Click on each map to see a larger version with additional information. The float links to a new page in the 'Argo Tour'.

Sea Surface Temperature and sea ice:

[March](#) [June](#) [Sept.](#) [Dec.](#)

Ocean circulation:

[Current variability](#) [Dynamic topography](#) [Surface currents](#)

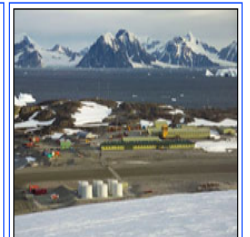
Other maps

[Salinity Jan.](#) [Salinity July](#) [Bathymetry](#)

RMS variability of sea surface height (SSH) is highest in areas where current flow is



Summer in Repparfjord, Arctic Norway



Summer in Rothera, Antarctic Peninsula.

Climate Science and NASA data in the high school



We are building a collaboration between high school teachers and UW scientists and graduate students to bring NASA data into a dual-credit (high school and college) climate science class. Learning modules are being developing that include hands on data manipulation in Excel. Funded by NASA GCCE

High School teachers and graduate students look at a hydrological cycle demonstration, June 2011

- Author name: LuAnne Thompson
- University of Washington
- Year: 2011
- Public aimed: High School teachers and students
- Medium: Curriculum materials
- Size / Format: Excel and Word files
- Language(s): English

Understanding Sea Level Variability and Rise

UNDERSTANDING SEA-LEVEL RISE and VARIABILITY

EDITORS
JOHN A. CHURCH
PHILIP L. WOODWORTH
THORKILD AARUP
W. STANLEY WILSON

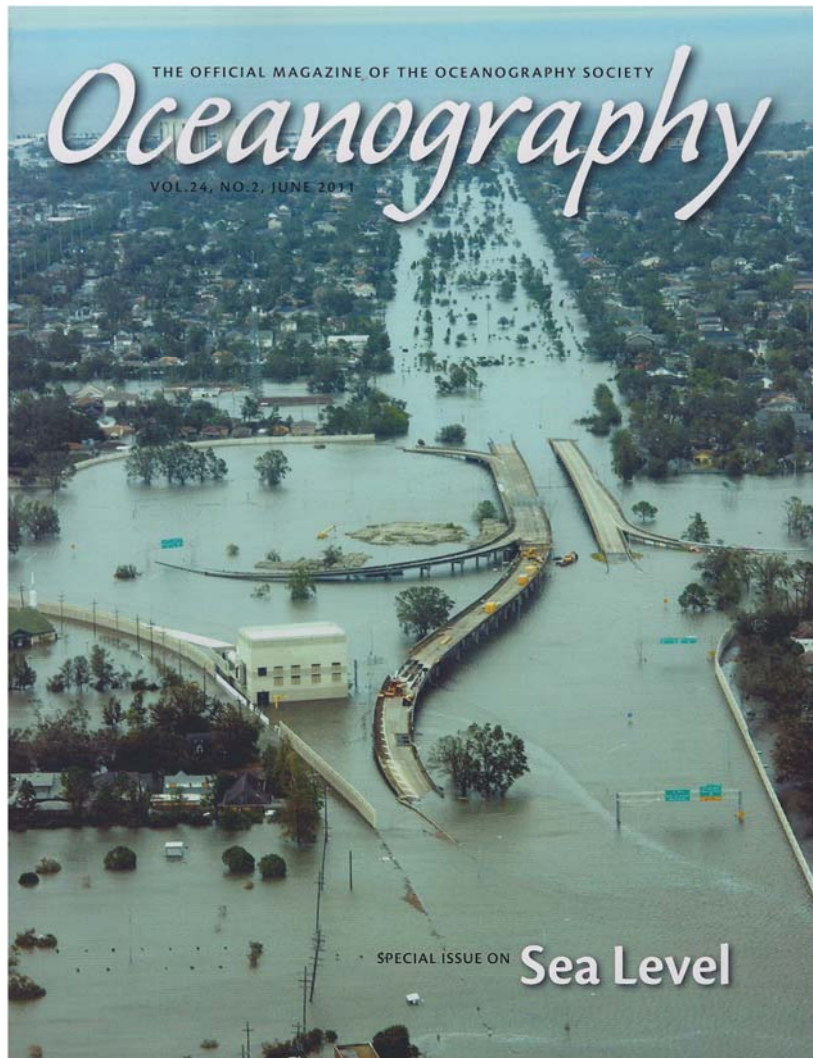
 WILEY-BLACKWELL

- Current status of understanding, impacts, research recommendations and monitoring requirements of sea-level variability and rise

- John A Church, Phillip L. Woodworth, Thorkild Aarup and W. Stanley Wilson
- Year: 2010
- Public aimed: *decision-makers, scientists, end-users*
- Medium: Book, Wiley-Blackwell



Sea Level special issue of *Oceanography*



Ten articles covering topics from paleo to modern sea level and future changes.

SPECIAL ISSUE FEATURES

Sea Level: An Introduction to the Special Issue

J. Willis, L. Miller, and G. Mountain. 2011. *Oceanography* 24(2):22–23, doi:10.5670/oceanog.2011.24.

The Moving Boundaries of Sea Level Change: Understanding the Origins of Geographic Variability

M.E. Tamisiea and J.X. Mitrovica. 2011. *Oceanography* 24(2):24–39, doi:10.5670/oceanog.2011.25.

A 180-Million-Year Record of Sea Level and Ice Volume Variations from Continental Margin and Deep-Sea Isotopic Records

K.G. Miller, G.S. Mountain, J.D. Wright, and J.V. Browning. 2011. *Oceanography* 24(2):40–53, doi:10.5670/oceanog.2011.26.

Global Climate and Sea Level: Enduring Variability and Rapid Fluctuations Over the Past 150,000 Years

Y. Yokoyama and T.M. Esat. 2011. *Oceanography* 24(2):54–69, doi:10.5670/oceanog.2011.27.

Holocene Sea Level Changes Along the United States' Atlantic Coast

S.E. Engelhart, B.P. Horton, and A.C. Kemp. 2011. *Oceanography* 24(2):70–79, doi:10.5670/oceanog.2011.28.

Nineteenth and Twentieth Century Changes in Sea Level

P.L. Woodworth, W.R. Gehrels, and R.S. Nerem. 2011. *Oceanography* 24(2):80–93, doi:10.5670/oceanog.2011.29.

Land Ice and Sea Level Rise: A Thirty-Year Perspective

W.T. Pfeffer. 2011. *Oceanography* 24(2):94–111, doi:10.5670/oceanog.2011.30.

Ocean Density Change Contributions to Sea Level Rise

G.C. Johnson and S.E. Wijffels. 2011. *Oceanography* 24(2):112–121, doi:10.5670/oceanog.2011.31.

Balancing the Sea Level Budget

E.W. Leuliette and J.K. Willis. 2011. *Oceanography* 24(2):122–129, doi:10.5670/oceanog.2011.32.

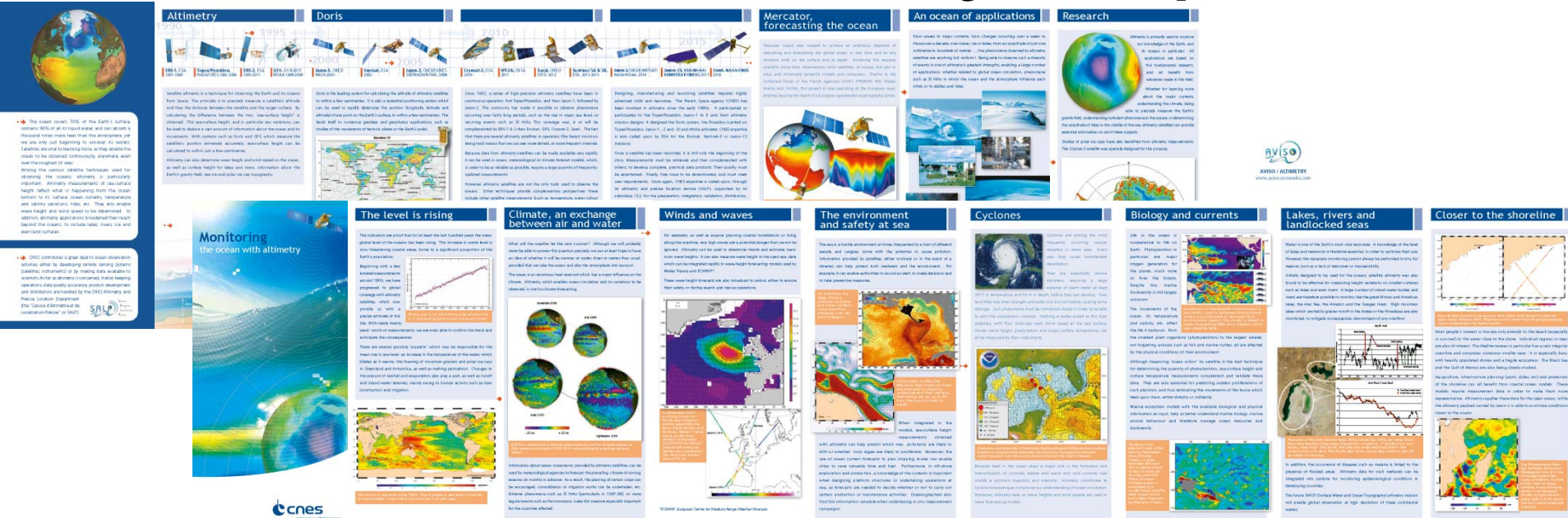
Understanding and Projecting Sea Level Change

J.A. Church, J.M. Gregory, N.J. White, S.M. Platten, and J.X. Mitrovica. 2011. *Oceanography* 24(2):130–143, doi:10.5670/oceanog.2011.33.

Planning for the Impacts of Sea Level Rise

R.J. Nicholls. 2011. *Oceanography* 24(2):144–157, doi:10.5670/oceanog.2011.34.

Accordion-folded flyer update



- Aviso
- CNES
- 2007, updated in 2009, 2011
- Public aimed: general public
- Medium: flyer
- Size / Format: 1/3 A4, 9 folds
- Language(s): English (exists also in French, Spanish)

A 18 pages presentation of altimetry, Doris and applications.

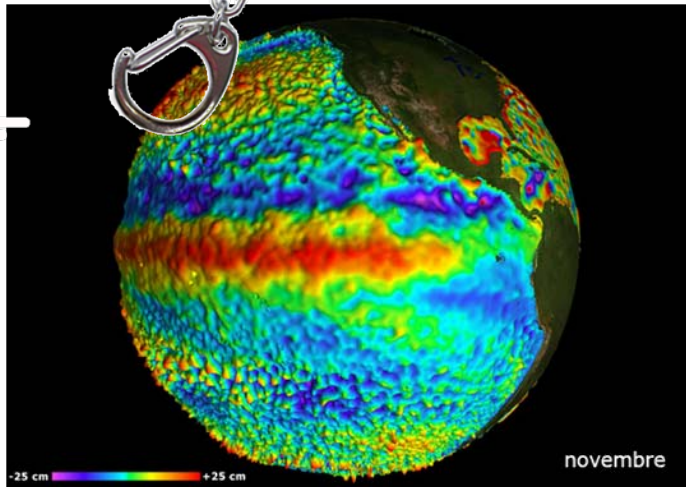
Updated satellite timeline

Updated texts

Updated applications & illustrations

Altimetry tools and images

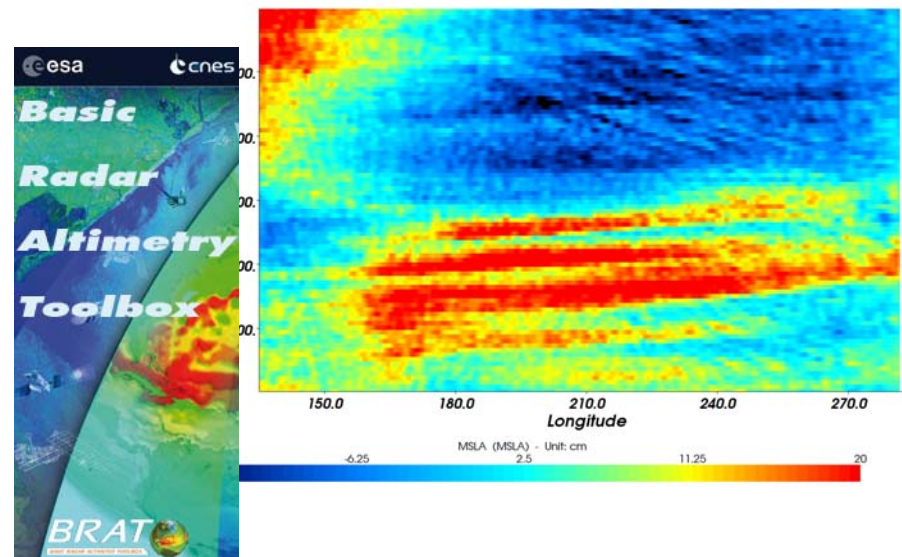
USB key



A key with:

- Images & animations,
 - Google Earth file,
 - BRAT
- & Data Use Cases (with data), tutorial...
- Useful links
- aimed at users / teachers / lecturers...

- Author: Aviso
- Cnes
- year: 2011
- Public aimed: users/lecturers
- USB Key



CNES fifty years of science results

The screenshot shows the CNES website interface. The header includes the CNES logo and navigation links. The main content area features a title "1993 TOPEX-POSEIDON TRAQUE EL NINO" and a date "Mise à jour : 19/09/2011". A small image shows a satellite in orbit with the text "50 ans de résultats scientifiques". The text below discusses the El Niño phenomenon and the role of the Topex/Poseidon satellite in monitoring sea level changes. A globe image shows sea level anomalies in the Pacific Ocean.

A series of web pages about 50 years of science results

For 1993, “[1993: Topex/Poseidon traque El Niño](http://www.cnes.fr/web/CNES-7107-scientifiques.php)” (Topex/Poseidon tracks El Niño)

see <http://www.cnes.fr/web/CNES-7107-scientifiques.php>

(in French only)

(for the 50th anniversary of CNES)

- Author name: J. Lambin
- CNES
- Year: 2011
- Public aimed: scientifically literate
- Medium: web
- Language(s): French



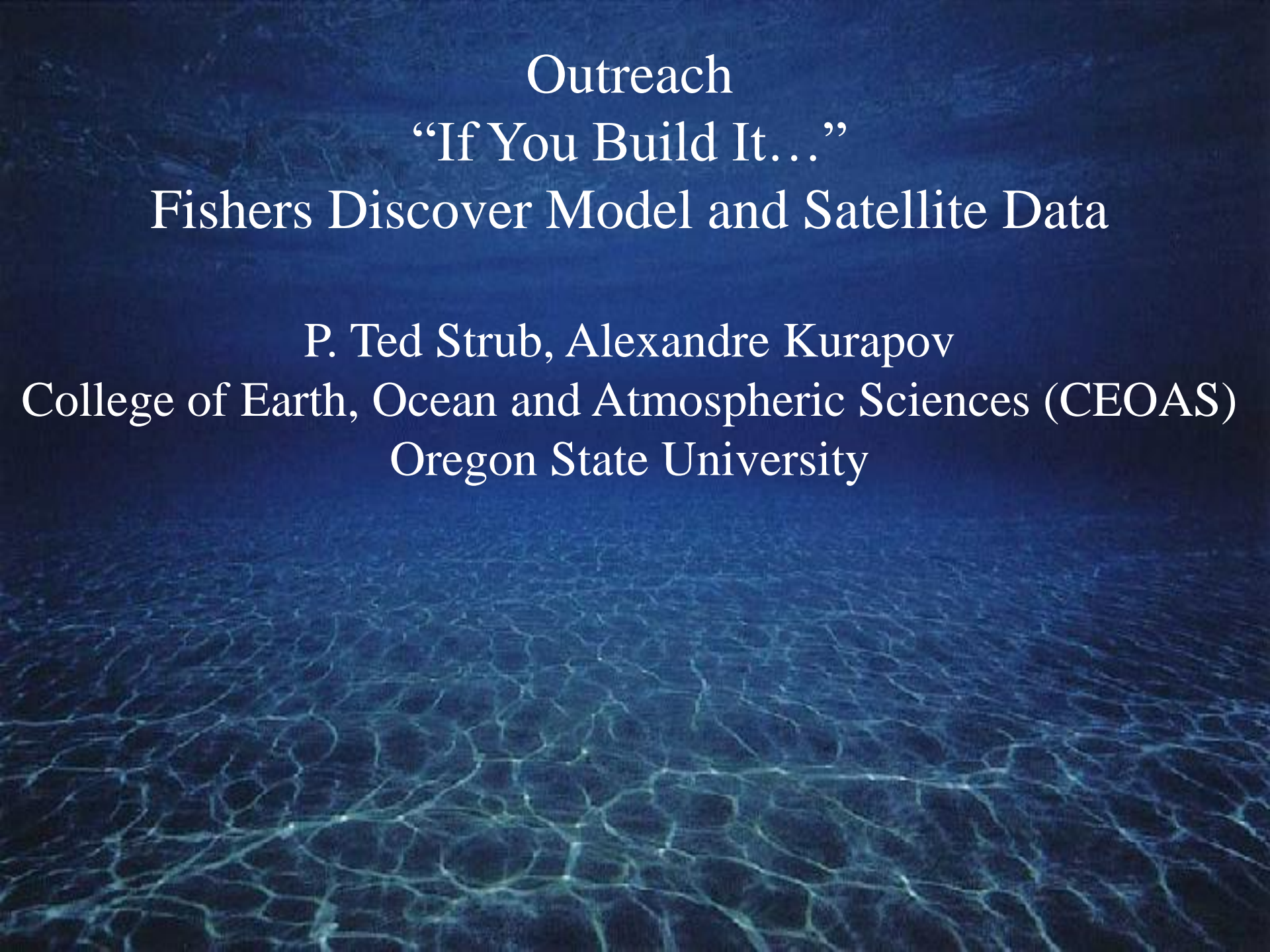
NASA Mission Applications Representatives

SWOT



- NASA Science Mission Directorate, Earth Science Division – Applied Sciences Program
- Early Phase NASA Decadal Survey missions
- Support applications objectives in conjunction with their science objectives
- Identify Community of Practice (data users) & support flight missions in investing in products of maximal value for CoP,
- Sustain interactions with the CoP to maximize impact of NASA Earth science investments.
- User workshops, products, user conferences, etc.



The background of the slide is a close-up, top-down view of water ripples. The ripples are small and irregular, creating a complex, interconnected pattern of light and dark blue-green tones. The lighting is soft, highlighting the texture of the water's surface.

Outreach
“If You Build It...”
Fishers Discover Model and Satellite Data

P. Ted Strub, Alexandre Kurapov
College of Earth, Ocean and Atmospheric Sciences (CEOAS)
Oregon State University

If You Build It..., Kurapov, Strub: Oregon State University

A real-time pilot forecast model for ocean circulation off the Pacific NW began assimilating SST, HF Radar, and SSH this year. This past summer the fishers began blogging each other and discussing the fields (criticising and defending them).

A charter fishing company has now made a web video showing how to use the fields with satellite and in situ data, accessing them from the NANOOS Visualization System (IOOS RA in the Pacific NW)

http://amigocharters.com/?page_id=58

What to do with your ID holders? Sell them at Disneyland



Modeling distribution of marine debris before and after tsunami of March 11, 2011

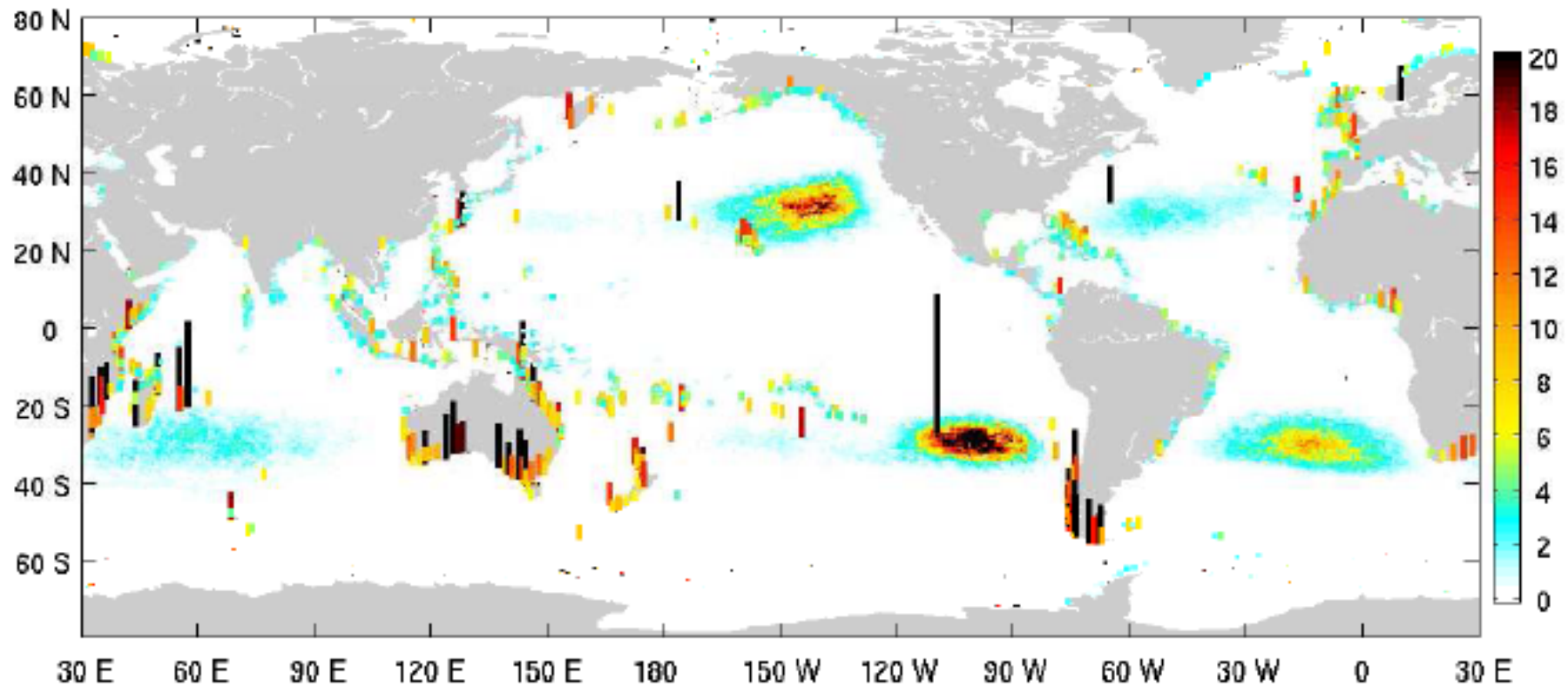
Nikolai Maximenko¹, Jan Hafner¹, and Rick Lumpkin²

¹ IPRC/SOEST, University of Hawaii

² NOAA AOML

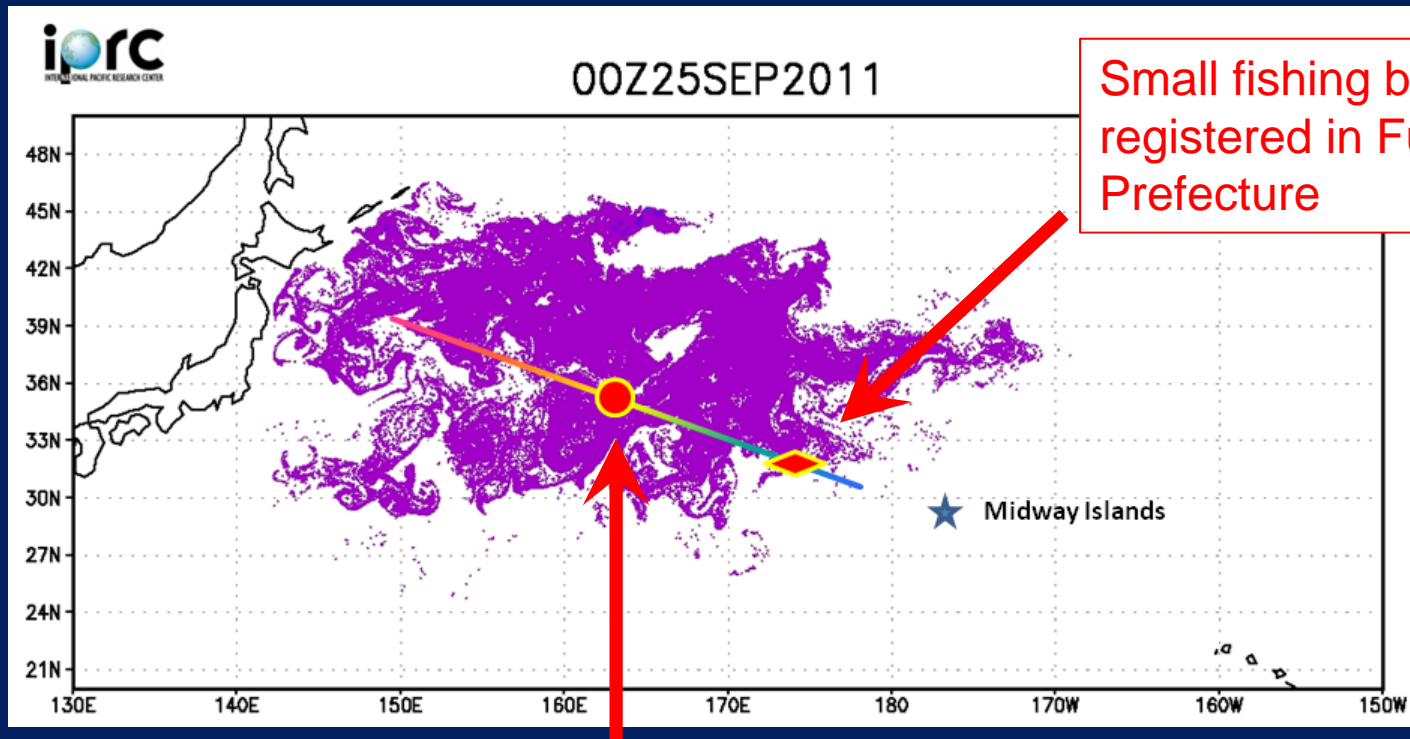


Model debris in water and on shore after 10 years of integration from initially homogeneous condition



Lumpkin et al (JTECH, under review)

STS "Pallada" found tsunami debris where SCUD predicted



Daily public updates are available
at http://iprc.soest.hawaii.edu/users/hafner/PUBLIC/TSUNAMI_DEBRIS