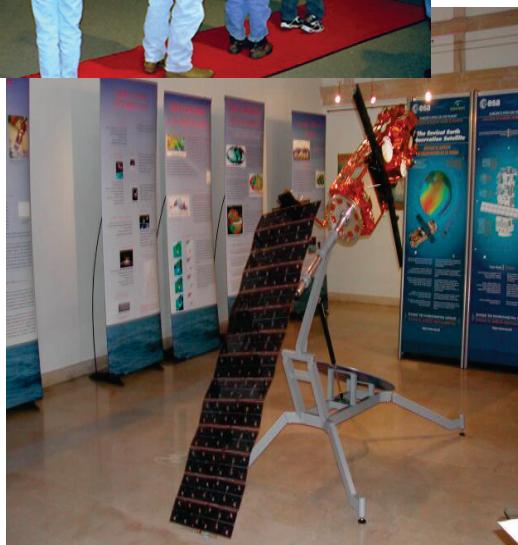
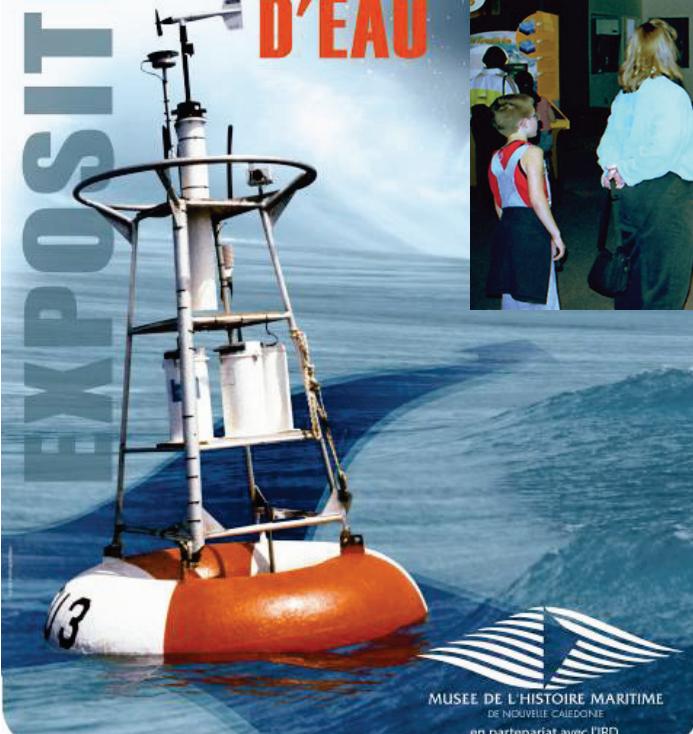


Outreach can be...

Helping in the making of exhibitions

Du 5 mai au 16 juillet 2006

EXPOSITION COURANTS D'AIR **COURANTS D'EAU**



Observacions des del satèl·lit ENVISAT:

El nivell de la mar a les Illes Balears



del 12 al 23 de maig de 2003
Extensió de la UIB a Eivissa-Formentera
C/ Bes, 9 - Eivissa

Doing public lectures / conferences

La mar vista des del cel

Ananda Pascual



I · M · E · D · E · A

Institut Mediterrani d'Estudis Avançats



ACTUALITÉS

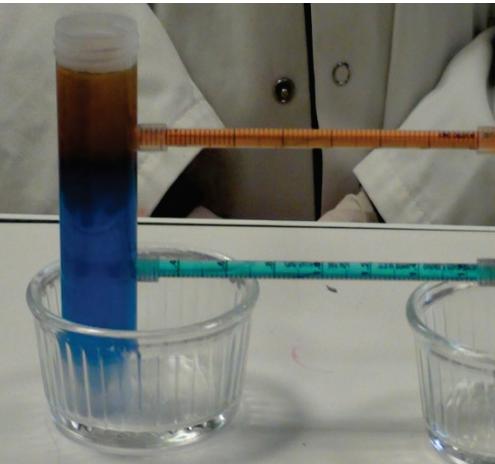
"Votre association est cette magicienne qui permet de ouvrir les esprits à la con...
es généreux militants sont rieur. Au point qu'ils font toiles mais aussi les fleurs, san. Bravo à eux."

Hubert Reeves



ation loi 1901 à but non lucratif
Observatoire Midi-Pyrénées
Edouard Belin - 31400 Toulouse

Participating in classroom activities

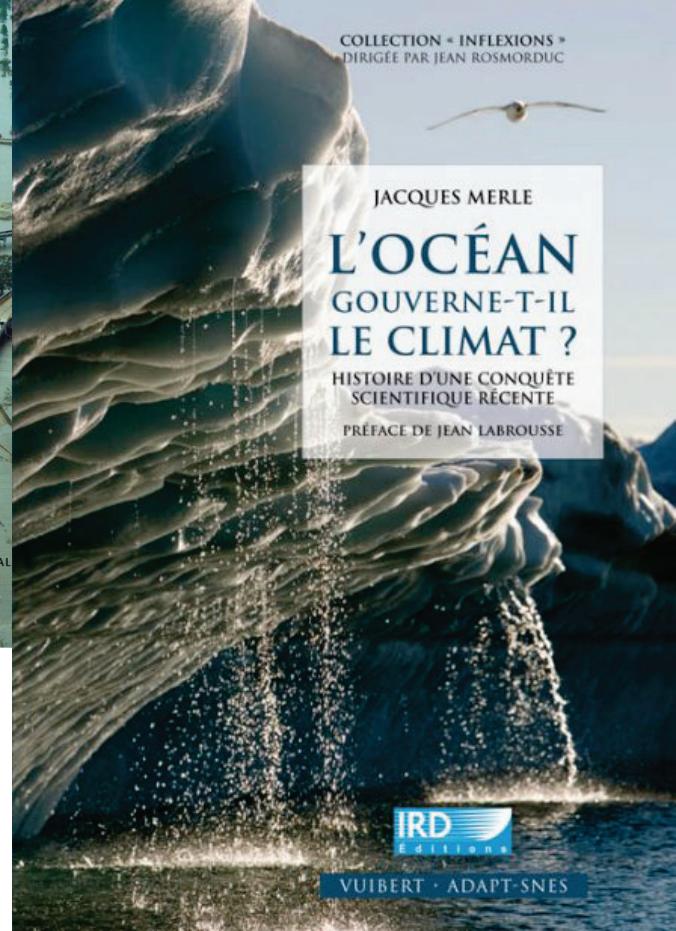
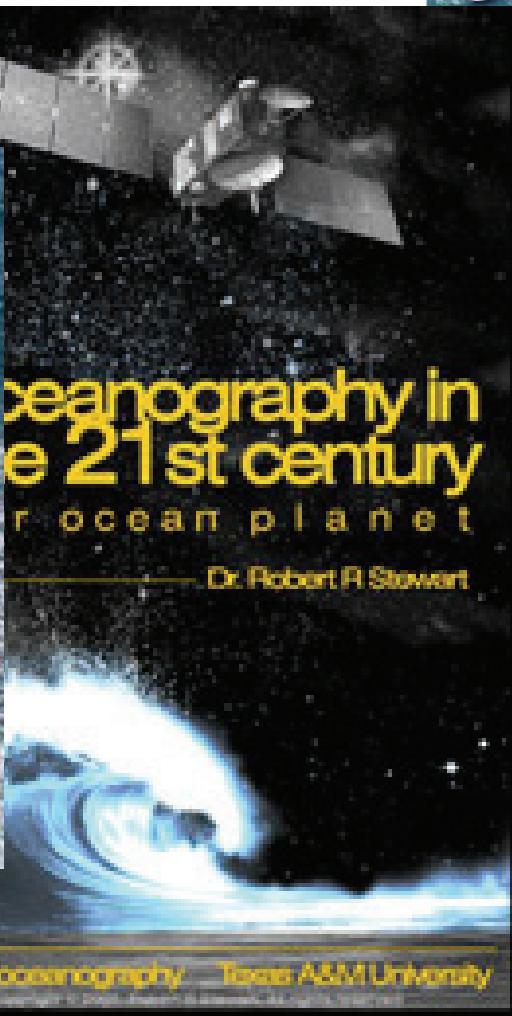
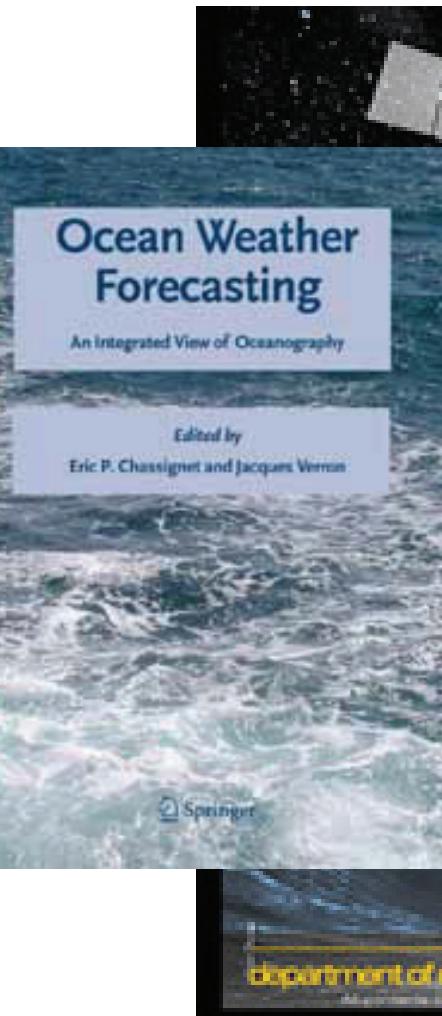


Une mesure simple à mettre en oeuvre

collage, feutre, Daniel & Ahmed

© images-google.fr

Writing & editing books



Vuibert · Adapt-Snes

Or making other “hard copy” material

La circulation océanique

Les couches océaniques

500 m Couche intermédiaire
3500 m Couche profonde

les courants les plus forts
la plus grande concentration d'êtres vivants
les échanges directs avec l'atmosphère

NASA

Océans, reflet de la Terre

Cette carte haute résolution de la surface moyenne océanique a été réalisée par CLS et le SHOM à partir des données de mesures altimétriques des satellites TOPEX/POSEIDON.

Oceans mirror the deep

This high-resolution map of the mean sea surface was produced by CLS and SHOM from ten years of altimetry data acquired by the CTOPO1, BRS1 and TOPEX/POSEIDON satellites.

Monitoring the ocean with altimetry

The altimeters are part of the fleet that has been launched over the last 20 years to measure global sea level rise. They have helped to save thousands of lives, bring economic opportunities, and provide a platform for a sustainable future. The World Climate Report shows that, over the past 20 years of measurements, we are able to predict the trend and understand the causes.

The level is rising

The increase in sea level is due to the melting of ice sheets and the thermal expansion of the ocean. The rate of sea level rise has increased significantly over the past century, particularly in the last few decades. This increase is projected to continue in the future, with projections ranging from 1 to 3 meters by the end of the century.

Climate, an exchange between air and water

What will the weather be like next summer? Although we will probably never be able to forecast it perfectly, we can at least hope to improve our ability to do so. Satellites are currently being developed that can help us to better understand the climate system and how it works. These new instruments will be able to provide more accurate information about the Earth's climate, which will help us to better predict the weather and climate.

Winds and waves

For meteorologists, as well as anyone planning coastal developments or living along the coast, wave height is a critical parameter that cannot be ignored. Altimeters can be used to determine winds and estimate their direction and speed. This information can then be used to calculate wave heights, which can be integrated rapidly into wave-height forecasting models used by Meteor France and EUMET.

The environment and safety at sea

The ocean is an enormous reservoir that has a major influence on the climate. Although it is a valuable resource, it is also vulnerable to changes in temperature and chemistry. It is important to monitor the ocean to ensure that it remains healthy and sustainable.

Radar altimeters

Satellite radar altimeters are used to measure the height of the ocean surface. By comparing the time taken for a signal to travel from the satellite to the ocean surface and back, the height of the ocean surface can be determined. This information is then used to calculate the wind speed and direction, as well as the height of the waves.

OSTM/Jason-2

Measuring ocean surface topography from space helps us understand global ocean currents.

Quiz and Discovery Cards reinforce all seven essential principles

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High Seas: Force Ocean Literacy Principles

EPO team partnered with NASA's award-winning Space Place education game. The game has become one of our most successful and useful tools in climate. It has proven to be fun and engaging for ages 9 to adult, classroom use. As we continue to focus our outreach activities on programs to use the game to reinforce learning of the seven essential principles ocean surface topography from space are most relevant (Principles 1, 3, and 7).

Blame El Niño!

El Niño is a natural phenomenon that occurs every few years. It is caused by changes in the way the wind blows across the equatorial Pacific Ocean. These changes affect the way the ocean currents move, which in turn affects the way the atmosphere moves. This can lead to changes in the weather patterns around the world, such as droughts and floods.

Classroom activities illustrate the ocean's influence on weather and climate (Principle 3)

What you should know about the ocean Seven Essential Principles

1. Earth has one big ocean with many features.
2. The ocean is big in the ocean shape the basin.
3. The ocean is a major influence on weather and climate.
4. The ocean makes Earth habitable.
5. The ocean is a source of energy and productivity of life and ecosystems.
6. The ocean is a major source of energy and productivity of life and ecosystems.
7. The ocean is largely unexplored.

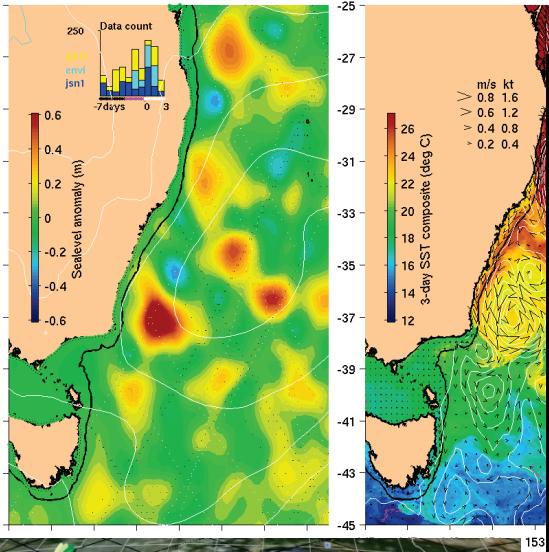
Sea Level Rise: What's Happening?

Sea level rise is a complex process that involves both natural and human-made factors. One of the main causes of sea level rise is global warming, which is causing the ice caps and glaciers to melt. This meltwater is adding to the volume of the ocean, causing it to rise. Another factor is the expansion of the ocean as it warms up. This is because warmer water takes up more space than cooler water. Finally, there are also some human-made factors, such as the extraction of groundwater and the filling of reservoirs, which can cause local sea level rise.

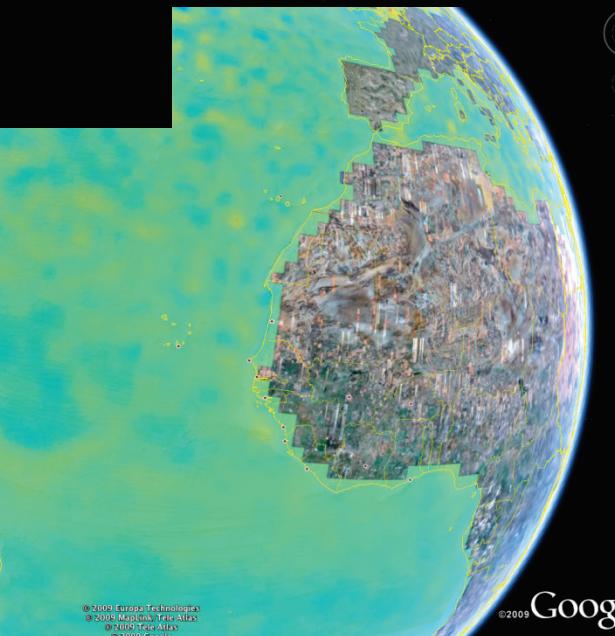
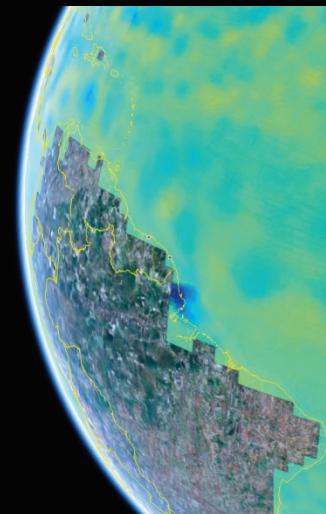
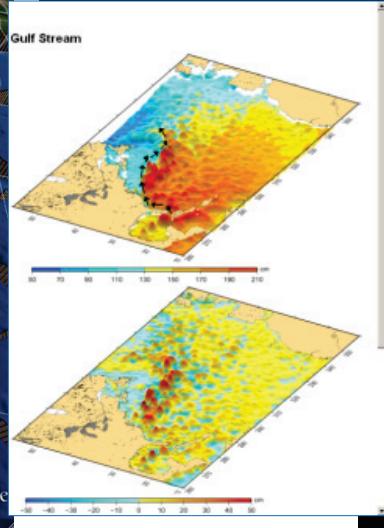
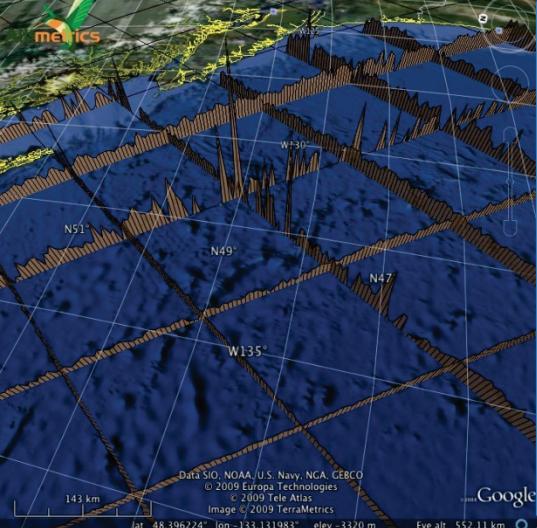
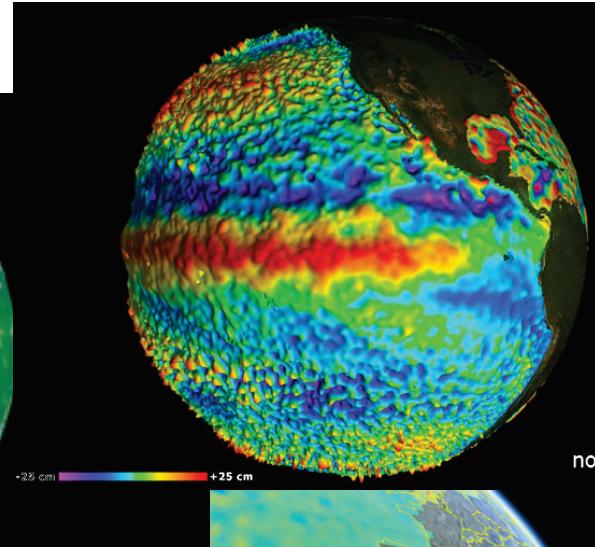
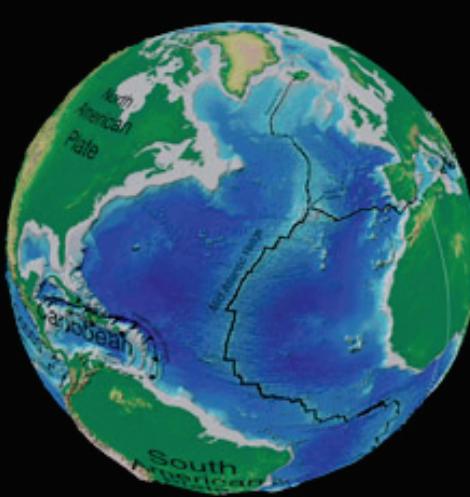
Quiz and Discovery Cards reinforce all seven essential principles

Generating animations and images

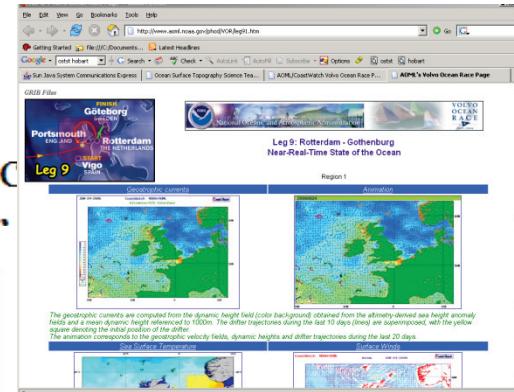
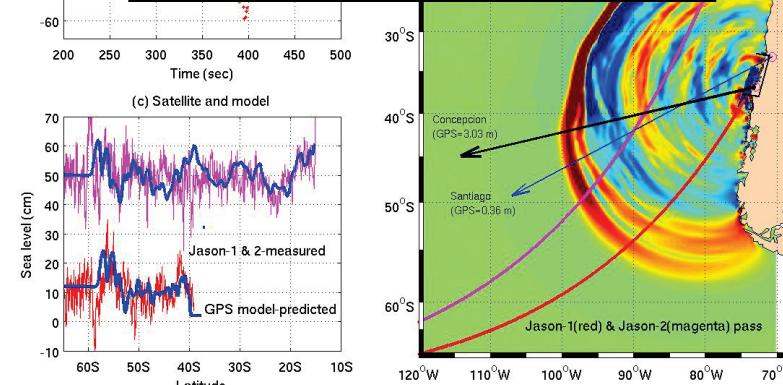
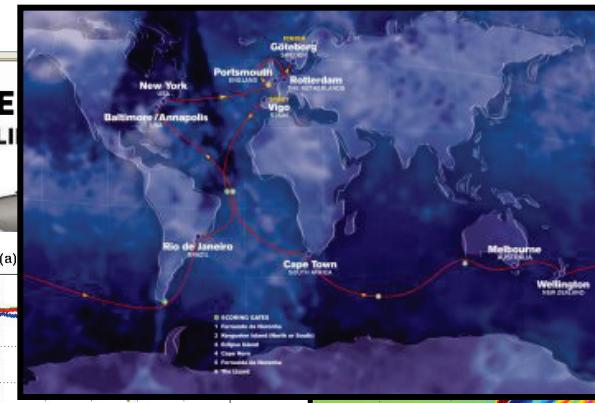
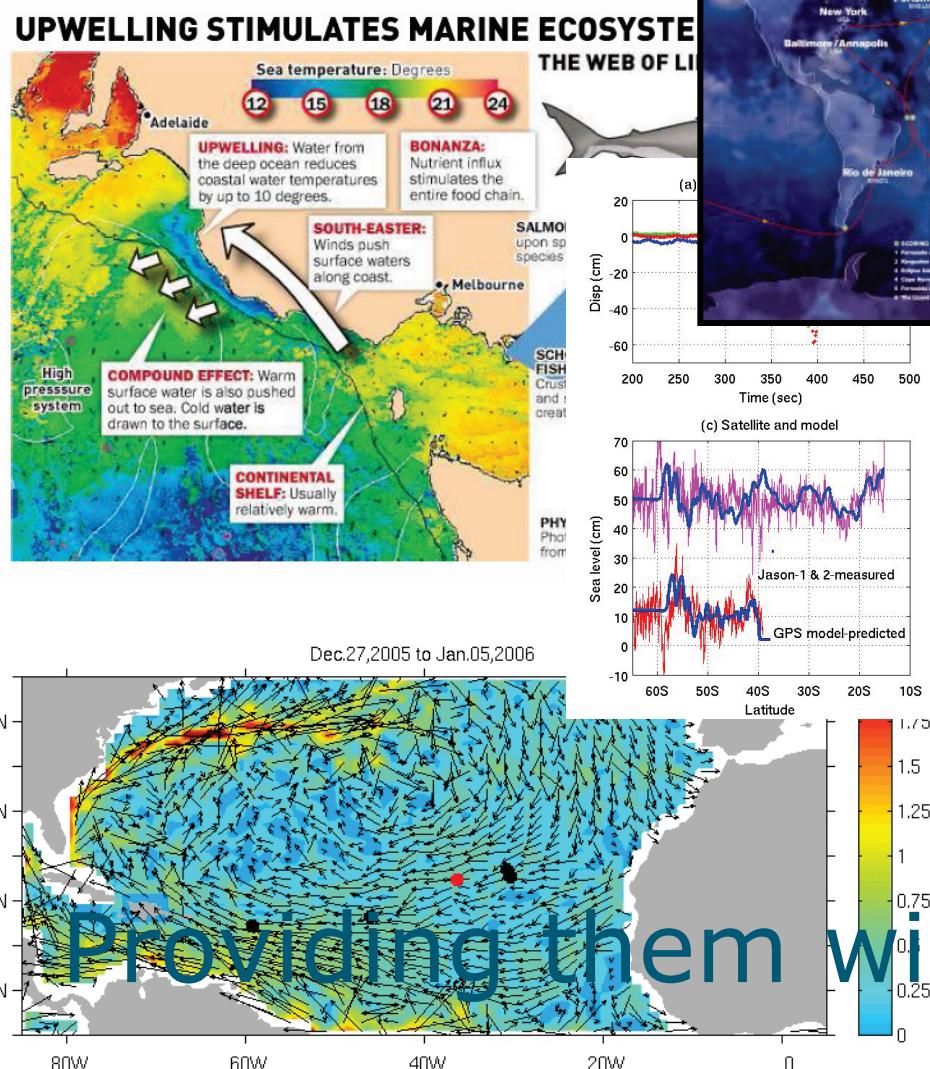
Atmospheric pressure contours (2 hPa); 11-Feb-2006
Isostatically adjusted sealevel anomaly; 11-Feb-2006



SST: 12-Feb-2006, SVP drifters (magenta): 05 Feb - 14 Feb
Sealevel contours (0.1 m) and geostrophic velocity; 11-Feb-2006.



Talking with journalists/media people



Get out the rubber booties ... a surfer enjoys the balmy warm water at Bondi Beach yesterday but swimmers will soon have to endure water temperatures of 19 degrees. Photo: Wolter Peeters

"Stories" (ours)

TAKE a dip in the ocean this weekend - it might be the last for a few months. After about eight weeks of unusually high water temperatures off Sydney, often reaching 25 degrees, the cold currents are set to finally arrive next week.

Putting up web sites / pages

Aviso Altimetry - Ocean Indicators: Mean Sea Level Data and Image Selection - Mozilla Firefox

Ocean Motion : Main Page - Mozilla Firefox

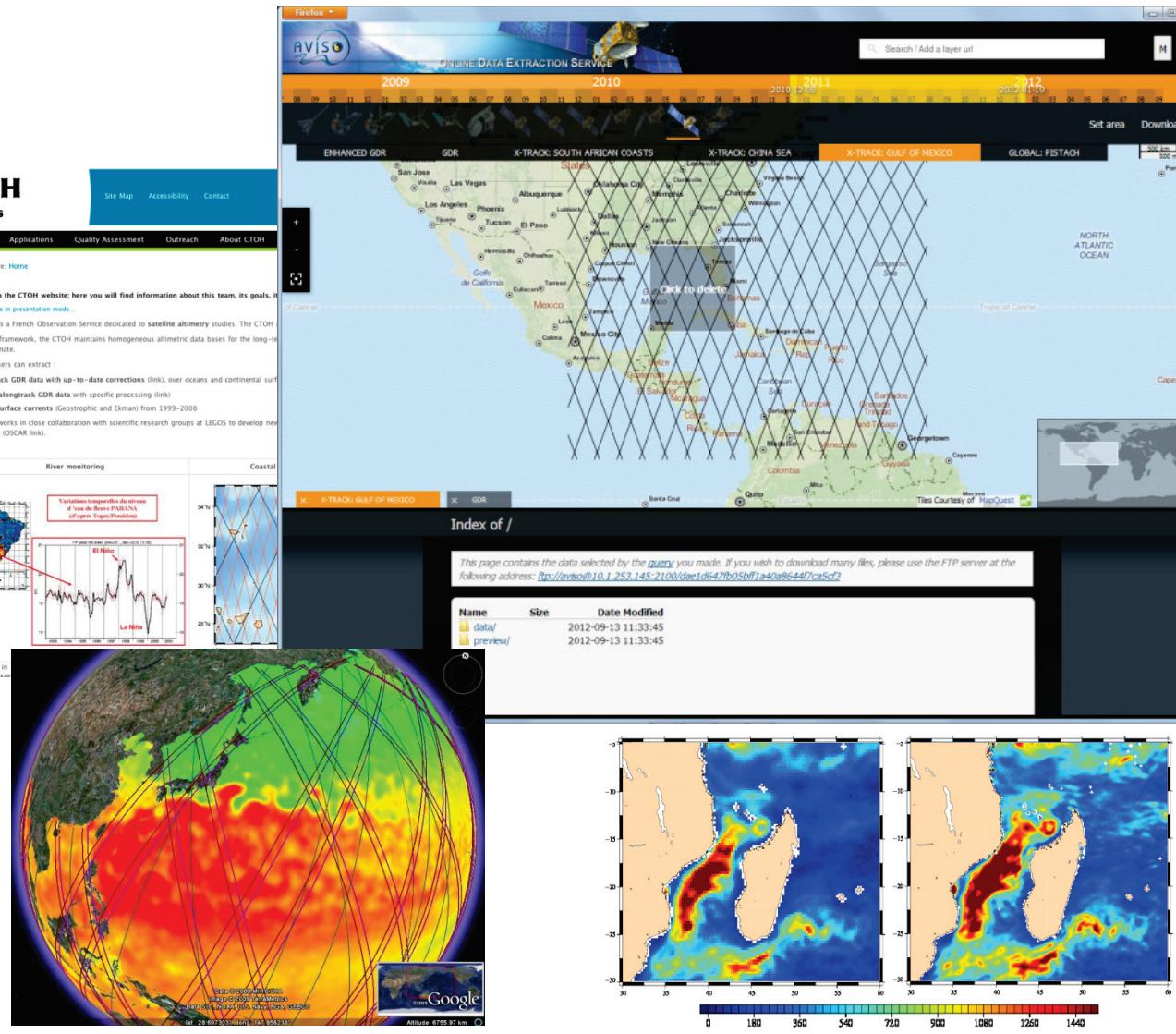
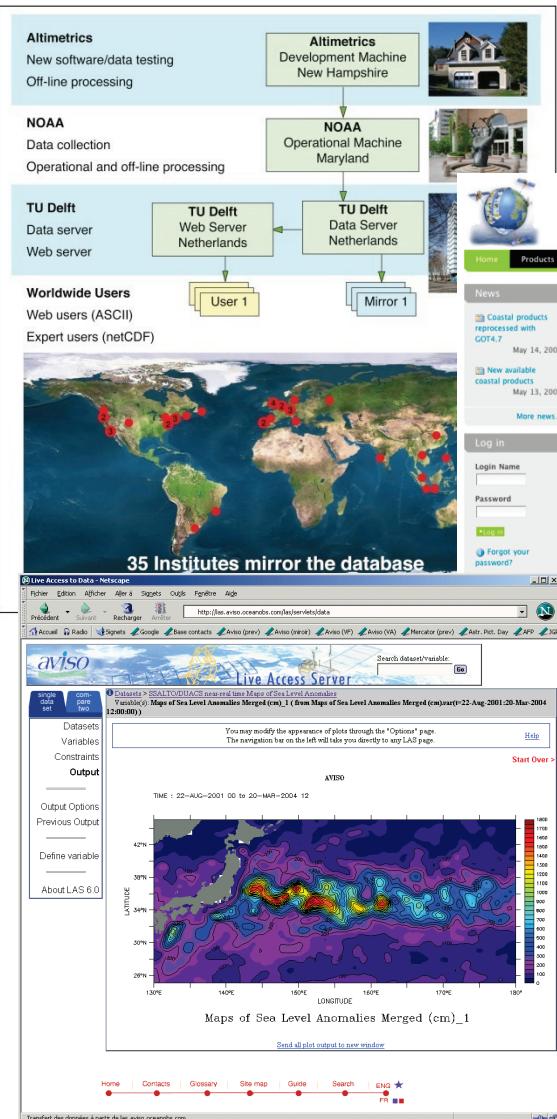
SEOS

Ocean Currents

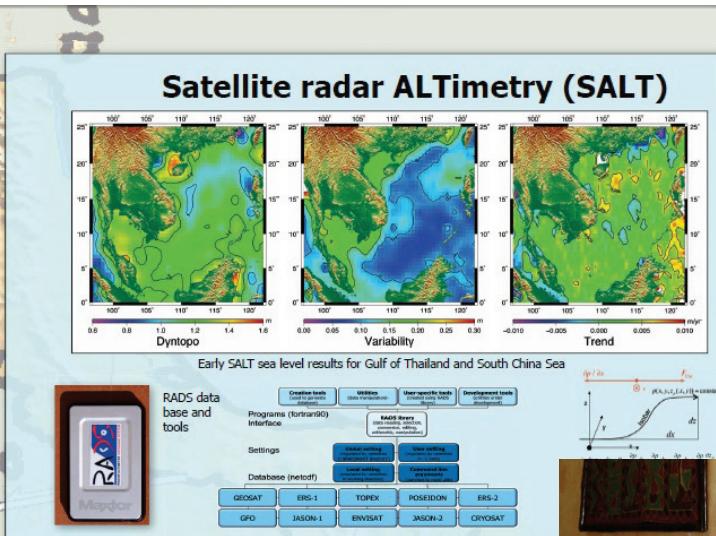
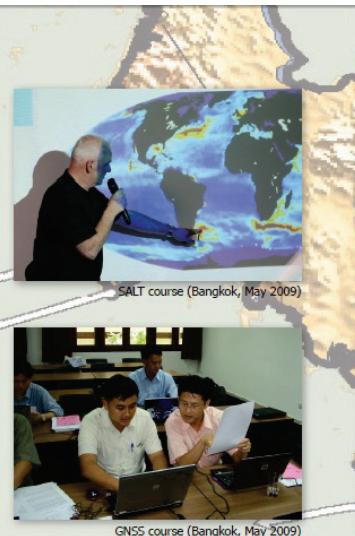
1993 TOPEX-POSEIDON TRAQUE EL NIÑO

Global Reservoir and Lake Monitor

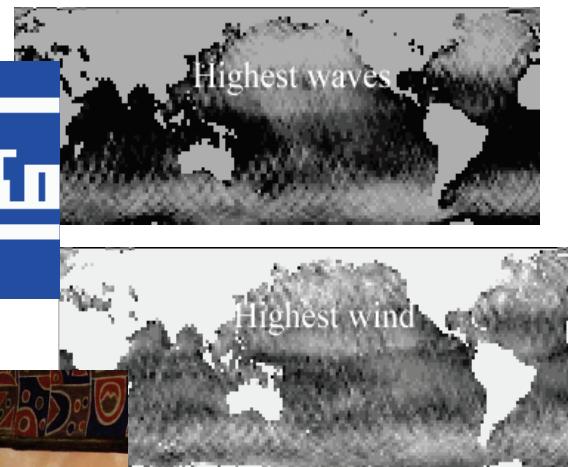
Easing data & their access



Giving courses

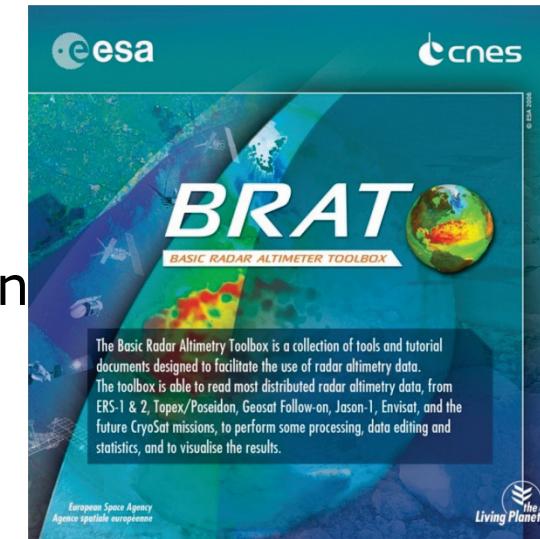


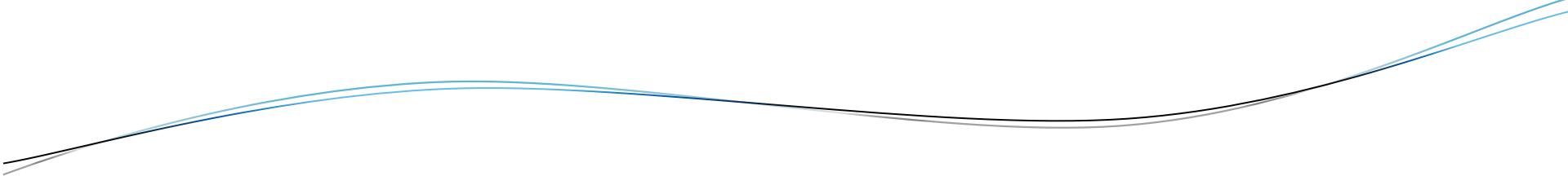
details can be found on the web site <http://www.sv.eng.chula.ac.th/geo2tecdl>



Providing with dedicated tools

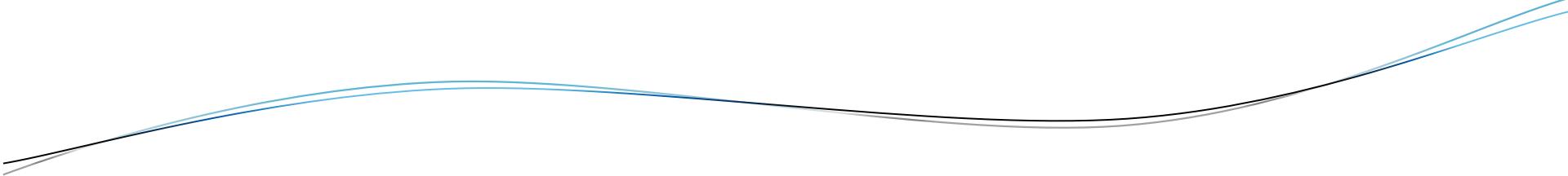
- (along-track) altimetry data needs quite different tools than “imagery” data:
 - Use of several hundreds(thousands) files at the same time
 - Computation
 - Editing selection on criterias (on different variables)
 - A lot of different satellites/formats
- Basic Radar Altimetry Toolbox:
 - A Joint project between ESA and CNES,
 - Data reading, processing and visualisation
 - from ERS-1 (1991) up to Saral
 - <http://www.altimetry.info>,
 - <http://earth.esa.int/brat/> (mirror),
 - DVD





**Thanks to all who
participated!**

(this year and previous years)



Outreach & data services splinter

Outreach session

Thursday, 20 October 14:00-15:40

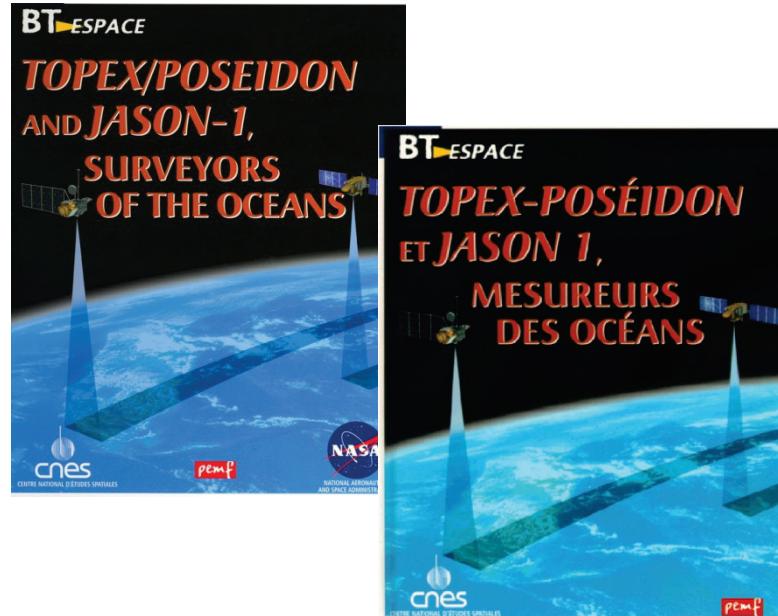
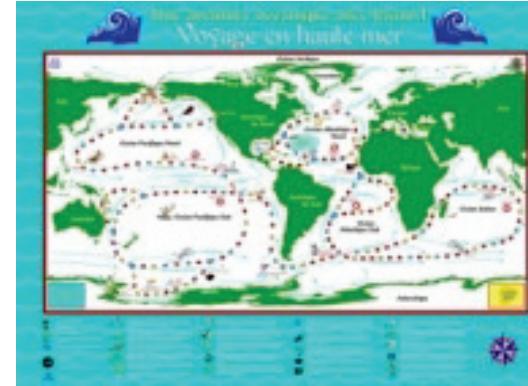
- Chairpersons: V. Rosmorduc, M. Srinivasan
- Agenda Topics:
 - ARGONAUTICA, an educational project using JASON data
 - The 7th Continent Expedition : International Student Participation in a Voyage to the "Great Pacific Garbage Patch" (Staerke et al)
 - Education, Outreach, and Societal Benefits of Ocean Altimetry Missions: 20 Years of Communication & Collaboration (Richardson et al.)
 - Climate Science Education for Underrepresented Students through Collaboration with CABPES (Hamlington et al.)
 - Indonesian Throughflow Proxy from Satellite Altimeters (Susanto et al.)
 - Jason-1 Geodetic Datasets at PO.DAAC and the Impact on its Users and Services (Hausman)
 - SHOWCASE of altimeter outreach

Posters

- LearnEO!: an ESA Learn Earth Observation Project Byfield et al.
- A new interface to download altimetry data in Toulouse Rosmorduc et al.
- Reaching Operational Users ? A JPL/CCAR collaboration Srinivasan et al.
- Sea Level Experiments for Climate Science Education of High School Students Fitzpatrick et al.
- CTOH: 20 years of altimeter data Fleury et al.
- Ssalto/Duacs: Preparation of the next products version Pujol et al.

20 years of NASA/JPL-CNES collaboration

- A fruitful collaboration
- Now with Eumetsat, NOAA, ESA...
- Joint products & activities including Argonautica in the US
- Translations English-French & French-English



Altimetry Data Services

- Several presentations/posters.
- Statistics/metrics about users (Jason-1 geodetic phase GDRs) were provided.
- Is there interest in compiling joint, multi-service, metrics to provide “total” number of users to the agencies? (is it feasible?)
- Aviso “Online Data Extraction Service” on demo
- JPL/CCAR collaboration for real-time users
- CTOH, SSALTO/DUACS data
- D. Griffin “IMOS ocean current” web site

Oceancurrent.imos.org.au



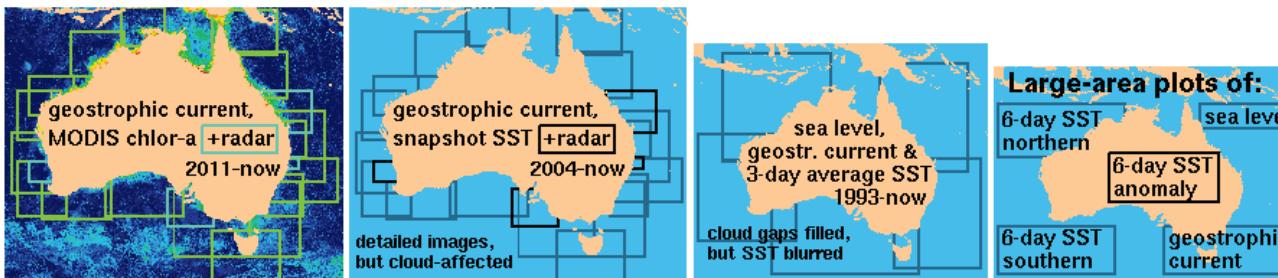
OceanCurrent - Ocean Surface Currents and Temperature

Ocean News: An even-higher sea level event in the Great Australian Bight (29 Aug 2012) [\[more...\]](#)

The Day the East Australian Current vanished (13 Aug 2012) [\[more...\]](#)

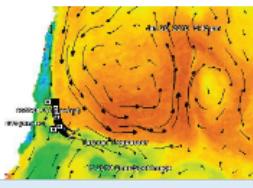
Technical News: Data system functioning again (24 Aug 2012) [\[more...\]](#)

Prepared maps and animations



[\[Source Data\]](#) [\[what's shown\]](#) [\[animation won't play?\]](#)

Imagery for import into Google Earth



[\[West Australia, last 6 days\] \[2008-now\]](#)

[\[East Australia, last 6 days\] \[2008-now\]](#)

Click one of these links to make a map of the anomaly of 3-day average SST for WA or East Australia appear in [Google Earth](#). If you select the 'last 6 days' link, drag the time slider right to see the most recent data. For either recent or old, zoom in to see 'snapshot' images of SST anomaly, overlain with altimeter-derived estimates of currents. Move the time slider slowly to load other days' data. **Warning:** You need a good internet connection for this to work well. **Tip:** Do not save this to My Places in GE. To refresh tomorrow, reload from the website.

Education

- Argonautica: students presentations in plenary (20yrs) and outreach session (OSTST)
 - **real** appreciation from the attendees for the quality of science content, procedures and presentation
- definitely something to continue in next OSTSTs (both sides of the Atlantic?)



Education (cont'd)

- Argonautica:
 - “7th continent” operation: understand and study the Pacific plastic garbage patch through an expedition + satellite data):
 - JPL joining in
 - OSTST members are welcome to join in too!
- CAPBES Sea Level Education For Underrepresented Students: after-school sea level and climate science course with Matlab and experiments
- LearnEO (web-based lessons about use of EO data)
- OSTST members involved in a number of Training courses:
 - Advertise them more widely?
 - Share material? (including “kitchen experiment” descriptions) → medium?

Recommendations

- Heightened interest of general public concerning all things concerning climate, more efforts should be made in altimetry visibility
- Organize more trainings, make more tutorials, let them be known, share material
- Link between the different data available by the different data center
- Continue funding “old” missions for regular upgrades / reprocessings
- Develop international collaboration between students ; material in several languages.

New Planned Efforts

- Jason-2/OSTM, SWOT, Saral and Jason-3 education & public outreach and applications outreach
- Altimetry and multisensor applications promotion
- Coverage of science team research and other applications on web
- Presentations about altimetry and applications made available to the community?
- Continue the “beautiful images from altimetry”?
- AvisOcean Iphone/Ipad application expanded
- Aviso Online Data Extraction Service to be open online (2013) with full database
- Climate day cont'd

OSTST posters on the web

- A complete overview of what was shown during this meeting
- An archive of past meetings (from 1998)
- Send them in pdf to aviso@oceanobs.com (tell us if > 5MB)
- Your posters available online at:
<http://www.aviso.oceanobs.com/ostst/>