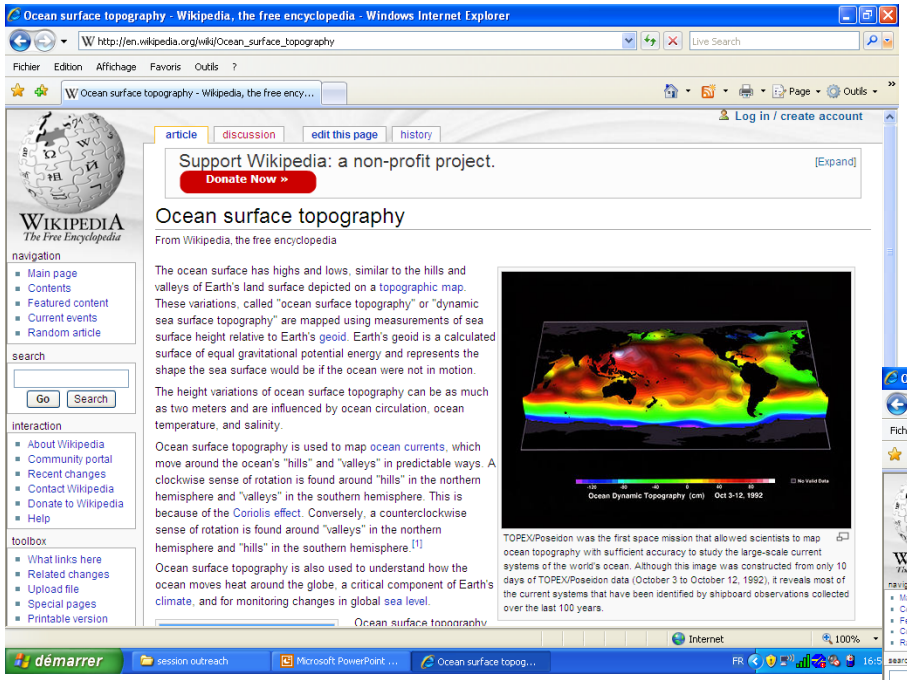
2007-2008 Highlights

- Outreach products and web pages for Jason-2/OSTM
- Continued highlights of societal benefits
- New applications videos on Aviso
- New Aviso web site (see dedicated presentation)
- New OSTM/Jason-2 web pages on NASA OST site
- 2008 wall calendar (2009 soon!)
- “Climate Day 2008” Multi-partner education event
- OST & Satellite pages in the Wikipedia
- Exhibition on Ocean in Paris (Trocadéro), organized by CNRS

Wikipedia



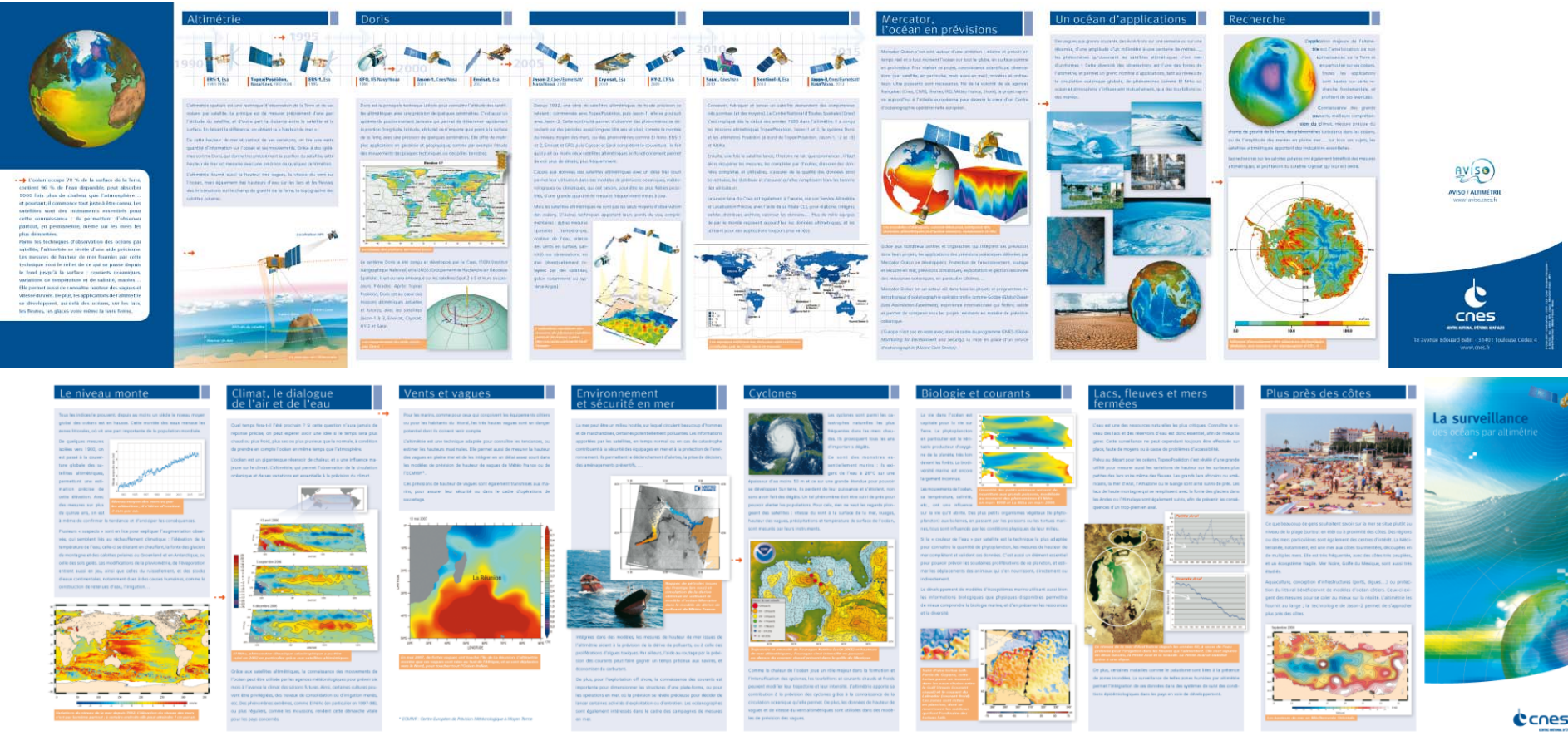
Ocean Surface Topography

Jason-1

OSTM / Jason-2

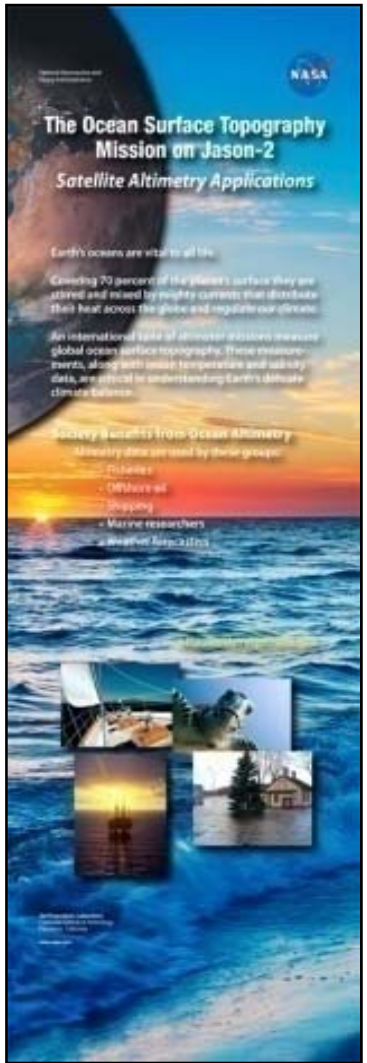
Accordion-folded flyer

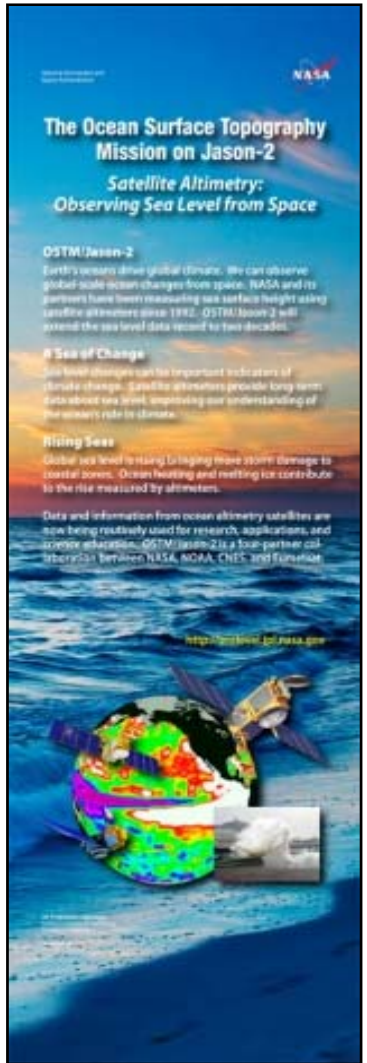
- A flyer on altimetry & applications
- Available in English, French or Spanish



OSTM/Jason-2 Multi-purpose exhibit

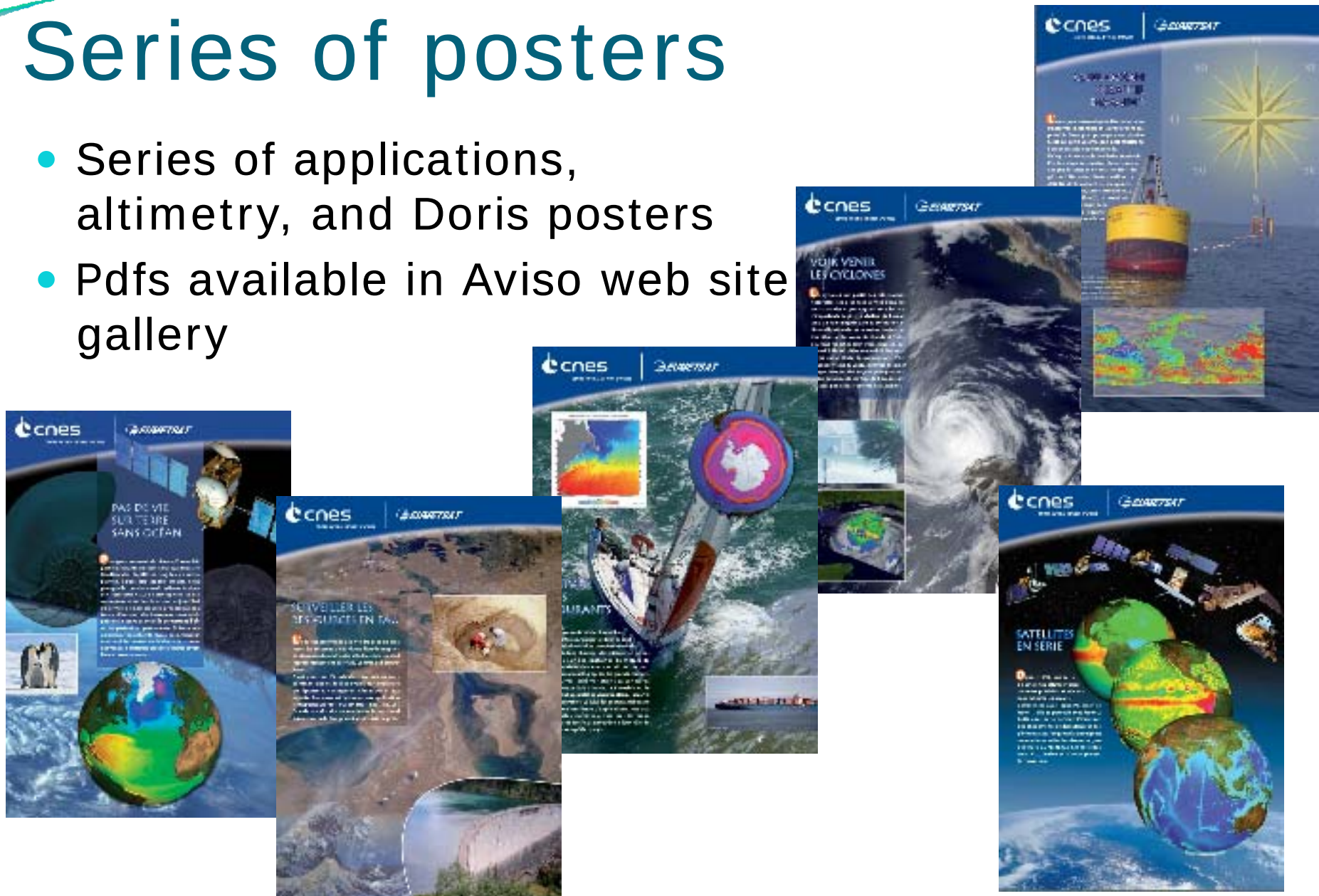
- Exhibits that can be used in different venues
- 3 separate panels, stand-alone or use together
- Applications
  Education
  General mission





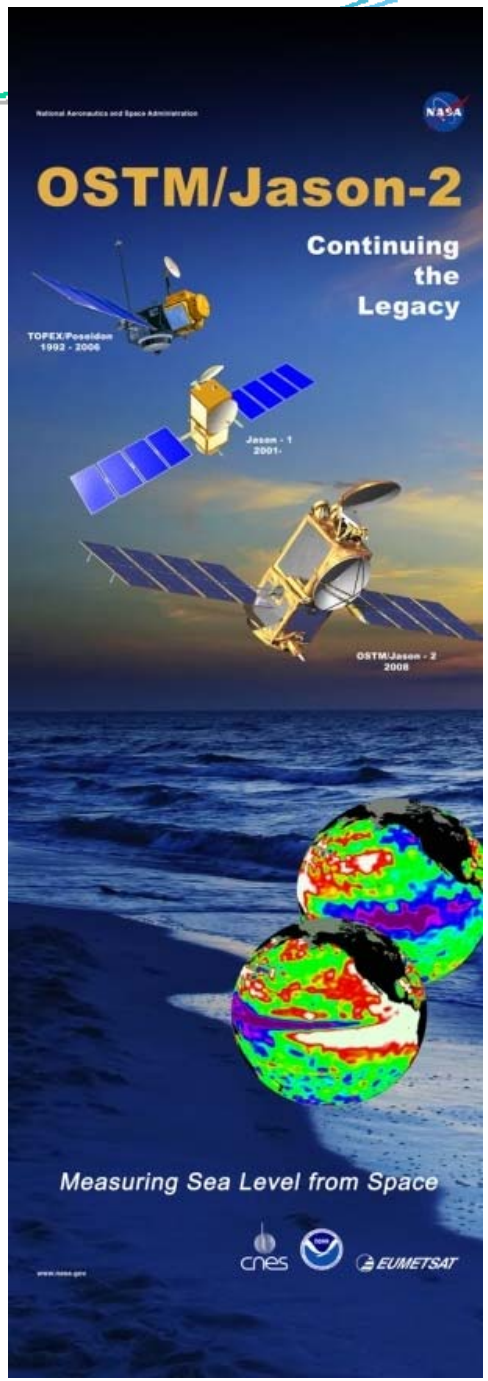
Series of posters

- Series of applications, altimetry, and Doris posters
- Pdfs available in Aviso web site gallery



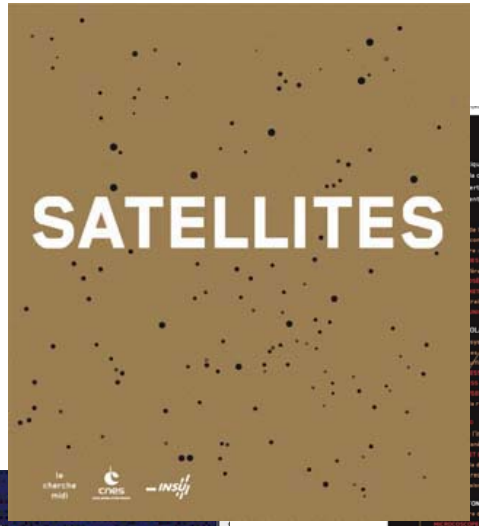
OSTM/Jason-2 banner

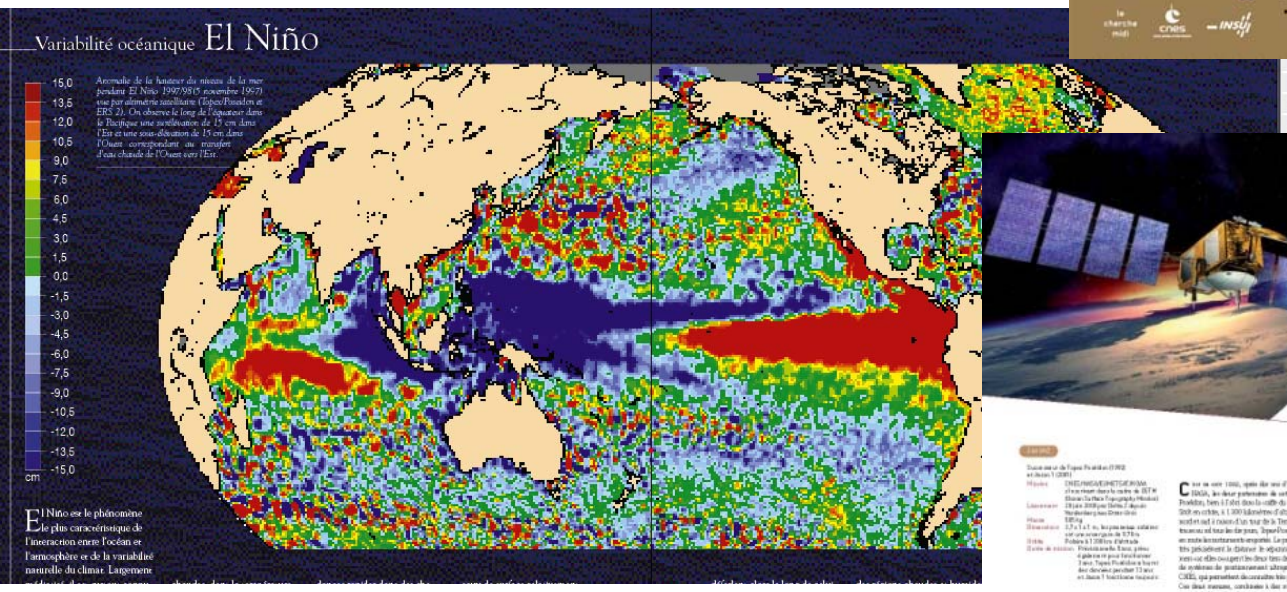
- OSTM launch banner displayed at JPL in 6 public locations beginning 2 weeks prior to launch
- Also printed as small poster



Altimetry highlighted in books

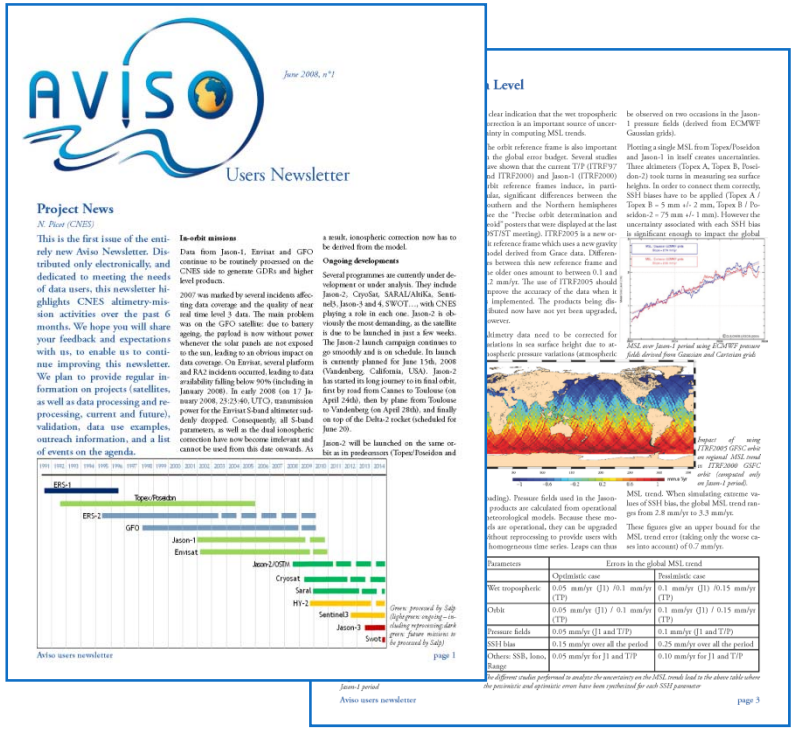
- *Satellites,* Cherche-Midi Ed. (A. Chabreuil, Cnes)
- Book on Climate & Earth Observation, Thalès (Club des Argonautes)





Aviso (new) Newsletter

- Two issues of a new format of Aviso Newsletter.
- Pdf, sent by e-mail / available on the web


AVISO Users Newsletter

June 2008, n°1

Project News

N. Picot (CNES)

This is the first issue of the entirely new Aviso Newsletter. Distributed only electronically, and dedicated to meeting the needs of data users, this newsletter highlights CNES altimetry-mission activities over the past 6 months. We hope you will share your feedback and expectations with us, to enable us to continue improving this newsletter. We plan to provide regular information on projects (satellites, as well as data processing and reprocessing, current and future), validation, data use examples, outreach information, and a list of events on the agenda.

In-orbit missions

Data from Jason-1, Envisat and GFO continue to be routinely processed on the CNES side to generate GDRs and higher level products.

2007 was marked by several incidents affecting data coverage and the quality of near real time level 3 data. The main problem was on the GFO satellite: due to battery ageing, the payload is now without power whenever the solar panels are not exposed to the sun, leading to an obvious impact on data coverage. On Envisat, several platform and RA2 incidents occurred, leading to data availability falling below 90% (including in January 2008). In early 2008 (on 17 January 2008, 23:23:40, UTC), transmission power for the Envisat S-band altimeter suddenly dropped. Consequently, all S-band parameters, as well as the dual ionospheric correction have now become irrelevant and cannot be used from this date onwards. As a result, ionospheric correction now has to be derived from the model.

Ongoing developments

Several programmes are currently under development or under analysis. They include Jason-2, CryoSat, SARAL/AltiKa, Sentinel3, Jason-3 and 4, SWOT..., with CNES playing a role in each one. Jason-2 is obviously the most demanding, as the satellite is due to be launched in just a few weeks. The Jason-2 launch campaign continues to go smoothly and is on schedule. Its launch is currently planned for June 15th, 2008 (Vandenberg, California, USA). Jason-2 has started its long journey to its final orbit, first by road from Cannes to Toulouse (on April 24th), then by plane from Toulouse to Vandenberg (on April 28th), and finally on top of the Delta-2 rocket (scheduled for June 20).

Jason-2 will be launched on the same orbit as its predecessors (Topex/Poseidon and

Aviso users newsletter page 1

Level

clear indication that the wet tropospheric correction is an important source of uncertainty in computing MSL trends.

he orbit reference frame is also important the global error budget. Several studies ave shown that the current T/P (ITRF97 nd ITRF2000) and Jason-1 (ITRF2000) bit reference frames induce, in particular, significant differences between the outhern and the Northern hemispheres ee the "Precise orbit determination and recal" posters that were displayed at the last ST/ST meeting). ITRF2005 is a new orit reference frame which uses a new gravity odel derived from Grace data. Differenes between this new reference frame and e older ones amount to between 0.1 and 2 mm/yr. The use of ITRF2005 should mprove the accuracy of the data when it implemented. The products being distributed now have not yet been upgraded, owever.

Altimetry data need to be corrected for olations in sea surface height due to atmospheric pressure variations (atmospheric

ading). Pressure fields used in the Jason- products are calculated from operational eteorological models. Because these models are operational, they can be upgraded ithout reprocessing to provide users with homogeneous time series. Leaps can thus be observed on two occasions in the Jason-1 pressure fields (derived from ECMWF Gaussian grids).

Plotting a single MSL from Topex/Poseidon and Jason-1 in itself creates uncertainties. These altimeters (Topex A, Topex B, Poseidon-2) took turns in measuring sea surface heights. In order to connect them correctly, SSH biases have to be applied (Topex A / Topex B – 5 mm +/- 2 mm, Topex B / Poseidon-2 = 75 mm +/- 1 mm). However the uncertainty associated with each SSH bias is significant enough to impact the global

NASA over Jason-1 period using ECMWF pressure fields derived from Gaussian and Cartesian grids

Impact of using ITRF2005 GFSC orbit (corrugated) over Jason-1 period).

MSL trend. When simulating extreme values of SSH bias, the global MSL trend ranges from 2.8 mm/yr to 3.3 mm/yr.

These figures give an upper bound for the MSL trend error (taking only the worse cases into account) of 0.7 mm/yr.

Parameters	Errors in the global MSL trend	
	Optimistic case	Pessimistic case
Wet tropospheric	0.05 mm/yr (J1) /0.1 mm/yr (TP)	0.1 mm/yr (J1) /0.15 mm/yr (TP)
Orbit	0.05 mm/yr (J1) / 0.1 mm/yr (TP)	0.1 mm/yr (J1) / 0.15 mm/yr (TP)
Pressure fields	0.05 mm/yr (J1 and T/P)	0.1 mm/yr (J1 and T/P)
SSH bias	0.15 mm/yr over all the period	0.25 mm/yr over all the period
Others: SSB, Iono, Range	0.05 mm/yr for J1 and T/P	0.10 mm/yr for J1 and T/P

Jason-1 period.

he different studies performed to analyze the uncertainty on the MSL trends lead to the above table where the pessimistic and optimistic errors have been synthesized for each SSH parameter.

Aviso users newsletter page 3


AVISO Users Newsletter

July 2008, n°2

News of OSTM/Jason-2

J. Perbos, Jason-2 project manager at CNES

This is a special feature issue of the Aviso users Newsletter, dedicated to the newborn Jason-2 mission. Less than one month after launch, all indicators are very good. The satellite is now beginning its tandem verification phase, 55 seconds behind Jason-1.

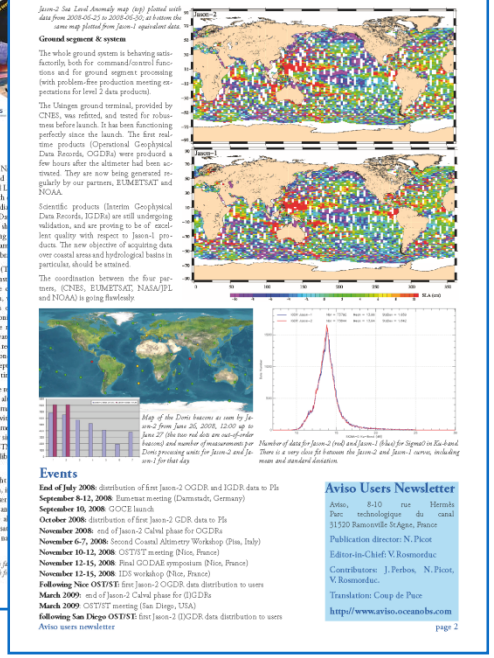
OSTM/Jason-2 was successfully launched on 20 June 2008, after a slight delay of four days with respect to the initial date planned about four years ago. The launch sequence went off normally and the Delta II rocket put Jason-2 onto the right injection orbit. All equipment on the satellite platform operated perfectly.

DORIS was the first instrument to be switched on, during the evening of June 20. In spite of the satellite being in 'barbecue' mode (i.e. spinning with its different sides alternately exposed to the Sun), which is not favourable for DORIS as the antenna then only receives ground beacon signals intermittently, the Diode onboard navigator achieved decametric accuracy on the satellite position in less than six hours.

The spacecraft began functioning nominally (in particular with geocentric (nadir pointing) on the morning of June 22. The other instruments were successively activated on June 22, namely Poseidon (altimeter, CNES), AMR (radiometer, NASA), GPSP (pre-

The Delta-II rocket with Jason-2 inside in flight (Credit NASA/Carleton Bailie photograph)

Aviso users newsletter



Jason-2 Sea Level Anomaly map (top) plotted with data from 2008-06-25 to 2008-06-30; at bottom the same map plotted from Jason-1 equivalent data.

Ground segment & system

The whole ground system is behaving satisfactorily, both for command/control functions and for ground segment processing (with problem-free production meeting expectations for level 2 data products).

The Usingen ground terminal, provided by CNES, was refitted, and tested for robustness before launch. It has been functioning perfectly since the launch. The first real-time products (Operational Geophysical Data Records, OGDRs) were produced a few hours after the altimeter had been activated. They are now being generated regularly by our partners, EUMETSAT and NOAA.

Scientific products (Interim Geophysical Data Records, IGDRs) are still undergoing validation, and are proving to be of excellent quality with respect to Jason-1 products. The new objective of acquiring data over coastal areas and hydrological basins in particular, should be attained.

The coordination between the four partners, (CNES, EUMETSAT, NASA/JPL and NOAA) is going flawlessly.

Map of the Doris beacons as seen by Jason-2 from June 26, 2008, 12:00 up to June 27 (the two red dots are out-of-order beacons) and number of measurements per Doris processing units for Jason-2 and Jason-1 for that day.

Number of data for Jason-2 (red) and Jason-1 (blue) for Signal1 in Ku-band. There is a very close fit between the Jason-2 and Jason-1 curves, including mean and standard deviation.

Events

End of July 2008: distribution of first Jason-2 OGDR and IGDR data to PIs
September 8-12, 2008: Eumetsat meeting (Darmstadt, Germany)
September 10, 2008: GOCE launch
October 2008: distribution of first Jason-2 GDR data to PIs
November 2008: end of Jason-2 Calval phase for OGDRs
November 6-7, 2008: Second Coastal Altimetry Workshop (Pisa, Italy)
November 10-12, 2008: OST/ST meeting (Nice, France)
November 12-15, 2008: Final GODAE symposium (Nice, France)
November 12-15, 2008: IDS workshop (Nice, France)
Following Nice OST/ST: first Jason-2 OGDR data distribution to users
March 2009: end of Jason-2 Calval phase for (J)GDRs
March 2009: OST/ST meeting (San Diego, USA)
following San Diego OST/ST: first Jason-2 (J)GDR data distribution to users

Aviso Users Newsletter

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Translation: Coup de Pace

http://www.aviso.oceanobs.com

Aviso users newsletter page 2

- Another issue to be published soon

Jason-2 contest for schools

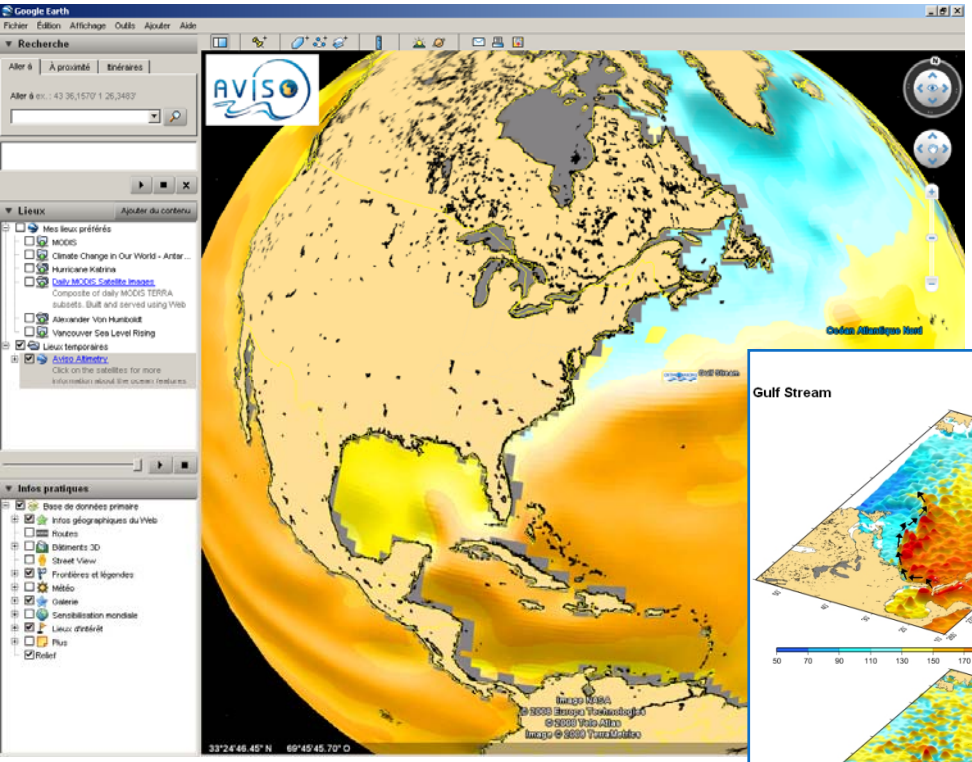
- “Un canard sur l’océan” a contest for schools to write, lay-out and publish their own newspaper on satellites and climate
- Ressources on the web, including a Desktop-publishing software

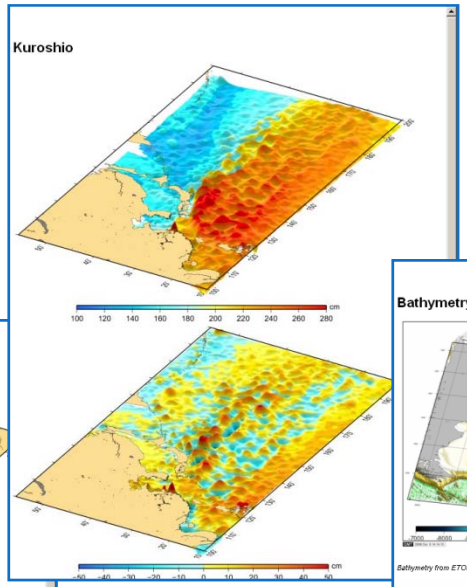
New Planned Efforts

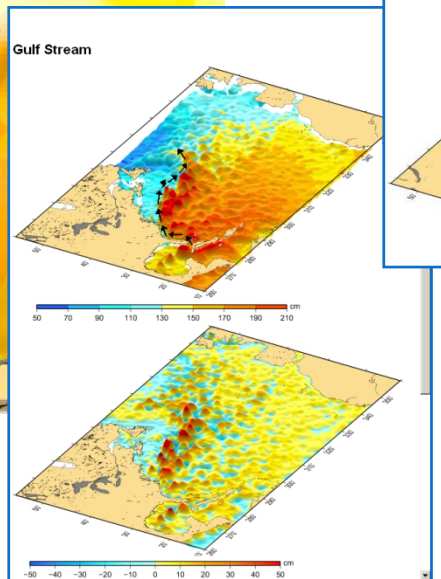
- Jason-2/OSTM Education & Public Outreach & applications outreach
- Saral & SWOT Education & Public Outreach & applications outreach
- Highlight altimetry applications, including multisensor
- Coverage of science team research and other applications on web
- “Climate Day 2009” Multi-agency, multi-partner education and public outreach event
- Argonautica 2008-2009 begins soon
- Radar altimetry tutorial and toolbox new version (http://www.altimetry.info)
- Google Earth altimetry application browser in preparation, with a series of new images

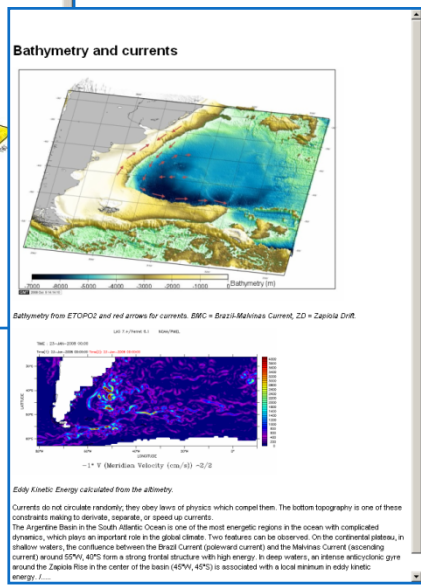
Browsing altimetry applications through Google Earth

- Using Google Earth to display images of altimetry applications









Outreach session agenda

11:00-11:05 Welcome & Introduction,
V. Rosmorduc, M. Srinivasan

11:05-11:20 Argonautica: king penguins tracking
(students presentation)

11:20-11:30 NASA's OST Web Site: Promoting OST Research
M. Srinivasan

11:30-10:40 Ocean & Climate Literacy: JPL Outreach Update
A. Richardson

11:40-11:55 A New Aviso Web Site
V. Rosmorduc

11:55-12:05 India/CNES Altimetry Training Program,
A. Lombard, E. Thouvenot

12:05-12:25 Outreach Showcase of OSTST products and activities

12:30 Wrap Up