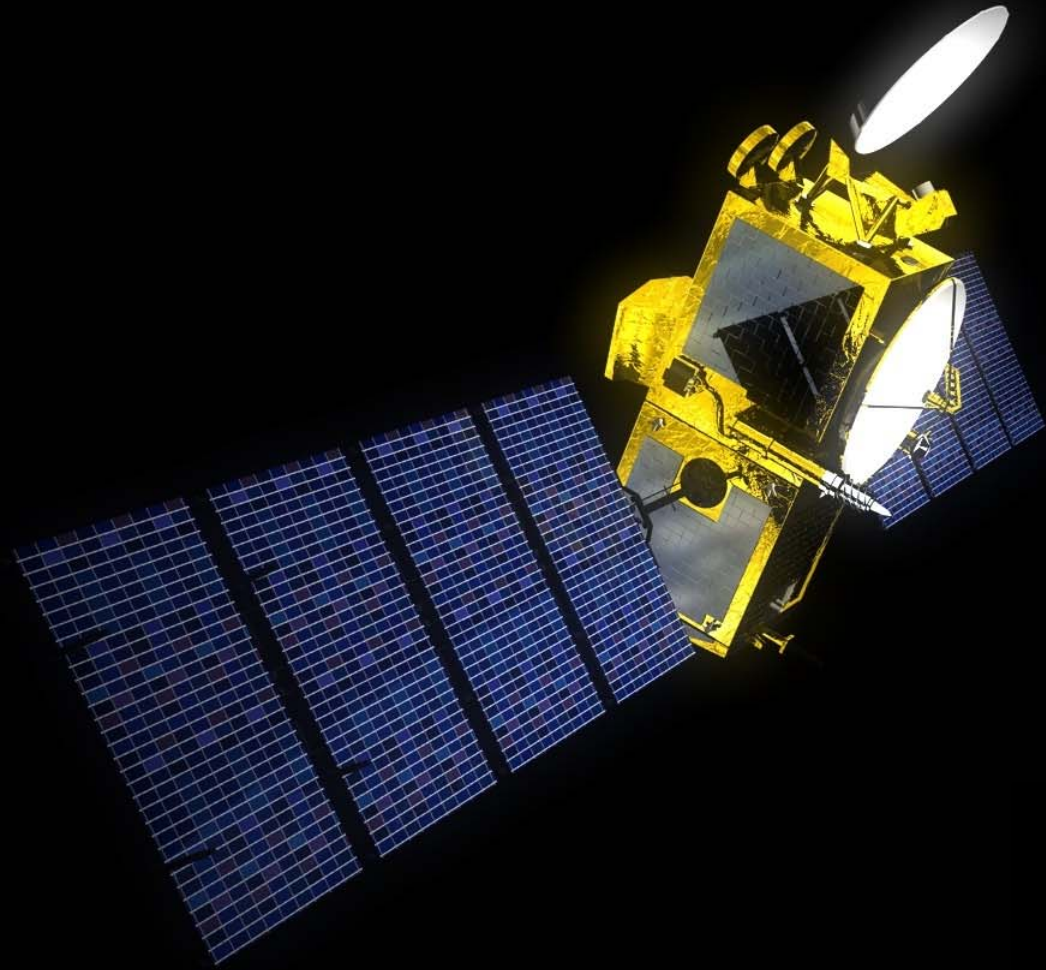


The Road to Continuity: Redefining Success on the 10th Anniversary of Jason-1



Josh K. Willis

Jet Propulsion Laboratory
California Institute of Technology

June 23, 2001

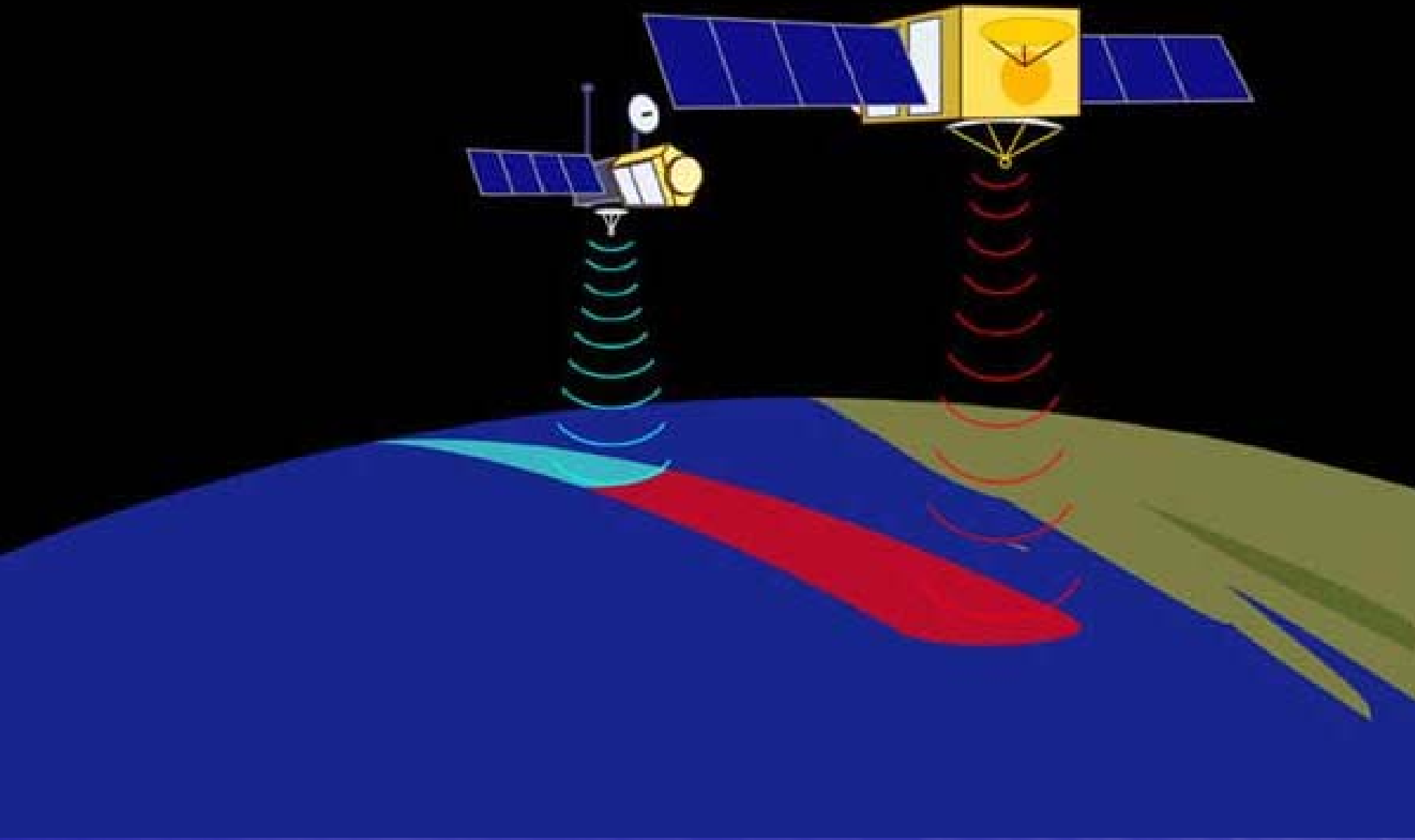


December 7, 2001

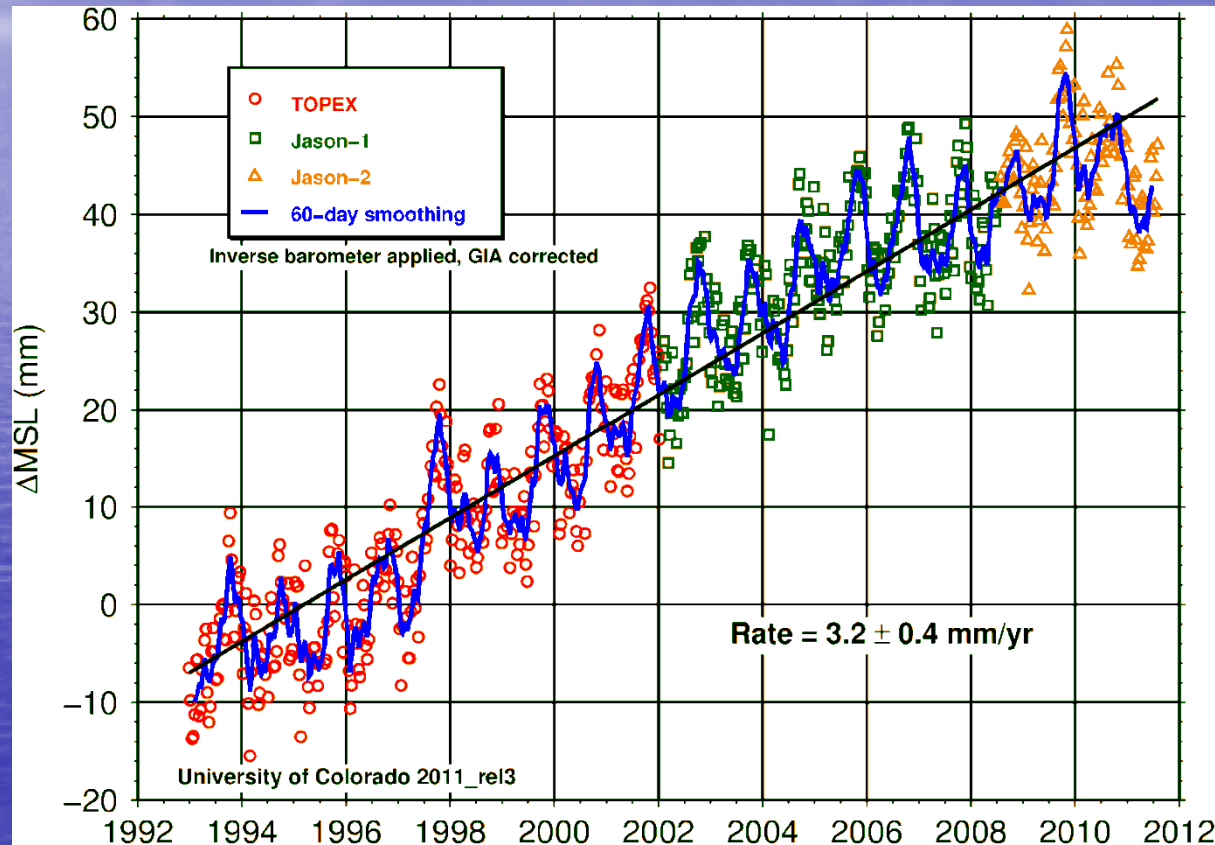
Jason-1



The Road to Continuity

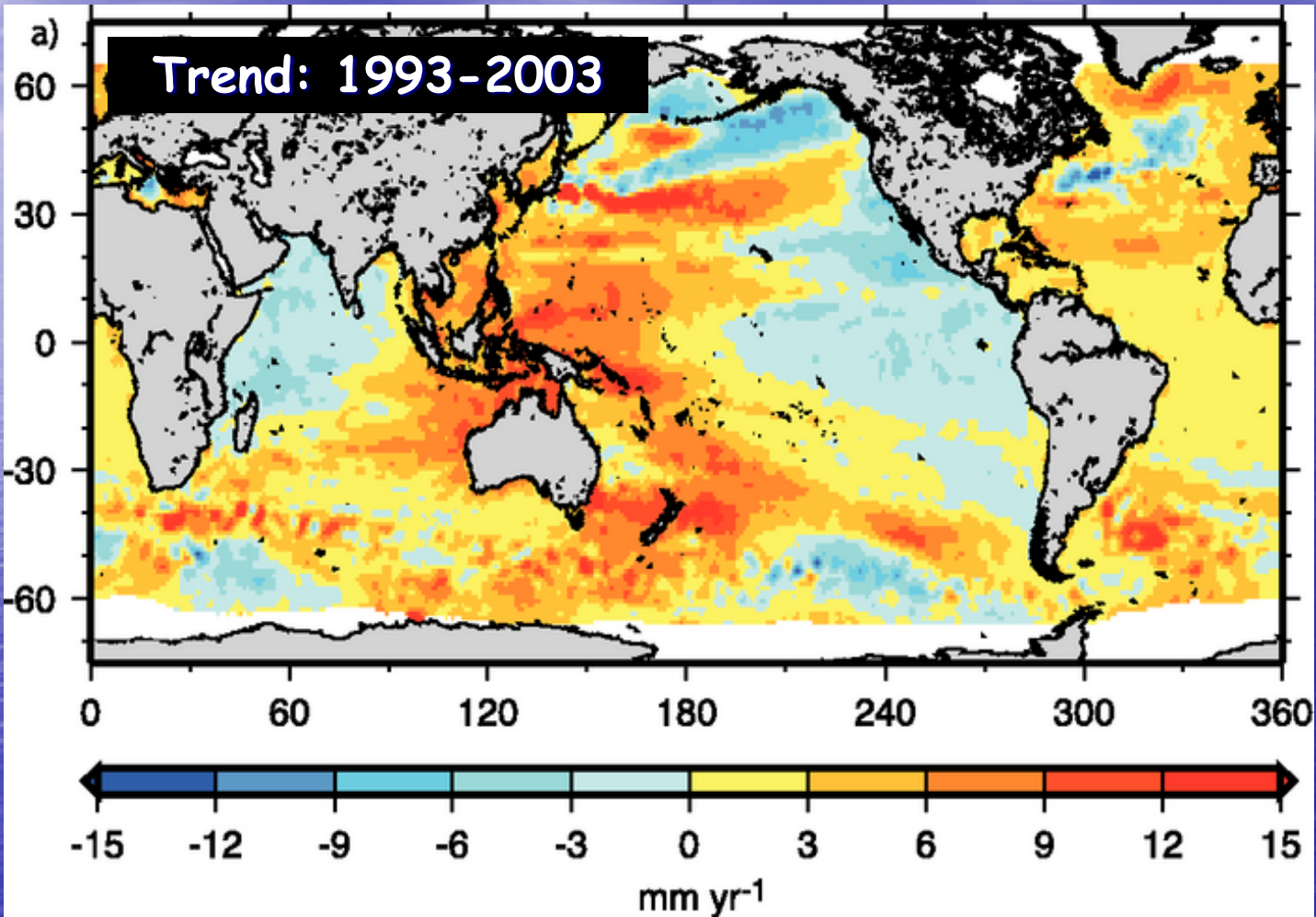


Continuing Global Observations of Sea Level Rise

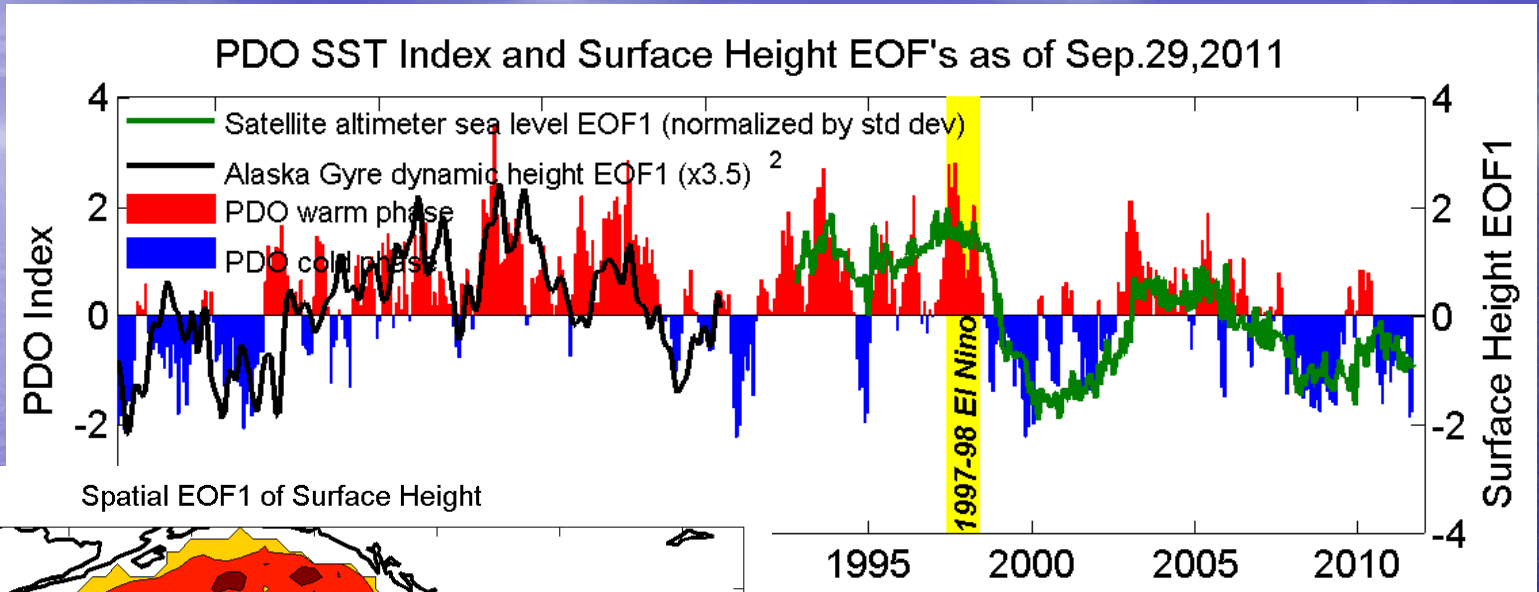


Seamless transition of the global mean sea level record from Jason-1 to Jason-2

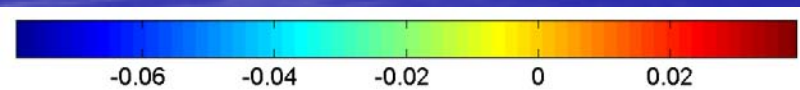
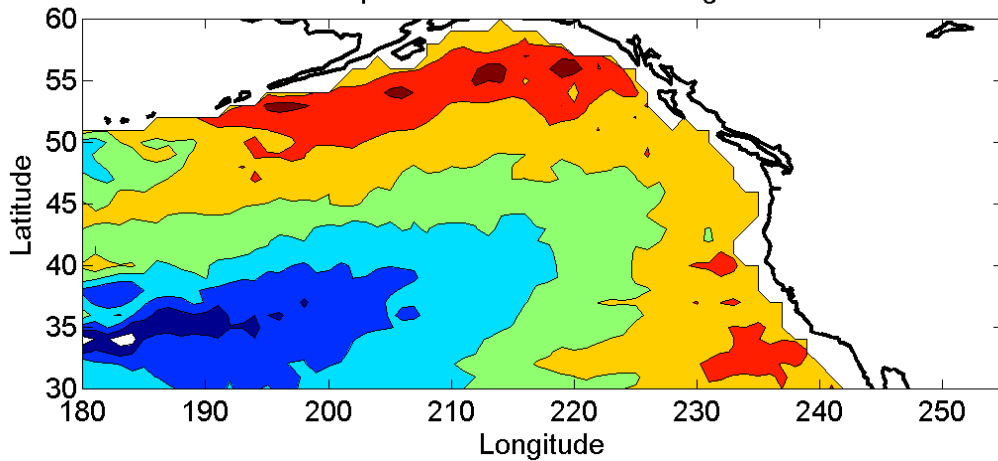
Decadal Variability



Decadal Variability



Spatial EOF1 of Surface Height

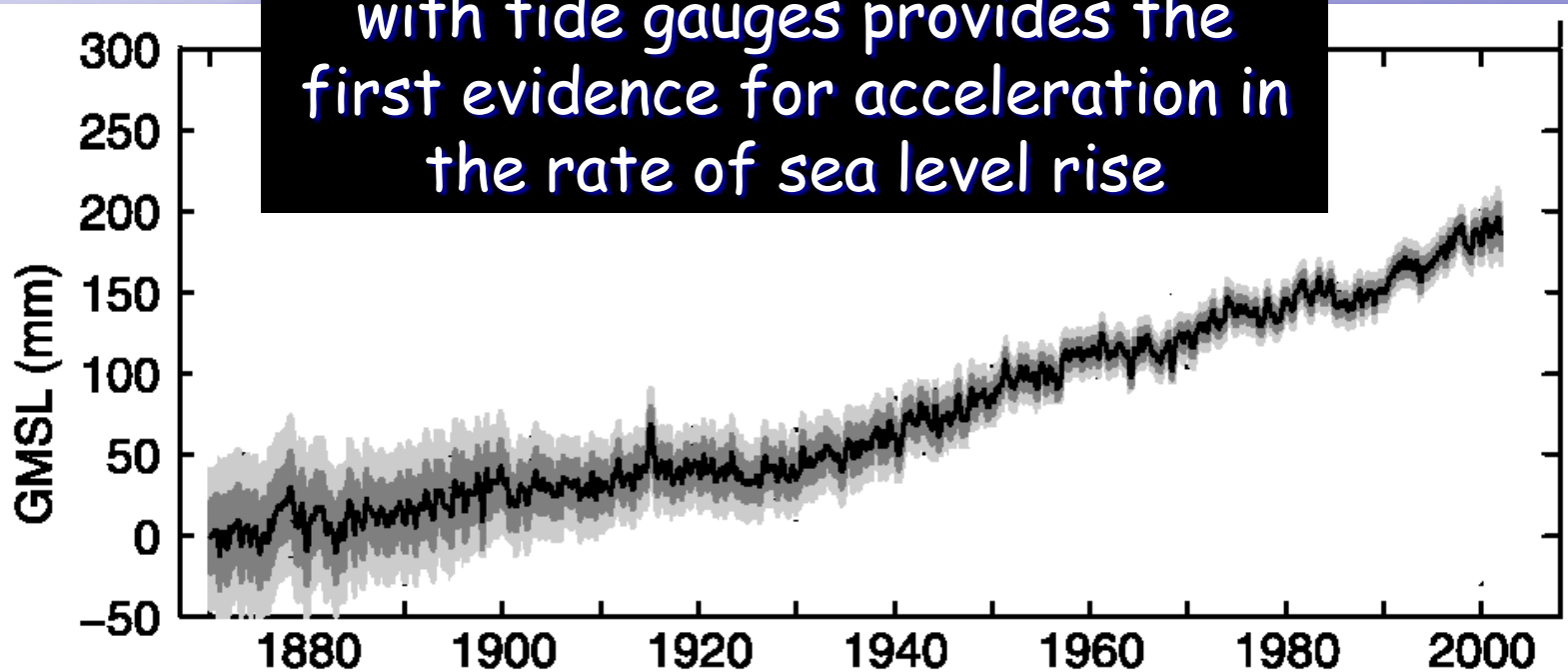


As the record length grew to longer than 10 years, decadal signals in SSH began to emerge

Cummins et al. (2005)

Reaching Back in Time

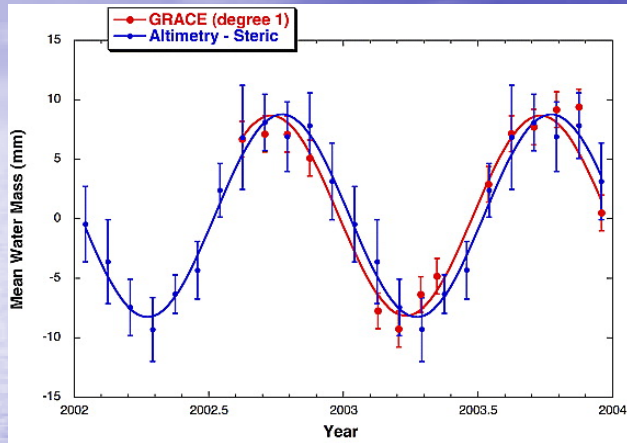
Combining Jason-1 & TOPEX data with tide gauges provides the first evidence for acceleration in the rate of sea level rise



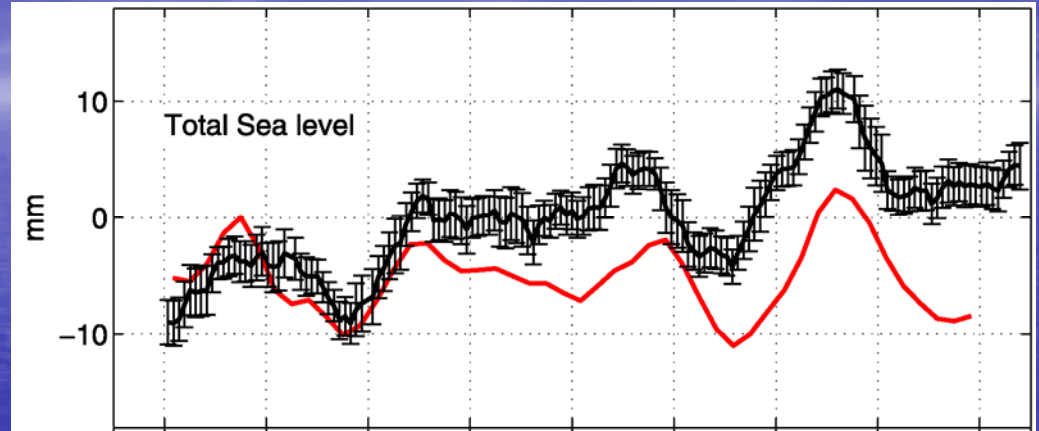
Cross calibration was key!

Church and White. (2006)

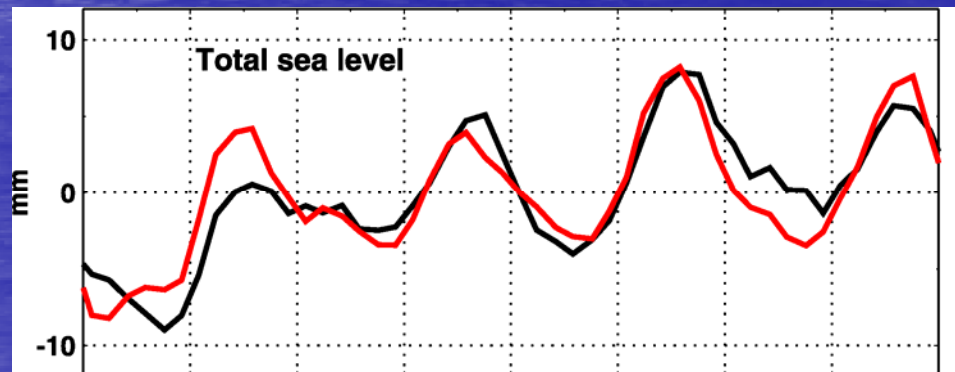
Sea Level Budget



Chambers et al. (2004)



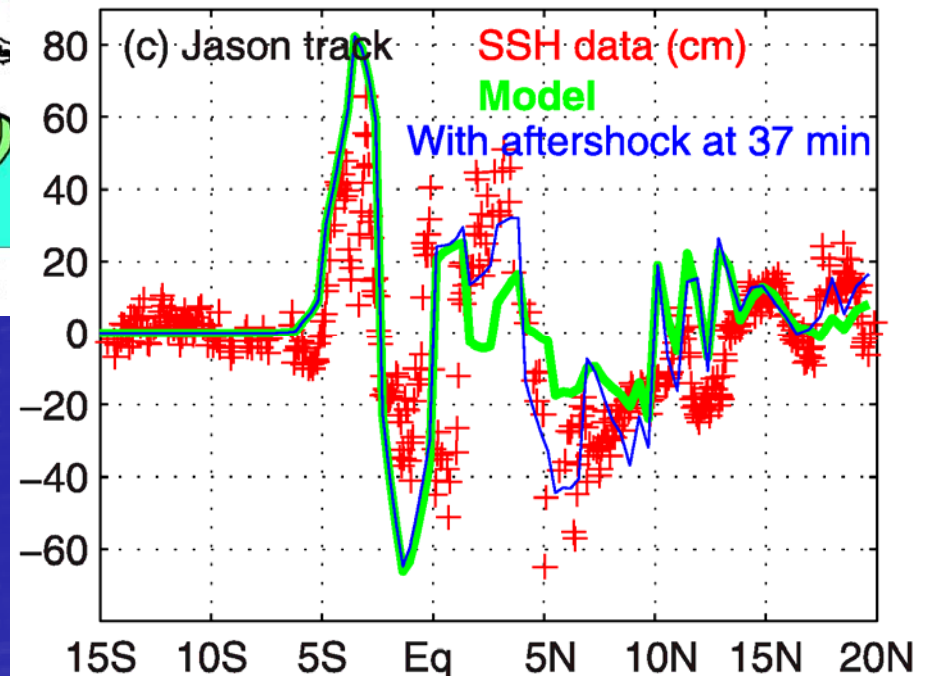
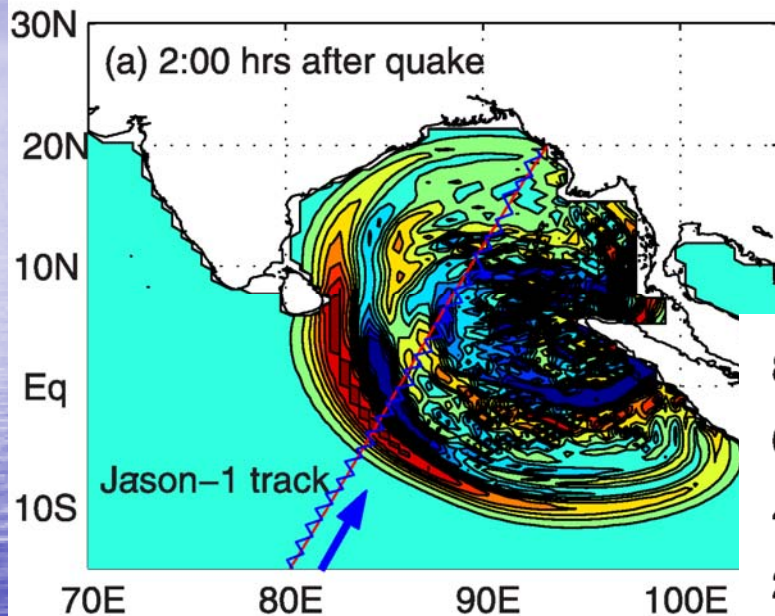
Willis et al. (2008)



Leuliette & Miller (2009)

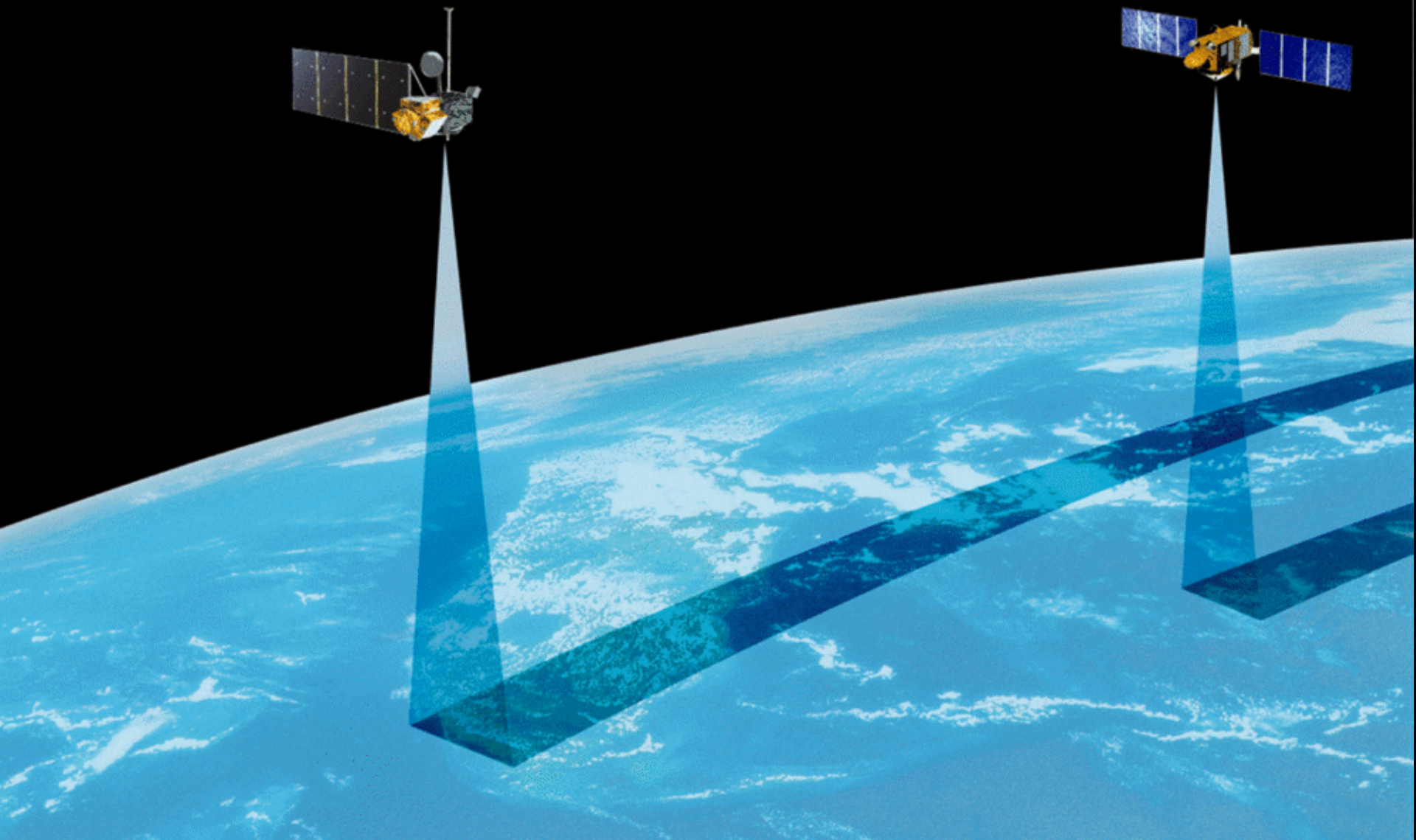
To Catch a Wave

December 26, 2004
Jason-1 measures the
Indian Ocean Tsunami



Song et al. (2005)

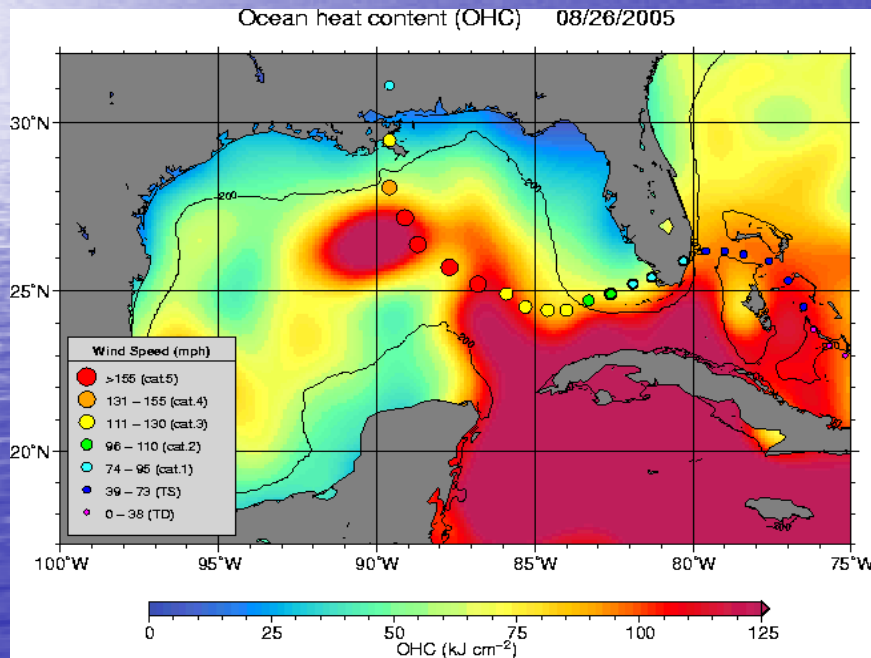
The 1st Interleaved Mission



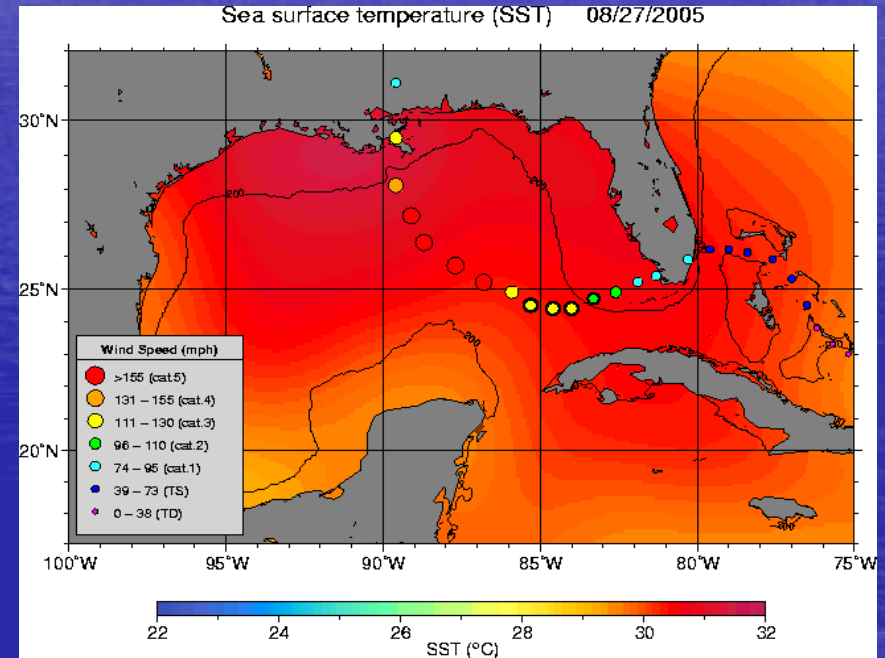
Brewing up a Storm

In the tropics, altimetry provides a means of detecting warming over depth, which can cause hurricanes to intensify

SSH



SST



Courtesy of NOAA/AOML

The End of an Era

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NASA's Topex/Poseidon Oceanography Mission Ends

ScienceDaily (Jan. 9, 2006) — The joint NASA/Centre National d'Etudes Spatiales Topex/Poseidon oceanography satellite ceased operations after nearly 62,000 orbits of Earth. The spacecraft lost its ability to maneuver, bringing to a close a successful 13-year mission.

See Also:

Earth & Climate

- Oceanography
- Geography
- Earth Science

"Topex/Poseidon revolutionized the study of Earth's oceans, providing the first continuous, global coverage of ocean surface topography and allowing us to see important week-to-week oceanic variations," said Dr. Mary Cleave, associate



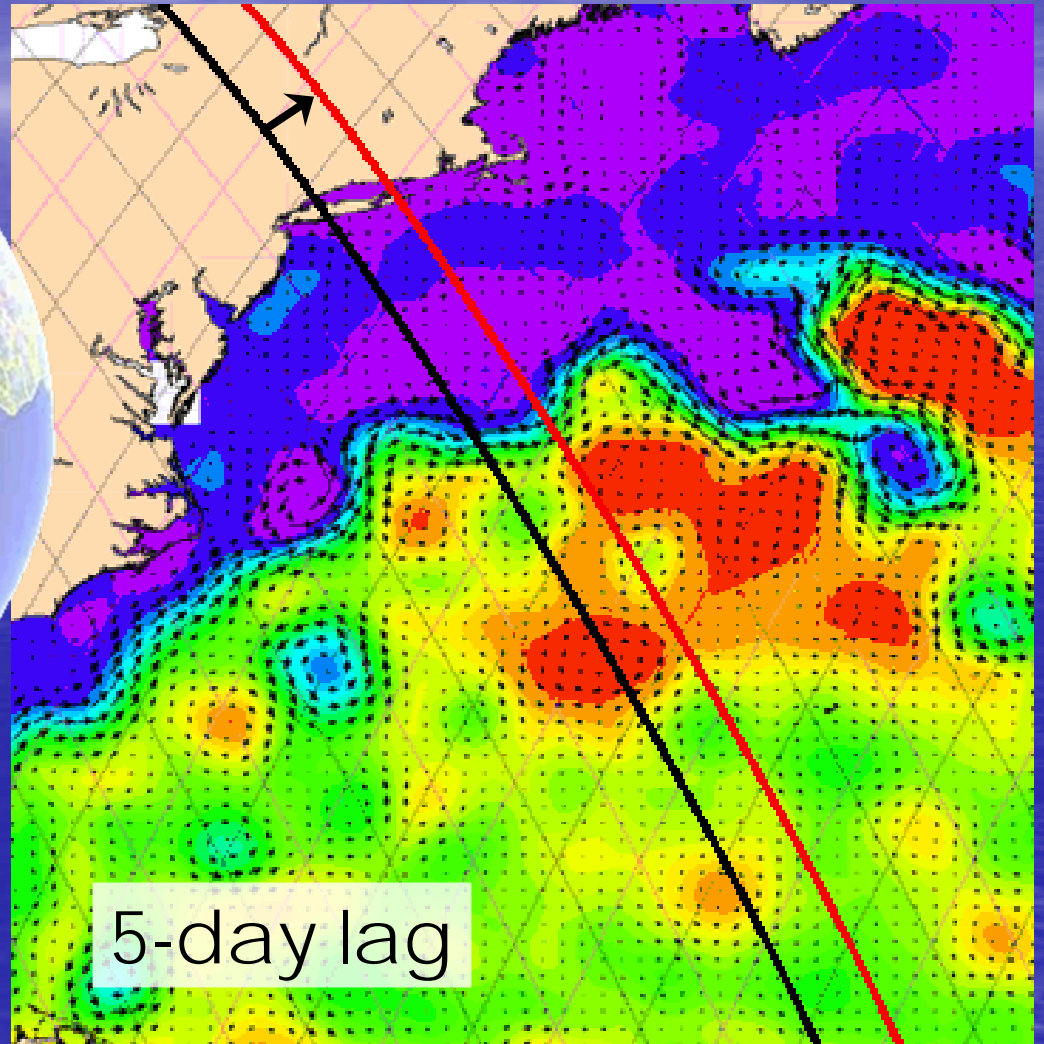
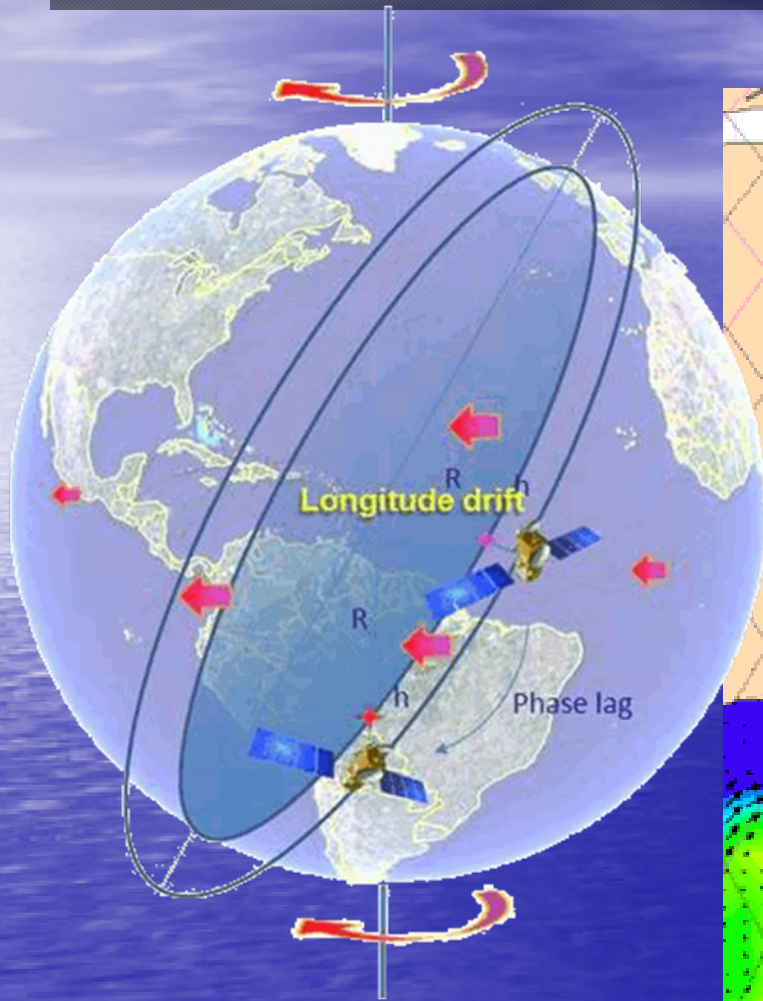
A New Beginning

June 20, 2008
(Wife's B-Day)

Jason-2



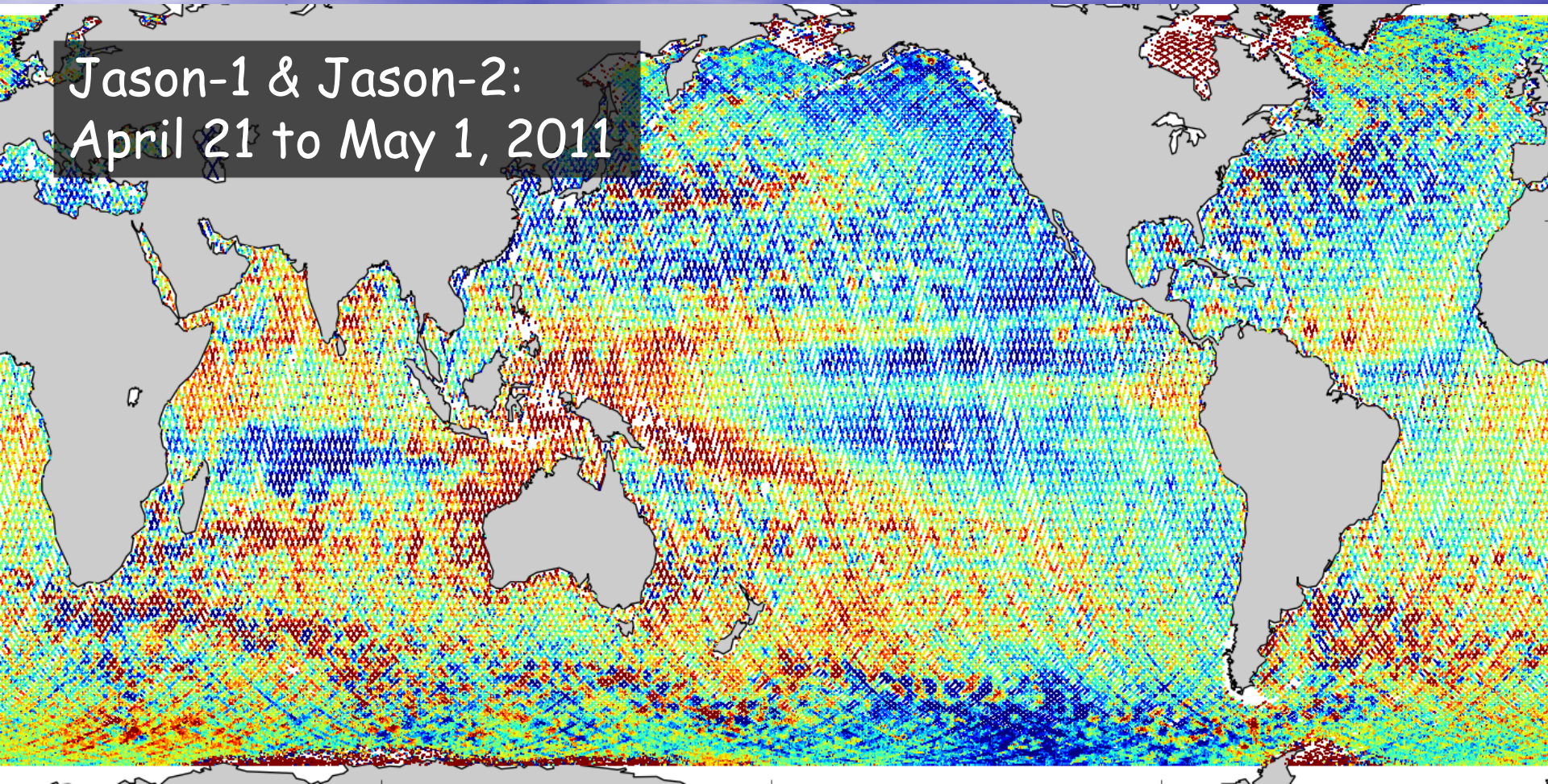
The 2nd Interleaved Mission



Jan-Feb, 2009

Hi Resolution in Near Real Time

Jason-1 & Jason-2:
April 21 to May 1, 2011

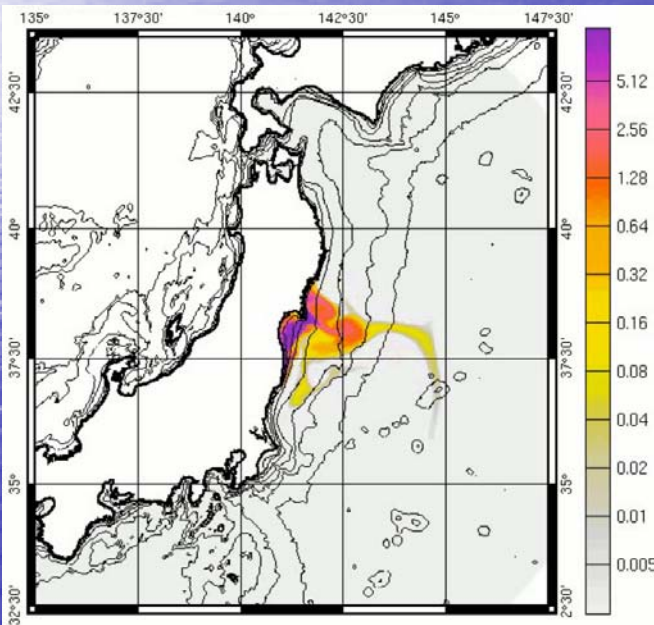


-20 -16 -12 -8 -4 0 4 8 12 16 20

Sea Surface Height Anomaly (cm)

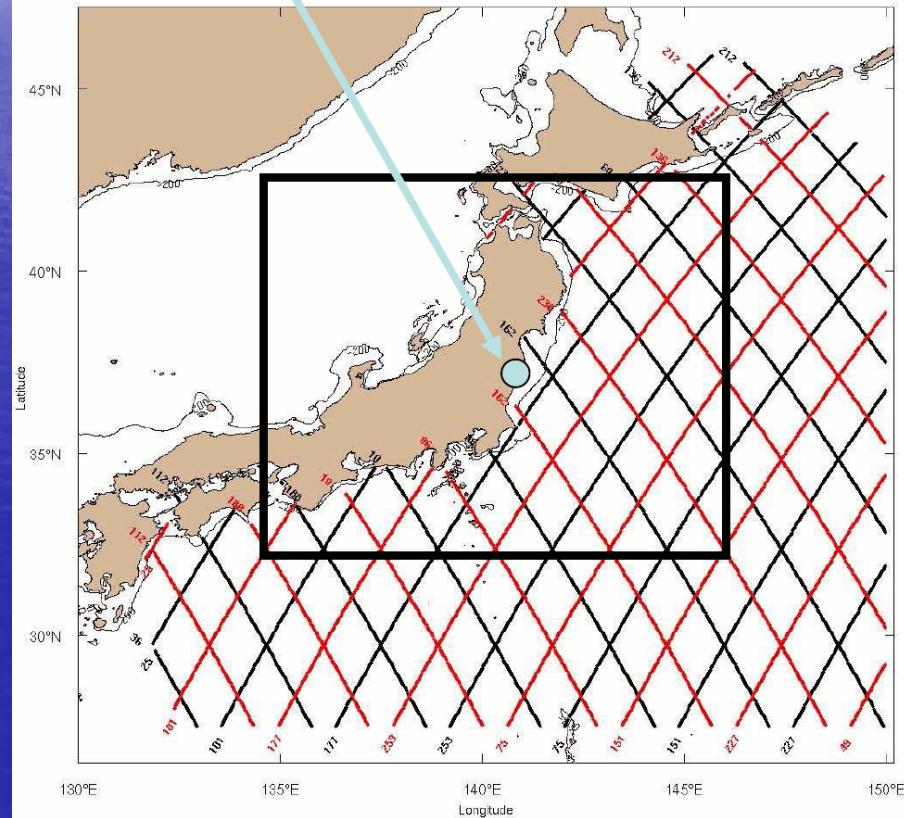
Monitoring small scale currents

Jason-1 and OSTM/Jason-2 data are used in ocean models to predict dispersion of radioactive particles



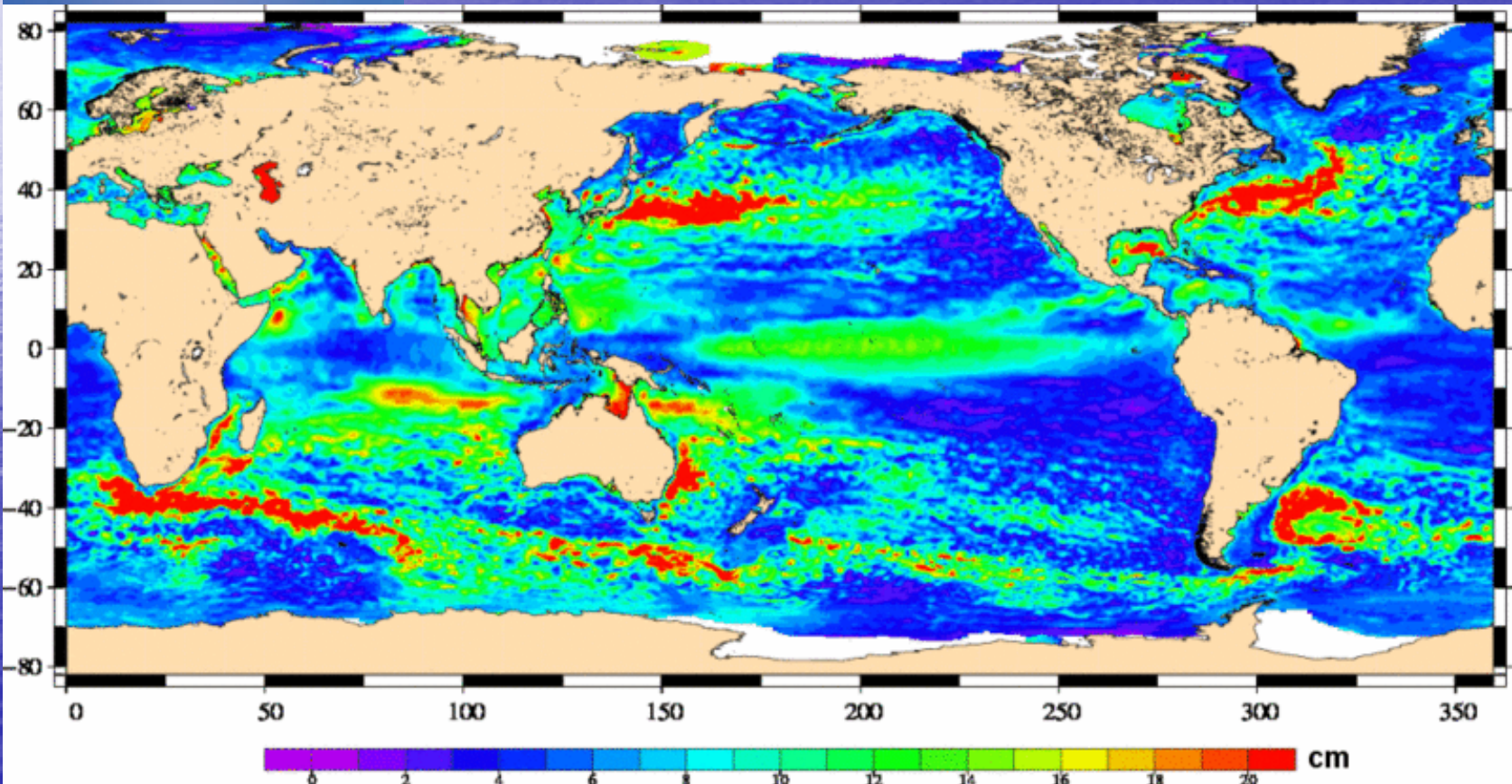
From SIROCCO at the request of IAEA

Fukushima Nuclear Reactor

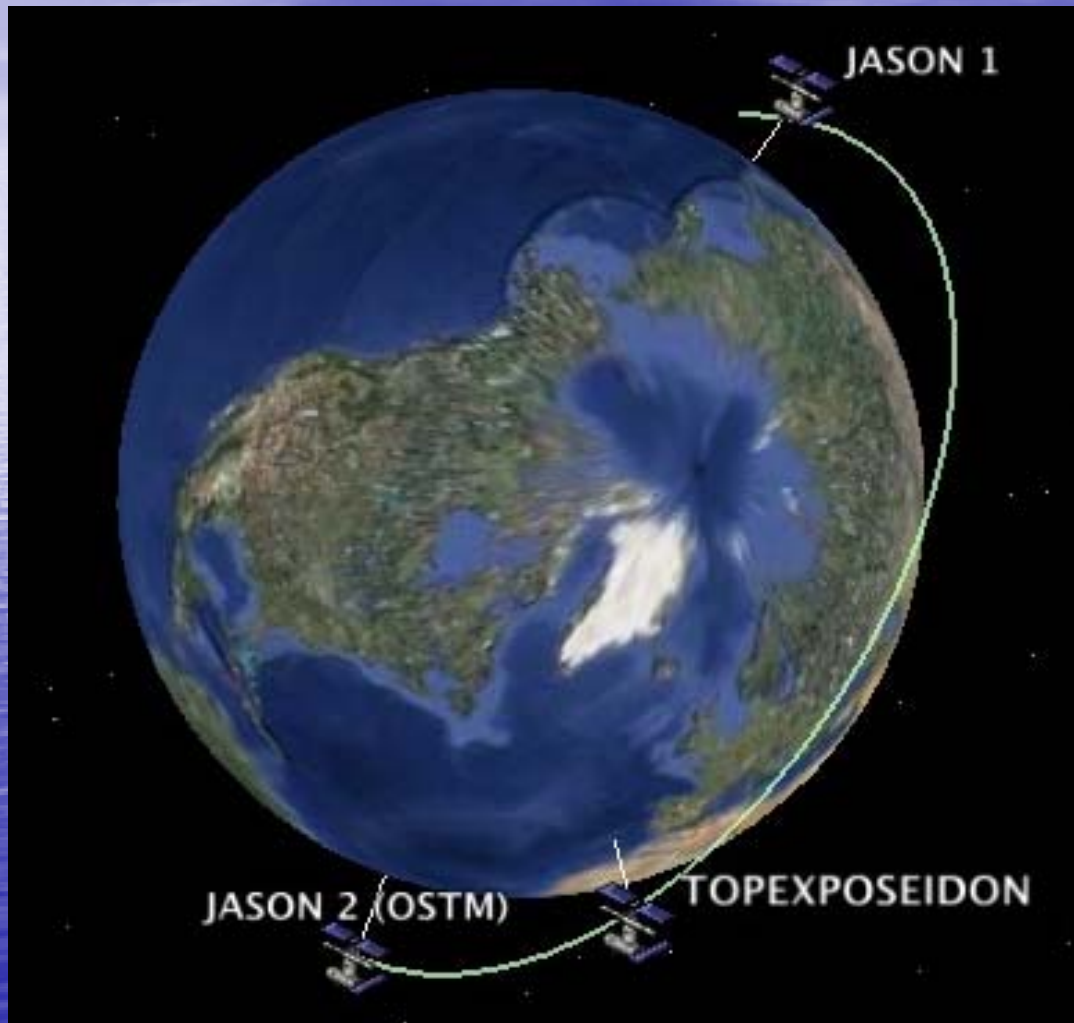


OSTM

Jason-1



A Collision Course?



In recent years, fears of collision between Jason-1 and TOPEX have driven agencies to consider the decommissioning of Jason-1

The OSTST in Lisbon, Oct 2010

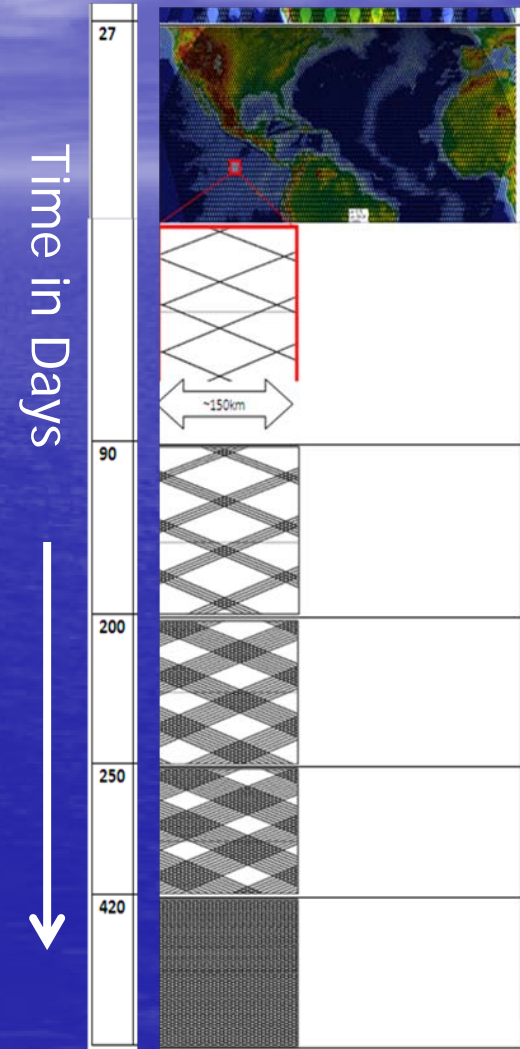
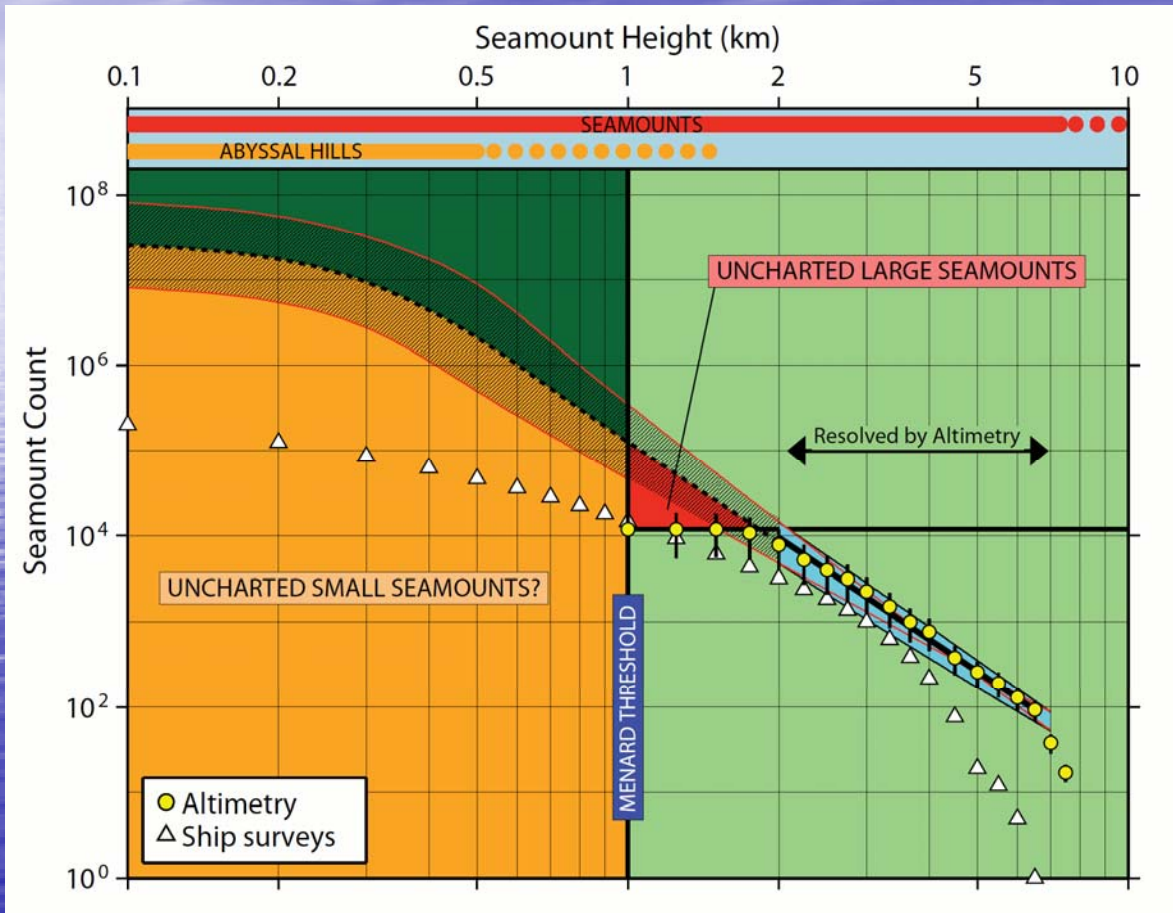


We recommend that Jason-1:

Remain in its current orbit until AltiKa data can be validated.

After validation of AltiKa data, move to a new repeat-cycle or geodetic orbit in the range 1326 to 1286 km, or another suitable geodetic orbit within an appropriate range.

Redefining Jason-1



Wessel et al., 2010

From G. Dibarboure

The Agencies React



Jason-1 will:

Remain in its current orbit until AltiKa data can be validated or until 2013.

It will then be moved to a geodetic orbit

However, all excess fuel must be depleted as soon as possible to reduce the risk of catastrophic failure

Depletion Maneuvers

Original
wedding
dress



June 19, 2010

Redefining Success

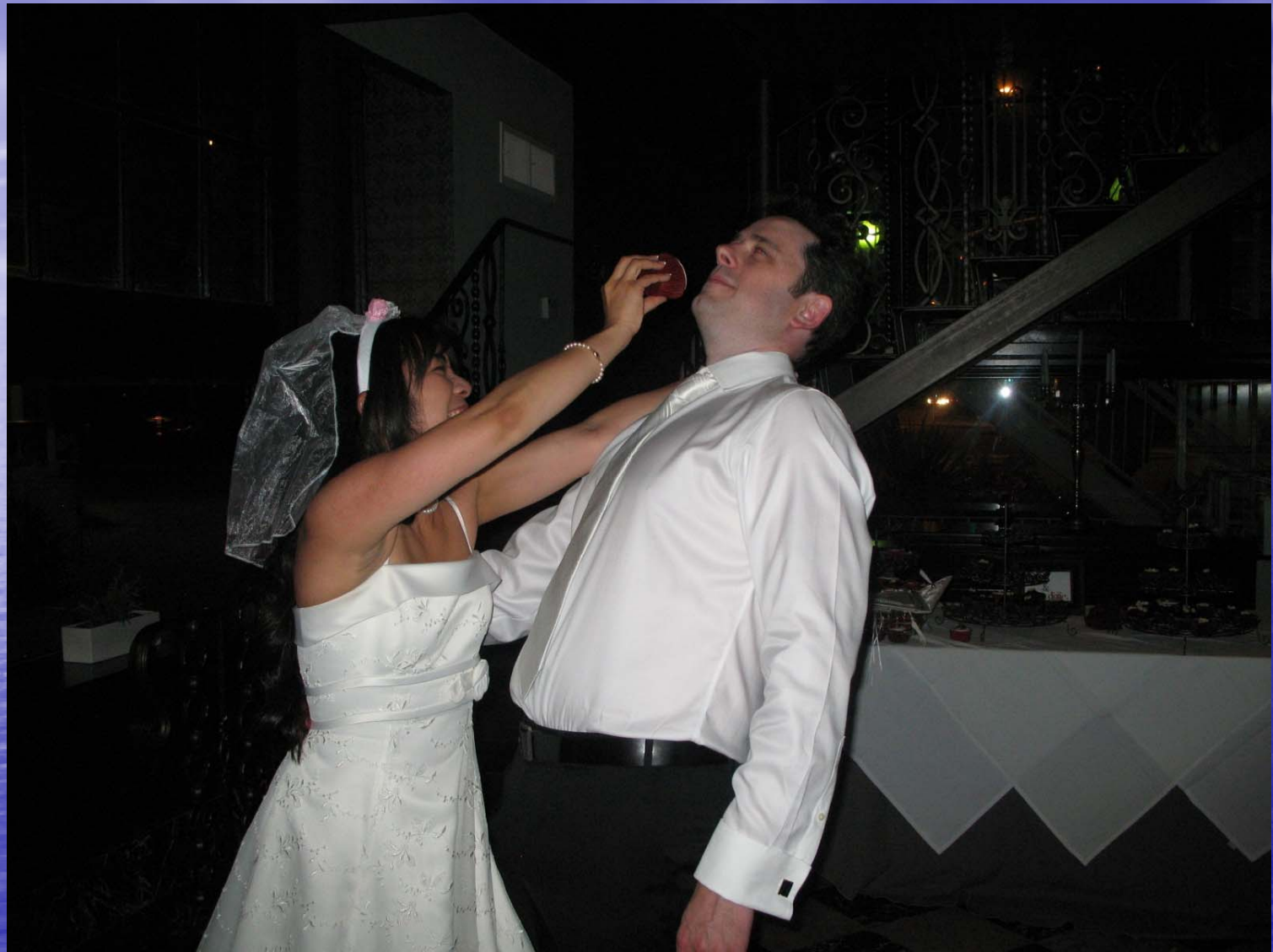


The OSTST has achieved success in three critical ways:

Science

Applications

Management



Thank You!