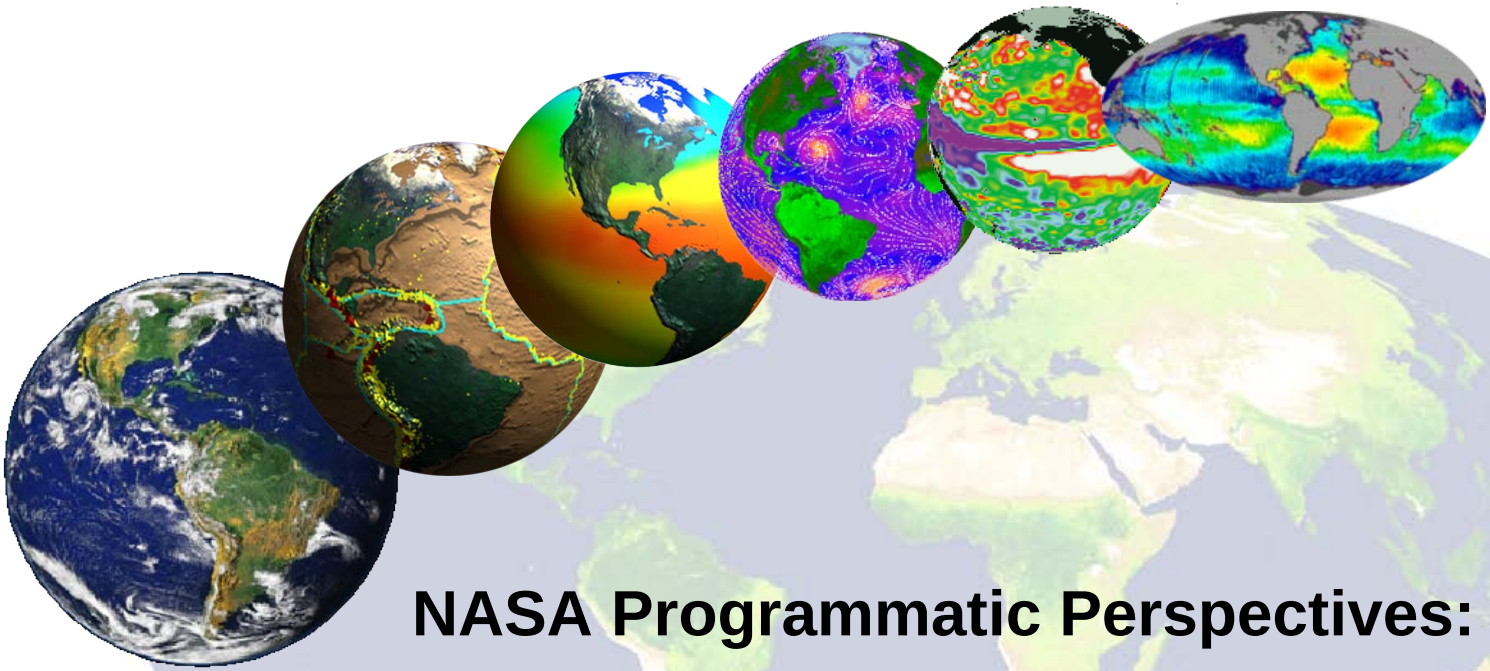
2012 International Ocean Vector Wind ST Meeting
Utrecht, Netherlands, 12-14 May 2012



NASA Programmatic Perspectives:
Present Status and the Way Forward

Peter Hacker and Eric Lindstrom
NASA Science Mission Directorate
Earth Science Division
12 May 2012

The Past Year: Events and Meetings

- 2011 IOVWST Meeting in Annapolis: all papers are on IOVWST web-site.
- Senior Review at NASA HQ June 2011: QuikSCAT gets green light for 2012-2015.
- OSCAT progress: collaboration, new data stream, products, reanalysis.
- JPL future scatterometry meeting for science definition January 2012 (resulted in White Paper which is on IOVWST web-site).
- Future Mission Options presentation at NASA HQ spring 2012 (feedback currently being provided by HQ).
- Lots of progress on the 6 themes of the OVWST call (meeting talks).
- **An Assessment of NASA's Earth Science Programs, Spring 2012.**

An Assessment of NASA's Earth Science Programs

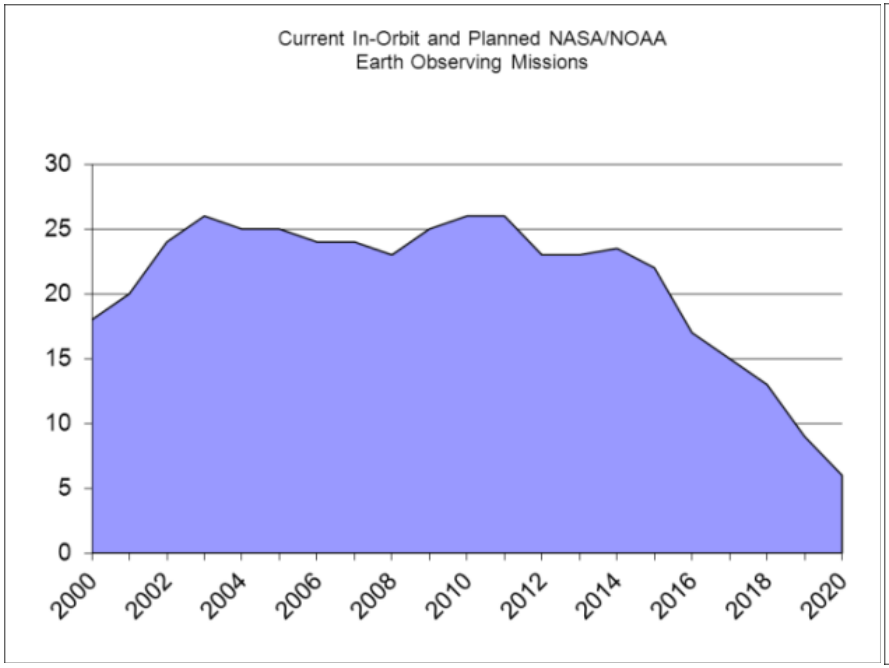
Dennis Hartmann, Committee Chair
University of Washington

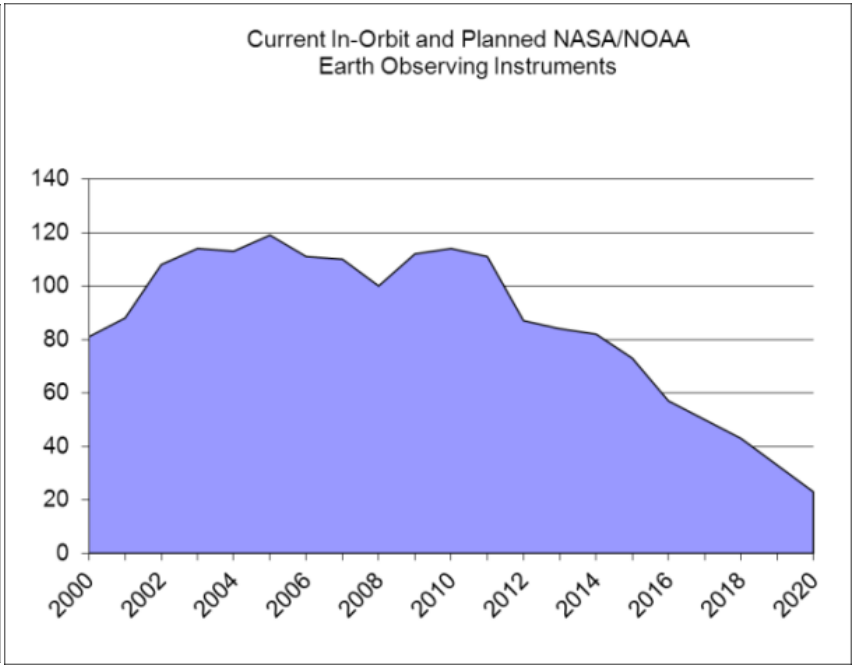
Art Charo, Study Director
Lewis Groswald, Research Associate
National Research Council-Space Studies Board

Background and Statement of Task

- 2005 NASA Authorization Act: “The performance of each division in the Science directorate of NASA shall be reviewed and assessed by the National Academy of Sciences at 5-year intervals.”
- Late 2010: NASA requests that the NRC create an ad hoc committee to review the alignment of its Earth Science Division’s program with previous NRC advice, *primarily the decadal survey’s 2007 final report*, “Earth Science and Applications from Space: National Imperatives for the Next Decade and Beyond.” Specifically:
  - **How well NASA’s current program addresses the strategies, goals, and priorities outlined in the 2007 decadal survey and other relevant NRC reports;**
  - **Progress toward realizing these strategies, goals and priorities; and**
  - **In the context of current and forecast resources, any actions that could be taken to optimize the science value of the program.**
- The committee was asked not to revisit or alter the scientific priorities or mission recommendations in the decadal survey and related NRC reports. However, the committee was invited to provide guidance about implementing the recommended mission portfolio in preparation for the next decadal survey.

NASA ESD Missions/Instruments*





Finding: The nation's Earth observing system is beginning a rapid decline in capability as long-running missions end and key new missions are delayed, lost, or cancelled.

*****Planned missions are included only when the missions are funded and have a specified launch date in NASA or NOAA budget submissions. Thus, the graphs do not show missions that have been proposed or planned, but are not yet funded or selected (e.g., GRACE Follow-On, Venture missions)

Findings (one of several)

- **Finding**: NASA responded favorably and aggressively to the decadal survey, embracing its overall recommendations for Earth observations, missions, technology investments, and priorities for the underlying science. As a consequence, the scientific and applications communities have made significant progress over the past 5 years.

Principal Impediment to Achieving Survey Recommendations

- **Finding:** Funding for NASA's Earth science program has not been restored to the approximate $2 billion per year (in FY 2006 dollars) level needed to execute the decadal survey's recommended program. The failure to restore the Earth science budget to a $2 billion level is a major reason for the inability of NASA to realize the mission launch cadence recommended by the survey.

Recent Comment (in the Christian Science Monitor) on the Mid-Term Assessment Situation

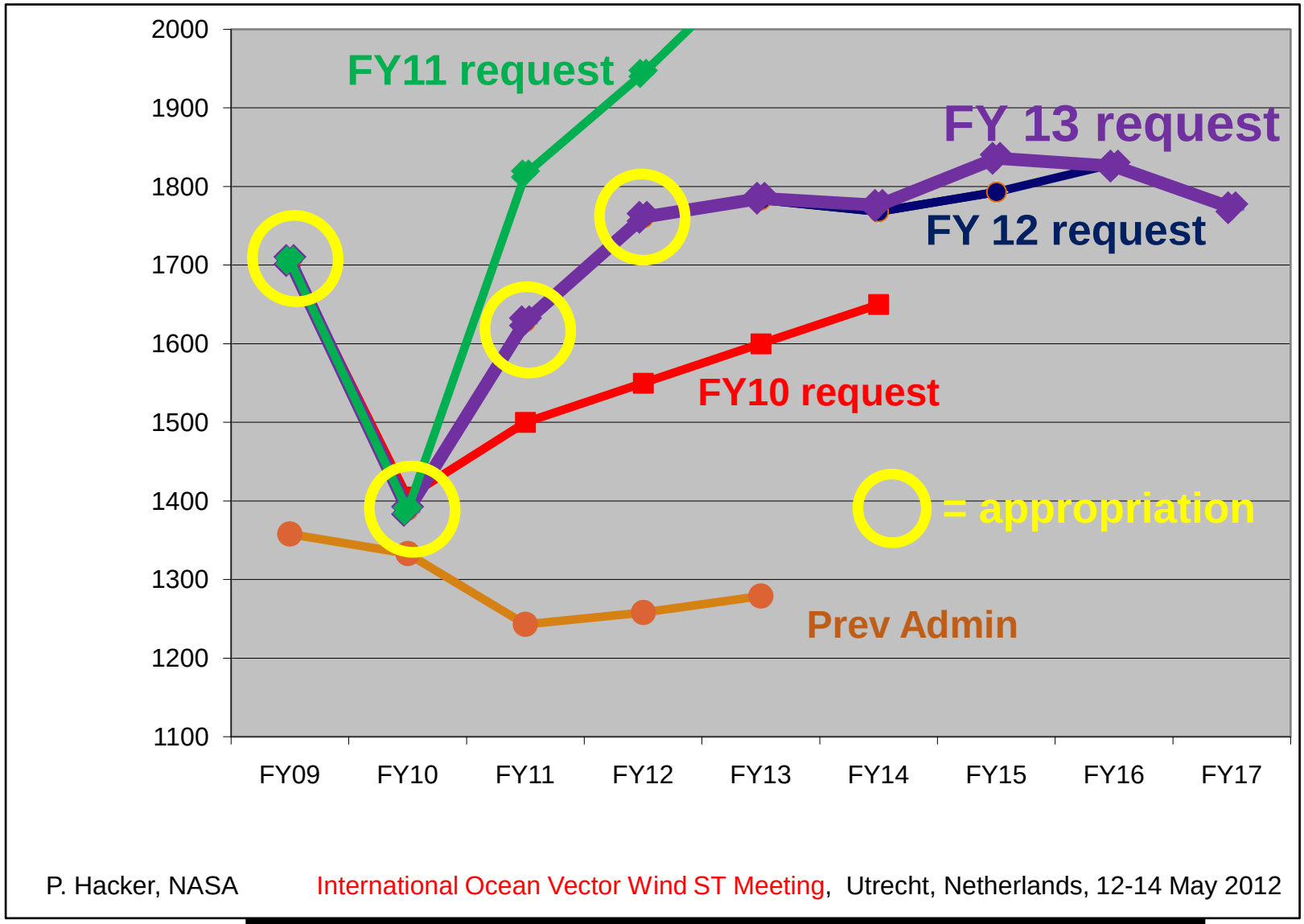
"American satellites are rotting alone in space, who will save them?"

Frank Muller-Karger

The Christian Science Monitor

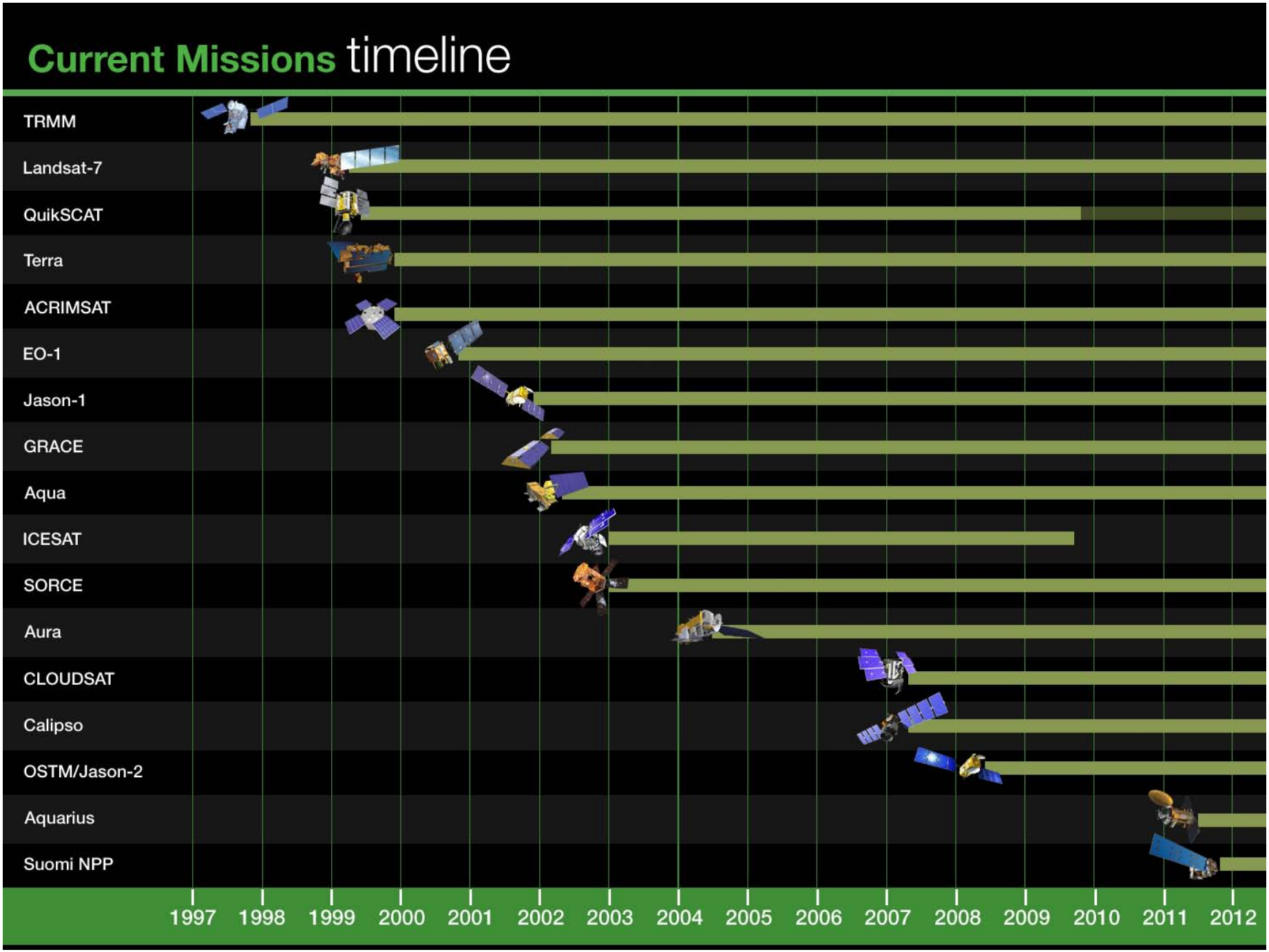
June 8, 2012

Earth Science Budget – FY13 Request



ESD Operating Missions

Current Missions timeline



OSCAT Recent and Ongoing Activities

- Collaboration has continued over the past three years on the Oceansat-2 scatterometer (OSCAT).
- ISRO installed and "froze" the latest version of L1B processing on December 21, 2011.
- OSCAT data continue to flow via EUMETSAT to NOAA, and from there are made available to NASA/JPL.
- Implementing Arrangements are now in place between ISRO-NASA and ISRO-NOAA.
- JPL has produced and placed on-line preliminary 12.5 km wind retrievals from the OSCAT data (for orbits from Dec 21, 2011 to April 30, 2012), and is working to produce a consistent QuikSCAT/OSCAT data set.

OSCAT Recent and Ongoing Activities

- ISRO has begun to make reprocessed OSCAT data available to NASA and NOAA. Six months of reprocessed data were received via disk the week of May 7-11, 2012), and the plan is for continuation of reprocessed data-transfer from ISRO.
- NOAA has implemented "version 1.0" of its OSCAT L2A and L2B processing in an operational demonstration mode. Product is still in the development phase, and refinements continue on rain flagging, GMF, etc).
- Analyses of operational and reanalysis data streams and wind retrievals have been underway at JPL, NOAA, ISRO and by others in preparation for this IOVWST meeting.
- We expect recommendations for future collaborative activities as a result of this meeting.
- There are tentative plans for ISRO to hold an Oceansat-2 validation meeting for the science in fall 2012 (perhaps the week prior to the CEOS Plenary), but plans need to discussed and firmed up.

Present Status and Future Plans

Present status-

- Mid-point of projects (4 years 8/1/10 to 7/31/14);
- New data are available from ASCAT, OSCAT and QuikSCAT;
- Funding is stable.

Future directions and plans-

- Meeting talks and discussions on science directions and opportunities;
- Meeting talks and discussions for new mission opportunities;
- Meeting talks on improved products and new products;
- ROSES call in 2013 or 2014 for 1/1/15 start for new projects.

Please keep NASA and the rest of the Science Team informed on scientific breakthroughs and publications. This is especially important for internal NASA PR and updates on OVWST progress.

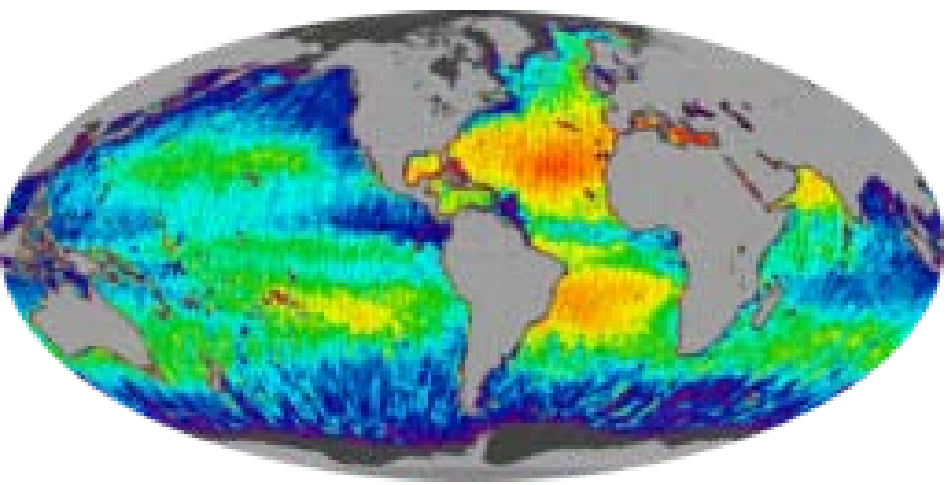
Possible Discussion Topic for Consideration

Would roughness data from ASCAT and OSCAT, together with data from Aquarius, be useful for quantifying the space/time roughness-related noise levels in Aquarius SSS estimates?

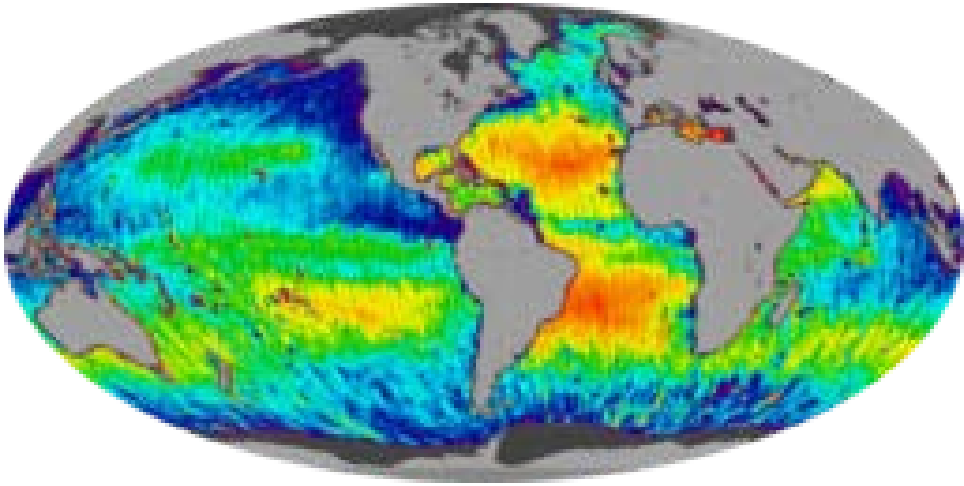
Note the different spatial structure of noise especially in regions of low temperatures (high latitudes).

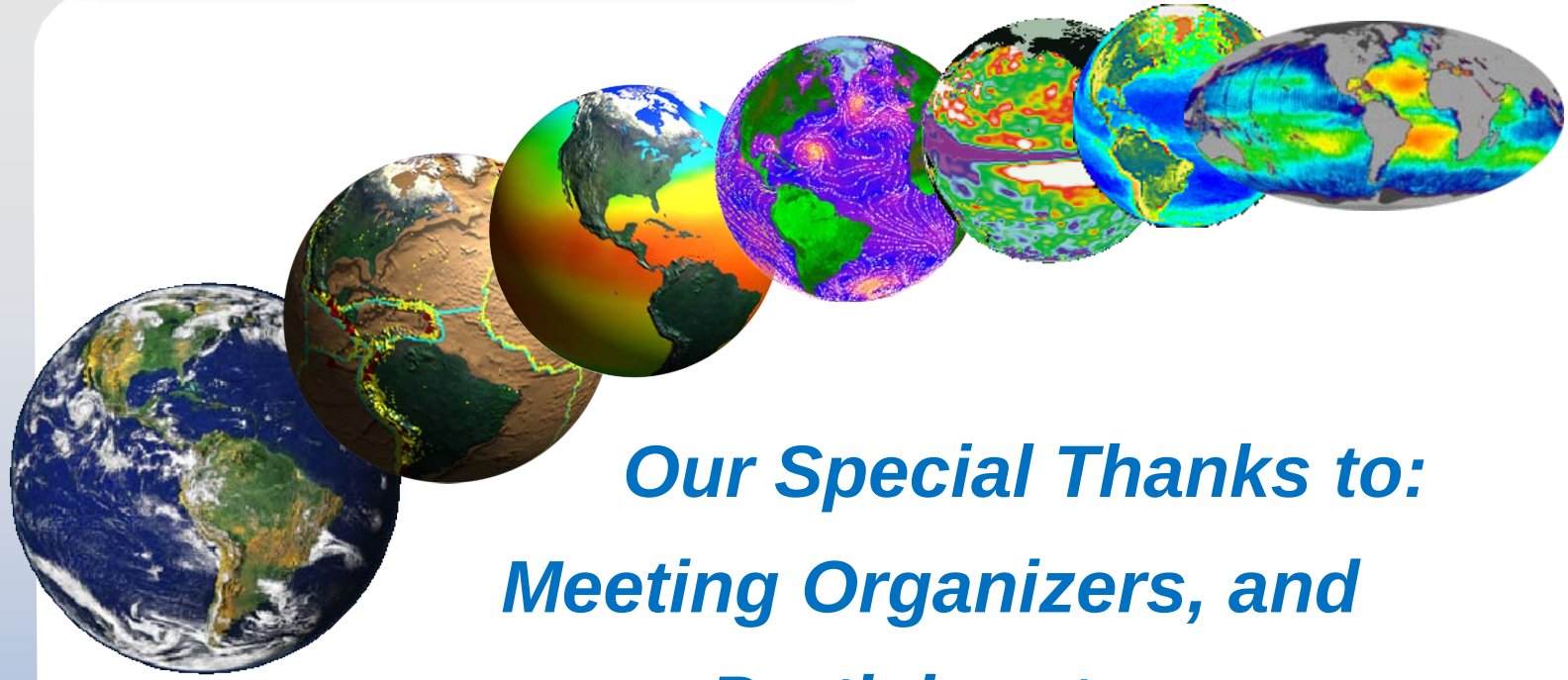
Aquarius SSS, week 22, 27 May to 2 June 2012

Descending



Ascending





Our Special Thanks to:

Meeting Organizers, and

Participants.

We look forward to

a productive meeting.

Thank you!

BACKUP SLIDES

NASA OVW Science Team

Science Teams are organized around a **measurement/parameter** rather than around a mission.

Ocean Vector Winds (OVWST) was re-competed in 2009-

- 20 proposals selected
- $17.8 M for 4 years (starting in 2010)
- 2 projects by ST leaders (M. Bourassa and E. Rodriquez)

- Ernesto Rodriguez, QuikSCAT Project Scientist, JPL
- Mark Bourassa, OVWST Team Leader, FSU
- Robert Gaston, QuikSCAT Project Manager, JPL
- Eric Lindstrom, QuikSCAT and OVW Program Scientist, NASA HQ

NASA OVWST: Six Themes (Broad range of topics)

- Research on the multiyear time series of QuikSCAT and SeaWinds standard backscatter and vector wind products, improve estimates, reduce biases. (atm, ocean, interdis, climate)
- Geophysical analyses that exploit the frequent sampling or that combine observations from multiple wind sensors including QuikSCAT;
- Advanced techniques that quantify the accuracy of measurements and products;
- Advanced products that have increased temporal resolution, spatial resolution, and/or accuracy, based on Ku-band data and other measurements and models;
- Intercalibrated Ku-band and C-band or passive microwave observations to understand physical processes related to rain and the ocean surface;
- Assimilation and analysis techniques to improve the impact and effectiveness of scatterometer and vector wind measurements for operational uses (weather, hazards, climate forecasts).

Status of QuikSCAT

- *The QuikSCAT antenna stopped rotating in November 2009, and winds over a large swath cannot be estimated.*
- *The SeaWinds radar continues to operate normally and is collecting calibrated sigma0 measurements.*
- *The new QuikSCAT mission goal is to provide a facility for cross-calibration of multiple Ku-band scatterometers to a known, well calibrated source, enabling climate data consistency.*
- *We have collected over 1 year of data at the ISRO OSCAT angles.*

Future Missions timeline