



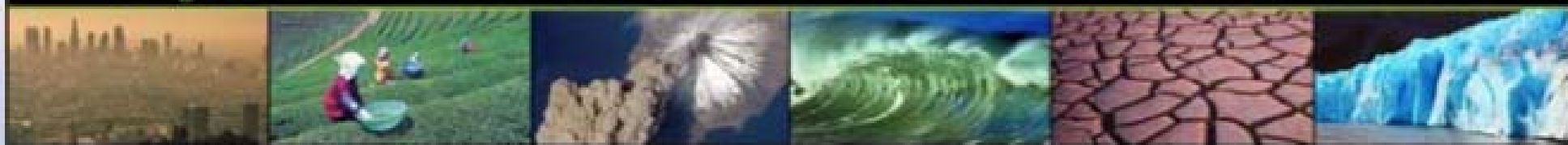
Coordination of space agencies in support of climate change assessment

Stefano Bruzzi

Committee for Earth Observation
Satellites
(CEOS)

What is CEOS?

CEOS Committee on Earth Observation Satellites



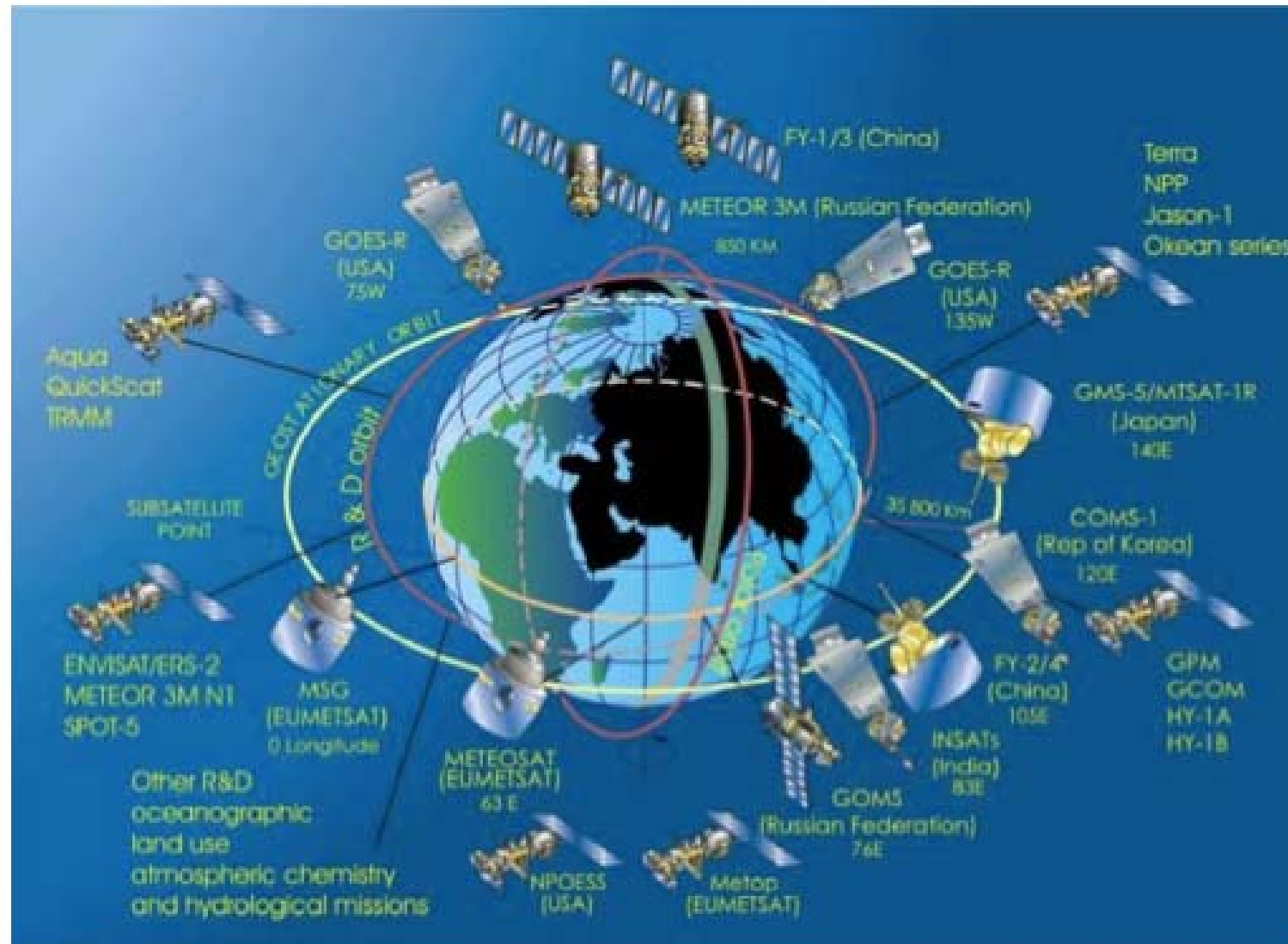
28 space agencies



World
Meteorological
Organization
Weather • Climate • Water

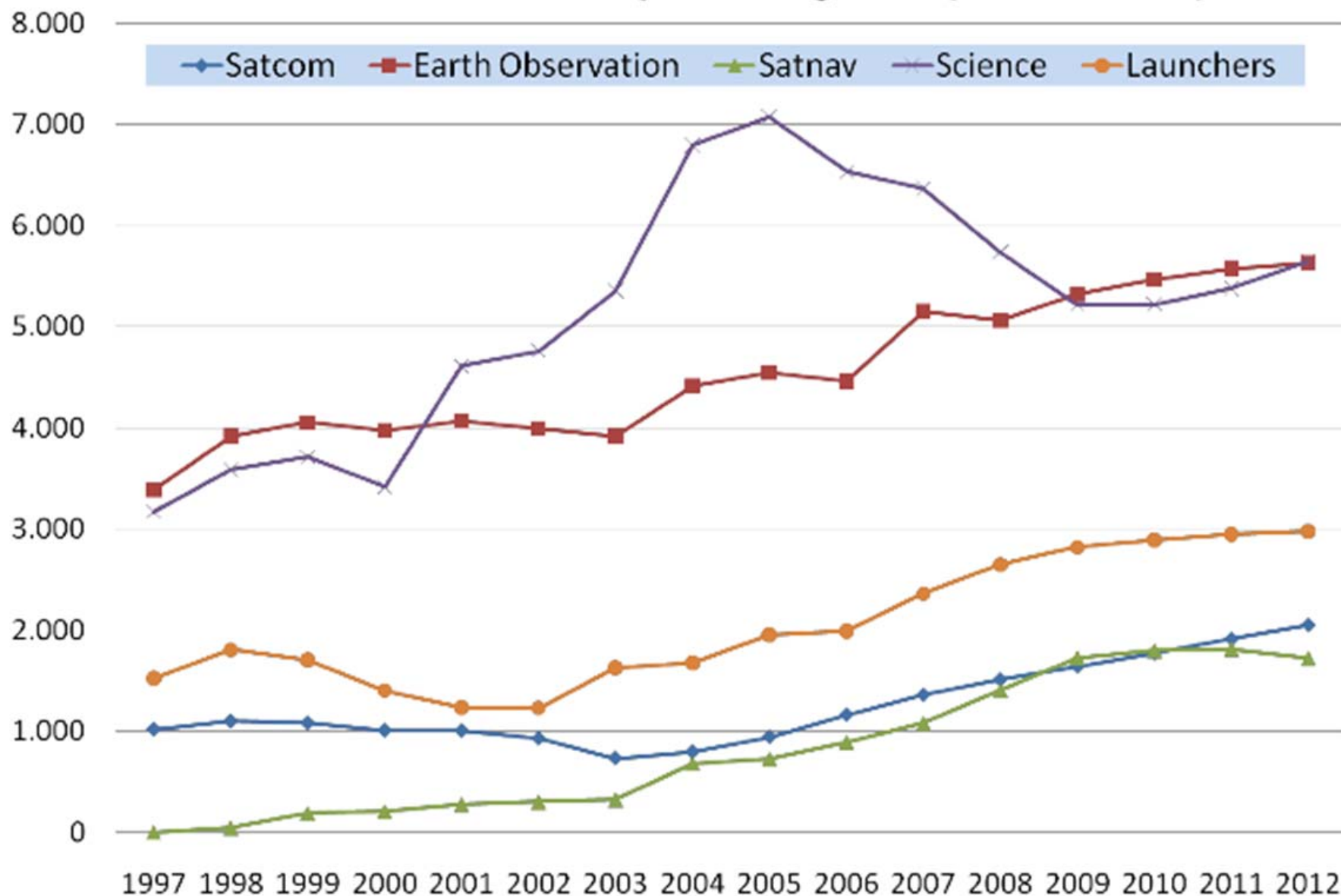
20 participating organizations

What has changed in the vision of the space agencies?



Need to coordinate Earth observation programmes and ensure interoperability

World Government Space Programs (million USD)



Source: Euroconsult (2009)

Earth observation and scientific programs dominate public R&D investment for non-manned space programs

- CEOS SIT September 2009, Darmstadt
 - First discussion in CEOS about need for cooperation on ECV production
 - Proposal to form an ad hoc advisory group on climate
- CEOS Plenary - Phuket - November 3rd and 4th, 2009
 - Climate Coordination Strategy side discussion
 - Space Agency Coordination for Climate - Plenary Item on Agenda
- CEOS informal expert discussion on satellite needs for Climate - February 1st, 2010
- CEOS SIT - Tokyo - April 14th, 2010
 - Proposal for a Climate Advisory Group [Feb. 1 Informal Expert Meeting Result]
- CEOS Climate Ad-hoc Group meeting - Harwell - July 22nd, 2010
 - Drafting of Terms of Reference
 - Proposal for creation of WG Climate to Plenary 2010

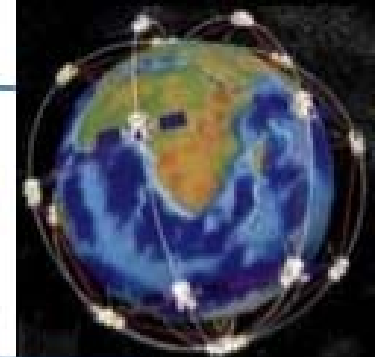
**2010 Progress Report:
Coordinated Response from Parties that Support
Space Agencies Involved in Global Observations
to the Needs Expressed in
the Global Climate Observing System (GCOS)
Implementation Plan of 2004**

Developed by the Committee on Earth Observation Satellites (CEOS)

Also describes the significant progress in CEOS agencies commitments to sustained generation of climate data records and key climate observations

- NOAA Climate Data Records Program
- NASA on-going reprocessing of EOS datasets
- ESA Climate Change Initiative
- EUMETSAT Climate Program & SAFs
- USGS Plans for developing FCDRs and ECVs
- JAXA's key climate observations (GCOM)

CEOS Virtual Constellations



Common requirements, independent satellites, compatible data
(CEOS – Committee on Earth Observation Systems)

Atmospheric Composition Air quality, CO ₂	Land Surface Imaging ecosystem monitoring
Ocean Surface Topography climate variability	Precipitation weather forecasts
Ocean Color Radiometry marine ecosystems	Ocean Surface Vector Wind

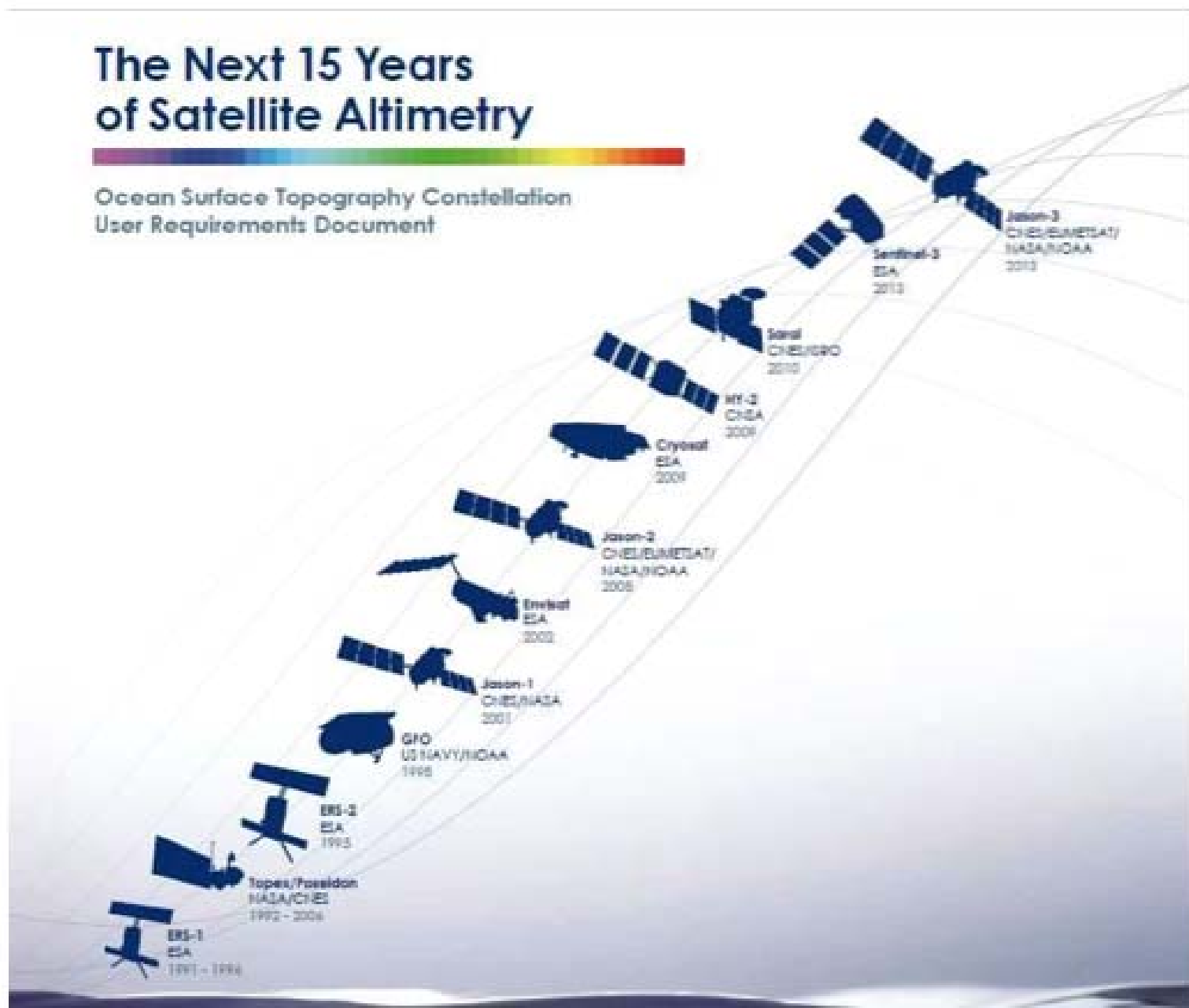


Ocean surface topography constellation

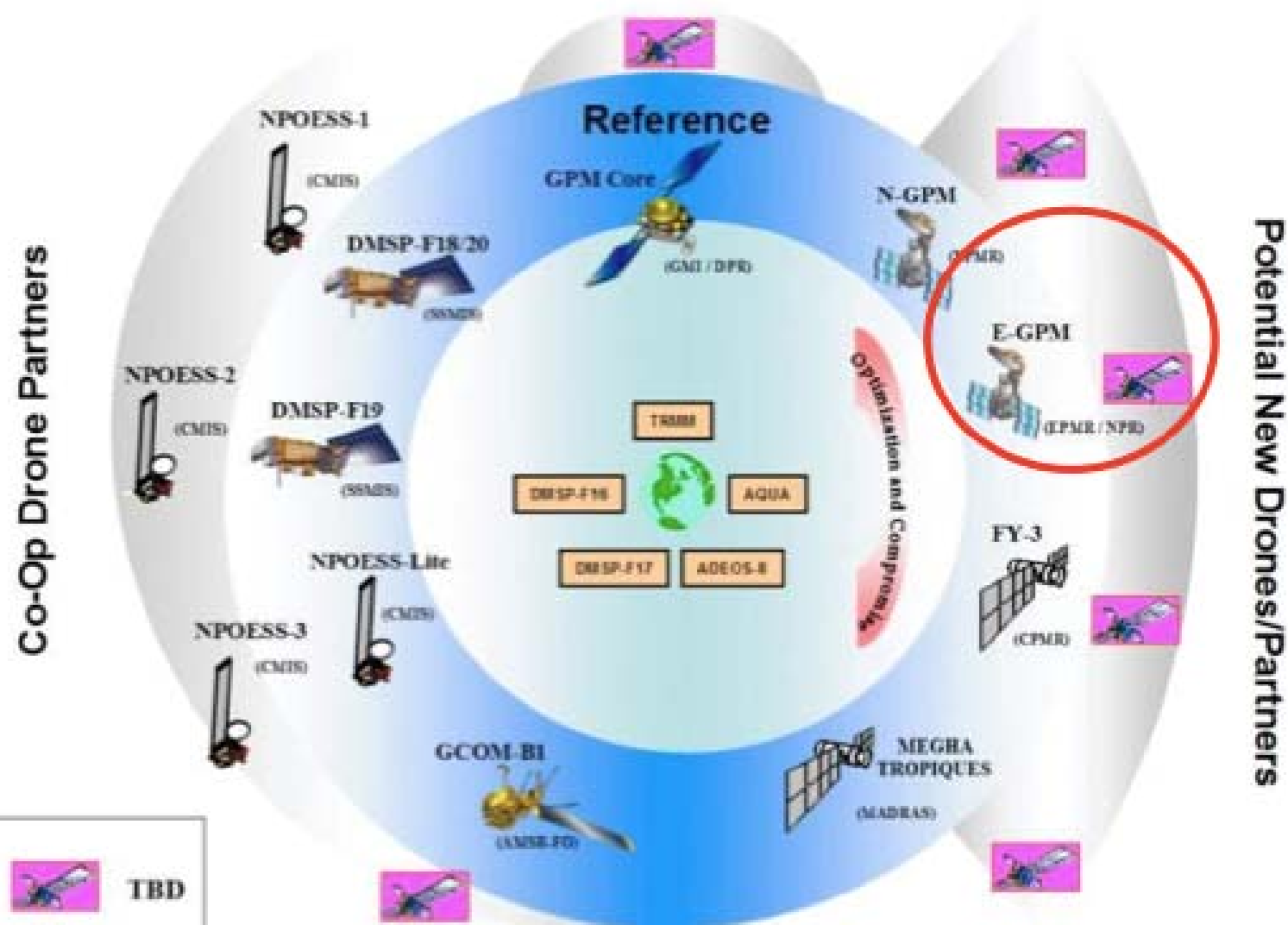
The Next 15 Years of Satellite Altimetry



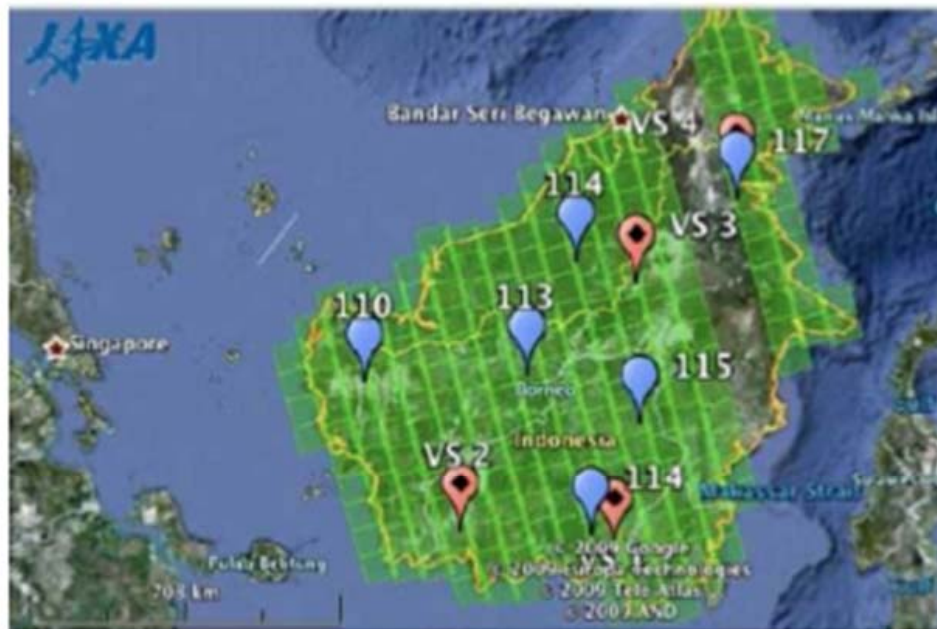
Ocean Surface Topography Constellation
User Requirements Document



Global Precipitation Constellation



Forest Carbon Tracking – Task Force



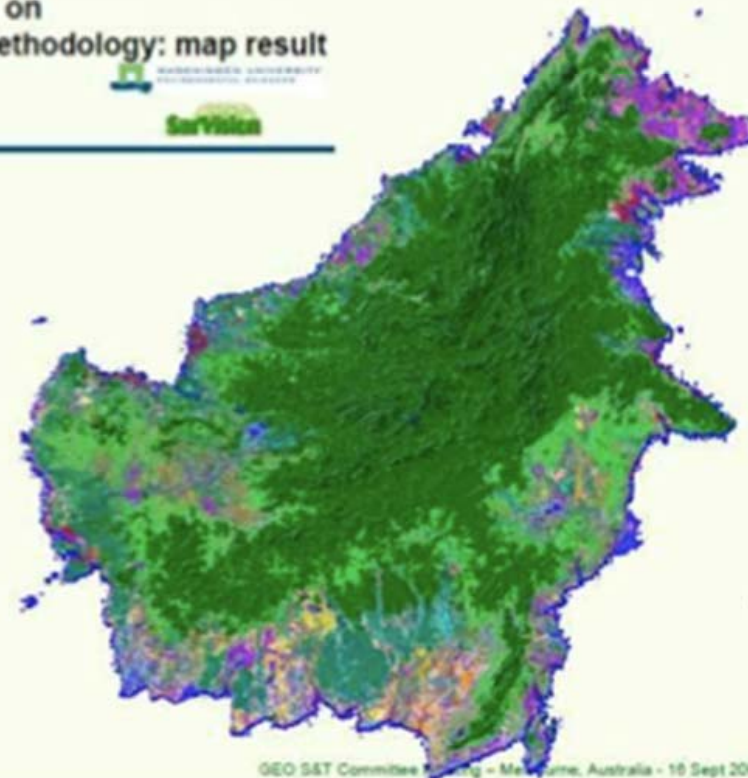
CSIRO, JAXA, NSC,
GOFC, INPE, **ESA**

Is it feasible to
monitor the
world's tropical
forests?

LULC classification
Borneo



ends on
g methodology: map result



GEO S&T Committee Meeting – Melbourne, Australia – 18 Sept 2009

Open access data policies: a qualified success



CBERS@INPE/CRESDA:
2 million images (2004-2010)



LANDSAT @USGS:
1 million images (Jan-Aug-2009)



GMES Sentinels @ESA-EC:
Data will be open access (Sep 2009)

Proposed Terms of Reference

- The CEOS Climate Working Group will:
 - Review, on behalf of CEOS, the generation of Fundamental Climate Data Records (FCDRs) and derived Essential Climate Variable (ECV) climate products supported by Member space agencies;
 - Foster multi-agency implementation teams for each product and review their actions, and ensure that a coherent implementation plan exists for each and every product;
 - Make recommendations to the above teams and receive recommendations from them, for transmission to Agency Principals;
 - Ensure coherence of climate product generation supported by space agencies, including other relevant international initiatives such as SCOPE-CM;
 - Assess compliance of satellite missions and products with the GCOS Climate Monitoring Principles and with the “Guideline for the Generation of Datasets and Products meeting GCOS Requirements” (GCOS-143);
 - Undertake any other relevant activities as instructed by CEOS Chair.

Proposed Terms of Reference

- In addition, it will:
 - Oversee the CEOS actions within the GEO Climate SBA and review relevant reports on behalf of CEOS Plenary, including:
 - The update of documents such as the CEOS Response to GCOS requirements, and
 - The update of reports to SBSTA/UNFCCC on CEOS climate actions, as requested;
 - Support the work of GCOS in defining and delivering the Essential Climate Variables required by the UNFCCC;
 - Support and advise on the overall relation of CEOS to the UNFCCC and its subsidiary bodies, and to the IPCC.