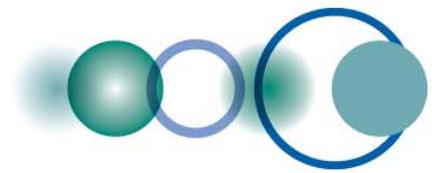


An Evolving Business Model for Commercial Imagery: How Will GEOSS Help?

Douglas M. Muchoney, Ph.D.
GEO Secretariat



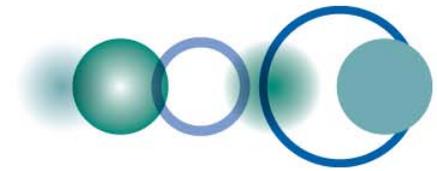
GEO, the Group on Earth Observations

An Intergovernmental Organization with 73 Members and 52 Participating Organizations



U.S. Department of State, Washington DC

July 31, 2003

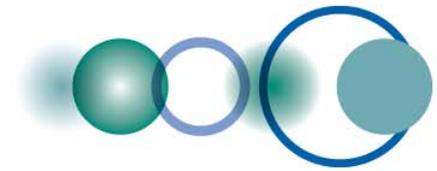


The Cape Town Ministerial Summit 2007

The Summit was the opportunity:

- To highlight early progress of GEO and key achievements in the Implementation of GEOSS (The First 100 Steps to GEOSS, The Full Picture)
- For Ministers to commit to emerging priorities through The Cape Town Declaration.

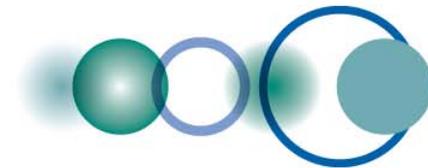




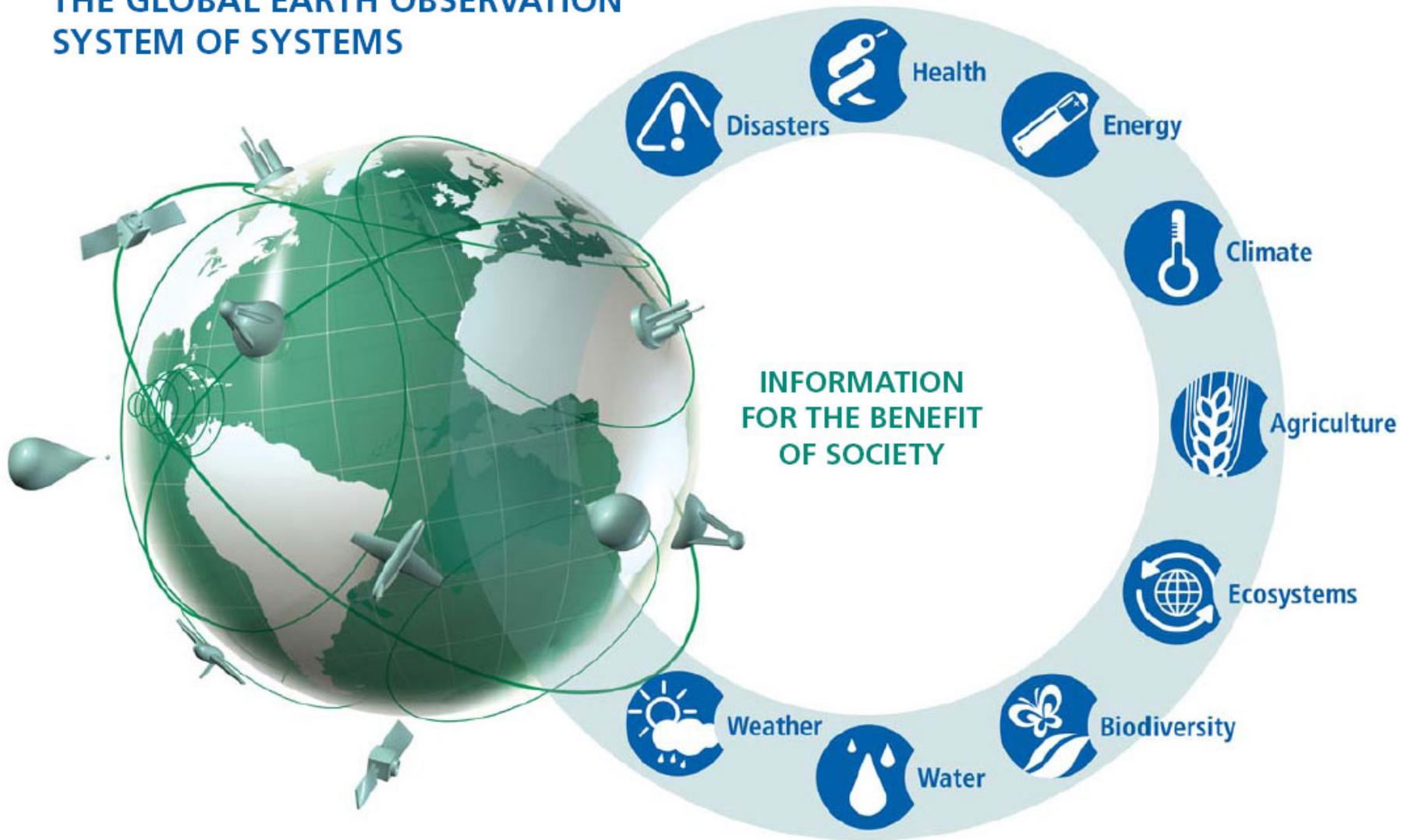
The Cape Town Declaration

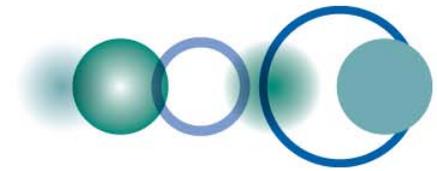
- **Value of Earth Observations**
- **Data Sharing Principles**
- **Commitment to Sustainable, Interoperable Systems**
- **Protection of Frequencies**
- **Need to Explore Ways and Means for the Sustained Operations of GEOSS Components**





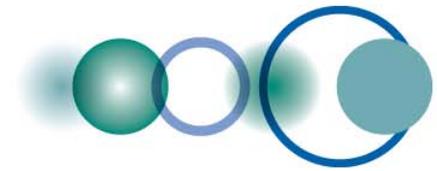
THE GLOBAL EARTH OBSERVATION SYSTEM OF SYSTEMS





- **Coordinate and Sustain Observation Systems**
- **Provide Easier and More Open Data Access**
- **Foster Use (Science, Applications, Capacity Bldg)**

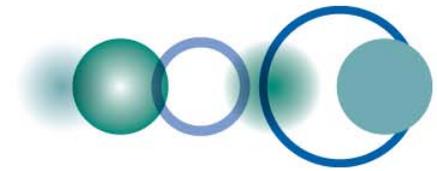
**... to answer Society's need
for informed decision making**



GEOSS Implementation Requires Interoperability of Systems

- **Technical Specifications for Collecting, Processing, Storing, and Disseminating Data and Products**
- **Based on Non-proprietary Standards**
- **Defining What Systems Should Comply With to be Contributed to GEOSS**



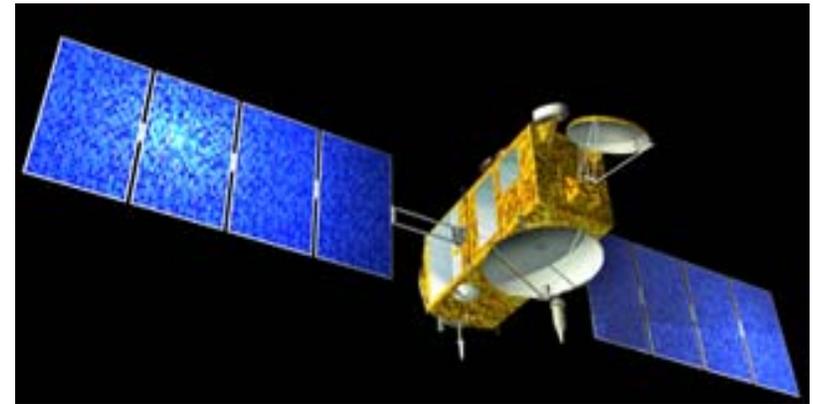


Ensure the Transition from Research to Operations and the Continuity of Observing Systems



1992

TOPEX/POSEIDON



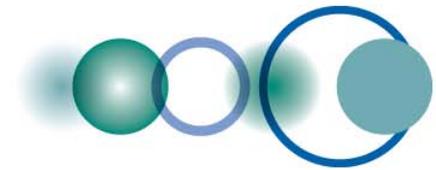
2001

JASON

2006

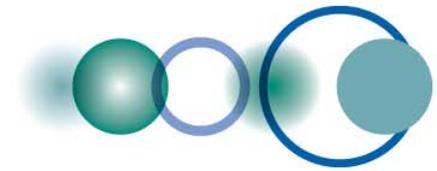
JASON-2





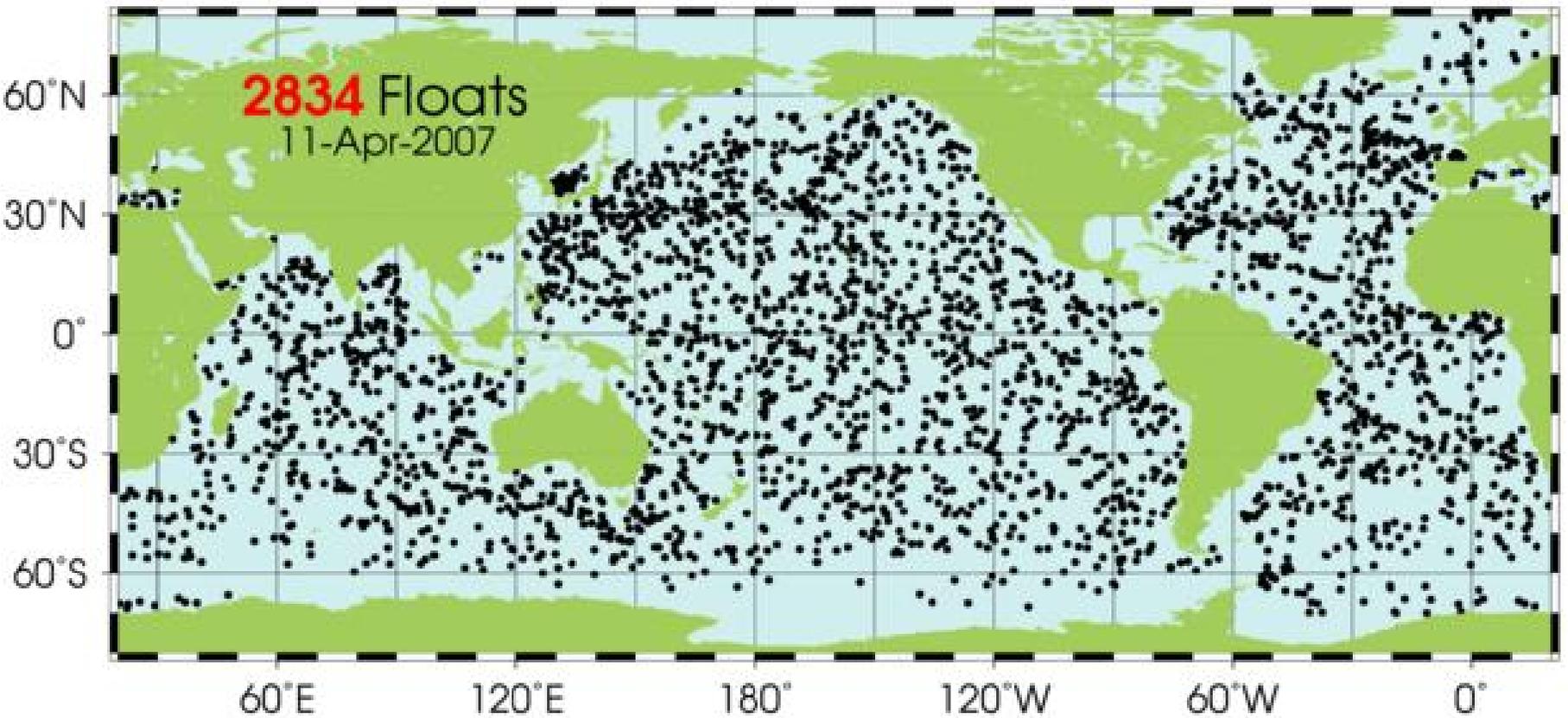
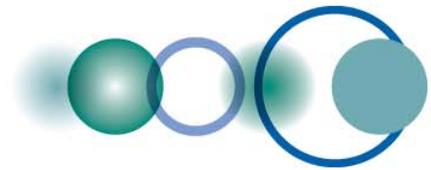
How GEOSS Targets translate into GEO Tasks:

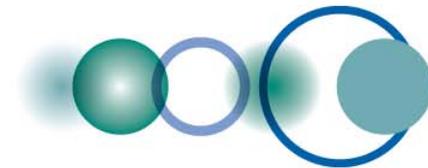
- **Calibration / Validation**
- **Ocean Color**
- **Data Continuity**
- **Carbon and REDD**
- **Virtual Constellations**
- **Societal Benefit Areas**
- **Cross-Cutting Activities: Land Cover, Coastal Zone, REDD**



Old and New Schemes for Funding and Implementing Observing Systems

- **Public National/Regional/International Programmes**

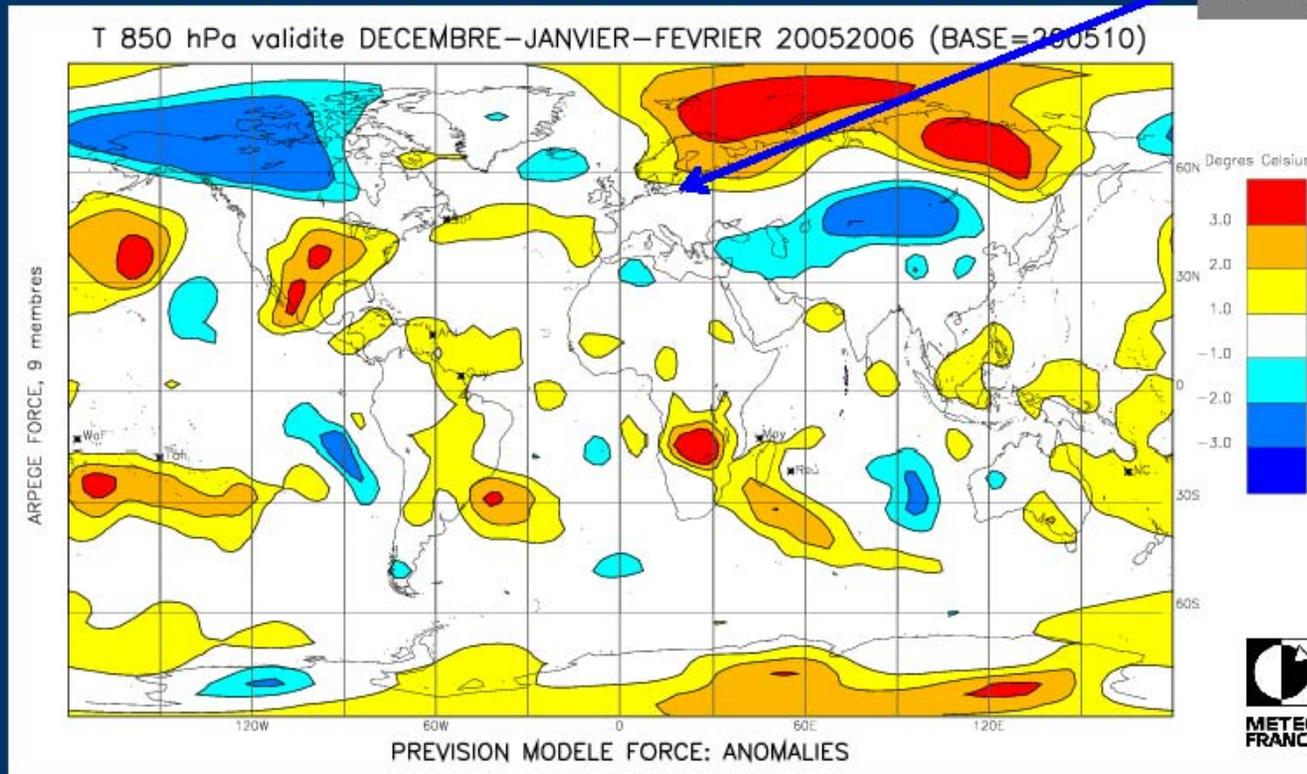




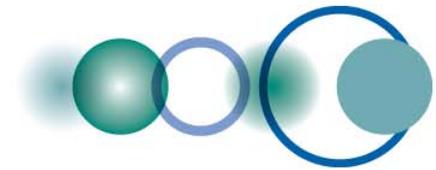
Seasonal Forecasting without Mercator

This forecast missed the cold anomaly over Europe

Europe



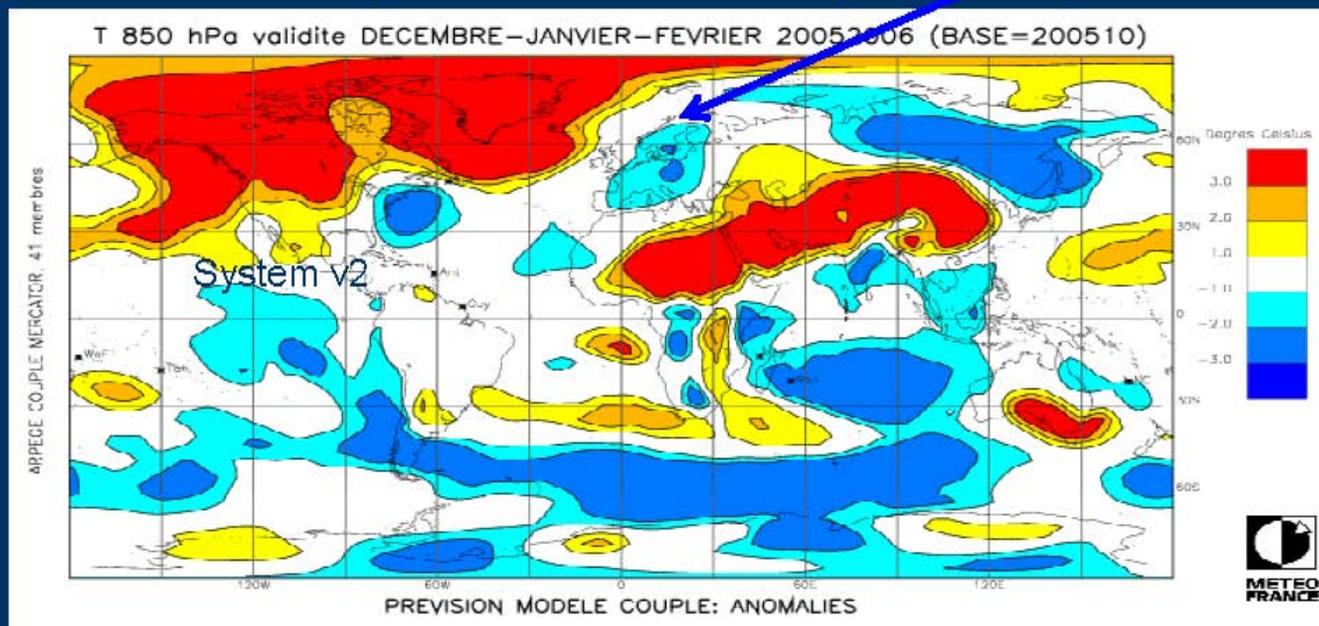
Temperature anomalies for Dec2005-Fevrier 2006



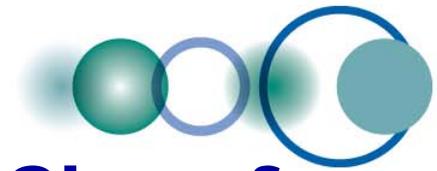
Mercator: Seasonal Forecasting

Europe

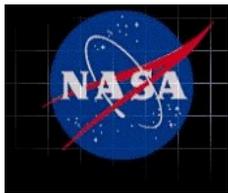
This forecast captured the cold anomaly over Europe

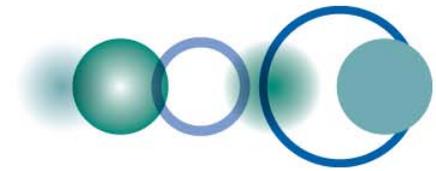


Temperature anomalies for Dec2005-Fevrier 2006

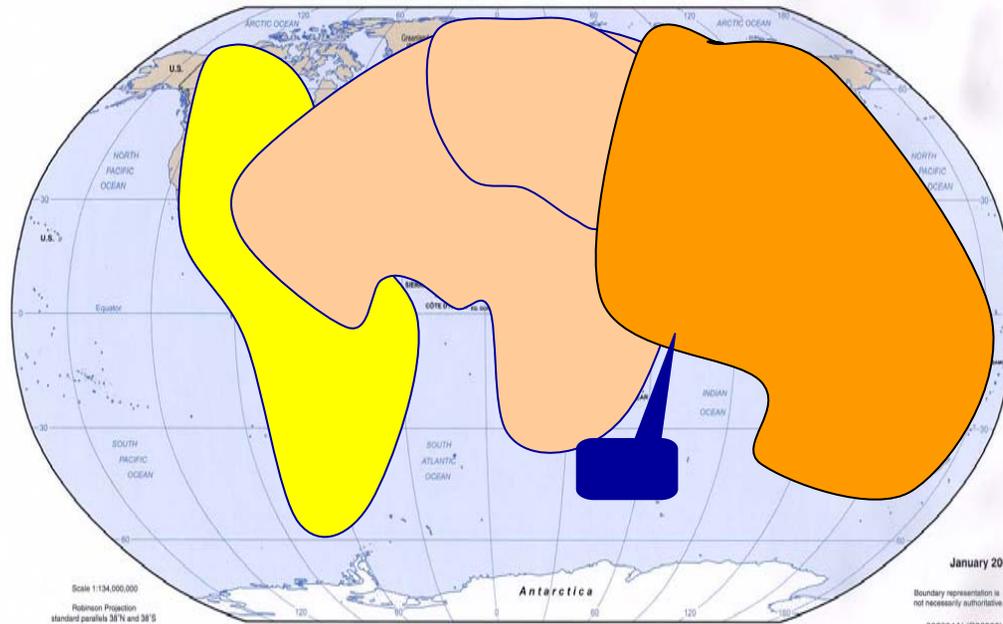


SERVIR: Geospatial One Stop Shop for Disaster Management in Central America & Mexico





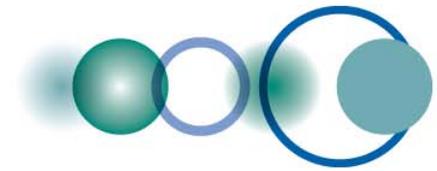
GEONETCast To Disseminate Space-based, Airborne and In Situ Data and Products to Users Addressing all Nine Societal Benefit Areas



Global Coverage

Contributors

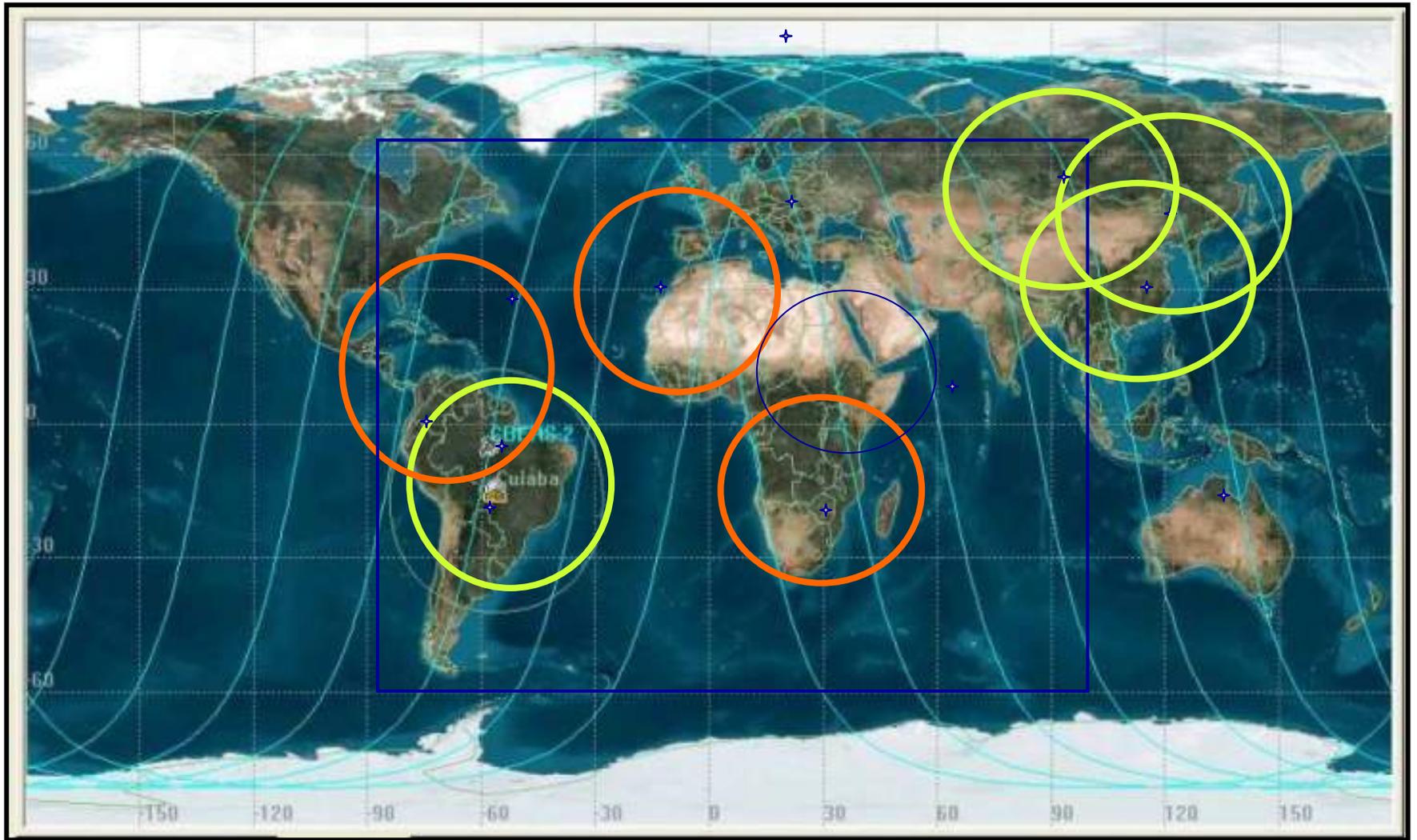
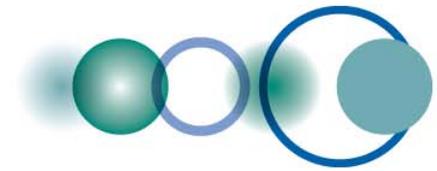


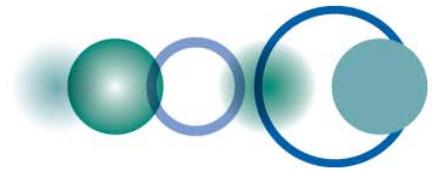


CBERS Data for Africa and the Caribbean



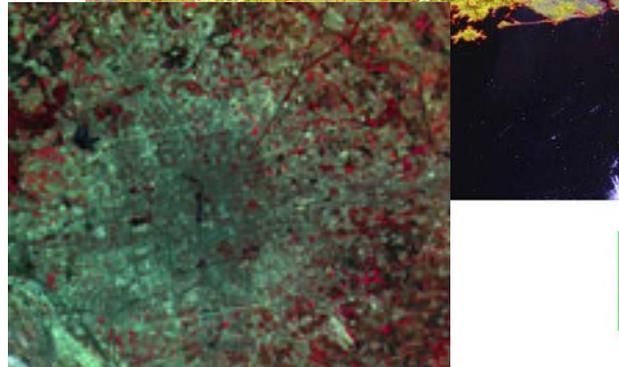
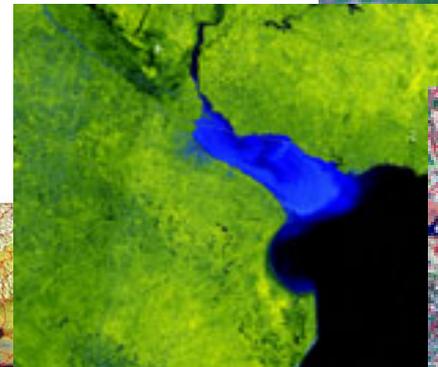
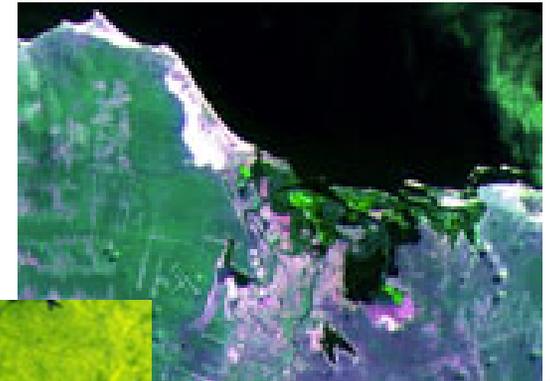
*China Brazil Earth Resources Satellite

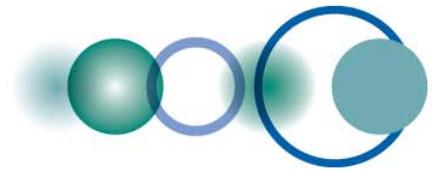




Applications and End-users

- **Agriculture and Forestry**
- **Water resources Managers**
- **Land Use Planners**
- **Disasters (Floods, Spills)**
- **Geological Mapping**
- **Fisheries**





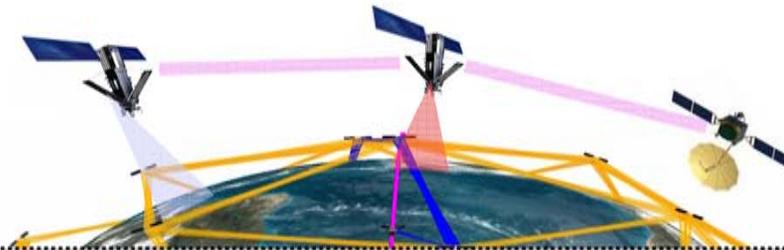
Iridium NEXT

4

- Iridium's NEXT-generation LEO satellite constellation
 - Seamlessly replace current constellation to ensure **mission continuity**
 - Maintains unique attributes: **global coverage, security, availability**
 - **Backward compatibility** with present applications and equipment
 - New and enhanced capabilities – **increase speed, bandwidth, flexibility**
 - Enable a new generation of user equipment - **new applications beyond mobile comms.**
- Initial design begins in 2006
- System deployed 2013-2016
- Funded primarily from business free cash flow
- Provision for government and commercial partnerships which leverage NEXT's unique architecture

Secondary Payloads

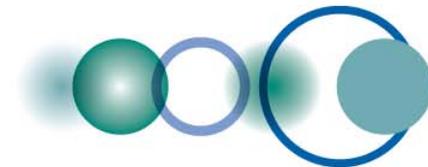
Imaging and Sensor
 Applications
 Climate Change,
 Science



C3

Global Command,
 Control and
 Communications
 for Independent
 Satellites

**Unique Global Opportunity for Space Assets Leveraging NEXT
 Communications Backbone**



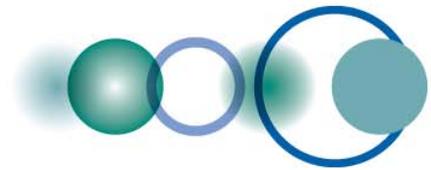
NEXT Earth Observation Mission (cont)

6

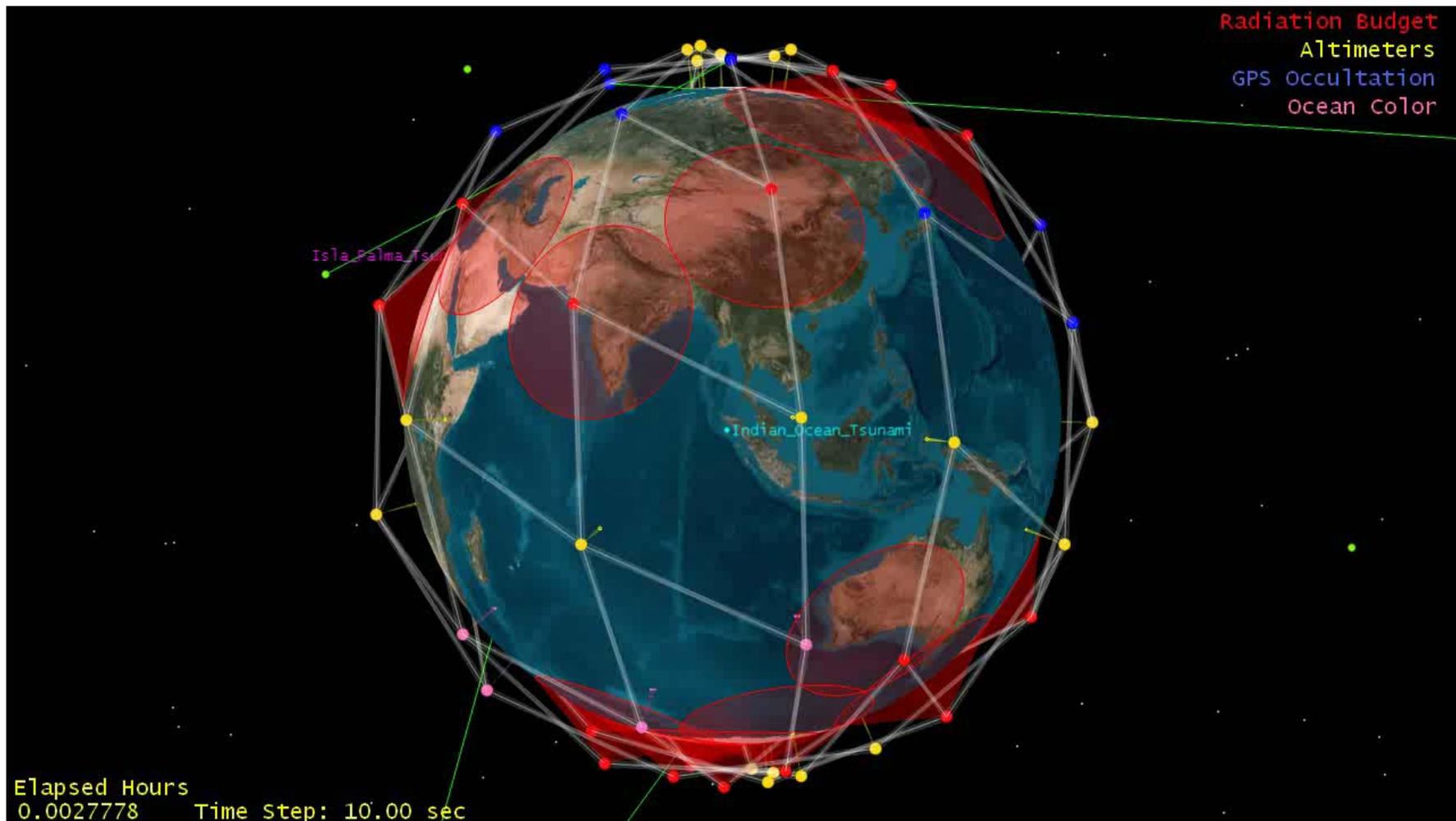
- Sensor selection to maximize EO capability and minimize impact (cost) on commercial Iridium satellite design
- Iridium NEXT ground infrastructure to collect data from the constellation
- To use existing data processing infrastructure as far as possible
- Data to be made available to all GEO members

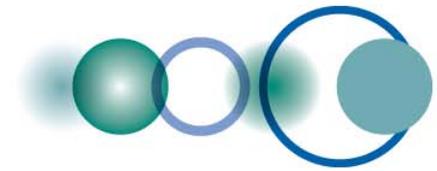
<u>Sensor</u>	<u>Quantity</u>	<u>Measured Parameter(s)</u>
Altimeter	24	Wave height & wind speed; mean sea level; ice height
GPS Occultation	12	Atmospheric water vapour content & temperature profile
Optical Imager	6	Broad band radiometer; ocean colour & land imaging
Radiometer	24	Earth radiation budget; energy source for climate system

N.B. Sensor selection is open to discussion, e.g. atmospheric chemistry is also being considered but SARs are too large. Also land imaging is well covered in the planned Landsat Continuity missions.



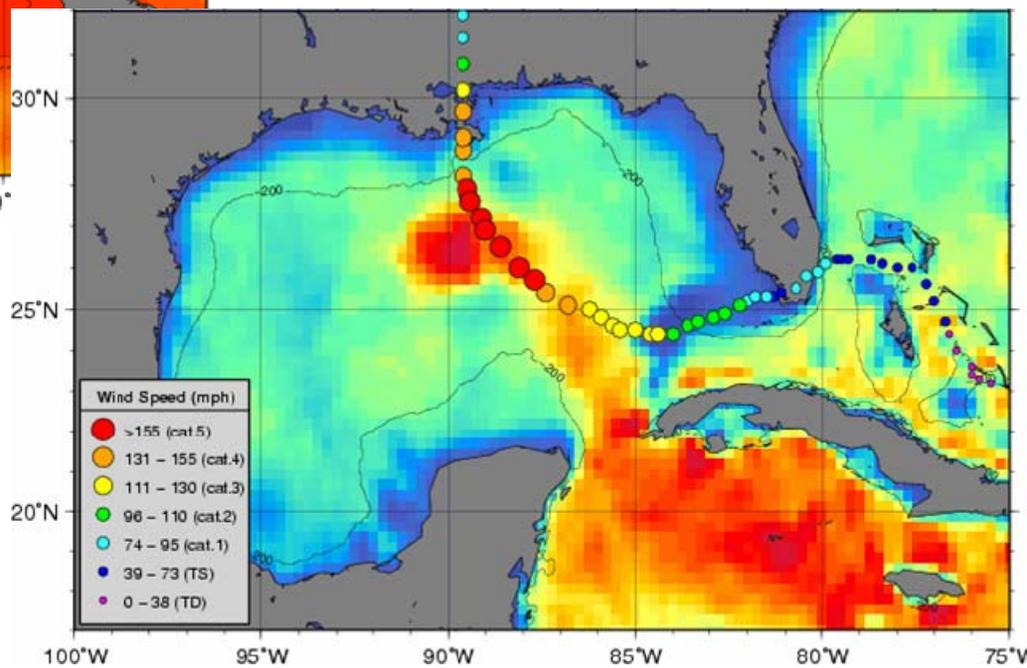
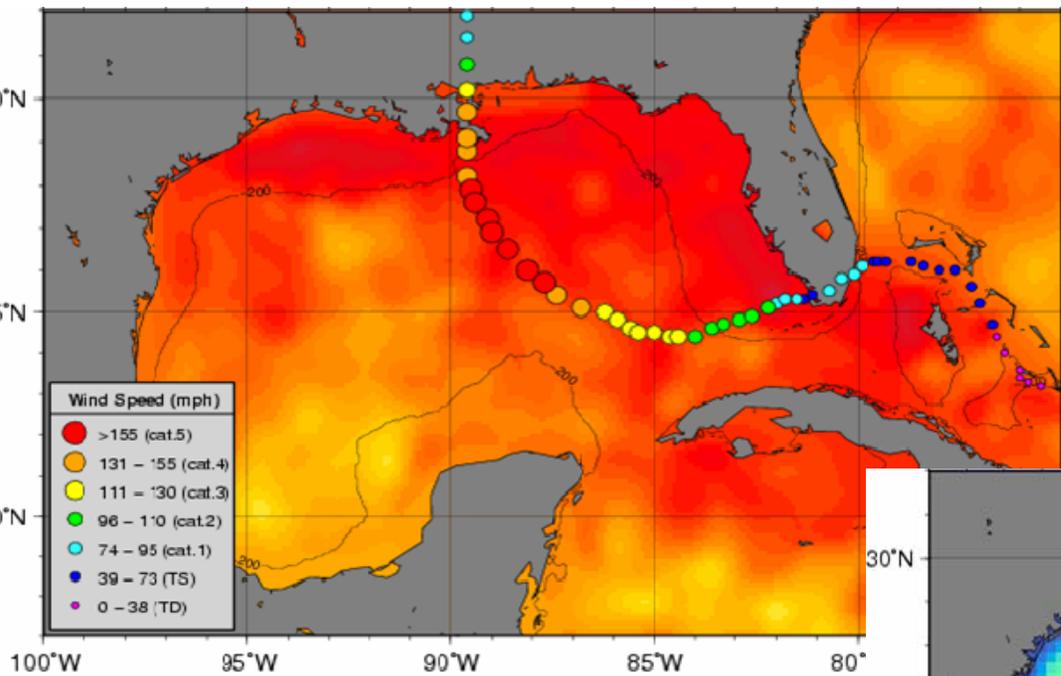
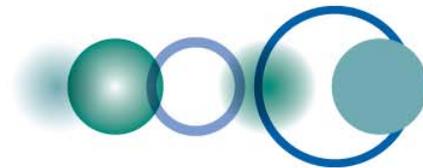
Iridium Sensors

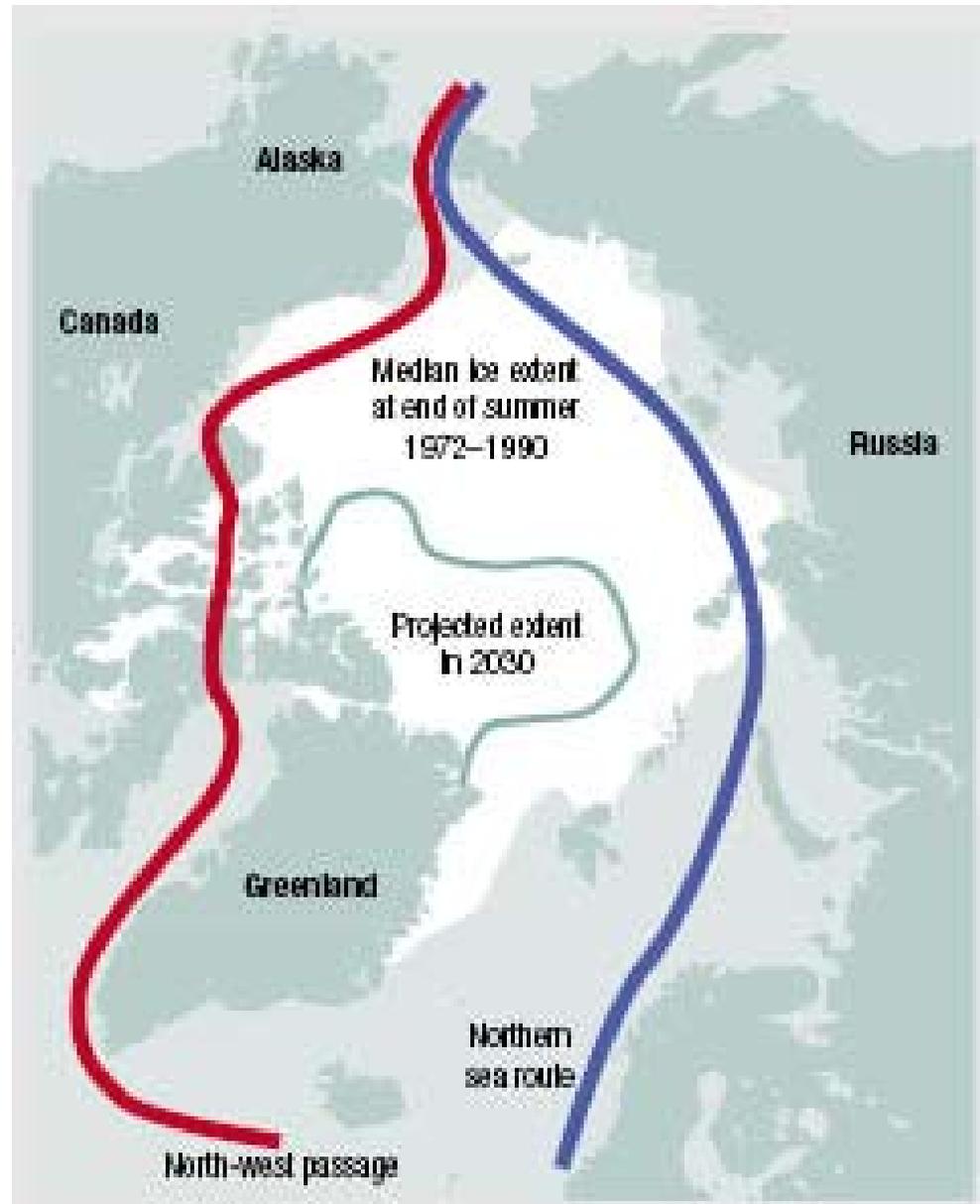
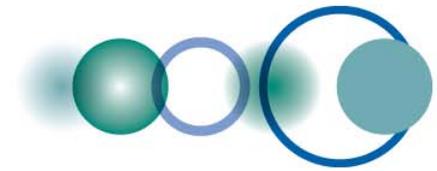




Old and New Schemes for Funding and Implementing Observing Systems

- **Public National/Regional/International Programmes**
- **Public-Private-Partnerships**

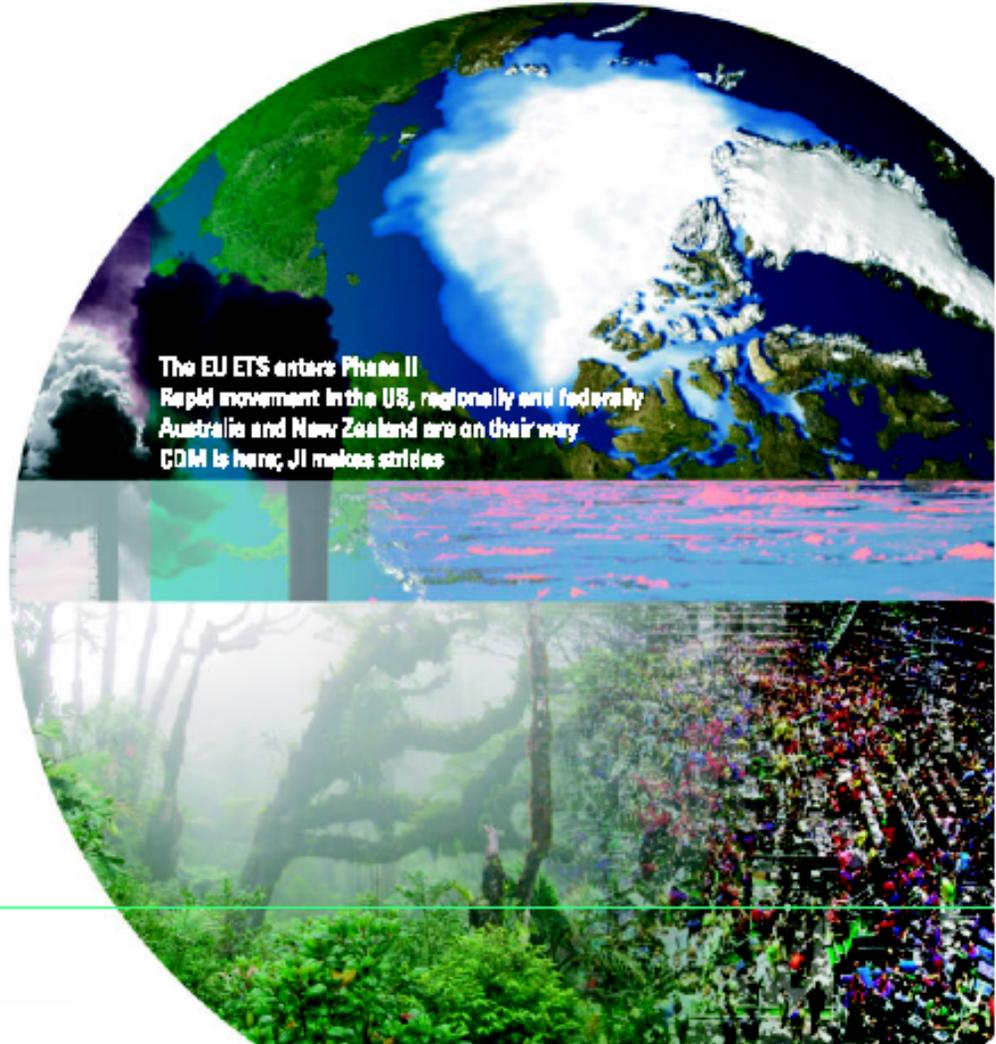


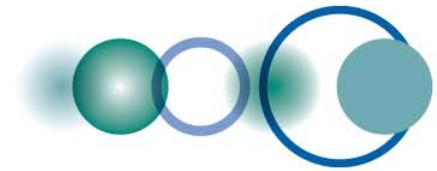


GREENHOUSE GAS MARKET 2007

**BUILDING UPON A SOLID FOUNDATION:
THE EMERGENCE OF A GLOBAL EMISSIONS TRADING SYSTEM**

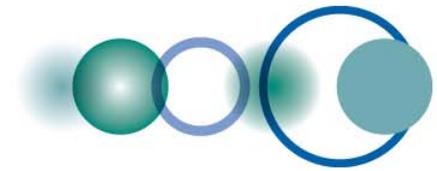
Carbon Markets Loom
on the Horizon - €500
Billion





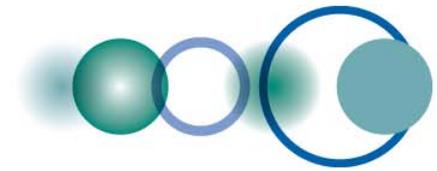
Concluding Remarks

- **Earth Observations Should Remain a Reliable Source of Information**



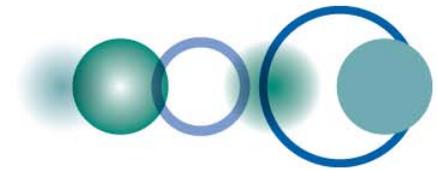
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Concluding Remarks

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- **On Climate Change: Focus on Adaptation (Forecast, Nowcast, Monitoring)**
- **Earth Observations Should Demonstrate its value in Energy Efficiency and in Water Management**



Concluding Remarks

- **Earth Observations Should Remain a Reliable Source of Information**
- **On Climate Change: Focus on Adaptation (Forecast, Nowcast, Monitoring)**
- **Earth Observations Should Demonstrate its value in Energy Efficiency and in Water Management**
- **GEO Should Develop New Mechanisms for Funding and Implementation**

Thank you!

