



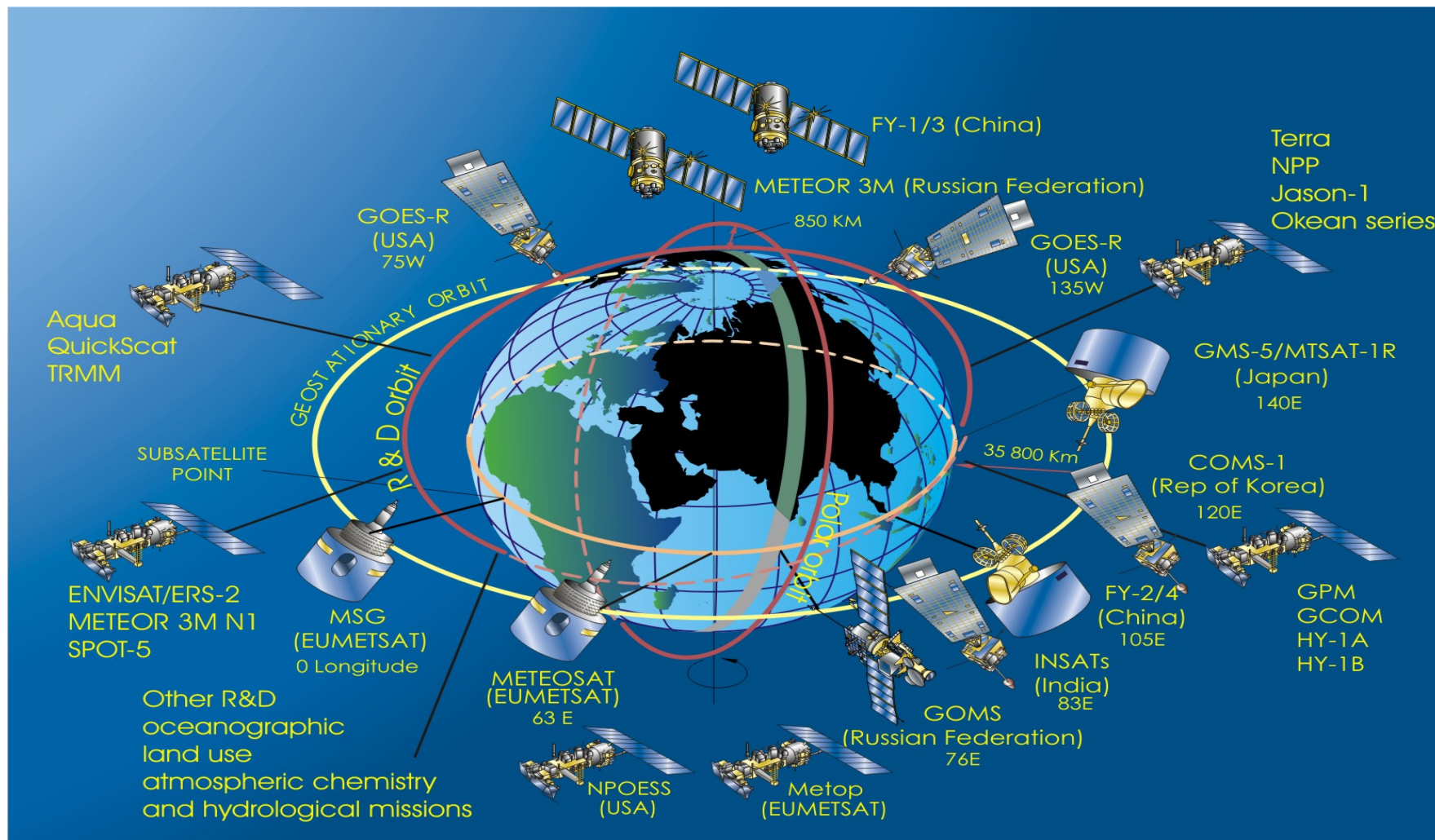
Group on  
Earth Observations

# The Context of GEOSS

26<sup>th</sup> CEOS WGCV Meeting  
Chiang Mai  
31.10.-3.11.2006

Michael Rast, GEO Secretariat

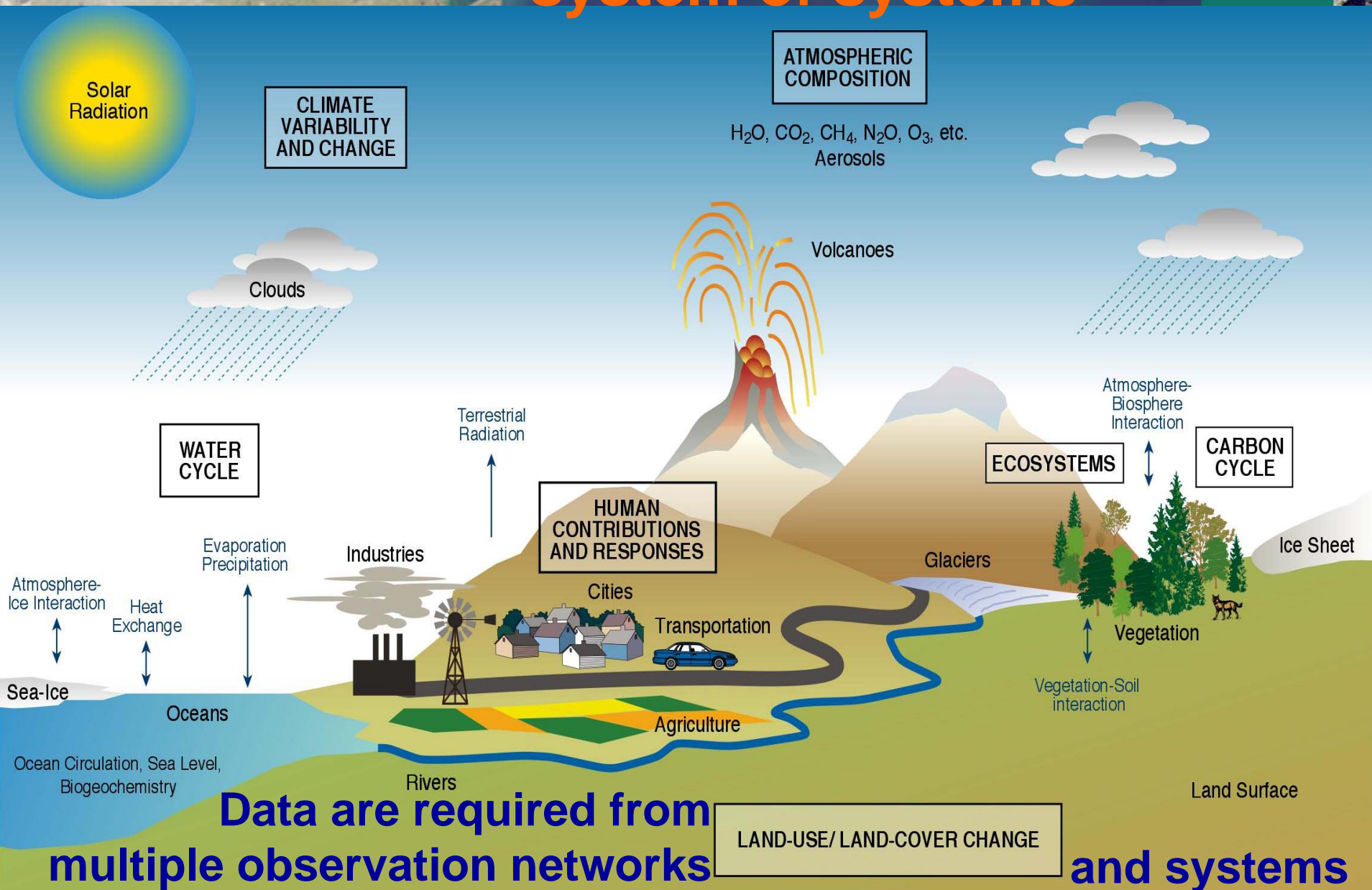
# Satellite Observation Systems



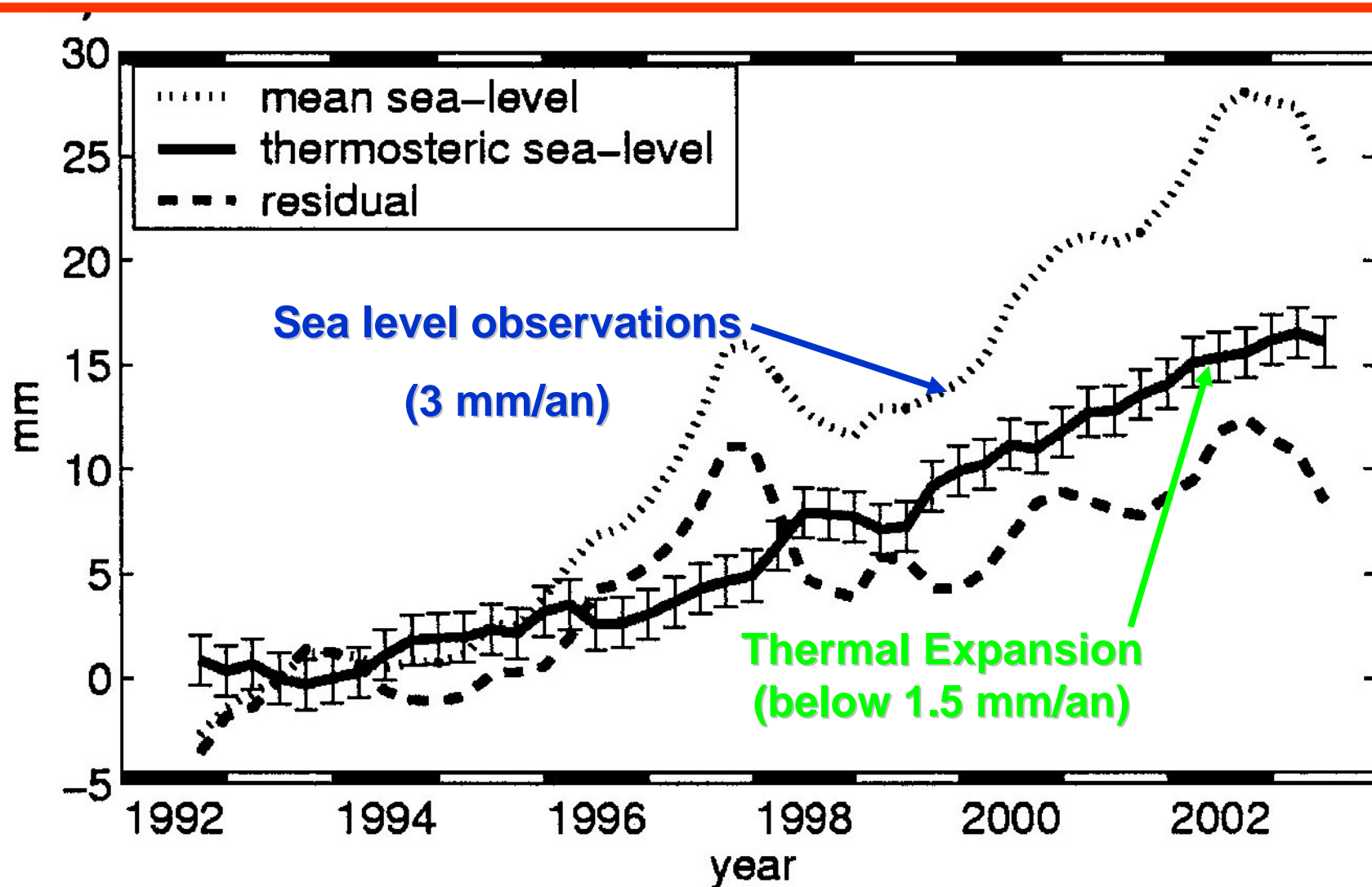


Group on  
Earth Observations

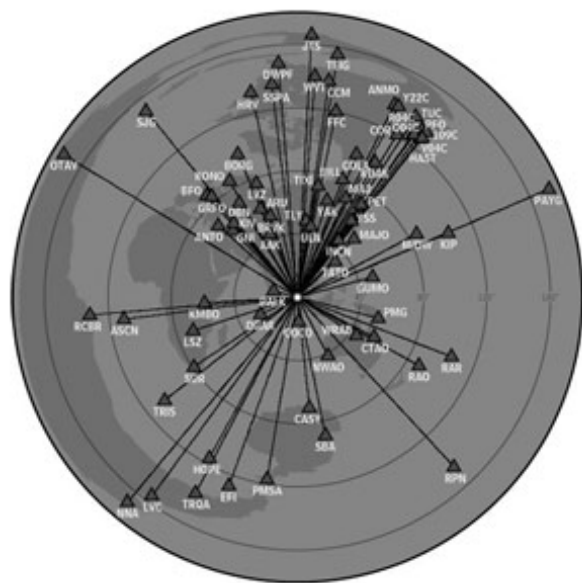
# The Earth is a complex system of systems







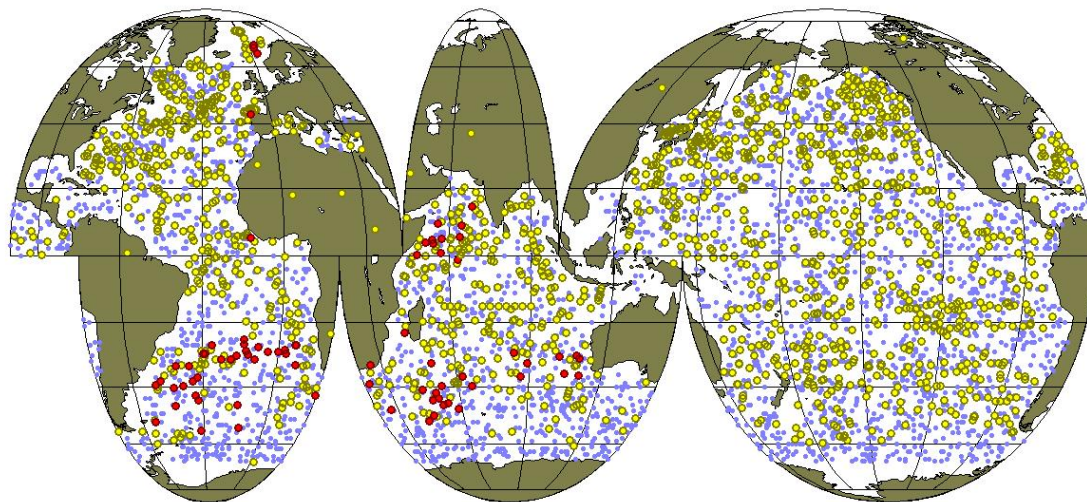
# Global In-situ Networks



## Seismic Networks

## Argo Float Array

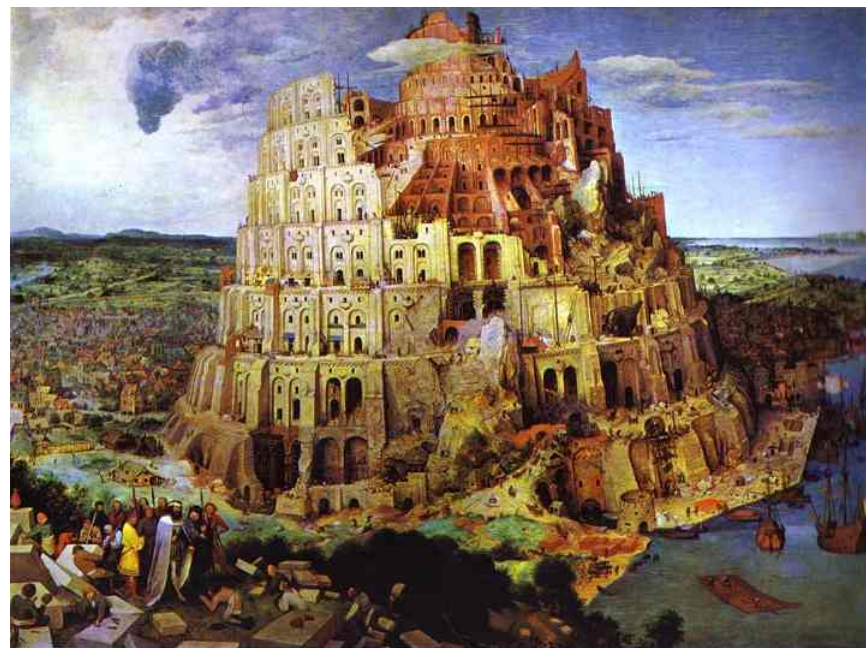
Global Argo Float Array (red – Argo UK; yellow – all Argo; blue – proposed array)



**There is a Need for a System  
which Provides Access to all  
Earth Observation Data in  
Standard Interoperable  
Formats**

## **Need for a Portal and Clearinghouse**

- **For Access to all Earth Observation Data**
- **Based on Existing Portals, Systems and Networks**
- **Designed to Increase Quality and Accessibility of Information**
- **Providing Tools**

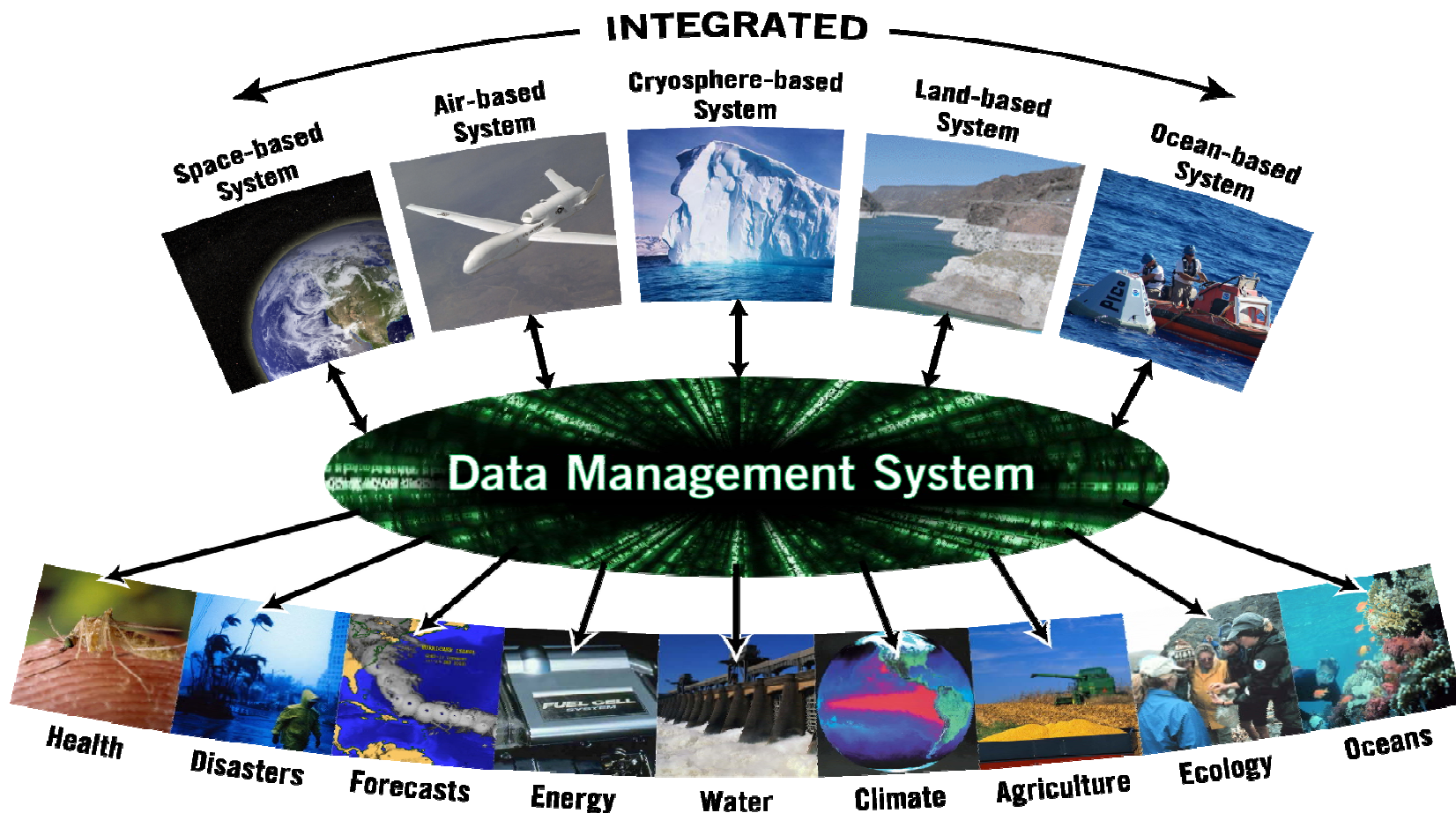




- The Group on Earth Observations **GEO** as Intergovernmental Organization is formally established
  - 10-Year Implementation Plan Endorsed
  - GEO Secretariat established in Geneva
- the Group on Earth Observations is an Intergovernmental Organization with 65 Member Countries, the European Commission and 43 Participating Organizations
- One Objective: Establish a global, coordinated, comprehensive and sustained system of Earth observing systems, **GEOSS**



# A Global, Coordinated, Comprehensive and Sustained System of Earth Observing Systems

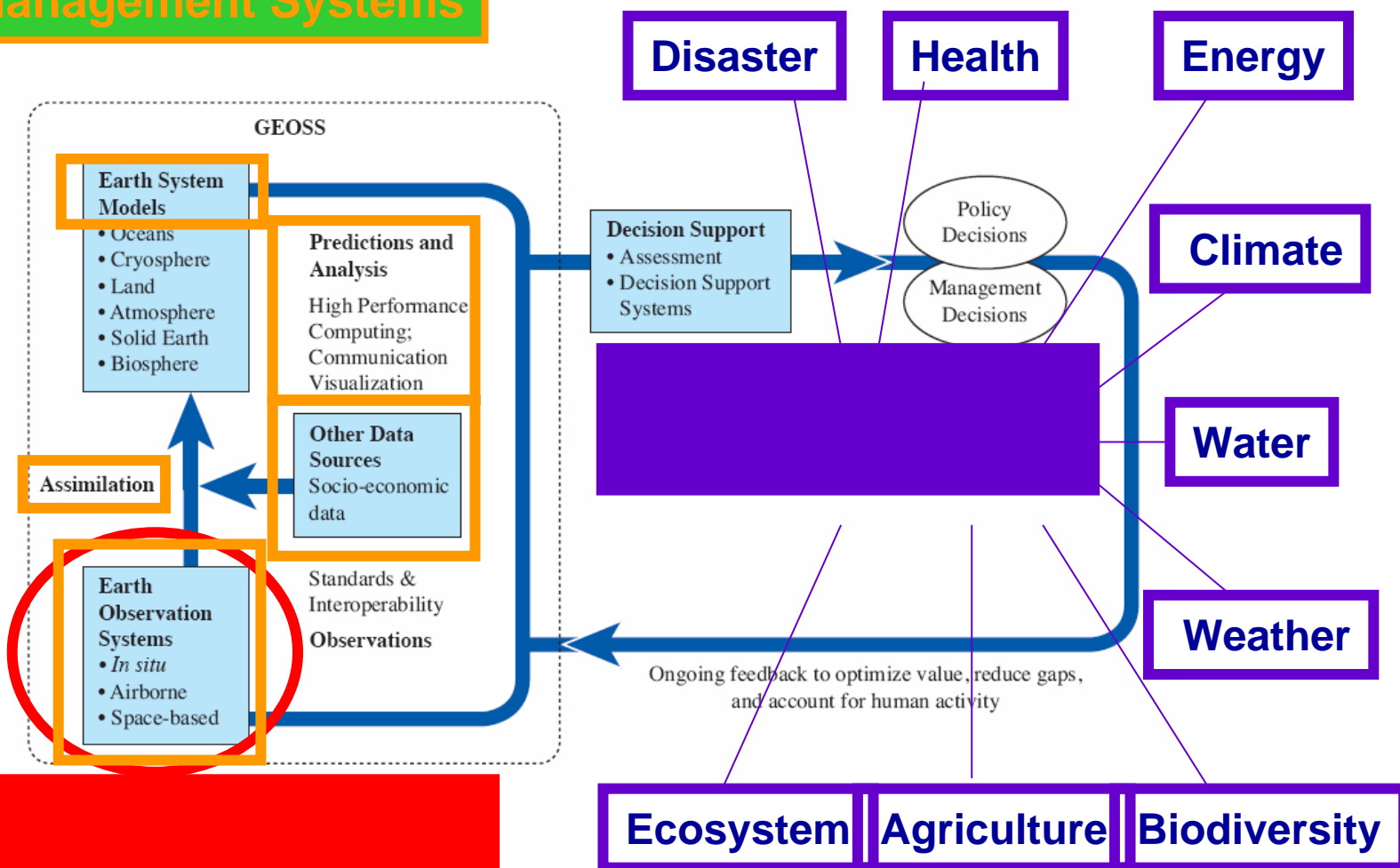






- **Needs-driven** - driven by user needs, supports a broad range of implementation options
- **Scope** - addresses all observations required for participants to make products, forecasts and related decisions
- **Capabilities** - includes observing, processing, and dissemination capabilities, provided by national, regional or international agencies subscribing to GEOSS while retaining their ownership and operational responsibility
- **Data and its exchange and dissemination** - observations and products are to be observed, recorded and stored in clearly defined formats
- **Operation** - secures the future continuity of observations
- **Catalogue** - members and participating organizations and the components they support will be documented in a catalogue that is publicly accessible, network distributed, and interoperable with major Earth observations catalogues

## Modeling, and Data Management Systems





## **will Provide Systems Interoperability and Easier and More Open Data Access**

**Seven shortcomings as target areas for GEOSS:**

- 1. Lack of access to data and associated benefits in the developing world**
- 2. Eroding technical infrastructure**
- 3. Large spatial and temporal gaps in specific data sets**
- 4. Inadequate data integration and interoperability**
- 5. Uncertainty over continuity of observations**
- 6. Inadequate user involvement**
- 7. Lack of relevant processing systems to transform data into useful information**



## A User-driven Approach

- Improve and Coordinate Observation Systems
- Provide Easier & More Open Data Access
- Foster Use through Science and Applications

to answer Society's need for informed decision making

## Interoperability Arrangements

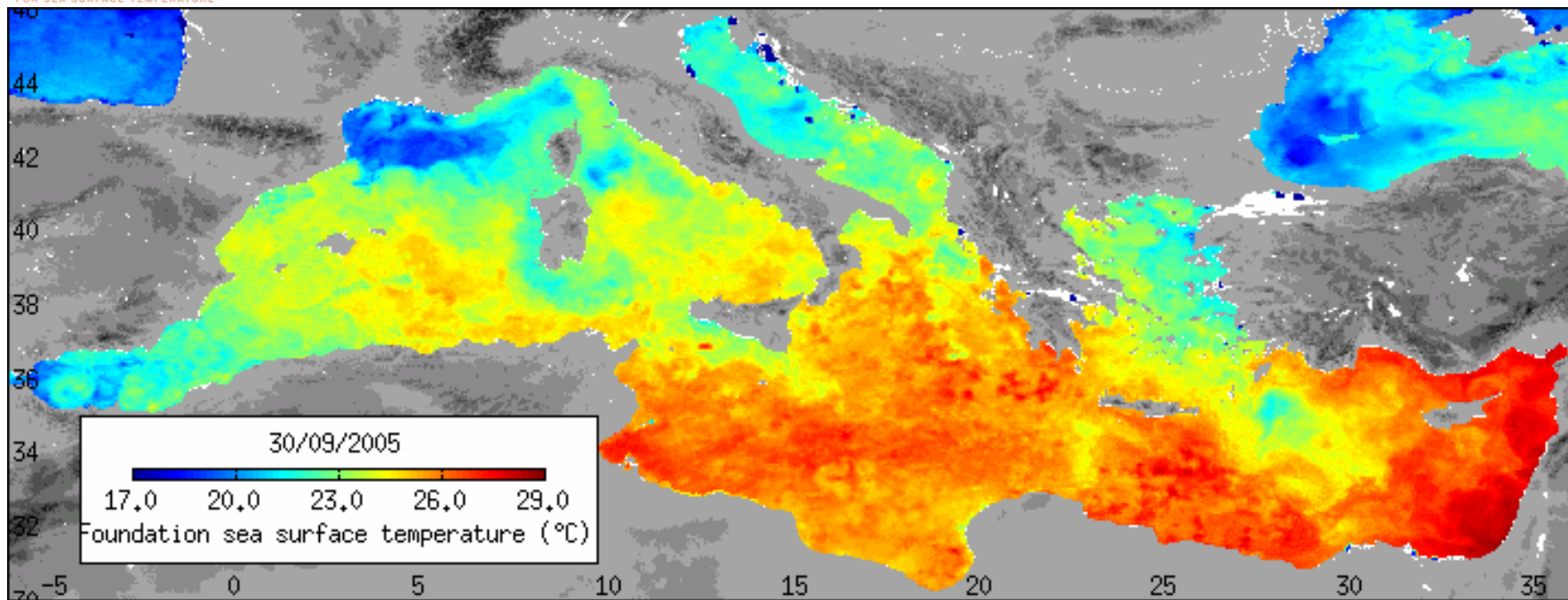
*“What few things must be the same so that everything else can be different?”*

Eliot Christian



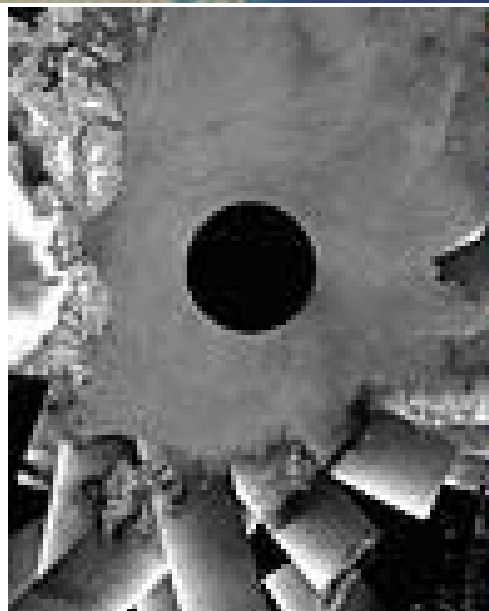
## Sea Surface Temperature Mediterranean Sea in September 2005

medspiration  
EUROPEAN NODE  
FOR SEA SURFACE TEMPERATURE

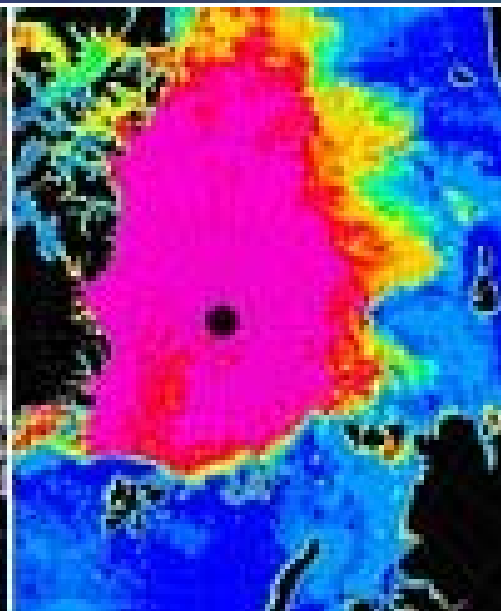


*The Medspiration project combines SST data measured independently by different satellites, including Envisat AATSR, into a set of products that represent the best measure of SST, presented in a form that can be assimilated into numerical ocean forecasting models.*

<http://www.medspiration.org>



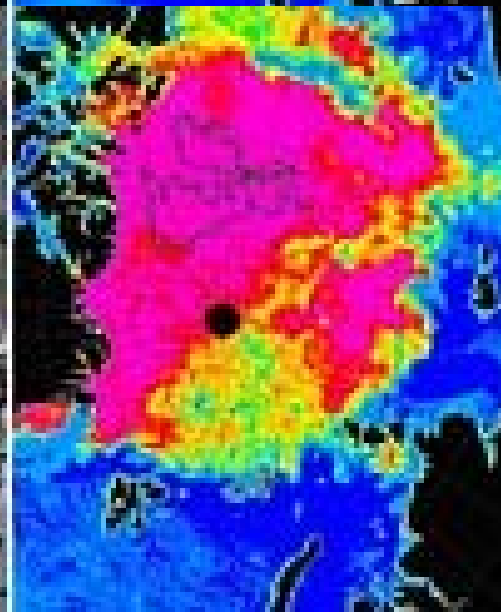
**ASAR 24.8.05**



**AMSR 24.8.05**



**ASAR 25.8.06**



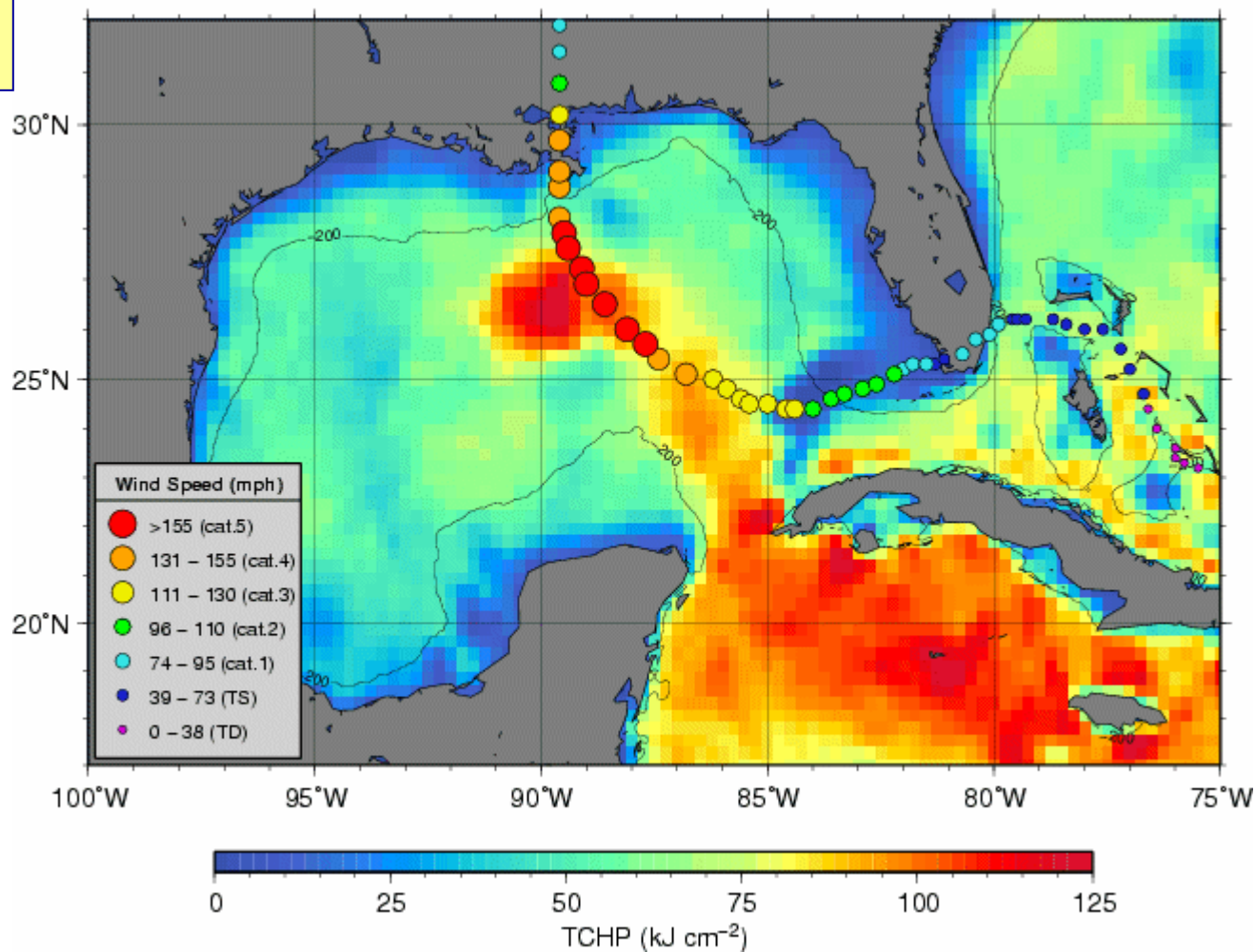
**AMSR 24.8.06**



[illegible]

## Hurricane Katrina

Gulf of Mexico – Tropical cyclone heat potential (TCHP) 08/28/2005



Altimetry data from ESA Envisat, NASA/CNES Topex/Poseidon & Jason-1, US Navy GFO

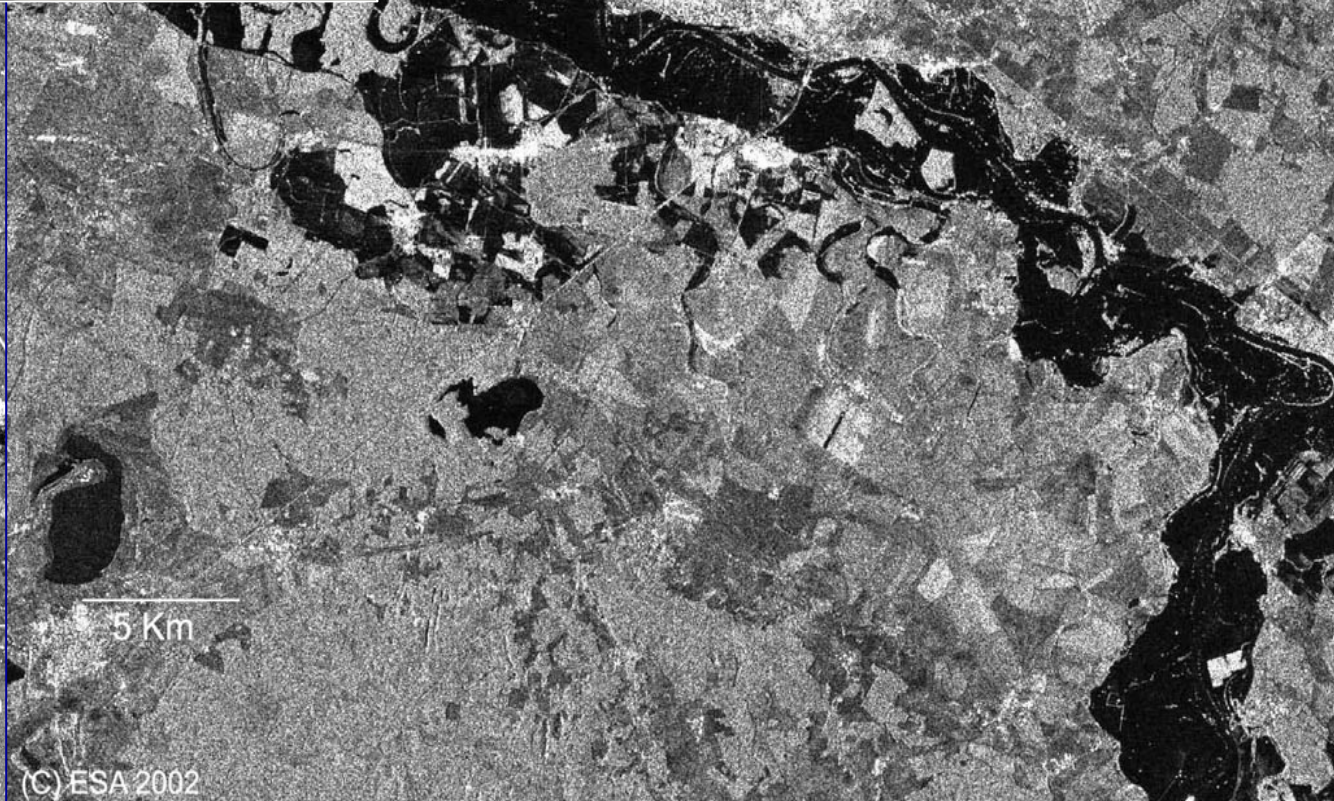
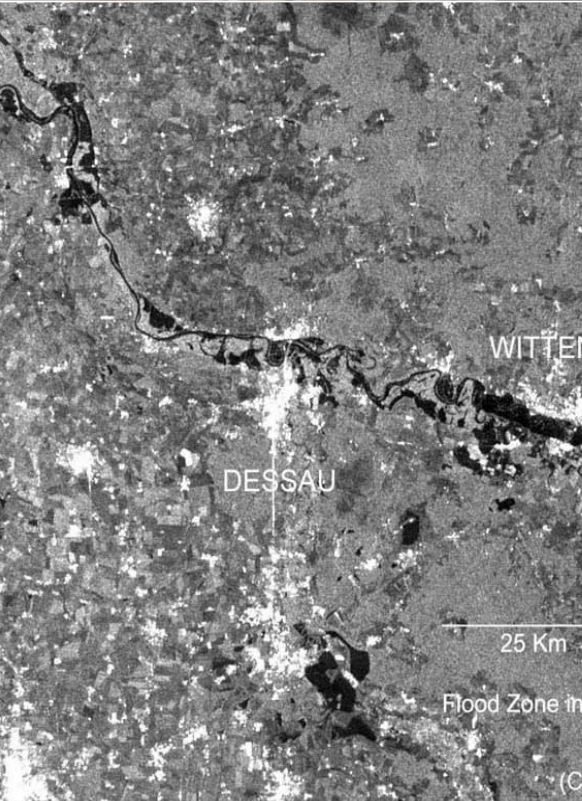
Figures courtesy of Gustavo Goni, NOAA/OAR/AOML





# 2007-2009 Work Plan

## Flood Forecasting



Flood Zone in

(C) ESA 2002

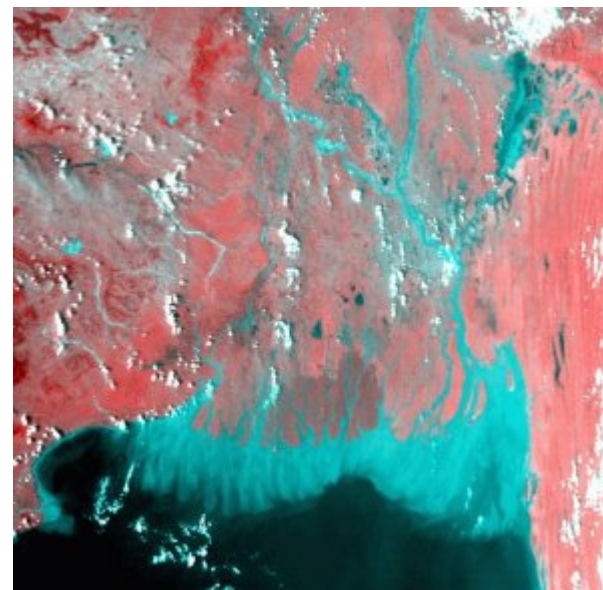


# Cholera Outbreaks in Bangladesh

**VIBRIO CHOLERAЕ HAS A  
MARINE ZONOTIC CYCLE  
ASSOCIATED WITH ALGAL  
BLOOMS**



**COPEPOD**

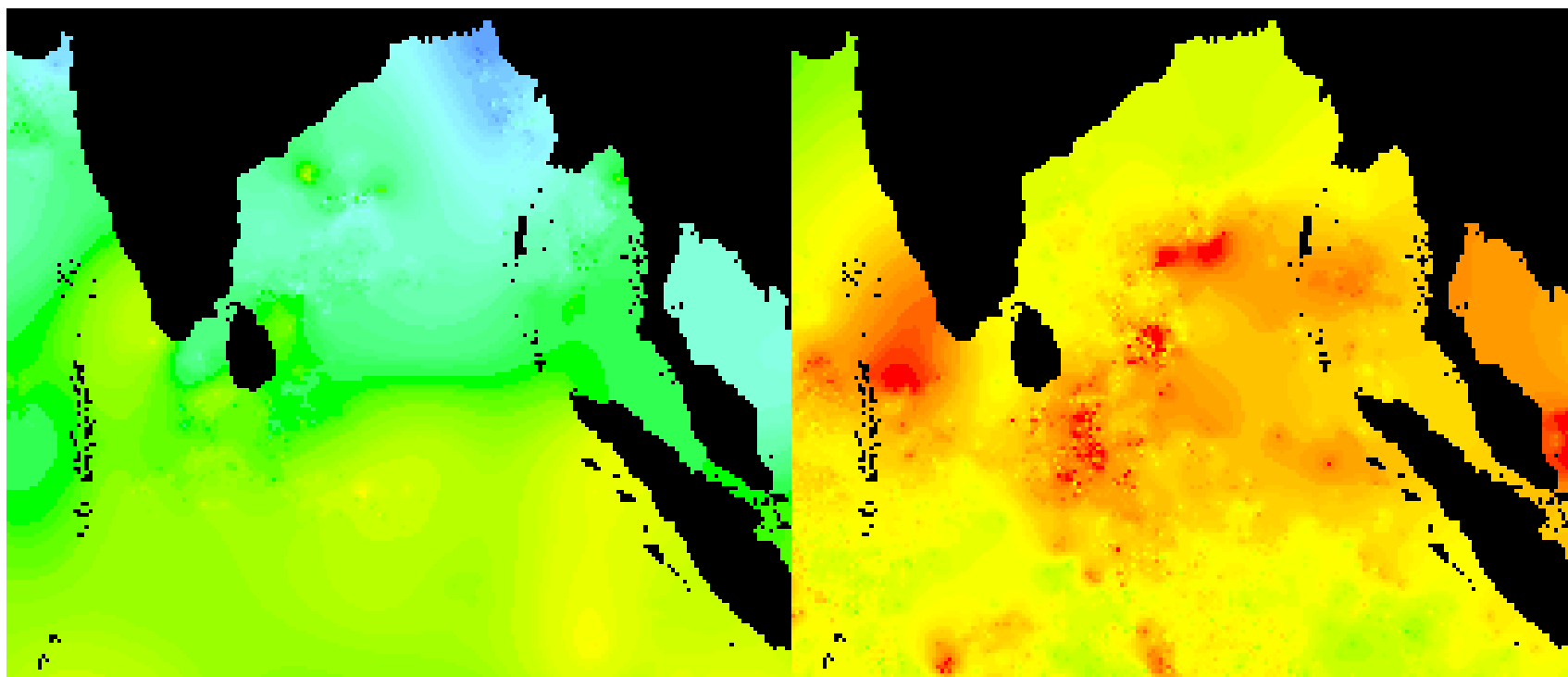


**BAY OF BENGAL**

**AVRHH SEPT 1992  
FALSE COLOR INFRARED**



## SEA-SURFACE TEMPERATURE IN BAY OF BENGAL



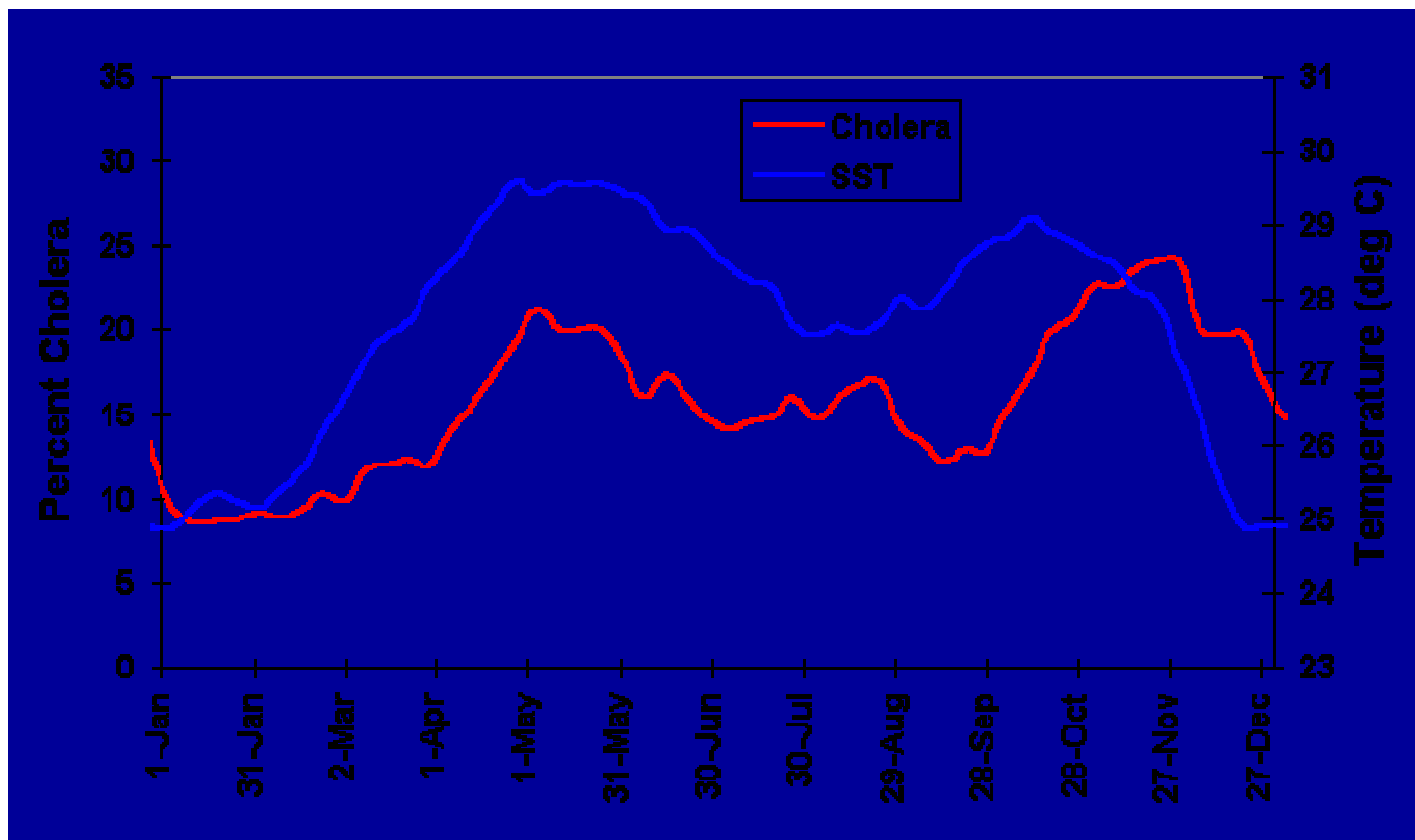
JANUARY

MAY

AVHRR Global Composite SST images from 1992



## SEA SURFACE TEMPERATURE PREDICTS CHOLERA CASES



**BAY OF BENGAL**

- **DA-06-02:** Develop a GEO data quality assurance strategy, beginning with space-based observations and evaluating expansion to *in-situ* observations, taking account of existing work in this arena.
- **CL-06-02:** Establish actions securing the provision of key data for climate studies and forecasting from satellite systems
- **EC-06-02:** Establish an ad hoc Ecosystems Classification Task Force, covering terrestrial, freshwater, and ocean ecosystems, with a mandate to create a globally agreed, robust, and viable classification scheme for ecosystems



**The success of GEOSS will depend on data and information providers accepting and implementing a set of interoperability arrangements, including technical specifications for collecting, processing, storing, and disseminating shared data, metadata, and products.**

