



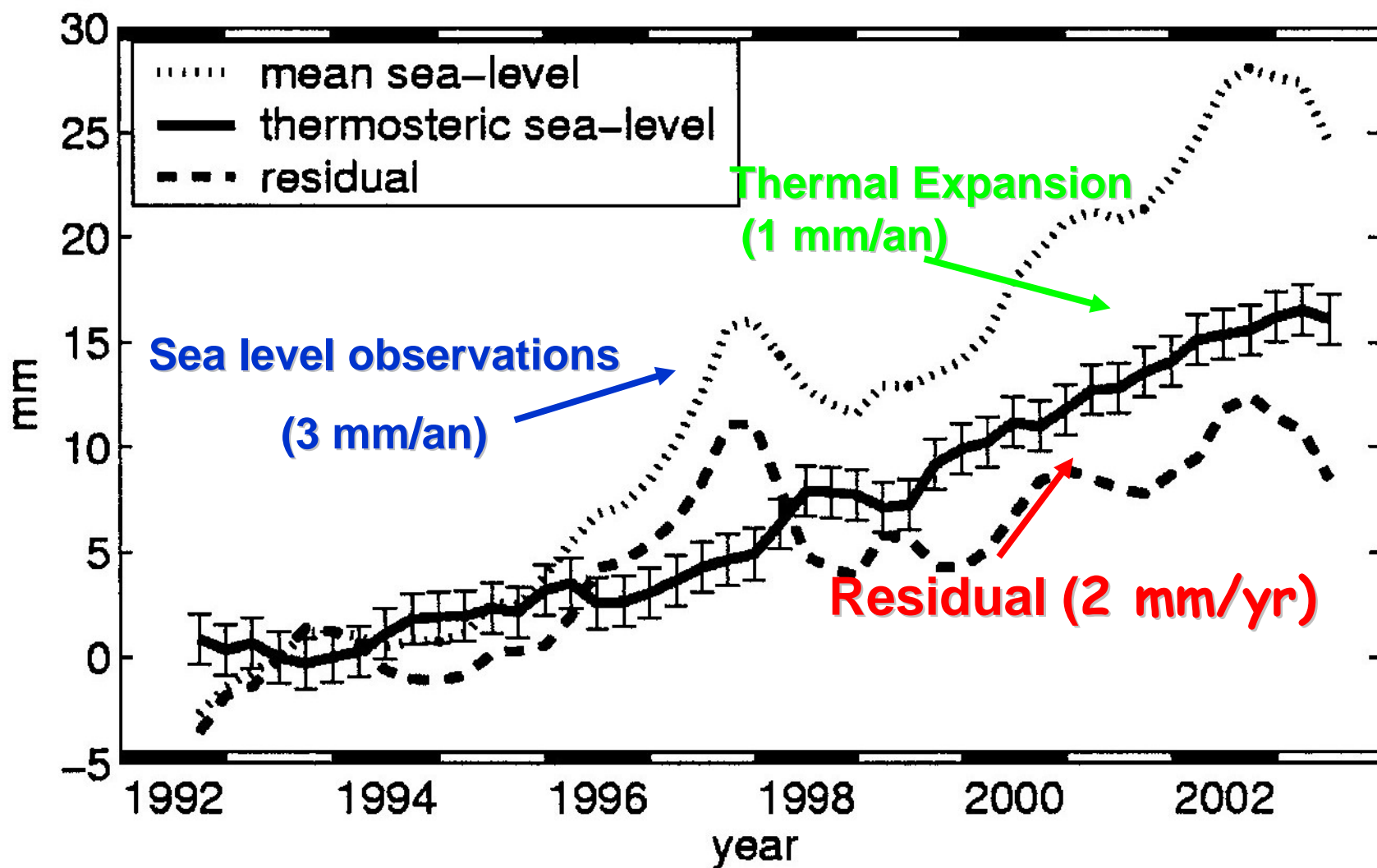
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Earth Observations

# GEO

**To Understand Trends, Forecast Changes and  
Support Informed Decisions**

## **GEO Data Sharing Principles- Challenges and Opportunities**

**José Achache, Secretariat Director**





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Earth Observations



# Recognizing the Need to Share Observations



Washington  
Tokyo  
Brussels







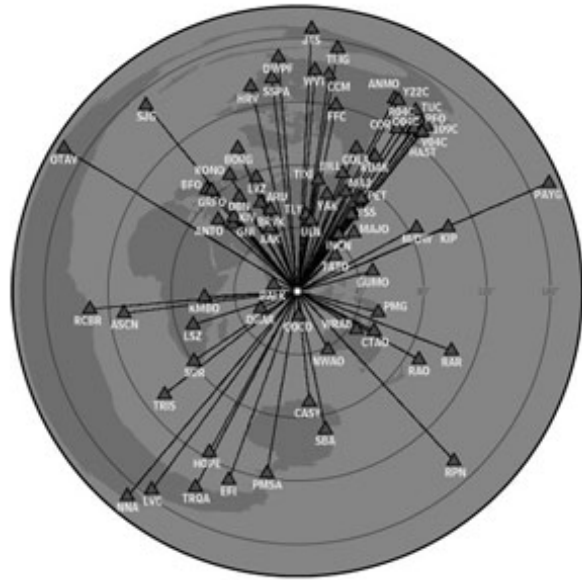


**Any Single Problem Requires Many  
Data Sets**

**A Single Data Set Will Serve Many  
Communities**



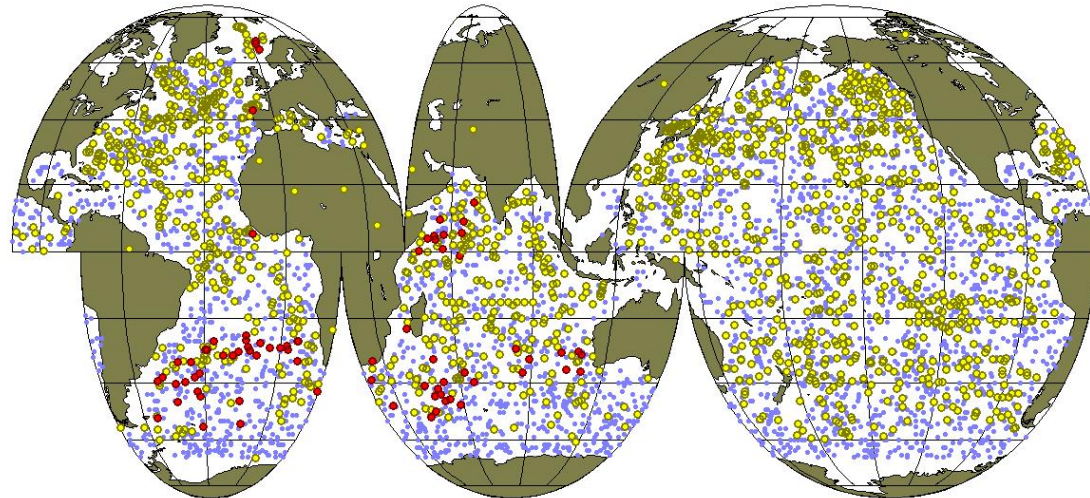




## Seismic Networks

## Argo Float Array

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



## The Tower of Babel

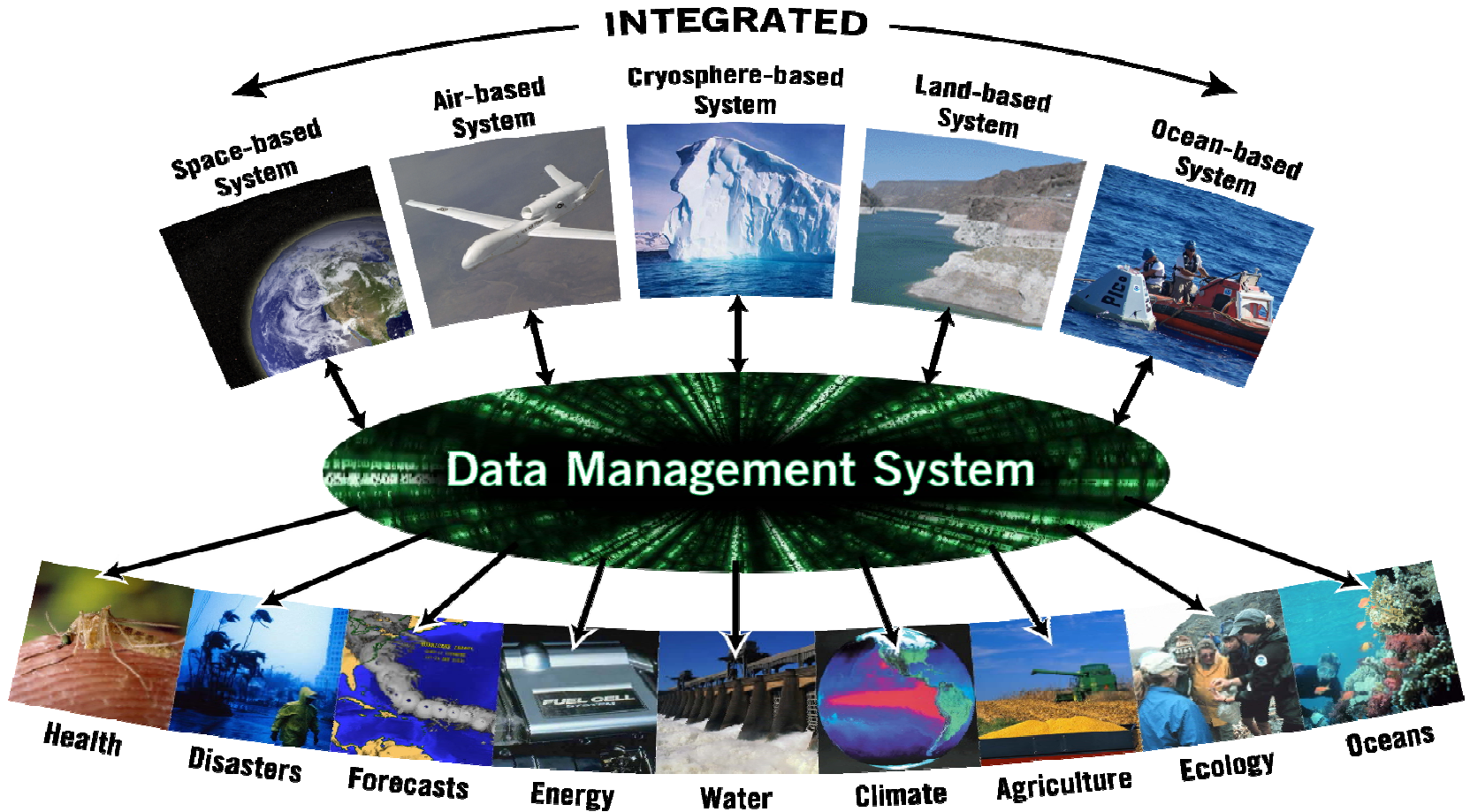
**There is a Need to Share  
all Earth Observation  
Data in Standard  
Interoperable Formats**







# **GEOSS: A Global, Coordinated, Comprehensive and Sustained System of Observing Systems**



# **GEO** : The Group on Earth Observations is an Intergovernmental Organization of 66 Member Countries, the European Commission and 43 Participating Organizations







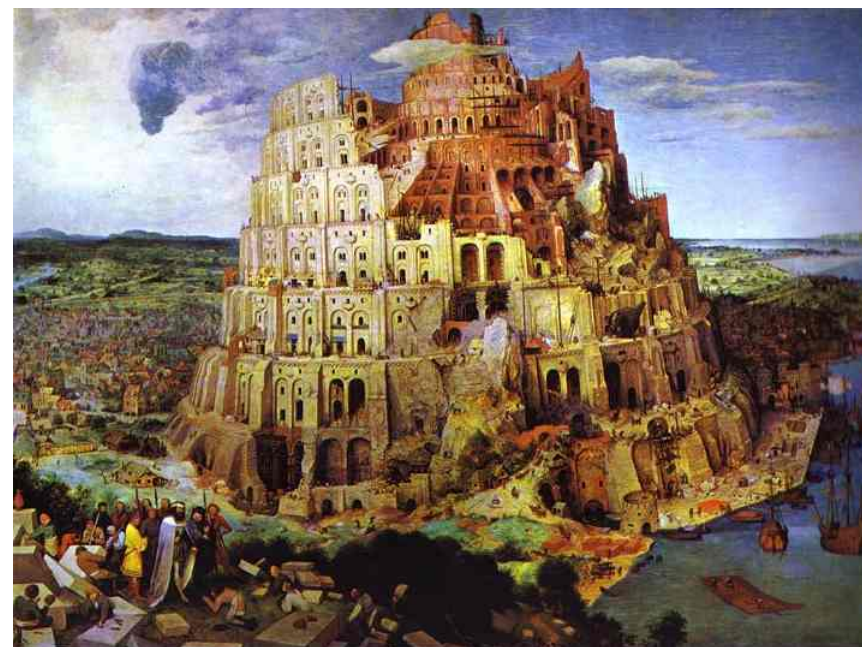
# GEO should Provide Easier and More Open Data Access





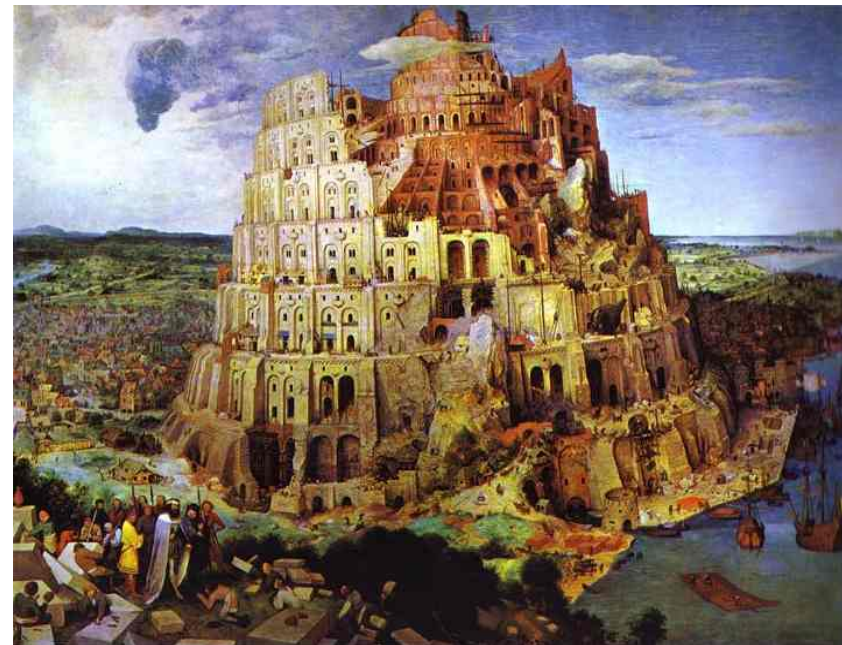
# GEO Web Portal and Clearinghouse

- **Defining Standards for Quality Assurance of Derived Products**
- **Providing Online Calibration and Validation**
- **Providing Tools**



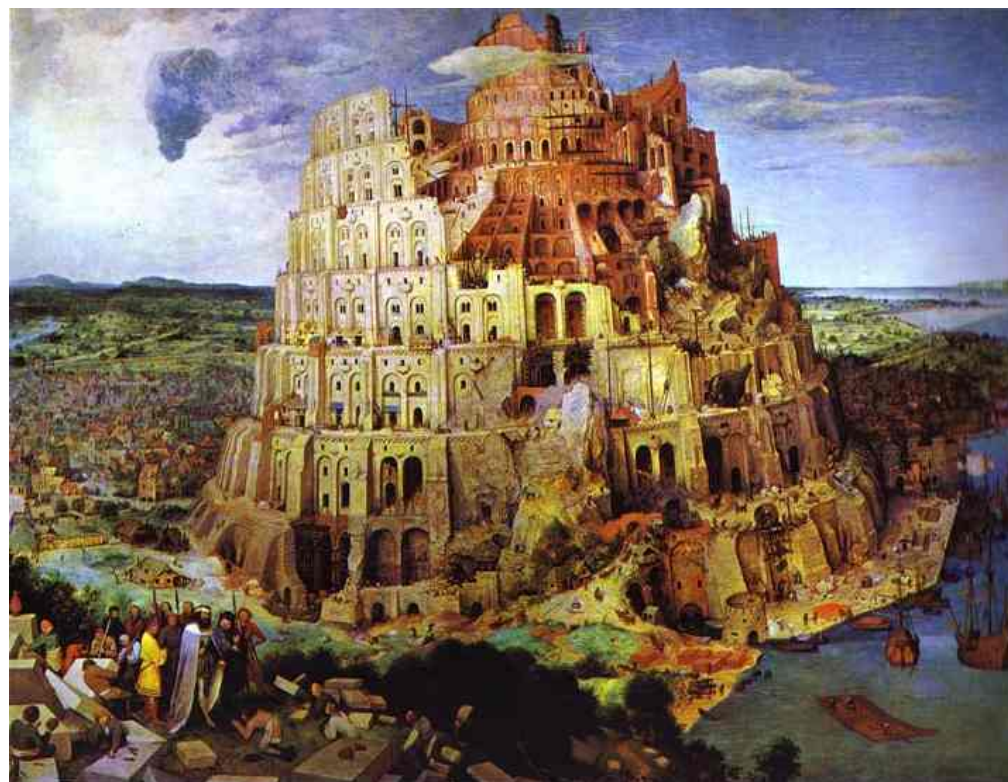
## GEO Data Sharing Principles

- **Full and Open Exchange of Data...Recognizing Relevant International Instruments and National Policies and Legislation**
- **Data and Products at Minimum Time delay and Minimum Cost**
- **Free of Charge or Cost of Reproduction for Research and Education**



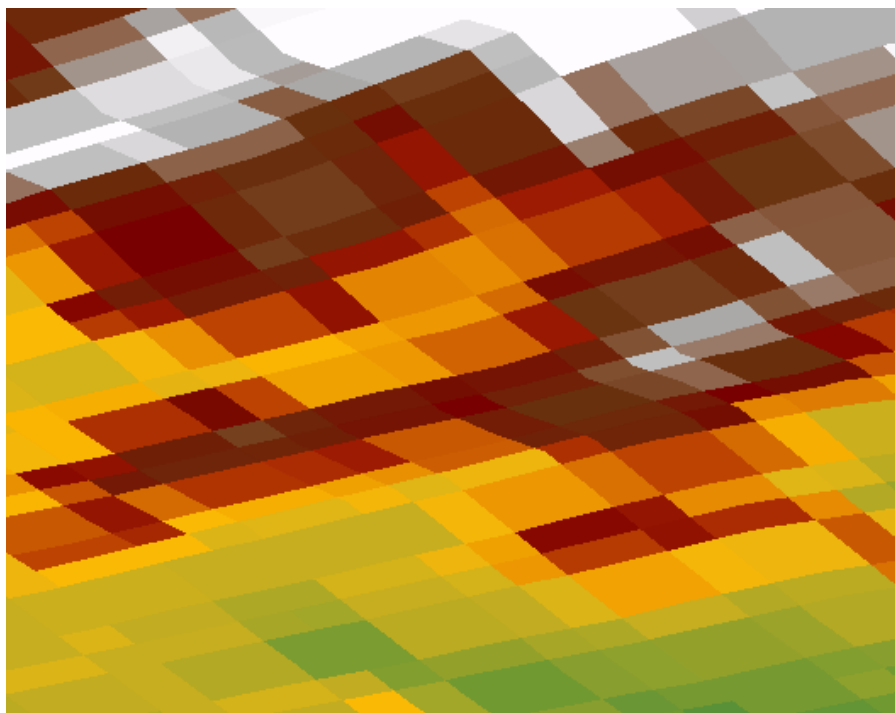


# Challenges

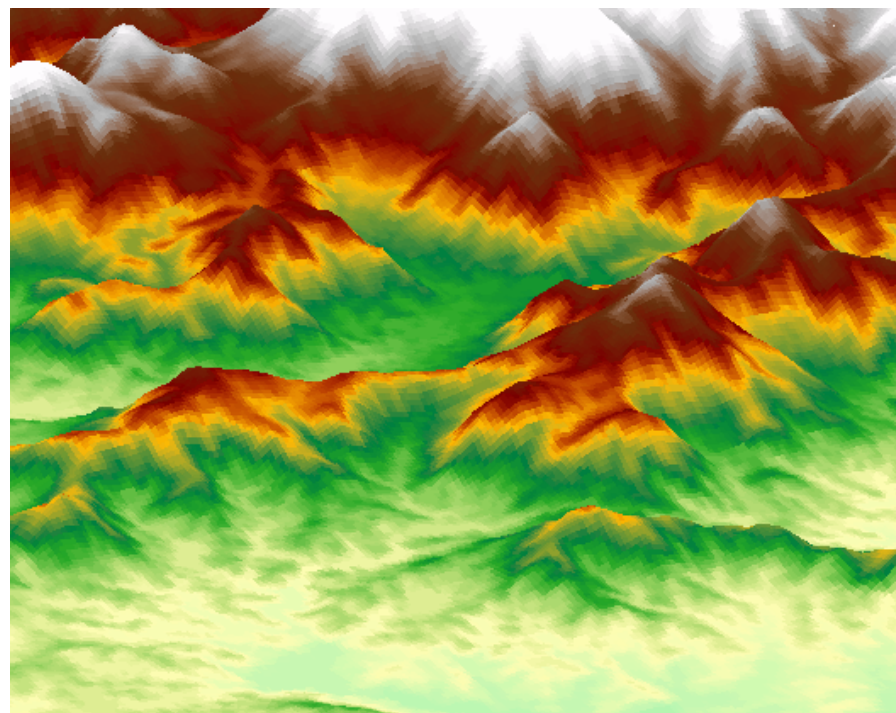




# National Security



90 m



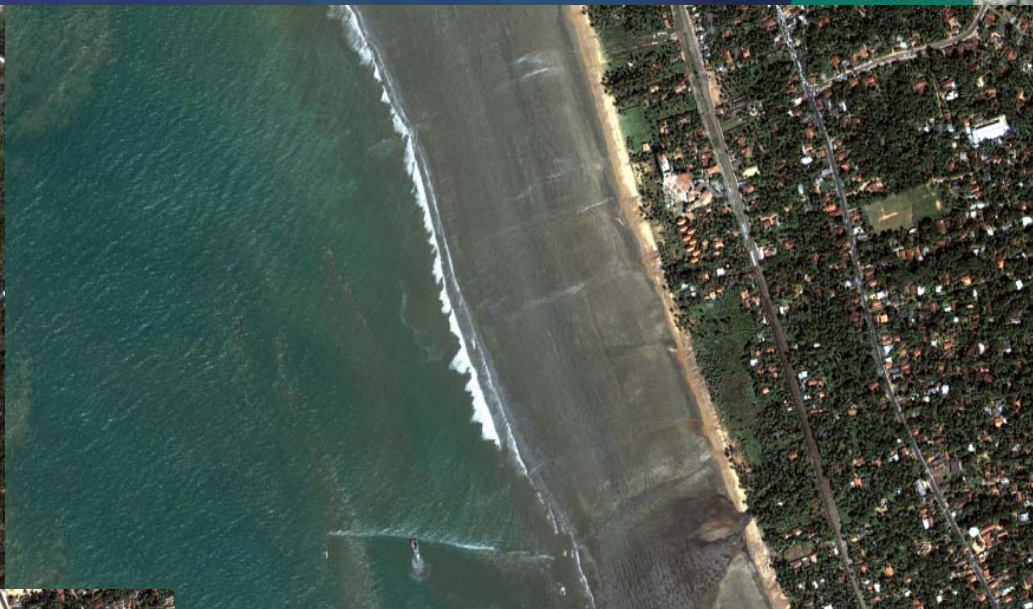
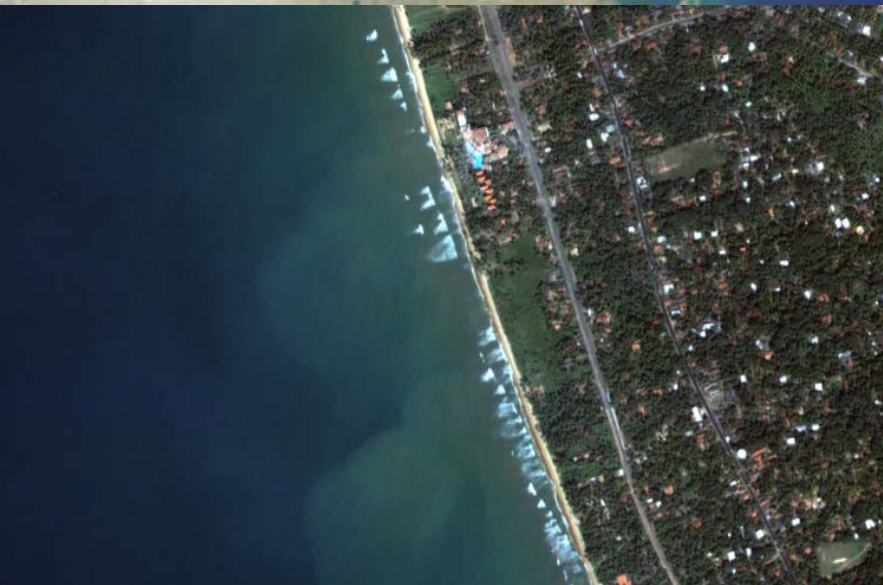
30 m





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# Commercial Imagery

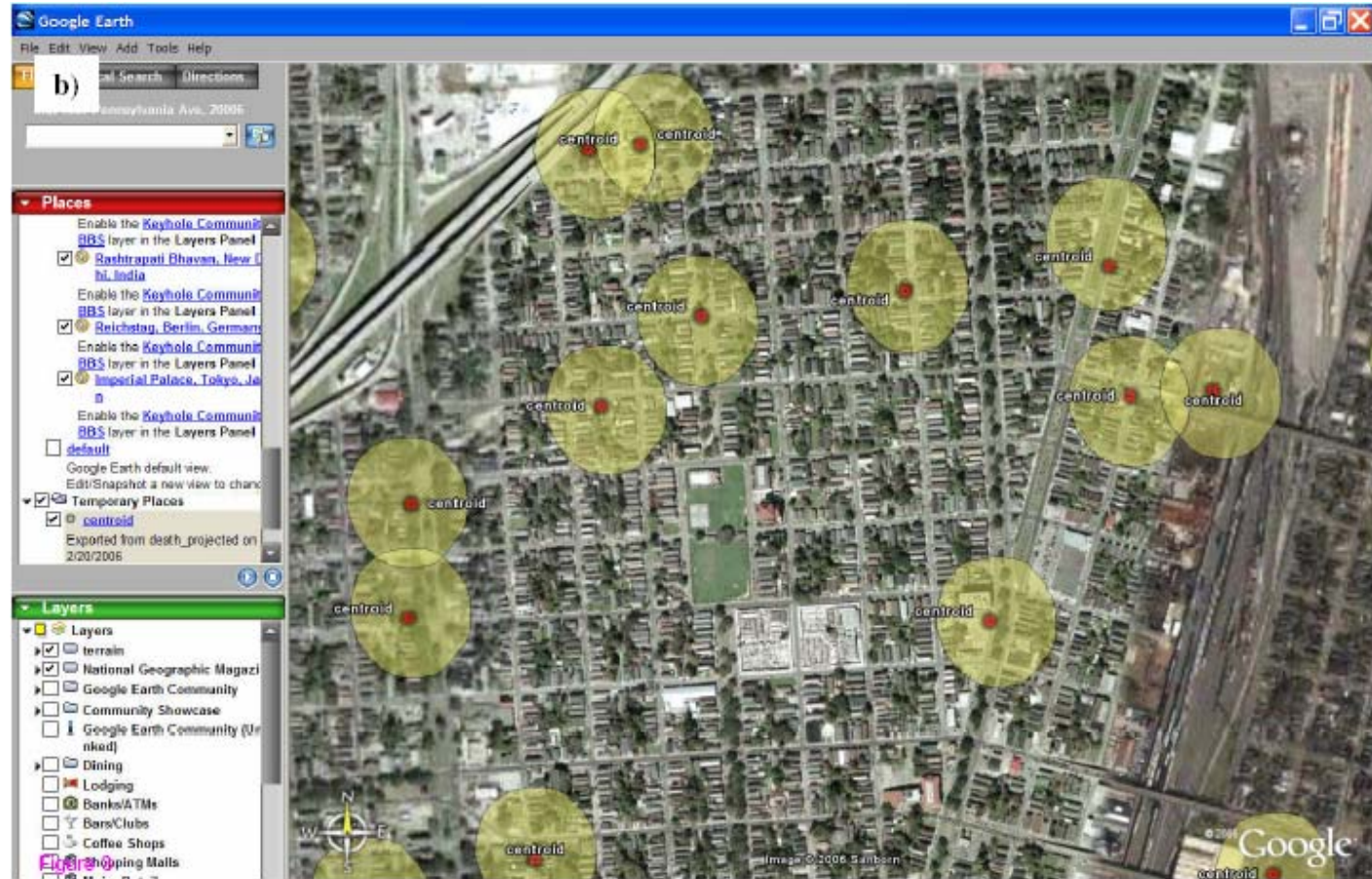






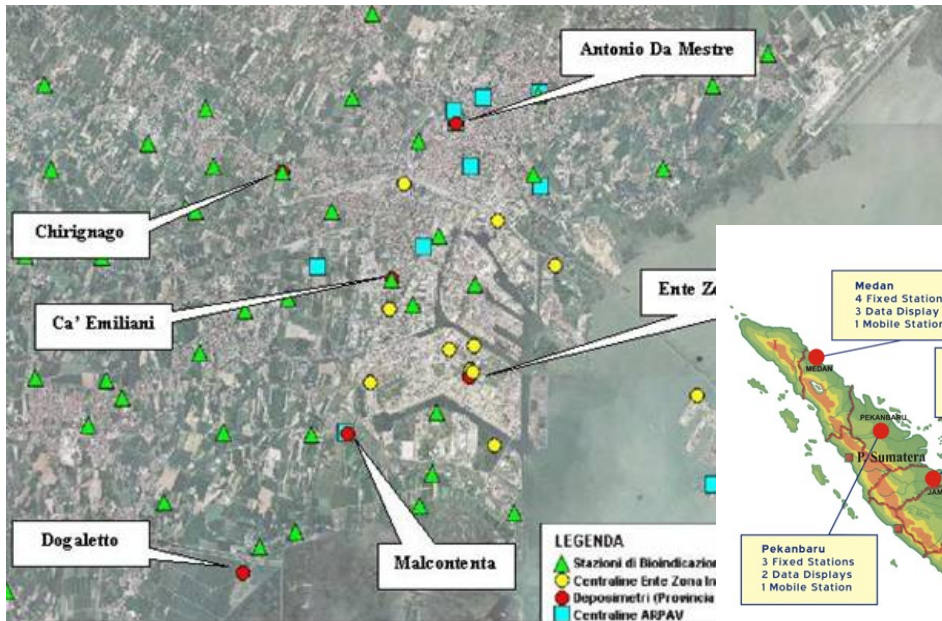


- Example: Use of Google Earth to help pinpoint households where deaths occurred due to Hurricane Katrina, using data from a generalized map



Paper in press in the *International Journal of Health Geographics* by A.J. Curtis, J.W. Mills, and M. Leitner, “Spatial confidentiality and GIS: re-engineering mortality locations from published maps about Hurricane Katrina”

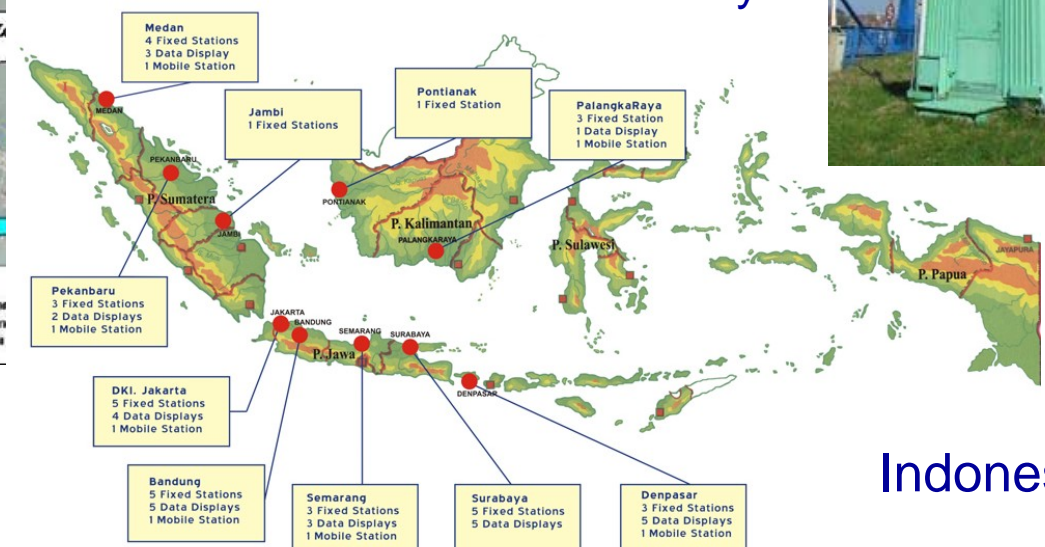
# Private Operators of Observing Systems



Venice, Italy

Urban  
Air Quality

Air pollution  
measurement  
station  
Emden,  
Germany



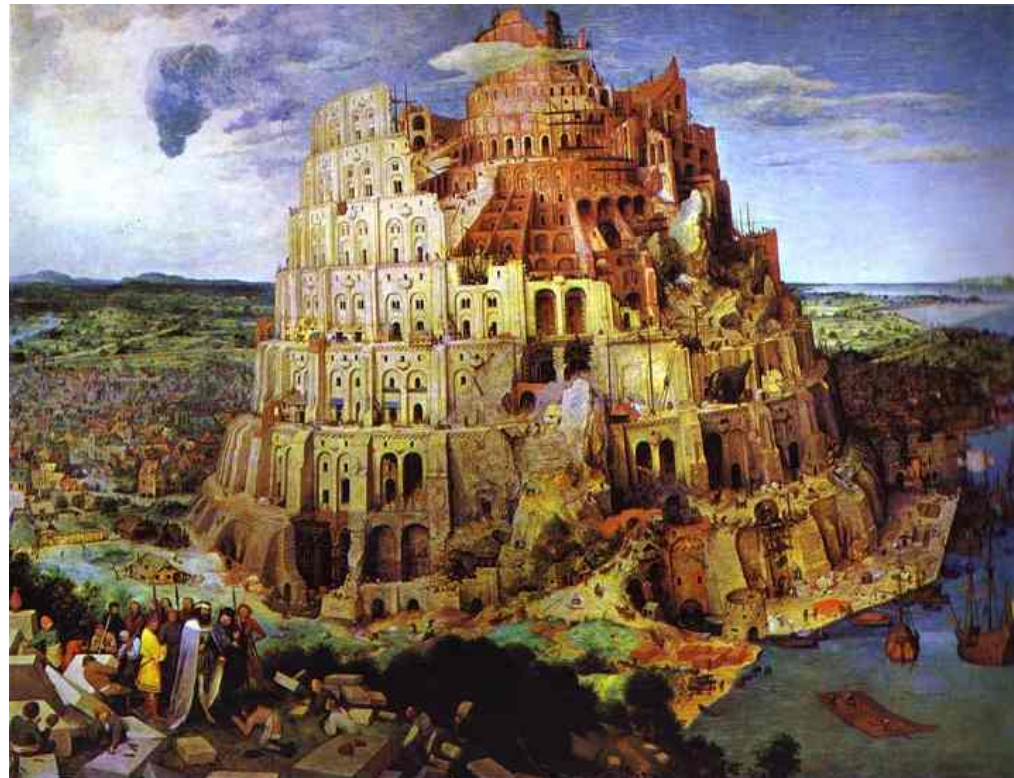
Indonesia





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# Opportunities



## The value-adding Private Sector

**EO Global turnover today:**

**Infrastructures: 2-3 B€**

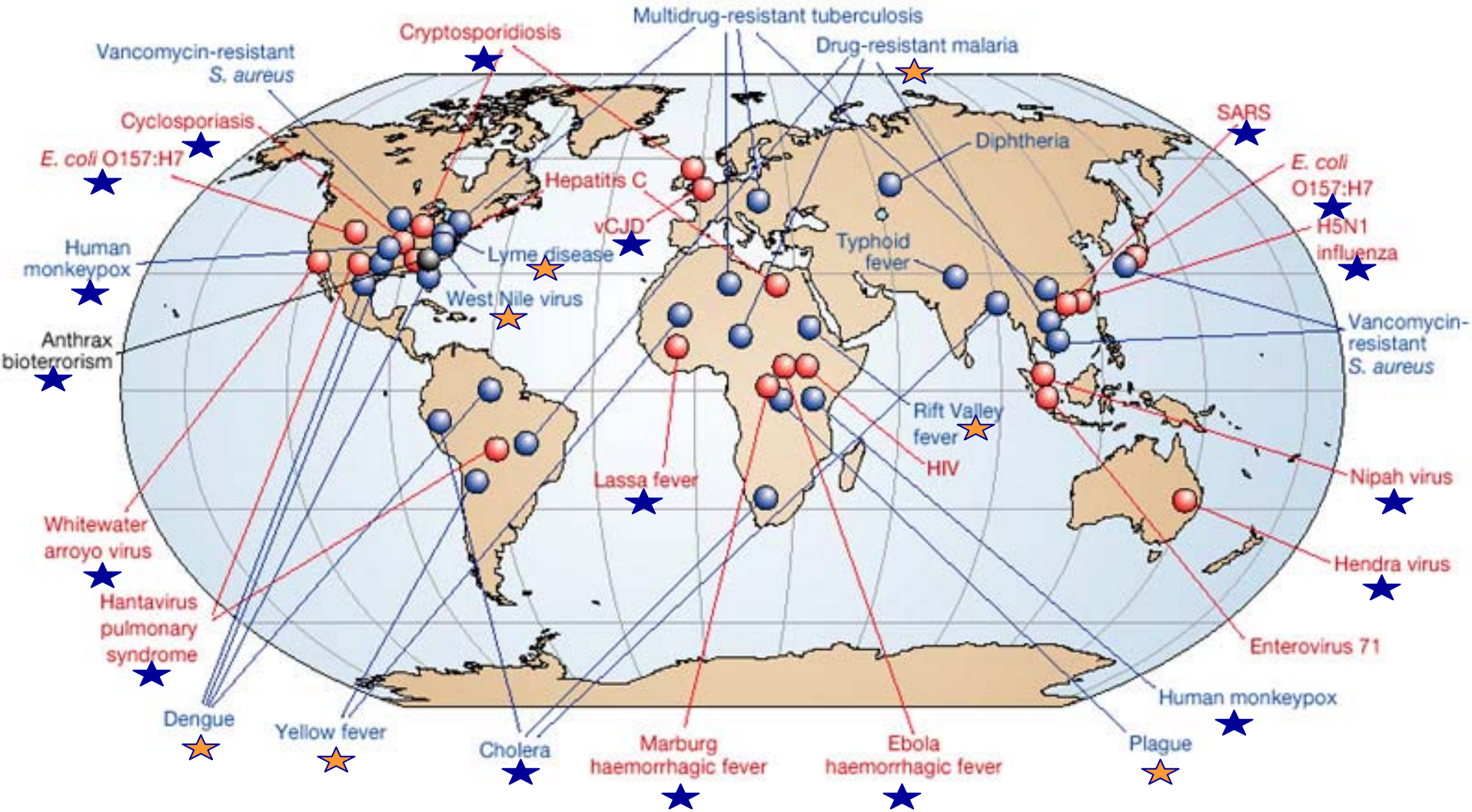
**Services: 1 B€**

**(should be compared with Broadcast:**

**Infrastructures: 5-10 B€**

**Services: 100 B€)**





**EMERGING**  
**RE-EMERGING**

**★ ZOOONOTIC**  
**★ VECTOR-BORNE**

\* Modified from Morens et al. 2004 *Nature* 430:242



# Information Providers and Web Services

Google Earth

File Edit View Add Tools Help

Fly To Local Search Directions

e.g. 37 d 25' 19.07"N, 122 d 05' 06.34 "W

Search

**Places**

- Fussen
- Trip 2 US
  - Universal Studios
  - Orlando Disney
  - Iaiagara
- Sightseeing
- default  
Google Earth default view
- Temporary Places

**Layers**

- Layers
- Keyhole Community BBS
- User-Supplied Collections
- Dining
- Lodging
- Banks/ATMs
- Bars/Clubs
- Coffee Houses
- Malls/Shopping Centers
- Major Retail
- Movie Rentals
- Grocery Stores

Pointer 34°49'05.01" N 142°32'58.60" E Streaming 100% Eye alt 8115.40 mi

© 2005 Google

Lodging Dining Roads Borders Terrain Buildings



# The Energy Sector

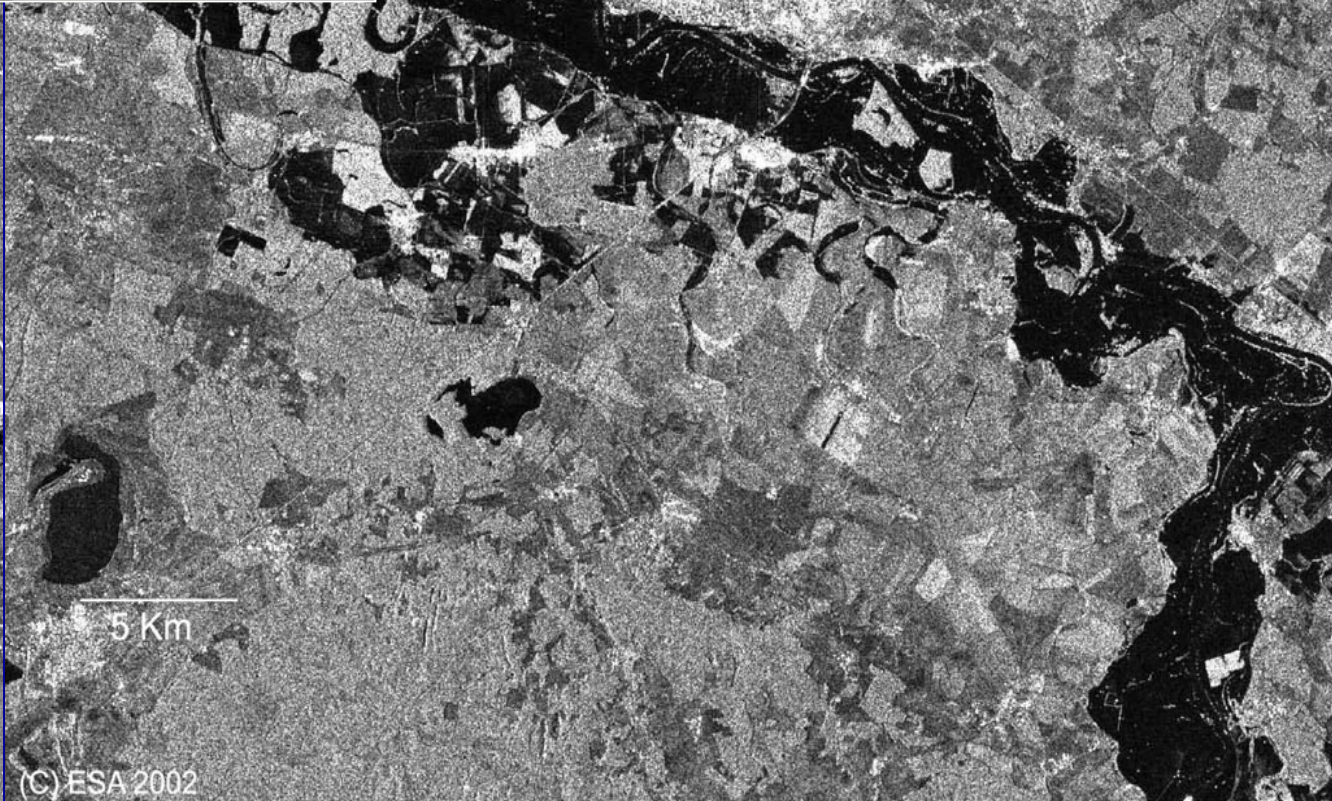
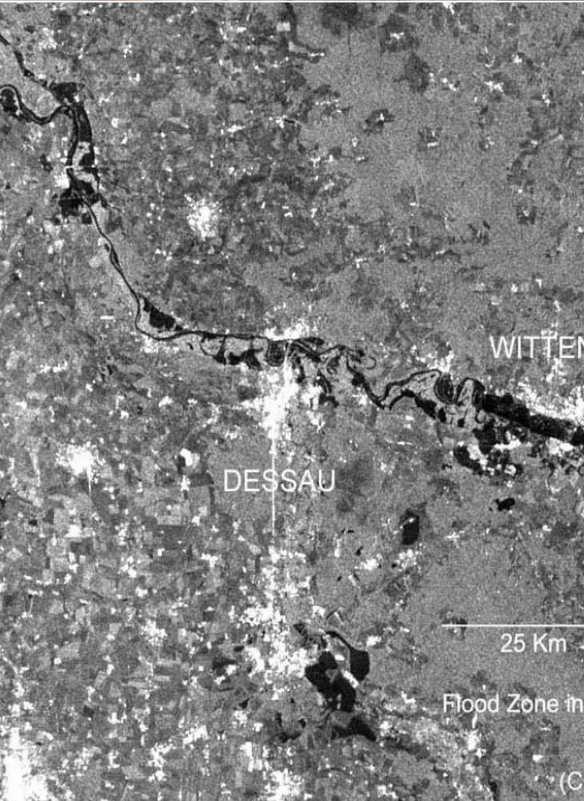
- Developing applications for monitoring renewable energy sources
- Improving forecasting of fluctuations and intermittency







# The Insurance Sector









**To Provide the Right Information, in the Right  
Place, at the Right Time, to the Right People  
to Make the Right Decisions.**

