



International
Office
for Water



United Nations
Educational, Scientific and
Cultural Organization



UNECE



The 7th World Water Forum

12-17 April 2015, Daegu-Gyeongbuk, KOREA

Thematic Process Session

**Session T 4.3.4 - Building trust : Facilitating data and
Information exchange between the riparian countries in
transboundary basins**

Thursday 16 April, 14h40-16h40 - Daegu EXCO, room DEC_304

Round table 1: Developing Innovative monitoring

Perspectives of development of Earth Science Observation

for improving the production of data necessary

for transboundary water resource management

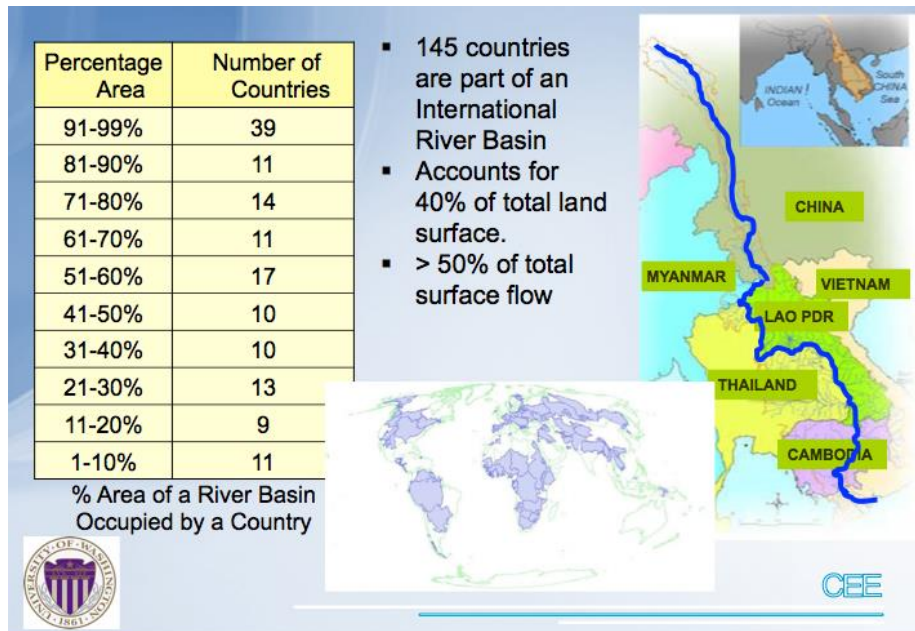
Mrs. Selma CHERCHALI

CNES Headquarters



Concerning...

- » The complexity and heterogeneity of the world's hydrological systems
- » **The needs of efficient water management at the drainage basin scale**
- » **Current questions on cross border water sharing**



Courtesy: Faisal Hossain

- » The rarity of resources in broad regional contexts
- » Population growth and “water dependence” for economic development
- » The cost of establishing and maintaining extended in situ networks

Space data for Water

The added value...

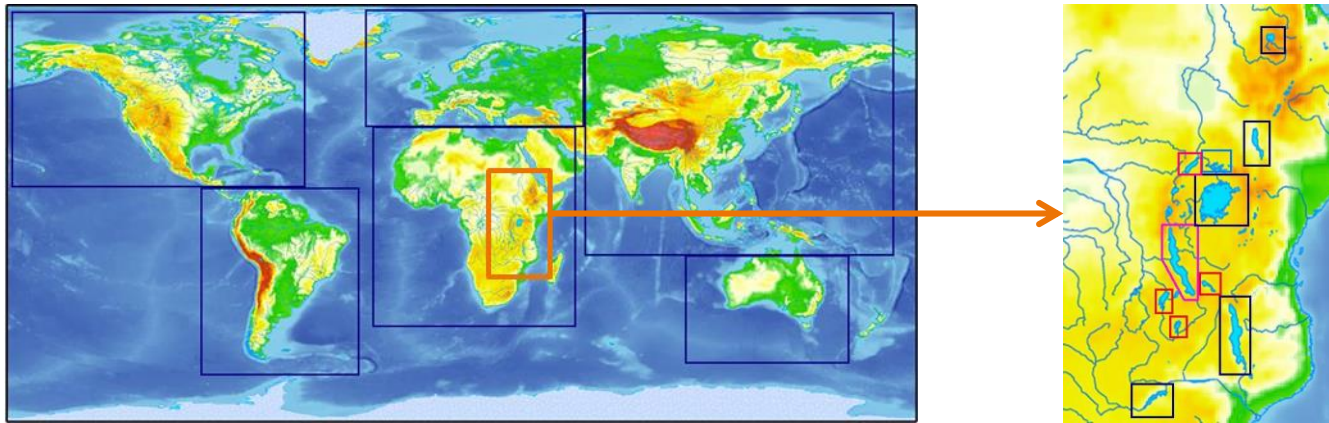
- Bringing measurements at different scales: from large to small drainage basins
 - » Radar altimetry and imagery are used to monitor the flooded areas and the water levels in the reservoirs, rivers.
- Improving our understanding of the distribution and monitoring of water in the various parts of land surfaces
- Provide an overview for decision support
- Supplement in-situ measurements, and occasionally replace them

It would seem necessary to encourage the establishment of global space and in-situ databases with some requirements

- Simple and free access
- Development of Standards for the metadata
- User training
- Guaranteed continuity in the space system
- Real time operational systems

Example: Hydroweb Database

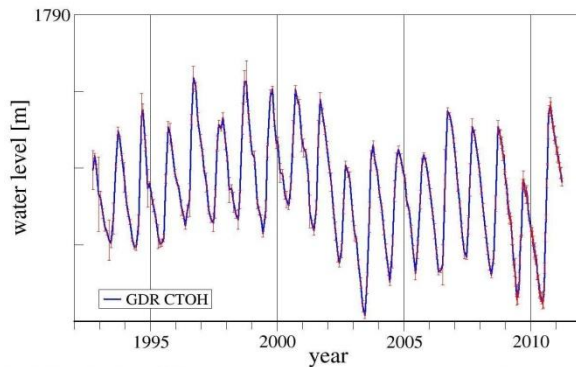
- **Hydroweb** provides heights, surfaces and volumes for about 230 lacs in the world and for more than 1400 SV for 20 big river basins. And in the future, this capacity of coverage will be increased for more lacs and rivers



HYDROWEB

Hydrological database : www.hydroweb.legos.obs-mip.fr

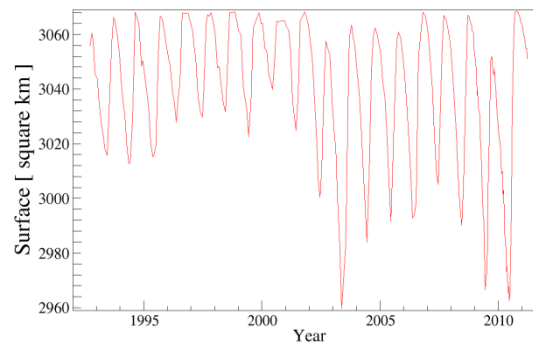
Lake Tana lat=11.40 lon=37.20



HYDROWEB

Hydrological database : www.hydroweb.legos.obs-mip.fr

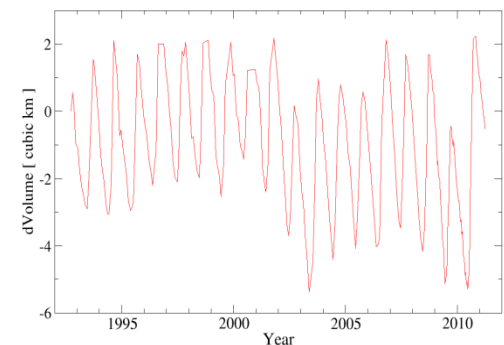
Tana surface variation



HYDROWEB

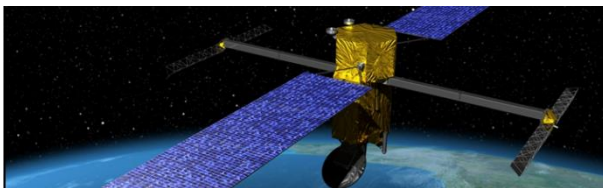
Hydrological database : www.hydroweb.legos.obs-mip.fr

Tana volume variation



Space context in the future

- 2009 : SMOS
- 2015 : SMAP
- 2012 : Pléiades 1,2
- 2013 : Landsat 8
- 2015 : Sentinels 1,2 (Copernicus infrastructure 2030 ...)
- 2013 : Jason-2 (LRM Ku / 10d) & AltiKa (LRM Ka / 35d)
Cryosat-2 (LRM+SAR+SARIn / 369d)
- 2015 : Sentinel-3A (SAR Ku / 27d)
Jason-3 (LRM Ku / 10d) -> JASON-2 interleaved
- 2016 : Sentinel-3B (SAR Ku / 27d interleaved)
ICESat-2 (laser / 90d)
- 2018 : JACS (SAR Ku / 10d) -> JASON-3 interleaved
- 2020 : **SWOT** (swath Interf. Ka + LRM Ku 2x / 22 d)



HYDROLOGY

- Water Storage in lake, river and wetlands
- Water Storage Variation
- Rivers Discharge estimation

... which
allow

OCEANOGRAPHY

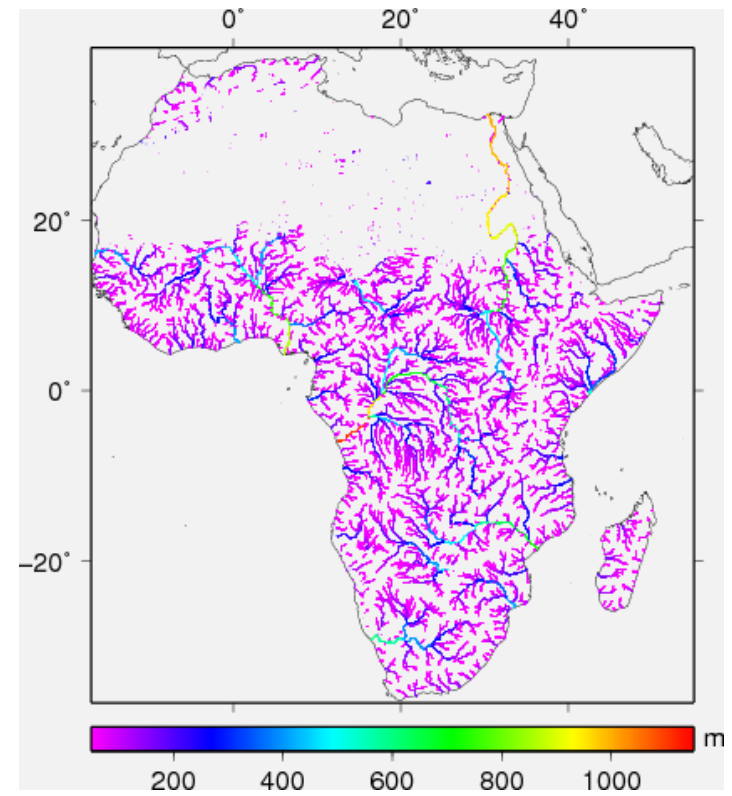
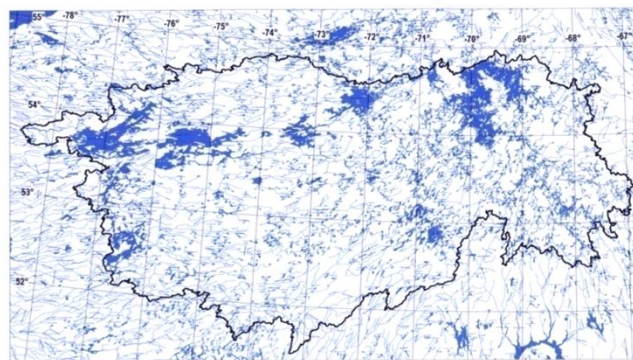
- Coastal currents
- Representation of eddies at mesoscale
- Global ocean altimetry at high resolution

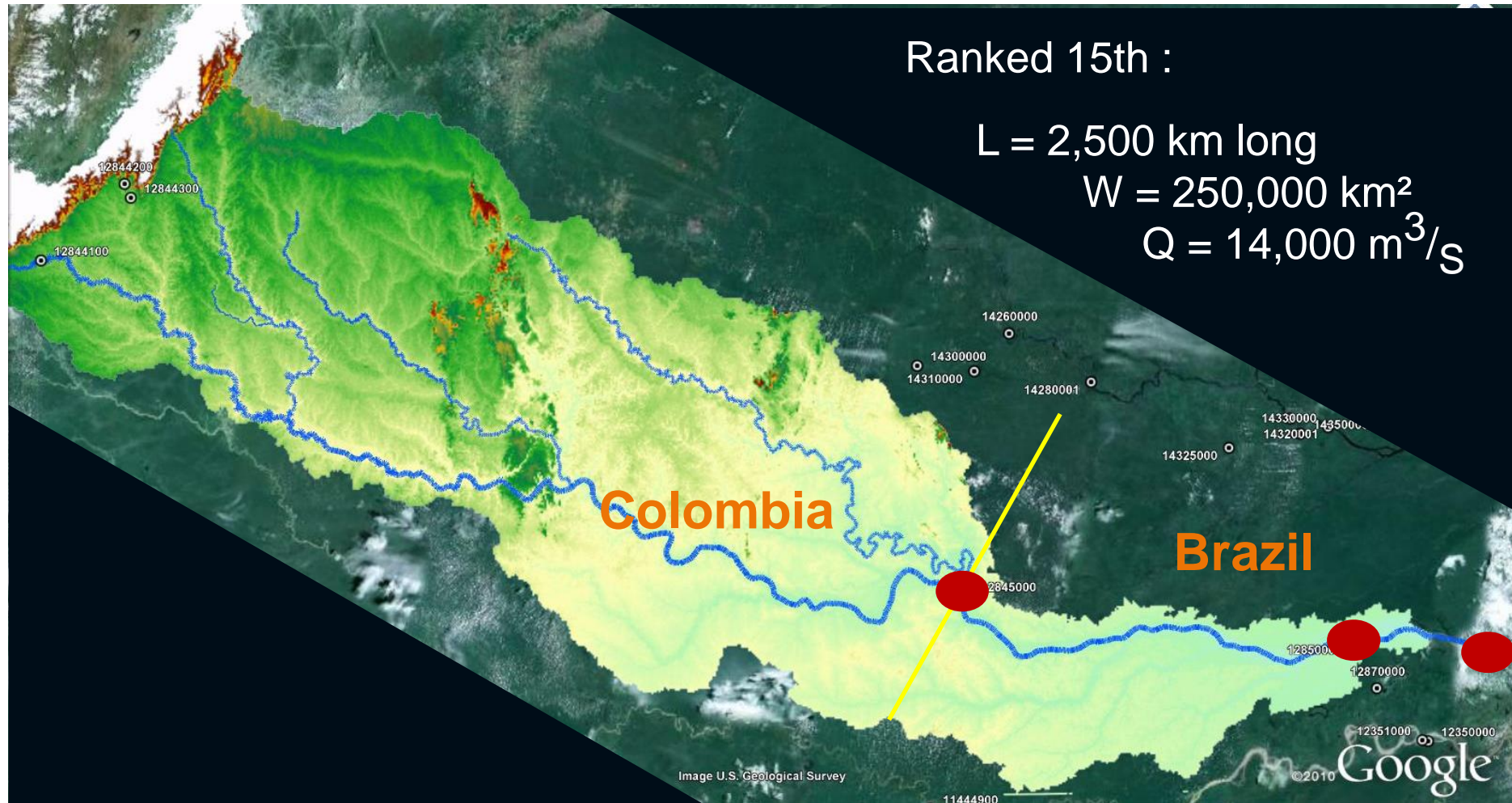
Which allow

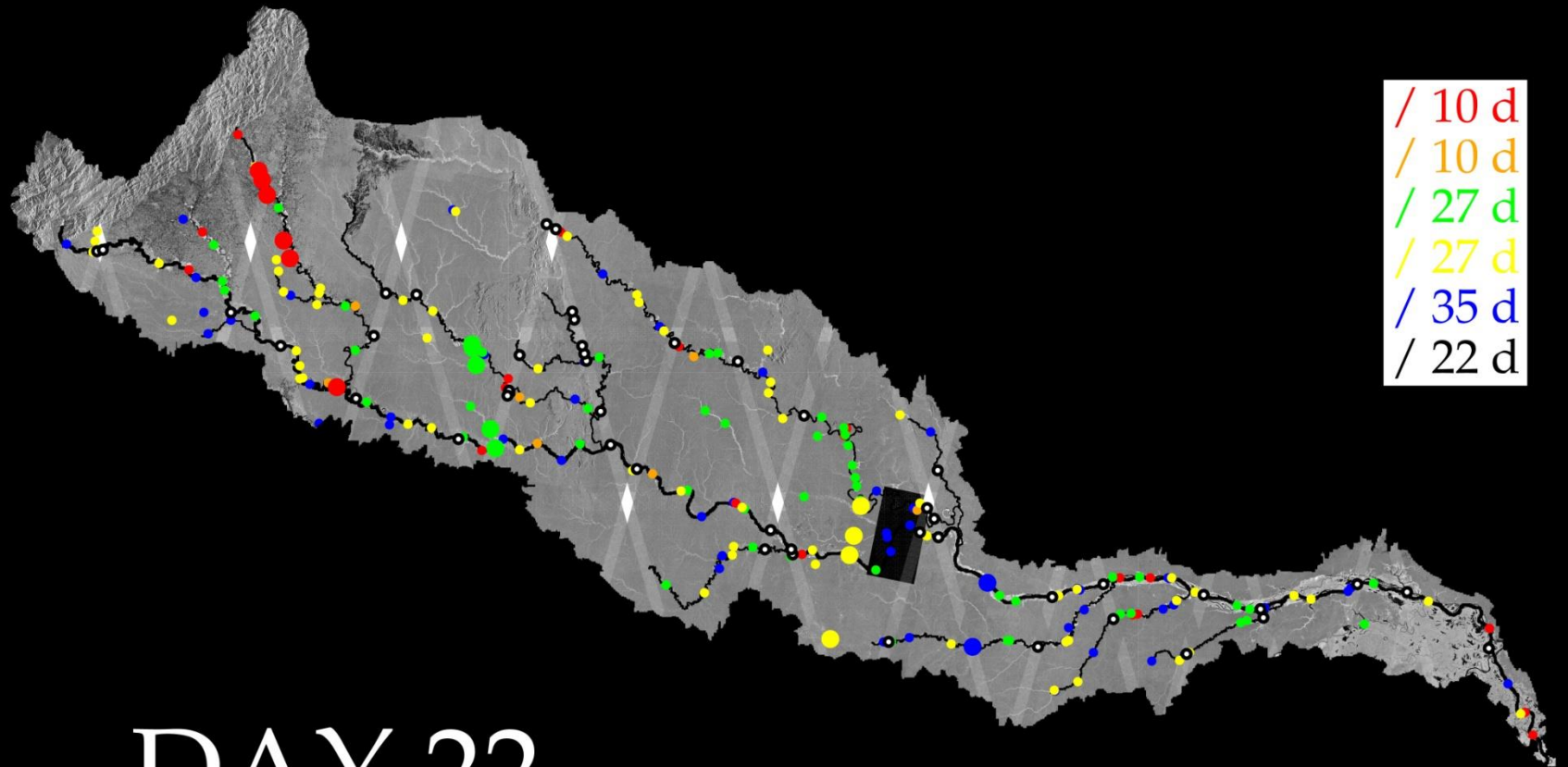
1. **Transboundary rivers management (international & interregional)**
2. A better modelling of flood
3. Clear water management for urban, industrial and agricultural
4. **Hydroelectricity production management**
5. Prevention of the propagation of epidemics
6. **Fluvial navigation support**
7. Integrated management for estuaries

7. Climate and weather forecast with better accuracy
8. Marine operations
9. Fisheries
10. Oil And Gas Offshore support

In-situ and RA cannot measure this







DAY 22

SWOT / altimétrie Nadir

Topex

