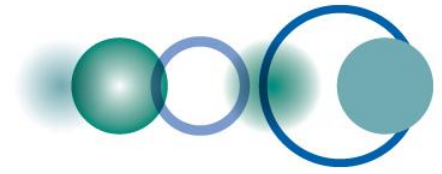


The Global Earth Observation System of Systems. Ongoing Developments and Priorities.

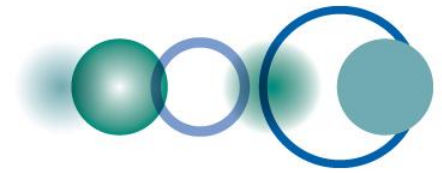
José Achache
Executive Director



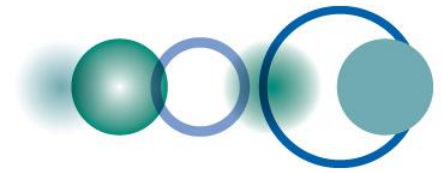


THE GLOBAL EARTH OBSERVATION SYSTEM OF SYSTEMS

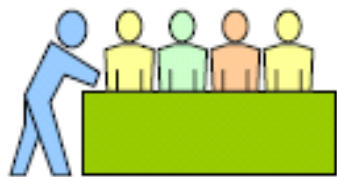




- Connect Observing Systems and Ensure Access to Data**
- Integrate Observations to Develop Information Systems (Water, Carbon, Biodiversity)**
- GEOSS for AFRICA**



Connect Observing Systems and Ensure Access to Data



Standards and Interoperability Forum

GEOSS Common Infrastructure

Registries

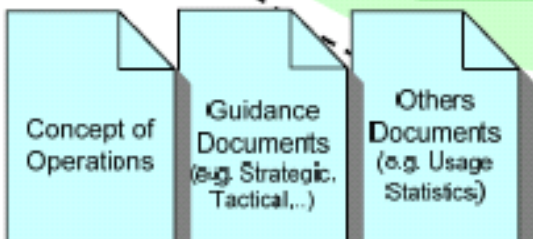
GEOSS Component and Service Registry ✓

GEOSS Standards and Interoperability Registry ✓

Best Practices Wiki ✓

User Requirements Registry

Registration



Concept of Operations

Guidance Documents (e.g. Strategic, Tactical...)

Others Documents (e.g. Usage Statistics)

Main GEO Web Site

Web browser

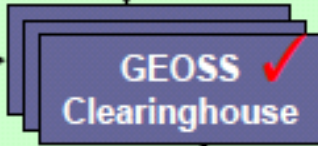
Applications



User

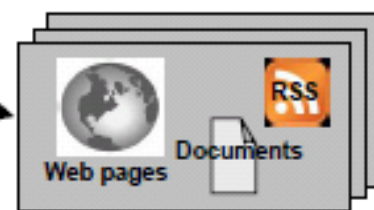


GEO Web Portal ✓



GEOSS Clearinghouse ✓

Unregistered Community Resources



Web pages

Documents

RSS

Clearinghouse provides means to connect to registered services via metadata from catalogues

Registered components and services

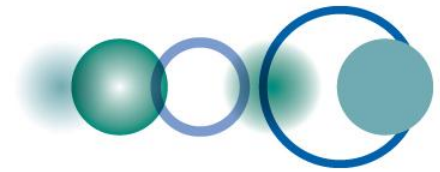


Websites/ Portals (Components)

Services

Data and Service Catalogues

Catalog queries



GEO Portal (ESRI, Compusult, ESA)


GEOPortal - GEO-Portal - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.geoportal.org/web/guest/geo_home

BBC IHT igwco wmo wmo-portal CSU ATS GTN-R Google Translate









GEO - Group on Earth Observations | GEOPortal - GEO-Portal


GEO GROUP ON EARTH OBSERVATIONS | **GEO Portal** | **esa** | 

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Provide Feedback to GEO

BROWSE RESOURCES BY SOCIAL BENEFIT AREAS

-  **DISASTERS**
-  **HEALTH**
-  **ENERGY**
-  **CLIMATE**
-  **WATER**
-  **WEATHER**
-  **ECOSYSTEMS**
-  **AGRICULTURE**



Europe Asia


South America Africa Africa

The planet's 2nd largest continent, includes (53) individual countries. It contains the Nile River, the world's longest,

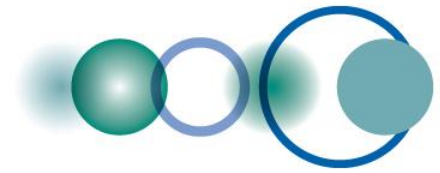
BREAKING NEWS

HURRICANES IN HAITI, EXTENSION OF CALL

On 11 September charter activation 220 was extended for a third time to cover the area hit successively by Hurricane Gustav, Hurricane Hanna, and Hurricane Ike, as the city of Gonaives remained under water and media reported about 500 dead.

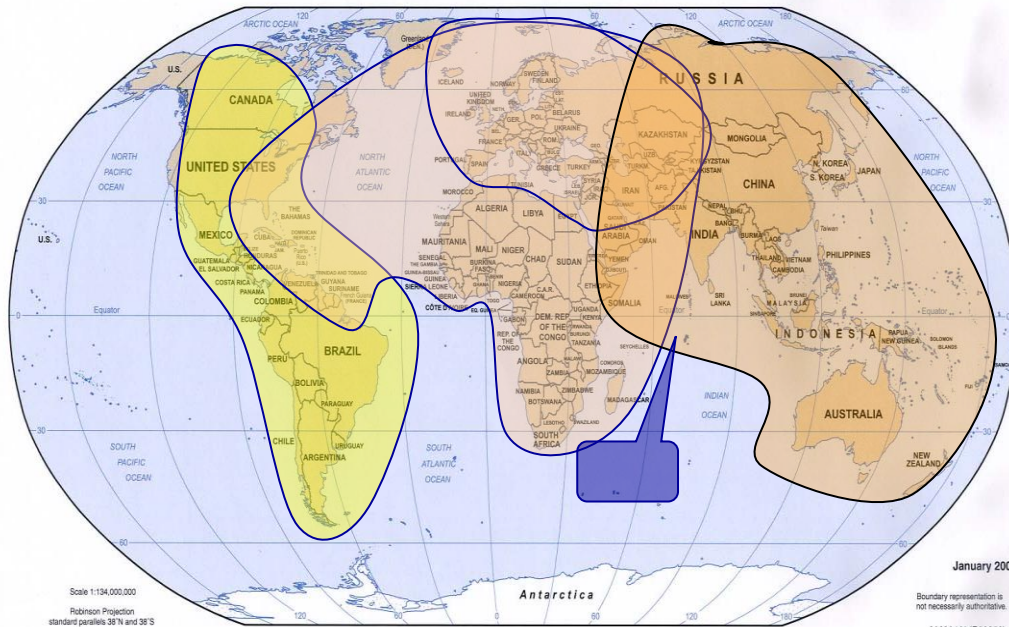


[More...](#)



GEONETCast

A Space-based Dissemination System for Data, Products, Services and Early Warning

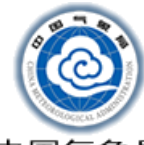


Global Coverage

Contributors



EUMETSAT



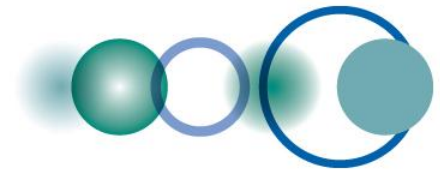
CMA

中国气象局
www.cma.gov.cn

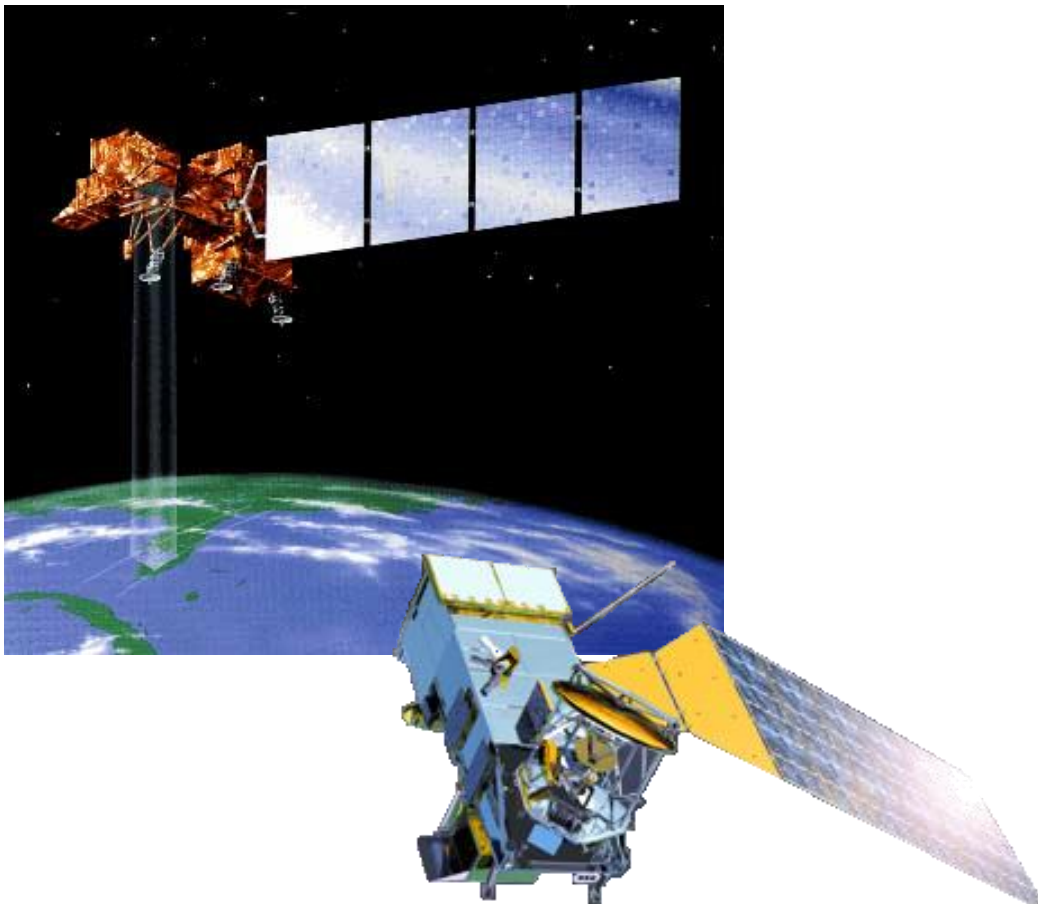


NOAA

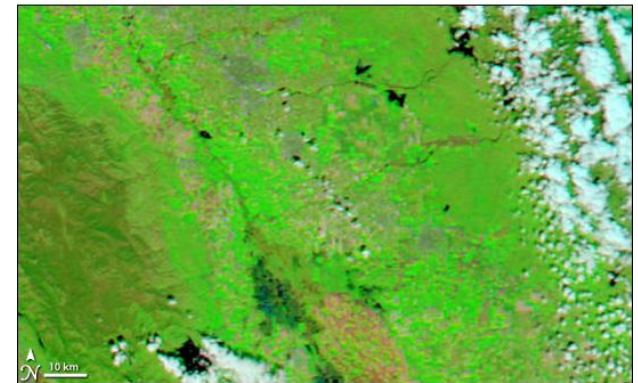
ROSHYDROMET



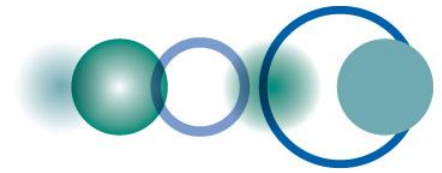
Free and Open Access to the LANDSAT Archive (USGS - USA)



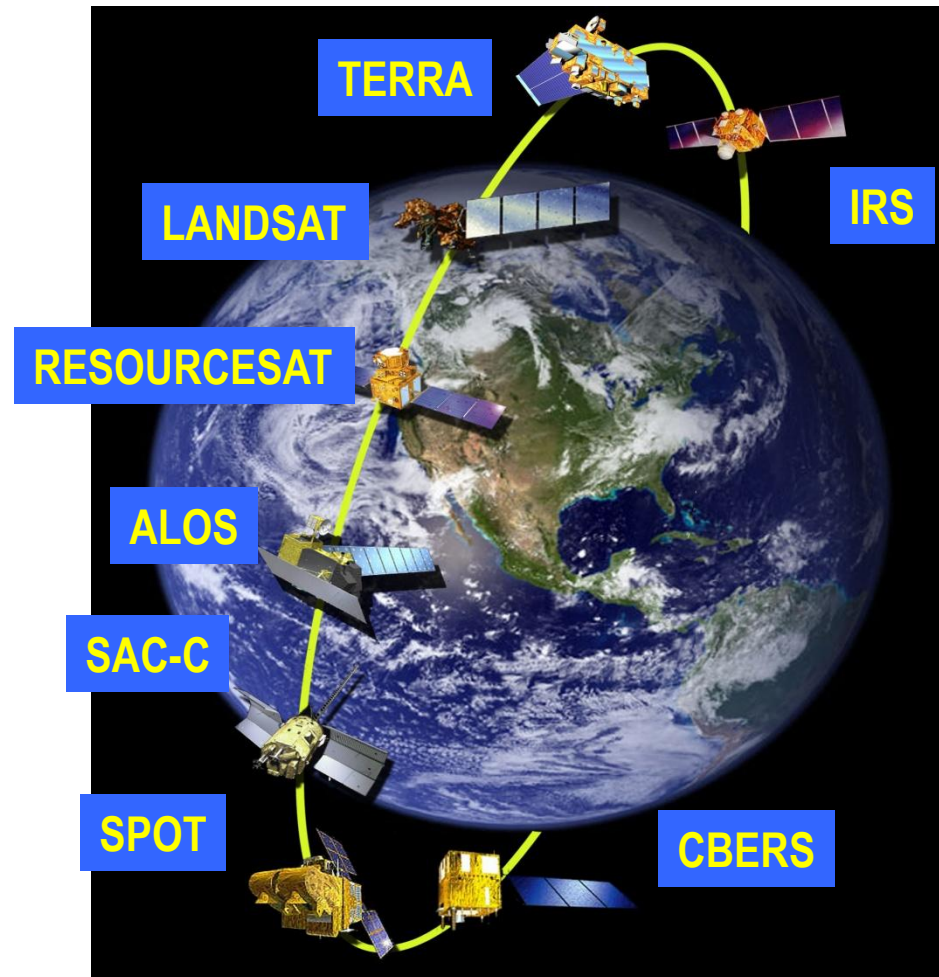
April 13, 2006

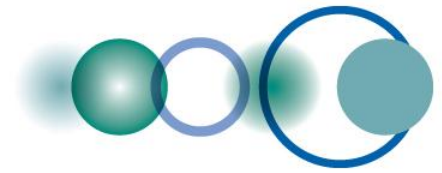


March 19, 2006



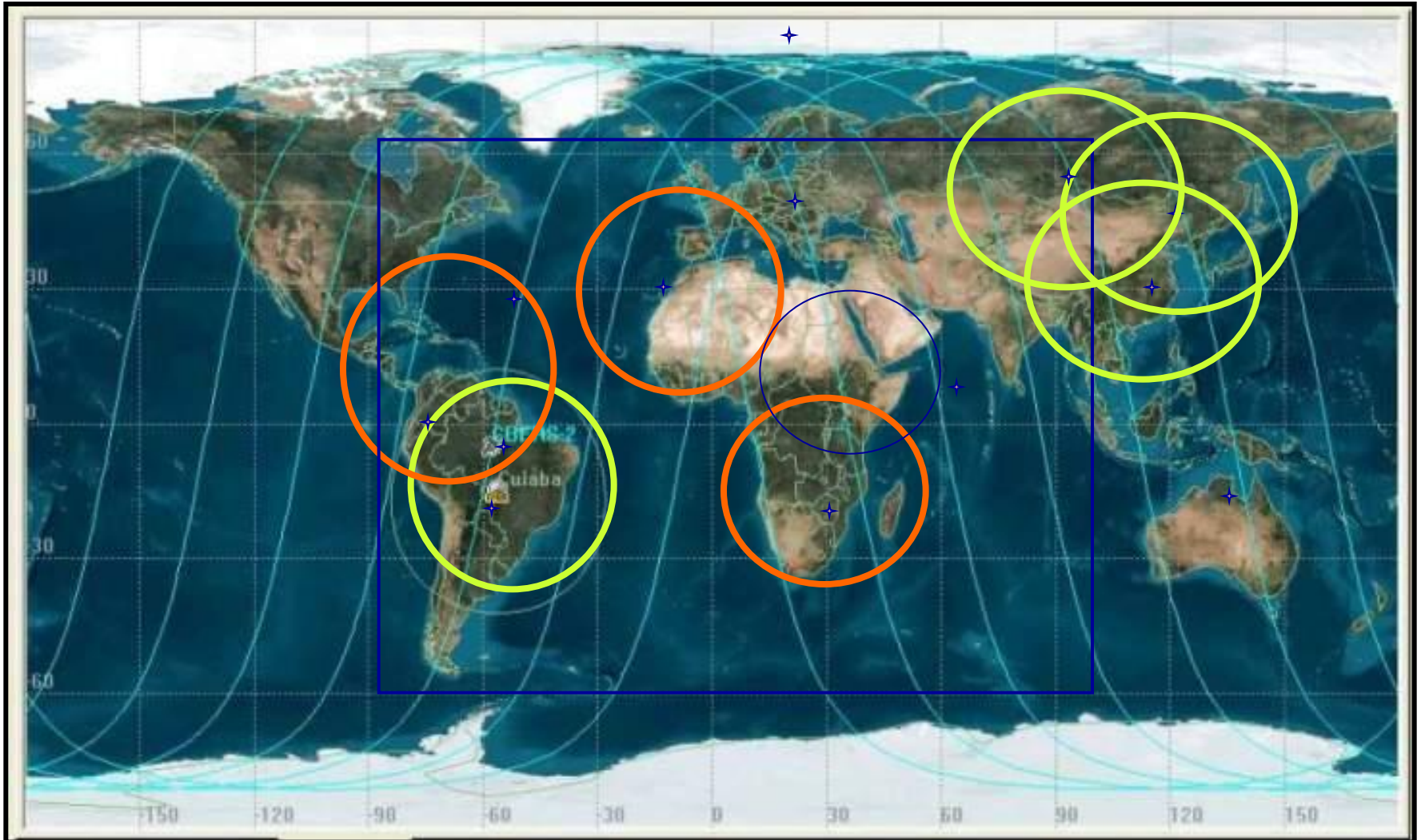
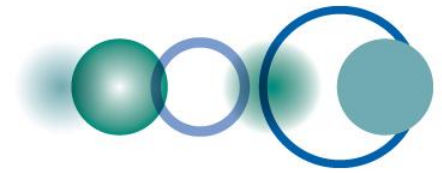
Access to Imagery with the Land Surface Imaging Constellation (CEOS)

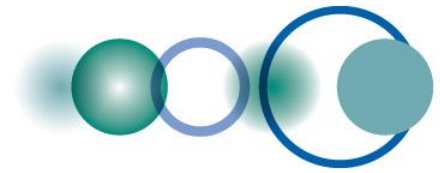




Free and Open Access to CBERS Data in Africa and the Caribbean (China, Brazil, RSA, Spain, Egypt)



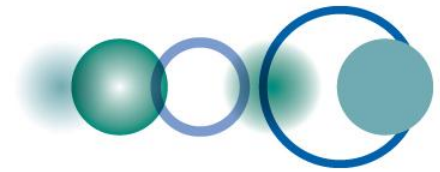




Extending Charter on Space and Major Disasters Access

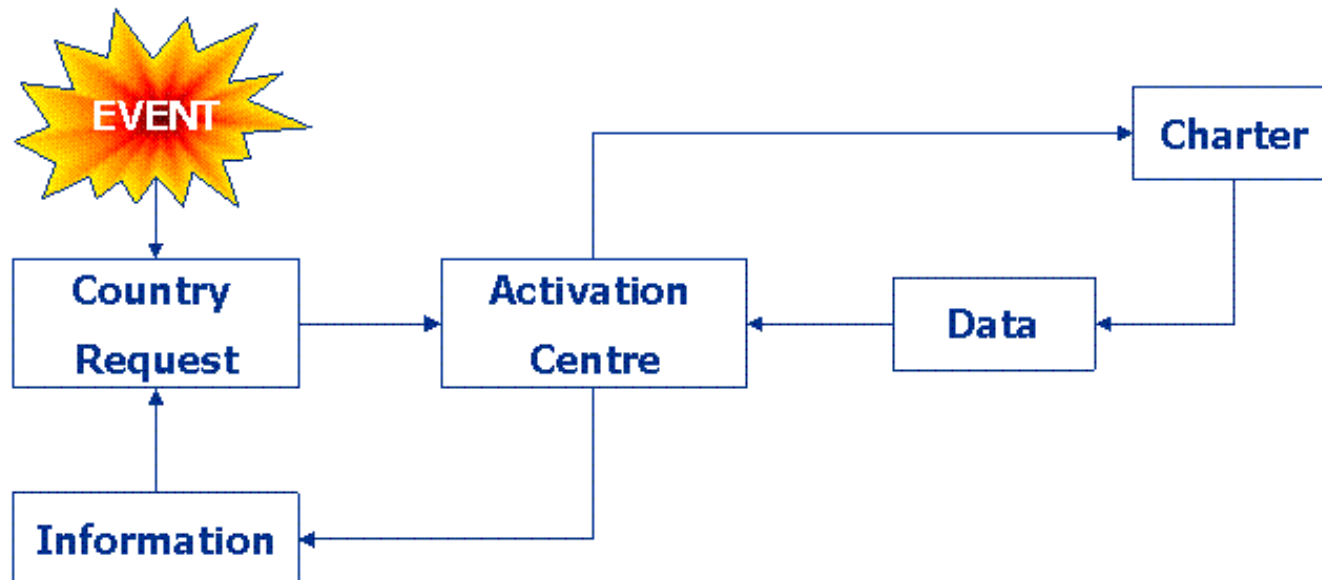
In response to GEO request for access for all GEO Members to Charter, the Charter Board unanimously endorsed the principle of « universal access » for all states.

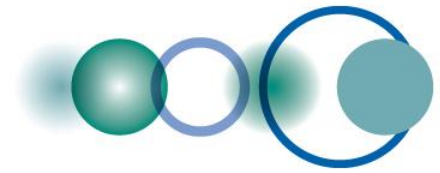
GEO is working to define the mechanisms for providing Charter access to all GEO Members (47 GEO Members do not have an Authorized User to activate the Charter).



A Regional Hub Approach: Sentinel Asia

The Regional Center will activate the Charter on behalf of Countries in the region. Regional Center could offer Project management and value adding.

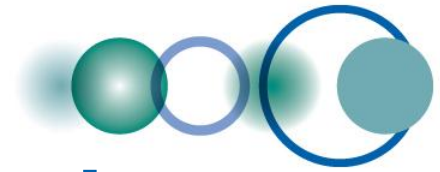




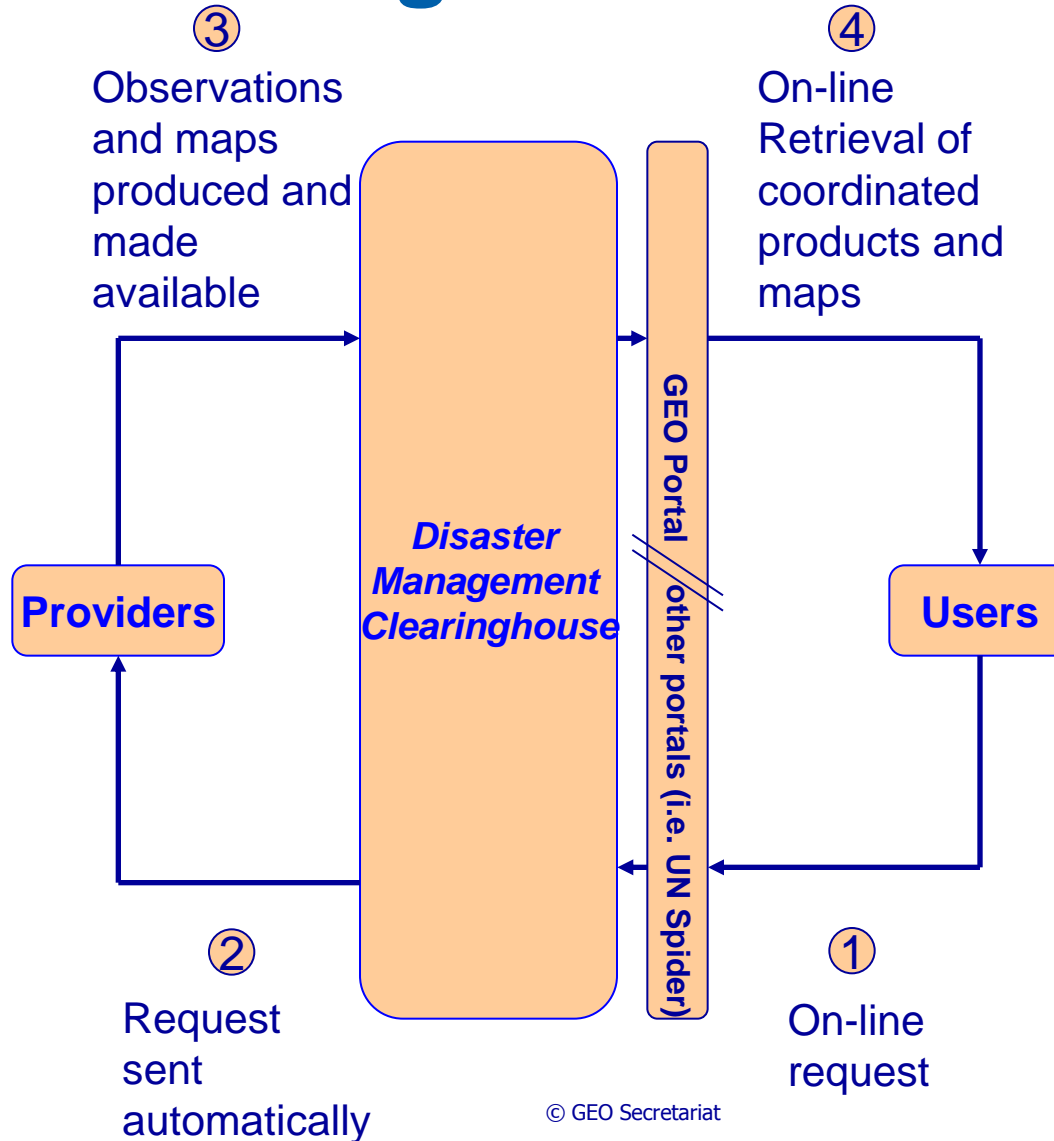
Disaster Management Clearinghouse (DLR – Germany, UN-SPIDER)

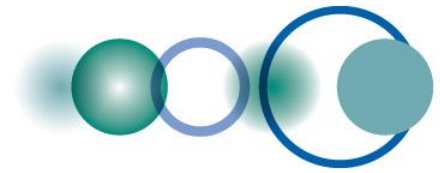
A centralized source of information for disaster management providing *integrated* and *interoperable* observations and derived maps for:

- 1. Vulnerability/Risk assessment:** Relevant observations and derived maps will be made available.
- 2. Crisis Management:** Users will be able to make requests on-line. The GEO Disaster Management Clearinghouse will generate maps and other products and publish them through the GEO Portal.
- 3. Related Forecasts:** Products in support of disaster management will be made available through the Clearinghouse (i.e. weather, population migration, fire risk etc).

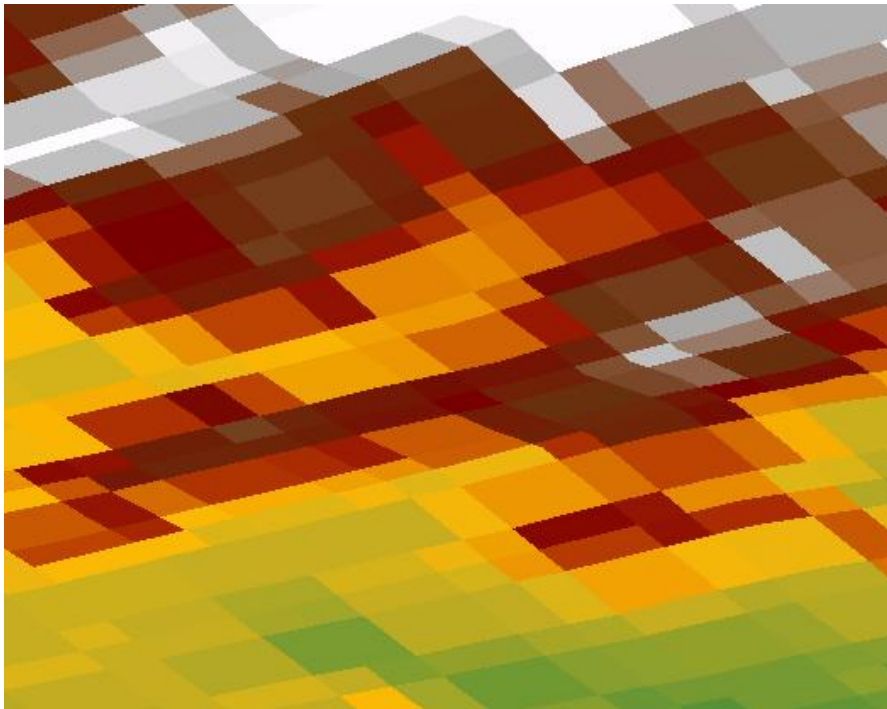


Disaster Management Clearinghouse



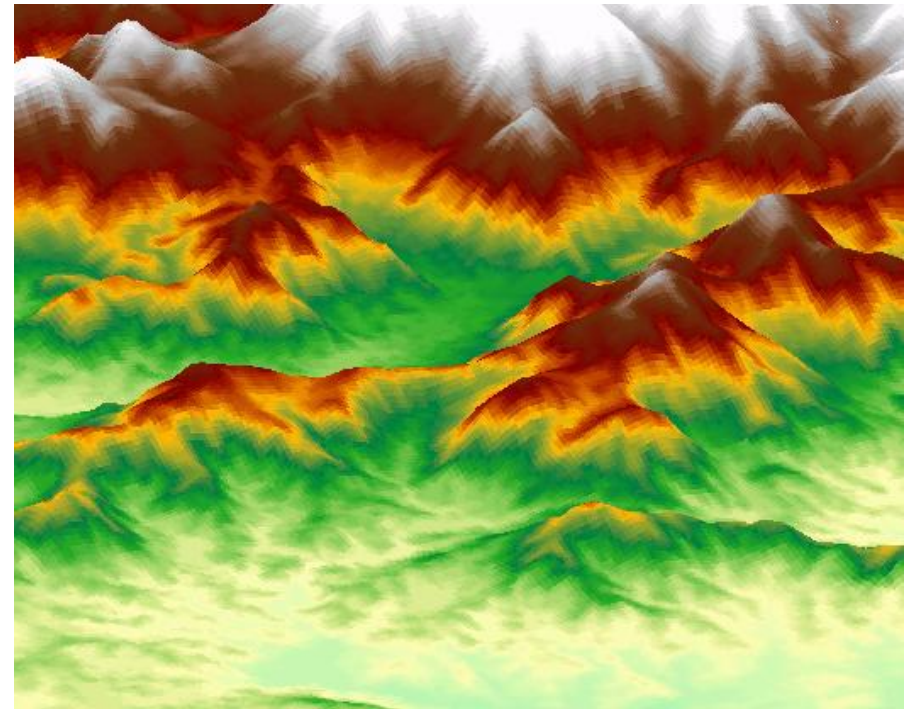


A global DEM at 30 meter resolution derived from ASTER data, by US and Japan, by end of 2008

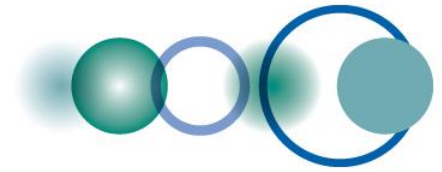


90 m

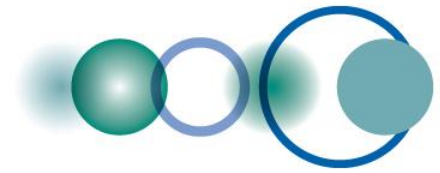
Comparison courtesy of V. Gorokhovich, CIESIN



30 m

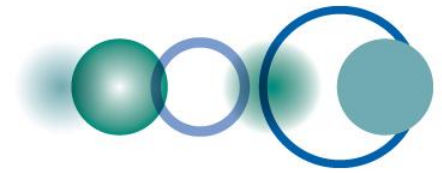


Integrate Observations to Develop Information Systems

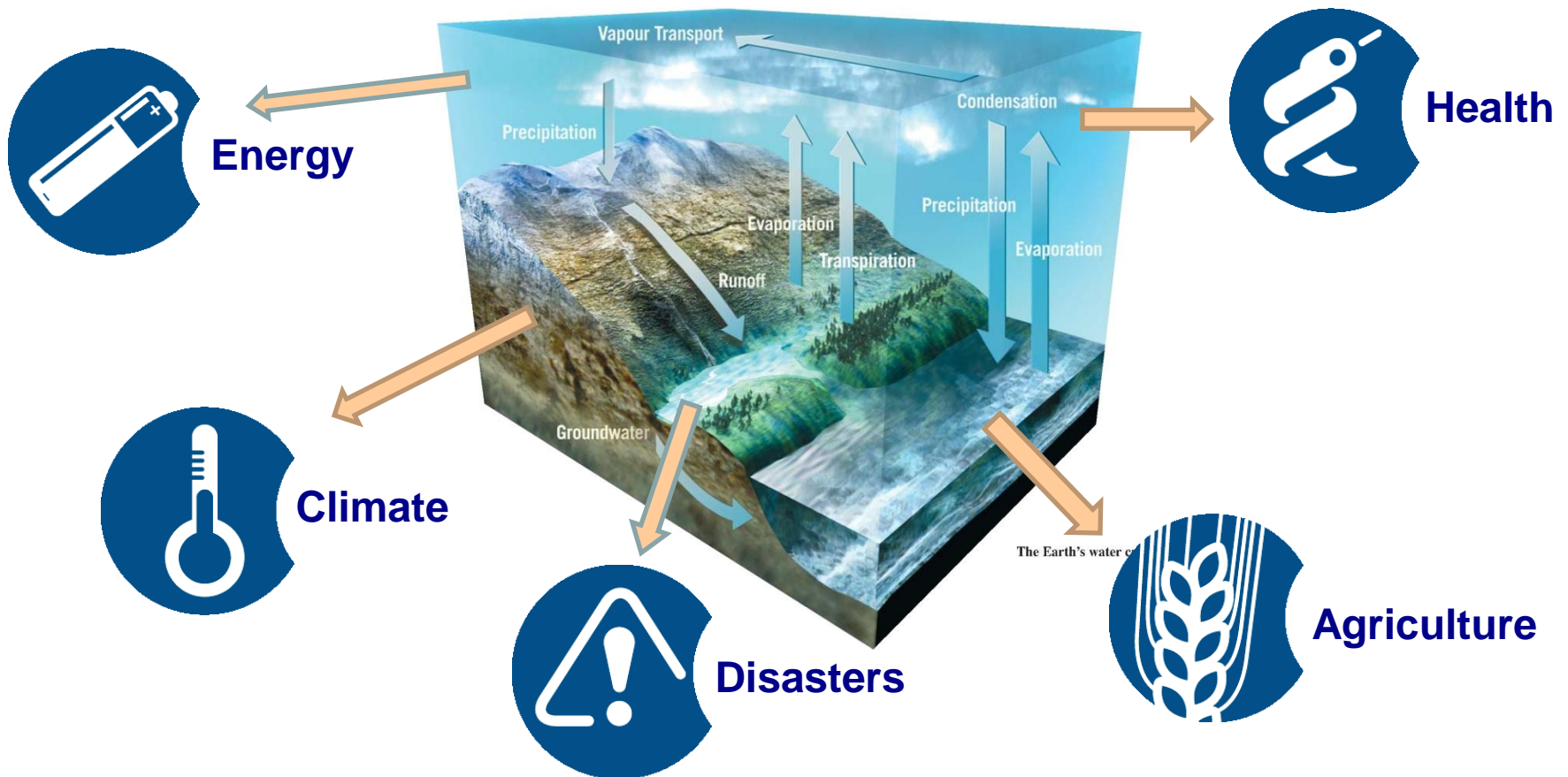


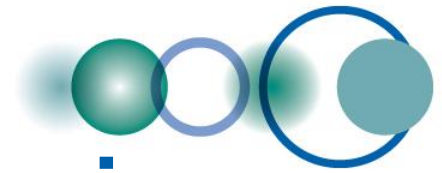
G8 Toyako Summit, July 7-9 2008

...we will accelerate efforts within the **Global Earth Observation System of Systems (GEOSS)**, ... in priority areas, inter alia, climate change and *water resources management*, by strengthening observation, prediction and data sharing. ... capacity building for developing countries ... interoperability and linkage ...

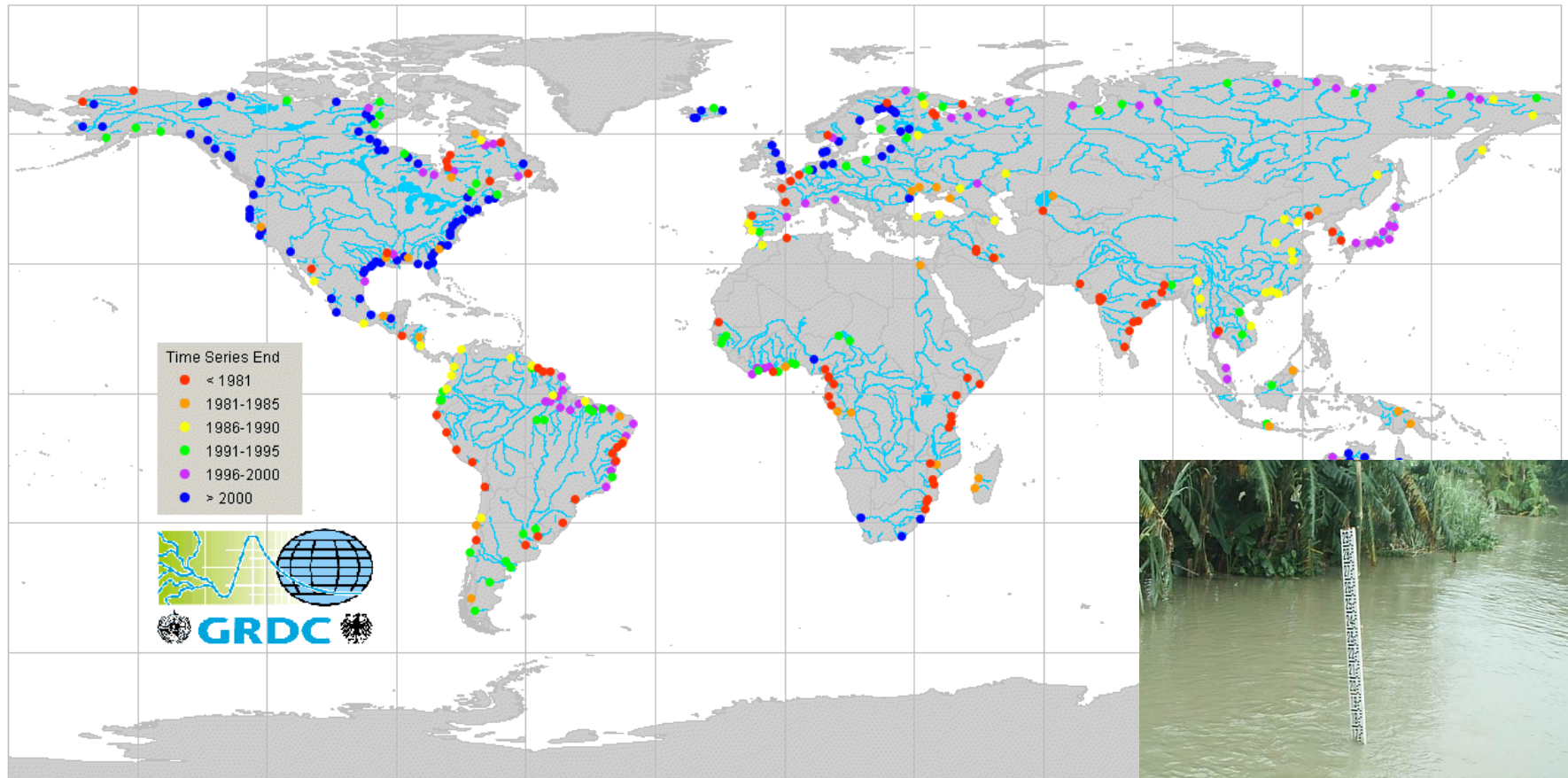


Integrated Water Cycle Management (WMO, Gewex, France, Japan, ...)





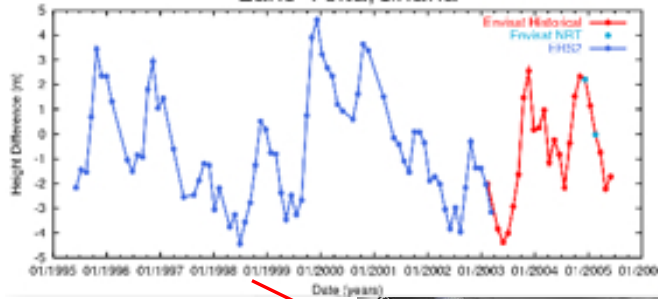
Upgrade in-situ stations for river discharge



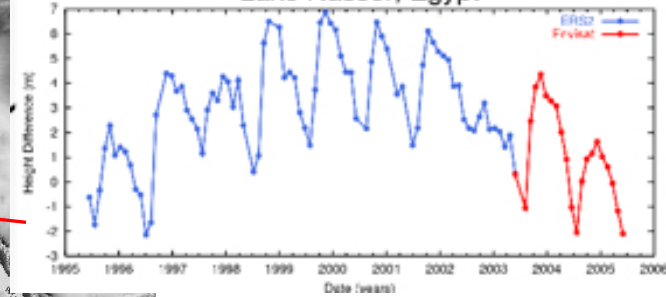


Integrate Space Observations

Lake Volta, Ghana

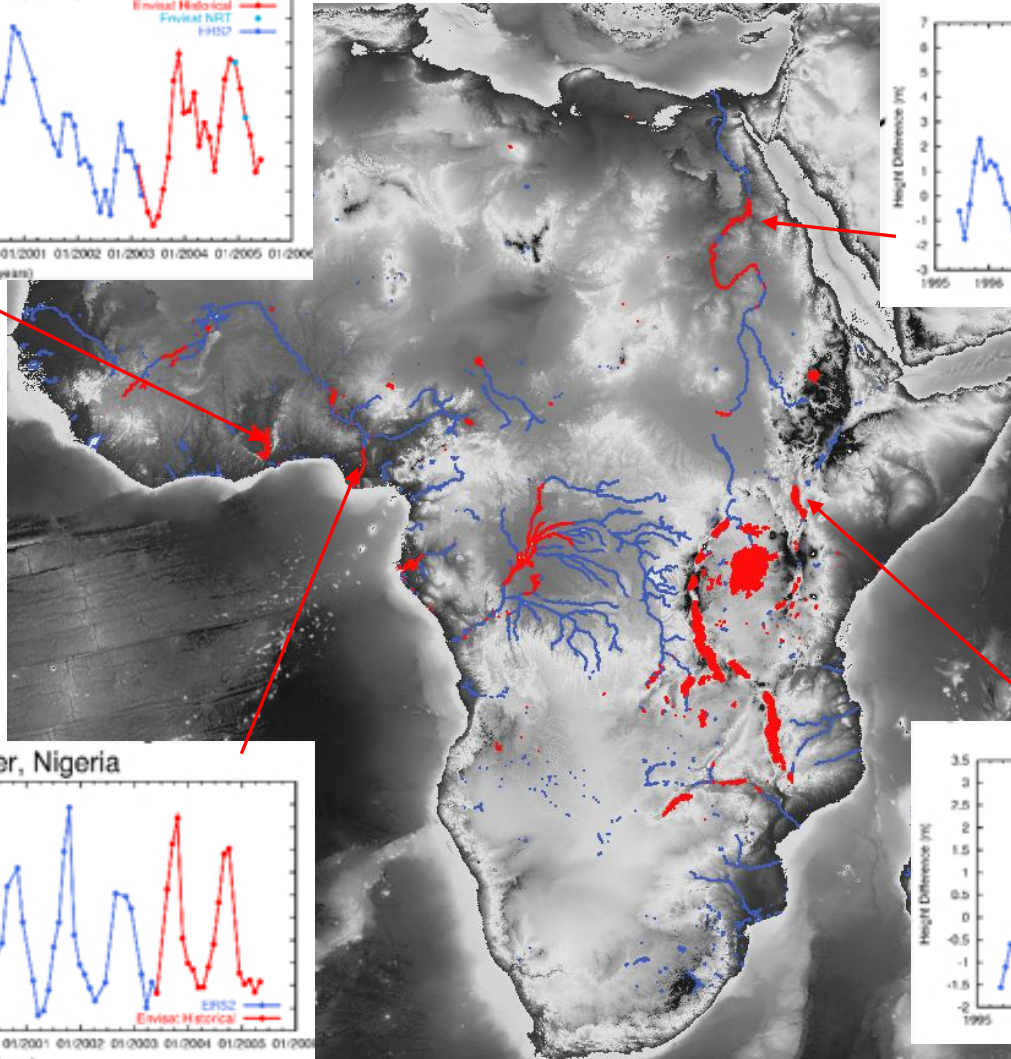


Lake Nasser, Egypt

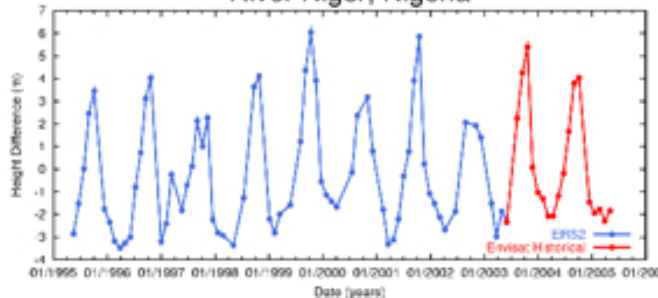


Red indicates area where NRT products are currently generated

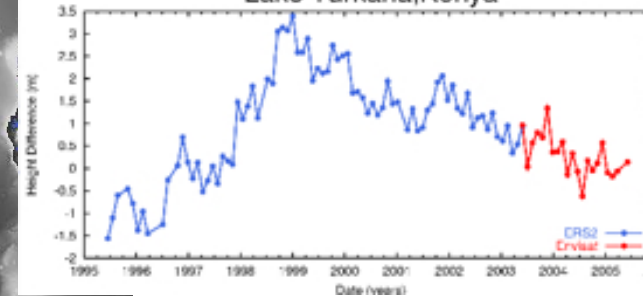
Blue indicates area where products may be generated in the future.

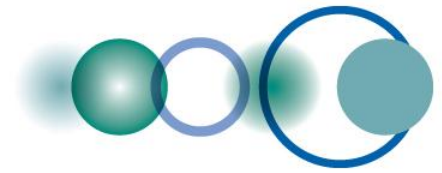


River Niger, Nigeria



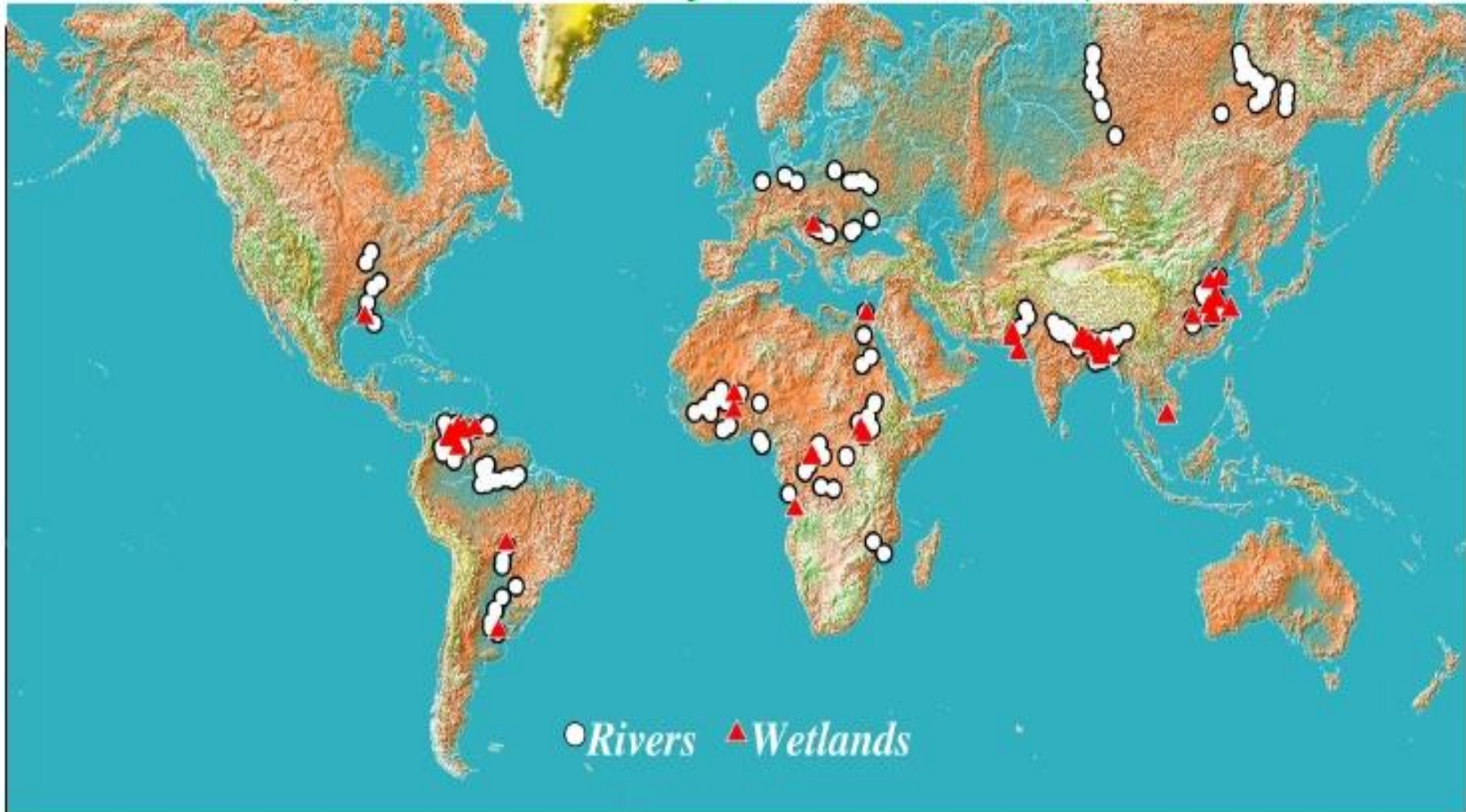
Lake Turkana, Kenya

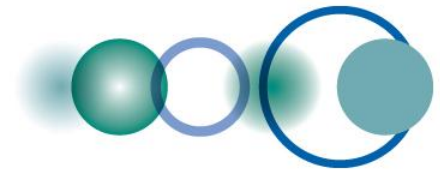




Hydroweb (France)

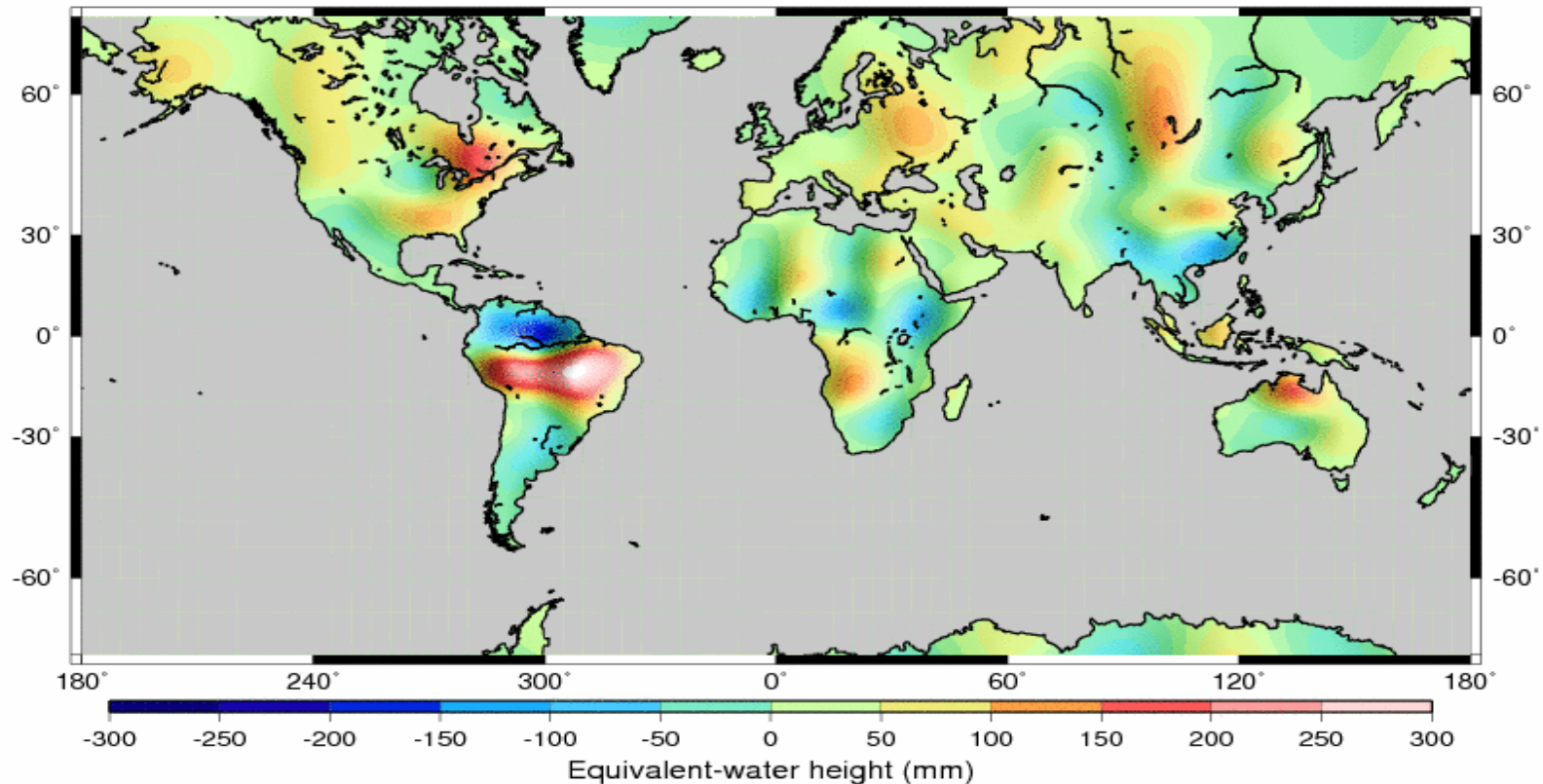
Map of virtual stations over large rivers and wetlands in «Hydroweb»

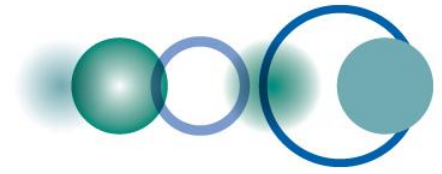




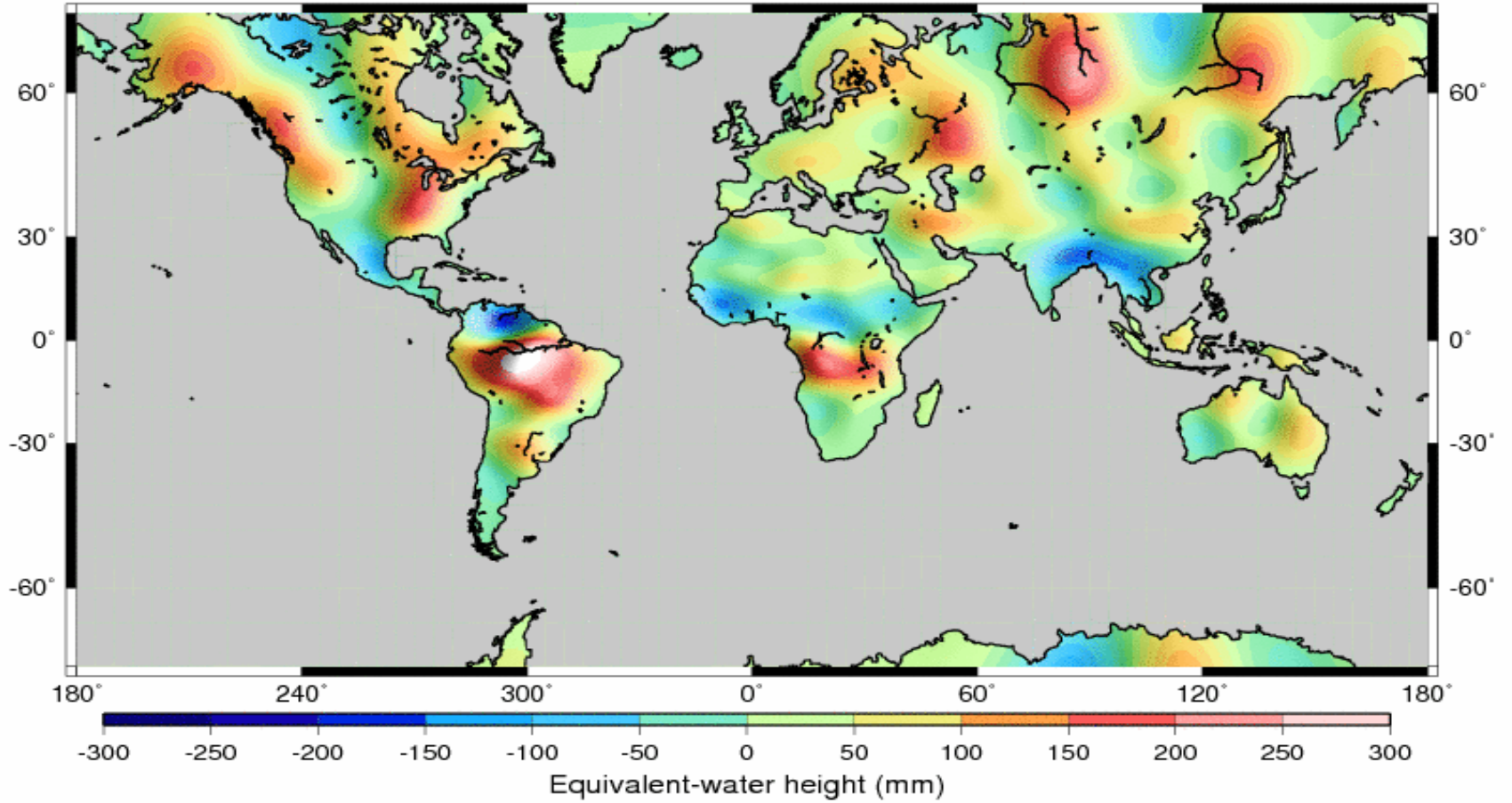
GRACE Subsurface Water Variations (USA, Germany)

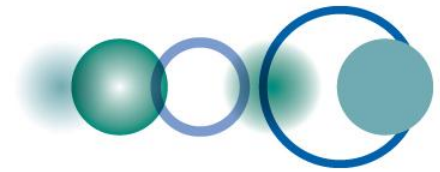
GRACE LW SOLUTION --- FEB 2004 --- DEG=25-30 --- 5 ITERATIONS



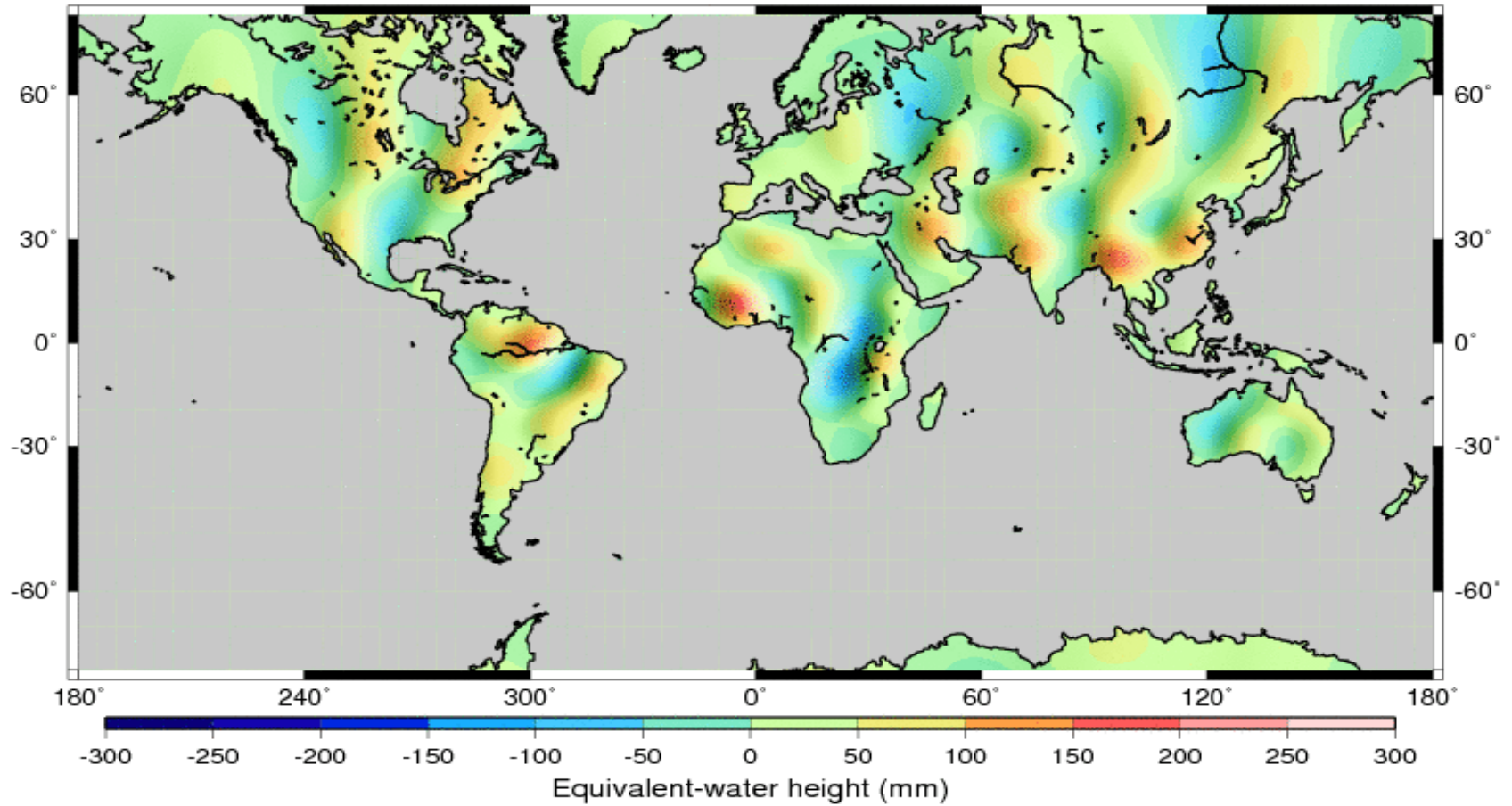


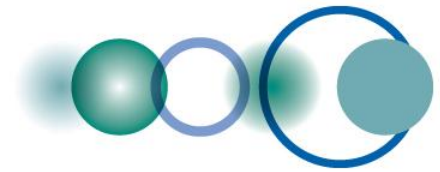
GRACE LW SOLUTION --- APR MAY 2002 --- DEG=25-30 --- 5 ITERATIONS



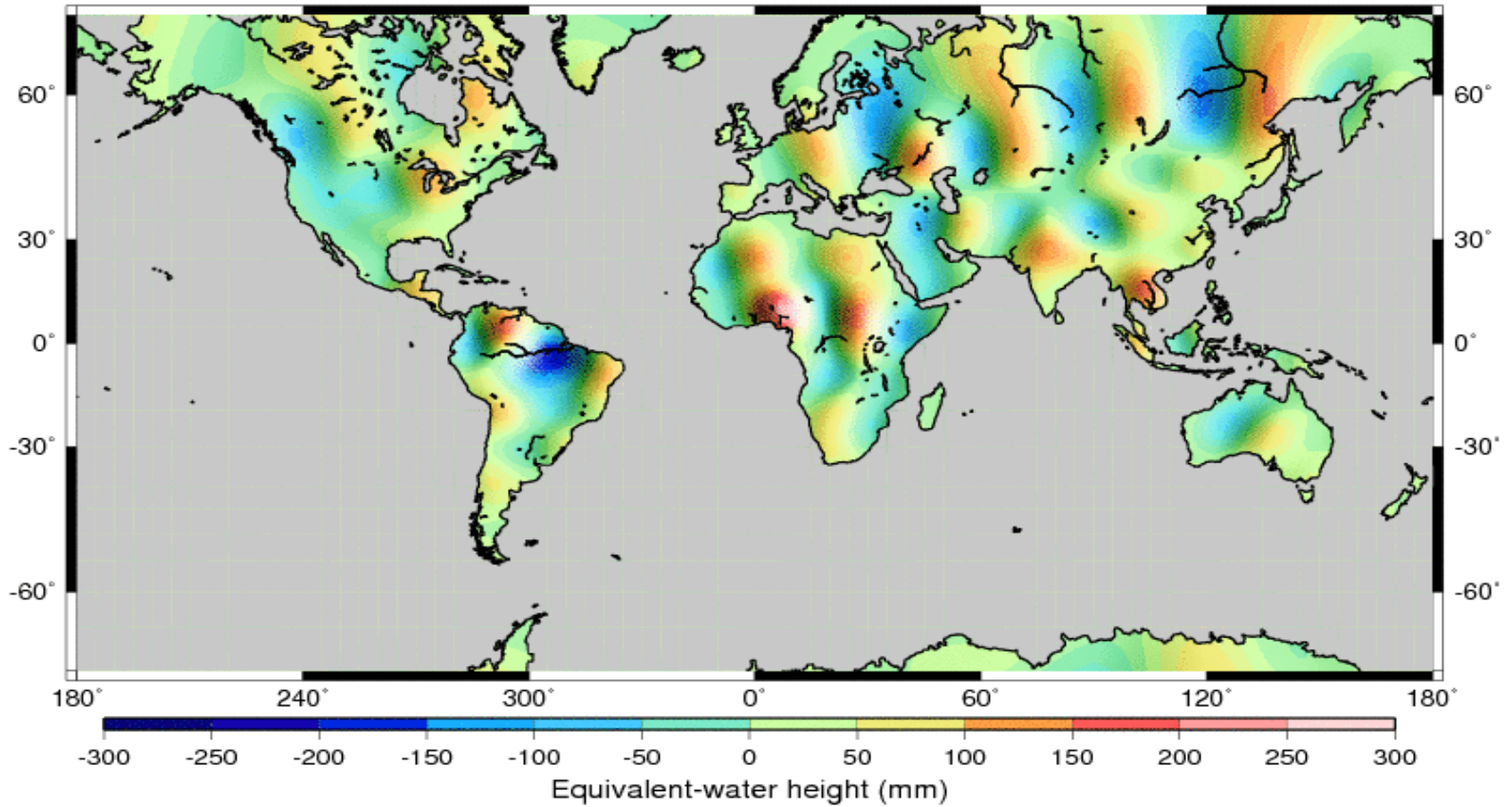


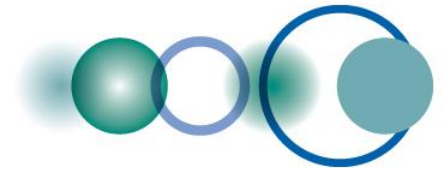
GRACE LW SOLUTION --- AUG 2002 --- DEG=25-30 --- 5 ITERATIONS



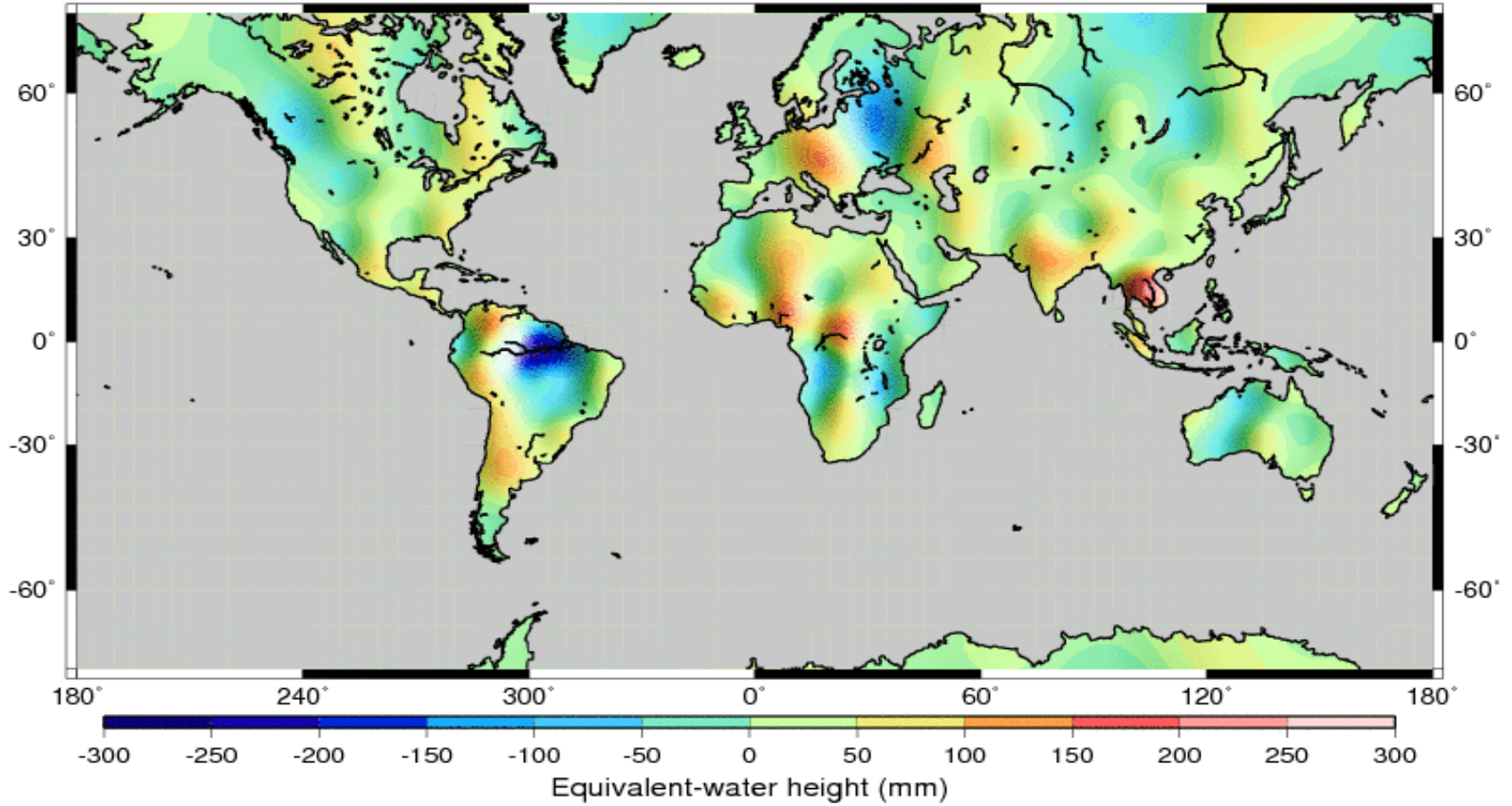


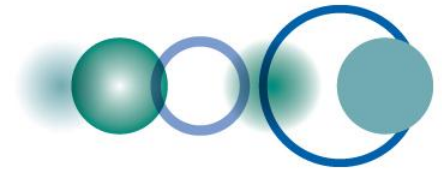
GRACE LW SOLUTION --- SEP 2002 --- DEG=25-30 --- 5 ITERATIONS



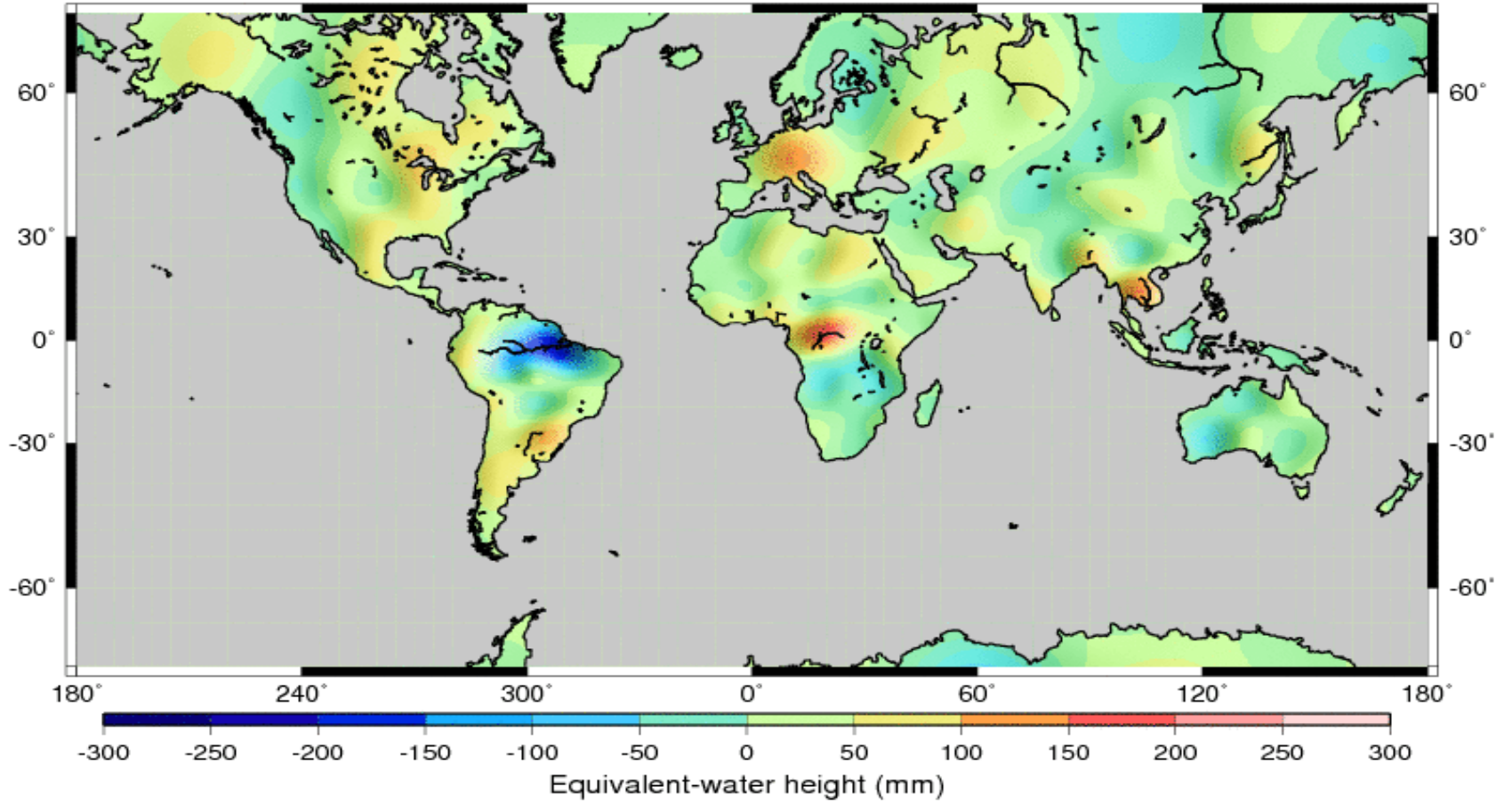


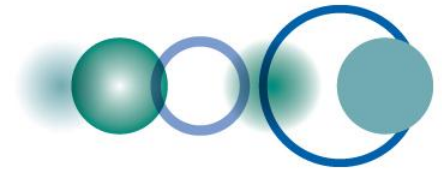
GRACE LW SOLUTION --- OCT 2002 --- DEG=25-30 --- 5 ITERATIONS



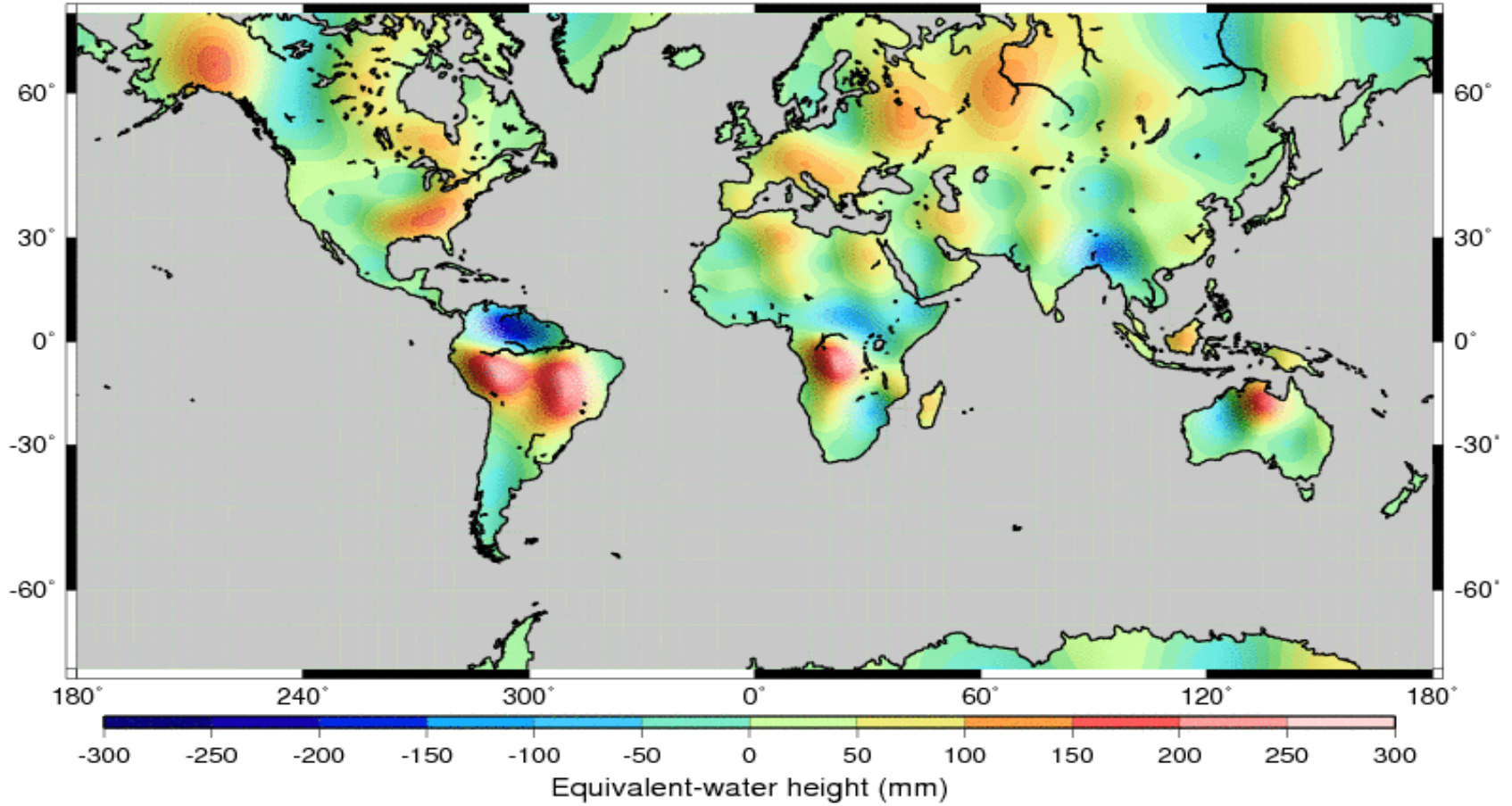


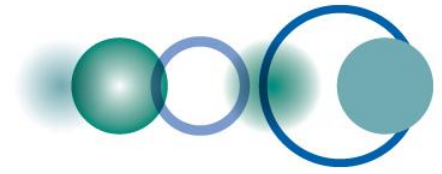
GRACE LW SOLUTION --- NOV 2002 --- DEG=25-30 --- 5 ITERATIONS



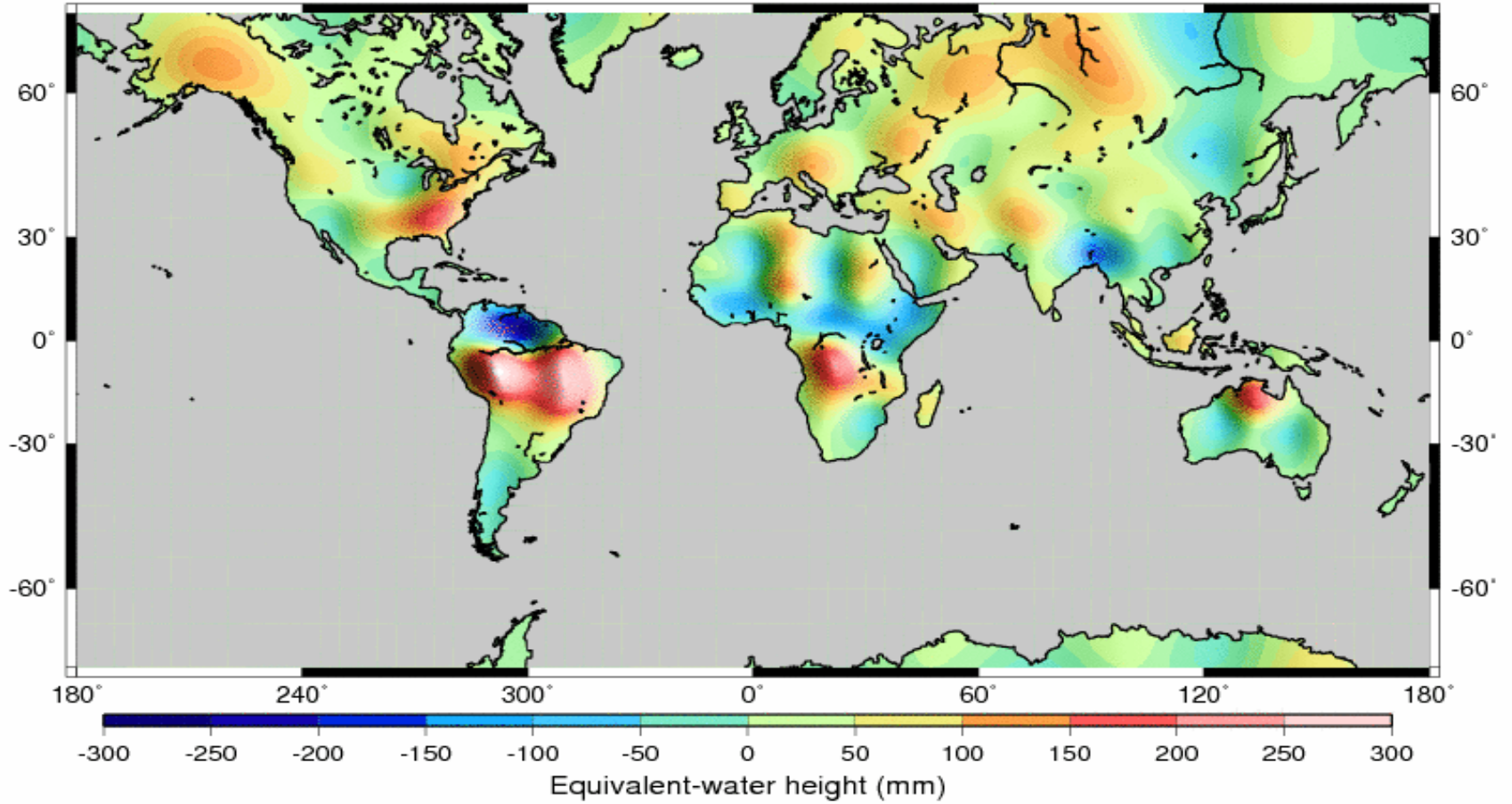


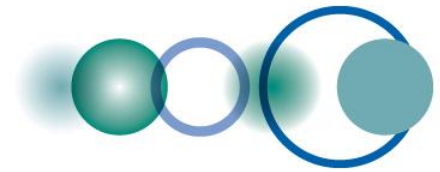
GRACE LW SOLUTION --- FEB 2003 --- DEG=25-30 --- 5 ITERATIONS



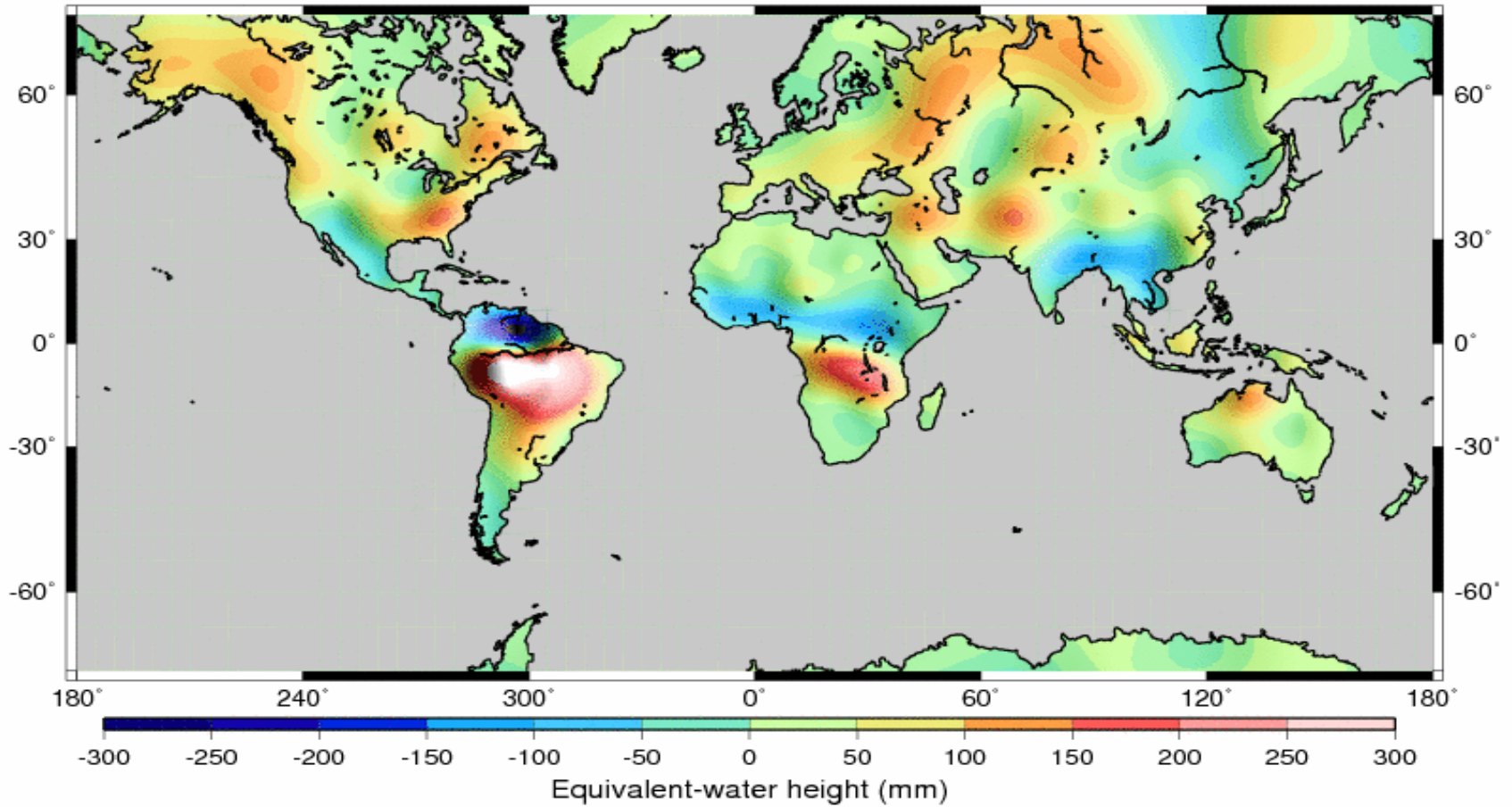


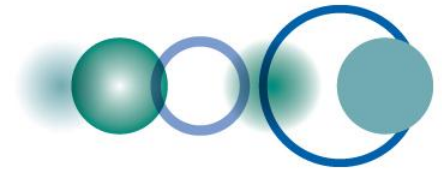
GRACE LW SOLUTION --- MAR 2003 --- DEG=25-30 --- 5 ITERATIONS



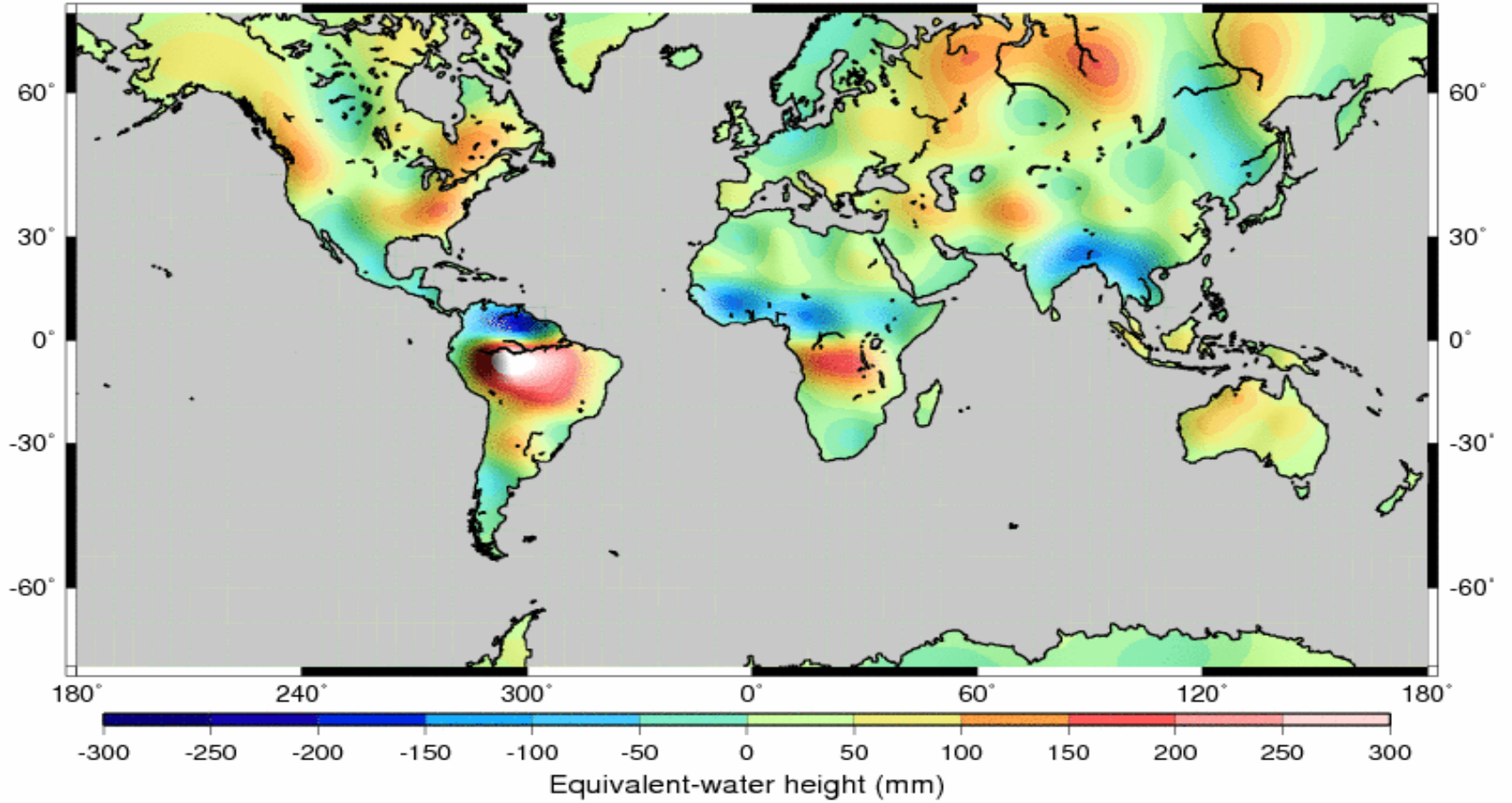


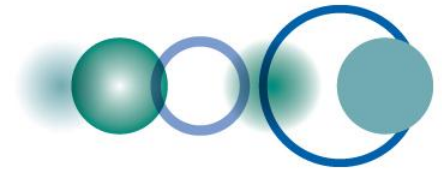
GRACE LW SOLUTION --- APR 2003 --- DEG=25-30 --- 5 ITERATIONS



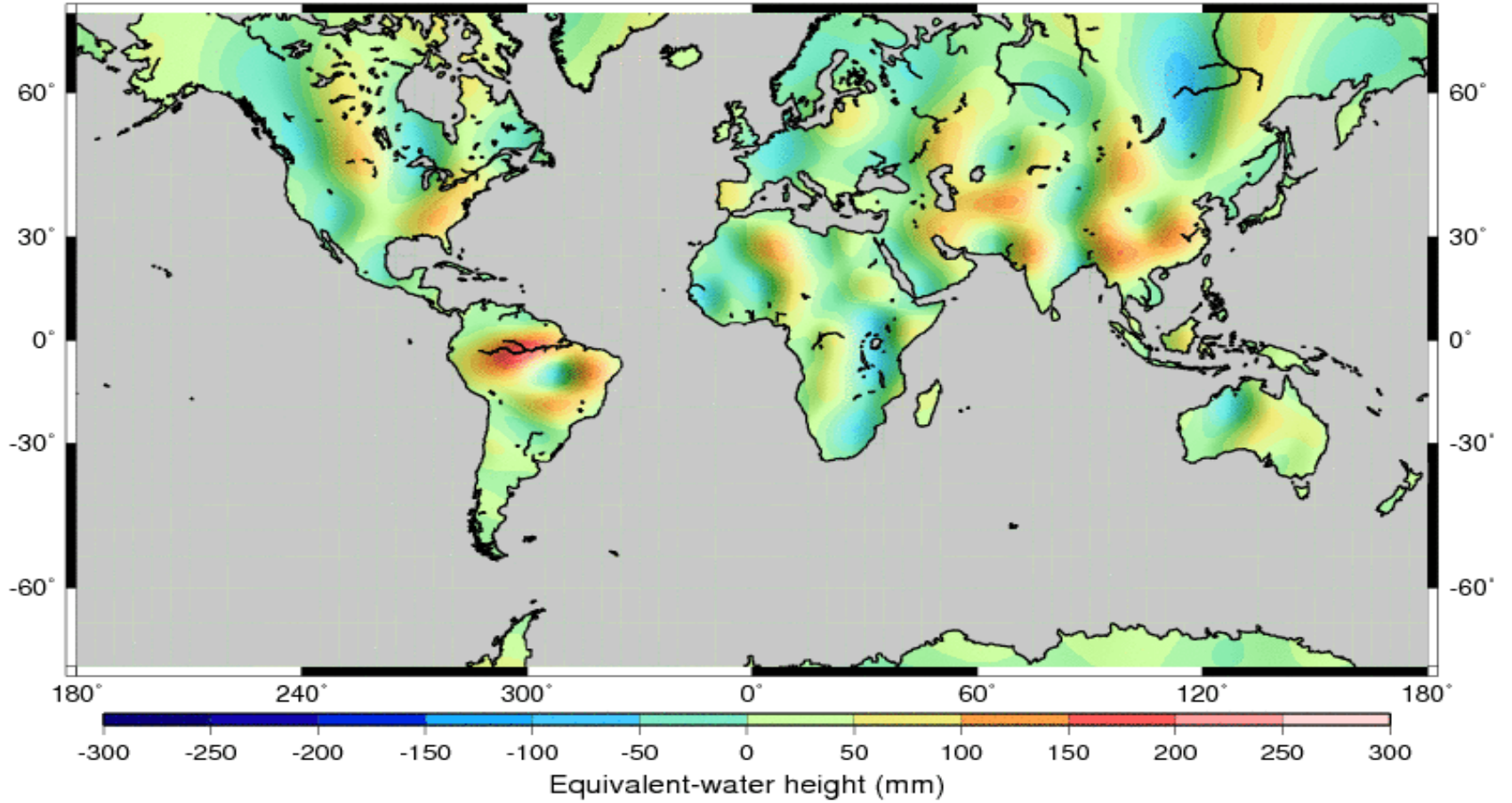


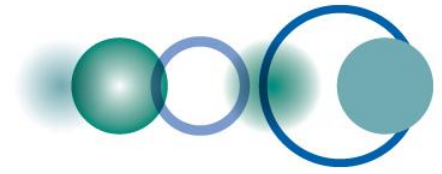
GRACE LW SOLUTION --- APR MAY 2003 --- DEG=25-30 --- 5 ITERATIONS



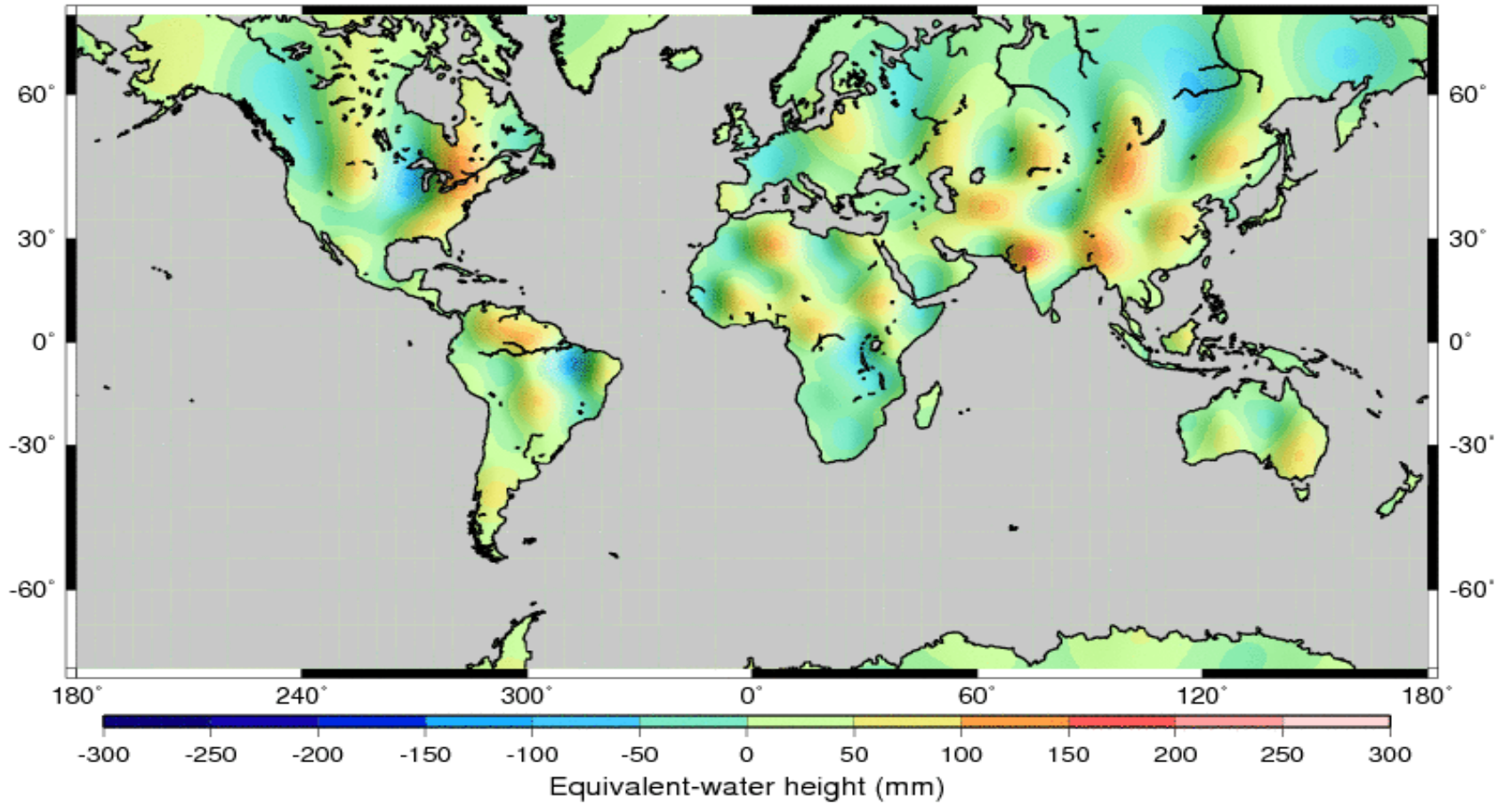


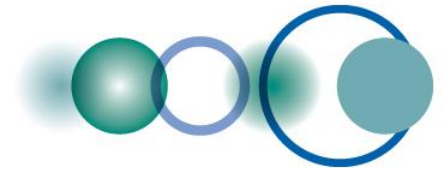
GRACE LW SOLUTION --- JUL 2003 --- DEG=25-30 --- 5 ITERATIONS



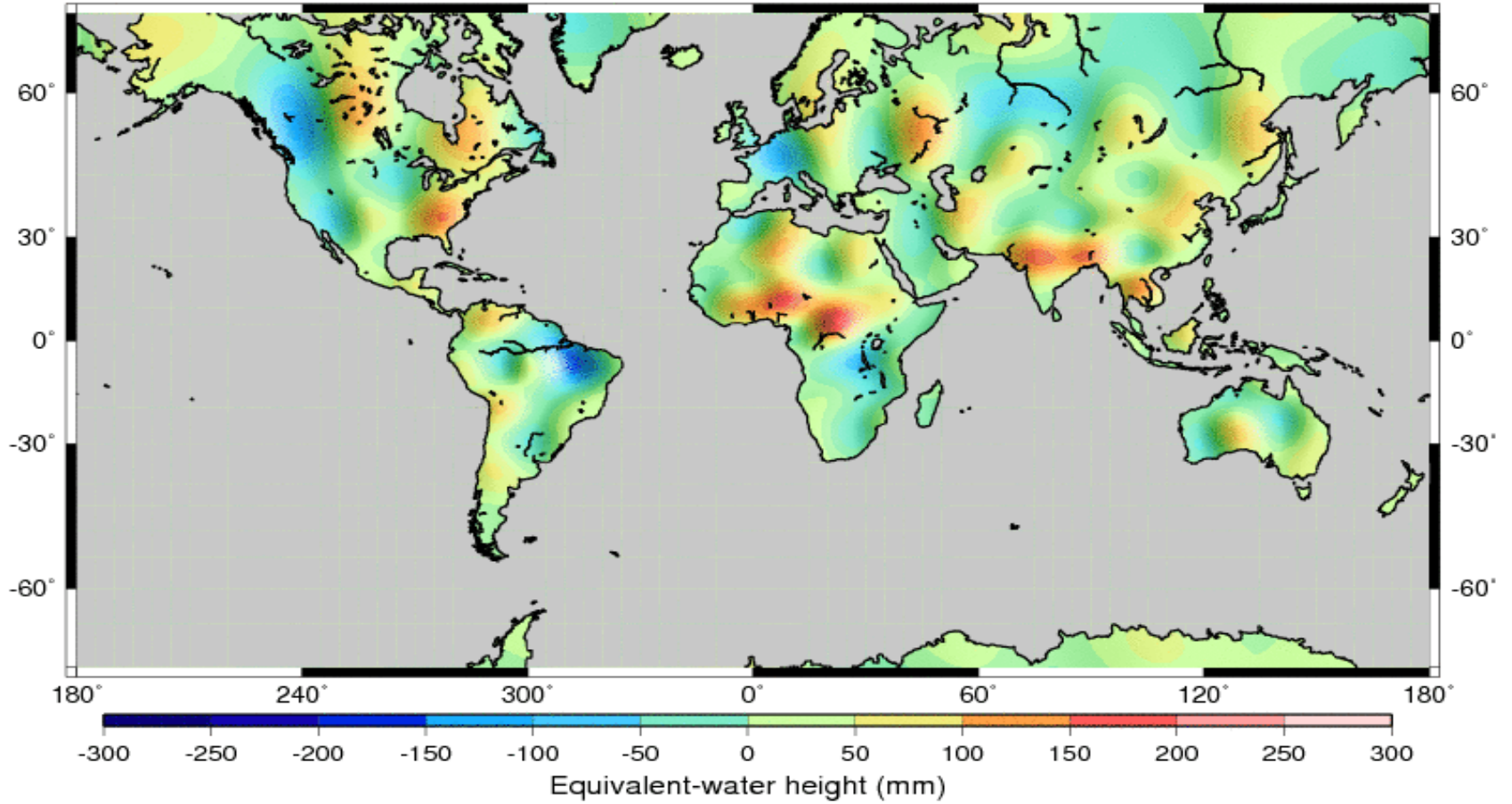


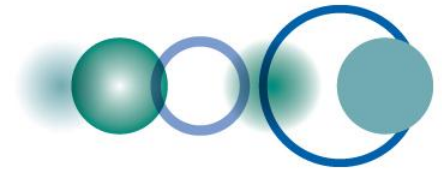
GRACE LW SOLUTION --- AUG 2003 --- DEG=25-30 --- 5 ITERATIONS



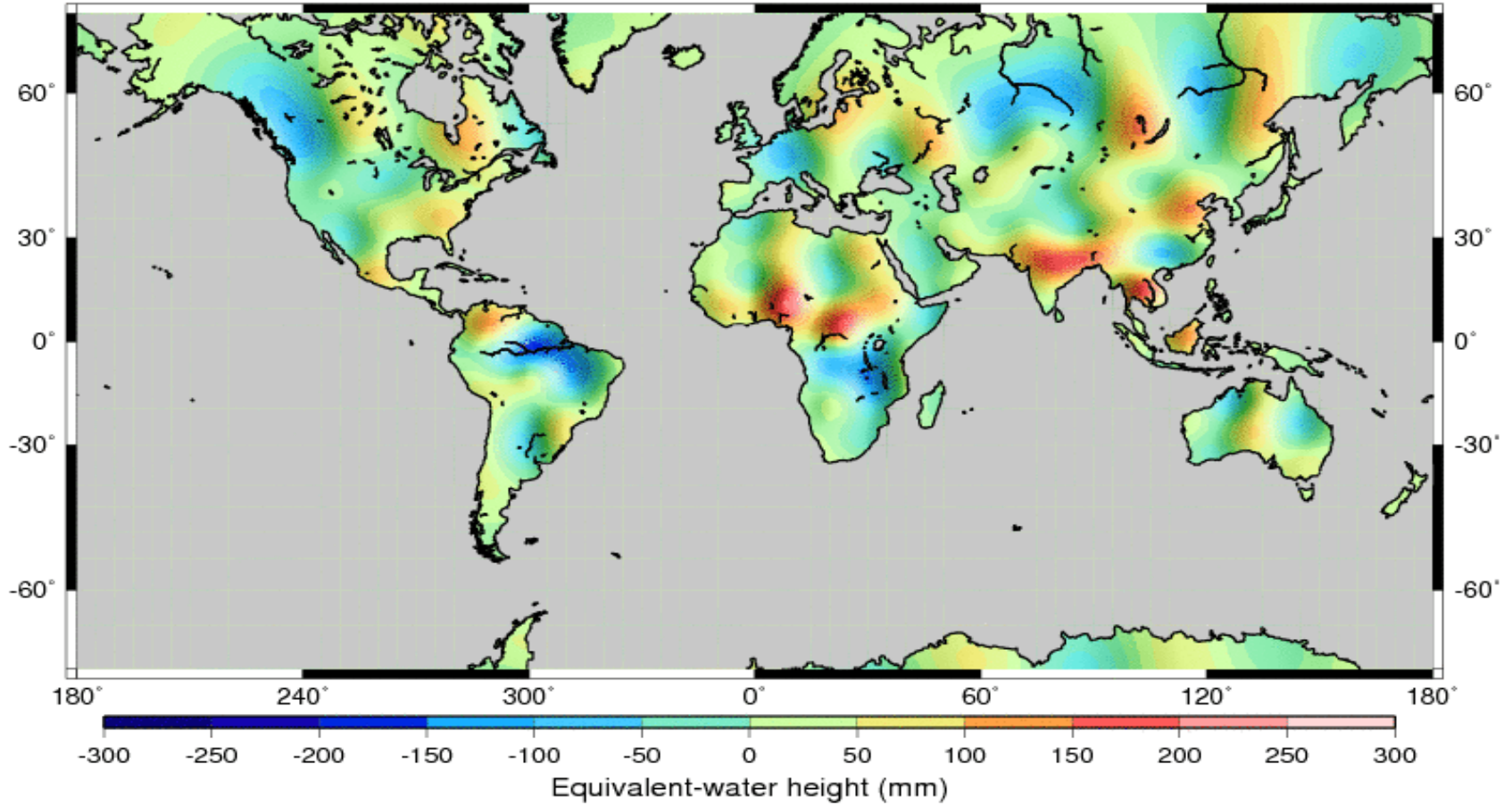


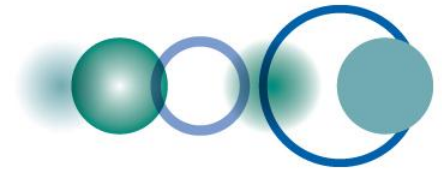
GRACE LW SOLUTION --- SEP 2003 --- DEG=25-30 --- 5 ITERATIONS



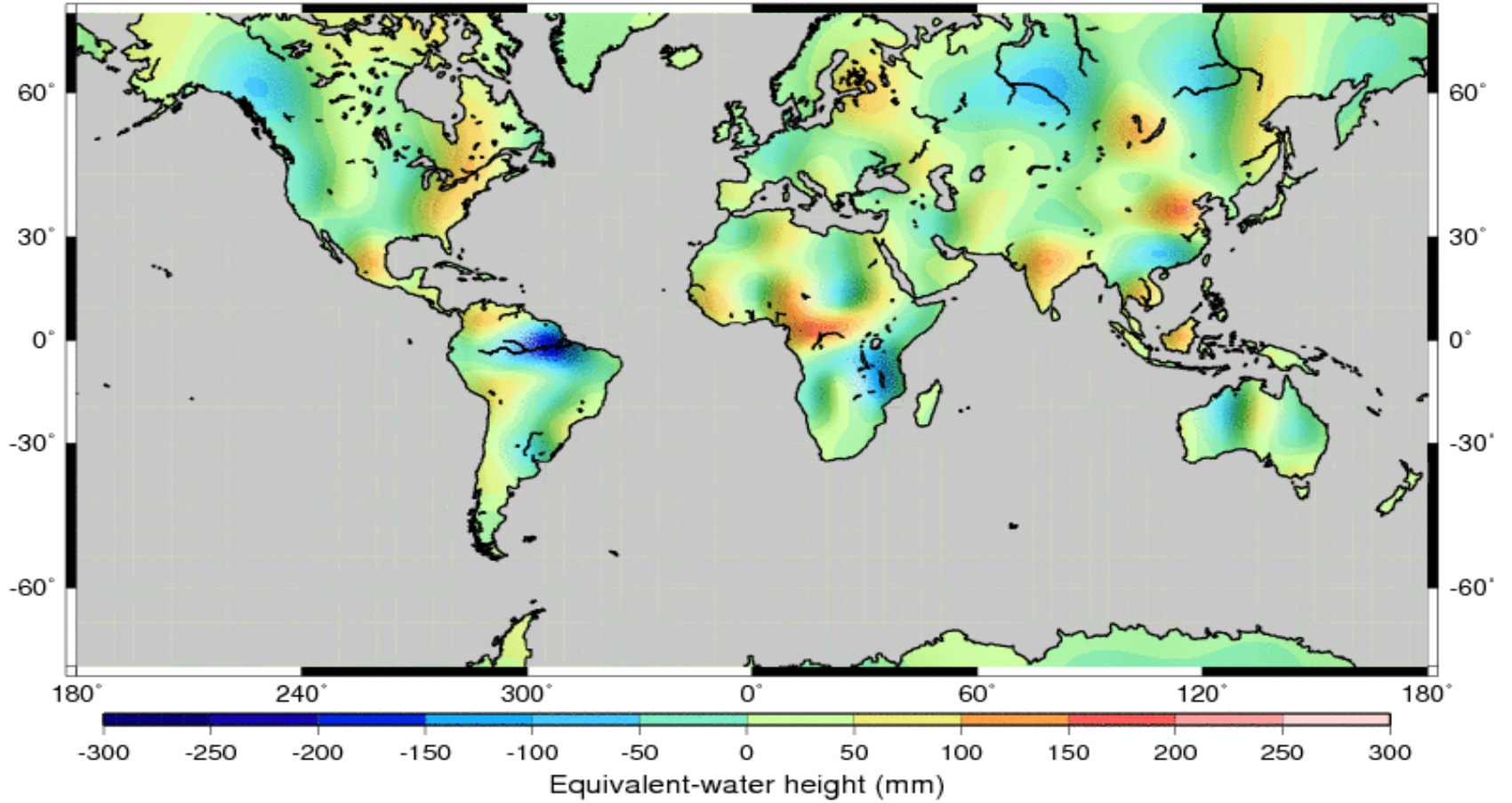


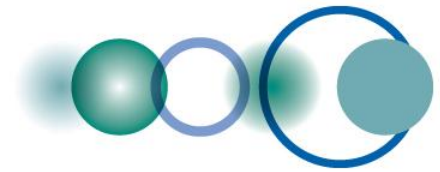
GRACE LW SOLUTION --- OCT 2003 --- DEG=25-30 --- 5 ITERATIONS



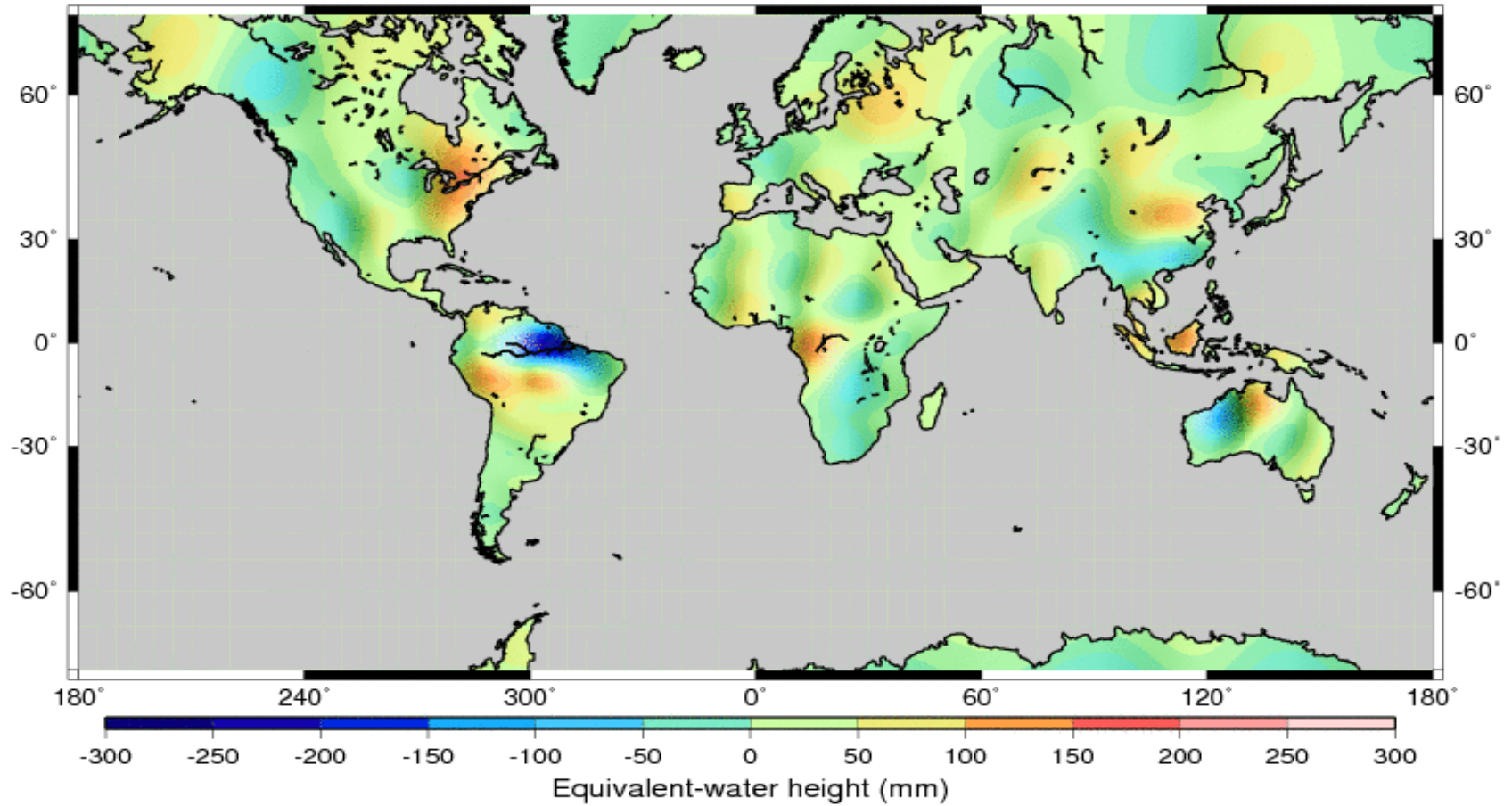


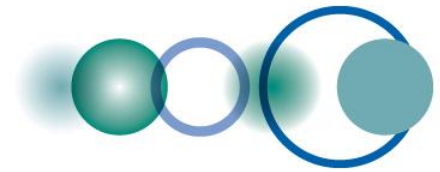
GRACE LW SOLUTION --- NOV 2003 --- DEG=25-30 --- 5 ITERATIONS



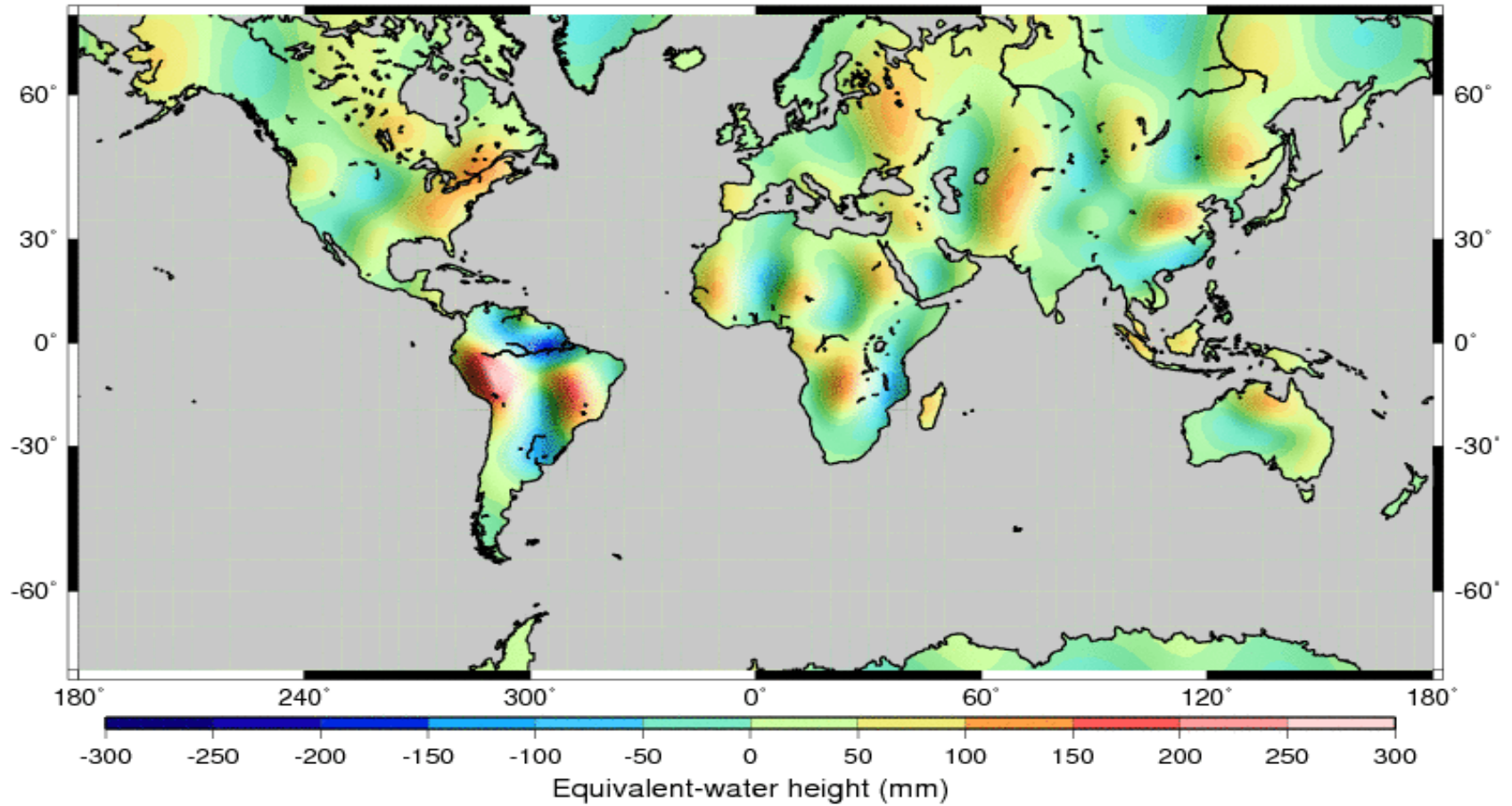


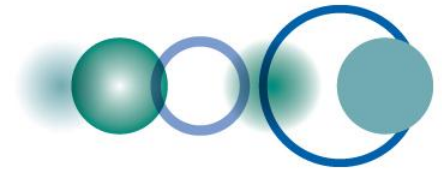
GRACE LW SOLUTION --- DEC 2003 --- DEG=25-30 --- 5 ITERATIONS



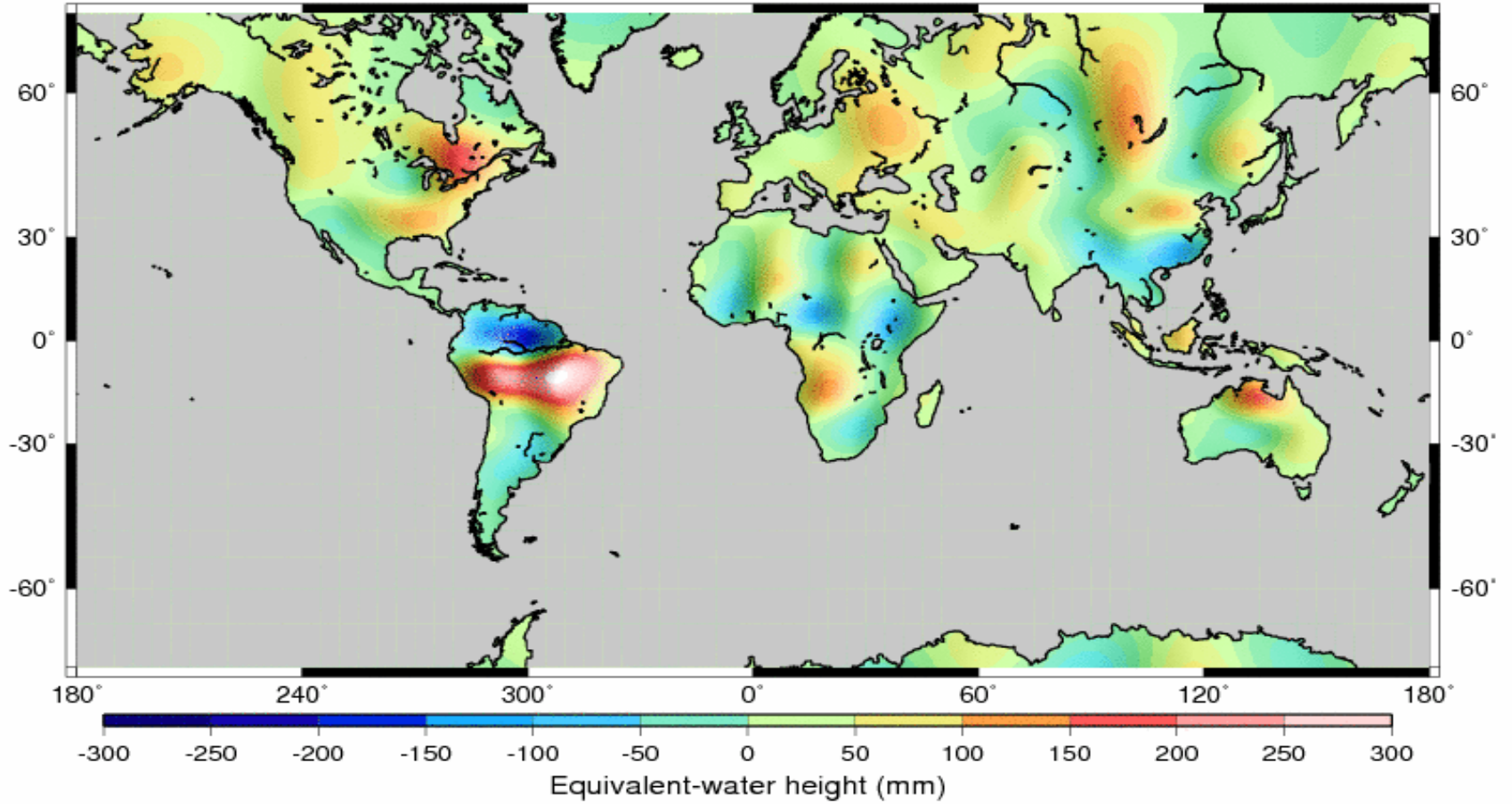


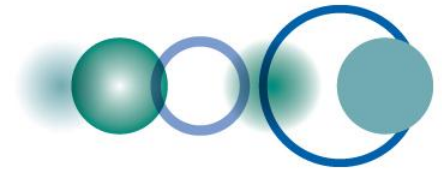
GRACE LW SOLUTION --- JAN 2004 --- DEG=25-30 --- 5 ITERATIONS



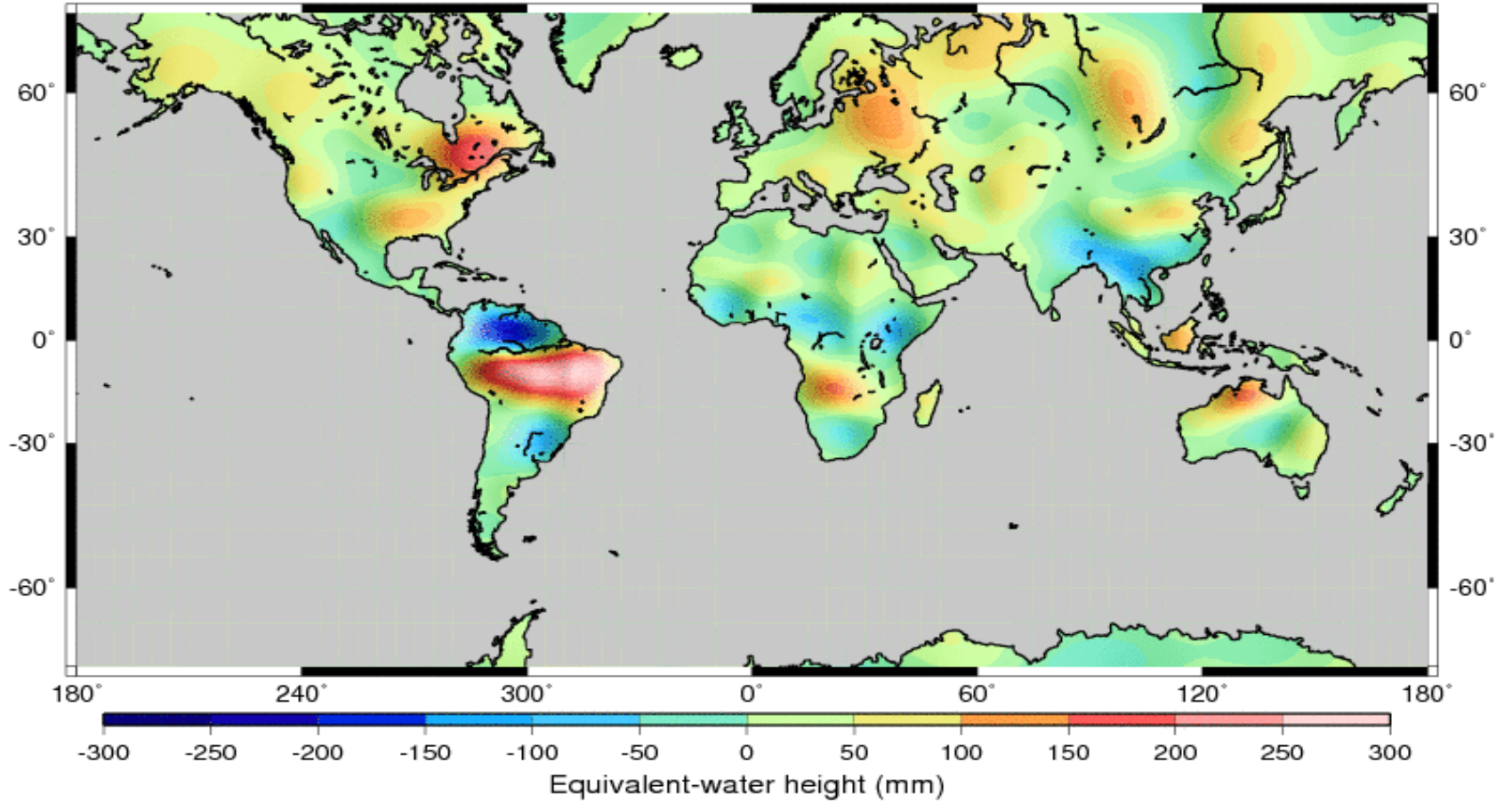


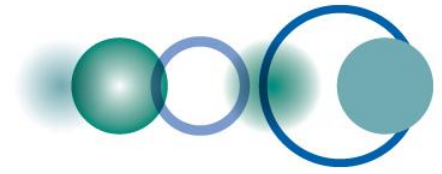
GRACE LW SOLUTION --- FEB 2004 --- DEG=25-30 --- 5 ITERATIONS



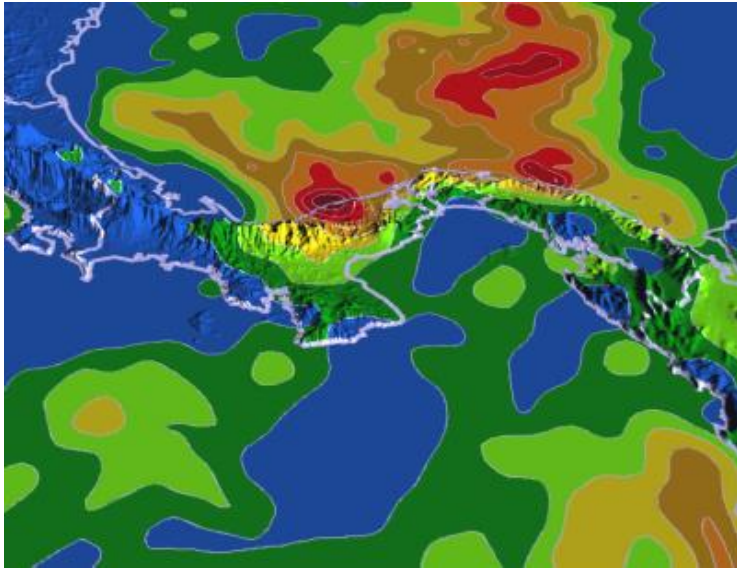


GRACE LW SOLUTION --- MAR 2004 --- DEG=25-30 --- 5 ITERATIONS





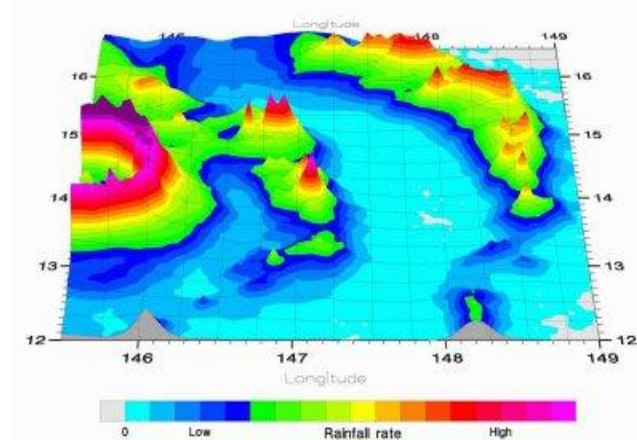
Precipitation (USA, Japan)

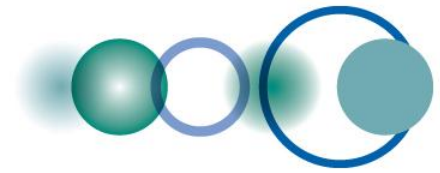


TRMM



GPM



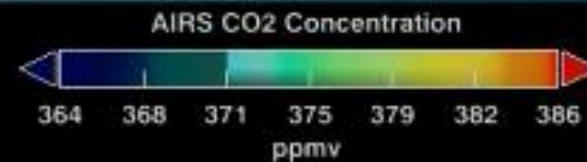


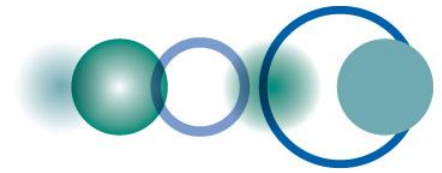
Atmospheric Water Vapor (NASA)

AIRS Mid-Tropospheric Carbon Dioxide

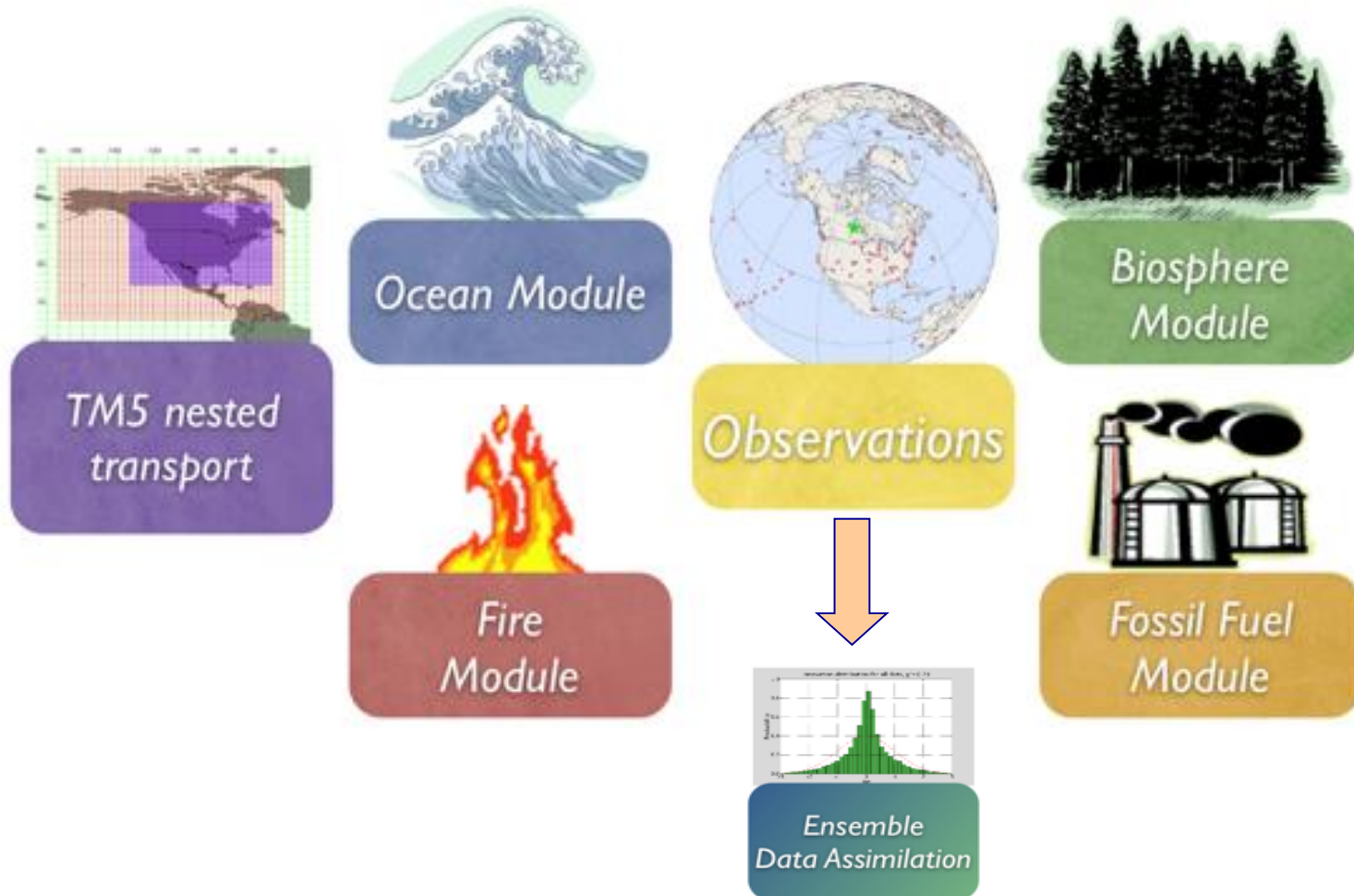


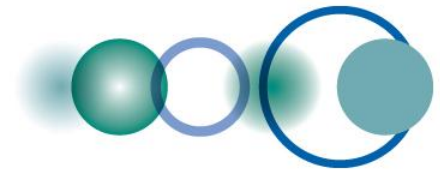
Sep 2002



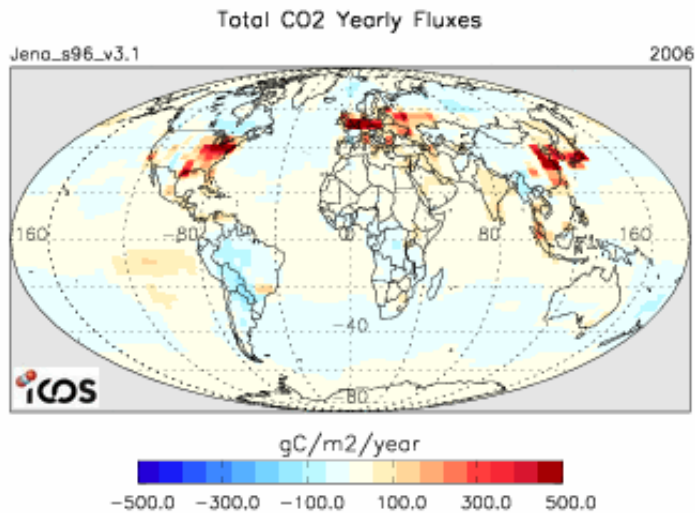


A global carbon monitoring system

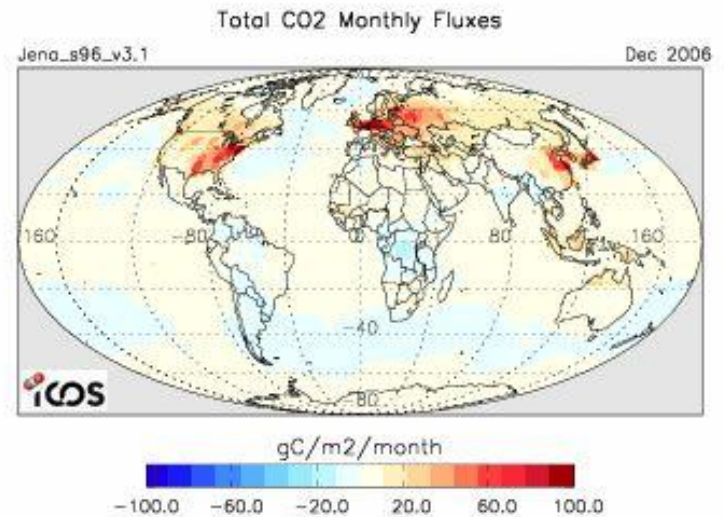


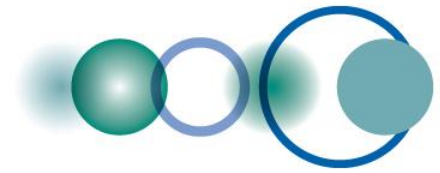


Yearly fluxes 1996-2006



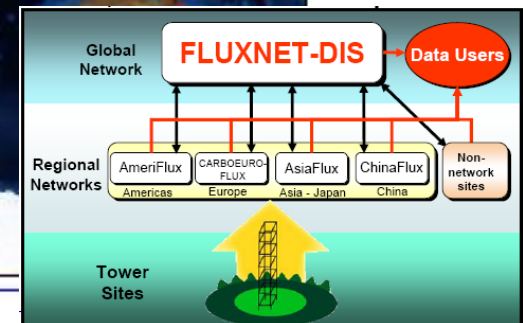
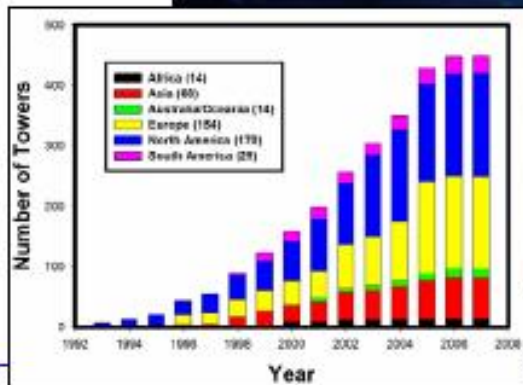
Monthly fluxes 2006

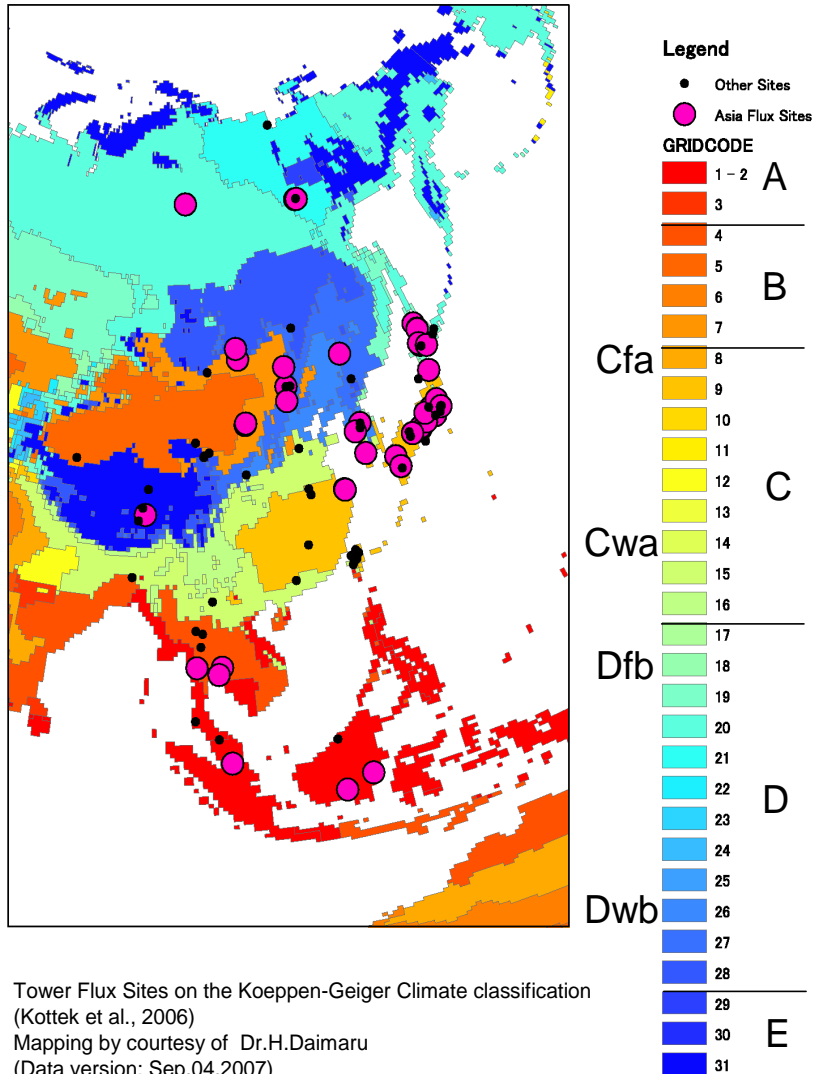
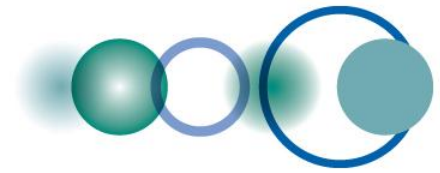




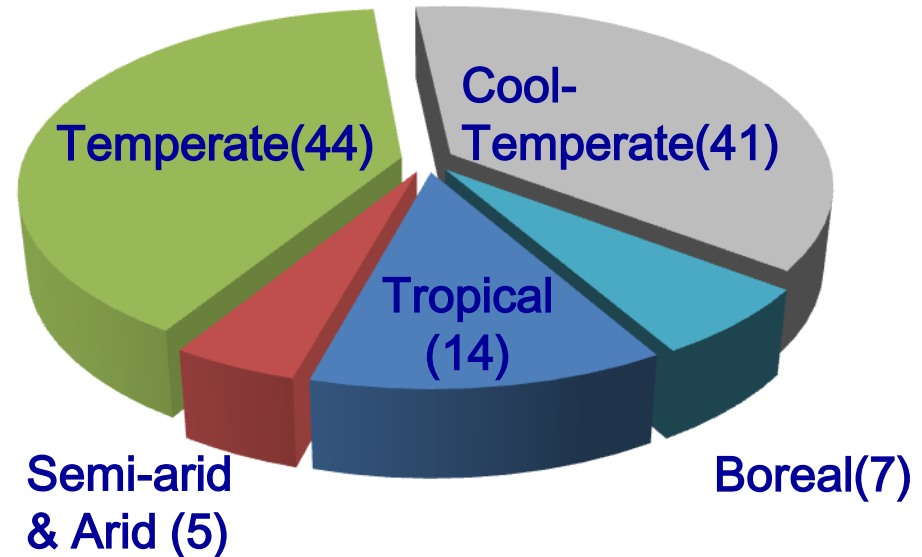
Fluxnet: A Global Network of Flux Tower Networks

More than 550 towers from >10 regional networks and 46 countries worldwide

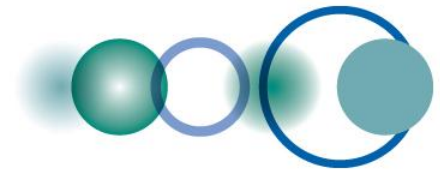




Number of sites: 111 (68)*
 Number of sites listed in the AsiaFlux web page: 45 (39)*
 * currently continuing

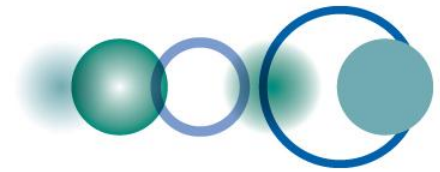


Tower Flux Sites on the Koeppen-Geiger Climate classification (Kottek et al., 2006)
 Mapping by courtesy of Dr.H.Daimaru
 (Data version: Sep.04,2007)



Space Observation: The Present

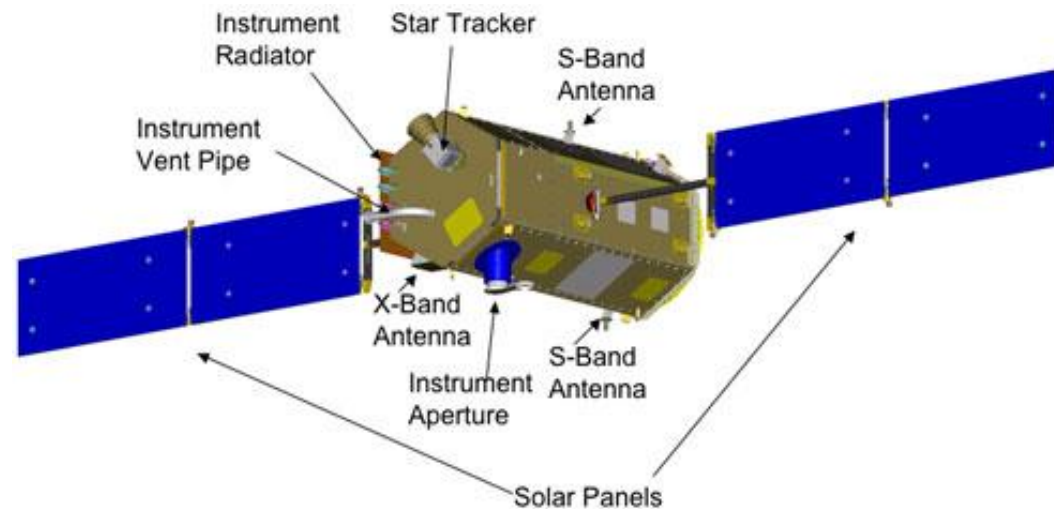


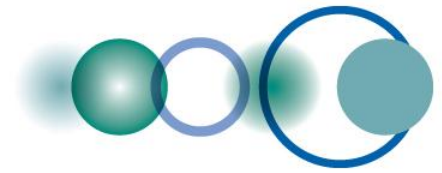


Space Observations: The Future

GOSAT (JAXA)
Launched on 23
January

OCO (NASA)
Launch failure



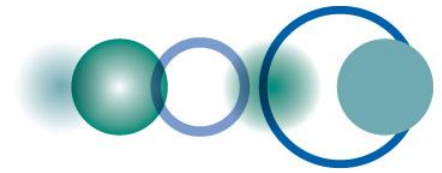


Forest Mapping and Carbon Tracking (Australia, Finland, Japan, Norway, USA, EC, FAO, GOFC-GOLD, CEOS)

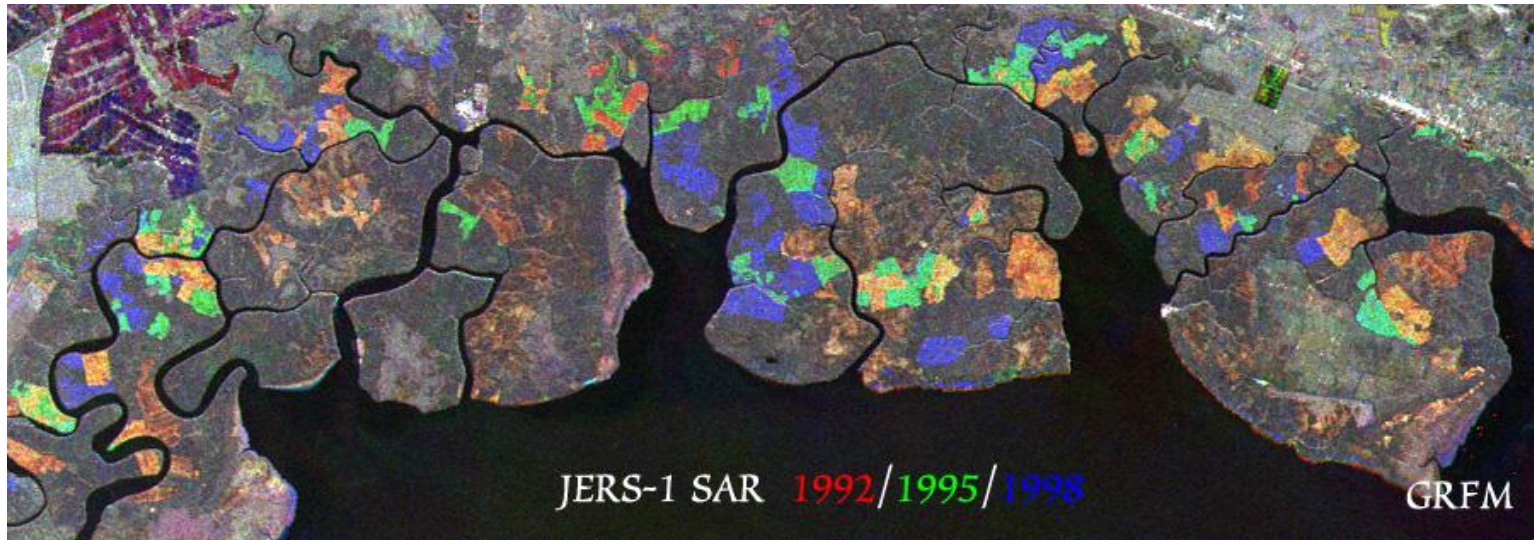
GEO is developing a collaborative forest monitoring system which will

- consolidate observation requirements and reference products;
- coordinate the provision of remote sensing data and integrate data from different sources in order to ensure operational observations and relevant products;
- define and activate a limited number of test sites for pilot projects focused on in situ observation, validation of methodologies and tools, and capacity building.



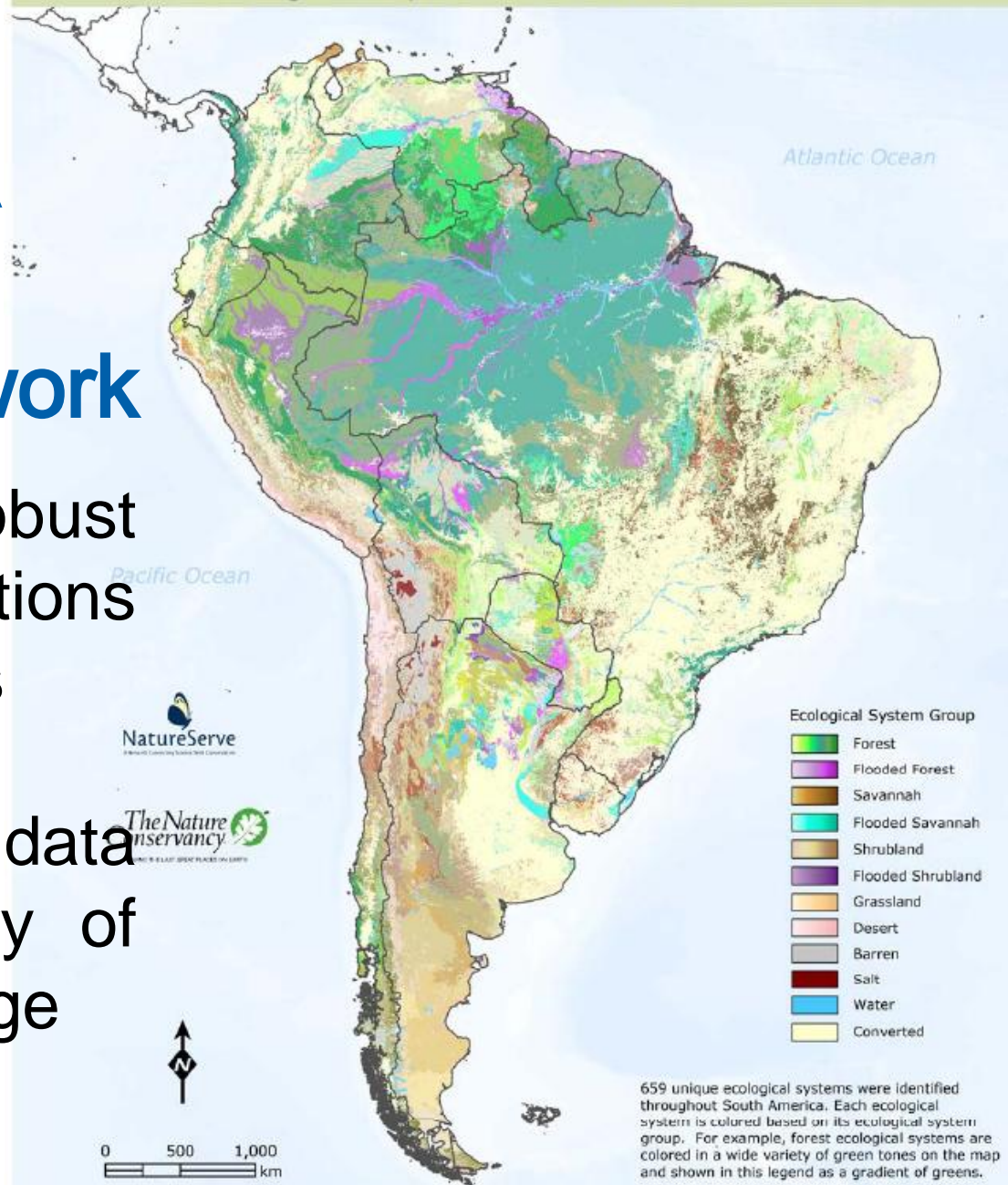


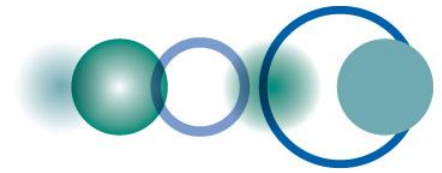
Forest Mapping and Carbon Tracking



GEO BON : A Biodiversity Observation Network

- Provide a global, robust framework for observations of biodiversity changes
- Coordinate the data gathering and delivery of biodiversity information





Develop GEOSS for AFRICA through the Coordination of International Initiatives

SERVIR Africa (under development)



HOME DATA & SERVICES TOOLS & MODELS LIBRARY COMMUNITY ABOUT US

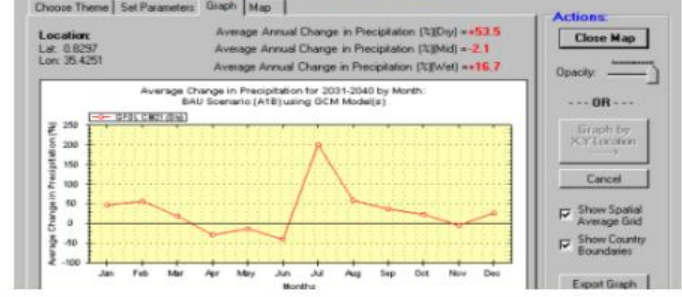
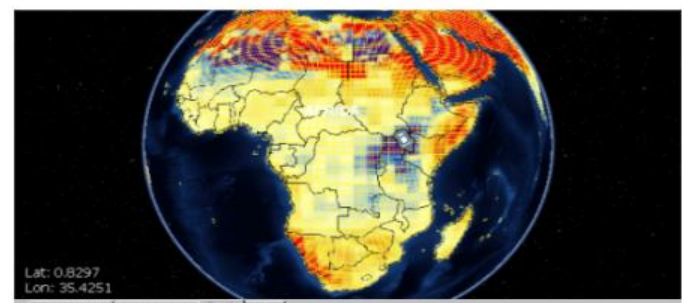
The SERVIR-Africa website is under development.

Over the next few weeks, we will continue to add new content and functionality. Please check back soon, or [sign up](#) to receive notification of changes.

Coming Soon - Online Map Tools

Featured Map Viewer 2D Viewer 3D

Title: **SERVIR-Viz Climate Mapper** [More info...](#)
Source: SERVIR
Date: Future decadal scenarios



SERVIR Mission

Enabling the use of Earth observations and predictive models for timely decision making to benefit society

Latest Community News

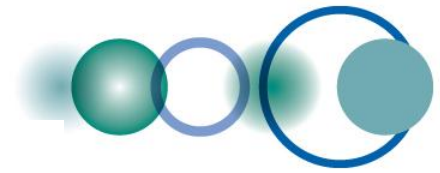
- [Latest SDI-Africa newsletter \(January 2009\)](#)
- [Launch of African Soil Information Service \(AfSIS\)](#)
- [Lake Chad Basin Commission advancing geospatial data infrastructure](#)
- [Artificial light causing night time stresses to coral reefs](#)
- [University Buea \(Cameroon\) Remote Sensing Centre goes operational](#)

[More...](#)

Latest SERVIR News

- [Introductions to SERVIR-Africa facility](#)
- [SERVIR-Africa launches at RCMRD](#)
- [East and southern African Land Ministers put their support behind SERVIR-Africa](#)
- [Use of NASA satellite rainfall data for flood modeling](#)
- [SERVIR-Africa team members to attend AARSE 2008](#)

[More...](#)



SERVIR Africa

Implementing Agencies



Government agencies



NGOs/Non-Profits

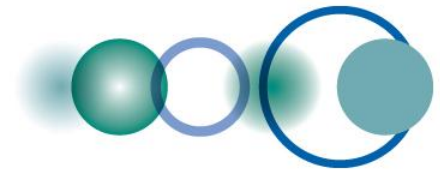


Universities



Business/Industry





The WMO Sand and Dust Storm Warning System

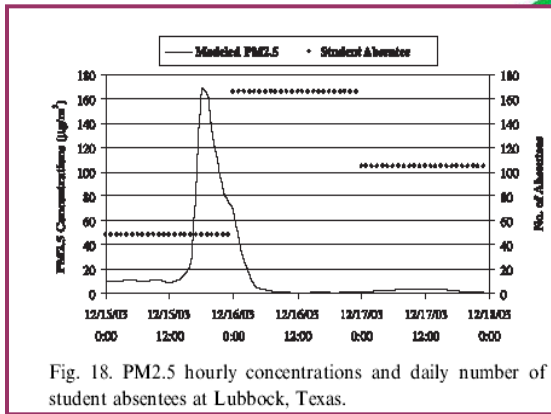
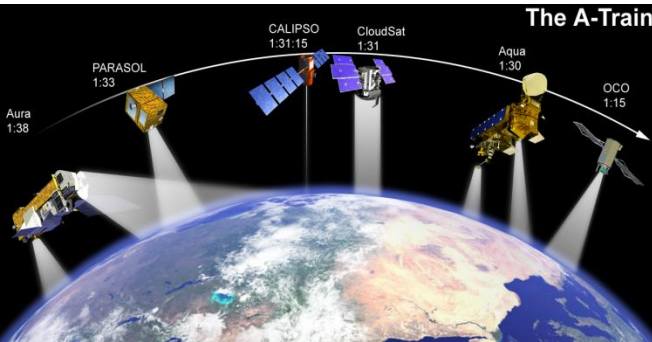
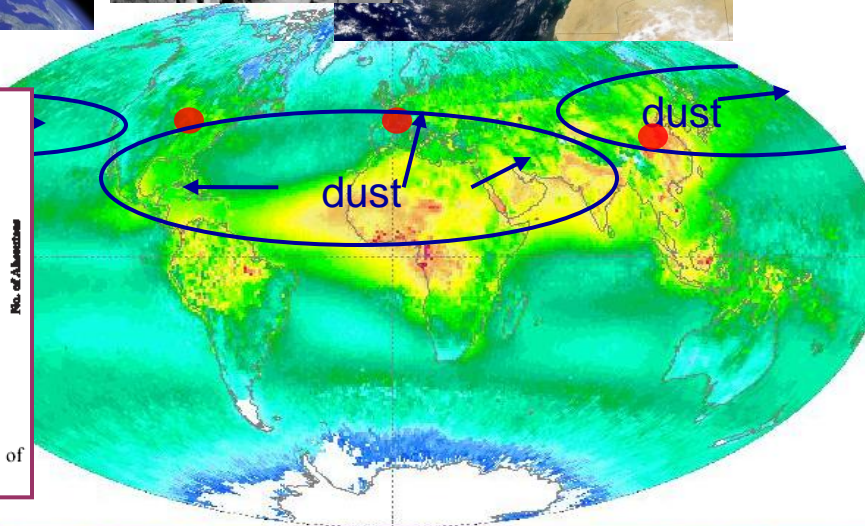
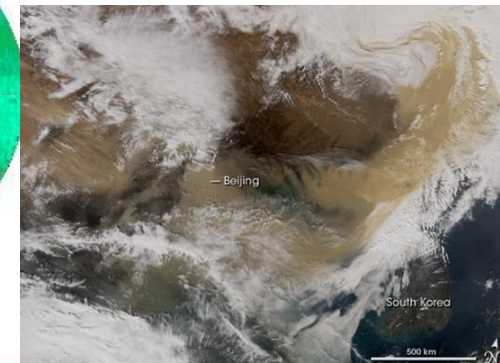


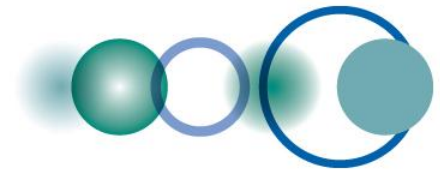
Fig. 18. PM2.5 hourly concentrations and daily number of student absences at Lubbock, Texas.



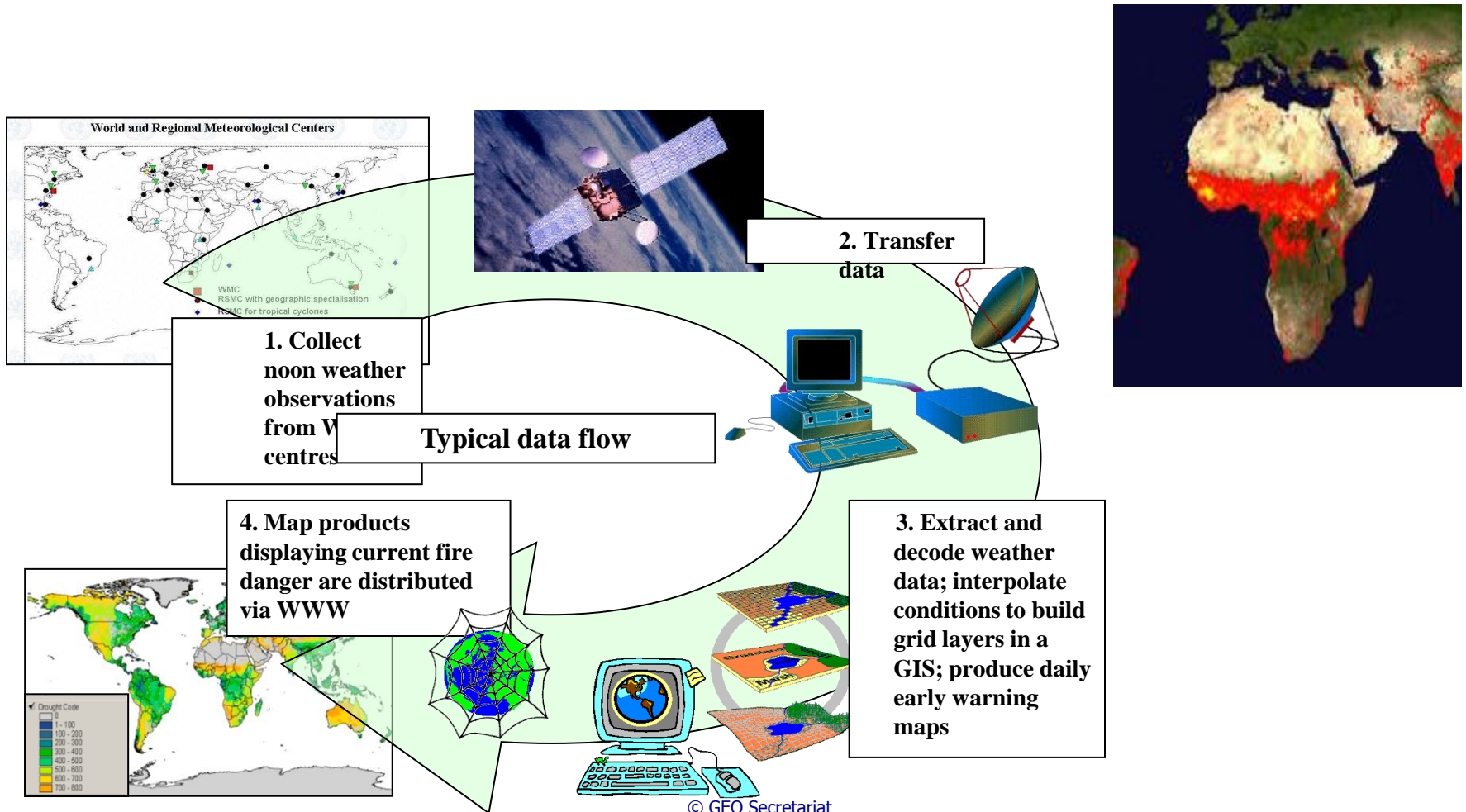
0.0 0.2 0.4 0.6 (550nm)
courtesy of S.Kirne (MPI-Meteorology, Hamburg)

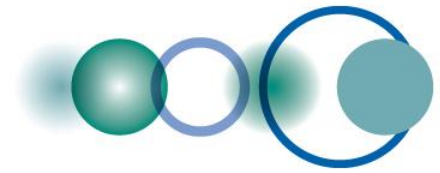


**Eleven Institutions With SDS Forecasts Available on the Internet:
Three Major Nodes In the System**



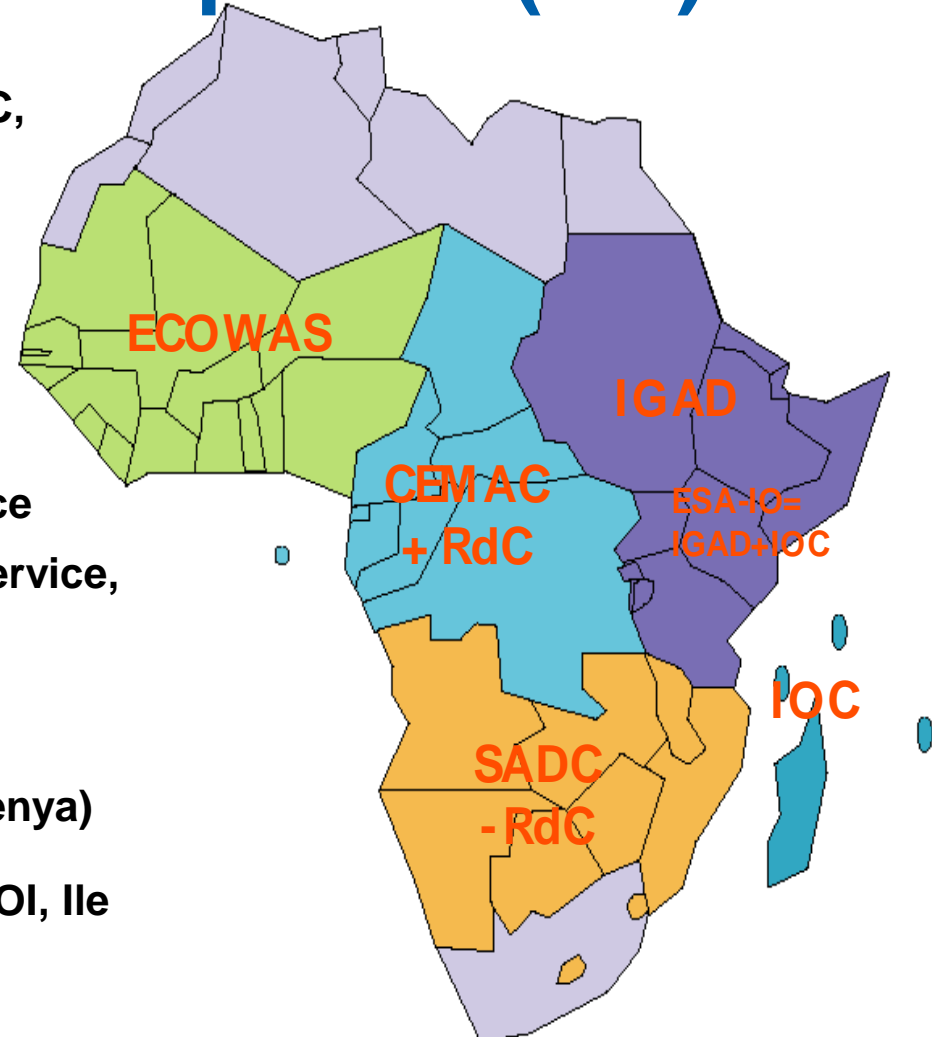
Wildland Fire Early Warning

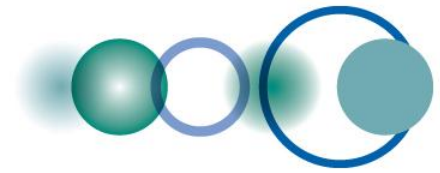




African Monitoring for Environment and Sustainable Development (EC)

- **Water Resource Management, (CEMAC, CICOS, RDC)**
- **Water Management for Cropland and Rangeland Management (ECOWAS, AGRHYMET, Niger)**
- **Agricultural & Environmental Resource Management (SADC, Meteorological Service, Botswana),**
- **Land Degradation, Mitigation & Natural Habitat Conservation (IGAD, ICPAC, Kenya)**
- **Marine & Coastal Management (IOC, MOI, Ile Maurice)**

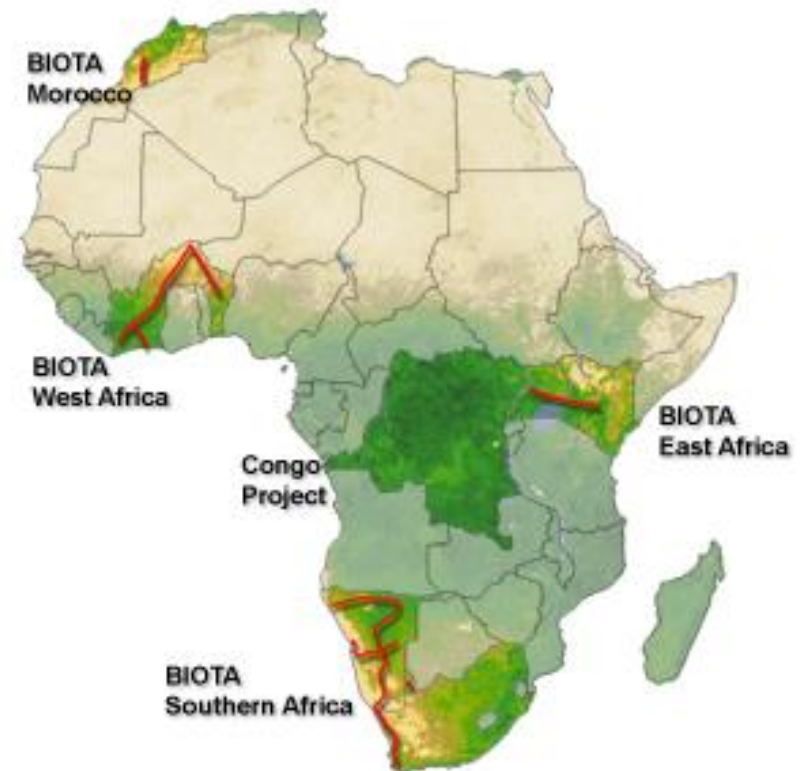


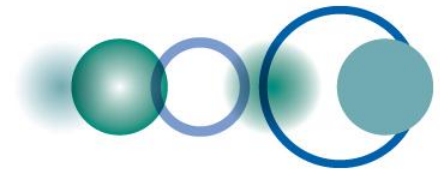


BIOTA AFRICA

**A Contribution to
GEOBON**

BIOdiversity
monitoring
Transect analysis
in **Africa**



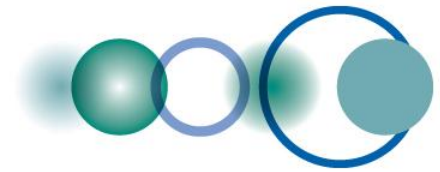


AEGOS objectives

African-European Georesources Observation System

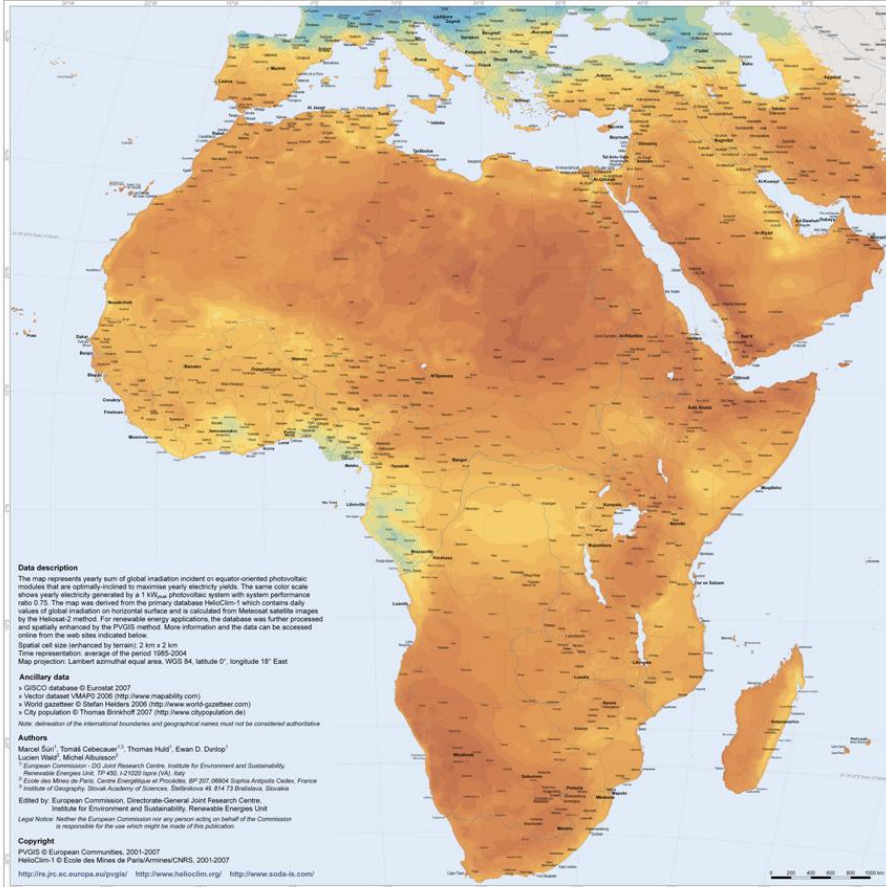


- > Design a pan-African infrastructure of interoperable data and user-oriented services to strengthen the sustainable use of georesources in Africa
- > Safeguard, share, valorise the knowledge and data archived in African and European geological surveys
- > Support geoscientific communities and institutional decision-makers for sustainable development public policies
- > Create a network of contributing partners

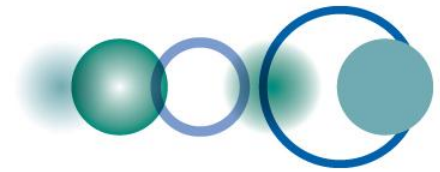


ENVISOLAR – Environmental Information for Solar Energy from Space (France, EC)

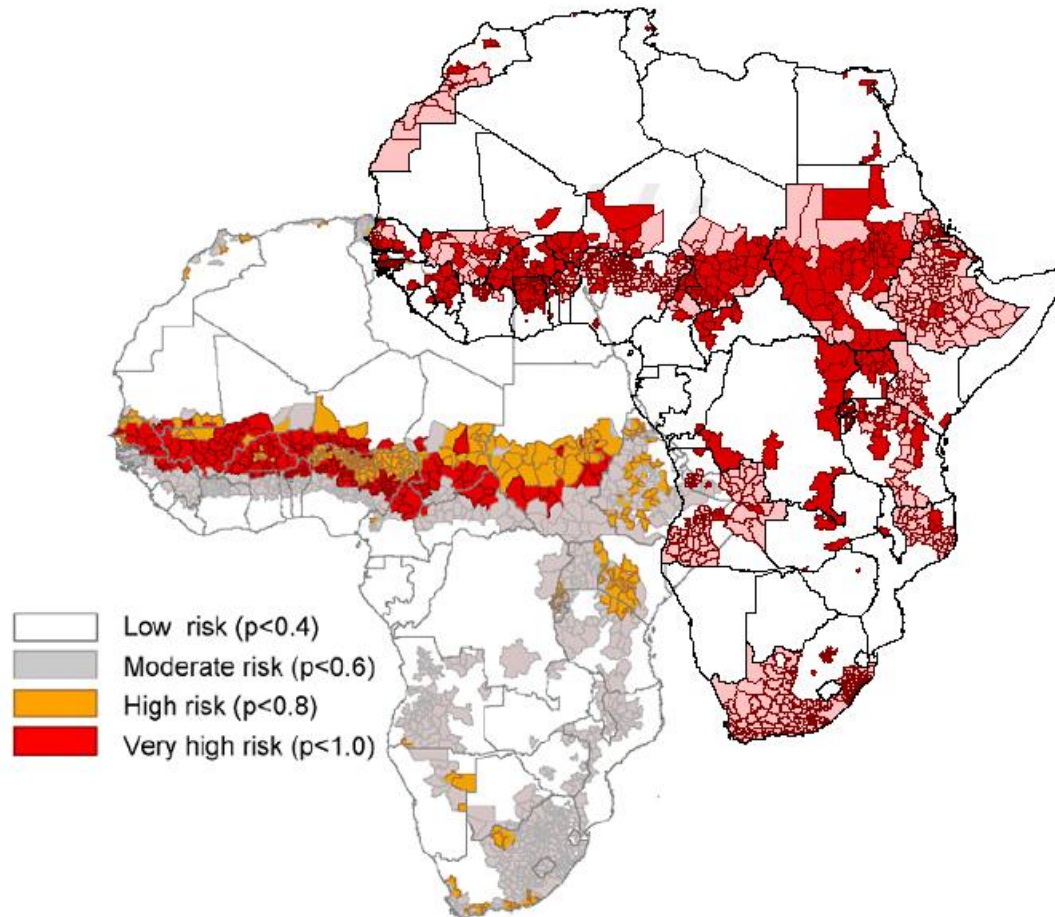
Photovoltaic Solar Electricity Potential in the Mediterranean Basin, Africa, and Southwest Asia



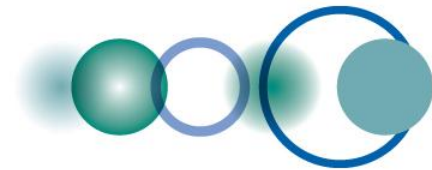
Solar electricity potential (JRC/Armines)



MERIT: Meningitis Environmental Risk Information Technologies (USA, WMO, Switzerland)



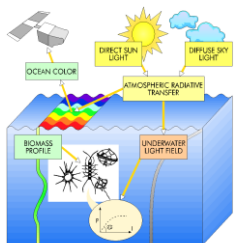
Plan WHO
Meningitis
Vaccination
Campaigns



Satellite derived products



Models data



Environmental variables (e.g. Bathymetry)

ChloroGIN

Chlorophyll Globally Integrated Network

Chlorophyll Globally Integrated Network

What is ChloroGIN?
An international network providing multi-scale data and information on the global ocean ecosystem.

Why Ocean Colour?
Satellite measurements provide ecosystem indicators over large scales at low cost.

Measuring the Oceans at Different Scales
Combining ecosystem information from satellites and local measurements allows a greater understanding of ecosystem function.

Why In Situ Data?
To complement and extend satellite observations, and to validate remote sensing.

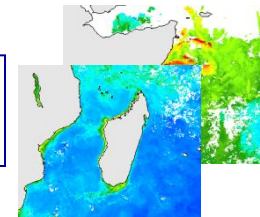
Societal Benefits
Disasters: extreme events and harmful algal blooms
Health: disease and harmful algal blooms
Climate: long term monitoring & modelling
Water: understanding global water cycles
Weather: understanding the ocean-atmosphere system
Ecosystems: observing the global ecosystem
Agriculture: aquaculture & fishing applications
Biodiversity: understanding marine productivity

A Network of Capacity

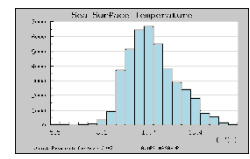
The Way Forward
Extend the network, develop the capacity, expand the services.

chloroGIN

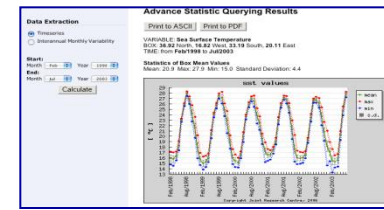
Maps Navigation



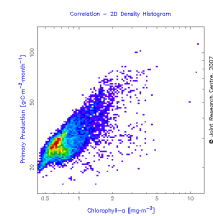
Basic Statistics



Time-series



Threshold analysis



Multivariate analysis

African Marine Information System **amis**

EUROPA > European Commission > DG JRC > IES > AMIS Home > GIS Functionalities

Chlorophyll-a Concentration (mg·m⁻³) - July 2002

West lon: -38.00 South lat: -58.00 East lon: 68.00 North lat: 48.00

Legend

0.0 0.2 0.4 0.6 1.0 1.5 2.0 3.0 5.0 10.0

Reference Map

Variables

- BIOSISICAL
- Sea Surface Temperature
- Bathymetry
- HYDROLOGICAL
- Chlorophyll-a
- Primary Production
- Office Alteration

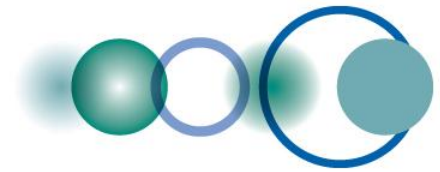
Time

Year: 2002 Month: Jul

Option map

- Grid
- Borders
- UVMs
- Contour

DRAW PRINT PDF



- GEO Web Portal and GEOSS Clearinghouse
- GEONETCast: a Global Environmental Information Delivery System
- CBERS for Africa
- SERVIR – Africa, in cooperation with RCMRD
- Sand and Dust Storm Warning System
- Global Wildland Fire Early Warning System – African Component
- Puma, AMESD and GMES Africa
- GEOBON – GEO Biodiversity Observation Network
- TIGER - Towards an African Water Observation System
- SoDa - Solar Data for Developing Countries
- MERIT- Meningitis Environmental Risk Information Technologies
- Evaluating African Protected Areas
- ClimDev Africa - Climate for Development in Africa Programme
- ChlorOGIN Building a Chlorophyll Ocean Global Integrated Network
- GeoAFRICA

Thank you!

