

IGWCO and its interactions with the AfWCCI

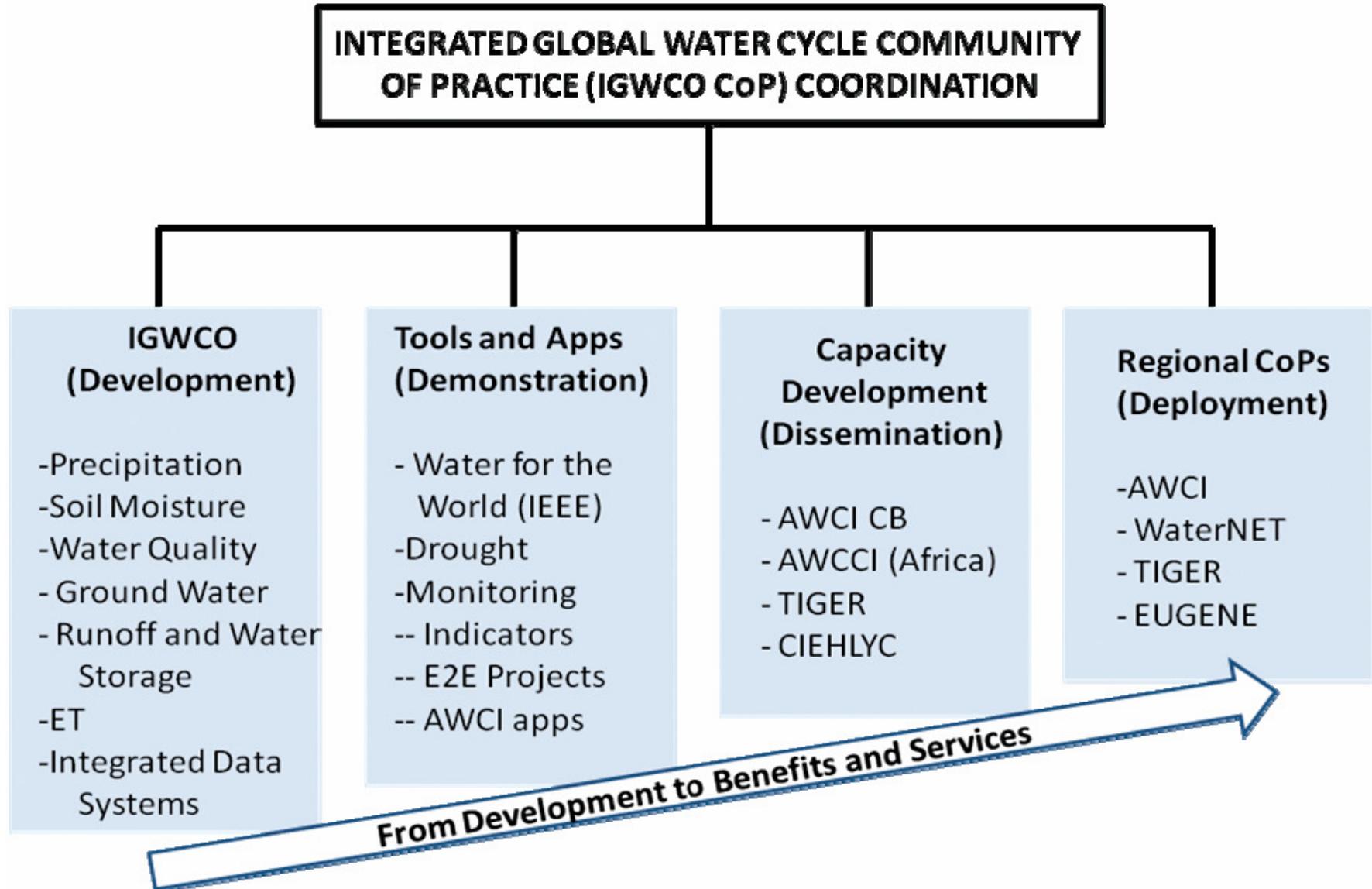
Rick Lawford
Nairobi, Kenya

January 2012

GOALS OF THE IGWCO COP

1. To facilitate the engagement and coordination of the water cycle community's inputs to the GEO Work Plan by promoting interaction, support, involvement and application of the GEO results and principles.
2. To explore new concepts/issues not currently addressed in the GEO work plan and help to bring them to the level of maturity where they can be included in future work plans.
3. To serve as a voice of the water cycle community for issues of concern related to GEO, CEOS (Committee on Earth Observing Satellites), WMO, WCRP and others.
4. To serve as an interface between the users of water cycle products and the providers of these products.

In 2012, IGWCO will place more emphasis on developing the “Tools and Apps” and the “Regional COPs”.

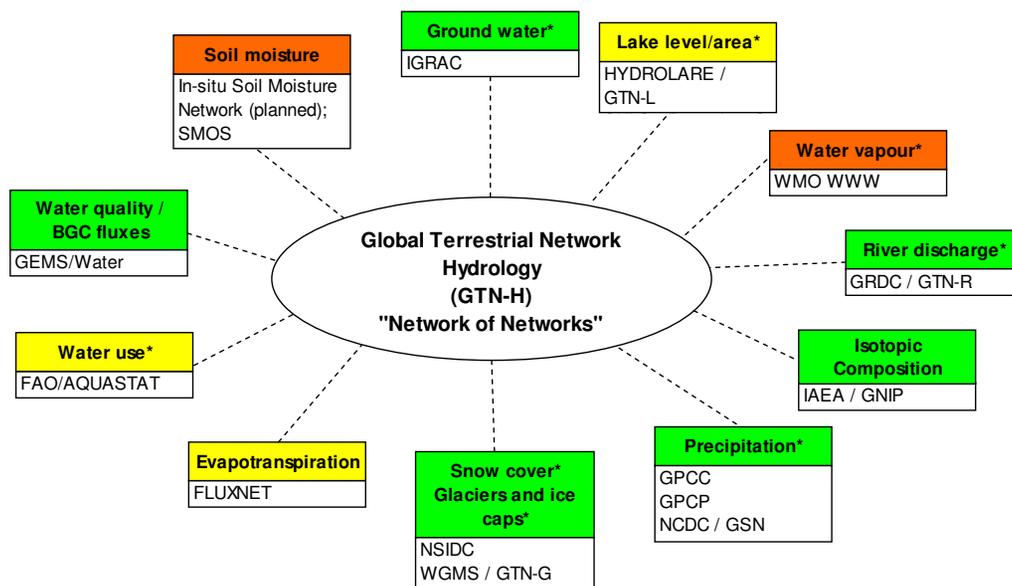


IGWCO Partners: The World Meteorological Organization (WMO) through the Global Terrestrial Network for Hydrology (GTN-H) and the Committee of Earth Observing Satellites (CEOS) support IGWCO and delivery on the GEO water tasks.

CEOS



GTN-H



Water Task activities of the 2012-2015 GEO Work Plan (WA-01)

Subtask

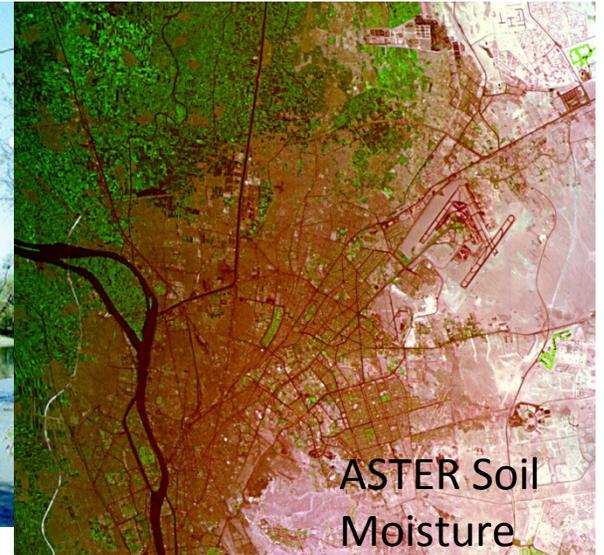
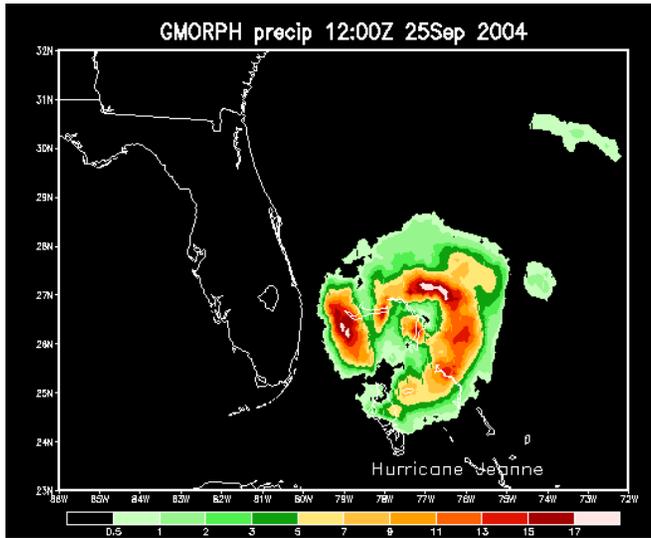
1 Integrated Water-cycle Information Products and Services (Precipitation, soil moisture, evapotranspiration, runoff and terrestrial water store)

2 Information Systems for Hydrometeorological Extremes (GDEWS, Drought Impacts, Floods)

3 Cold Region Information Services

4 Global Water Quality Information Products and Services (Remote Sensing, Sediments, UNEP GEMS)

5 Data System Development, Implementation and Capacity Building (CIEHLYC, AWCI, AfWCCI, IEEE Pilots)



Integrated Water-cycle Information Products and Services

Improvements and expansion of in-situ networks, combined with new and existing satellite missions and emerging assimilation and prediction capabilities, are opening the door to a new era in global water-cycle management.

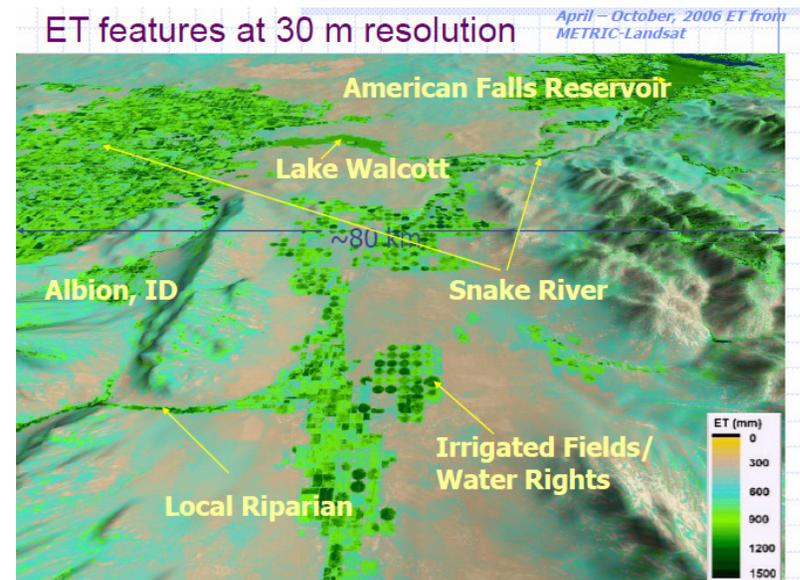
a) Precipitation

b) Evapotranspiration

c) Soil Moisture

d) Runoff and Terrestrial Water Storage

e) Water Cycle Integration



Results of a recent GEO survey of data needs in its nine Societal Benefit Areas

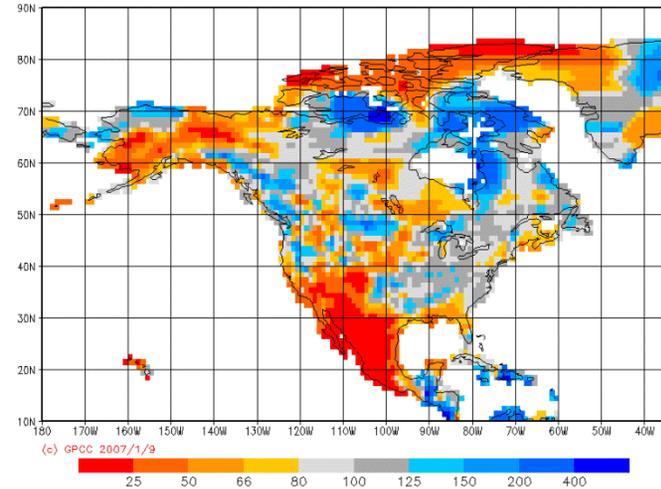
Variable	Ranking in the Cross-SBA List in US-09-01a	Status of Observations	Possible Follow-on
Precipitation	#1	In good shape in most areas	GPM needs support IGWCO happy to help with US-09-01a follow-on
Soil Moisture	#2	SMOS & SMAP beneficial. Surface obs need help	
Surface Humidity U. Air Humidity	#6 #17	IGWCO has looked to GEWEX to lead	Intercomparison of products.
Vegetation Cover (Evapo-transpiration)	#7	ET is not included as an GCOS ECV	ET workshop planned
River flow Observations	#19	WMO has advanced HARON proposal	NASA/CNES has a mission proposal under development

Information Systems for Hydrometeorological Extremes (GDEWS, Drought Impacts, Floods)

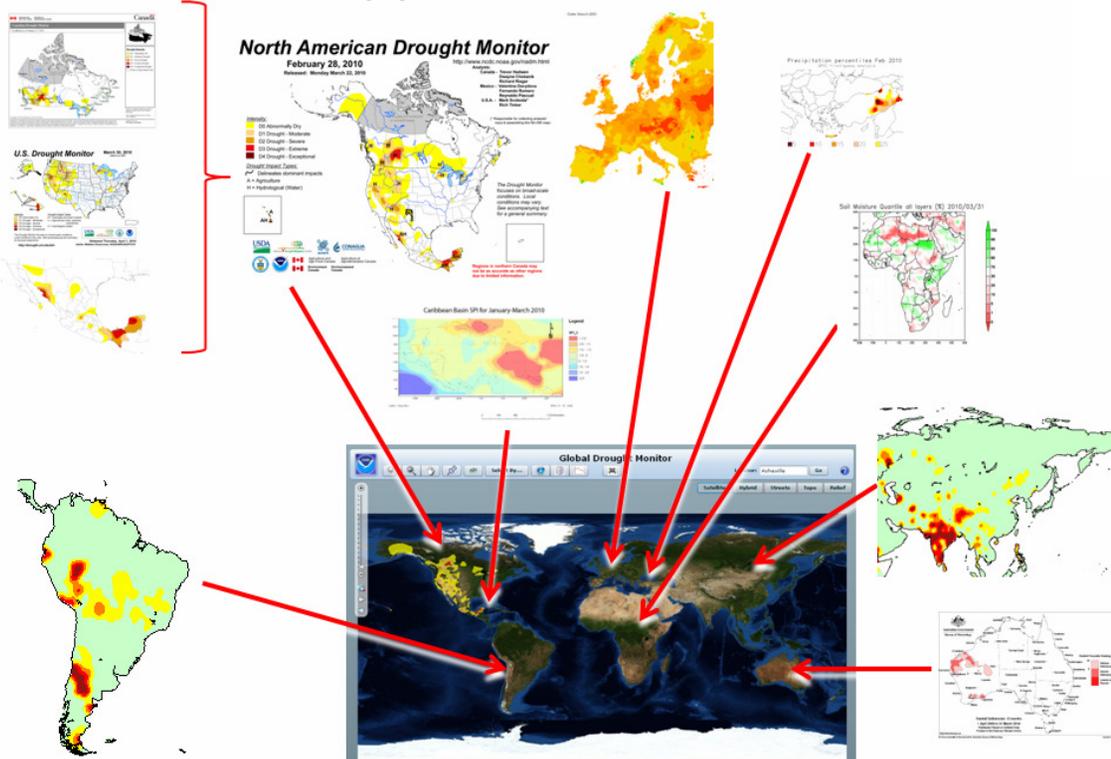
Pathways to a Global Drought Monitoring Product

Global coverage by a single product or index

GPCC Monitoring Product Gauge-Based Analysis 1.0 degree precipitation percentage of normals B1/90 for Season (Dec,Jan,Feb) 1998/1999 (grid based)

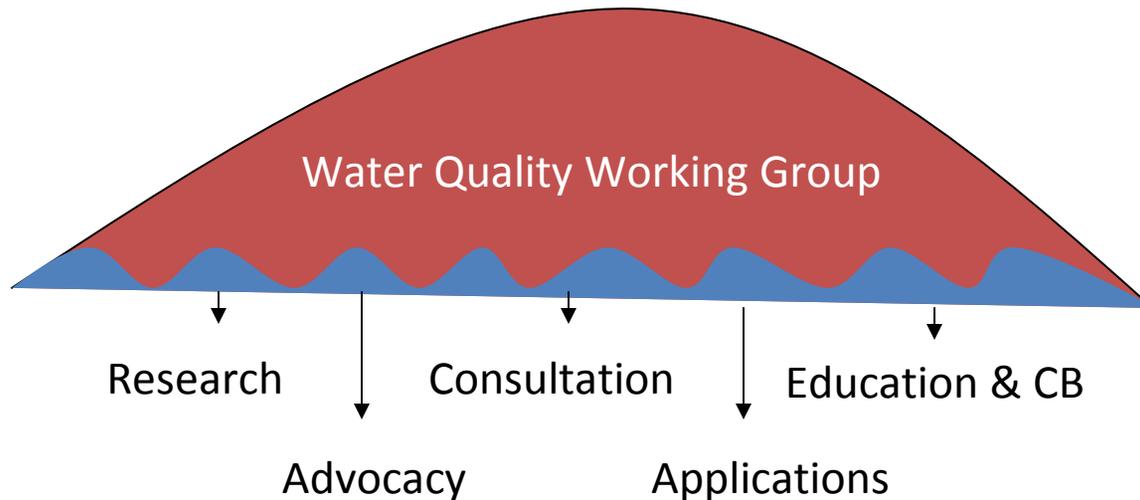


The mosaic approach



Research is planned to evaluate the degree to which drought impacts in parts of the world can be assessed using a global set of indicators in combination with local information.

Global Water Quality Information Products and Services (Remote Sensing, Sediments, UNEP GEMS)



- Currently 45 members
- Three informal gatherings
- GEO Geneva Workshop
- One teleconference call
- Formation of sub-committee on *Terms of Reference* (Vision, Goals, Objectives, roadmap)
- Possible Community of Practice

Water Quality activities focus on both freshwater and marine waters. In the newest work plan the subtask has been expanded to include sediments and The development of a prediction system.



IEEE *Water for the World* Demonstration Project

Monitoring Water Quality in Lake Nicaragua by Satellite Remote Sensing

Project Manager: Steven R. Greb

Project Objectives

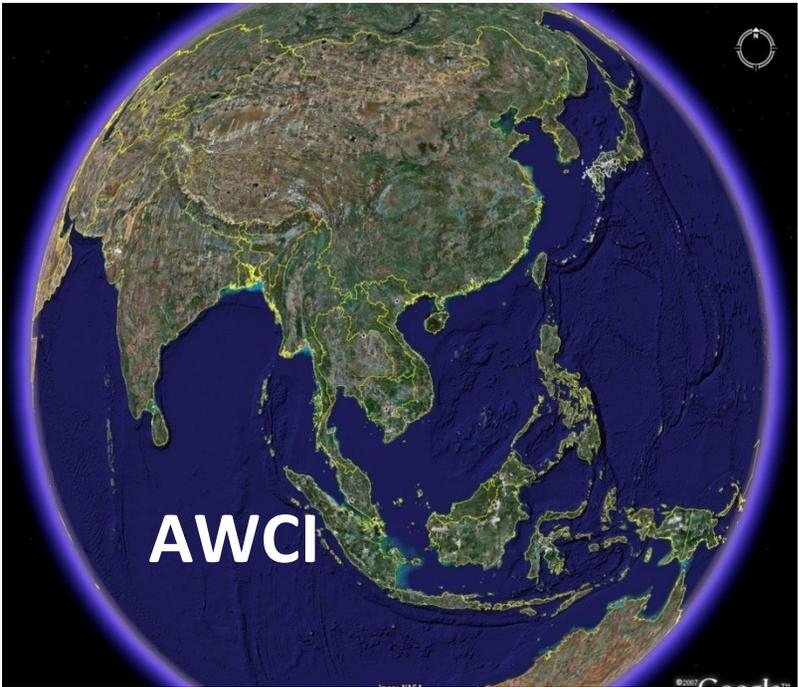
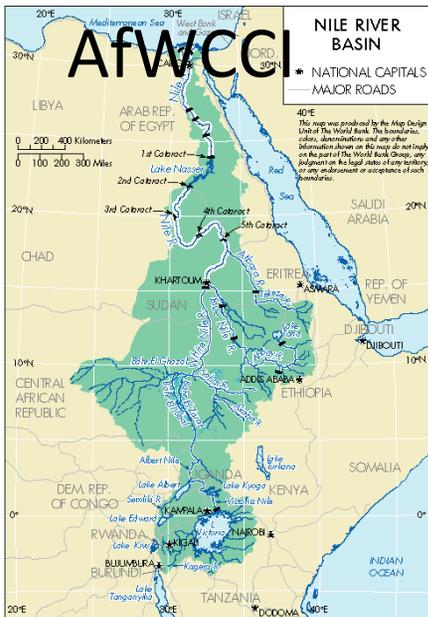
1. Demonstrate the efficacy of using satellite remote sensing for monitoring water quality in the Central American lake of Lake Nicaragua.
2. Share the operational use of this newly developed tool with local water quality managers for future monitoring of both seasonal and annual water quality conditions and anticipates future problems in the lake.
3. Share the data products from this pilot project with the global remote sensing community in an effort to interlink systems and fill the void of Central America regional water quality information.
4. Share the developed remote sensing techniques refined in this pilot project with the global community in the hopes that it will be used by other investigators.



Information System Development and Capacity Building (CIEHLYC, AWCI, AfWCCI, IEEE Pilots)

Water Cycle Capacity-Building Workshop

Cartagena-Colombia 2011
November 28 - December 2 2011



Other Activities anticipated in 2012:

IGWCO will:

- collaborate with GEOWOW (GEOS Interoperability For Weather, Ocean and Water) in defining information needs.
- collaborate with AIP5 and the implementation of Water ML.
- continue to explore the use of indicators for linking Water cycle information with other types of information for Drought monitoring, etc.
- Support where possible work related to the Water-Energy-Food nexus.
- Support initiatives that build towards a “green economy”.
- Provide substantive inputs to the “GEO Water Cycle Strategy : from observations to decisions.”

IGWCO will also support progress toward more integrated approaches to water management: (WEF Nexus)

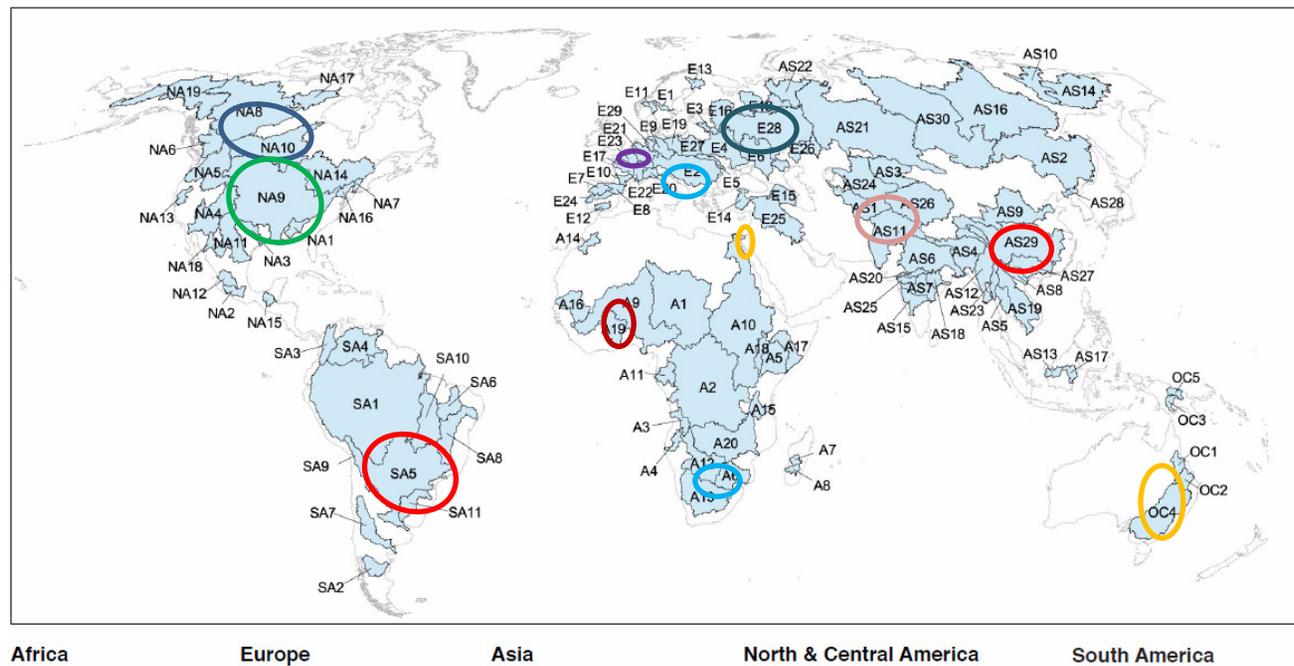


The 2011 World Economic Forum report identified three major risks for the global economy:

1. The macroeconomic balances nexus
2. The illegal economy nexus
3. The water-food-energy nexus

GWSP GCI 2:

A survey of the GCI 1 Basins (plus others) will be taken out the next four months with a focus on the W-E-F nexus, including the role of Earth Observations.



Africa

Europe

Asia

North & Central America

South America

Some Upcoming IGWCO COP Meetings (2011 - 2012):

January 2012: Workshop on African Basins (Kenya)

February 2012: IGWCO Planning Meeting (Hawaii)

February 2012: Third Annual African WCCI Symposium (Gabon)

March or April 2012: Pacific GEO Symposium (Japan)

March 2012: Contribution to the “Planet in Peril” Conference (UK)

June 2012: RIO + 20 Conference (Brazil)

July 2012: NEESPI-GEO Capacity Building Workshop (Under discussion) (Russia)

How IGWCO could benefit from the results of this workshop:

1. The development of AfWCCI would be strengthened and accelerated.
2. Projects would be initiated that strengthen:
 - delivery on 2012-2015 work plan commitments
 - user engagement.
 - collaboration between IGWCO partners (CEOS, WMO, Nations).
 - convergence in water cycle capacity building efforts
 - in-situ observations networks
 - linkages to RIO+20 activities and the Green Economy
 - GEO infrastructure and principles
 - links with water resource management and economic considerations including the W-E-F nexus.

WA-01 Integrated Water Information (incl. Floods and Droughts)

C1: Integrated Water-cycle Products and Services

C2: Information Systems for Hydro-meteorological Extremes (incl. Floods and Droughts)

C3: Information Service for Cold Regions

C4: Global Water-Quality Products and Services

C5: Information System Development and Capacity Building



Global Drought Monitoring (Canada, USA, Mexico, EC)



North American Drought Monitor

March 31, 2010

Released: Tuesday, April 20, 2010

<http://www.ncdc.noaa.gov/nadm.html>

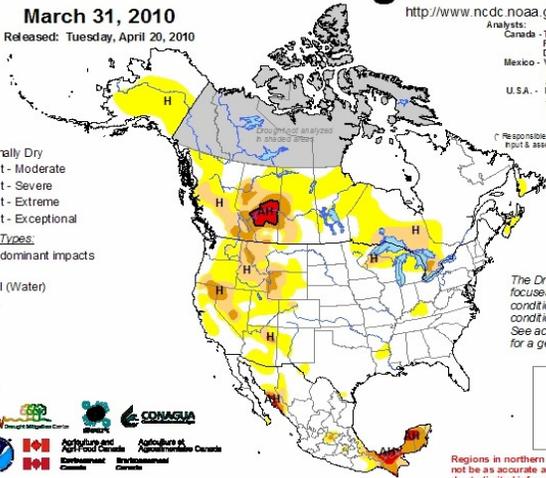
Analysts:
 Canada - Trevor Hadwin, Richard Siegel
 Dwayne Chobanik
 Mexico - Valentina Davydova, Fernando Romero
 A delira A Ibanil
 U.S.A. - Matthew Rosenzans, Jay Lavrimore*, Liz Love-Brotak

* Responsible for collecting analysts' input & assembling the NA-DM map

- Intensity:**
- D0 Abnormally Dry
 - D1 Drought - Moderate
 - D2 Drought - Severe
 - D3 Drought - Extreme
 - D4 Drought - Exceptional

Drought Impact Types:

- ~ Delinates dominant impacts
- A = Agriculture
- H = Hydrological (Water)



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text for a general summary.

Regions in northern Canada may not be as accurate as other regions due to limited information.



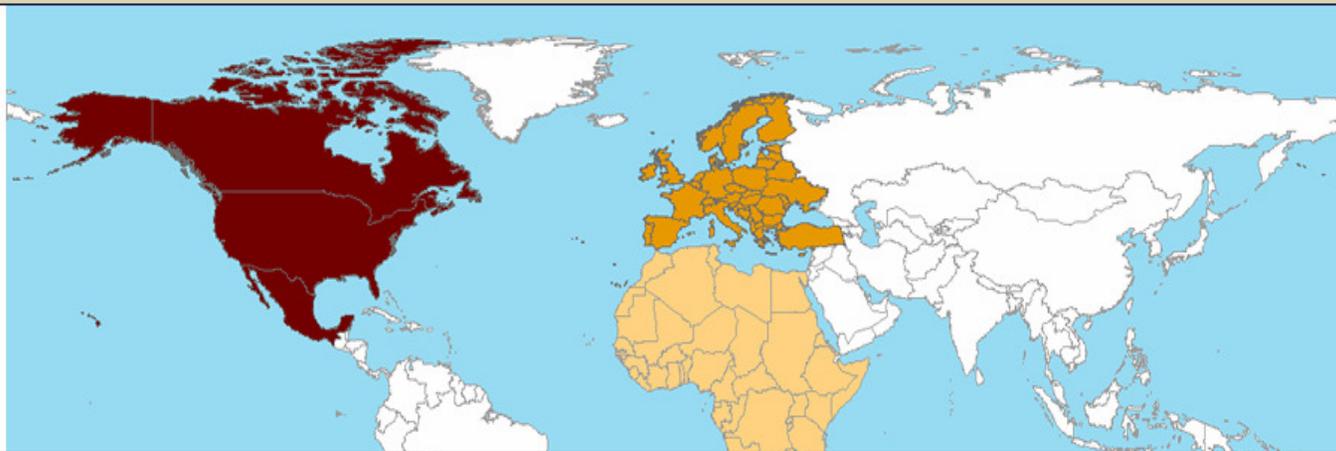
Integrating regional drought monitors



Beyond Drought

Global Participation for Better Planning and Response

CURRENT CONDITIONS INTERACTIVE MAPS AND DATA REGIONAL DROUGHT MONITORING ABOUT



US National Integrated Drought Information System (NIDIS) hosting global drought portal, bringing together:

- North American Drought Monitor
- Princeton University drought monitor for Africa
- European Drought Observatory
- China, Argentina, and Australia to join soon...

The complete understanding and management of the continental water cycle can be significantly improved through the combination of observations from various disciplines, nations and agencies: **gravity field** changes measured by the GRACE (NASA/DLR) satellite reflecting the redistribution of subsurface water masses stored on continents; level of lakes and rivers measured by **altimetry** satellites Jason (CNES/NASA/EUMETSAT/NOAA) and Envisat (ESA); and observations from networks of **in-situ** water discharge/run-off stations.

