

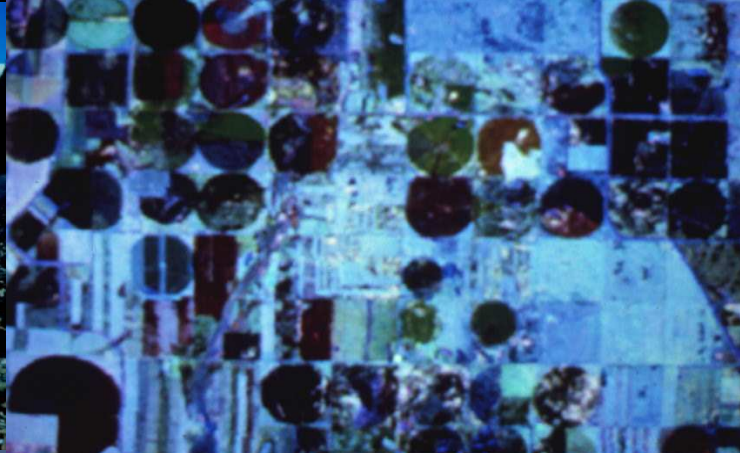
**SUMMARY OF WORKING GROUP DISCUSSIONS  
WORKING GROUP #3  
(DISASTERS, GEOHAZARDS, WATER CYCLE, COASTAL  
ZONE)**

7<sup>TH</sup> GEO UIC MEETING  
Toronto  
May 7. 2008

# DATA PRODUCTS



A WATER  
CYCLE GEO  
COMMUNITY  
PAC



DATA

# SCOPE OF THE WATER CYCLE COMMUNITY OF PRACTICE

ONE SCENARIO:

# THE WATER CYCLE COMMUNITY OF PRACTICE

CoP  
EXECUTIVE

REGIONAL  
CoPs

- AWCI
- WaterNET
- TIGER
- Water in the Americas

IGWCO /GEO  
INITIATIVES

**CEOP**

E2E INITIATIVE

OUTREACH AND CAPACITY  
BUILDING

# Observation Resolutions & Systems

<b>Primary Water Cycle Var.</b>	<b>H-Res</b>	<b>T-Res.</b>	<b>V-Res</b>	<b>Accu/Units</b>	<b>In-situ Obs &amp; Surface-based</b>	<b>Remote sensing satellites</b>
Precipitation (liq./solid)	L: 1 Km R: 10 Km G: 50 to 100 Km	L: 1 hr R: 3 hr G: 1 d	N/a	0.1mm/5%	Surface gages, Doppler  Radar	SSM/I, TRMM (& GPM follow on), AMSR, AMSR-E, Geost. Env Sat's, Polar Orb. Sat's, NPOESS
Water vapor & RH (Surface, column amounts, profiles)	L: 1 Km R: 10 Km G: 50 to 100 Km	L: 1 hr R: 3 hr G: 1 d	0.5 – 0.5 Km	1-5%	Surface met., Radiosonde,	SSM/I, MODIS, HIRS, AIRS, TES, CHAMP, COSMIC, NPOESS
Soil moisture (surface/sub-surface → Vadose zone), freeze/thaw state & timing ?	L: 1 Km R: 10 Km G: 50 to 100 Km	L: 1 to 6 hrs R: 1 d G: 1 d to 1 m	10 cm to 1+ m to depth of water  table	0.02  m <sup>3</sup> /m <sup>3</sup>	Mesonets, Cli. Ref. Nets, Reg. soil moisture networks	(CMIS, CrIS) SMMR, AMSR, AMSR-E, SMAP, SMOS,

# Key Measurements for Water

Requirement	Observed or Derived	Amenable to Remote Sensing?	Importance	Status	Gaps and Challenges	Crosswalk with other SBAs
Precipitation	Observed	Yes	Important flux variable in the water cycle	Good national coverage with manual observing stations and radar networks	Need more real-time ground-based data for quantification. Preservation of long-term stations. More stations on Tribal lands.	Climate, Agriculture, Weather, Disaster
Soil Moisture	Observed and Derived	Can help with derived estimates	Important storage variable in the water cycle	National coverage could be improved	Enhance spatial coverage of data to support estimates.	Climate, Agriculture, Weather
Groundwater storage	Observed: water level; Derived: storage	Yes, microgravity measurements (GRACE)	Important storage variable in the water cycle	Some aquifers well monitored; most need improvement	Enhance spatial and temporal coverage of ground-water level monitoring.	Climate, Agriculture
Surface water levels and extent (lakes and reservoirs)	Observed: water level; Derived: storage	Remote sensing can determine areal extent of water surface	Important storage variable in the water cycle	Many reservoir operators collect data; national coverage should be improved.	Integrate data from various sources.	Disaster, Climate, Agriculture, Ecosystems
Snow and Ice extent and thickness	Observed: depth, cover; Derived: water equivalent, melt rate	Yes	Important flux and storage variable; determines water supply for much of the West	Good national coverage from remote sensing and ground-based networks; some erosion of ground-based coverage	Maintain and expand coverage of SNOTEL stations, and expand coverage to the north central and northeastern states. Integrate in situ and remotely sensed data.	Climate, Agriculture, Weather
Streamflow	Observed: water level; Derived: streamflow	Remote sensing may provide estimates for large ungaged rivers	Important flux variable in the water cycle	Good national coverage through ground-based network; some erosion of coverage is occurring.	National network is 43% funded by state and local gov'ts. Additional Federal funding needed to maintain and expand the network, and RS techniques.	Disaster, Ocean, Climate, Ecosystems
Water quality monitoring	Observed	No for groundwater; Remote sensing can monitor plumes of sediment and algae in surface waters.	Needed to understand watershed and aquifer processes and guide anti-pollution efforts.	National networks are somewhat limited and are not well linked.	Enhance spatial and temporal and parameter coverage. Integrate data from various sources.	Ocean, Health, Ecosystems

# 9-Step UIC Process

(Status of the Review WC CoP  
Variables)

1. For each of the nine GEO SBAs, UIC Members identify Advisory Groups & Analysts who identify/develop the following **(Done)**
2. Scope of topics for the current priority-setting activity **(Done)**
3. Existing documents on observation priorities **(Done)**
4. Analytic methods and priority-setting criteria **(In-process)**
5. Priority observational needs from documents & interviews **(In-process)**
6. Combine the information & develop a preliminary priorities report **(In-process)**
7. Gather feedback on the preliminary report
8. Perform any additional analysis
9. Complete the report on Earth observation priorities

# QUESTIONS FOR THE FURTHER DEVELOPMENT OF THE WC NEEDS ASSESSMENT

- 1) Can UIC provide guidance on the preferred ways to interact with the end users (or the people at the end of the value chain)?
- 2) We think there may be many national surveys which are not currently considered in the WC data needs analysis. How can GEO help us acquire these national reports and other information needed?
- 3) What is the best way to structure the analysis (or presentation of the material):
  - by spatial scale?
  - by user class (e.g. water management, food security, etc)

## Coastal Zone Community of Practice Activities/Plans

A series of CZCP regional users workshops is currently being planned:

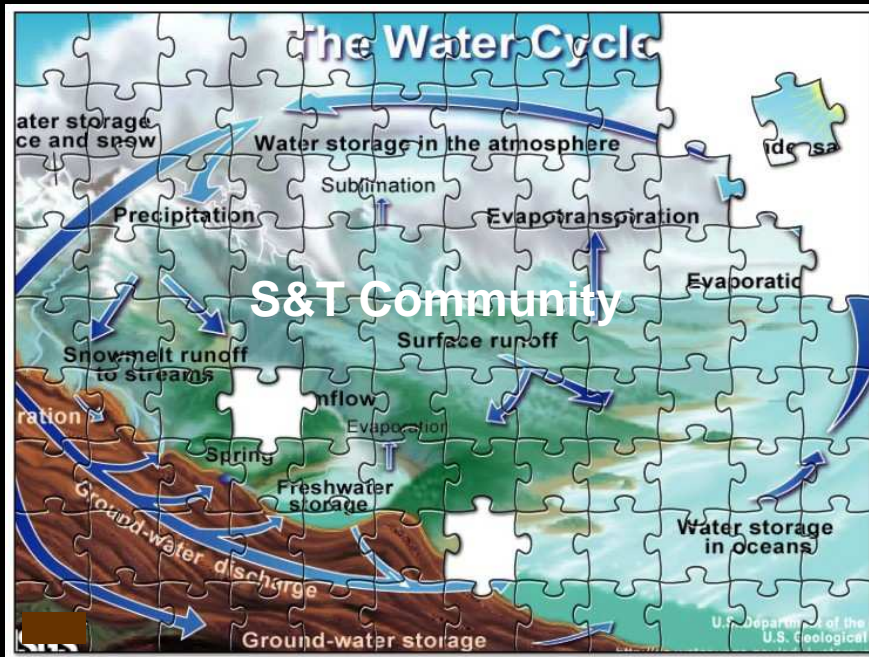
*“GEOSS Support for Decision-Making in the Coastal Zone: Managing and Mitigating the Impacts of Human Activities and Natural Hazards In the Coastal Zone”*

*Subsequent Workshops:*

Will be held in *2) Africa, 3) Asia and 4) the Americas* in the 2009-2010 timeframe; Suggestions welcome for specific locales/venues, hosts, sponsors et al. These workshops will also be developed in coordination with the GEO Secretariat.

The transition of the Coastal Zone theme from IGOS-P to a GEO CoP has gone smoothly but has raised concerns about the compatibility of the theme activities with the perceived mandate of a CoP.

# Path Forward

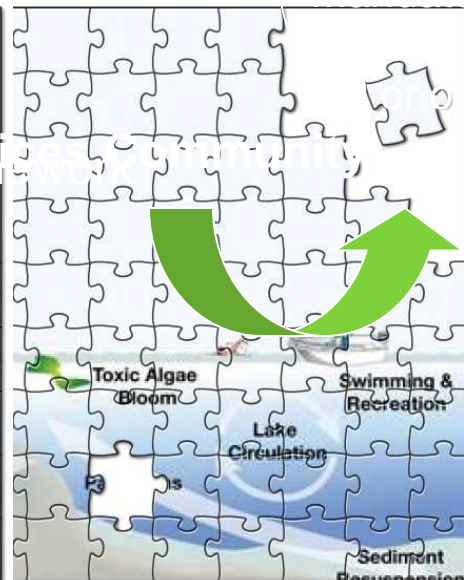
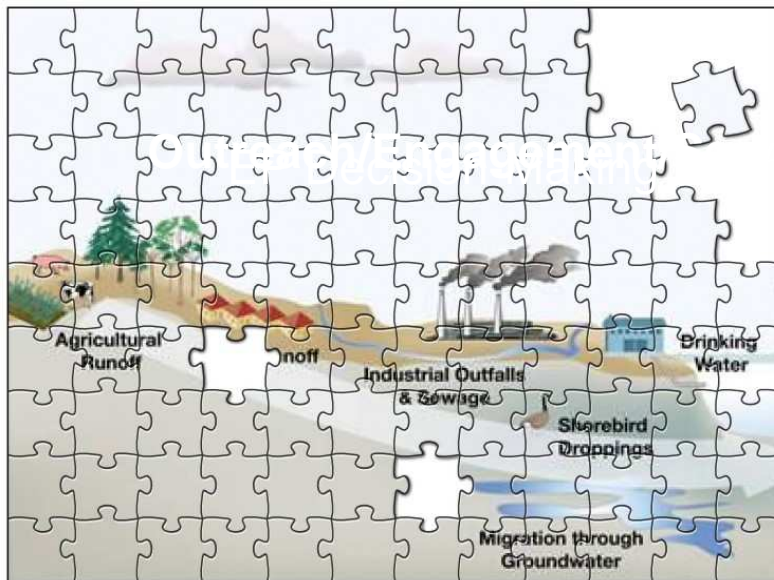


What's feasible  
S&T

What's:  
• Affordable  
• Mandated

What's  
what's usable  
produced

What's relevant  
Service



# IEEE WATER PROJECT

- IEEE Water Project Underway
- Global Panel coming together
- Actionable Vision in 2008
- Pilot Projects in 2009



## Water for the World

Water for the World could provide an excellent platform for some of the needed Water Cycle demonstration projects.



The Global Geodetic  
Observing System



International  
Association of  
Geodesy

**GGOS Vision:**

*Empowering with geodesy the advancement of society*

*GGOS is the flagship component of the IAG whose goal is to advance geodetic observing methods for Earth and planetary system science and applications.*

The GGOS Mission is to:

- **define** the geodetic infrastructure that is needed to meet scientific and societal requirements;
- **advocate** for the establishment and maintenance of this geodetic infrastructure;
- **improve** the quality of and accessibility to geodetic observations and products;
- **coordinate** interaction between the IAG Services, Commissions, and stakeholders;
- **educate** the scientific community about the benefits of geodetic research and the public about the fundamental role that geodesy plays in society.

# NEW GEO TASKS

WC 1: IGWCO rewriting WA-08-01 to incorporate the consequences of merging IGWCO and GEO Water activities. This means expanding the text to include the IGWCO precipitation, soil moisture, ground water sections. (Runoff and HARON are well covered).

WC2: IEEE study of “Water for the World” emphasizing the pilot projects to be implemented to support the development of “new” water resources.

## **Opportunities for Participation:**

- 1) The IGWCO E2E pilot projects and activities are very well suited to participate in Tiers 1 and 2 in this call.**
- 2) The Water Cycle capacity building efforts in the Americas would also mesh well with the Tier 1 of the Call.**
- 3) There is potential for funding for IEEE pilot projects such as ChloroGIN through this initiative.**

## Questions:

What scope is there at the national level for supporting consultative workshops on user needs and for the development of regional COP activities?

What is the best way to way to bring IGWCO activities closer to the WC CoP?

What analytical tools and concepts, support and services can UIC (and GEO) provide to enable the WC CoP to be more active and successful?

The UIC meetings provide some links between CoPs but many more could be Developed. The UIC should give more priority to promoting more cross-cutting themes.

# RECOMMENDED ACTIONS

- 1) CLARIFY THE MANDATE AND ACTIVITIES OF THE DISASTER CoP AND ITS LINK WITH GEOHAZARDS. (THE UIC COULD LEAD AN EXERCISE TO DO A FULL ANALYSIS OF ALL OF THE CoP's; RATIONALIZATION OF THE COMMUNITIES OF PRACTICE)
- 2) MEET THE DEADLINES FOR THE GEO TASK SUBMISSIONS.
- 3) MOVE FORWARD WITH THE WC USER NEED ASSESSMENT.
- 4) IGWCO AND THE WC CoP SHOULD TAKE MORE ADVANTAGE OF THE NEW USER NEEDS ASSESSMENT FRAMEWORKS AND THE ADC STRUCTURED APPROACH TO REGISTRIES, PORTALS, ETC.

## Regarding the IGOS/GEO merger:

The GEO process needs a more disciplined approach to capture the benefits of the IGOS-P themes. The UIC should take the lead in bringing this need forward to the GEO Executive.