Activity Report by Rick Lawford
In 2008, the IGWCO became the IGWCO Community of Practice within the GEO framework.

**Integrated Global Water Cycle Community of Practice (IGWCO COP) Coordination**

- **IGWCO (Development)**
  - Precipitation
  - Soil Moisture
  - Water Quality
  - Ground Water
  - Runoff and Water Storage
  - ET
  - Integrated Data Systems

- **Tools and Apps (Demonstration)**
  - Water for the World (IEEE)
  - Drought
  - Monitoring
    -- Indicators
    -- E2E Projects
    -- AWCI apps

- **Capacity Development (Dissemination)**
  - AWCI CB
  - AWCCI (Africa)
  - TIGER
  - CIEHLYC

- **Regional CoPs (Deployment)**
  - AWCI
  - WaterNET
  - TIGER
  - EUGENE

*From Development to Benefits and Services*
Priority Issues (L&C Americas):
- Floods
- Adaptation to Impacts of Climate Change (Receding Tropical Glaciers)
- Droughts
- Water Quality Issues

Priority Issues (Asia):
- Floods and Landslides
- Drought and Water Resources
- Water Pollution and ecosystem degradation
- Climate Impacts on Water

Priority Issues (Africa):
- Integrated Water Resources Management
- Adaptation to Climate Change
- Droughts
- Floods

Tunisia (01/09)
Japan (02/09)
Some Workshop Outcomes:

1) A dynamic web site has been developed for listing of data sets & services, project summaries with interactive capabilities.

2) Launched a “Coalición para la Información Espacial e Hidrológica en Latinoamérica y el Caribe” (‘CIEHLYC’). Includes reps from Argentina, Mexico, Columbia, Haiti, Brazil, USA & Canada. Petition to GEO in the Americas to be a formal Working Group.

3) A ‘Water Cycle Federation of America’ to help integrate existing projects and develop new projects and initiatives. Issues identified including floods, droughts, glacier retreat & climate impacts.

4) Contacts have been made with the WB small grants programme to seek funding for several small projects.
IEEE “Water for the World” Program

- Developing country focus
- In the field within one year
- Sustainable
- Scalable
- Reusable
- Fundable

Food Security: Water and Sustainable Agriculture - India

Urban Water - Ghana
<table>
<thead>
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<th></th>
<th>In-situ</th>
<th>Satellite</th>
<th>Integration</th>
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<tbody>
<tr>
<td>Soil Moisture</td>
<td>ISMWG</td>
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<tr>
<td>Precipitation</td>
<td>IPWG</td>
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<td>Runoff</td>
<td>WMO Lead</td>
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<td>Ground water</td>
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<td>Water Quality</td>
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<td>Possible New Products</td>
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<td>Evapotranspiration</td>
<td>Water Vapour</td>
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**Legend:**
- **Success**
- **Good Progress**
- **More effort needed**
Translation of Landsat ET to MODIS ET for Local to Regional Applications (R. Allen)

Right – USDA-ARS ‘Alexi-DisAlexi’ for Regional to Local ET. Applied to Nile. {30m – 25km}

One of Two NASA MODIS & Related Products in Near Real Time towards a Global ET. U Wash. Continental US 2001-2009.(to 1-km)

Normalized Evaporative Stress Index
USDA/ARS

July

NASA ET Satellite Data w/ Real-Time with Local to Global & Applications
Experience in using surveys of data centres to establish data centers alliances

First experimental alliance

Data Collection ↔ Services

Research ← Operations
Meetings where reference was made to GWSP


December 2009: IEEE/IGWCO Workshop on the use of water cycle information (San Francisco)

March 2010: IGWCO COP Planning Meeting at CCNY in New York

Planned Meetings for 2011

February 2011 – African Water Cycle Coordination Initiative (Ethiopia)

March 2011 – IGWCO COP Planning Meeting

April 2011 – Workshop on Evapotranspiration (NASA/USDA)

April 2011 – Workshop on Global Drought Monitoring (NASA)

April 2011 – TRACE Workshop

Others:

Date? - IEEE Water Quality and Health workshop
Date? – Latin and Caribbean Americas Water Cycle Capacity Building
User Engagement: Linking Earth Observations (Drought Monitoring) to Societal Benefits

Earth Observation Systems
- Remotely-sensed
- In situ

Societal Benefits
- Earth System Models
  - Oceans
  - Ice
  - Land
  - Atmosphere
  - Solid Earth
  - Biosphere

Policy Decisions
On-going feedback to optimize value and reduce gaps

Storages Anomalies in Saskatchew River Basin

Surface Measurements

GRACE Satellite

Drought
Flood

Time (Months)

-12
-8
-4
0
4
8
12

Apr-02 Oct-02 Apr-03 Oct-03 Apr-04 Sep-04 Mar-05 Sep-05 Mar-06

North American Drought Monitor
January 2006
Released: Thursday, February 16, 2006

Is more generation capacity needed?

Girling

Approaches:
- Table Top Exercises
- User Workshops

GRACE Satellite

Surface Storage
GRACE Storage

(Snelgrove)

2003/04
1976-2002

2002/03

27 Year Average

Nelson-Churchill Drainage Basin
Manitoba Energy in Reservoir Storage

(Snelgrove)
Future focus: develop a plan for integrating regional drought monitoring products into a global drought monitor.
Drought on the western Canadian prairies is an episodic event that occurs several times each decade. The talk will provide a brief overview of the drought phenomenon with perspectives on the past, present and future characteristics of the cause, intensification and demise of these events.

The objectives of DRI are:
- To better understand the physical characteristics of and processes influencing Canadian Prairie droughts, and
- To contribute to their better prediction.
DRI Legacy (Enhancing the DRI footprint):

In process:
- The DRI Glossy
- The DRI data system and DRI website
- A lecture series
- Methodologies for user engagement through Table Top exercises

Under consideration:
- A museum exhibit at a provincial museum
- Development of a curriculum on climate and Extremes
- Workshop on Climate and Extremes.
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Collaborations with the International Institute of Sustainable Development

- RBC funded the IISD Water Innovation Centre
- emphasis on the use of innovation to address environmental problems in the Lake Winnipeg basin

The IISD (Winnipeg) would be happy to host a GWSP/GCI Workshop in Winnipeg.

Would GWSP like to take them up on this invitation?
Opportunities:

1. There is a window of opportunity to submit an item to the 2012-2015 GEO Work Plan. Indictors would provide an excellent opportunity to link GWSP and GEO interests. Would GSI be willing to work with IGWCO to Develop a proposal for a work plan item.

2. DRI has been advancing its legacy during the past year. What is the legacy of GWSP 1 and how will it be developed?

3. There is considerable potential for convergence between GWSP GCI basins, RHPs and GEO CB and Demonstration Basins. GCI could provide a framework for bringing together those aspects of these basin activities that can inform GWSP objectives and questions. I would recommend that GCI in its next phase consider working towards this goal.
GCI Phase 2 (Scoping only):

Phase 2 of GCI is being implemented to address questions that are of concern for both the natural sciences and the social sciences. Key basins from Phase 1 and new basins that meet certain criteria will be surveyed to assess their Practices, constraints and vulnerabilities in 5 distinct areas:
- Tipping points and thresholds in relation to climate change.
- Methodologies for assessing risk from climate change, land use change, population growth.
- Characterization of the basin (drawing on inputs from Phase 1).
- Assessment of management practices and their relation to basin characteristics.
- The nature of governance in the basin and the factors controlling the evolution of basin governance principles.

Approach:
- A meeting with the principals will be held to develop the hypotheses to be tested.
- The questionnaire will be developed to address these questions and to obtain any missing information that has not been included from Phase 1.
- A preliminary analysis will be undertaken followed by a workshop where the responses to the analysis will be discussed with survey participants.
- Based on the results from this meeting a book on Phase 2 would be written.
Recommendations (not vetted by the CLB panel):

1. GWSP should explore the effect of the transfer of water-related information between regions, basins, cultures, etc in facilitating convergence in the provision of information and in the nature of decision making. (This could be part of GCI Phase 2)

2. GWSP should consider a comprehensive project to assess the value of water and develop a strategy for dissemination of the results to ensure they are used in priority setting in national and river basin plans.