



Canadian Group on Earth Observations (CGEO)

**GEO-DRI Drought Monitoring Workshop
Winnipeg, Manitoba**

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Environment Canada
10 May 2010





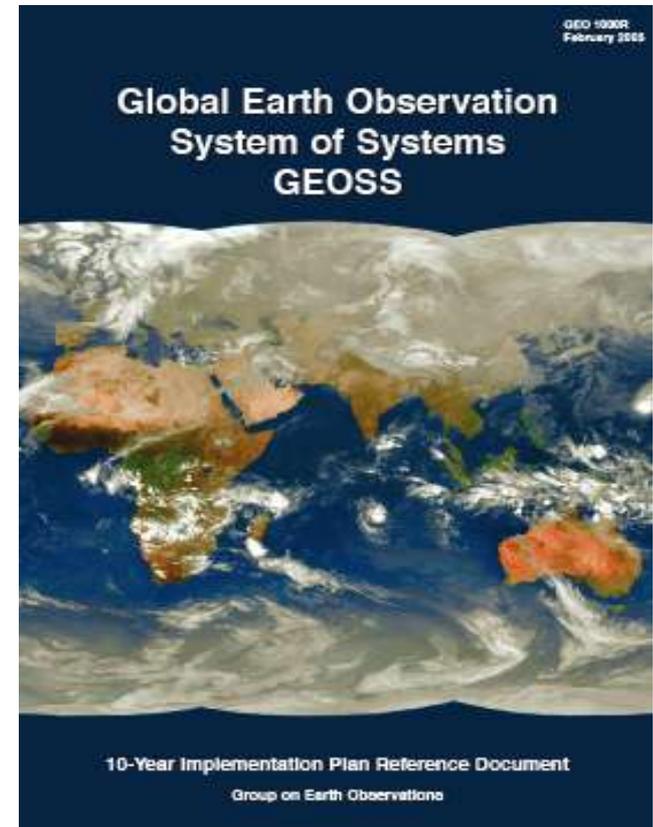
Outline

- Brief background on GEO, GEOSS & CGEO / website links
- Canada's role in GEO and GEOSS
- Example activities
- Canadian GEO challenges
- Possible roles for GEO-DRI
- Summary



www.earthobservations.org

- **GEO** – the intergovernmental **Group on Earth Observations** has 80 Member Countries and the European Commission and 58 Participating Organizations
- **GEOSS** – the objective of GEO is to implement a **Global Earth Observation System of Systems** over 10 years to provide coordinated, comprehensive, and sustained Earth observations





Group on Earth Observations (GEO)

Origins

- Importance of EO recognized at World Summit on Sustainable Development (Johannesburg - 2002)
- G8 recognition and support for coordinated and improved Earth observations
- First Earth Observation Summit – Washington, July 2003
 - Nations agreed to work cooperatively towards coordinated EO
 - principle of free, open, and timely exchange of data and information
 - Ad-hoc GEO formed
- Third Earth Observation Summit – Brussels, February 2005
 - New intergovernmental GEO organization formed
 - International Secretariat established in Geneva

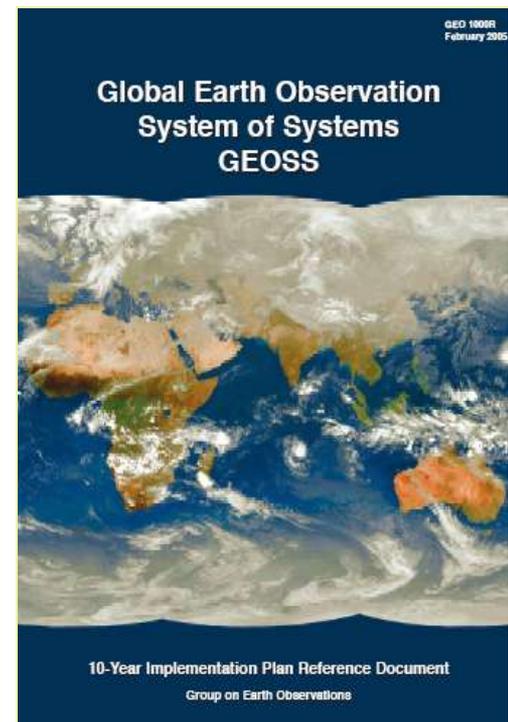




GEOSS 10-year Implementation Plan

Key GEOSS Concepts

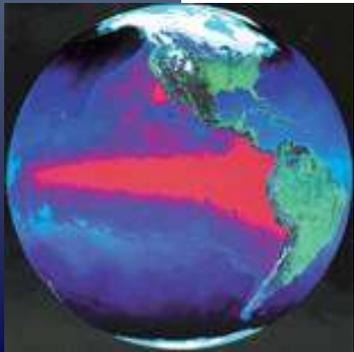
- build through voluntary contributions by participants
- build-on and enhance existing EO systems
- requirements driven - identify critical gaps and coordinate the response
- information highly discoverable and accessible through data sharing principles and interoperability standards
- development of new products and predictions to meet user needs in new domains (e.g. health, biodiversity)





Canadian GEOSS Imperative

- Some 30% of our economy is tied to the environment
- Scientific understanding and ongoing knowledge of the Earth system is fundamental for well informed economic decision making
- Sustained Earth observations are critical in understanding the Earth
- A global approach to Earth observations is required





Canadian Context – Status of EO

- Extensive, but largely uncoordinated EO
 - federal, provincial, municipal players
- High dependence on non-Canadian observations and science, especially for space-based data
- Economic and societal benefits from existing investments in EO are not being fully realized
- Responsibility for EO is dispersed across federal departments and levels of government
- Benefits of EO coordination widely recognized
 - international and domestic contexts





Canadian Perspectives on Global Earth Observations

- **Canada is critically dependent on international systems to meet domestic requirements**
 - observations of Canadian territories
 - global observations required by Canada (e.g. weather, climate, oceans)
 - across all domains - meteorological, mapping, security, research, etc.
- **Globally coordinated and sustainable Earth observations are of high benefit to Canada**
 - improved access to and sustainability of required observations
 - leveraged international investment
 - enhanced global societal benefits, with positive impacts on Canada
- **Global issues require a global response**
 - a coordinated Earth observation response is required to address global challenges
 - e.g., coordinated systems, interoperability, data policies, etc...



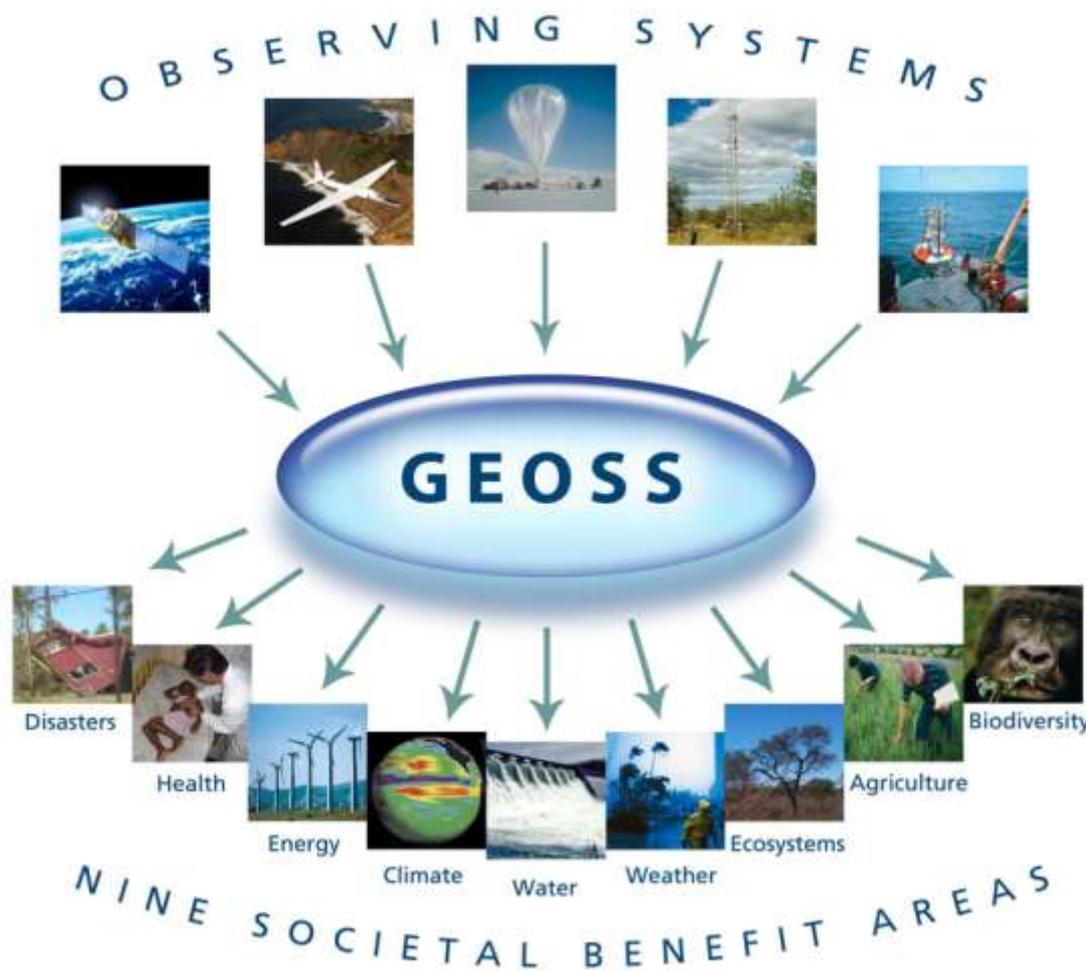
Realizing A Future: GEOSS



‘To realize a future wherein decisions and actions for the benefit of humankind are informed by coordinated, comprehensive and sustained Earth observations and information’



GEOSS Outcomes – Framed by ‘Societal Benefit Areas’



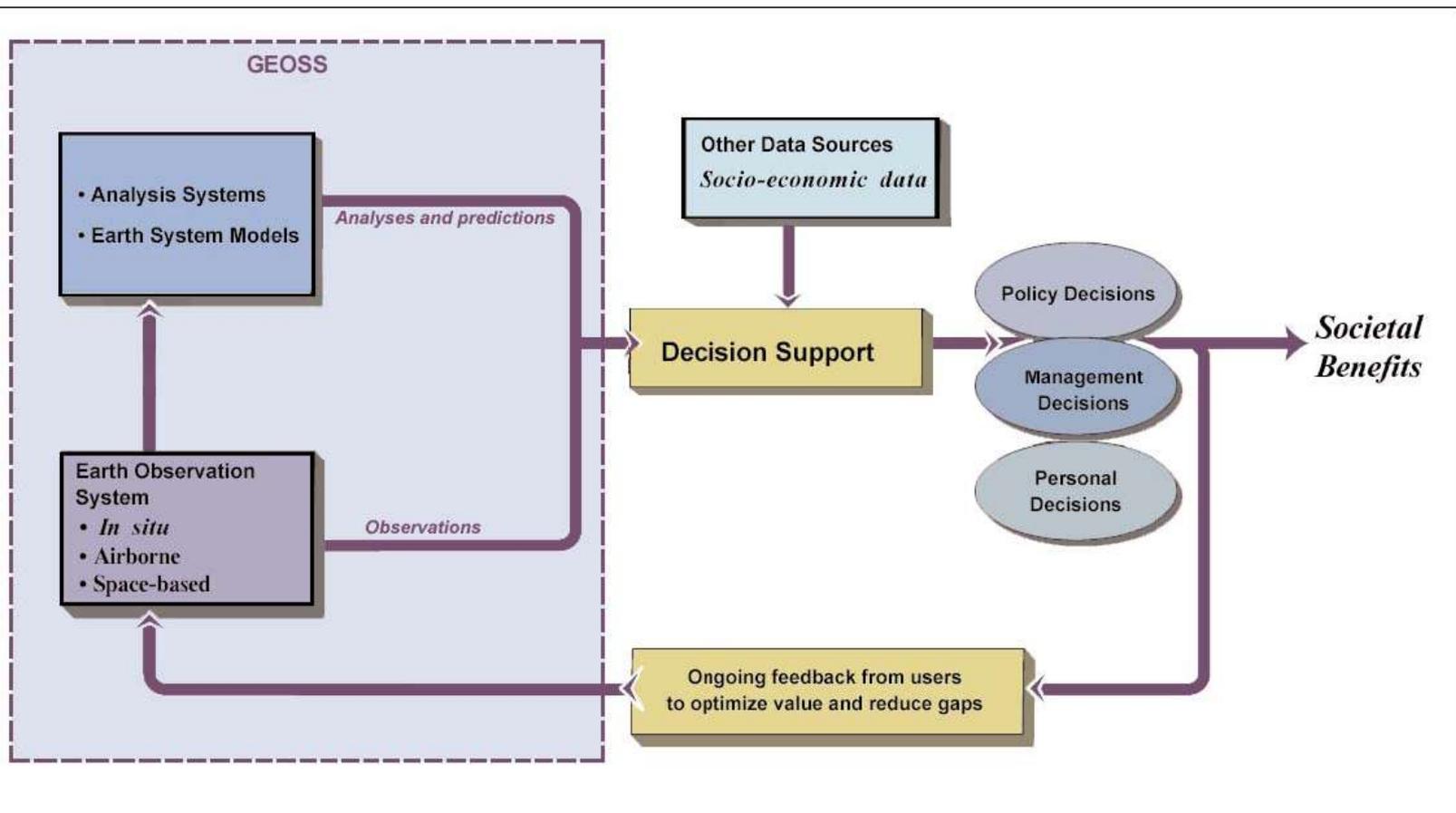
Cross-cutting Activities

- system architecture and interoperability
- data sharing principles
- capacity building
- science and technology



From Observations... to Societal Benefits

GEOSS Value Chain





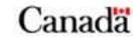
Canadian Group on Earth Observations (CGEO)

- Established to coordinate Canada's response & engagement in international GEO & to meet Canadian EO challenges
 - EC led (GEO Principal for Canada)
 - AAFC, CSA, DFO, DFAIT, DND, HC, NRCan, StatCan
- Governance
 - ADM Steering Committee
 - Interdepartmental Coordination Committee (DG level)
- Interdepartmental Secretariat established 2005
 1. **Advance the coordination of EO within Canada**
 - Develop a 'Federal Earth Observation Strategy'
 - Identify and facilitate collaborative EO projects and a Canadian GEOSS
 - Advocate & catalyze coordinated, comprehensive and sustained EO
 - Establish partnerships for implementing EO tasks and activities
 2. **Manage Canada's involvement in International GEO**
 - Maintain close relations with international GEO Secretariat (Geneva)
 - Prepare Canada's positions in GEO Plenary Meetings & Ministerial Summits
 - Establish strong ties with key countries, especially USA
 - Co-chair GEO Americas Caucus and GEOSS in the Americas initiatives
 - Support GEO processes and GEOSS development



www.cgeo.gc.ca

 Government of Canada / Gouvernement du Canada





Canadian Group on Earth Observations
www.cgeo-gcot.gc.ca

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Canadian Group on Earth Observations

Canada's vast oceans, inland waters, land surfaces, and atmosphere require a wide array of measurements and surveillance in order to monitor and understand their current condition, and to predict their future states. These 'Earth observations' contribute every day to the health and safety of Canadians, the protection of Canada's natural environment, security and sovereignty of our country, and to Canada's economic prosperity. Reliable and sustained Earth observations (EO) are fundamental to hazard warning, weather prediction, the understanding of climate cycles, health protection, optimizing agricultural and forestry practices, resource assessments, infrastructure planning, and environmental protection.

The Canadian Group on Earth Observations (CGEO) was established to advance coordinated Earth observations in Canada and to coordinate Canada's position and engagement in the international Group on Earth Observations (GEO) initiative and the development of the *Global Earth Observation System of Systems* (GEOSS).



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"To realize a future wherein decisions and actions for the benefit of humankind are informed by coordinated, comprehensive and sustained Earth observations and information."



What's new

▶ [International GEO Workshop on Synthetic Aperture Radar \(SAR\) to Support Agricultural Monitoring](#)

Member Departments

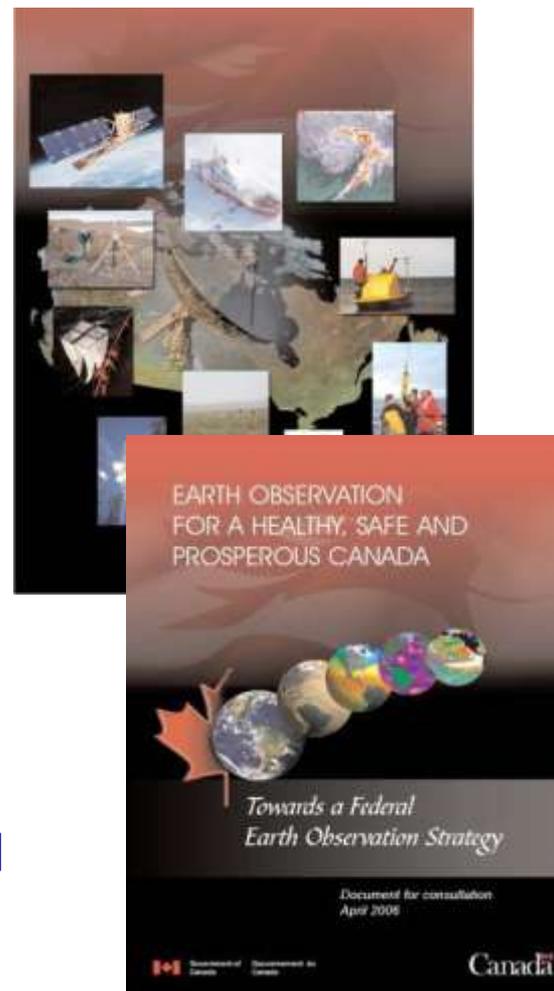
- ▶ Agriculture and Agri-Food Canada
- ▶ Canadian Space Agency
- ▶ Environment Canada
- ▶ Fisheries and Oceans Canada
- ▶ Foreign Affairs and International Trade
- ▶ Health Canada
- ▶ National Defence
- ▶ Natural Resources Canada
- ▶ Parks Canada
- ▶ Statistics Canada

[Member Area](#)

For registered Canadian Experts

Example CGEO Domestic Activities

- Water Cycle / Soil Moisture monitoring
- Coordinated Arctic Monitoring
- EO cross-cutting 'enablers'
 - data policy & data principles
 - data discovery, access, and interoperability
 - Coordinated monitoring networks (e.g. weather, hydrometric, satellite ground stations) > EC Monitoring Strategy
 - integrated analysis & modeling capacity
- Development of a Federal Earth Observation Strategy
- 2009 survey of Canadian experts engaged in GEO-related tasks & activities
- International GEO Workshop on SAR for Agricultural Monitoring, 2-4 Nov 2009, Kananaskis, Alberta





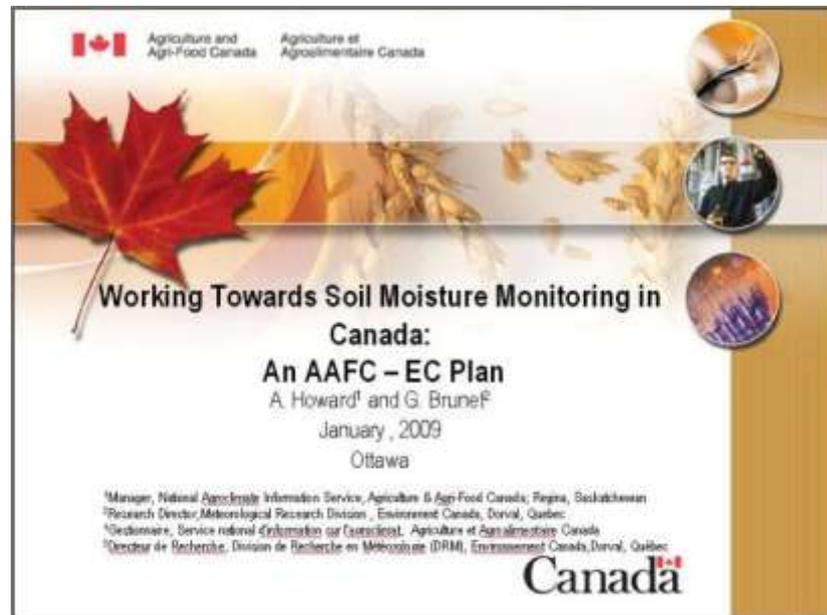
Earth Observations Data Policy

- High-level data policy to be discussed by a senior group of ADMs representing the Inter Agency Committee on Geomatics (IACG) and CGEO
- Need a strong Canadian lead for EO data policy and related issues, including:
 - data standards
 - data access & sharing
 - costs
 - review of evolving international initiatives such as the GEO data principles white paper
 - represent Canada on international groups such as the GEO Architecture & Data Committee and the Standards Interoperability Forum
 - build out a Canadian GEOSS



Soil Moisture Way Forward

- The CGEO soil moisture initiative continues to move forward – active Soil Moisture Working Group
- Activities approved in AAFC & EC planning processes
- Workshop in 2010/2011 to bring together soil moisture experts from 3 areas:
 - *in situ* practitioners
 - modellers
 - remote sensing community





International CGEO Activities

- Support to the GEO Principal
- GEO Plenary Sessions & Ministerial Summits
- Chair, GEO Americas Caucus
- Active in GEO Committees, Tasks, Task Forces, Working Groups, Communities of Practice, etc.
 - additional non-Federal participation
- US-Canada bilateral cooperation on trans-border EO interests
 - air quality, water security, Arctic, climate services, extreme hazards...
- Co-Chair, GEOSS in the Americas
 - Symposiums in Brazil Sep 2007, Panama Sep 2008, Washington Forum 2009





GEO Plenary-VI

- Hosted by U.S. in Washington, DC week of 17-18 November 2009
- A number of GEO-related events were held around the Plenary, including a CGEO-USGEO co-hosted Forum on Coastal Zone management (GEOSS in the Americas)
- Advanced CGEO priorities (water, GEOSS in the Americas initiatives, data policies, GEO monitoring & evaluation, Ministerial Summit preparation, etc.)

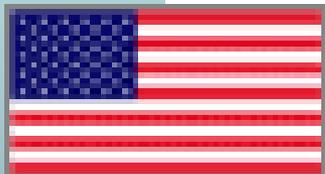


GROUP ON
EARTH OBSERVATIONS



Canadian & USGEO Bilateral Initiatives

- Cooperation on trans-border Earth observation interests
 - Air quality
 - Drought and water cycle
 - Monitoring testbeds & drought studies
 - Ice / Arctic monitoring
 - GEO monitoring & evaluation
- Americas region issues and support to the *GEOSS in the Americas* initiative
- Bilateral meetings / workshops
 - 1st meeting Jan 2007 in Montreal
 - 2nd meeting & Workshop on Water & Ice in Arlington Oct 2008
 - 3rd meeting 28-29 May 2009 in Toronto
 - Testbed & Drought Studies Workshop, Asheville, 23 Apr 2010
 - Bilateral Leaders Meeting, Washington, 26 April 2010

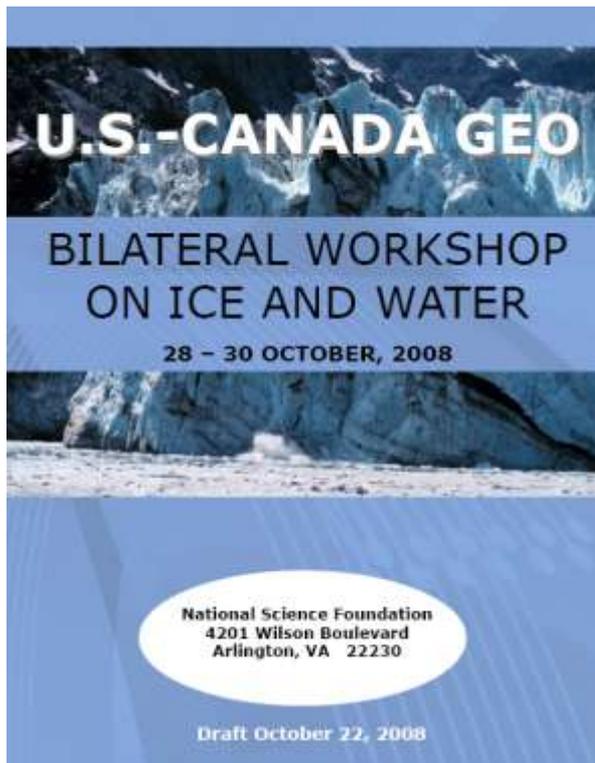


USGEO

GEOSS
in the Americas
Forum
Focus on Coastal Zones



U.S. – Canada GEO Bilateral Workshop on Ice and Water



- Held 28-30 Oct 2008 near Washington, DC
- Technical sessions organized by Rick Lawford (water) & Jeff Key (ice)
- Themes:
 - Drought
 - Marine and Freshwater Ice
 - Closing the Water Budget
 - Data Assimilation
- ~ 90 participants



Canada and GEOSS in the Americas

- Developing a strategy for engagement in GEOSS in the Americas
- The Americas is now a Canadian foreign policy priority region = opportunities
- Interest in concrete projects and GEOSS implementation activities (e.g. capacity building training, workshops, pilot studies)
- Regular participation in discussions on regional GEO and GEOSS issues
- Active engagement in GEOSS in the Americas Symposiums (Brazil 2007, Panama 2008)





Canadian GEO Challenges

How to:

- Establish sources of reliable, relevant and accessible EO information and products for Canadian decision makers
- Better integrate and use governments' investment in EO
- Leverage international collaboration to ensure Canada's access to essential global EO information
- Position Canada to be a contributor to global EO efforts
- Fully engage Canadian players in the coordination processes
- Get importance of EO onto the political agenda and engage Ministers



Possible Roles for DRI Engagement in CGEO

- Contribute to the development of GEOSS by:
 - providing data, models, tools, components, etc.
 - participate in an expert capacity in GEO tasks, activities, committees, Communities of Practice, etc.
 - providing expertise to capacity building initiatives
- GEOSS can provide:
 - a framework for implementation of activities
 - data standards and data interoperability capability
 - data and information access & sharing through the GEO Portal and Clearinghouse
 - access to world-wide research, models, tools, best practices, etc.
- Contribute to, support and help to develop synergies between the various CGEO drought & water activities and other related initiatives
 - bilateral testbeds & drought studies
 - EC-NOAA projects
 - EC-USGS projects
 - GEOSS in the Americas
 - JECAM initiative
 - Soil Moisture Way Forward
 - capacity building
 - Etc...



Summary

- GEO/GEOSS provides an important context and stimulus to advance coordinated EO within Canada
- Your drought initiatives can contribute to the development of GEOSS
- GEO-DRI participants can benefit from GEOSS (architecture and standards, access to other sources of data and information, partnerships, etc.)
- Drought is of strong interest to Canadian GEO – global, regional & domestic
- Drought could be a theme of the next *GEOSS in the Americas Symposium* (likely to be held in Chile in spring 2011)
- Development of a Federal Earth Observation Strategy is an important enabling step to develop a common vision and focus efforts for a future National Earth Observation Strategy
- We need you to be engaged and help implement Canadian and international GEO and develop GEOSS



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CGEO

Thank you

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