SUMMARY REPORT FROM THE GEOSS IN THE AMERICAS SYMPOSIUM

Background

GEO Members in the Americas organized a GEOSS in the Americas Symposium held 17 through 19 September 2007 at the Hotel Portobello in Mangaratiba, Brazil. Hosted by Brazil's National Institute for Space Research (INPE) and supported by the GEO Secretariat, the purpose of the Symposium was to increase understanding of GEOSS in the region, raise awareness about existing GEOSS in the Americas activities, strengthen partnerships, and advance a dialogue about opportunities, capabilities, and requirements.

The Group on Earth Observations (GEO) is an intergovernmental body of 71 governments, the European Commission, and 46 international organizations working together to build a Global Earth Observation System of Systems (GEOSS). To support sound, rational management of our planet, environment, and resources, GEOSS is organized to inform decisions and actions in the following areas:

- Disaster reduction;
- Human health improvement;
- Energy resource management;
- Water resource management;
- Understanding and adapting to climate variability and change;
- Improved weather forecasting;
- Management and protection of ecosystems;
- Sustainable agriculture; and
- Understanding and conserving biodiversity.

As of 17 September 2007, GEO membership from the Americas included: Argentina, Belize, Brazil, Canada, Chile, Costa Rica, Honduras, Mexico, Panama, Paraguay, and the United States.

Meeting Approach

The GEOSS in the Americas Symposium was structured as a two-and-a-half day meeting consisting of plenary presentations and discussions (see also the agenda in Annex A). In the context of the nine societal benefit areas, the Symposium was organized around four plenary workshops:

1. Biodiversity, Ecosystems and Agriculture
2. Public Health Observation Systems in the Americas
3. Earth Observations for Coastal Management
4. GEOSS Architecture and Access in the Americas

The meeting also featured a side session on Capacity Building and a GEONETCast in the Americas Coordination Meeting.

Themes

The meeting was well attended by a cross-section of stakeholder groups representing twelve countries and the GEO Secretariat. Discussions were candid with open dialog on a number of concerns, especially related to facilitating capacity building; and increasing overall regional participation. Several topics were raised in each discussion and the following themes emerged:

Theme #1: Begin by widening engagement in key national and regional initiatives, and expand their usefulness.

Participants were impressed by the extraordinary array of GEOSS systems, data, information, and products addressed by the Symposium presentations. To manage the opportunities GEOSS offers while also securing involvement, participants stressed the need to begin by identifying and sharing the most relevant national and regional initiatives, including the following key opportunities:

- The extension of SERVIR, a Mesoamerican Environmental Visualization System based in Panama, to all of South America (as well as to Africa);
- The activation of GEONETCast for the Americas and the initiation of a coordination mechanism for product development and integration with other environmental data dissemination mechanisms;
- The global availability, in 2008, of TerraAmazon, an open source software tool developed by Brazil's INPE, for assimilating remote sensing data from multiple sources for monitoring deforestation;
- The launch by China and Brazil of CBERS 2B, a cooperative Earth observation satellite mission which will distribute data freely to South America and Africa;
- The availability of SIGMACast – a GIS system for environmental applications that accesses Brazil's extensive remote sensing databases and provides information products for weather and climate prediction;
- The development of SINET, Chile's integrated national remote sensing system.

Theme #2: Build capacity continuously.

Participants stressed that capacity building is critical and must be tailored to the specific needs of a given country, organization or even individual system. Institutionalizing capacity building from the start ensures that GEOSS is accessible to all and that it remains simple, straightforward, and not overly bureaucratic. A special side session on capacity building featured the following initiatives:

- The recent GEO Inland and Near-shore Coastal Water Quality Remote Sensing Workshop, which is working to identify and develop user-driven water quality pilot projects integrating remote sensing data into decision support tools;
- The expansion of ANTARES, a regional network designed to build capacity for ocean-color monitoring to assess long-term changes in coastal ecosystems around South America;
- The CBERS 2B launch on 17 September 2007;
- The use of open-source GIS tools for building local capacity to process and use Earth observation data;
- The use of open-source cognitive platforms to enhance environmental protection, cartography and mapping, and resources management.

Theme #3: Increase regional participation and coordination through education, outreach, information, and networking.
The effectiveness of GEOSS depends upon increasing regional partnerships and coordination through outreach and education efforts. Continuing to engage new Members and adding new systems will require a significant effort to educate current and potential Members on GEO, GEOSS, and the benefits of participation. Further, participants thought that significant consideration should be given to initiatives that lend themselves to outreach—especially solutions that can be replicated across states and regions. Participants stressed the need for GEO Members to identify and reach individuals and countries from the Americas not represented at the Symposium. In this respect, additional regional conferences, seminars and workgroups may be proposed, and links with other related international organizations should be forged. Mass media and educational entities also could be part of the effort.

Theme #4: Maintain coherency, even as GEOSS expands and thrives.
Though science and technology will continue to expand—and with them GEOSS data, products, and opportunities—participants were clear that the overall system and the processes must remain coherent. Participants revealed that, in most cases, there is knowledge of a particular data stream or type of instrument, but knowledge of the overall opportunities for data and products is limited. This reiterates the importance of constantly providing a clear overall picture of the benefits and requirements of GEOSS with enough specifics so that each user or nation can tailor their uses and outcomes. Populating the GEO portal and clearinghouse through the GEOSS registries was recognized as key to the successful expansion of access to data, metadata and products available through GEOSS and maintaining global coordination and coherence.

Session Highlights
Each symposium workshop provided a variety of presentations and lively discussions, highlighted below.

Biodiversity, Ecosystems and Agriculture
Participants discussed the need for high-resolution, multi-scale, multi-temporal data sets and the challenge of training biodiversity observations in GPS. Participants also highlighted the need to expand collaboration with the following key organizations and initiatives:

- The Inter-American Biodiversity Information Network;
- The Pan American Institute of Geography;
- The upcoming GEO Forest Monitoring Symposium;
- The GEO Ecosystem Classification and Mapping task;
- The planned Global Biodiversity Observation Network.

Public Health Observation Systems in the Americas
The challenges of health risk mapping were discussed frequently, but participants also addressed the ability of Earth observation to deal with global pandemics, the need for further scientific development and closer engagement with end users, investment in longer-term trends that lead to health problems, and the opportunity GEOSS provides to link the ecology and human health communities. GEOSS can also provide further context for increasing access to public health data, a goal of the World Health Organization (WHO). Participants also noted the need to forge links with the following existing activities and organizations:

- The UN/OOSA regional capacity building initiative on space technology and tele-epidemiology;
- The Pan-American Health Organization and the WHO;
- The World Federation of Public Health Associations.

Earth Observations for Coastal Management
Participants characterized the coastal zone as an important laboratory for GEOSS implementation, where many economic, social, and scientific interests intersect and real conflicts of interest arise. They discussed the economic importance of ecosystem health to fisheries and tourism, the linkage of sea-level rise to disasters, the need for multi-hazard warning systems, decreasing vulnerability to climate change through capacity building, and the need for increased access to data and products.

The session also provided an opportunity to discuss the special needs of the Caribbean, particularly small island states. These included the challenge of historical data gathering and in-country data archiving, as well as a specific need to rehabilitate the Caribbean sea-level network. The following initiatives and activities were highlighted:

- GEO Coastal Zone Community of Practice (building on IGOS-P Costal Theme);
- Activities of GOOS and IO/Caribe, supported by UNESCO/IOC;
- The Large Marine Ecosystem Program;
- Caribbean Marine Atlas.

GEOSS Architecture
Following presentations describing national and regional systems, the final session on GEOSS Architecture articulated the core need for interoperability among systems, achieved chiefly at the level of web services, and structured by answering the question "What few things need to be the same so that everything else can be different?" The session included a demonstration of prototype GEOSS registries, illustrating how component system operators might link their system to the emerging GEO Portal and Clearinghouse.

Outcomes and Next Steps

At the conclusion of the meeting, several participants indicated that they would like to pursue the following steps in preparation for the GEO Plenary and Ministerial Summit in Cape Town, South Africa on 30 November 2007:

- Facilitate staff follow-up from the Symposium and invite help from the GEO Principals in the Americas region;
- Organize a teleconference among GEO Principals in the Americas to discuss this report and the way forward, including informing the preparations for and the outcomes of the next GEO Plenary and Ministerial Summit;
- Outline a road map that will increase coordination and broaden regional participation.

GEOSS in the Americas Symposium | Brazil 17, 18, 19 September 2007

MONDAY, 17 SEPTEMBER 2007

Participants are invited to sign in on Sunday evening from 6:00 PM – 8:00 PM or on Monday morning from 8:00 AM – 9:00 AM in the foyer outside of the Sabia Room. Speakers are invited to meet at the front of the Sabia Room 30 minutes before their session.

7:00 AM – 10:30 AM Breakfast in the Escuna Restaurant

9:00 AM Opening Session in Sabia Room *(Speakers assemble at 8:30 AM)*

Welcome from Brazil ..... Dr. João Braga, Deputy Director, INPE
Mr. Luiz Maria Pio Corrêa, Ministry of External Relations
Mrs. Darly Henriques da Silva, Ministry of Science and Technology

Keynote: GEOSS – Accessing Information for Society's Benefit *(15 minutes)* ..... Dr. José Achache,
GEOSS Societal Benefit Areas and Architecture GEO Secretariat Director

GEOSS Implementation – Progress Report *(10 minutes)* ..... Mr. David Grimes,
GEO Principal for Canada
Co-Chair, GEO Ministerial Summit Task Force 2
on GEOSS Progress

GEOSS in the Americas – Realizing GEOSS in the Western Hemisphere *(10 minutes)* ..... Ms. Helen Wood,
United States, USGEO Co-Chair

GEOSS in the Americas – Regional Cooperation in Space *(10 minutes)* ..... Ambassador Raimundo Gonzales,
GEO Principal for Chile

Symposium Overview *(5 minutes)* ..... Dr. João Vianei Soares, Brazil

Coffee Break 10:30 to 11:00

11:00 AM Side Session on TerraAmazon, Sabia Room ..... Dr. Dalton De Morisson Valeriano, Brazil/INPE

11:30 AM Roundtable with GEO Leadership ..... Moderator: Ms. Helen Wood,
General discussion of Earth observation priorities for the region with questions and comments about GEO and GEOSS fielded by GEO Principals and the GEO Secretariat Director. USGEO Co-Chair

1:00 PM – 2:30 PM Lunch in the Pergula Restaurant (around the pool)

2:30 PM – Workshop I – Biodiversity, Ecosystems and Agriculture
SESSION CHAIR, Dr. Doug Muchoney, GEO Secretariat
Dr. Dalton De Morisson Valeriano, Brazil/INPE
Dr. Ivan Valdespino, Inter-American Biodiversity Network (IABIN)
Dr. Evlyn M.L.M. Novo, Brazil/INPE
(Speakers will have 15-20 min. each in sequence, followed by roundtable discussion)

Coffee Break 3:30 to 4:00 PM

7:00 PM – Welcome Reception in the Lobby

7:00 – 10:30 PM – Dinner in the Pergula Restaurant

TUESDAY, 18 SEPTEMBER 2007

7:00 AM – 10:30 AM – Breakfast in the Escuna Restaurant

9:00 AM – 10:00 AM – Side Session on Capacity Building, Sabia Room

Remote Sensing Applications for Water Quality ..... Dr. Evlyn Novo, Brazil/INPE
CBERS Satellite ..... Dr. João Vianei Soares, Brazil/INPE
Geospatial Open Source: A Tool for Capacity Building ..... Dr. Lúbia Vinhas, Brazil/INPE
Open-source Cognitive Platforms for Digital Image Interpretation ..... Dr. Claudia Almeida, Brazil/INPE

Coffee Break 10:00 to 10:30 AM

10:30 AM – 1:00 PM Workshop II: Public Health Observation Systems in the Americas

SESSION CHAIR, Dr. Christovam Barcellos, Brazil/ FIOCRUZ
SESSION CHAIR, Dr. Miguel Antonio Vieira Monteiro, Brazil/INPE
Dr. Marcelo Scavuzzo, Argentina/CONAE
Dr Wayner Souza, Brazil/FIOCRUZ
Dr. Milton Kampel, Brazil/INPE
Mr. John Haynes, United States (NASA)
Dr. Samir Banoob, World Federation of Public Health Associations (WPHA)
(Speakers will have 10-15 min. each in sequence, followed by roundtable discussion.)

1:00 PM – 2:30 PM – Lunch in the Pergula Restaurant

2:30 PM – 5:00 PM – Workshop III: Earth Observations for Coastal Management

Part 1 – Regional Initiatives in Coastal Management

SESSION CHAIR, Ms. Maria A.F. Da Silva Dias – Brazil/CPTEC-INPE
Dr. Jonathan Phinney, United States NOAA/Large Marine Ecosystem Program (LME)
Dr. Milton Kampel, Brazil/INPE, GEO Coastal Zone Community of Practice
(Speakers will have 10-15 min. each in sequence, followed by roundtable discussion)

Coffee Break 3:30 PM to 4:00 PM

Part 2 – Earth Observation Applications in Coastal Management

SESSION CHAIR, Mr. David Grimes – Canada/GEO Principal
Dr. Lorna Inniss, Barbados/Coastal Zone Management Unit
Mr. Paulo Manso, Costa Rica/GEO Principal
Dr. Raul Aguilera, Chile/University of Chile
(Speakers will have 10-15 min. each in sequence, followed by roundtable discussion)

5:15 PM – 6:45 PM – GEONETCast in the Americas Coordination Meeting, Sabia Room

7:00 PM – 10:30 PM – Dinner in the Pergula Restaurant

WEDNESDAY, 19 SEPTEMBER 2007

7:00 AM – 10:30 AM - Breakfast in the Escuna Restaurant

9:00 AM Workshop IV – GEOSS Architecture and Access in the Americas

Part 1 – Regional and National Systems Contributing to GEOSS

SESSION CHAIR: Hugo Marraco, Argentina/CONAE
Dr. Carlos Frederico Angelis, Brazil/CPTEC-INPE – SIGMACast
Mr. Luis Felipe Saez, Chile/Aerophotogrametric Service of the Air Force – (SAF)- SINAT
Dr. Emil Cherrington, Belize/CATHALAC – SERVIR
Ms. Linda Moodie – United States/NOAA – GEONETCast
(Speakers will have 10 min. each in sequence, followed by roundtable discussion)

Coffee Break 10:00 to 10:30 AM

Part 2 – GEOSS Architecture and Interoperability

SESSION CHAIR, Dr. Ivan DeLoatch, United States/GEO Architecture and Data Committee Co-Chair
Dr. Doug Nebert, United States/Federal Geographic Data Center (USGS-FGDC)
(Speakers will have 20 min. each in sequence, followed by roundtable discussion)

11:30 AM Symposium Outcomes and Next Steps ..... Dr. João Vianei Soares

12:15 PM Recess

1:00 PM Lunch in the Pergula Restaurant

Airport shuttle departures will begin at approximately 1:30 PM, depending on specific flight arrangements.

ANNEX B Participant List (alphabetical by country)

Full Name	Institution	Acronym	Country
Ana Gabriela Medico	Comisión Nacional de Actividades Espaciales	CONAE	Argentina
Carlos Marcelo Scavuzzo	Comisión Nacional de Actividades Espaciales	CONAE	Argentina
Hugo Gustavo Marraco	Comisión Nacional de Actividades Espaciales	CONAE	Argentina
Lorna Veronica Inniss	Coastal Zone Management Unit	CZMU	Barbados
Antonio Roberto Formaggio	National Institute for Space Research	INPE	Brazil
Antonio Miguel Vieira Monteiro	National Institute for Space Research	INPE	Brazil
Carlos Frederico Angelis	National Institute for Space Research	INPE	Brazil
Christovam de Castro Barcellos Neto	Fundacao Oswaldo Cruz	Fiocruz	Brazil
Cláudia Maria de Almeida	National Institute for Space Research	INPE	Brazil
Dalton de M Valeriano	National Institute for Space Research	INPE	Brazil
Darly Henriques da Silva	Ministry of Science and Technology	MCT	Brazil
Evlyn Marcia Leão de Moreas Novo	National Institute for Space Research	INPE	Brazil
Hilcéa Ferreira	National Institute for Space Research	INPE	Brazil
João Braga	National Institute for Space Research	INPE	Brazil
João Vianei Soares	National Institute for Space Research	INPE	Brazil
Julio Cesar Lima Dalge	National Institute for Space Research	INPE	Brazil
Laércio Namikawa	National Institute for Space Research	INPE	Brazil
Lúbia Vinhas	National Institute for Space Research	INPE	Brazil
Luiz Maria Pio Corrêa	Ministry of External Relations	MRE	Brazil
Maria Assunção Faus Da Silva Dias	National Institute for Space Research	INPE/CPTEC	Brazil
Marjorie Xavier	National Institute for Space Research	INPE	Brazil
Milton Kampel	National Institute for Space Research	INPE	Brazil
Mirian Vicente	National Institute for Space Research	INPE	Brazil
Mônica Oliveira	National Institute for Space Research	INPE	Brazil
Nélia Ferreira Leite	National Institute for Space Research	INPE	Brazil
Tânia Regina Freire Sanchez	National Institute for Space Research	INPE	Brazil
Thanisse Braga	National Institute for Space Research	INPE	Brazil
Wayner Souza	Fundacao Oswaldo Cruz	FIOCRUZ	Brazil
Kenneth Korporal	Canadian GEO Secretariat	CGEO Secretariat	Canada
Ronald David Grimes	Environment Canada, Meteorological Service of Canada	EC - MSC	Canada
Jorge Lafourcade	Chilean Space Agency	ACHE	Chile
Luciano Parodi	Ministry of Foreign Affairs of Chile	M.RR.EE.-CHILE	Chile
Luis Sáez Collantes	Servicio Aerofotogramétrico	SAF	Chile
Raimundo González Aninat	Ministry of Foreign Affairs of Chile	M.RR.EE.	Chile
Raul Aguilera Hermosilla	Centro de Estudios Espaciales - Universidad de Chile	CEE - UChile	Chile
Juan Piedra	Oficina Nacional de Emergencia - Chile	ONEMI	Chile
Glenn Hyman	International Center for Tropical Agriculture	CIAT	Colombia
Paulo Manso	Instituto Meteorológico Nacional	IMN	Costa Rica

Full Name	Institution	Acronym	Country
Sonia Maria Rivera Mendez	Secretariat of Environment and Natural Resources	SERNA	Honduras
Francisco Javier Jiménez Nava	Instituto Nacional de Estadística, Geografía e Informática	INEGI	Mexico
Diana Argelia Laguna Caicedo	Oficina de Asuntos Internacionales		Panamá
Emil Cherrington	Water Center for the Humid Tropics of Latin America and the Caribbean	CATHALAC	Panamá
Iván A. Valdespino Q.	Inter-American Biodiversity Information Network	IABIN	Panamá
Ever Enrique Castillo Osorio	Meteorology and Hydrology National Service	SENAMHI	Peru
José Achache	GEO Secretariat	GEO	Switzerland
Douglas Muchoney	GEO Secretariat	GEO	Switzerland
Jacob Opadeyi	University of the West Indies	UWI	Trinidad Tobago
Dori Stiefel	GRS	GRS	USA
Douglas Nebert	U.S. Geological Survey	USGS/FGDC	USA
Eric Madsen	U.S. National Oceanic and Atmospheric Administration	NESDIS	USA
Heather Allen	U.S. National Oceanic and Atmospheric Administration	NOAA	USA
Helen M. Wood	U.S. National Oceanic and Atmospheric Administration	NOAA	USA
Ivan B. DeLoatch	U.S. Geological Survey/Federal Geographic Data Committee	USGS/FGDC	USA
John Haynes	U.S. National Aeronautics and Space Administration	NASA	USA
Jonathan T Phinney	U.S. National Oceanic and Atmospheric Administration	NOAA	USA
Leonard Hirsch	Smithsonian Institution	SI	USA
Linda V. Moodie	U.S. National Oceanic and Atmospheric Administration	NOAA	USA
Montira Pongsiri	U.S. Environmental Protection Agency	U.S. EPA	USA
Paul Seymour	U.S. National Oceanic and Atmospheric Administration	NOAA	USA
Peter Colohan	The Colohan Group		USA
Samir Banoob	World Federation of Public Health Associations	WFPHA	USA
Vivian McConnell	GRS	GRS	USA
William Douglas Wilson	U.S. National Oceanic and Atmospheric Administration	US NOAA	USA

ANNEX C Proposed Outcomes and Next Steps (provided by participants from Chile)

Note: Except for small edits for language, outcomes and next steps below are the complete text authored by participants from Chile and distributed to all Symposium participants at the closing session.

1.- With the aim of strengthening the GEOSS role within the Americas, it is necessary to foster, promote and create a regional space agency, as it was agreed in the last meeting of the COPUOS [United Nations Committee on the Peaceful Uses of Outer Space]. Besides, this initiative was proposed by Argentina in the Fifth Space Conference of the Americas (Quito, Ecuador, July 2006). This does not mean the establishment of a new [United Nations] entity or mechanism. It means the formation of a regional entity in order to coordinate the regional efforts that are in line with the global challenges and opportunities being addressed by GEOSS.

2.- It is essential to improve the linkages and synergies between GEOSS and other international scientific organizations. In order to favor this connectivity, it is valuable that GEOSS acquire observer status in different related regional and international organizations, like the existing relationship between GEOSS and UN-SPIDER [United Nations Platform for Space-based Information for Disaster Management and Emergency Response].

3.- In order to achieve its nine societal benefits, it is essential for GEOSS to devise a sound strategy to reach all the relevant actors that are still missing from the Americas. In addition, GEOSS and its applications and societal benefits are not very well known in the region. In this sense, additional regional conferences, seminars and workgroups are required. Mass media and educational entities should also be made part of the effort.

4.- GEOSS has to recognize that there are different sub-regions within the Americas, with different requirements and capacities. To structure a regional GEOSS, each country has to assess its national priorities; identify its requirements (data, processing systems, capacity building, etc.); and offer their national resources and capabilities that can be made part of GEOSS. In addition, each country should foster the establishment of a GEOSS national group in order to coordinate the country's efforts and activities and to link them to the regional efforts of GEOSS-Americas as well as the implementation of the GEOSS 10-Year Implementation Plan.

5.- [Addressing] language differences within the Americas is a key element and has to be considered for the full participation of all the countries within the region. Also, it is a requirement for the effective implementation of the GEOSS tools, nationally and transbounderly, and at the local government and community level, especially when it deals with disaster prevention and management.

6.- The outcomes and future steps within GEOSS-Americas need to be shared at the next GEO Plenary and Ministerial Summit, which will take place in Cape Town in November 2007.