

SUMMARY REPORT

The Third GEOSS Asia-Pacific Symposium - Data Sharing for a Transverse GEOSS

The Third GEOSS Asia-Pacific Symposium focusing on Data Sharing for a Transverse GEOSS was held 4-6 February 2009 in Kyoto Research Park, Kyoto, Japan.

The Symposium was attended by 251 participants from 33 countries both within and outside the Asia-Pacific region.

Key objectives of the Symposium were to produce new, relevant data streams, demonstrating the added-value of GEOSS, along with sharing and integrating diverse data and information in connection with cross-sectoral issues, focusing particularly on activities in the Asia-Pacific region.

The Symposium proceedings were conducted over two and a half days, encompassing two plenary sessions and six parallel sessions.

Day 1 (February 4): Plenary Session

The general plenary session commenced on February 4, 2009 and started off with a general overview of GEOSS activities. Brief reports from countries and organizations in the region were also presented.

The plenary session was opened by Ms. Natasha Brutsch on behalf of GEO Secretariat, the sponsor of the Symposium. The welcome address of the host country then followed, made by Mr. Masaaki Tanaka, MEXT, Japan.

The plenary keynote speech was delivered by Dr. Vincent Tao, of Microsoft, whose presentation was entitled: "Empower the Communities with the Virtual Earth Technology: A Private Sector Perspective".

The following GEOSS-related activities were then presented as GEOSS Architecture and Priorities;

- GEOSS Architecture and Data Management by Prof. Ryosuke Shibasaki, MEXT
- Network Opportunities for GEOSS by Dr. Richard Hughes-Jones (DANTE))
- GEOSS Priorities in 2009-2011 by Prof. Jose Achache, Director of the GEO Secretariat

During the section on Country and Regional Reports on GEOSS-related Activities, nine countries and two regional organizations gave presentations, as follows;

Japan (Mr. Masaaki Tanaka, MEXT), Australia (Dr. Gary Richards, Department of Climate Change), Bangladesh (Mr. Md. Zahidur Rahman, Ministry of Defence), China (Dr. Wang Guofu, National Meteorological Information Centre, CMA), Indonesia (Dr. Mahdi Kartasasmita, National Institute of Aeronautics and Space (LAPAN)), Korea (Dr. Yong-Seob Lee, Korea Meteorological Administration), Pakistan (Dr. Qamar-Uz-Zaman Chaudhry, Pakistan Meteorological Department), Philippines (Dr. Flaviana Hilario, Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA/DOST)), Thailand (Dr. Phuriwaj Ruengnaowaraj, Geo-Informatics and Space Technology Development Agency (GISTDA)), Asia-Pacific Network for Global Change Research (APN) (Dr. Linda Anne Stevenson, APN), and the International Centre for Integrated Mountain Development (ICIMOD) (Mrs. Mandira Shrestha, ICIMOD)

In order to set the tone for the parallel sessions on the following day, and guide the discussions, the Chair of each parallel session gave a brief presentation at the close of the plenary session. The themes and tasks of each parallel session included:

- Monitoring and Predicting Climate Change
Dr. Yukihiro Nojiri, National Institute for Environmental Studies (NIES), Japan
- Water Cycle in the Asia-Oceania Region
Dr. Toshio Koike, University of Tokyo, Japan
- Monitoring Changes in Ecosystem, Biodiversity and Ecosystem Services
Dr. Tetsukazu Yahara, Kyushu University, Japan
- Earth Observation and Data Sharing for Disaster Management
Dr. Kaoru Takara, Kyoto University, Japan
- Toward actual Collaboration among Climate, Water Cycle and Disasters
Dr. Toshio Koike, University of Tokyo, Japan
- Necessity and Possibility of Observation, Forecasting, and Data Sharing through the Interdisciplinary Collaboration of “Ecosystem - Climate Change - Disaster”
Dr. Yoshiki Yamagata, NIES, Japan

Throughout the Symposium, participants could visit an exhibition showcasing GEOSS activities in the Asia-Pacific region. Exhibitors included:

- The GEO Portal (GEO Secretariat)

- GEOSS Asian Water Cycle Initiative (AWCI) (Univ. of Tokyo)
- JAMSTEC
- JACCO
- CGER/NIES
- JAXA
- AIST/GEO Grid
- ERSDAC
- GSI
- APN
- Symposium Secretariat (RESTEC).

Day 2 (February 5): Parallel Sessions

To streamline the discussion, the Symposium included four parallel sessions and two interdisciplinary sessions. The objective was to present and discuss relevant activities focusing particularly on the Asia-Pacific region, and to identify future activities that could contribute to GEOSS implementation. The parallel sessions were conducted as follows:

- WG1. Monitoring and Predicting Climate Change
(Co-chaired by Dr. Yukihiro Nojiri and Dr. Nobuko Saigusa, NIES, Japan)
- WG2. Water Cycle in the Asia-Oceania Region
(Chaired by Prof. Toshio Koike, University of Tokyo, Japan)
- WG3. Monitoring Changes in Ecosystem, Biodiversity and Ecosystem Services
(Chaired by Prof. Tetsukazu Yahara, Kyushu University, Japan)
- WG4. Earth Observation and Data Sharing for Disaster Management
(Co-Chaired by Prof. Kaoru Takara, Kyoto University, Japan,
Prof. Haruo Sawada, Tokyo University, Japan
Dr. Masanobu Shimada, JAXA, Japan)
- WG5. Toward actual Collaboration among Climate, Water Cycle and Disasters
(Co-chaired by Prof. Toshio Koike, University of Tokyo, Japan
Prof. Eiichi Nakakita, Kyoto University, Japan)
- WG6. Necessity and Possibility of Observation, Forecasting, and Data Sharing through the Interdisciplinary Collaboration of “Ecosystem - Climate Change - Disaster”
(Co-chaired by Dr. Yoshiki Yamagata, NIES, Japan
Dr. Alexander Held, CSIRO, Australia)

Day 3 (February 6): Plenary Session

The second plenary session lasted a half day, and included six reports from each parallel session. A panel discussion then followed.

The following reports were presented at the parallel sessions.

WG1: Monitoring and Predicting Climate Change, by Dr. Yukihiro Nojiri.

The objective of WG 1 was to discuss issues related to CO₂ and other Greenhouse Gas observations in the response to the needs of Earth system modeling for the Asia-Pacific region, and to clarify the future outlook for improving climate change projections using Earth system models.

The following topics were presented and discussed in WG1:

Four presentations focused on top-down and bottom-up approaches to quantifying the global mass balance and fluxes of GHGs as well as regional impact assessments, based on climate change projections from climate models. Observational gaps for atmospheric CO₂ and methane measurements exist in the regions of South America, Siberia, Africa and South and South-East Asia. However, we expect data from GOSAT and OCO to fill these gaps. On the other hand, there are still substantial gaps in terms of spatial scales in the estimation of surface fluxes between “bottom-up approaches” by tower flux measurements and “top-down approaches” by inverse techniques and O₂/N₂ ratios. Based on the discussions in this session, it is important that enhanced collaboration and information exchange between different observing areas be established in order to obtain accurate estimation of terrestrial and oceanic CO₂ sources/sinks. A data exchange system already exists, comprised of systems such as WDCGG, CDIAC, FLUXNET, and IOCCP. We need to build on and enhance data integration activities in the Asia and Pacific regions through these data exchange systems within the GEOSS framework.

WG2: Water Cycle in the Asia-Oceania Region, by Prof. Toshio Koike.

The objective of WG2 was to summarize water-related disasters in the Asia-Oceania region, and to identify the impacts of climate change on water resources, particularly in vulnerable environments. The WG2 session was opened by Dr. D. Cripe from the GEO Secretariat. He emphasized the importance of inter-disciplinary cooperation between the Water and various other Societal Benefit Areas, including Energy, Health, Agriculture and Ecosystems.

Prof. K. Takara offered a short lecture on “Water-related Disasters in the Asia-Oceania Region”. He introduced the impacts of water-related disasters by showing their serious effects in terms of loss of human life, ranging in context from mega-cities to small islands in Asia-Oceania region. Then, representatives of 15 countries in Asia, including Bangladesh, Cambodia, India, Indonesia, Japan, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Uzbekistan and Vietnam, gave reports on “Recent Signs of Water-related Disasters”. Throughout these reports, “Flooding” and “Climate Change Impacts” were the issues referred to most frequently.

Additionally, during the WG2 session, participants shared comprehensive overviews of water-related disasters and recent efforts at the regional level to mitigate their impacts.

WG3: Monitoring changes in Ecosystems, Biodiversity and Ecosystem Services, by Prof. Tetsukazu Yahara.

The objective of WG3 was to review the progress being made by GEOSS in ecosystems and biodiversity, and to discuss how activities for improving networks and sharing data can be promoted.

The following topics were presented and discussed in WG3:

Ecosystems and ecosystem services:

- “Model project on data management of ecosystems”
- “ECOSMAG: An Integrative Research on Ecosystem Services Management in Asia”
- “Vegetation monitoring using satellites”.

Biodiversity monitoring:

- “The formation of GEO BON”
- “The role for GBIF in biodiversity monitoring”
- “East and Southeast Asia Biodiversity Inventory Initiative”.

WG4: Earth Observation and Data Sharing for Disaster Management, by Prof. Kaoru Takara.

The objective of WG4 was to share information on activities being implemented in the field of disaster management, to explore new technologies and ideas using Earth observation systems, and to seek possible methods of integrating various kinds of data relating to natural hazards and disasters such as landslides, earthquakes, typhoons (or

cyclones), floods, and forest fires.

The following topics were presented and discussed in WG4;

Recent international activities:

- “IFNet-GFAS”
- “JAXA's contribution to world disasters through international cooperation”.

Applications of EO data for disaster risk reduction:

- “Forest fires”
- “Application of Earth Observation in Flood Risk in Nepal”

Interferometric analysis of geohazards with synthetic aperture radar:

- “Disaster monitoring using the PALSAR interferometry”
- “Contribution of ALOS/PALSAR to the Earthquake Hazard Mitigation: Example from the 2008 Wenchun, China, Earthquake”
- “Landslides”

Data sharing for disaster management:

- “Concept of Sentinel Asia and its latest activities”
- “Applications to early warning systems in Thailand”
- “GEO Disasters SBA: Overview of initiatives and priorities in 2009-2011”

WG5. Toward actual Collaboration among Climate, Water Cycle, and Disasters, by Prof. Toshio Koike.

The objective of WG5 was to discuss how to further cooperation and coordination among different Societal Benefit Areas such as, Climate, Water cycle, and Disasters, and to make plans for putting ideas into action.

The WG5 session was opened with an introductory talk from Prof. E. Nakakita. He emphasized the importance of sharing current and projected environmental conditions, current water management rules and their underlying concepts, current and historical social environments, and culture and religion for “accepting” and “adapting to” natural hazards in the effort to promote actual collaboration among activities in the areas of climate, water cycle and disasters.

Then, 11 presentations introduced on-going and/or planned activities:

- Climate models by Dr. A. Kitoh and Prof. E. Nakakita

- Earth observations by Dr. M. Yamanaka, Dr. S. Hosoda and T. Ohata
- Global scale mapping by Dr. P. Thenkabail and Dr. Y. Fukushima
- Regional cooperation by Mr. T. Moriyama and Mr. K. Fukami
- International projects by Dr. T. Wiener and Dr. S. Williams.

To accelerate the sharing of implementation experiences, as well as data product availability and requirements of contributing systems, Prof. R. Shibasaki offered a short technical lecture on “Data and Information Sharing Approach”. Following his talk, participants discussed ways in which cooperation and coordination could be fostered among different Societal Benefit Areas (Climate, Water cycle and Disasters), as well as how to turn the ideas into actions. The discussion centered around the major hazards in Asia, including typhoons/cyclones, droughts, cold surges, and GLOFs and glacier melting as potential candidates for cooperative efforts. To facilitate the discussions, Dr. S. Ogino and Prof. T. Koike gave introductory talks on the topics of cold surges and droughts.

Through the presentations and discussions, participants recognized that usable data sets and information, available cooperative frameworks, and target activities which are both feasible and attractive should be addressed by collaboration within the climate, water cycle and disasters sectors. They agreed to promote the GEOSS Asian Water Cycle Initiative (AWCI) in cooperation with on-going and/or planned activities in Asia-Oceania region. It was decided that a workshop should be held in the autumn of 2009 in order to devise an implementation plan.

WG6: Necessity and Possibility of Observation, Forecasting, and Data Sharing through the Interdisciplinary Collaboration of “Ecosystem - Climate Change – Disaster,” by Dr. Yoshiki Yamagata.

The objective of WG6 was to strengthen collaborative efforts of observation and data sharing in the fields of climate change, ecosystem management, and disaster prevention for “Cross-cutting data sharing in the Asia-Pacific Region.” Special consideration was given as to how the new GEO task “Forest Carbon Tracking” may be integrated into the relevant fields such as Biodiversity, Ecosystem modeling and Database development.

The following topics were presented and discussed in WG6:

Collaboration with ecosystem research and forest carbon observation:

- “Linkage with JaLTER and Monitoring 1000”

- “Linkage with AsiaFlux”.

Collaboration with remote sensing technologies:

- “Forest remote sensing with ALOS”
- “Forest Remote Sensing in Thailand”
- “Linkages to the regional Sentinel-Asia Initiative”.

Integration with forest carbon modeling:

- “Ecosystem modeling for global forest carbon monitoring”
- “Forest carbon monitoring studies in SE Asia”
- “Linking Carbon budget models and remote sensing of forest change”
- “Application to ecosystem vulnerability assessment”
- “Synergies between GEO Forest & Carbon Task, Ecosystem Monitoring and Disaster Monitoring”.

Forest cover information can be used as an indicator of potential risk with respect to future disasters (e.g., landslides) or loss in ecosystem services (e.g. clean water, biodiversity, etc.) A joint system encourages a common monitoring framework and data-sharing, consistent with GEOSS interoperability principles

Panel Discussion:

To review the Symposium and discuss the way forward, a panel discussion was conducted, chaired by Prof. Ryosuke Shibasaki, Univ. of Tokyo.

Panelists were Dr. Douglas Cripe of the GEO Secretariat and Dr. Nobuko Saigusa, Prof. Toshio Koike, Prof. Tetsukazu Yahara, Prof. Haruo Sawada, Prof. Eiichi Nakakita, Dr. Alexander Held from each parallel session.

The Chairman summarized the 6 WG discussions and noted several topics and issues from the parallel sessions related to Data Sharing for a Transverse GEOSS.

Topics such as:

- “Existing Data Exchange Platforms for Greenhouse Gas Observations”
- “Emission Factor of CH₄ from Rice Paddies”
- “Plans for promoting Collaboration (Ecosystem/Biodiversity)”
- “Activities Related to Forest Fires”
- “Forest Mosaic by PALSAR”
- “Biomass Mapping”

were discussed for further action plans within the Ecosystem/Biodiversity, Water, Forest Monitoring, and Socio-economic sectors.

A matrix of the status of data sharing among the 18 nations participating in regional river catchment intercomparison studies within the AWCI, linking both users and providers of data was recognized as a useful illustration of the collaborative and coordination efforts made possible by the GEO framework, as GEOSS implementation advances.

Closing

At the end of the plenary session, Dr. Michael Tanner of the GEO Secretariat made closing remarks on behalf of the GEO Secretariat. He thanked the organizers for their efficient work at making the Symposium run smoothly, as well as all participants for their sincere presentations and discussions.

Dr Ir. Yusuf S. Djajadihardja announced that the government of Indonesia would be pleased to host the 4th GEOSS Asia-Pacific in 2010. The plenary gratefully accepted the offer with a round of applause.

Lastly, Ms. Natasha Brutsch, of the GEO Secretariat, offered a final word of appreciation to the organizers and noted that the GEO Secretariat had been very pleased to participate in and support the highly successful and productive 3rd GEOSS-AP Symposium. Ms. Brutsch then formally closed the proceedings.

Technical Tour:

A technical tour was conducted in the afternoon of day 3 to the Shigaraki MU observatory, RISH, Kyoto University and Byoudou-in, the world heritage Buddhist temple.

About 50 participants joined this Technical tour.

End of Report

(Prepared by 3rd GEOSS AP Symposium Secretariat)