GROUP ON EARTH OBSERVATIONS

AGENDA FOR PARALLEL SESSIONS

1 MONITORING AND PREDICTING CLIMATE CHANGE

Climate change is threatening the safety and security of human society – as indicated by the recent Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) and the Stern report – and is becoming a top-priority political issue. The upcoming G8 Summit meetings in Japan will focus on this issue. The IPCC AR4 pointed out that the changes in the atmospheric abundance of greenhouse gases (GHGs) and aerosols, in solar radiation and in land surface properties alter the energy balance of the climate system. These changes are expressed in terms of radiative forcing, which is used to compare how a range of human and natural factors drive warming or cooling influences on global climate. Since the Third Assessment Report (TAR), new observations and related modelling of GHGs, solar activity, land surface properties and some aspects of aerosols have led to improvements in the quantitative estimates of radiative forcing.

In support of the objectives of GEOSS, the Japanese Alliance for Climate Change Observation (JACCO) was launched by Ministry of the Environment (MOE) and the Japan Meteorological Agency (JMA) in April 2006 to plan and coordinate comprehensive climate change observation systems. JACCO and Center for Global Environmental Research (CGER), National Institute for Environmental Studies (NIES) organized the "Asia-Pacific Workshop on Carbon Cycle Observation (APWSCCO)" in Tsukuba in March 2008. In APWSCCO, we discussed how to develop a comprehensive and integrated atmospheric, oceanic and terrestrial carbon cycle observation system in the Asia-Pacific region that takes user needs into consideration. In addition to the topics of APWSCCO, we need to expand how to coordinate the needs from modeling and integration for climate and oceanic observations in the framework of World Meteorological Organization (WMO), World Climate Research Programme (WCRP), and GEOSS.

The objectives of this breakout session are:
* To discuss the on-going and future plan for international collaboration in atmospheric GHG, oceanic and terrestrial carbon observation as well as climate observation that takes needs from modeling in Asia-Pacific region;
* To clarify the achievement of IPCC AR4 and strategy of climate change modeling for IPCC-AR5.

Tuesday, 15 April 2008

09:30-10:00 **Morning Coffee**

10:00-10:20 **Opening Climate Change Session**
Opening Remarks -GEO Secretariat
Introduction for this session (Reports of APWSCCO): Y. Nojiri (NIES, Japan)

10:20-14:20 **Green house gases (GHGs) observation**
10:20-11:20 International collaboration in the atmospheric GHGs observation in Asia-Pacific region
GAW activities: K. Suda (JMA, Japan)
GAW activities in Korea: S. Kim (KMA, Korea)
GHG observation by various platforms: T. Machida (NIES, Japan)

11:20-12:20 **Ocean carbon observation, status and future of network in Pacific and Indian Oceans**
Surface CO2 chemistry/Autonomous buoy: S. Watanabe (JAMSTEC, Japan)
Water column CO2 chemistry: M. Ishii (MRI, Japan)
Int. collaboration for Indian Ocean obs.: VVVS Sarma (NIO, India)

12:20-13:20 **Lunch**

13:20-14:20 **Needs from carbon cycle modeling**
Ocean modeling: M. Kawamiya (JMASTEC, Japan)
Terrestrial carbon cycle: A. Ito (NIES, Japan)
Atmospheric forward/inverse modeling: TBD

14:20-16:40 **Climate observation and modeling**

14:20-15:20 **Climate change observation and modeling, AR4 achievement and next step to AR5**
WCRP/GEWEX-CLIVAR: T. Yasunari (Nagoya-U., Japan)
Climate modelling: S. Emori (NIES, Japan)
Aerosol modelling: T. Nakajima (U-Tokyo, Japan)

15:20-15:40 **Break**

15:40-16:40 **Ocean climate change observation/monitoring, future direction for global coverage**
Argo, mooring buoy and ship observation: K. Mizuno (JAMSTEC, Japan)
Climate obs. System in Asia-Pacific area: S. W. Thurston (NOAA, USA)
NEONET: F. Syamsudin (BPPT, Indonesia)

16:40-17:30 **General discussion and wrap up session summary**

2 EARTH OBSERVATIONS FOR SUSTAINABLE WATER MANAGEMENT

The Asian monsoon is the largest water circulation system in the world. More than 60 percent of the world population lives under the influence of the Asian monsoon system, where rapid population and economic growth is taking place. Water resources from the Asian Monsoon benefits the region's food production, energy generation and even transportation. Serious water related problems occur due to variability of the monsoon rainfall. Global warming is changing the water cycle. Predictions include heavier rainfall events and larger interannual variations. Asia is especially vulnerable to impacts of Global warming. Common water-related issues are a growing concern in Asia.

In recognition of the need for accurate, timely, long-term, water cycle information as a basis for sound and effective water resources and risk management, the GEOSS Asian Water Cycle Initiative (GEOSS/AWCI) was established at the 1st Asian Water Cycle Symposium in Tokyo in November 2005, for using GEOSS to take up the challenge of solving water-related problems in Asia. The GEOSS/AWCI adopted its Implementation Plan in Beppu in December 2007, based on the continuous discussions and preliminary investigations in Bangkok in September 2006, Tokyo in January 2007, and Bali in September 2007.

The GEOSS/AWCI integrates observational network data with other types of data to generate information, develops a Data Integration and Analysis System and an Ontology System, and implements capacity building programs, for making sound water resources management decisions.

The objectives of this breakout session are:

* To recognize on-going water cycle variations and identify the associated societal problems in the Asia-Oceanic region under the climate change;

* To seek regional approaches for adapting to the variations; and

* To adopt GEOSS/AWCI actions for contribution to the adaptation to the water cycle variation under the climate change.

Tuesday, 15 April 2008

09:30-10:00	**Morning Coffee**
10:00-10:20	**Opening Water Breakout Session**
10:00-10:10	**Opening Remarks - GEO Secretariat**
10:10-10:20	**Introduction to GEOSS/AWCI – video**
10:20-11:05	**Scientific Understandings and Predictions**
10:20-10:35	**Rainfall in Asia**
10:35-10:50	**Prediction of Water Cycle Variations in Asia**
10:50-12:00	**What is happening in Asian countries?** Short Reports from Asian Countries (6 min. each) Australia/Bangladesh/Bhutan/Cambodia/China/India/Indonesia/Japan/ Korea/Laos/Malaysia/Mongolia/Myanmar/Nepal/New Zealand/Pakistan/ Philippines/Sri Lanka/Thailand/Uzbekistan/Vietnam
12:00-13:00	**Lunch**

13:00-13:50	**What is happening in Asian countries? -continue**
13:50-15:00	**What is on-going and/or planned?** Short Reports by international organizations and projects (5 min. each) IGWCO/APN/UNU/ICHARM/Pacific Region Drought Initiative/ Space Agencies/JAMSTEC/OCCCO/CEOP/MAHASRI/MAIRS/PUB/GWSP
15:00-15:20	**Break**
15:20-17:00	**Toward Adaptation to the Water Cycle Variations under the Climate Change - Discussions** GEOSS/AWCI capacity and possible contributions Actions for documenting the variations Actions for documenting the societal issues Actions for summarizing the on-going and planed adaptations Actions for realizing end-to-end approaches Actions for providing usable information for effective adaptations Actions for building capacity
17:00-17:30	**Closing Water Breakout Session**
17:00-17:20	**Session Summary - Session Convene**
17:20-17:30	**Concluding Remarks - GEO Secretariat**

3 USING GEOSS TO MANAGE ECOSYSTEMS AND PROTECT BIODIVERSITY

The effects of global warming on ecosystem and biodiversity have already been prominent in many aspects, and adaptations to such effects are urgently needed. GEOSS is to be used both to monitor the change and the effectiveness of the adaptation. Though some remote sensing systems are effective to observe globally or regionally, many processes ongoing are to be detected only by on-site observations. Better combination between the two types of observation is necessary to establish and utilize GEOSS effectively to contribute the monitoring and adaptation to global warming.

Asia Pacific region includes variety of ecosystems, which includes from low to high latitudes. Also it is the region of one of the highest biodiversity, including many hot spots. However, human population and economics are also growing rapidly in this region to cause interactive effects with global warming. The GEOSS should cover such interactive effects of global warming and other human impacts, in particular to develop the adaptive methods.

In this session, we discuss on how we can use GEOSS to manage ecosystems and protect biodiversity. In particular,
1) How GEOSS can contribute to monitor the change and adaptation of ecosystem and/or biodiversity in the global warming process? Or, what kind of system should be established or enhanced to do this?
2) How we can connect the large scaled observations with on-site observations?

Tuesday, 15 April 2008 - Parallel Sessions (Closed)

09:30-10:00 **Morning Coffee**

10:00-12:00 **Using GEOSS to manage ecosystems**
Introduction (Nakashizuka)
GEO Ecosystem Classification and Mapping (Yu Mai)
EAP-ILTER (Dr Zhao Shidong, Chair, EAP ILTER, China)
JaLTER (Dr Shibata, JaLTER)
Korean activities (Eun-Shik Kim, Korea)
IUFRO adaptation report (Risto Seppala, IUFRO)

12:00-13:00 **Lunch**

13:00-15:00 **Using GEOSS to protect Biodiversity**
Global Biodiversity Observation Network (Bruno Walther DIVERSITAS/NASA/GEO)
NaGISA (Dr Shirayama (?))
DIWPA (TBC)
Monitoring Site 1000 (Mr. Sakaguchi, Biodiversity Center, Japan)
GBIF (Dr. Eamonn O Tuama, GBIF Secretariat)
Symulating the shifts of species distribution (Nobuyuki Tanaka, FFPRI)

15:00-15:30 **Break**

15:30-16:30 **Linking remote sensing and on site observation**
Frontier Research Center for Global Change (TBC)
NIES (Dr Oguma, TBC)

16:30-17:30 **General discussion and wrap up session summary**

4 MAPPING FOREST AND TRACKING CARBON

Systematic Forest Monitoring is a key action for providing information that is essential for different GEO Societal Benefit Areas, in particular for addressing ecosystem management and biodiversity conservation. As both a major potential source of and sink for carbon, forest monitoring is also essential to tackling climate variability and change and dealing with adaptation.

A number of Tasks in the GEO Work Plan 07-09 are addressing the issues of monitoring forests and tracking carbon by estimating biomass. The present session will present and discuss the activities conducted in these Tasks and the current plans for increasing GEO's activities in these areas.

An effective, dependable monitoring system for mapping forests and measuring changes in forest carbon content will need to incorporate a range of monitoring instruments and take advantage of the best available scientific information about emissions from deforestation and other land-use change.

Many activities that have been initiated or are on-going at the national, regional and global levels have not yet been recorded as GEO activities. Based on what is available and being planned today, there is a clear need to share information and experiences about how to ensure forest monitoring and measure forest carbon.

Recognizing this, GEO, is encouraging its Members and Participating Organizations to coordinate their work on observations, reference datasets and robust assessment tools and methodologies in this field.

If properly designed, this initiative may provide the necessary supporting tools for implementing the Bali Action Plan, which calls for "Enhanced national/international action on mitigation of climate change, including, inter alia, consideration of … Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries …"

Objectives of the Session

The Session has the following objectives:

* Address the need for integrated observations from diverse instruments (satellite, airborne, in situ) and from various fields (climate, biodiversity, agriculture, etc.)

* Provide an overview of the available tools and methodologies, here included associated technical limitations and uncertainties

* Address the requirements for systematic satellite observations.

* Provide an overview of on-going activities for addressing the issue at different geographical levels (national, regional, but particularly in the Asia/Pacific, and global).

* Collect inputs and comments for a strong GEO initiative on this subject.

* Discuss implementation aspects of GEO initiative, and identify potential contributors.

The session will also contribute to building momentum around the Forestry and Climate-related issues being prepared for the G8 meeting, which takes place in Japan in July.

Preliminary agenda

1. Introduction
- Chairman
- GEO Secretariat

2. Global Observations (key words: integration, coordination, continuity, quality)
- Elements for a Global acquisition strategy (Ake R.)
- "The Advanced Land Observing Satellite (ALOS) and JAXA plans for follow-on missions" - Masanobu Shimada (JAXA, Japan)
- "Collection of global baseline datasets for REDD - the ALOS systematic observation strategy" - Ake Rosenqvist (European Commission JRC)

3. Methods, products and tools (science community and users)
- REDD and Global Land System: a view from ICSU/ESSP/GCP (Yoshiki Yamagata, NIES)
- "GOFC-GOLD REDD sourcebook development: background, status, next steps"–Martin Herold, GOFC-GOLD Land Cover Project Office
- " Implementing REDD: The Potential of ALOS PALSAR for Forest Mapping and Monitoring " – Josef Kellndorfer (Woods Hole Research Center, USA) *(note: it could be extended to multifrequency SAR potential, with emphasis on ALOS)*
- "Deriving vegetation parameters and forest structural information from airborne radar systems". Prof. A.K. Milne, School of Biological, Earth and Environmental Sciences, University of New South Wales, Sydney, Australia, and Remote Sensing Science Manager, Australian Cooperative Research Centre for Spatial Information
- Carbon sequestration source observation (Mitsuo Matsumoto, FFPRI & Forest Agency Japan)
- Estimation of Emission from Deforestation - Dennis Dye （GL, ECRP,FRCGC,JAMSTEC）

4. Initiatives and projects on Carbon Monitoring
- "The Australian Global Carbon Monitoring System (GCMS) Initiative" - Gary Richards (Dept. of Climate Change, Australian Govt.)
- "The NIES/JAXA Forest Carbon Monitoring System project" - Yoshiki Yamagata (NIES, Japan)
- REDD and adaptation to global warming in Borneo Island (KANEHIRO Kitayama)
- The Cameroon and Bolivia test cases - ESA/GAF TBD
- The US National Biomass and Carbon Dataset 2000 (NBCD 2000) - Josef Kellndorfer
- European Initiatives on REDD – TBD
- The carbon fluxes of arable land and the impacts of climate change on its SOC in China - Dr. Prof. Zhang Chengyi, National Climate Center of CMA, China,

5. Round table: How GEOSS could support global carbon measurements

6. Conclusions and wrap-up