
AGENDAS FOR PARALLEL SESSIONS

WG1: GEOSS ASIAN WATER CYCLE INITIATIVE (AWCI)

Human factors such as globalization, population growth, poverty, urbanization and changes in land use are aggravating the negative consequences of climatological, hydrological and meteorological hazards. Extreme climate events are also increasing these water-related disaster risks faced by populations living in vulnerable areas. The losses are increasing in both developed and developing countries, and in this inter-connected world, the impact of an event can immediately cross borders, leading to cascading consequences, even in areas that are remote from the event. Repeated exposure to disasters is hampering sustainable development in vulnerable localities.

In 2015, the international community agreed on three major accords: the Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework), the Sustainable Development Goals (SDGs), and the Paris Agreement on Climate Change (Paris Agreement). These agreements collectively present an urgent need and opportunity for action now and beyond. There are important connections among these agreements. The SDG on water and its related targets capture the many ways water is utilized, managed, treated and protected throughout the entire water cycle. These targets address pressing water-related issues including social vulnerability and water-related hazards due to intensified climate change as well as poverty, hunger and cities. These water issues are inter-related and interdependent and must be addressed in a systemic and global way to create a more water-secure world.

GEOSS/AWCI has stepped into the second phase. In March 2016, GEOSS/AWCI, in cooperation with the Network of the Network of Asian River Basin Organizations (NARBO) and the International Flood Initiative (IFI), organized the "Asia Water Cycle Symposium (AWCS2016)" in Tokyo and adopted a new strategic implementation framework for addressing the floods and droughts. The objective of this breakout session will focus on how to substantially enhance water-related data collection efforts, employ data integration capabilities, and create and share actionable information for reducing flood and drought risks.

Co-Chairs:

- Prof. Shahbaz Khan, Director, UNESCO;
- Dr. Ali Chavoshian, Director, RCUWM, Iran;
- Prof. Toshio Koike, Professor, University of Tokyo, Director, ICHARM.

09:15-09:45 **1. Opening GEOSS/AWCI Breakout Session**

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| 1) Opening Address | Co-Chairs; |
| 2) Report on the AWCS2016 | ICHARM. |

09:45-10:15 **2. Key-notes on SDGs and Water** **TBC**

10:15-10:30 Break

10:30-12:00	3. Observation, Data Integration and Information Dissemination (TBC)	
	<ul style="list-style-type: none"> 1) GEO Water 2) Climate Risk Early Warning Systems (CREWS) 3) Regional Coordination of Science & Technology on Water 4) Satellite Observations 5) Data Integration 	<ul style="list-style-type: none"> GEOGLOWS WMO UNESCO JAXA DIAS
12:00-13:00	Lunch Break	
13:00-14:30	4. Floods (TBC)	
	<ul style="list-style-type: none"> 1) IFI Implementation Strategy 2) National Status Reports Indonesia, Malasia, Myanmar, Pakistan, Philippines, Sri Lanka, Vietnam 	<ul style="list-style-type: none"> IFI Secretariat National Representatives
14:30-15:15	5. Droughts (TBC)	
	<ul style="list-style-type: none"> 1) Scoping and Planning IDI 2) UNESCO Arid Lands Information Network (G-WADI) 3) WMO Dought Initiatives 	<ul style="list-style-type: none"> IDI Secretariat UNESCO WMO
15:15-16:00	6. Collaboration with Donors (TBC)	
	<ul style="list-style-type: none"> 1) World Bank; 2) Asian Development Bank; 3) Japan International Cooperation Agency (JICA) 	
16:00-16:15	Break	
16:15-17:15	7. Discussion towards Promoting Inter-linkages	
	<ul style="list-style-type: none"> 1) Needs, Issues and Benefits; 2) Linkage to Regional and Global Coordination Framework; 3) Building Capacity; 4) Planning Strategy. 	
17:15-17:30	8. Closing GEOSS/AWCI Breakout Session	
	<ul style="list-style-type: none"> 1) Session Summary; 2) Concluding Remarks. 	

WG2: ASIA-PACIFIC BIODIVERSITY OBSERVATION NETWORK (AP-BON)

“Achievements and lessons learned in AP-BON: Toward developing a broader network of biodiversity and ecosystem observations”

Since its foundation in 2009, AP-BON has been developed as a coordinated network contributing to CBD and IPBES through observations of the states and trends of biodiversity and ecosystems in the Asia-Pacific region. AP-BON is promoting not only observations but also data sharing and published data papers and three volumes of books in which various data have been compiled. Based on those achievements and considering contribution to CBD Aichi targets and IPBES assessment, AP-BON will develop a new work plan towards 2020. One of the challenges of AP-BON towards 2020 is to promote multi-scale observations of spatial and temporal changes in biodiversity and ecosystem structure and functions by combining in situ field surveys, sensor networks, satellite observations and various models. AP-BON will facilitate (i) in depth observations at some “super-sites” placed along the environmental gradients, to find essential biodiversity variables (EBVs) and key biophysical characteristics that can be measured by satellites, (ii) multi-point observations at “a network of inventory sites” to monitor spatial variation of biodiversity and ecosystems under various pressures including land/sea use changes and also various efforts of conservation and restoration, and (iii) integrated analyses of the changes in biodiversity, ecosystems, and human-nature interactions. This working group aims to share the current status and vision of biodiversity and ecosystem observations by AP-BON and related networks such asILTER, and then to discuss the way forward considering the contribution to one of the SBAs in GEO Strategic Plan 2016-2025: Implementing GEOSS, “Biodiversity and Ecosystem Sustainability”, and further to a few targets involved in the SDGs.

Co-Chairs:

- Dr. Eun-Shik Kim (Kookmin University, Korea);
- Dr. Sheila Vergara (ASEAN Centre for Biodiversity, Philippines);
- Dr. Tetsukazu Yahara (Kyushu University, Japan).

Session 1: Overview of regional and national activities

Session 2: GEO Strategic Plan 2016-2025 and GEO Work Programme 2017-2019

Session 3: Development of broader observation network

Session 4: Discussion towards broader engagement of observation and user communities

WG3: THE GEO CARBON AND GHG INITIATIVE

The Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) is a landmark agreement entered into force in November 2016. The Paris agreement is aimed at reduction of greenhouse gases (GHGs) emission for keeping the global warming below 2°C. The commitments and progresses of each country should be carefully monitored, reported and verified by international bodies. In recent years, the number of observational platforms for monitoring atmospheric GHGs is increasing. National or regional inventories of emissions have also been prepared at greater resolution in space and time. However, due to uncertainties in modeling tools, and limited observational data coverage, high uncertainty still remains in global or regional sources/sinks estimations, particularly for carbon dioxide (CO₂).

Our urgent needs are to harmonize the increasing number of earth observation platforms for monitoring GHGs such as satellites, aircraft, ships, and ground stations, and to reduce their source/sink estimation uncertainties. Atmospheric transport modeling, inverse modeling, and assimilation methods should be tested and improved for process level understanding of regional fluxes of GHGs. All results should be complemented by the both "top-down" approach (with inverse models) and "bottom-up" approach (with surface flux/emission network data and ground-based models). The assessments of climate change and their impact on the global and regional GHGs budgets with high accuracy is needed for decision making. This will contribute to the UNFCCC's Sustainable Development Goals (SDGs) including SDG 13 "Climate Action" by providing additional sources of information that can complement the national inventories. International collaborative efforts in the framework of GEO are strongly needed to develop an integrated and globally coordinated carbon observing and analysis system.

Co-Chairs:

- Antonio BOMBELLI, Euro-Mediterranean Center on Climate Change (CMCC), Italy;
- Yi LIU, Institute of Atmospheric Physics, Chinese Academy of Sciences (IAP/CAS), China;
- Nobuko SAIGUSA, National Institute for Environmental Studies (NIES), Japan.

09:15-10:00 **1. Opening GEO Carbon and GHG Initiative Session**

- 1) Opening Address;
- 2) Introduction to the GEO Carbon and GHG Initiative, Antonio BOMBELLI, CMCC;
- 3) Background information on the GEO 2017-2019 Work Programme with the SDGs, Hiroyuki MURAOKA, Gifu University, Japan.

10:00-11:00 **2. Initiative Task 2 – Data Access and Availability: Domain-Overarching Carbon Cycle and GHGs Monitoring System**

- 1) CO₂ Monitoring from Space: TanSat Mission Status, Yi LIU, IAP/CAS;
- 2) National Carbon Project of India, Chandra Shekhar JHA, Indian Space Research Organization (ISRO), India;
- 3) Monitoring of atmospheric GHGs by commercial airliner, CONTRAIL, Toshinobu MACHIDA¹, Hidekazu MATSUEDA², Yousuke SAWA², Yosuke NIWA², Taku UMEZAWA¹; ¹ NIES, ² Meteorological Research Institute (MRI), Japan.

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- 11:00-11:15 Break
- 11:15-12:15 **3. Initiative Task 4 – Budget Calculations and Breakdown Across Scales to Support Policy Implementation**
- 1) Global Carbon Project (GCP) - Regional Carbon Cycle Assessment and Processes (RECCAP) in Asia, Prabir K. PATRA, Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Japan;
 - 2) Evaluation of oceanic CO₂ uptake based on global pCO₂ observation database “SOCAT”, Shin-ichiro NAKAOKA, NIES;
 - 3) Discussion.
- 12:15-13:30 Lunch Break
- 13:30-15:30 **4. Initiative Task 4 – Budget Calculations and Breakdown Across Scales to Support Policy Implementation**
- 1) Comparison of GHG concentrations and fluxes derived from GOSAT, Inventories, and Terrestrial Biosphere Models, Tsuneo MATSUNAGA, NIES;
 - 2) Impacts of the wildfires in Indonesia on the emissions of GHGs and atmospheric pollutants (TBD), Haris GUNAWAN, Peatland Restoration Agency (BRG), Indonesia;
 - 3) Use of measurement data in national GHG inventories, Kiyoto TANABE, Institute for Global Environmental Strategies (IGES), Japan;
 - 4) Discussions from the users' perspective (TBD).
- 15:30-15:50 Break
- 15:50-16:50 **5. Synergies with Other Initiatives in Asia-Pacific**
- 1) Progress with implementation of the Integrated Global Greenhouse Gas Information System (IG3IS) and New Zealand pilot project, Gordon BRAILSFORD, National Institute of Water and Atmospheric Research (NIWA), New Zealand;
 - 2) Global Forest Observation Initiative - Concept and the current status, Masanobu SHIMADA, Tokyo Denki University, Japan;
 - 3) Discussion.
- 16:50-17:30 **6. Closing the GEO Carbon and GHG Initiative Session**
- 1) Future Plan and Session Summary;
 - 2) Concluding Remarks.

WG4: OCEAN AND SOCIETY IN THE AP REGION

The GEO Blue Planet Oceans and Society Initiative aims to advance and exploit synergies among the many observational programmes devoted to ocean and coastal waters. The initiative also seeks to raise awareness of the societal benefits of ocean observations at the public and policy levels. In this regard the UN Sustainable Development Goals, SDG13, Climate Actions and SDG14, Life below Water, provide the context for why ocean observations and research are important.

Since 2012, The Ocean and Society working group, of the GEOSS-AP symposium has been working to define, enhance and integrate the inventory information exchanges of coastal data issue in the Asia-Pacific region which spans multiple jurisdictional waters. This working group, aims to evolve the current observation inventory system of in-situ ocean observation to better support the WESTPAC community and to meet the needs of SDG13/14, .

Thus, the goal of this session is to continue to discuss identify and define actions to address gaps of activities in the AP region that will evolve a comprehensive and integrated observation inventory system for the region. Ocean acification, an issue related to both SDG 13 and 14, will be the focus topic for consideration in this session.

Co-Chairs:

- Ken Ando (Japan);
- Andy Steven (Australia);
- Somkiat Khokiattiwong (Thailand).

09:15-10:00 **1. Introduction of the past activities and current situation**

10:00-12:00 **2. Expand ocean data inventory system in GEO**

13:30-17:00 **3. SDGs and ocean**

17:00-17:30 **4. Wrap-up**

WG5: AGRICULTURE AND FOOD SECURITY

The food demand is still increasing in the 21st century under rapid population growth, diet transition from grain to meat, use of crops for bio-fuel, etc., while facing the shortage of arable land and water resource for sufficient food production, and frequently occurring extreme weather conditions under global warming which are terrifying stable productivity of food. Moreover, we have to break the dependency of agricultural production on excessive use of chemicals which causes serious environmental impact and food safety issues. Namely, we need to simultaneously accomplish both high productivity and sustainability against several constraints, contributing to SDG 2 (End hunger, achieve food security and improved nutrition, and promote sustainable agriculture).

Realizing that global/regional/local scale earth observation is one of the most important key factors to address those issues by optimizing complex conditions, several groups have been involved in providing satellite observations and ground level observations with statistical information collection and trying to apply such data with some model for agriculture including crop yield forecast, crop growth outlook and agriculture damage assessment. In spite of the importance of merging data from different platforms such as satellite observations and ground observations for better decision support, there are just few good applications of such multi-platform data integration with model and available statistical information.

In this working group, participants representing different observation platforms and decision support system developments will interact to learn about the present status and perspectives of multi-platform observations, and discuss how to provide multi-platform observation environment to achieve sustainable food production particularly focusing on the utilization of wide range of the observations from different domains such as water management, biodiversity, forest management etc., in order to fulfill the above constraints, while clarifying the short-term and long-term goals of the observations. The results of the discussion will lead us to the Input to GEO GLAM (Global Agriculture Monitoring) project for G20 action plan, especially Asia rice crop team activity in GEO GLAM and other international projects including FAO AFSIS, etc.

Co-Chairs:

- Dr. Ir. Dedi Nursyamsi, M.Agr. (ICALRD, MOA, Indonesia);
- Dr. Seishi Ninomiya (The University of Tokyo);
- Dr. Surya Durbha (Indian Institute of Technology Bombay (not finalized)).

09:15-12:00 1. Asia Rice/GEOLAM and related projects in Asia

Chair: Dr. Seishi Ninomiya

1) Introduction of GEOLAM and Asia Rice

Dr. Sinichi Sobue, JAXA, Japan

2) Indonesia rice crop monitoring and management using space technology

Dr. Rizatus Shofiyati, MOA, Indonesia

3) Asian Food Security Information System

Dr. Shoji Kimura, AFSIS Advisor

- 4) GEORICE project - Rice monitoring in Vietnam
Dr. Thuy Le Toan, CESIBO, France
- 5) Rice crop monitoring in Tsuruoka by using multiple satellite data, Japan
Dr. Kei Oyoshi, JAXA, Japan
- 6) Formosat-2 applications in agriculture, and the future product of Formosat-5.
Dr. Franz MC Cheng, NSPO, Chinese Taipei
- 7) Indo-Japan joint project for sustainable agricultural production under climatic change
Dr. Seishi Ninomiya, U. Tokyo
- 8) Indo-Japan joint project for sustainable agricultural production under climatic change
Dr. Surya Durbha, IITB
- 9) Discussion

12:00-13:30 Lunch Break

13:30-15:30 **2. Technology innovation for rice productivity monitoring**

Chair: Dr. Ir. Dedi Nursyamsi

- 1) High-performance crop monitoring by drone
Dr. Ryo Sugiura, NARO, Japan
- 2) Framework for flexible crop modeling
Dr. Kei Tanaka, NARO, Japan
- 3) Interoperable platform of agricultural decision support
Dr. Kiyoshi Honda, Chubu U., Japan
- 4) Climatic change modeling
Dr. Atsushi Higuchi, Chiba U., Japan
- 5) TBD
- 6) TBD
- 7) Discussion

15:30-16:00 Coffee Break

16:00-17:30 **3. Panel Discussion**

High-performance rice productivity estimation by integration of satellite and ground data with model for decision making

Chair: Dr. Shinich Sobue

- Topics to be discussed:
 - Multi-platform observations;
 - Interoperable platform;
 - Innovation for crop models;
 - System implementation and maintenance.

- Panelists
 - Supported invitees and co-chairs