

Kyoto Statement 2018

Kyoto, Japan
October 26th, 2018

The 11th Global Earth Observation System of Systems Asia Pacific Symposium (GEOSS AP) was held in Kyoto from 24th to 26th October 2018, by the Group on Earth Observations (GEO) and Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT). The Symposium, attended by 171 participants including H.E. Mr. Palitha Range Bandara, State Minister of Irrigation and Water Resources and Disaster Management of Sri Lanka. The Symposium addressed the theme of "Strengthening Regional Cooperation through AOGEOSS for the SDGs, Paris Agreement and Sendai Framework". The Symposium plays a significant role in sharing experiences and find solutions to overcome challenges under the activities of the Asia Oceania GEOSS (AOGEOSS) initiative as a fundamental piece of regional infrastructure and an overarching vision for other EO initiatives in the Asia Oceania region.

A keynote presentation was delivered by the Asian Development Bank, and was followed by the introduction of the AOGEOSS Case Study: Mekong region then a panel session on cross cutting issues including data sharing, data platforms and user engagement. The six breakout task group sessions included GEOSS Asian Water Cycle Initiative (AWCI), Asia-Pacific Biodiversity Observation Network (APBON), GEO Carbon and GHG Initiative (GEO-C), Oceans, Coasts, and Islands (OCI), AsiaRiCE and Environmental Monitoring and Protection (EMP).

Each task group focused on developing a clear work program for 2019 directly delivering on GEO's priority areas.

The Participants agreed to the following outcomes and resolved to take the following actions toward the next Symposium.

(1) 2030 Agenda for Sustainable Development:

It is critical to end poverty and hunger, achieve gender equality, and make societies and economies resilient to water-related disasters in both urban and rural areas. AWCI launches full-scale efforts to activate Platforms on Water Resilience and Disasters by promoting dialogues, reinforcing partnership, sharing data, information, models, tools, experiences and ideas, and expanding sustainable practices. AWCI promotes initiative that will address targets in SDG 6 on Water use efficiency and Integrated Water Resources Management as well as SDGs related to Poverty, Food Security and Life on Land.

APBON discussed the need to promote the harmonization of activities that contribute to achieving SDGs (13, 14, 15) by identifying the synergies and trade-offs of ecosystem services and societal requirements. In-situ observations and their emerging knowledge will address these issues by taking consideration of the challenges in balancing our natural systems and societal systems. APBON also identified the importance of long-term monitoring of terrestrial, freshwater, coasts and marine ecosystems to produce the data and knowledge for sound decision making. Tackling the challenges with regard to climate change needs for cross-disciplinary activities including water resources, carbon management, food production, and also with various platforms of Earth Observations (EO).

In relation to SDG14, OCI will promote better access to marine data through: interoperability of data such as catalogues of state owned-data; standardisation of in situ and satellite data through the development and application of standards including Analysis Ready Data (ARD), that provide confidence and consistency, and better validate satellite based marine and coastal products by applying in-situ observation for calibration, validation and algorithm processing. OCI will continue to build upon its user-engagement activities with Oceania states to provide capacity building and training, develop regionally-specific best-practice EO methods and products that are useful to these communities in addressing climate, environment and livelihood issues.

AsiaRiCE directly addresses the issues of SDG 1, 2, 3, 6, 10, 13, 15 and 17 through better agri-food policy implementation. Compiled agromet information from various EO systems in Japan (JAXA/JASMIN), India (ISRO/MOSDAC) and other countries in AsiaRiCE under GEOGLAM. AsiaRiCE will greatly contribute to global and regional food security, by improving the outlook of crop production, precision agriculture, development of decision-support systems and early warning systems for biotic and abiotic stresses, in cooperation with the ASEAN Food Security Information System (AFSIS).

EMP directly focuses on SDG 15, also investigates ecosystem responses to natural disasters and climate change closely related to SDG 11, 13 and 17. By integrating multiple source EO data, EMP will monitor and assess terrestrial ecological and atmospheric environments, to generate annual policy relevant reports to support national governments and international organizations to make evidence-based decisions for environmental protection. EMP will provide quantitative remote sensing products for sharing and validation to all AO partners to strengthen cooperation.

(2) Paris climate agreement within the UNFCCC:

AWCI accelerates regional coordination to build capacity for identifying, monitoring and predicting the changing probability of water-related disasters and their associated risks. It will develop user-friendly analysis tools and engage all stakeholders in climate change adaptation planning and implementation at the national scale, and fill the gap between adaptation and mitigation by choosing options which are beneficial to mitigation.

GEO-C aims to support the evaluation of the effectiveness of climate change measures, and to provide measurement-based knowledge of atmospheric greenhouse gas (GHG) concentration in support of the evaluation and improvements emission inventories. Separation of natural and anthropogenic source and sink estimations is a key scientific focus. Large uncertainty remains in global or regional source and sink estimations for carbon dioxide. It is urgently needed to harmonize the increasing number of platforms for monitoring GHGs in Asia–Oceania, and to reduce uncertainties in their source and sink estimations. For example, methane emission from agricultural and industrial activities in Asia. Relevant institutions and agencies for GHG observation will cooperate to develop and improve up-to-date analysis systems, using remote-sensing and in-situ observations and to provide the data and knowledge to stakeholders in support of the Global Stocktake Process under the Paris Agreement.

Methane is also a key component of greenhouse gas, and the lowland rice field is one of the major sources of methane emission being measured by AsiaRiCE for optimization and minimization of water use. AsiaRiCE hope to reduce methane emissions without reducing the productivity of rice production in the AO region. AsiaRiCE also not the critical partnership required with the CEOS community.

As vegetation ecosystem is an important carbon sink, EMP is developing products related to vegetation ecosystem status and variation monitoring. The long time series of quantitative remote sensing products, including the vegetation phenology, Leaf Area Index, Fractional Vegetation Cover, Biomass and Net/Gross Primary Productivity, are used to study the climate change and the ecological effect and feedback of the ecosystem to the GHG, such as the carbon dioxide.

(3) Sendai Framework for Disaster Risk Reduction:

AWCI facilitates the implementation of Platforms on Water Resilience and Disasters to promote the four priorities for action of the Sendai Framework. AWCI provides usable and actionable information on thematic activities including preparedness and mitigation. AWCI archives disaster damage data and maintains statistics for encouraging investment for water-related disaster risk reduction.

Integrated climate models with EO data and information is critical for improving climate resilience. For risk management of water-related disasters, it is important to understand the impact of drought and flood on agri-

culture, which can be estimated by the agromet information and the monitoring of inundated area based on EO data in the activities of AsiaRiCE. This task is closely linked with SDG 13.

(4) Emerging Case Study for Mekong Region:

In 2018, AOGEOSS committed each Task Group to focus their knowledge to overcome the specific challenges in the Mekong region.

APBON will provide knowledge about biodiversity and ecosystem services, particularly on the impacts of climate and land use changes and hydropower dam construction. APBON will focus on fresh water biodiversity by intensive field research including direct fish sampling, environmental DNA, and market survey. Existing initiatives on the integration of climate change scenario impacts on the river basin ecosystem will serve as a platform for collaborations and inform effective conservation measures.

OCI will focus on the Mekong Delta and coastal bay to (a) develop algorithms for the retrieval of water quality parameters, and (b) work with other task groups to understand how changes in Mekong river discharge and land-use activities have affected coastal geomorphology, water quality, and fisheries productivity.

AsiaRiCE and Data Platforms will work with the Vietnam National Space Center and the Mekong River Commission to develop onsite and cloud based Open Data Cube deployments across the Mekong region with a focus on rice crop and forest monitoring in addition to hydrological response.

(5) Cross cutting topics:

The entire community accepts the critical requirement for data providers to distribute openly licensed data and ARD to power our platforms. Capacity building and platforms for knowledge sharing was highlighted as a key area to increase our efforts in 2019. Data sharing and data platforms/cubes committed to undertake an ambitious work plan in 2019 related to the development of ARD, roll out of the Asia Oceania Data Hub, capacity building, integration of systems in our region and operational deployment of systems for AOGEOSS's starting with the Mekong region, expanding into our other priority regions (Himalayas and Oceania) and in the medium term covering the entire Asia-Oceania region.

The Participants resolve to reconvene at the 12th GEOSS AP Symposium to be held in Canberra, Australia in 2019.