

Summary Report

AP-BON Task Group at 11th GEOSS Asia-Pacific Symposium (GEOSS-AP)

The Task Group (TG) 2 of AP-BON was held as one of the working group of the parallel session of 10th GEOSS (Global Earth Observation System of Systems) Asia-Pacific Symposium

■ Outline of the meeting

Date: 3rd November, 2019

Venue: Australian National University, Canberra, Australia

Co-Chairs: Tetsukazu Yahara (Kyushu University, Japan); Sheila Vergara (ASEAN Center for Biodiversity, Philippines); Eun-Shik Kim (Kookmin University, Republic of Korea)

Participants: 22 persons and 11 nationalities

■ Objectives:

- Engagement of biodiversity observation communities in the region particularly in the Pacific and Oceanic regions taking advantage of AOGEO Symposium being held in Australia
- Identifying policy-relevant biodiversity observations and assessments
- Seeking collaborative opportunities with carbon cycle community and satellite observation mission(s)

■ Outline of the proceedings

<Opening Session>

1. Welcome by Co-chairs of AP-BON

First of all, on behalf of the three co-chairs of APBON, Dr. Tetsukazu Yahara, Kyushu University, thanked to all participants to TG2. He delivered the brief explanation of the history of APBON and talked about one of the important APBON mission, which is to think and discuss the collaboration in the AP region in the future. Another mission from the other perspective is to think about how we can contribute to CBD COP 15 to be held in China in 2020.

In conclusion of his opening remarks, he noted today is an important meeting for the implementation of these mission, and therefore, today's fruitful discussion would be expected.

2. Welcome by Ministry of the Environment, Japan

Mr. Kazuo Somiya, Secretary General of AP-BON, (Ministry of Environment, Japan,) welcomed all

participants to TG2 and thanked to Ms. Laetitia Navarro from GEO BON and three co-chairs, Dr. Tetsukazu Yahara, Dr. Sheila Vergara and Dr. Eun-Shik Kim. He said that this meeting is a good opportunity to share the current status of biodiversity observation in the AP region, and also to discuss the contribution to AOGEO System. While mentioning to the Joint Session of TG2 and TG3, he concluded with his expectation for today's fruitful discussion.

3. Setting the scene - Overview of AP-BON New Workplan and Today's agenda

Dr. Hiroyuki Muraoka of Gifu University, Japan; AOGEO Coordination Board; GEO Programme Board, explained the history and outline of AP-BON with the introduction of the other several groups and their activities such as GEO BON and National BONs. Also, he mentioned the outcome titled "Kyoto Statement 2018" which was adopted last year and updated AP-BON workplan. Then, objectives of the session, today's agenda and expected outcomes were shared with all. Finally he said that reporting the results from each TG for AOGEO Statement 2019 would be needed in tomorrow's Plenary Session, and TG2's conclusion would be expected in today's discussion.

Keynote1: "Biodiversity observations in Asia-Oceania – Marine", Takehisa Yamakita (JAMSTEC, Japan)

Mr. Takehisa Yamakita of Japan Agency for Marine-Earth Science and Technology (JAMSTEC) briefly mentioned AP-MBON progress updates after the 11th AP-BON Workshop held in June 2019 in Kuala Lumpur and gave a presentation mainly about three things; GOOS, the outline of MBON and Topics in Oceania.

1) GOOS which stands for The Global Ocean Observing System is a sustained collaborative system of ocean observations, encompassing in situ networks, satellite systems, governments, UN agencies and individual scientists and 9th GOOS Regional Alliances Forum was held on 5-7 August 2019 in Tokyo, Japan. He introduced in what areas the GRA would like to be active, and mentioned China, Japan, Korea and Russia as NEAR-GOOS Databases.

2) He explained Vision and Key Objectives of MBON, and reported three things; Developing an MBON Implementation Plan, Data Management and Developing EBVs). In particular, he focused on "The U.S. MBON projects".

3) He talked about the current marine states in Australia through monitoring by using Autonomous-Underwater-Vehicles, so-called "Drone" inside the ocean.

Keynote2: "Australian-LTER and its potential to contribute to AP-BON", Michael Liddell (James Cook University, Australia)

Dr. Michael Liddell of James Cook University, Australia, firstly explained the outline of Australian LTER (Long Term Ecological Research) including its background, and in

particular, what is TERN Australian SuperSite with the mapping to show us the specific sites. Also he introduced Biodiversity in Australia, its meaning, Australian species biodiversity, and the rate of endemics out of all species in Australia. In addition, the biodiversity problem, biodiversity monitoring and national biodiversity conservation strategy were reported. Finally, he concluded with the explanation of ABSNET (Australian Biodiversity Sensor Network) and biodiversity monitoring using an early model I&II and camera traps.

Session1: Engagement of local, national and regional biodiversity observations

1. Session Introduction

Dr. Sheila Vergara as a moderator in Session1 told us the theme and expectations in this session, and introduced three presenters.

2. Recent development of local/national biodiversity obs.

2-1. Charlie Heatubun (University of Papua, Indonesia)

Dr. Charlie Heatubun in University of Papua, Indonesia, had a brief introduction of Indonesian New Guinea, and presented current status of biodiversity in New Guinea, the process of the number of species per decade from 1750 to 2019, and threats to biodiversity in Indonesian New Guinea showing pictures and mapping. Also he reported the estimated change of endemic plant species richness in the face of climate change from now to 2070 and change in species richness across New Guinea's ecoregions under future climate.

Finally, Declaration of West Papua as the first Conservation Province in Indonesia 2015 was introduced, where Manokwari Declaration followed in 2018.

2-2. Mangal Man Shakya (Wildlife Watch Group, Nepal)

Mr. Mangal Man Shakya, Wildlife Watch Group, Nepal, firstly introduced an overview of the progress by Nepal-BON and biodiversity observations in Nepal with some pictures. In addition, biodiversity initiatives in Nepal were shared. He emphasized the biodiversity significance in the Himalaya which has transboundary landscapes and told us some groups and goals as biodiversity initiatives in the Himalaya.

2-3. Sheila Vergara (ASEAN Centre for Biodiversity)

Dr. Sheila Vergara, ASEAN Centre for Biodiversity, gave a presentation about Conservation Challenges in ASEAN Heritage Parks and Progress of the implementation of Aichi Target in the ASEAN Region. First of all, she explained the status of protected areas of Terrestrial and Marine in pursuit of Aichi Target11. Connectivity of the ASEAN Flyway Network was shared and she emphasized the importance of the Philippine Hotspot for highly migratory species such as birds and

sea turtles.

Finally as a conclusion, Strategic goal C, Target5, Target7 and Target12 were mentioned, and current situations and what we need to do was shared.

Session2: Recent activities and Highlights of outcomes relevant to science-policy linkage

1. Session Introduction

Dr. Eun-Shik Kim as a moderator in Session2 told us the theme and expectations in this session, and introduced three presenters with their presentation titles.

2. GEO BON's activities and post-2020 strategy (Laetitia Navarro: GEO BON)

Ms. Laetitia Navarro on behalf of GEO BON gave a brief outline of GEO BON and explained "GEO BON core focus" which is producing policy relevant outputs by 1) developing the essential biodiversity variables (EBVs) and 2) developing the biodiversity observation networks. In terms of 2), the latter, she introduced updates on new BONs; soil BON and Americans BON. Regarding 1), the former, she mentioned the outline one EBVs, species traits and species populations.

In conclusion, she told us workshops named "EBV2020" which will be held in 2020 in the U.S. and Germany and post-2020 biodiversity framework.

3. Highlighting AP-BON activities for biodiversity-based consideration on environment/society issues

3-1. Freshwater – Yuichi Kano (Kyushu University, Japan)

Dr. Yuichi Kano, Kyushu University, Japan, reported new integrated biodiversity database on freshwater organisms of Monsoon Asia. He explained that freshwater organism, especially freshwater fishes, are the symbolic biodiversity in Monsoon Asia, but on the other hand, the fundamental information about freshwater biodiversity has been inadequate. With these background, he said that he had just launched an integrated biodiversity database on freshwater organisms of Monsoon Asia. There are totally 3 kinds of database, which means 2 out of 3 are FimSEA and GEDIMAP, and the other is Dr. Kano's original one. He introduced that the data are covered 6 countries; Japan, Thailand, Cambodia, Vietnam, Malaysia and Myanmar and the structure of the database has 6 tables; Sampling, Occurrence, Taxonomy, DNA, Media File and Literature.

3-2. Marine – Hiroya Yamano (NIES, Japan)

Dr. Hiroya Yamano, National Institute for Environmental Studies, Japan, delivered a presentation about area-based conservation and management of coral reefs for climate change adaptation of tropical Pacific islands. He mentioned the predictive modeling of coral bleaching and mortality and management planning at Kerama-shoto (Kerama Islands), National Park in Okinawa, Japan, under

changing climate. Also he introduced in-situ survey, model validation and future projection of coral bleaching and mortality because of SST (Sea Surface Temperature).

As a conclusion, the Publication of a guide for climate change adaptation in protected areas which was issued by Ministry of the Environment, Japan was shared.

In the following discussion, Dr. Reiichiro Ishii, Research Institute for Humanity and Nature, reported the outline of Regional Centre for Future Earth in Asia and hosted by his Institute and upcoming plan after 2020.

Session3: Designing the future steps: filling observational gaps by multi-disciplinary approach (joint session of TG2 and TG3)

1. Session Introduction

Dr. Hiroyuki Muraoka as a moderator in Session3 told us the theme and expectations in this session, and welcomed participants of TG3. Also he introduced totally

3 presenters and their presentation titles; one from AP-BON, one from JAXA, TG2, and one from TG3.

2. Expectations from AP-BON (Yayoi Takeuchi: NIES, Japan)

Dr. Yayoi Takeuchi, National Institute for Environmental Studies, Japan, firstly introduced the outline of AP-BON in terms of mission, activities, vision and challenges. She mentioned evaluation of sustainability of tropical forest ecosystems by 3D monitoring technique and introduced two objectives to understand relationship between forest structure and species diversity. One is characterizing forest canopy structure by UAV-SfM. Another is exploring forest canopy index which infer tree species diversity.

Finally, she told us two expectations from APBON as a conclusion. One is filling the observational gaps through collaboration with Remote sensing team. Another is understanding relationships between species diversity and ecosystem functions through collaboration with Carbon/GHG TG.

3. Expectations from satellite observations (Osamu Ochiai: JAXA, Japan)

Dr. Osamu Ochiai, JAXA, Japan, firstly did a presentation about the outline of CEOS (Committee on Earth Observation), Refinement to 2006 IPCC Guidelines for GHG Inventories, and a decade-long global GHG observation by GOSAT, “Ibuki” in Japanese. After the introduction of ESA BIOMASS, which is planning earth observation mission, he reported three kinds of case study; 1) Forest above-ground biomass map development, 2) Land-cover map development and regional-scale carbon budget estimation, and 3) Peatland subsidence monitoring and local-scale carbon budget estimation.

In the end, he finalized with the summary and future plan as described. First of all, PALSAR-2 time-

series data has an ability in above-ground biomass estimation and land-cover mapping. Secondly, PALSAR-2 InSAR technology has an ability to observe spatial distribution of ground subsidence in peatlands. Thirdly, these abilities are effective in carbon budget estimation in a large-scale. In the future, we will compare insitu observation data (CO₂ flux and peat depth) with our results to clarify the reliability of InSAR observation.

4. Expectations from Carbon and GHG initiative / AOGEO Task Group 3

(Kazuhito Ichii: Chiba University, Japan)

On behalf of TG3, Dr. Kazuhito Ichii, Chiba University, Japan, had a brief introduction of IPBES Global Assessment approved on May 4, 2019. He reported about Status of CO₂ flux observation, Data-driven CO₂ flux estimation, Issues of CO₂ flux observation, and Geostationary Satellite as a New Opportunity of Earth Observation.

As a conclusion, he brought up four issues; 1) Difficulty in validation with observation at present, 2) Promoting publicly available dataset, 3) Experiences in TERN/ ICOS etc., and 4) Experiences in TG-2, Linking TG-2 and TG-3.

Session4: Summary and next steps

1. Understanding biases and developing better standards for biodiversity data (Alice Hughes: XTBG)

Dr. Alice Hughes, Xishuangbanna Tropical Botanical Garden, Chinese Academy of Science, reported biodiversity threats and patterns in the Asian tropics while introducing threatened species with the map and current states of deforestation. Especially, its patterns and processes were stated in detail. She concluded with the explanation of priorities for conservation in Southeast Asia and conservation in a changing world.

2 . AP-BON's contribution to AOGEO (GEO's three Engagement Priorities, AOGEO Integrated Priority Studies)

Dr. Yayoi Takeuchi, National Institute for Environmental Studies, as a moderator in Session4 introduced AP-BON's contribution to AOGEO and IPS from each perspective; Mekong River Basin, Himalayas and Pacific Islands. Also she mentioned future steps and drafting AP-BON's input to AOGEO Statement.

3. Summary of the Sectorial session - Drafting AP-BON's input to AOGEO Statement

In this session, draft of AP-BON's input which was made by AP-BON session organizers to report activities and next designs of all TGs on Plenary Session on November 4 was shared with all. Its draft was revised considering today's presentation and discussion and finally completed with big

applause of all.

Closing Remarks

1-1. Tetsukazu Yahara (Kyushu University)

On behalf of three co-chairs, Dr. Yahara expressed his gratitude for all of today's discussion. After he briefly mentioned his future after his retirement next year, he concluded to continue working together to develop and strengthen our network.

1-2. Eun-Shik Kim (Kookmin University)

Dr. Eun-Shik Kim, one of co-chairs, briefly talked about his activity this year and expressed the expectation for young generations as co-chairs in the future.



TG2: Plenary Session



Keynote: Host Country (Australia)



Joint Session of TG2 and TG3



Group Photo (TG2)