

Regional cooperation for biodiversity observation and capacity development

- Asia-Pacific Biodiversity Observation Network -

Hiroyuki Muraoka

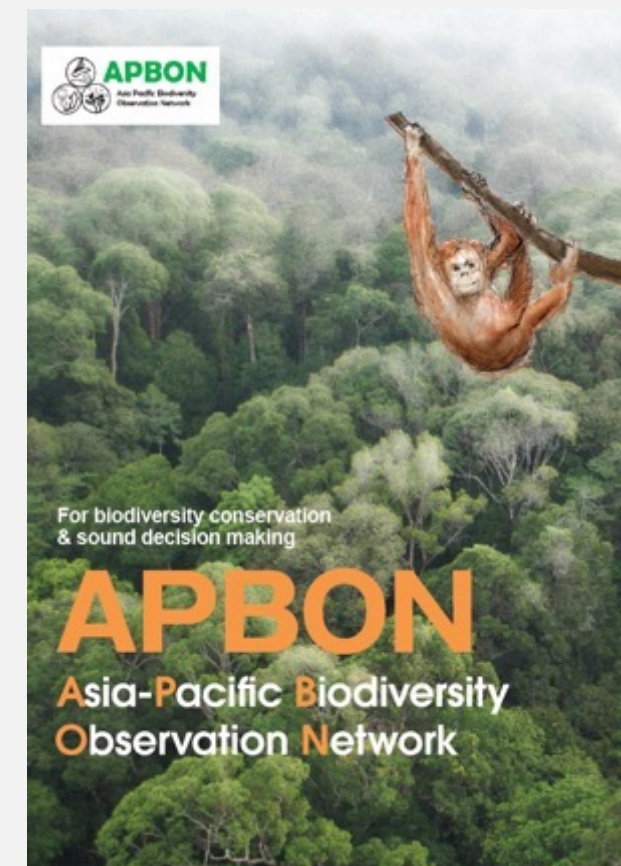
APBON Co-chair

Professor, Gifu University, Japan

Group Leader, National Institute for Environmental Studies

Technical Advisor, MEXT-Japan

*APBON is supported by,
Biodiversity Center of Japan, Ministry of the Environment Japan;
Ministry of Education, Culture, Sports, Science and Technology (MEXT) Japan;
National Institute for Environmental Studies (NIES);
and all other voluntary contributions.*



Asia-Oceania region

- ✓ Complex geographic characteristics
- ✓ Large population (60% of the world)
- ✓ Drastic climate change
- ✓ Natural disasters occur frequently
- ✓ Rapid, diverse socioeconomic development
- ✓ Deteriorating ecosystems

High biodiversity

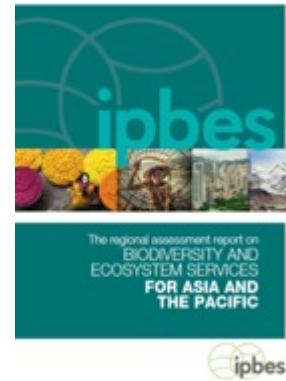
- Terrestrial
- Freshwater
- Coastal and Marine
- But its loss is in progress

Diversity of ecosystems

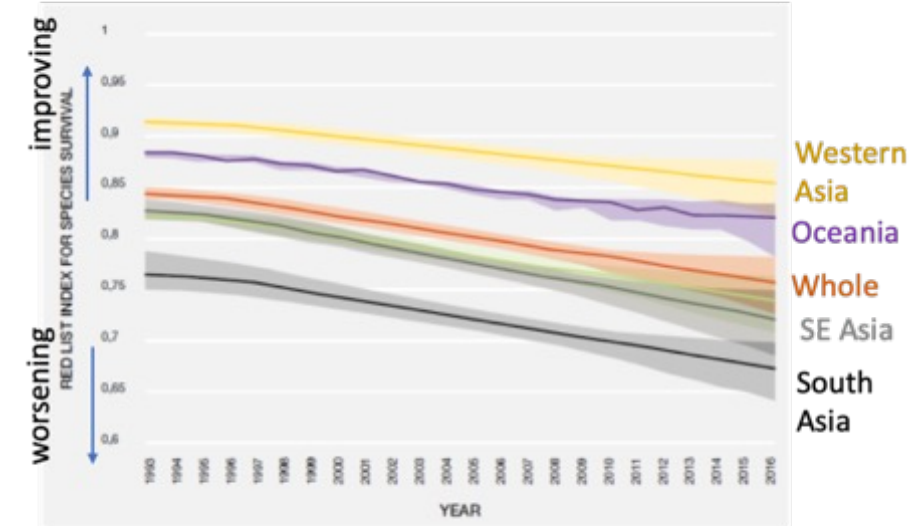
- Environmental regulation
- Provide goods and services (Nature's Contribution to People)

Biodiversity loss is proceeding

Y. Takeuchi (2022)
15^h AOGE0 Symposium



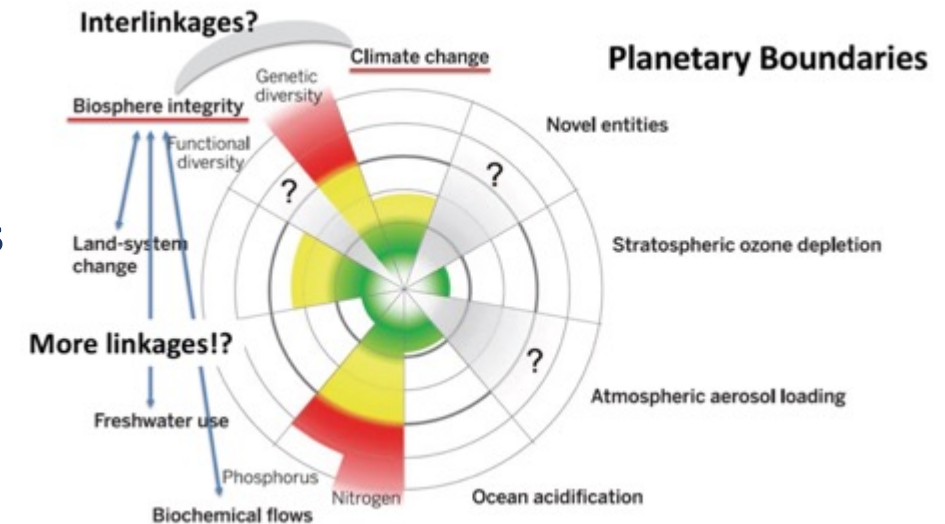
Trends in threatened species status



(IPBES 2018)

Interlinkages of Climate – Biodiversity – Ecosystem functions

H. Yamano (2021)
14th AOGE0 Symposium

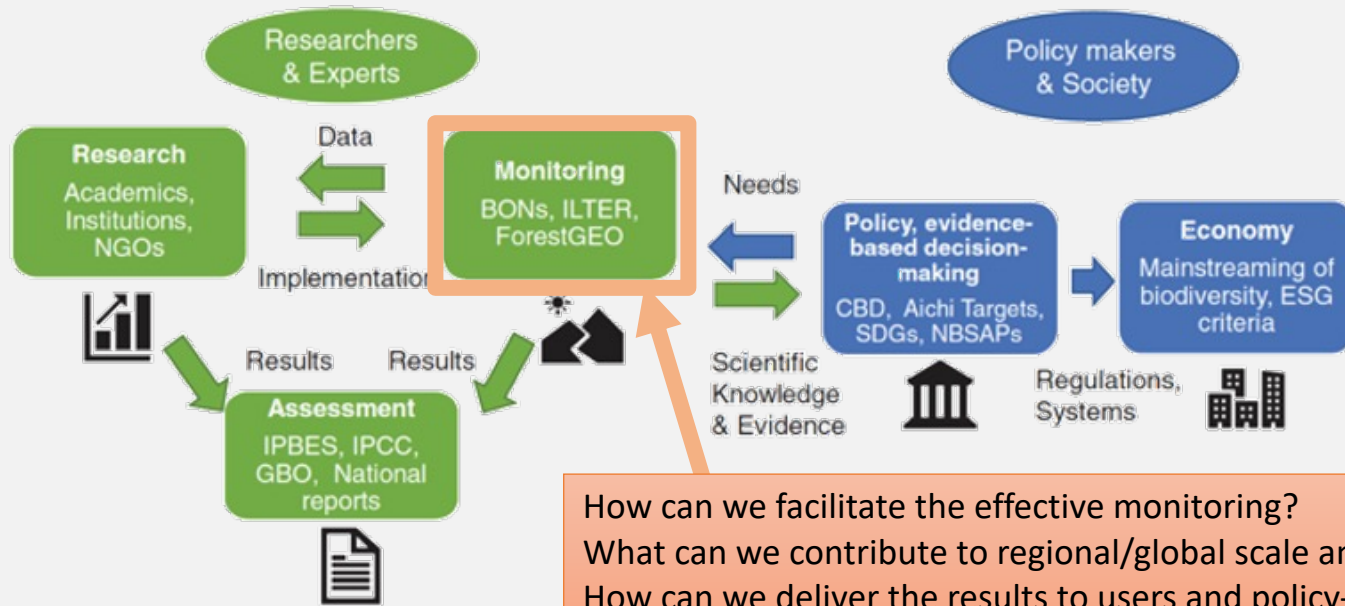


APBON Work Plan update toward 2030

APBON's missions

- ❑ Promoting interdisciplinary research and problem-solving approaches with filling the observational and knowledge gaps,
- ❑ Promoting data sharing and data accessibility through/by networks of the observation networks,
- ❑ Delivering our information and knowledge to stakeholders and global platforms

Takeuchi & Muraoka et al. (2021)
Ecological Research



Received: 19 April 2020 | Revised: 21 January 2021 | Accepted: 25 January 2021
DOI: 10.1111/1440-1703.12212

BIODIVERSITY IN ASIA ECOLOGICAL RESEARCH WILEY

The Asia-Pacific Biodiversity Observation Network: 10-year achievements and new strategies to 2030

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Yayoi Takeuchi and Hiroyuki Muraoka contributed equally to this study.
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232 | wileyonlinelibrary.com/journal/ve *Ecological Research* 2021,36:232-257

APBON' collaborative research



T. Yahara (Kyusyu University, Japan)

**Plant diversity assessment:
154 plots at 56 locations of 10 countries**

Plant species monitoring and recording new species in Southeast Asia

Many more species to be described

**3-D digital database
"ffish.asia/floraZia"**

<https://sketchfab.com/ffishAsia-and-floraZia>

Y. Kano (Kyusyu University, Japan)

Impacts of Dams and Global Warming on Fish Biodiversity in the Indo-Burma Hotspot

RESEARCH ARTICLE

Impacts of Dams and Global Warming on Fish Biodiversity in the Indo-Burma Hotspot

Yuichi Kano^{1*}, David Dudgeon², So Nam³, Hiromitsu Samejima^{4,5,6}, Katsutoshi Watanabe⁷, Chaiwut Grudpan⁸, Jarungjit Grudpan⁹, Wichan Magtoon¹⁰, Prachya Musikasinthorn¹¹, Phuong Thanh Nguyen¹², Bounthob Proxaysombath¹³, Tomoyuki Sato¹⁴, Koichi Shibukawa^{15,16}, Yukihiko Shimatsu^{17,18}, Apinun Suvanarakaha¹⁹, Wataru Tanaka²⁰, Phanara Thach²¹, Duc Dinh Tran²², Tomomi Yamashita²³, Kenzo Utsugi²⁴

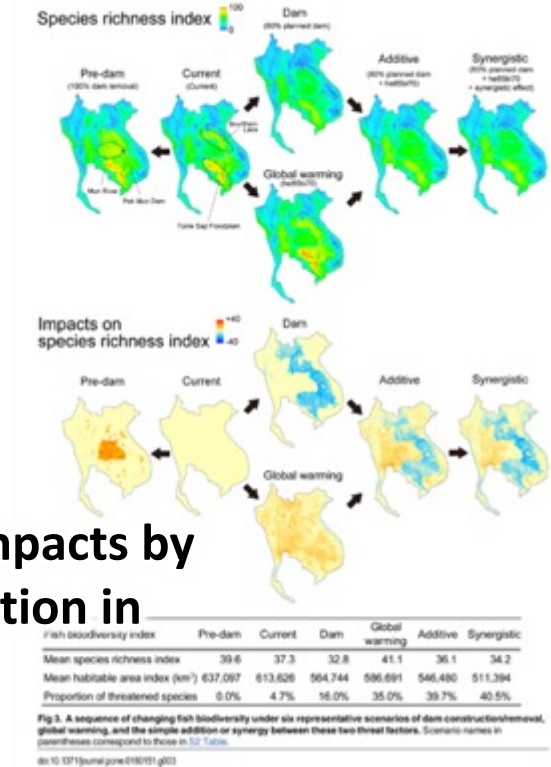
OPEN ACCESS

Citation: Kano Y, Dudgeon D, Nam S, Samejima H, Watanabe K, Grudpan C, et al. (2018) Impacts of Dams and Global Warming on Fish Biodiversity in the Indo-Burma Hotspot. PLOS ONE 13(2): e0191011. doi:10.1371/journal.pone.0191011

Editor: Hideyuki Doi, University of Hyogo, JAPAN

*** These authors contributed equally to this work**
*** These authors also contributed equally to this work**

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Evaluating fish diversity and its impacts by climate change and dam construction in Mekong River

Mapping EBSAs (Ecologically Biologically Significant Areas)

Yamakita and Sudo et al. EBSAs in East and South East Asia (Marine Policy 2017)
 Contribution to marine science and policy making on sustainable use

Examples of Agreements and Disagreements

- Turtle Islands Heritage Protected Area (Major nesting area of marine turtles)
- Island Unit of Mariana Trench Marine National Monument (High biodiversity of seamounts and hydrothermal vents)
- Savu Sea Marine Protected Area (Migration corridor for threatened species, high nutrient)
- Leaf Marine Park (Coral reefs)

Mapping Ecologically Biological Significant Areas for coastal biodiversity

Region	Rate (%)
Indo-Pacific region	1.1
Protected Area (MPA)	0.5
Not included among EBSA candidates	0.6
EBSA candidate not overlap with MPA	13.9

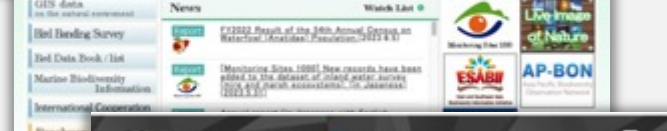
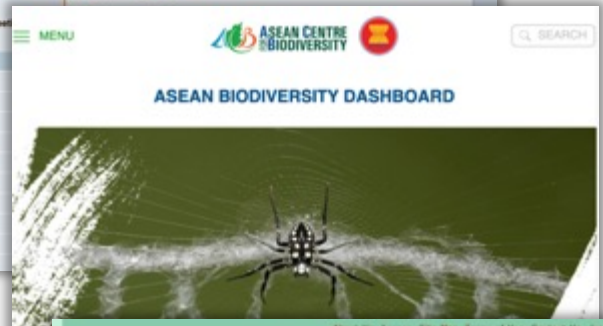
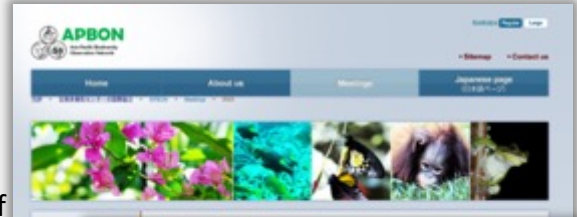
Total area of EBSAs became 14.4% of the study area.
 Only 45% of MPAs overlapped with EBSA candidates.

Data and Knowledge sharing – Database and Publications



<http://www.esabii.biodic.go.jp/ap-bon/index.html>

APBON knowledge sharing
(Presentation files of workshops / webinars)

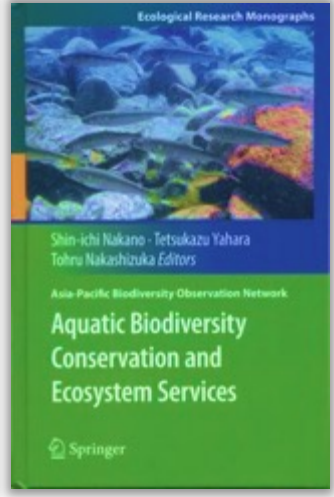
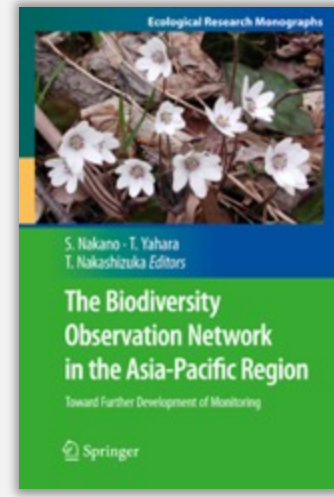


ASEAN Biodiversity Dashboard

Biodiversity databases
(Biodiversity Center of Japan, MoE)

ffish.asia/floraZia
<https://sketchfab.com/ffishAsia-and-floraZia>

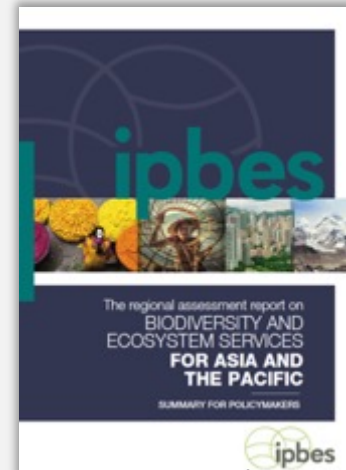
“APBON Books” (Springer, 2012, 2014, 2016)



CBD report



IPBES Regional Assessment Report (2018)



Data paper + Database



APBON Highlights



Workshop summary



Data and Knowledge sharing – Seminars



2023

12 April 2023	16th APBON Web seminar
1-2 February 2023	14th APBON Workshop 15th APBON seminar

2022

September 2022	14th APBON Web seminar
28-30 September 2022	15th AOGEO Symposium
13 September 2022	13th APBON Web seminar Special meeting for the 15 th AOGEO Symposium
8 July 2022	12th APBON Web seminar Dr. Charlie D. Heatubun (Provincial Government of West Papua) Dr. Nirunrut Pomoim (Department of National Parks, Wildlife and Plant conservation)
4 March 2022	11th APBON Web seminar (Special) Understanding the role and potential of Other Effective Area-based Conservation Measures (OECMs) in the Asia Pacific Region Dr. Sunita Chaudhary (ICIMOD) Dr. Madhu Rao (IUCN World Commission on Protected Areas) Dr. Ruchi Pant (Biodiversity, Climate Change UNDP India) Dr. Taku Kadoya (Biodiversity Division, NIES, Japan) Dr. Nakul Chettri (Transboundary Landscapes, ICIMOD) Ms. Cristina Lazaro (UNEP-WCMC)

2021

December 2021	10th APBON Web seminar Dr. Tetsukazu Yahara (Kyushu University) Dr. Ai Nagahama (Kyushu University)
10-12 November 2021	14th Asia-Oceania Group on Earth Observations Symposium
19 October 2021	13th APBON Workshop Scoping collaborative work plan of APBON in the next ca. 4 years (~2025), which is the first half of APBON's strategic plan toward 2030.

30 September 2021	9th APBON Web seminar Dr. Alice Hughes (Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences) Dr. Angela Quiros (Akkeshi Marine Station, Field Science Center for Northern Biosphere, Hokkaido University)
8 July 2021	8th APBON Web seminar Dr. Po Teen Lim (University of Malaya) Dr. Chaodong Zhu (Chinese Academy of Sciences)
27 May 2021	7th APBON Web seminar Dr. Yuichi Kano (Kyushu University) Dr. Asanee Kawtrakul (Kasetsart University)
25 February 2021	6th APBON Web seminar Dr. Eun-Shik Kim (Kookmin University) Dr. Tomoaki Miura (University of Hawaii, JAMSTEC)
22 January 2021	12th APBON Workshop
21 January 2021	5th APBON Web seminar Dr. Bunthang Touch (Inland Fisheries Research and Development Institute) Dr. Chheang Dany (Forestry Administration, Cambodia)

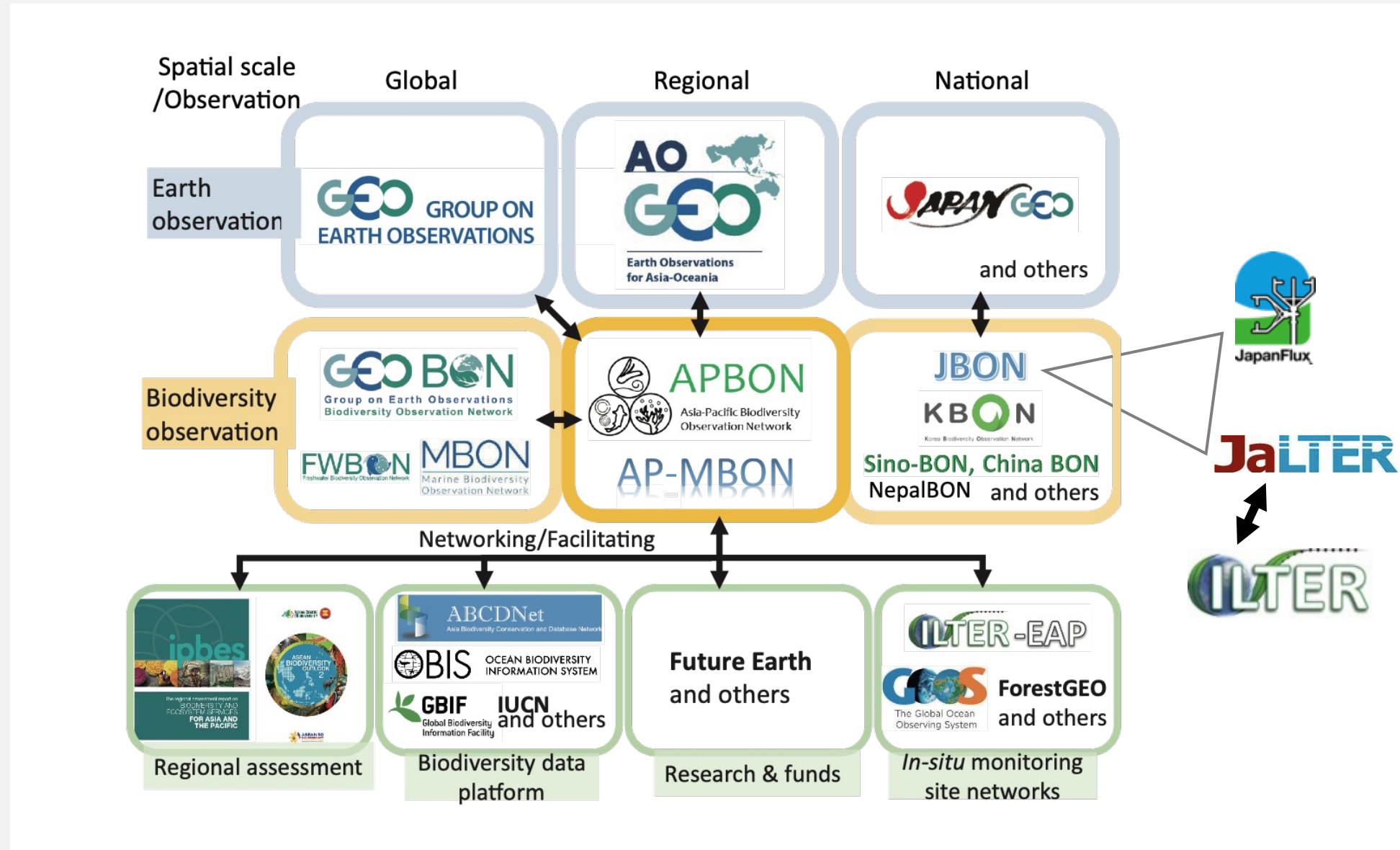
2020

December 2020	4th APBON Web seminar Mr. Yao Tze Leong (Forest Research Institute Malaysia) Dr. Takashi Hosono (Japan Agency for Marine-Earth Science and Technology)
22 October 2020	3rd APBON Web seminar Dr. Po Teen Lim (University of Malaya) Dr. Laetitia Navarro (GEO BON)
27 August 2020	2nd APBON Web seminar Dr. Alice Hughes (Xishuangbanna Tropical Botanical Garden) Dr. Yuichi Kano (Kyushu University)
6–10 July 2020	GEO BON Open Science Conference & All Hands Meeting
29 June 2020	Kick-off Meeting 1st APBON Web seminar Dr. Yongyut Trisurat (Kasetsart University) Dr. Sheila Vergara (ASEAN Centre for Biodiversity)

Development of national, regional and global networks

Network(s) of,

- experts,
- institutions,
- public organizations,
- private sectors,
- people, and
- opportunity



Japan Biodiversity Observation Network



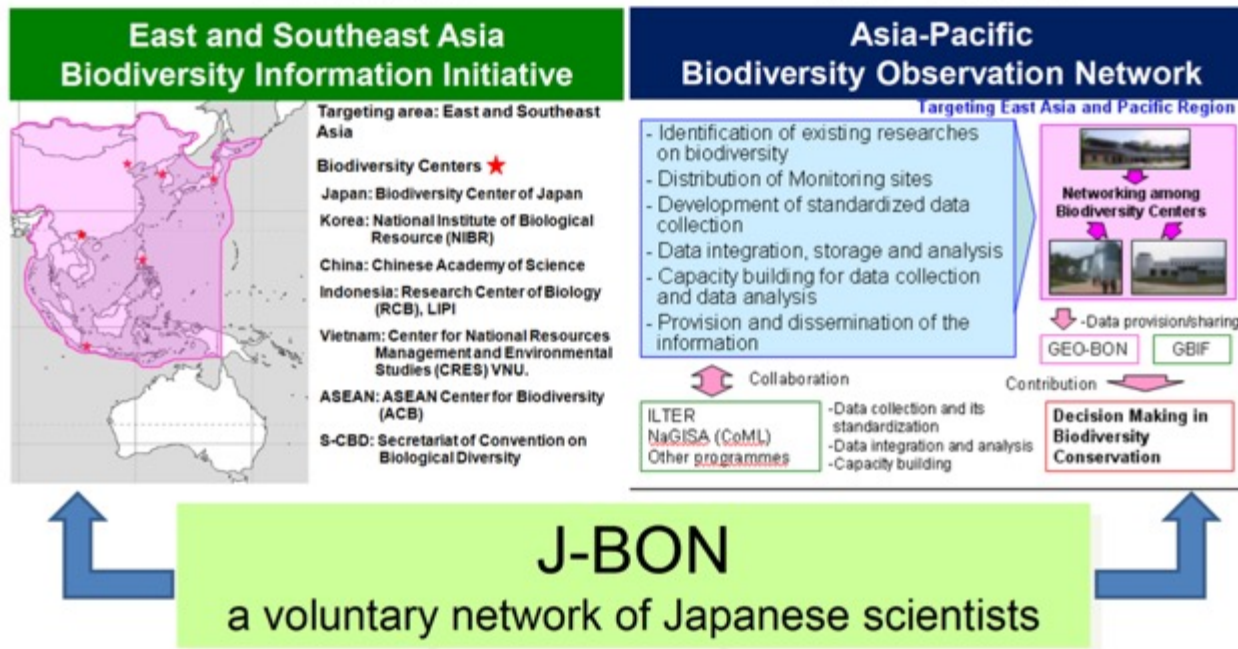
J-BON was established as collaborative network among domestic researchers in Japan in 2009, supported by the Ministry of the Environment Japan.

→ Basis of APBON



ESABII

AP-BON



Re-building JBON (April 2023~)

To respond to:

1. Growing demand for biodiversity information in society
2. Growing demand for biodiversity information in economy
3. Development of cutting-edge technologies for biodiversity observation & increasing importance of conventional surveys

→ **Network of scientists (academia, national institutes, citizen science), practitioners, private sectors, museums, academic associations, etc.**

188 individual persons
8 organizations (Sep 2023)

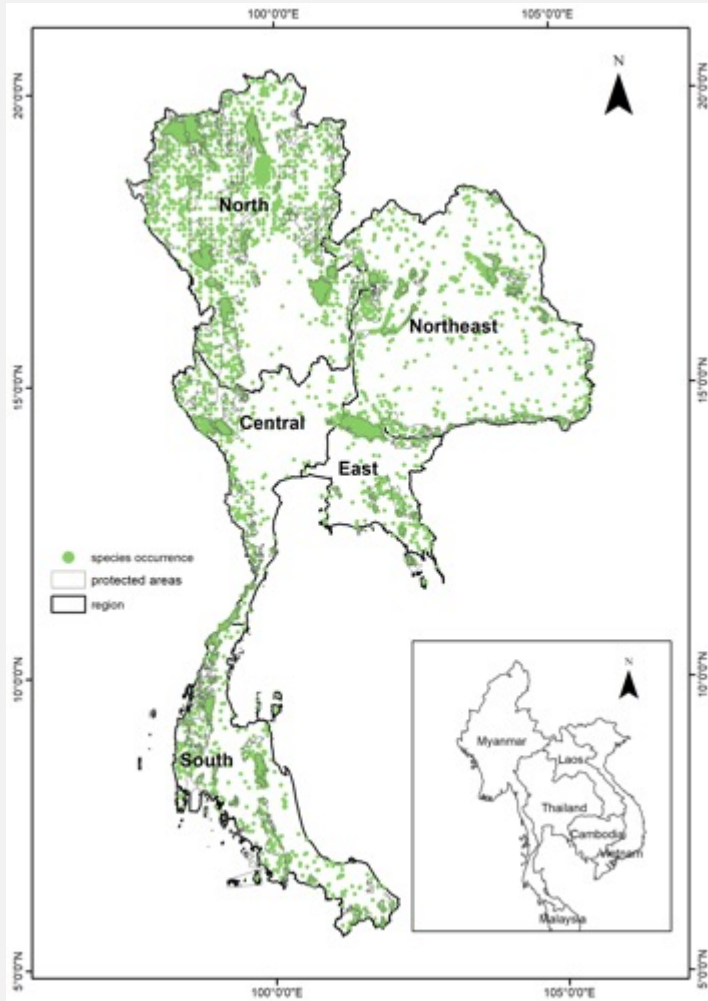
Partner Organizations



Thailand (contact: Prof. Yongyut Trisurat, APBON co-chair)

Biodiversity monitoring

Database



Received: 28 September 2019 | Revised: 24 November 2019 | Accepted: 28 November 2019
DOI: 10.1111/1440-1703.12105



ECOLOGICAL RESEARCH WILEY

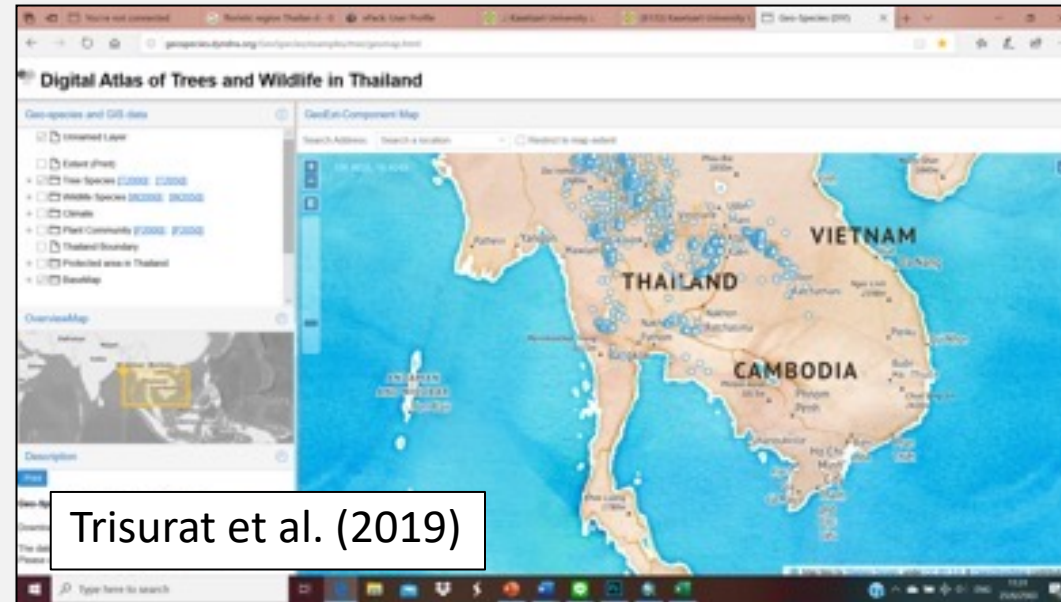
SPECIAL FEATURE

Data rescue—collection of precious and laborious in situ observed data

Systematic forest inventory plots and their contribution to plant distribution and climate change impact studies in Thailand

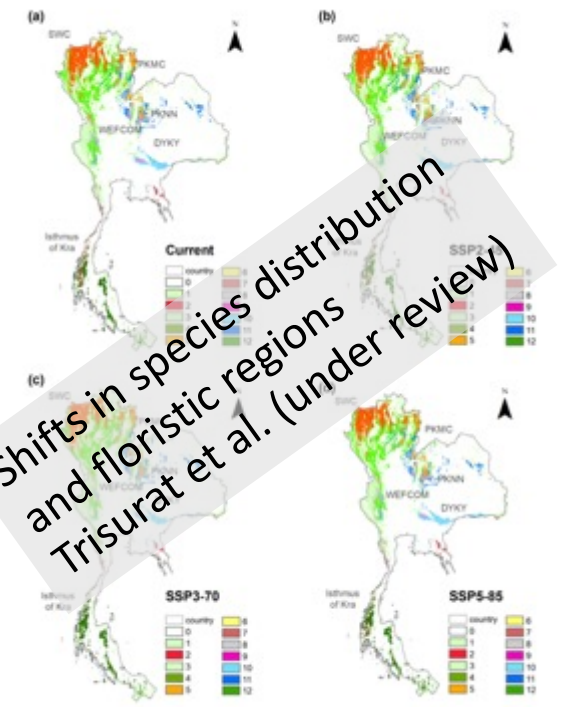
Yongyut Trisurat¹ | Wichan Eiadthong¹ | Weeraphart Khunrattanasiri¹ | Somyot Saengnin² | Auschada Chitechote² | Sompoch Maneerat²

Digital Atlas of Trees and Wildlife in Thailand



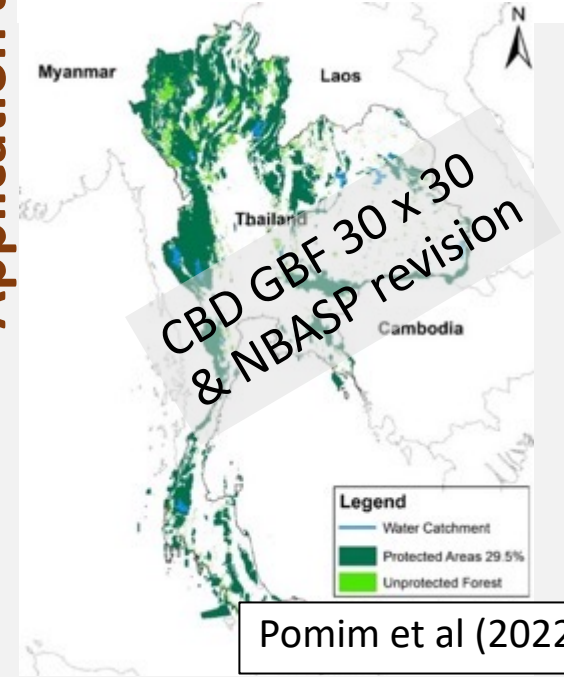
Trisurat et al. (2019)

<http://geospecies.dyndns.org/GeoSpecies/examples/tree/>



Shifts in species distribution and floristic regions Trisurat et al. (under review)

Application and use



CBD GBF 30 x 30 & NBASP revision

Pomim et al (2022)

Biodiversity Informatics

Engaging research communities for data mobilization

Organized Biodiversity Data Mobilization

- **KBA e-Learning & Biodiversity Data Mobilisation Workshops**
21-24 August 2023, Philippines
- **Workshop on Establishment of National Clearing-House Mechanism Using Bioland Tool**
9-12 October 2023, Thailand

Workshops and Trainings

- **Training of Trainers: Multisector Framework for Mainstreaming Biodiversity Workshop**
25-26 July
- **Philippine Biodiversity Strategy and Action Plan Expert's Consultation Meeting**
27 July Philippines
- **Completion of the Internship Program**
August 2023 Philippines



Monitoring, capacity building and data sharing in the Hindu Kush Himalaya

Monitoring and assessment

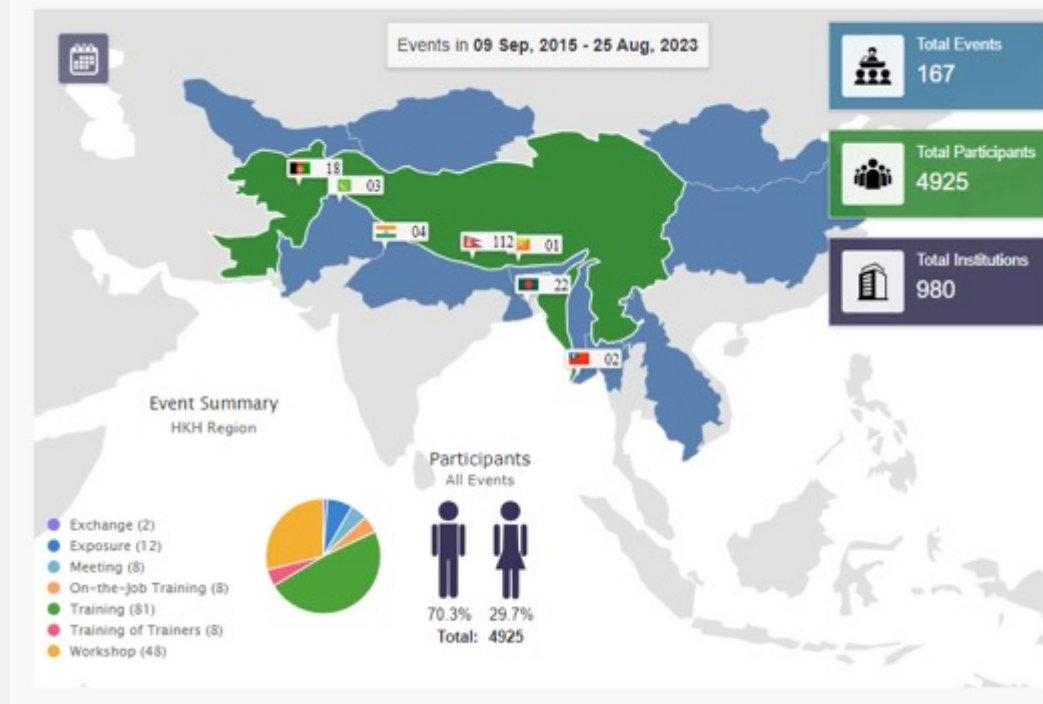
- Regular climate and discharge monitoring at higher altitude with sites in Langtang and manang valleys
- Vegetation monitoring including tree coring in Langtang valley of Nepal
- Permafrost monitoring started in far-western Nepal
- Springs inventory and biodiversity assessment
- [Regional Database System](#) with open access policy



Capacity building

Thematic areas:

- Land cover and land use change
- Ecosystem composition & dynamics
- Freshwater resources and hydro-climatic disasters
- Weather and climate



Growing needs to develop value chain --

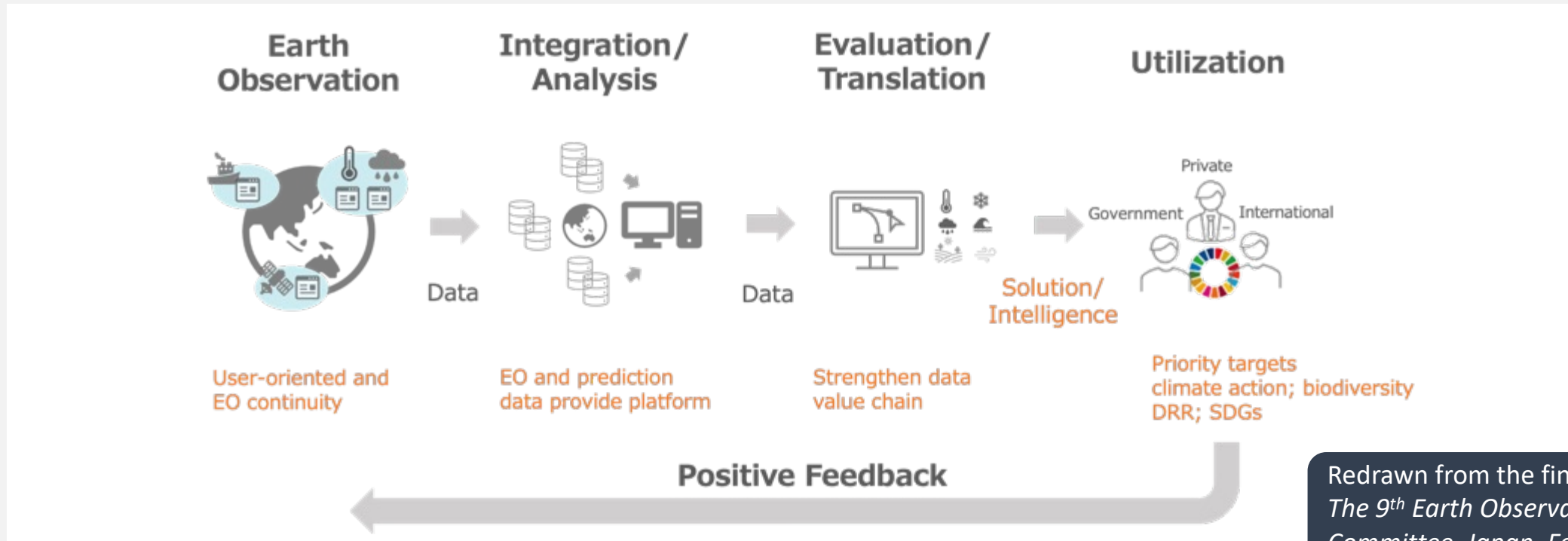
Observations, Data processing, and Users to address challenges



Special Session -- Biodiversity for Addressing Climate Change & Disaster Risk Reduction



Special Session -- Biodiversity and Sustainable Society: How EO contributes to integrating nature into economic activities

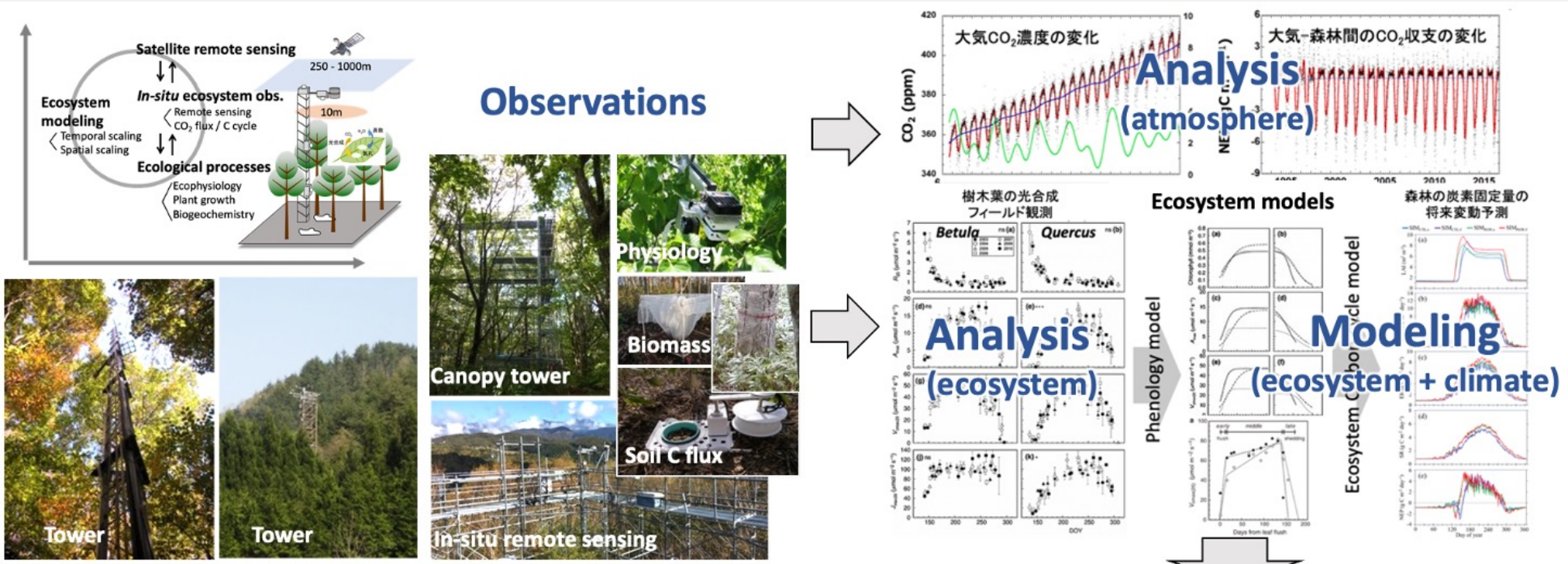


Redrawn from the final report by The 9th Earth Observation Promotion Committee, Japan, February 2023

APBON's possible contribution to GBiOS

“Super-site” to develop multidisciplinary and cross-scale observations, and process-based modeling on biodiversity, ecosystem functions, and climate

Networks



- Understanding mechanisms
- Detecting critical changes
- Applications to societal challenges

Cooperation with networks



Fig.1 Scheme of multi-scale measurements of optical data at individual-leaf, canopy, and landscape scales

Needs and Challenges to connect observations and society

Multiple dimensions of “biodiversity and ecosystem data” – genetic, species, ecosystem; no. of threatened species; ecosystem functions; ...

Inter-disciplinary research and understanding on Climate – Biodiversity – Ecosystem functions interdependencies across scales

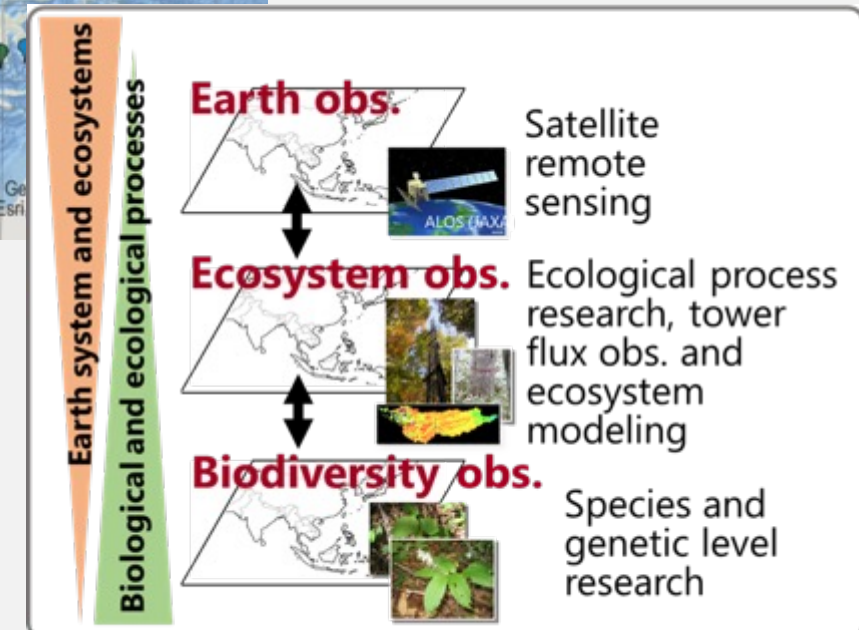
Filling spatial / thematic observational gaps by connecting *in-situ* and satellite observations, and model simulations

Data / Knowledge generation and sharing through national and regional cooperative capacity development, citizen science

Promoting value chain: Earth observations – analysis – evaluation – intelligence – decision making (science to action) by networking networks and stakeholders



Takeuchi et al. (2021)



(Muraoka et al. 2012 in APBON book)

Thank you

For more information of APBON

<http://www.esabii.biodic.go.jp/ap-bon/index.html>

APBON on-line seminars

<http://www.esabii.biodic.go.jp/ap-bon/meetings/index.html>

Presentation files from seminars and workshops are available

APBON is supported by,

- Biodiversity Center of Japan, Ministry of the Environment Japan;
- Ministry of Education, Culture, Sports, Science and Technology (MEXT) Japan;
- National Institute for Environmental Studies (NIES);
... and all other voluntary contributions.



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What is APBON?

The Asia-Pacific Biodiversity Observation Network (APBON) is a network of institutions and research groups in AP region that contribute to and utilize a knowledge resource base for decision making and policy-making for the conservation of biodiversity and ecosystems. It was launched in 2009, in response to the establishment of the Biodiversity Observation Network under the Group on Earth Observations in 2008.

APBON encourages inclusive activities and contributions such as observations, data, knowledge and capacity for regional cooperation. Members share the mission and core values of the network and acknowledge voluntary contributions each other.

Brief summary of its 10-year achievements and new strategies toward 2030 can be read below.

[The Asia-Pacific Biodiversity Observation Network:10-year achievements and new strategies to 2030 \[PDF:4.552KB\]](#)

News and Topics

[Up Coming Meetings]
[13th APBON Web Seminar](#)
Date: 13 September, 2022

Brochures

Download of the APBON Logo