

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

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Sheila Vergara (ASEAN Centre for Biodiversity, Philippines)

Tetsukazu Yahara (Kyusyu University, Japan)

Mark John Costello, Dedy Darnaedi, Bibian Diway, Alice Hughes, Reiichiro Ishii, Po Teen Lim, Keping Ma, Aidy M Muslim, Shin-ichi Nakano, Masahiro Nakaoka, Tohru Nakashizuka, Manabu Onuma, Chan-Ho Park, Runianak Sylvester Pungga, Yusuke Saito, Mangal Man Shakya, Mohd Khairulazman Sulaiman, Maya Sumi, Yongyut Trisurat, Xuehong Xu, Hiroya Yamano, Tze Leong Yao



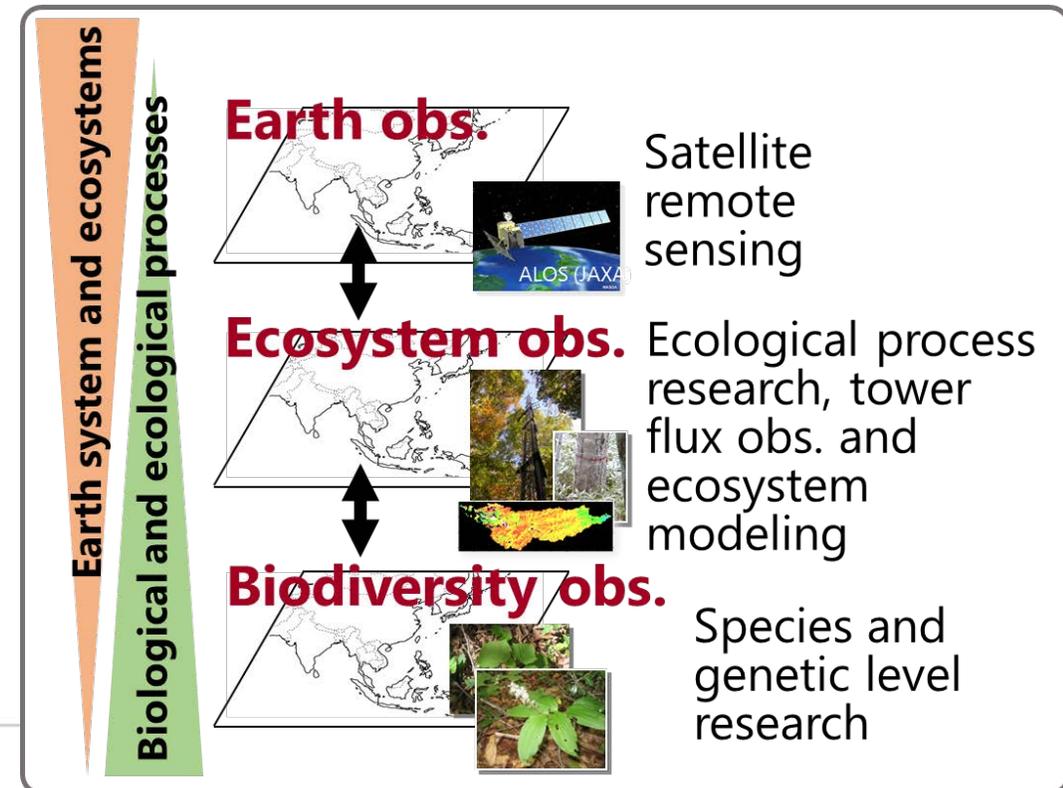
APBON established in 2009

Mission

1. Contribution to sound decision making related to biodiversity conservation based on scientific information
2. Facilitation of the utilization of existing biodiversity data
3. Coordination of a regional network

Activities

1. Monitoring changes of biodiversity
 - ✓ Biodiversity mapping
 - ✓ Identification of key drivers
 - Land use change, Climate change
2. Networking of the observation networks
 - ✓ Sharing information through the networks
3. Capacity building



(Muraoka et al. 2012 in APBON book)

History of APBON and other network activities

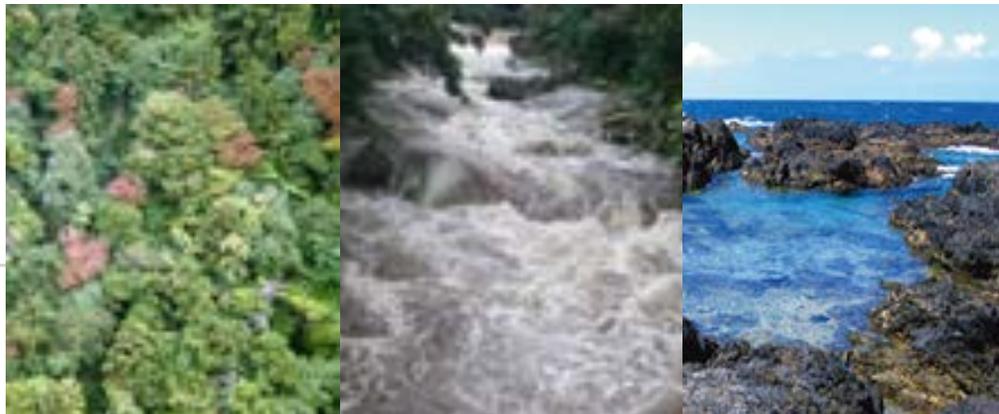
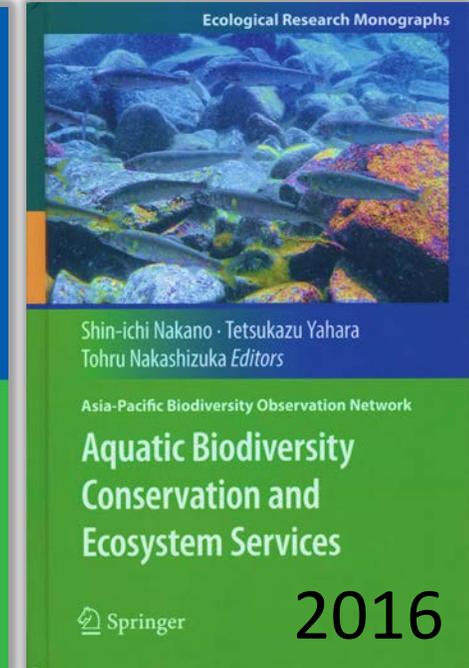
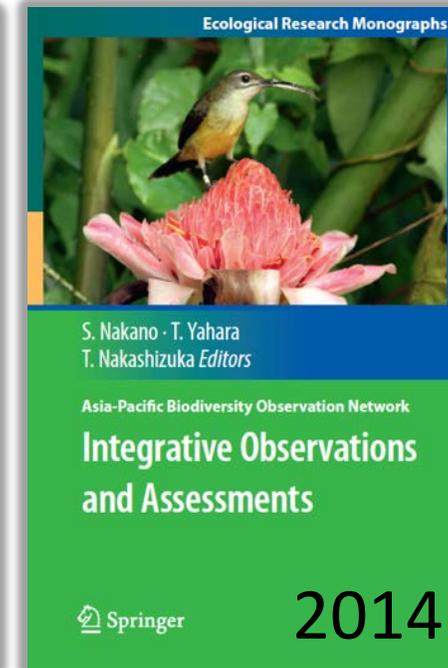
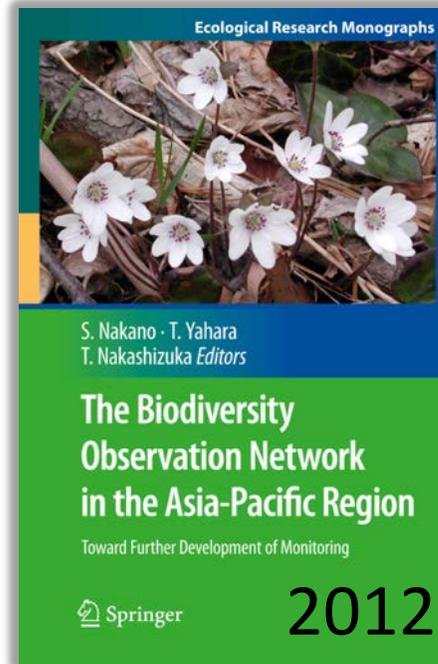
Year	GEO/GEOS Symposia	GEO BON	AP BON Meetings	National BONs	CBD COPs	IPBES
2009	3rd GEOSS AP (Kyoto, February)		1st AP BON (July, Japan) 2nd AP BON (December, Japan)	Japan BON (May)		
2010	4th GEOSS AP (a session, Bali, March)	GEO BON Meeting (February, USA)	3rd AP BON (CBD COP10 Preconference, March, Japan)		COP10 (Japan, Side-event)	
2011			4th AP BON (December, Japan)			
2012	5th GEOSS AP (Tokyo, April)	GEO BON Meeting (December, USA)	WCC of IUCN (September, Korea)	Korea BON, Nepal BON, Bangladesh BON	COP11 (India, Side-event)	
2013	6th GEOSS AP (Ahmedabad, February)		5th AP BON (November, ACB, Philippines)	Philippines BON		Plenary-1
2014	7th GEOSS AP (Tokyo, May)	IC and AB (June, Germany)	6th AP BON (October, NIBR Korea)		COP12 (Korea, Side-event)	Plenary-2
2015	8th GEOSS AP (Beijing, September)	IC and AB (June, Germany)		Sino BON, Indonesia BON		Plenary-3
2016	2016-2025 A New GEO Strategy Plan Initiated	All-Hands Meeting (July, Germany)	7th AP BON (ACB, Thailand) 8th AP BON (Taipei, Taiwan)	WCC of IUCN (September, USA)	COP13 (Mexico)	Plenary-4
2017	9th GEOSS AP (Tokyo, January) , 10th GEOSS AP (Hanoi, September)	IC and AB (July, Germany)				Plenary-5
2018	11th GEOSS AP (October, Kyoto)	All-Hands Meeting (July, Beijing)	9th AP BON (Bangkok, February), 10th AP BON (Kuching, July)		COP14 (Egypt)	Plenary-6
2019	12th AOGEO (November, Canberra)		11 th AP BON (KL, Malaysia)			Plenary-7
2020	13 th AOGEO (tbd)	Open Science Conference & All Hand Meeting			COP15 (China) (postponed)	Plenary-8 (tbc)



Key Activities and Achievements 2009 - 2019

- Species recording, mapping Biodiversity
- Detect changes of biodiversity
- Assessing risks on biodiversity
- Working groups: terrestrial, freshwater and marine
- Data and knowledge sharing, publishing together
- Networking sites / people / institutes / data / communities

“APBON Books” (Springer)

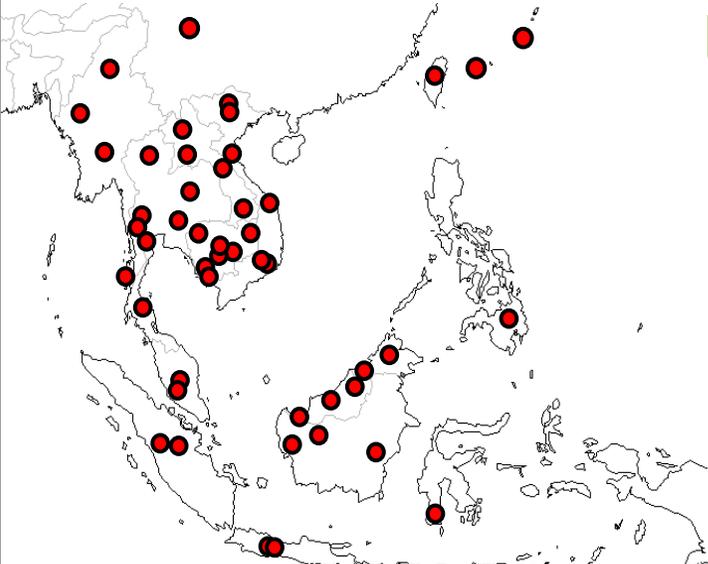


“Ecological Research” Data paper
(Ecological Society of Japan, Wiley)

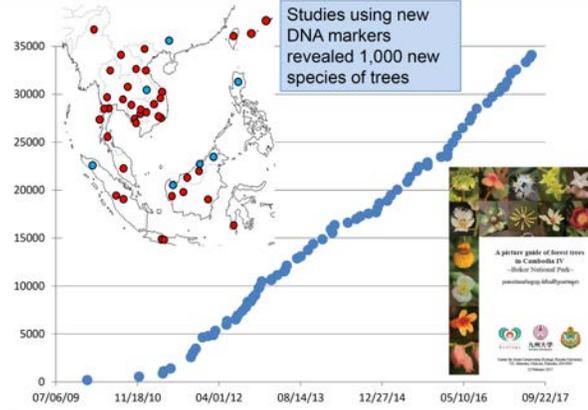
Observations by APBON (Terrestrial)

T. Yahara (Kyusyu University, Japan)

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



34,099 collections from plant diversity assessment

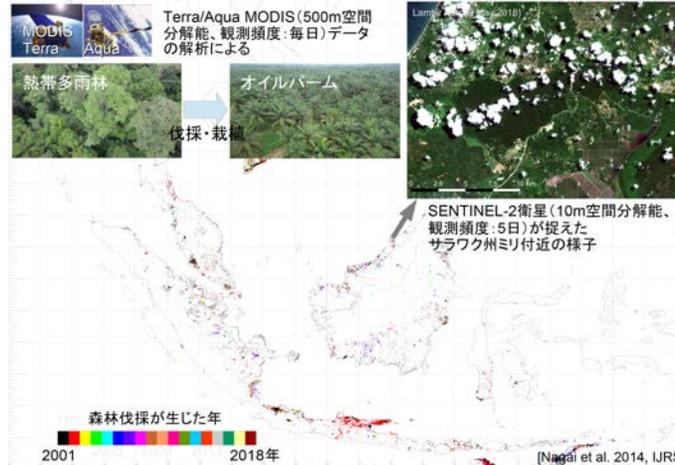


Many more species to be described

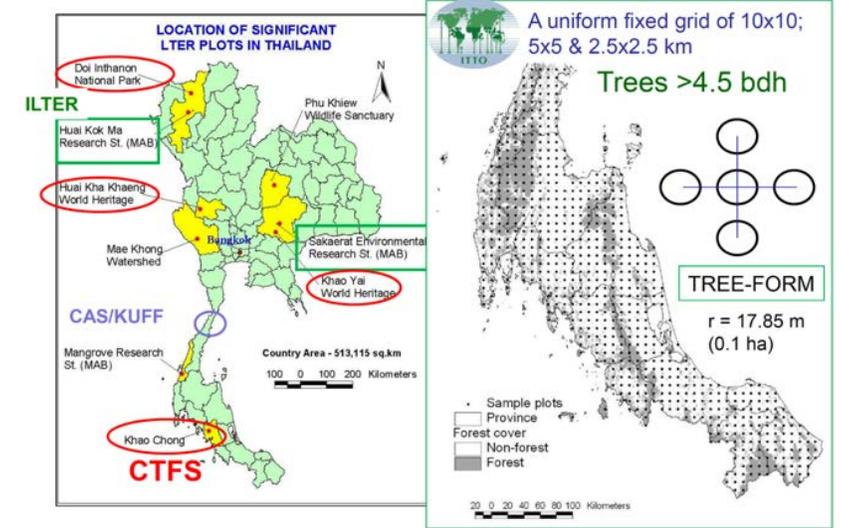


...Let's work together

S. Nagai (JAMSTEC, Japan)



Y. Trisurat (Kasetsart University, Thailand)



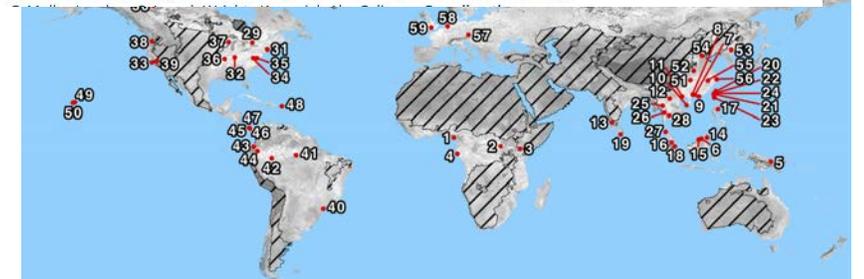
P. Ong (Univ. Philippines Diliman, Philippines)

Global Change Biology

Review Full Access

CTFS-ForestGEO: a worldwide network monitoring forests in an era of global change

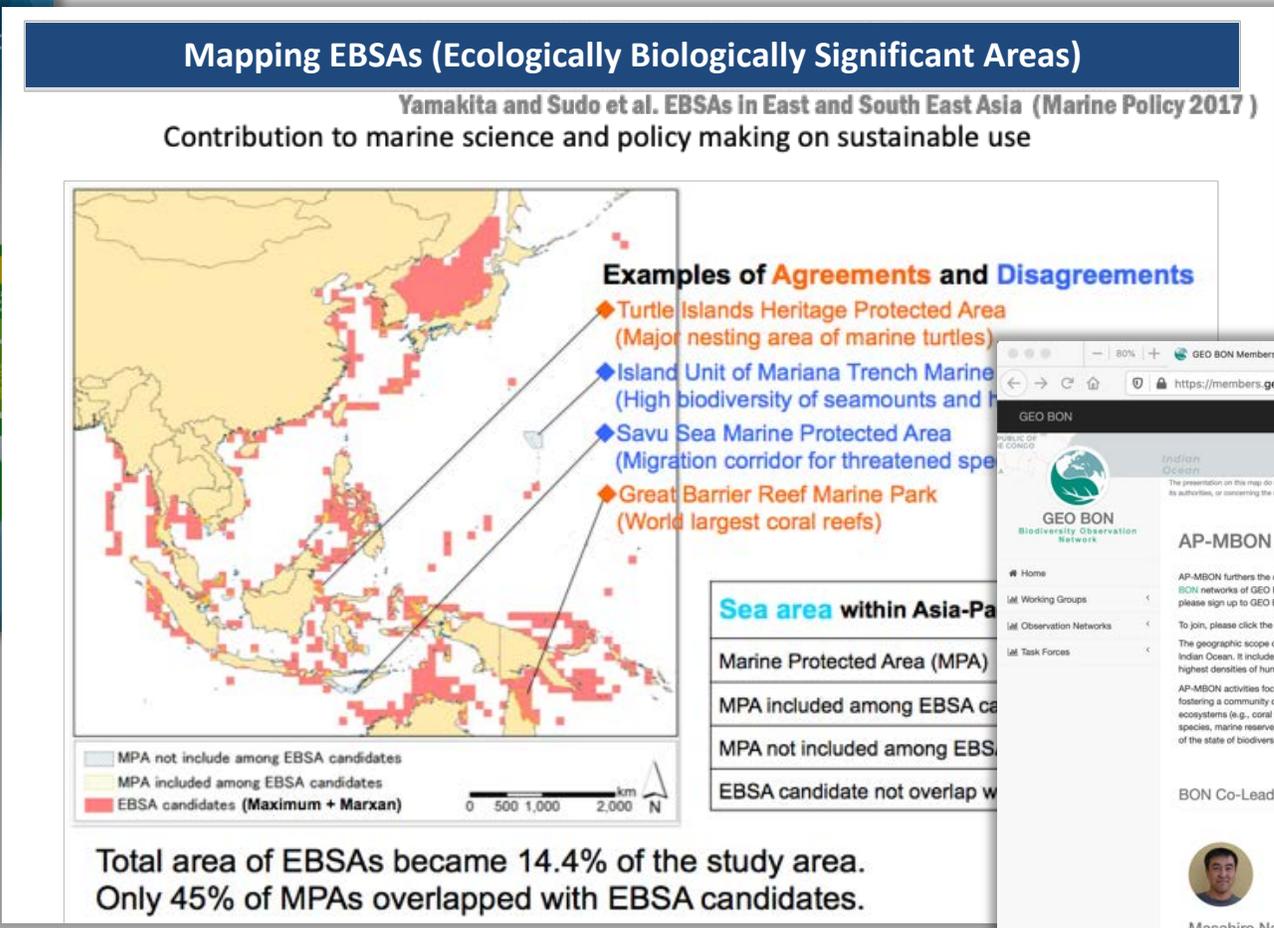
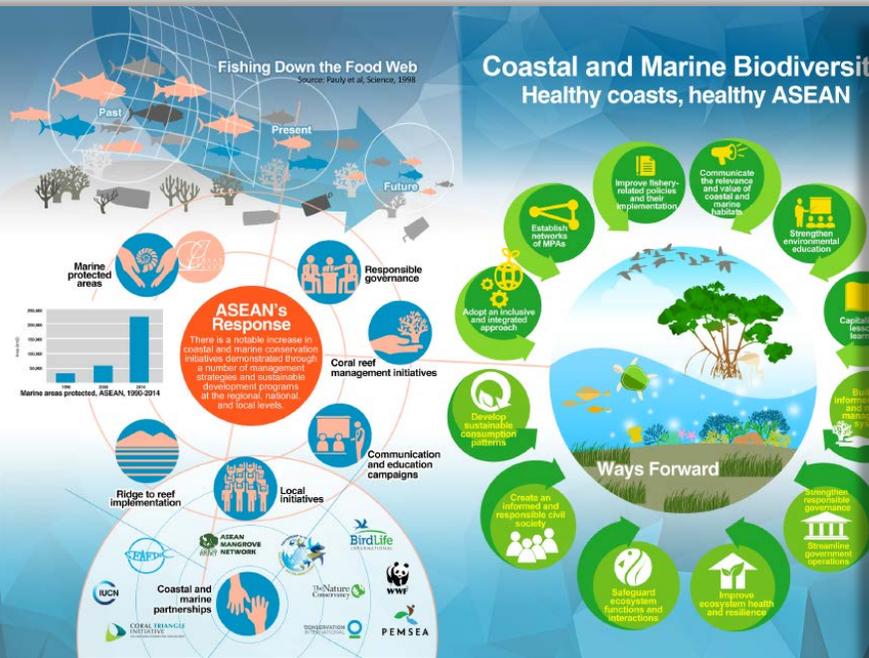
Kristina J. Anderson-Teixeira, Stuart J. Davies, Amy C. Bennett, Erika B. Gonzalez-Akre,



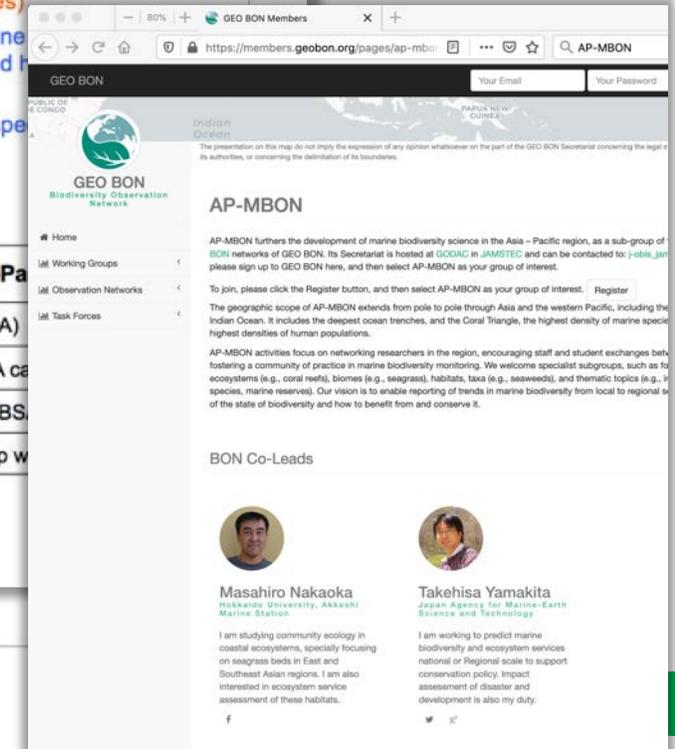
Observations by APBON (Marine and Coasts)

S. Vergara (ASEAN Centre for Biodiversity)

T. Yamakita (JAMSTEC, Japan)



AP-MBON



Observations by APBON (Freshwater)

Y. Kano (Kyusyu University, Japan)



RESEARCH ARTICLE

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

Yuichi Kano^{1*}, David Dudgeon^{2*}, So Nam^{3†}, Hiromitsu Samejima^{4,5†}, Katsutoshi Watanabe^{6†}, Chaiwut Grudpan^{7†}, Jarungjit Grudpan^{7†}, Wichan Magtoon^{8†}, Prachya Musikasinthorn^{9†}, Phuong Thanh Nguyen^{10†}, Bounthob Praxaysonbath^{11†}, Tomoyuki Sato^{12†}, Koichi Shibukawa^{13,14†}, Yukihiko Shimatani^{1,5†}, Apinun Suvarnaraksha^{15†}, Wataru Tanaka^{16†}, Phanara Thach^{3†}, Dac Dinh Tran^{10†}, Tomomi Yamashita^{1†}, Kenzo Utsugi^{13*}

1 Institute of Decision Science for a Sustainable Society, Kyushu University, Fukuoka, Fukuoka, Japan, 2 School of Biological Sciences, The University of Hong Kong, Hong Kong SAR, China, 3 Inland Fisheries Research and Development Institute of Fisheries Administration, Phnom Penh, Cambodia, 4 Institute for



OPEN ACCESS

Citation: Kano Y, Dudgeon D, Nam S, Samejima H, Watanabe K, Grudpan C, et al. (2016) Impacts of Dams and Global Warming on Fish Biodiversity Indo-Burma Hotspot. PLOS ONE 11(8): e0160151. doi:10.1371/journal.pone.0160151

Editor: Hideyuki Doi, University of Hyogo, JAP

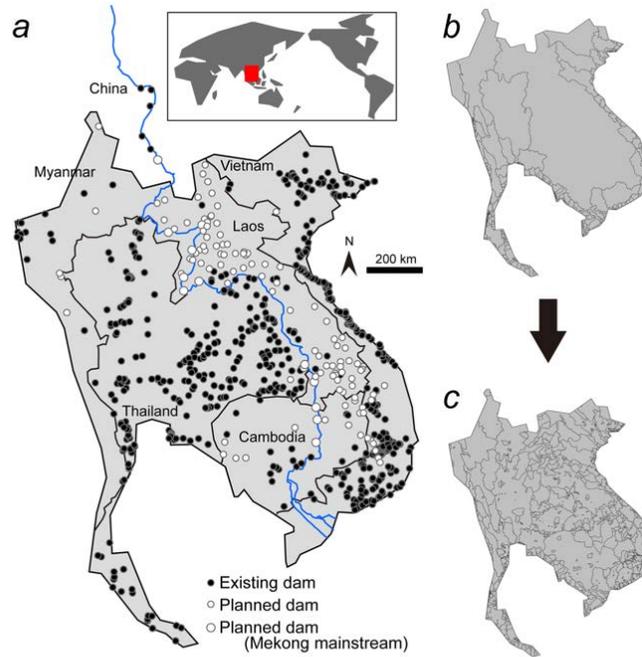
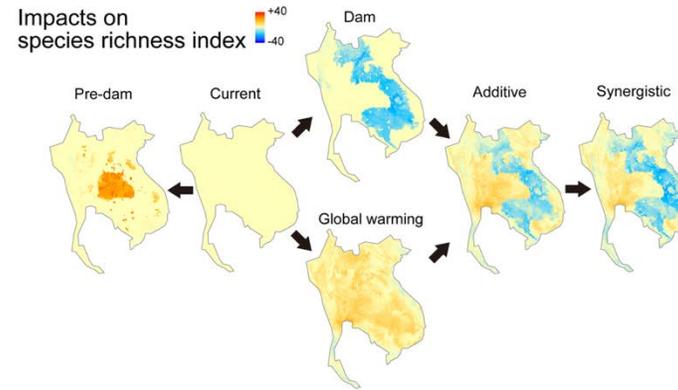
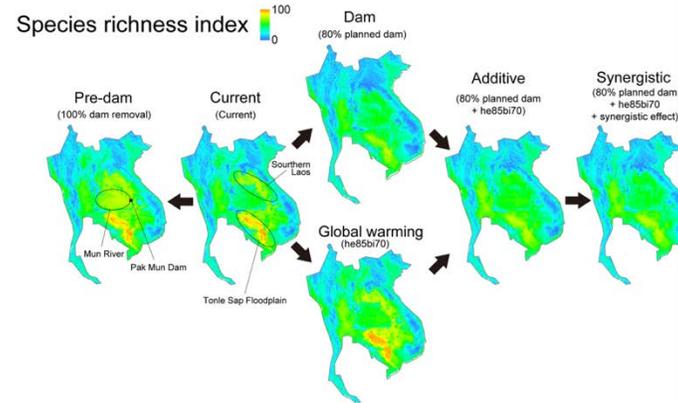


Fig 1. Dams and fragmentation in Indo-Burma Biodiversity Hotspot. (a) Existing (solid circles) and planned dams (blank circles) in the Indo-Burma Region [13] with Mekong River shown in blue line. (b) Spatial arrangement of drainage basins, prior to construction of dams (i.e. 'Pre-dam' condition). (c) Fragmentation of the drainage basins due to man-made barriers, assuming that all planned dams are constructed. Note that the graphical images are illustrative only; see [13] for a precise map of Indo-Burma.

doi:10.1371/journal.pone.0160151.g001



Fish biodiversity index	Pre-dam	Current	Dam	Global warming	Additive	Synergistic
Mean species richness index	39.6	37.3	32.8	41.1	36.1	34.2
Mean habitable area index (km ²)	637,097	613,626	564,744	586,691	546,480	511,394
Proportion of threatened species	0.0%	4.7%	16.0%	35.0%	39.7%	40.5%

Fig 3. A sequence of changing fish biodiversity under six representative scenarios of dam construction/removal, global warming, and the simple addition or synergy between these two threat factors. Scenario names in parentheses correspond to those in S2 Table.

doi:10.1371/journal.pone.0160151.g003

Ichthyol Res (2013) 60:293–295
DOI 10.1007/s10228-013-0349-8

<https://ffish.asia/>

NEWS AND COMMENTS

An online database on freshwater fish diversity and distribution in Mainland Southeast Asia

Yuichi Kano · Mohad Shalahuddin Adnan · Chaiwut Grudpan · Jarungjit Grudpan · Wichan Magtoon · Prachya Musikasinthorn · Yoshihiro Natori · Stefan Ottomanski · Bounthob Praxaysonbath · Koneouma Phongsai · Achariya Rangsiruji · Koichi Shibukawa · Yukihiko Shimatani · Nam So · Apinun Suvarnaraksha · Phanara Thach · Phuong Nguyen Thanh · Dac Dinh Tran · Kenzo Utsugi · Tomomi Yamashita

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Y. Kano et al.

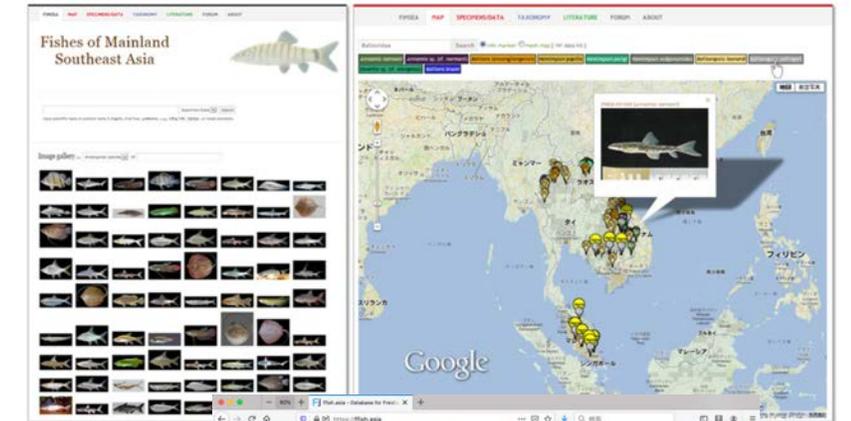
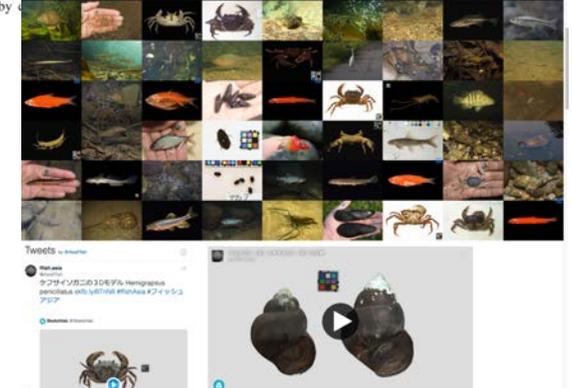


Fig 1. Screenshots of FIMSEA, diversity and distribution in Mainland Southeast Asia. Image of species are listed by markers in...



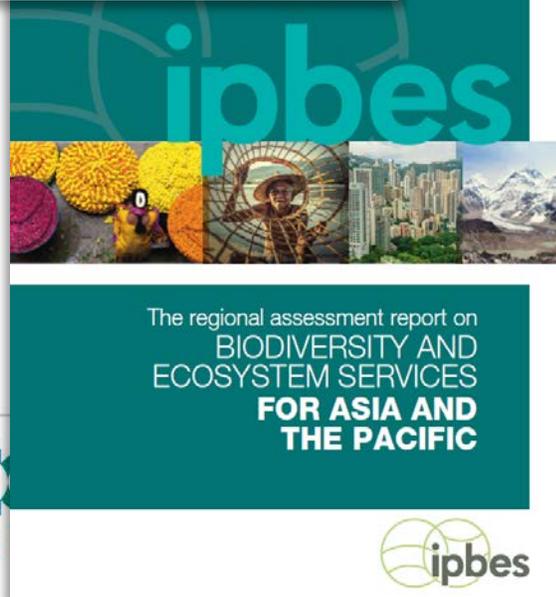
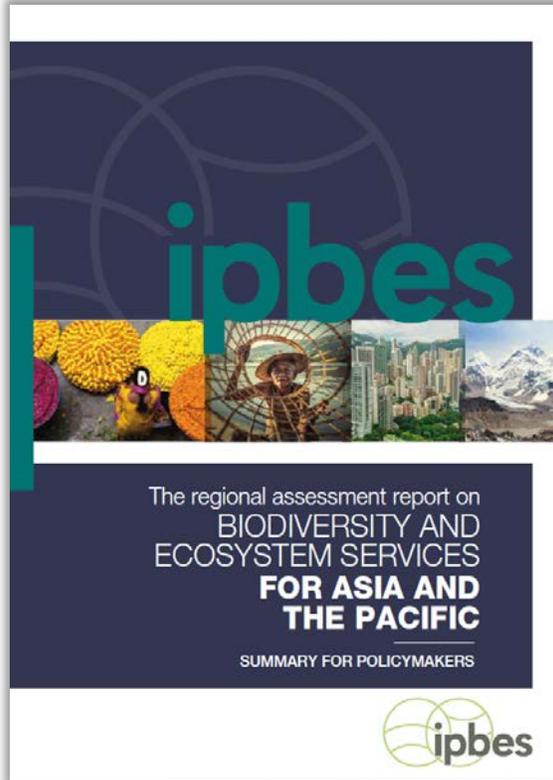
IPBES AP regional assessment

IPBES: Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services

Box 2 Data sources of the Asia-Pacific Regional Assessment.

These include among several others the Clearing-House Mechanism (CHM) of the CBD, the Global Biodiversity Outlook, National Specimen Information Infrastructure (NSII), the Global Biodiversity Information Facility, the Indian Bio-resource Information Network, the Group on Earth Observations Biodiversity Observation Network with regional components, the Asia-Pacific Biodiversity Observation Network and subregional or national components, the Japanese Biodiversity

Observation Network and the Korea Biodiversity Observation Network; regional initiatives: the Economics of Ecosystems and Biodiversity for South-East Asia; regional research institutes: Bioversity International (Asia-Pacific Oceania division), Ocean Bio geographic Information System, the World Resources Institute, the CGIAR Consortium for Spatial Information, the International Centre for Integrated Mountain Development, the International Union for Conservation of Nature



Transboundary information sharing has also become the focus of effort for conservation and sustainable use of BES such as The Asia Biodiversity Conservation and Database Network (ABCDNet) of the Chinese Academy of Sciences and Asia-Pacific Biodiversity Observation Network (AP BON) (UNEP-WCMC, 2016a), ASEAN Clearing-House Mechanism of the ASEAN Centre for Biodiversity (<http://aseanbiodiversity.org>), and the Biodiversity Information Sharing Service of the ASEAN Regional Centre for Biodiversity Conservation (<https://www.arcbc.org.ph>).

STRATEGIC GOAL E: Enhance implementation through participatory planning, knowledge management and capacity building

Regional and national initiatives for BES knowledge sharing are growing, such as Asia-Pacific Biodiversity Observation Network (AP-BON), J-BON (Japan) and K-BON (Korea).

APBON Work Plan update toward 2030

Earth observations – increasing the societal demand under climate change

Needs ... We need to respond to the global agenda and activities by providing adequate and defensible biodiversity data that help developing policy for conservation and sustainable use of biodiversity

- APBON will strive to supply the scientific evidence to develop sound assessments and facilitate policy-making
- Promoting interdisciplinary research and problem-solving approaches with filling the knowledge gaps
- Strengthening biodiversity observation networks and collaboration with Earth observation communities for societal benefits
- Promoting the data accessibility, deliver our information and knowledge to global platforms such as CBD and IPBES

Strategy

1. Biodiversity research and monitoring

- a. Monitoring states and changes of biodiversity
- b. Filling gaps in data availability
- c. Increasing access to data (**GBIF**, **ABCDNet**, *Ecological Research data paper*, **OBIS**)
- d. Improving knowledge by using cutting-edge technologies

2. Networking of networks

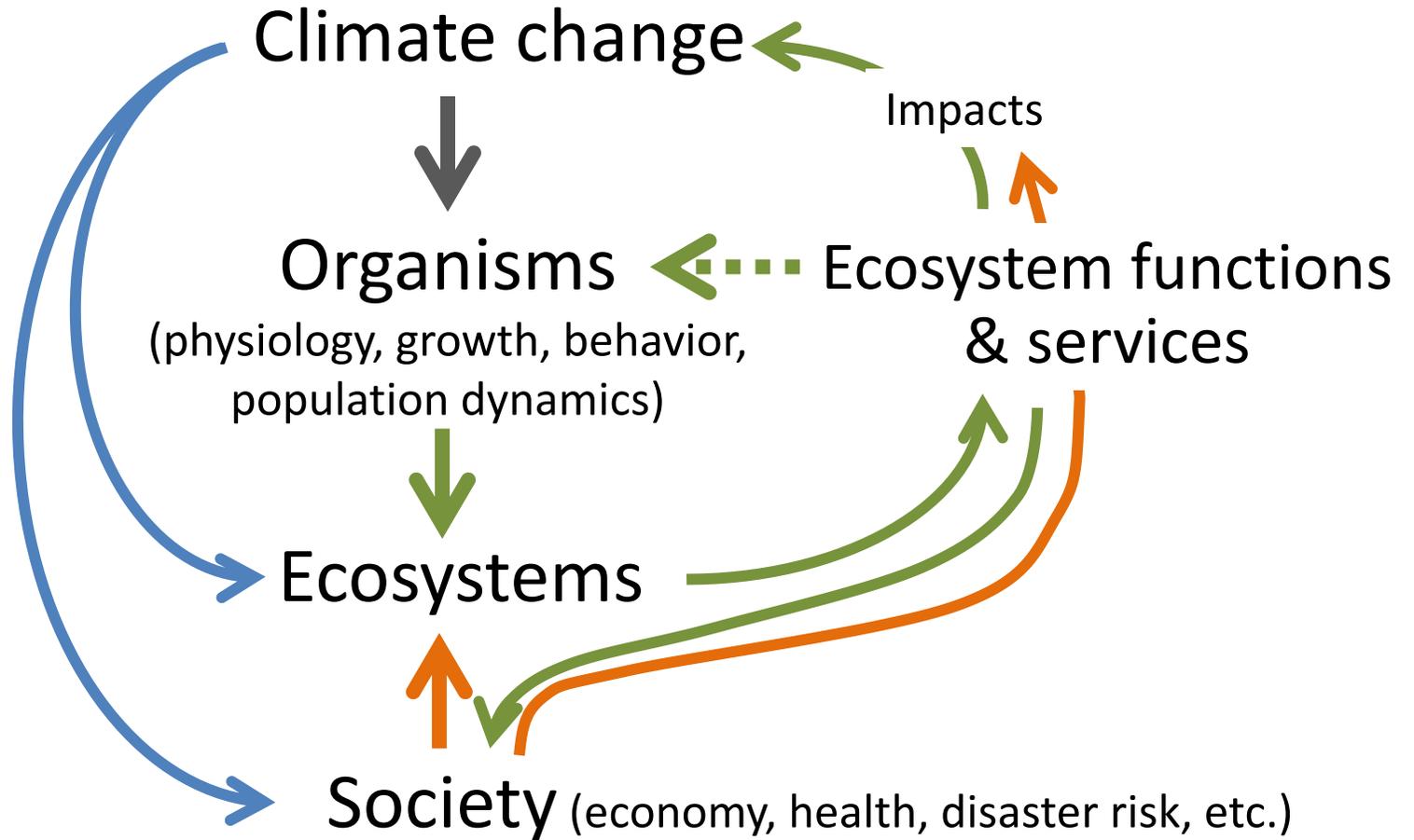
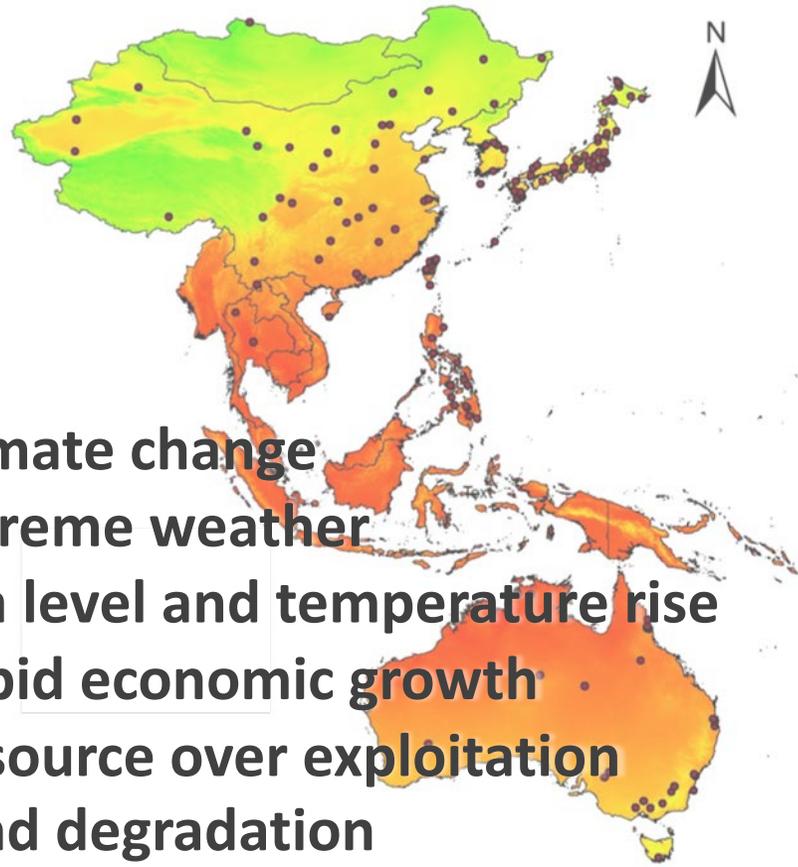
- a. Networking of in-situ biodiversity/ecosystem monitoring networks
- b. Science-policy and science-society networks

3. Capacity building

- a. Training workshops (students, scientists, users)

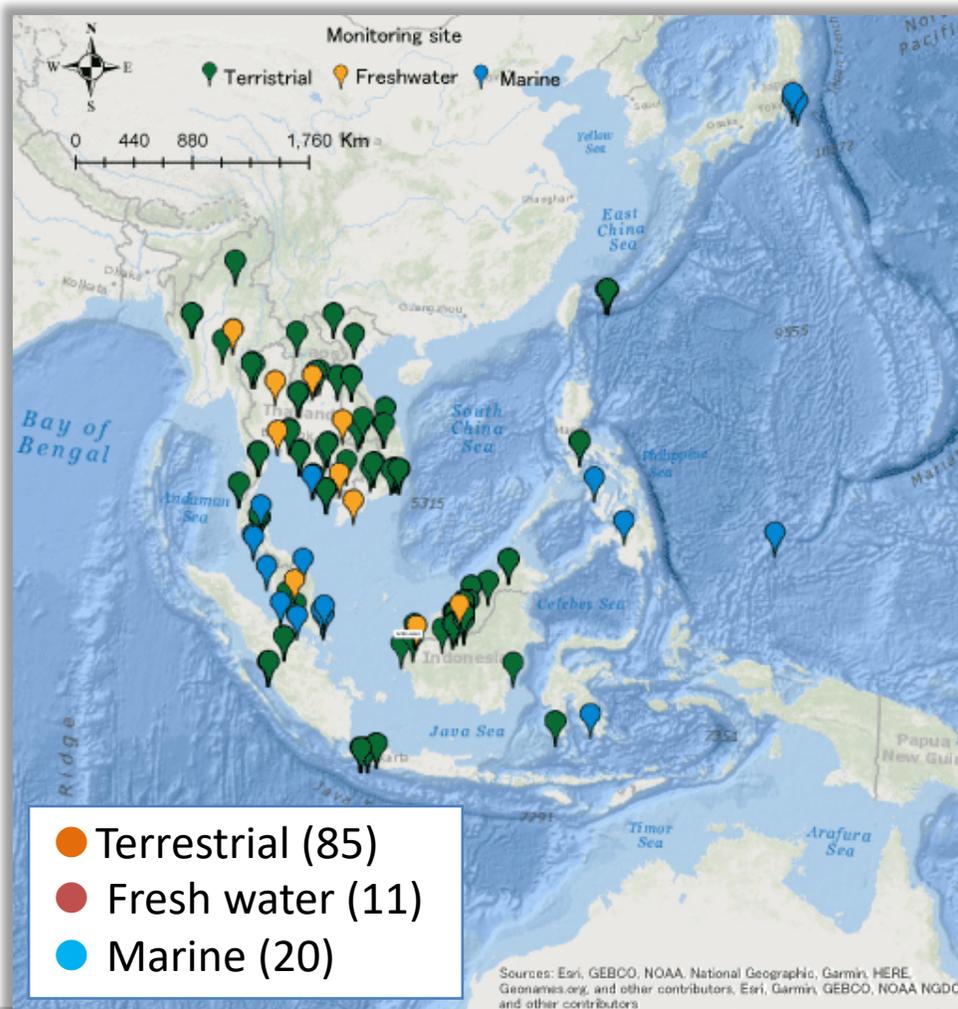


Climate, biodiversity, ecosystem and societal changes

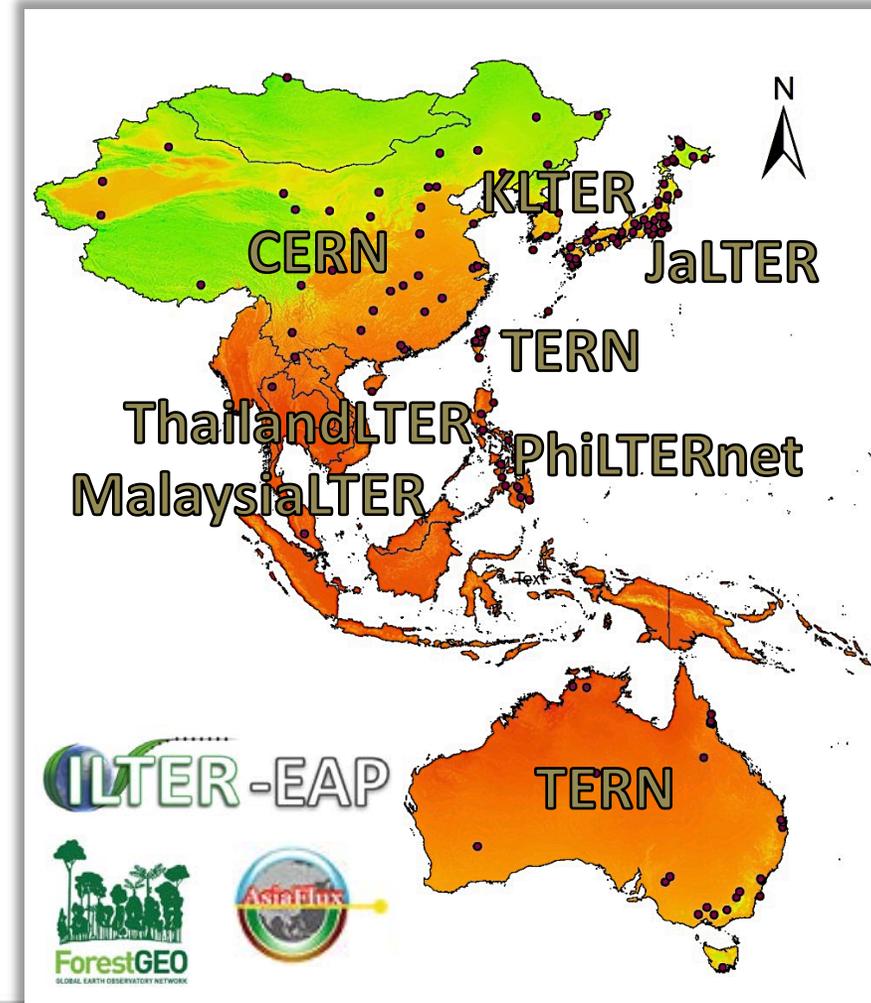


Biodiversity and ecosystem monitoring sites

APBON sites



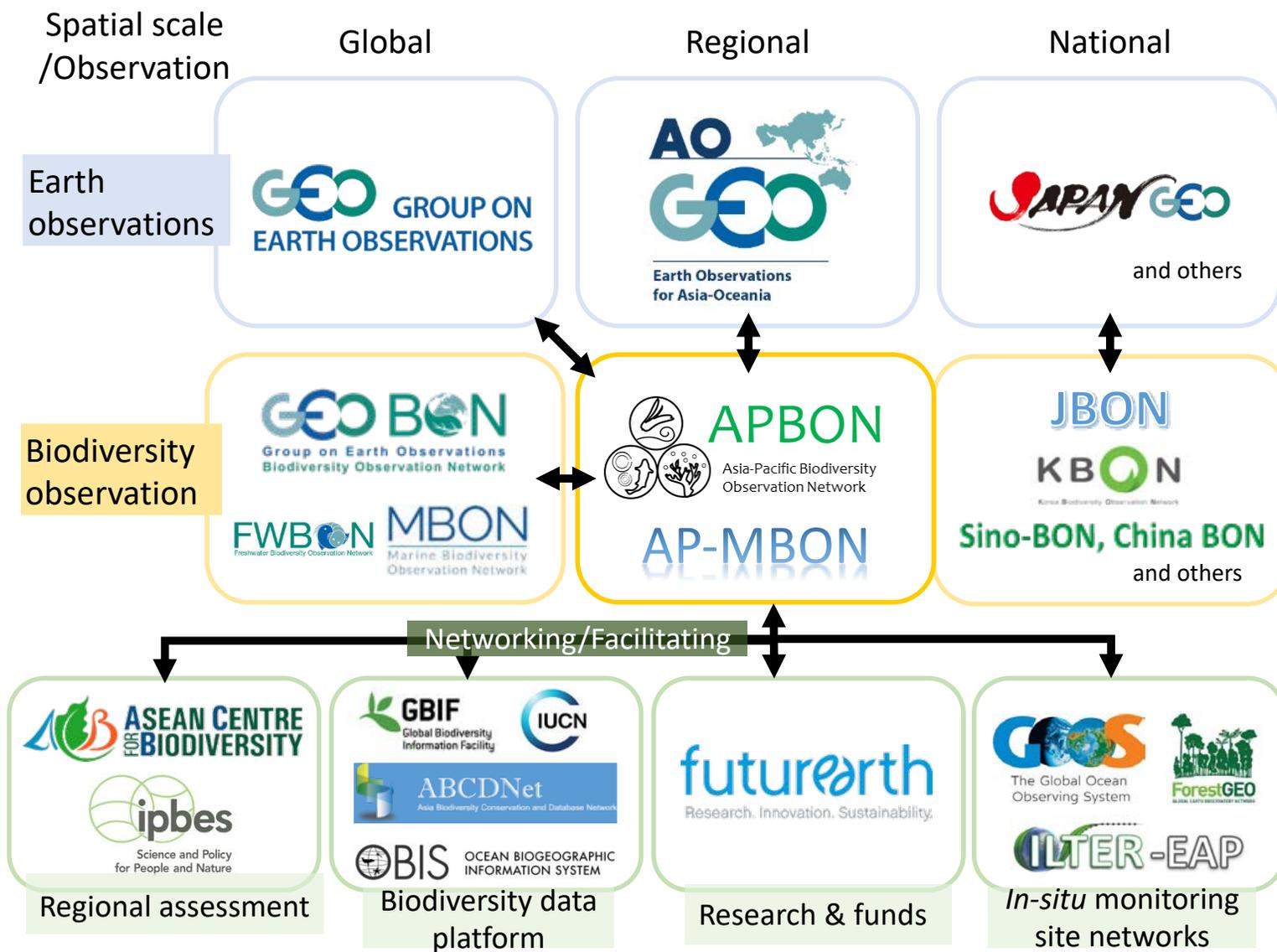
Ecosystem research sites



For EAP ILTER sites see:

<https://www.ilter.network/?q=content/ilter-east-asia-and-pacific-regional-network-ilter-eap-website>

Networking with observation and user communities



AO GEO
<https://aogeo.net/en/>

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

AP-MBON
<https://members.geobon.org/pages/ap-mbon.php>



12th AOGEO Symposium (2-4 November 2019, Canberra, Australia)

Scaling up successful Earth Observation activities for all of Asia-Oceania – Share the results and design the future steps for global agendas –

Venue: University House, Australian National University, Canberra, Australia
Keynote Speech: Dr. Stuart Minchin, Australia GEO Principal, Geoscience Australia
Attendee: About 200 participants from 35 countries
Australia, Cambodia, China, Costa Rica, Finland, Georgia, Germany, India, Indonesia, Iran, Israel, Japan, Korea, Malaysia, Mongolia, Myanmar, Nepal, Netherlands, New Zealand, Niger, Nigeria, Pakistan, Philippines, Thailand, UK, U.S.A., Vietnam, ...



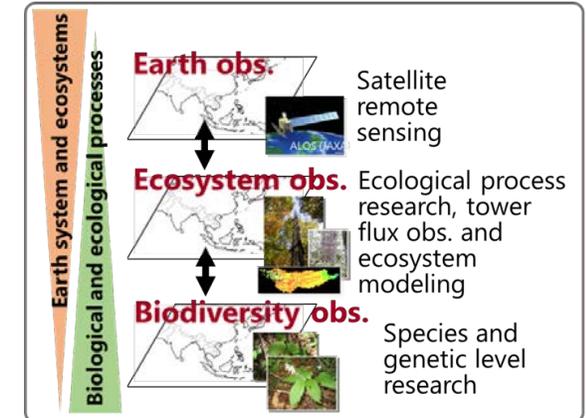
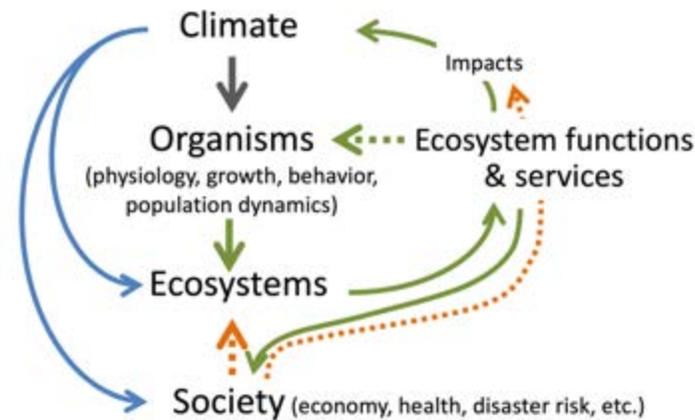
Task Group 2: APBON session

Attendance:

- 23 attendee from 12 countries (Australia, China, Indonesia, Japan, Korea, Malaysia, Nepal, Netherlands, Philippines, Thailand, U.S.A.)
- GEO BON (Germany)
- Joint session with TG3: Carbon and GHG Initiative

Meeting objectives:

1. Engagement of biodiversity observation communities in the region particularly in the Pacific and Oceanic regions, Himalayan region
2. Identifying policy-relevant biodiversity observations and assessments, and
3. Seeking collaborative opportunities with carbon cycle community and satellite observation mission(s)



(Muraoka et al. 2012 in APBON book)

Needs to fill gaps in observations and mechanistic understandings on the status and changes in,
Biodiversity/ecosystem –
Carbon balance –
Climate change consequences

APBON Work Plan toward 2030

2009

Missions:

- Networking of institutions and research groups
- Promoting collaborative projects and shared information
- Delivering a scientific knowledge for decision makers for the conservation of biodiversity and ecosystems

Achievements:

- Contribution to IPBES regional assessment
- Data sharing
- Engagement of scientists with national and regional BONs through meetings and projects

2019

New missions:

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

Key activities:

- Biodiversity research and monitoring: promoting national BONs, improving knowledge using cutting-edge technologies
- Networking of networks: facilitating both science- and policy-relevant society.
- Capacity building: training workshops of monitoring skills for students and practitioners at NGOs

2020

CBD
COP15

2030



For biodiversity conservation & sound decision making

APBON

Asia Pacific Biodiversity Observation Network

Our achievements from 2009 to 2019

- 100 sites in 10 countries have been monitored for biodiversity & ecosystems
- 3 APBON books were published
- 23 meetings with participants from 18 countries/areas were held

Our vision toward 2030

- Biodiversity research and monitoring**
 - ✓ Monitoring states and changes of biodiversity
 - ✓ Filling gaps in data availability
 - ✓ Increasing access to data
 - ✓ Improving knowledge on cutting-edge technologies
- Networking observations and users**
 - ✓ Coordination of a regional network of biodiversity observation institutions
- Capacity building**
 - ✓ Sharing knowledge and skill of biodiversity survey through workshops
 - ✓ Training courses for taxonomic capacity building

Our partner: ESABU

APBON Secretariat: Biodiversity Center of Japan
Natural Conservation Bureau, Ministry of the Environment,
1-9-1, Kojimachi, Kojimachicho, Fuchu-shi, Tokyo, 163-8602, JAPAN
E-mail: biodef_webmaster@env.go.jp
Tel: +81-558-72-6031 Fax: +81-558-72-6035

Thank you for your attention,
and thank you for organizing this meeting

For more information of APBON

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

<https://members.geobon.org/pages/asia.php>

<https://members.geobon.org/pages/ap-mbon.php>

Speaker:

Hiroyuki Muraoka

muraoka@green.gifu-u.ac.jp

APBON Co-chairs:

Tetsukazu Yahara

Sheila Vergara

Eun-Shik Kim

