

Transnational Cooperation in Research on the Sustainability of Marginal Seas of South & East Asia

International Conference

The Transformation of Research in the
South: policies and outcomes

21 and 22 January, 2016,

OECD Headquarters, Paris





Sustainability Initiative in the Marginal Seas of South and East Asia (SIMSEA)

A project developed in Asia to meet the requirement for transformative change towards global sustainability



SIMSEA Scientific Steering Committee (Authors)

Authors	Expertise & Interests
Lourdes J Cruz	Harnessing biochemistry & biotechnology for development of IPs and rural communities
Nordin Hasan	Environment, ecosystem services and management; Chair, RAC Future Earth in Asia
Toshio Yamagata	Global climate modes & climate variability; oceanography and meteorology
Annadel Cabanban	Coastal and marine resources management in the Coral Triangle
Ma. Antonette Menez	Development of sustainable aquaculture technologies; sea ranching; environmental governance
Fadzilah Majid-Cooke	Environmental sociology; biodiversity conservation in multiple use forests landscapes



Future Earth

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EDITORIAL

Future Earth

The new year ushers in important international agendas secured at the end of 2015: the Paris climate agreement to limit global warming to a 1.5° to 2°C increase and adoption of the United Nations Sustainable Development Goals. Both actions reflect the world's recognition that development in all nations hinges on a stable and resilient Earth system. This is a political paradigm shift, fortified

by three decades of remarkable advancements in Earth system science. The International Geosphere-Biosphere Programme (IGBP), which ended in December 2015, can take considerable credit for coordinating and catalyzing much of this fundamental research. The recently launched Future Earth research program builds on this legacy and is the right response to the new scientific challenges.

Formed in 1986, IGBP became the first major international program to conceptualize Earth as a whole system. Its objective was "to describe and understand the interactive physical, chemical and biological processes that regulate the total Earth system...and the manner in which they are influenced by human activities." Its visionary research agenda attracted leading scientists from advanced and developing countries, and brought together thousands of researchers through interlinked research initiatives such as the Global Carbon Project (GCP) and the Past Global Changes (PAGES) project, all of which continue to generate key scientific insights. In December 2015, GCP published its 10th annual carbon budget during the Paris climate summit, indicating a decline of 0.6% in the growth rate of carbon dioxide emissions in 2015, potentially the first decrease during a time of world economic growth. Earlier last year, PAGES researchers concluded that sea levels could stabilize at around 6 meters higher than preindustrial levels if global temperatures were to increase 1° to 2°C.

The integrated systems perspective is what made IGBP so important, particularly its focus on the dynamics and feedbacks between the climate system and the biosphere.

From its free-wheeling intellectual spirit, unbounded by political mandates, emerged profound scientific insights, such as the concept of the "Great Acceleration" in human activity since the 1950s, and quantification of this impact on Earth. IGBP will forever be associated with the concept of the Anthropocene—the scientific conclusion that Earth has entered a new geological epoch dominated by human interference—which was first

discussed at an IGBP meeting in 2000, was published in the IGBP newsletter that same year, and was central to IGBP's first synthesis report, *Global Change and the Earth System: A Planet Under Pressure*. IGBP was a foundation for the now-established field of Earth system science and influenced the research trajectory of many institutes.

This new knowledge, and the sheer scale of responsibility that the Anthropocene represents, necessitate an evolution to global sustainability science. Future Earth is the next logical step and brings together natural and social sciences to work toward more integrative global change science and

solutions-oriented research that engages governments, civil society, research funders, and the private sector. The new initiative has the support of an influential coalition of international bodies, including the International Council for Science, the United Nations, and the major national research funders. Future Earth international offices have now been established in Canada, France, Japan, Sweden, and the United States, and national and regional networks and offices are growing rapidly. But Future Earth's success will lie in its ability to stay true to IGBP's legacy. As IGBP projects transfer to Future Earth, the new program must continue to attract the best scientists and institutions.

Earth system resilience and stabilization are necessarily rising to the top of political and scientific research agendas. With humanity at a critical juncture, Future Earth has the potential to become the largest, most ambitious international research program ever undertaken.

—Johan Rockström



"Future Earth...is the right response to the new scientific challenges."



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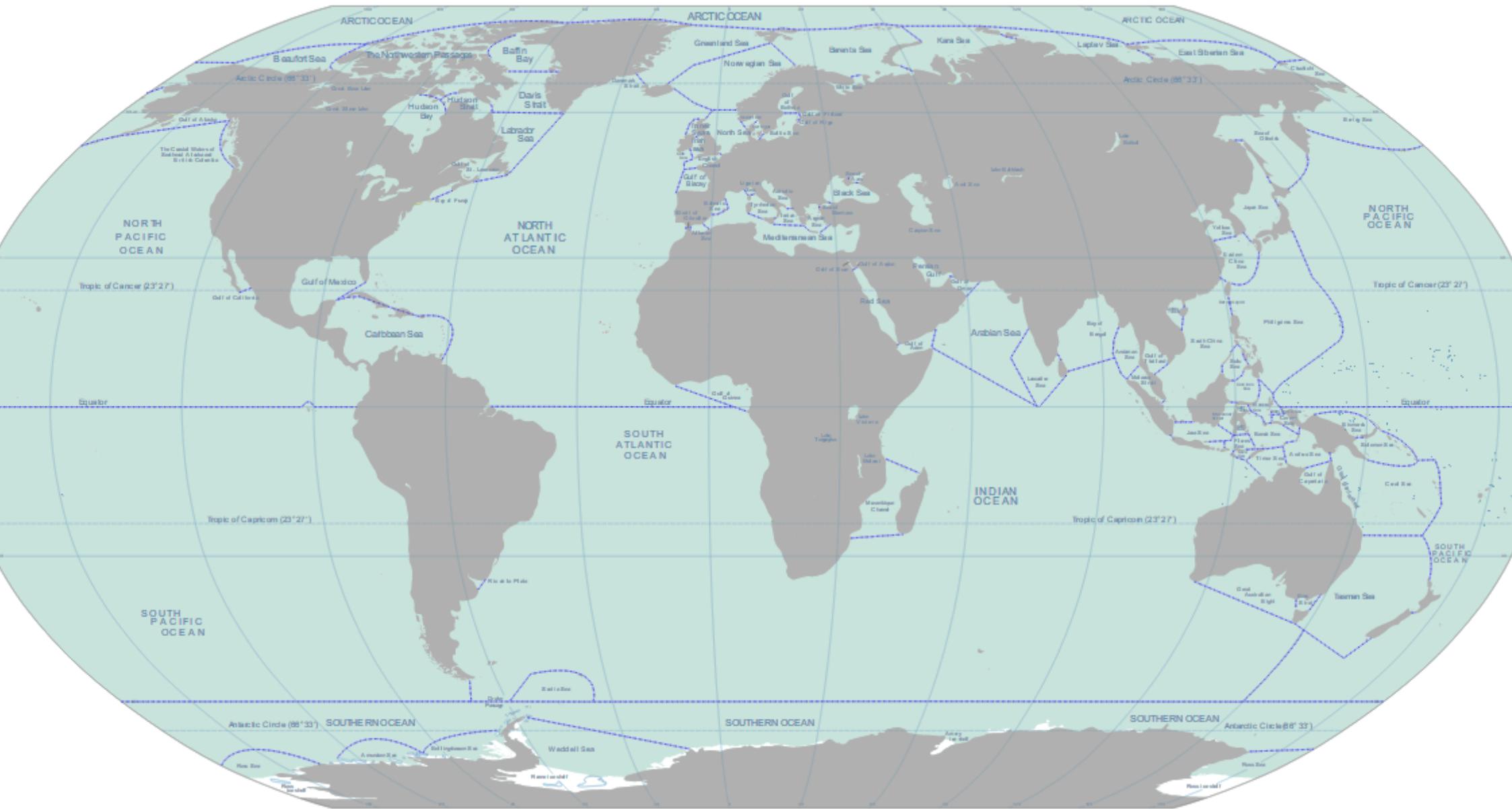
Alignment with the design principles of Future Earth

- Inclusive – co-design, co-production, co-benefit
- Transdisciplinary – natural & social sciences

Aim to work toward a transdisciplinary endeavour to meet the regional challenges of:

- biodiversity conservation
- sustainability of marine ecosystem services
- protection of human well-being in light of
 - population pressure
 - environmental degradation
 - extreme weather events and climate change

Marginal Seas of the World



and seas boundaries map-en" by Oceans_and_seas_boundaries_map-fr.svg. From IHO 23-3rd: Limits of Oceans and Seas, Special Publication 23, 3rd Edition 1953, International Hydrographic Organization. https://commons.wikimedia.org/wiki/File:Oceans_and_seas_boundaries_map-en.svg#/media/File:Oceans_and_seas_boundaries_ma



Marginal Seas of South and East Asia

Indo-Pacific – holds ~85% of coral reefs

Southeast Asia: produces >40M tons of fish and
80% of world's aquaculture products

High extraction volume of marine bioresources

- Artisanal or traditional fishing
- Fishing industry

Aquaculture and sea ranching

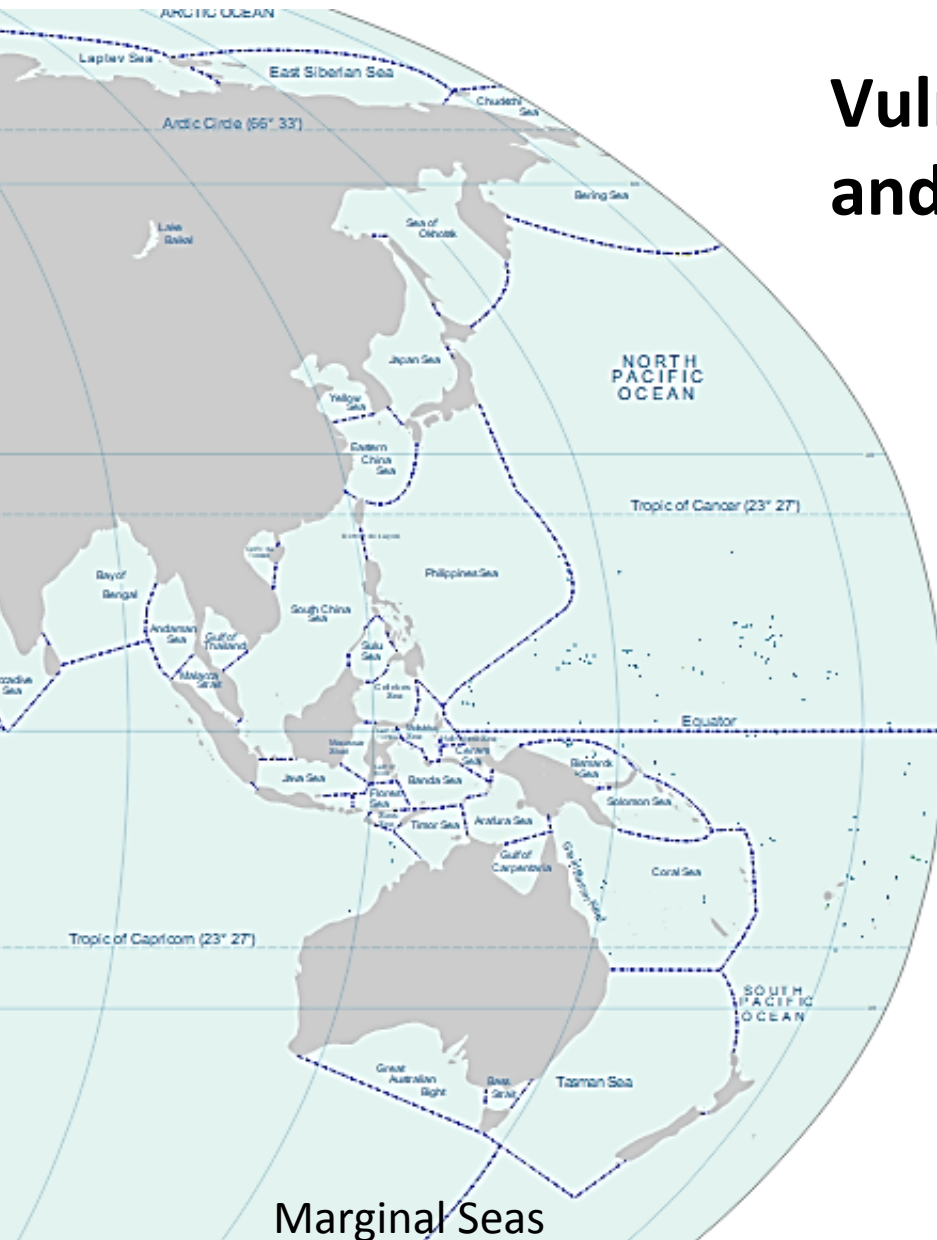
Used as shipping lanes

Other ecosystem services – recreational, etc

Population pressure – Pollution, Nutrients

Interconnected sea/ ocean currents

Vulnerability of the region to Climate change and variability



From SIMSEA Brochure, 2015

and seas boundaries map-en" by Oceans_and_seas_boundaries_map-fr.svg. From IHO 23-3rd: Limits of Oceans and Seas, Special Publication 23, 3rd Edition 1953, International Hydrographic Organization. https://commons.wikimedia.org/wiki/File:Oceans_and_seas_boundaries_map-en.svg#/media/File:Oceans_and_seas_boundaries_map-en.svg

SIMSEA Vision

An international alliance of physical, ecological and social scientists working together in collaboration with other stakeholders to generate policy and community-relevant knowledge towards sustainability of the marginal seas of South and East Asia.

Overall Goal

To generate knowledge that can bring about transformative change towards sustainability in the marginal seas of South and East Asia, and hence contribute towards sustainability at the global level.

Objectives

- **To co-design an integrative programme that would establish the sustainability of the Marginal Seas of South and East Asia; and**
- **To play a catalytic role, among projects and programmes, facilitate cooperation and close gaps in science for the benefit of societies.**

Scoping workshop (JAMSTEC, Japan)
Review of existing transnational programs

Establishment of SIMSEA Program office
Brochure & website

Survey of research topics &
Prioritization workshop (UP Diliman)

Promotion of SIMSEA and formation of
SIMSEA national alliances (RCAP)

Regional workshop , September 2016
International conference 2017

Development of projects & Fund sourcing
Scientific Steering Committee meetings
Wountry workshops of national alliances

Scan of Regional Activities in Western Pacific

Speaker	Topic
Wenxi Zhu	InterActivities of IOC/WESTPAC , (Governmental Oceanographic Commission/ Western Pacific)
Hiroaki Saito	Activities of PICES (Pacific International Council for the Exploration of the Sea)
C h i n - S e u n g Chung,	Activities of the APEC Climate Center
Tetsuo Yanagi	Achievements of LOICZ and the Sato-Umi concept for sustainable fisheries (Land Ocean Interactions in the Coastal Zone Project)
Chua Thia-Eng	The East Asian Seas- A Bumpy road to sustainable ocean development (the PEMSEA experience)
N o b u y u k i Miyazaki	New strategy for coastal marine science for establishment of ‘Future Oceans’
A n n a d e l Cabanban	Views from living marine resource management and the Coral Triangle Initiative

Status of National Marine Ecosystems

Speaker	Topic
Porfirio M Alino (UPMSI)	Coastal Ecosystems of the Philippines
Somkiat Khokiattiwong (SEAGOOS)	Integrated Coastal Zone Management of Thailand
Nor Aieni Haji Mokhtar (MOSTI)	Oceanography of Malaysia
Seong-Joong Kim (KOPRI)	Rapid Arctic Warming in Recent Decades
Fadl Syamsudin	Near Future Ocean Climate: Indonesia
Vo Si Tuan	Oceanography in Vietnam

Examples of SIMSEA research topics along the main themes of Future Earth

Dynamic Planet

- Spatial and temporal scales for assessing sustainability of coastal and marine ecosystems services
- Tipping points and resilience of marginal seas in relation to global change
- Impacts of priority pollutants on marine organisms and humans

Global Sustainable Development

- Consequences of economic growth strategies on socio-economic and environmental wellbeing
- Ocean health and its indicators in different regions
- Establishing ecologically coherent networks of locally managed marine areas including MPAs

Transformations towards Sustainability

- Building local community capabilities towards sustainability
- Co-developing and co-learning plausible alternative pathways toward sustainability

Learning from previous transnational collaborations

- **Case 1. Biodiversity and Natural Products Research**
- **Case 2. Coral Triangle Initiative**

SIMSEA as a Regional Collaboration

- **Frame work being developed for collaboration SIMSEA and presented to governments in the regions**
- **Agreement among governments in the region**

Thank you!