

Coastal Blue Carbon

Measurements, Modeling
and Assessment

Session 1: Coastal Blue Carbon: Measurements, Modeling, and Assessment

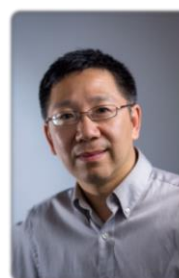
About this session

Coastal blue carbon refers to the carbon fixed from atmospheric CO₂ by plants such as salt marshes, mangroves, and seagrass, phytoplankton, macroalgae, and other organisms and stored in their biomass and bottom sediment in the coastal wetlands. Complex interactions of sea level/climate change, land use management, nitrogen pollution determine the strength of this carbon sink for a given area. Ecosystem services and the associated values of conservation and restoration of the coastal wetlands for the purpose of mitigating climate change have only recently been recognized. However, our ability to measure and model vertical and lateral exchanges of carbon in coastal wetlands across land, atmosphere and ocean is rather limited. This session aims to bring wetland ecologists, ecological engineers, biogeochemists, earth system modelers, and social scientists together to discuss field measurements, modeling, assessment, restoration/creation, and to promote coastal blue carbon trading for climate change mitigation.



Expected output

Accepted authors will be invited to submit a full paper for a special issue in Deep-Sea Research Part II: Topical Studies in Oceanography following the instructions that will be communicated later on. *Other journals for the symposium volume may be also considered if needed.*



Moderator

Jianwu Tang

East China Normal
University

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IMBeR West Pacific Symposium

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Strengthening

Coral Reefs

Resilience to Climate Change
and Human Impacts

Session 2: Strengthening Coral Reef Resilience to Climate Change and Human Impacts

About this session

Coral reefs and associated ecosystems are among the most valuable resources on the earth. They contain the highest biodiversity and provide many important ecosystem services, especially the protection of coastlines from storms and erosion, provide jobs for local communities, source of food, tourism benefit to local businesses, source of nitrogen and other nutrients for marine food chains, and new medicines. However, coral reefs are severely affected by natural disturbances, particularly heavy storms, diseases and predators, and anthropogenic disturbances, including sedimentation, pollution, destructive fishing, overfishing, and climate change, which is resulting in elevated seawater temperatures and ocean acidification. Coral bleaching events affected most coral reef ecosystems worldwide. To reverse the global coral reef degradation trends, scientists have required better management strategies that focus on strengthening coral reef resilience, people to rely on, and economies. Resilience is defined as the capacity of a system to withstand stressors, maintain its structure and function in the face of disturbance, and adapt to future challenges. It may be useful as a guiding framework for coral reef management in the face of rapid global change. In this session, scientists and researchers are invited to exchange their experiences in research, management, monitor and conservation aspects, focusing on coral reef resilience, including current and future applications, and any aspects to strengthen coral reef resilience to climate change and human impacts. The presentation aspects may include, but are not limited to coral reef monitoring, biogeochemical and ecological processes for enhancing coral reef resilience, impacts of climate change and other human activities on the health of corals, coral bleaching, reduction of local threats, coral restoration, sustainable use and management of coral reefs, and innovative studies.



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Co-moderators

Thamasak Yeemin
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Takashi Nakamura
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Dried Small Fish

Ecology, Value Chains
and Nutrition

Session 3: Dried Small Fish: Ecology, Value Chains and Nutrition

About this session

Dried, salted, fermented, pickled small fish, and derivative products are an important and ancient category of processed aquatic foods. They supply a concentrated source of micro-nutrients to diets of large populations in Asia, provide livelihoods to millions of small-scale fishers, processors and traders, and are a culturally significant component of Asian cuisines. The availability of small pelagic fish, such as anchovy and sardine, to producers, traders and consumers is linked with the ecology of these species. The patterns of movement of these fish species in the West Pacific and Indian oceans are increasingly shaped by human impacts (stressors) on the ocean, such as climate change. This session seeks to engage in a multidisciplinary/interdisciplinary dialogue on the links among ecology, value chains and nutrition related to small fish, used for drying and other forms of processing, in rapidly changing environmental and economic contexts. Expressions of interest are invited from natural scientists working on ecology and nutrition of small fish (e.g. anchovy, sardine) in the West Pacific and Indian oceans, as well as social scientists working on dried/processed small fish value chains in East, Southeast and South Asia. Abstract selection will be guided by the openness to present within multi-disciplinary, sub-regional groups.



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Co-moderators

Nireka Weeraratne
International Centre
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Derek Johnson
University of Manitoba

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Ecosystem -social

interactions in the
coastal sea

Session 4: Ecosystem-Social Interactions in the Coastal Sea

About this session

Continental marginal systems are supporting human well-being from important and valuable goods to services, but anthropogenic activity and climate change have substantially altered the oceans and are impacting their ability to sustain ecological and human communities. Integrating environmental, ecological and economic knowledge of continental margin systems, and how these systems may change under different perturbation scenarios, is imperative to understand the interplays between human uses of the oceans, present management strategies of marginal systems, and optimize the services they provide. Lessons learned from multidisciplinary syntheses and inter-regional comparative studies of coastal socio-ecological systems will help rationalize and optimize marginal seas management approaches. This session is aimed at improving our understanding of marginal social-ecological systems, guiding sustainable development of resources and advising governance regimes to facilitate sustainable governance, facilitating equitable sharing of margin resources, and evaluating alternative research approaches and partnerships that address major margin challenges.



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Co-moderators

Su Mei Liu
Ocean University of
China



**Suvaluck
Satumanatpan**
Mahidol University

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Towards the Sustainable Indo-Pacific Region

Marine Biogeochemistry
and Biodiversity

Session 5: Towards the Sustainable Indo-Pacific Region (IPR): Marine Biogeochemistry and Biodiversity

About this session

The IPR is the linkage between the West Pacific Ocean and the East Indian Ocean, covering complex ocean channels and numerous tropical islands. As an important node for global ocean conveyor belt, the IPR hosts active interactions among atmosphere, water and soil/sediments. The high-level biodiversity in the IPR is also well known, likely supported by the diverse biogeochemical processes and warm environment. This session focuses on the biogeochemistry studies from the view of climate change, e.g., solute dispersion, chemical transformation and biological assimilation, as well as biodiversity research across temporal scales, e.g., species diversity, evolutionary origins and biodiversity drivers. Furthermore, as a region deeply influenced by anthropogenic activities, topics regarding marine economics and management are also welcome in this session.



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Co-moderators



Shan Jiang, East China Normal University
Aazani binti Mujahid, University Malaysia Sarawak
Deo Florence L. Onda, University of the Philippines
Romanus Edy Prabowo, Universitas Jenderal Soedirman
Jing Zhang, Shanghai Jiao Tong University / East China Normal University

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Marine Extreme Events

Impacts
Forecasting
and Risk Management

Session 6: Marine Extreme Events: Impacts, Forecasting, and Risk Management

About this session

Marine extremes including heatwaves, deoxygenation events, upwelling – are becoming more common in many regions of the world. These extremes are often exacerbated by climate change, such that impacts on marine resource users and coastal communities is greater than in the past. This session will include presentations on the impacts of marine extremes on species and habitats, and human communities and activities. With an improvement in forecasting ability, particularly on seasonal time scales, early warning for the probability of extreme events is now possible. Marine heatwave forecasting, for example, is now providing early warning for coral reef systems, and ocean areas around Australia. Other forecasting systems for marine extremes that are under development can be discussed in this session. Finally, we welcome presentations on risk-based approaches to management of extreme events by governments, industries, and communities. These risk management approaches may be developed as a response to observed or predicted impacts, to forecasts, or to situations that have occurred elsewhere. An understanding of impacts, forecasting, and risk management for extreme events is critical in the West Pacific, where many coastal communities rely on the ocean for food, transport and livelihoods.



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Moderator

Alistair Hobday

CSIRO

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Connectivity of the West Pacific and Southern Ocean

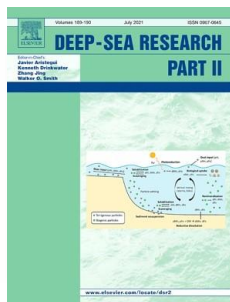
the Importance of
Oceanic Top Predators

Session 7: Connectivity of the West Pacific and Southern Ocean: the Importance of Oceanic Top Predators

About this session

Oceanic top predators are an important link between the West Pacific and Southern Oceans and function as indicators of ecosystem change across the region. The main determinants of predator movements are the distribution and abundance of their prey, which are not distributed homogeneously. Prey distribution is determined and influenced by oceanographic processes that influence biological productivity and/or increase the availability of prey, thus creating areas where foraging is more energetically efficient. The spatio-temporal scales on which these processes operate vary greatly, from vertical mixing at centimeters to meters over time scales of seconds-hours-days, to climate features such as El-Niño Southern Oscillation and Southern Annular Mode that occur over hundreds of thousands of kilometers at time scales of years to decades. Consequently the impact on trophic structure and predator responses also varies greatly; from localised and short-term changes in foraging efficiency and prey availability to long-term population trends. This session aims to further disentangle the relationship and relevant lag-times between oceanographic processes in the West Pacific and Southern Oceans, and predator responses from foraging behaviour to large-scale demographic trends and future population viability under plausible climate scenarios. While focussed on this region, we also invite submissions from elsewhere which can provide valuable lessons that can be applied to understanding predator responses in the West Pacific and Southern Oceans. The session will feature both talks and posters, and the authors will have the opportunity to publish their works in a special volume of a renowned peer-reviewed international journal. We particularly encourage submissions from ECR and members from underrepresented groups in science.

This session represents a joint [ICED](#) (Integrating Climate and Ecosystem Dynamics in the Southern Ocean) [CLIOTOP](#) (CLimate Impacts on Oceanic TOP Predators) initiative.



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Co-moderators

Jaimie Cleeland
University of Tasmania /
Australian Antarctic Division

Luis A. Huckstadt
University of California
Santa Cruz / University of
North Carolina Wilmington

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Ecosystem, Biogeochemistry
and Interventions in the
Western Pacific and its
Marginal Seas

Beyond the Disciplinary Borders

Session 8: Ecosystem, Biogeochemistry, and Interventions in the Western Pacific and its Marginal Seas: Beyond the Disciplinary Borders

About this session

Marine ecosystems are under serious pressure of anthropogenic perturbations such as global warming, ocean acidification, coastal development, IUU fishing. The ecosystem changes are inducing the degradation of marine ecosystem services, which are the foundation of human society, and have affected economic activities and the welfare of coastal residents. Science-based policymaking is necessary for the sustainable use of marine ecosystem services under the on-going pressures. However, our understand on the complex and diverse ecosystem structure and dynamics of the western Pacific Ocean, the biogeochemical cycle, and their responses to climate change is limited. Preparing the best scientific knowledge to decision makers is an emergent request to scientists from society.

This session invites studies of marine ecosystem, biogeochemistry, their response to natural and anthropogenic climate perturbations and adaptation-focused interventions in the Western North Pacific and its marginal seas, especially those with interdisciplinary approach. Studies with new technique such as BGC-Argo, molecular biology, earth system model/regional ecosystem and BGC model, are welcome.



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Co-moderators

Hiroaki Saito
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Ying Wu
East China Normal University

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