

Title : *Lighting the 'grey zone'*

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Workshop description :

The world-wide development of the blue economy will likely result in an ever more intense penetration of human activities into the marine realm. Marine ecosystems are already exposed to unprecedented levels of pollution and resource extraction, as well as heavily impacted by climate change. There is thus an urgent need for science-based approaches to be put in place for the sustainable management of marine resources and ecosystems while ensuring lasting ocean-based benefits to society. Time scales from seasonal to decadal coincide with decisions of particular relevance to the adjustment of practices and infrastructure towards the goal of increased sustainability. These time scales are targeted by decadal predictions, a rapidly developing field with an increasing number of applications to the management of living marine resources. The transition towards the sustainable management of marine ecosystems should, however, not only rely on the development of coupled physical-ecological prediction systems, but should ideally integrate the human dimension. It calls for the development of socio-ecological model systems with humanity as a system component and actor of governance.

This workshop aims to bring together scientists from natural sciences, along with experts from humanities sharing a common interest in tackling the challenge of expanding decadal prediction systems to include the socio-ecological dimension.

Objective:

While human activity is a major driver of climate and environmental changes in the Anthropocene, it is still absent from most model systems. With model systems increasingly evolving into **decision support tools**, next-generation decadal prediction systems should **integrate the human dimension**. Since the workshop 'Lighting the Grey Zone' targets participants from different disciplines, it is important to **create a common language**. The "Grey Zone" refers to the decadal prediction horizon and tackling it requires a specific modelling approach. An introduction to modelling techniques and related issues will be part of the workshop. The technical introduction will be limited to the modelling of the physical/chemical/biological systems, but will also address humanities (the human dimension). Decadal predictions are produced by global Earth System models. Decision makers and stakeholders expect, however, information at regional scale. How to overcome this **mismatch of scales**? Again, there is a technical side to this question (downscaling), but also a region-specific human dimension. Decadal predictions are based on **ensemble methods** which provide probabilistic information. How to integrate **human behaviour** into these systems? Decision makers and the general public need tools (and education) to apprehend this information and its inherent uncertainty.

Outcomes and expected impact:

The workshop will produce a strategy and guide-lines on how to integrate human dimensions into coupled physical-biogeochemical/ecological prediction systems. These will feed into a perspective paper, the key objective of the workshop. The strategy will be structured around a precise topic, such as **the ocean and food security**, and link back conceptually to modelling the grey zone will be possible.

Ideas for Keynote speakers:

Taking into consideration gender balance, geographic balance, interdisciplinarity
suggestions

“Grey Zone”: Inna Senina (CLIOTOP) Pacific tuna fisheries, SIDS, climate justice

WS 2 specific topics

- 1) technical modelling aspects (general high level introduction): David Ford, UK
- 2) decadal predictions applied to fisheries management: Mark Payne, DK
- 3) human dimension: ???, a scientist from humanities
- 4) climate justice: Inna Senina