

## Two decades of research under CLIOTOP: IMBER's Regional Program on *Climate Impacts on Oceanic Top Predators*

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### Abstract

This talk will showcase the transformative research and key insights gained from two decades of international collaboration under CLIOTOP. Since 2005, CLIOTOP has established a global network of over 200 researchers investigating the complex interactions among climate variability and human uses of the ocean, and their cascading effects on marine top predators and ecosystems. Through coordinated, interdisciplinary efforts spanning ocean basins and species, CLIOTOP has developed innovative methodologies and integrated approaches that have fundamentally advanced our understanding of marine ecosystem dynamics. The program has also bridged natural and social sciences, fostering a more holistic understanding of coupled human-natural marine systems.

Currently, four active Task Teams are advancing CLIOTOP's research on oceanic top predators. Two focus on trophodynamics, including global analyses of mesopelagic food web linkages to tunas and the ecological role of white sharks. Another examines the impacts of marine heatwaves on top predators in tropical oceans, while the fourth addresses key challenges and innovations in marine ecological forecasting. These efforts are shaping global research, enhancing international networks and knowledge exchange, and informing sustainable resource management, conservation, and fisheries strategies in an era of rapid ocean change.

Looking ahead, CLIOTOP will focus on emerging research priorities, including integrating novel monitoring technologies, advancing ecosystem models with climate projections, and strengthening pathways to translate scientific findings into adaptive management approaches. Addressing barriers to effective collaboration—such as equitable funding, cross-cultural knowledge exchange, and aligned research priorities—will be key to maximizing global research impact and ensuring sustainable ocean stewardship.