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Abstract

An Updated Assessment on Climate Change Impacts and Adaptation in the Oceans †

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Abstract: According to the latest IPCC report on impacts and adaptation, ocean and coastal systems are already reaching tipping points, where habitat-forming species such as corals and seagrasses will reach non-reversible shifts, even below 1.5 °C warming. Marine species are responding to incremental temperature changes in the oceans by shifting poleward at a pace of 60 km/decade. However, extreme events such as marine heat waves challenge the conditions at which many species can thrive. These changes have significant impacts in human dependent communities, with effects ranging from the capacity of fishing fleets to continue harvesting, to the nutritional intake of marine fisheries in coastal communities. Here, I present an overview of new evidence for anthropogenic climate change impacting upon the oceans and the human dependent communities, focusing on the solutions space and adaptation pathways for the oceans over the next few decades. A combination of nature-based solutions, socio-institutional adaptation and technical interventions are needed to address the impacts of climate change in the oceans. The reach of the adaptation portfolio highly depends on mitigation efforts, where lower emission scenarios allow for a more effective adaptation. Nature-based solutions in the oceans include ecosystem-based management, adaptive fisheries management, restoration and the conservation of habitats and ecosystems. Under higher-emission scenarios, technological solutions and infrastructure interventions are needed; for example, for restoring coral reefs and for adapting to a rise in sea level. In any case, engaging in such options requires a profound transformative change of ocean governance, shifting the policy focus to equity and justice.

Keywords: adaptation; ocean and coastal systems; IPCC; nature-based solutions; adaptation pathways

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