Predictable impacts of climate change on tropical and sub-tropical marine fisheries

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Abstract

The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) states that climate change and ocean acidification are altering the oceans at a rate that is unprecedented compared with the recent past, leading to multifaceted impacts on marine ecosystems, associated goods and services, and human societies. AR5 underlined key uncertainties that remain regarding how synergistic changes in the ocean are likely to affect human systems, and how humans are likely to respond to these events. This paper reviews the literature to capture corroborating, conflicting, and novel findings published following the cut-off date for contribution to AR5. Specifically, we highlight key scientific developments on the impacts of climate-induced changes in the ocean on key socioeconomic sectors, including fisheries, aquaculture, and tourism. New evidence continues to support a climate-induced redistribution of benefits and losses at multiple scales and across coastal and marine socio-ecological systems, partly resulting from species and ecosystem range shifts and changes in primary productivity. Although climate change may improve conditions for some types of freshwater aquaculture, potentially providing alternative opportunities to adapt to impacts on wild capture fisheries and ocean acidification poses a risk to mariculture. The risk of increased prevalence of disease under warmer temperatures is uncertain, and may detrimentally affect human health. While promising, ecosystem-based coastal adaptation approaches are still emerging, and require an improved understanding of key ecosystem services, and values for coastal communities in order to assess risk, aid coastal development planning, and build decision support systems.

Keywords: Climate change, Fisheries, Marine ecosystems, Ecological impacts**.**