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Impacts of climate-modified disturbance regimes on coastal ecosystems and their services

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Coastal ecosystems, such as mangroves, coral reefs, salt marsh, seagrass, and kelp forests, provide crucial regulating, provisioning, and cultural services to human societies. Previous research has demonstrated the various ways in which these ecosystems can reduce disaster risk and contribute to climate change adaptation. Simultaneously, the potential effects of climate extremes and extreme weather events on ecosystem composition and functioning are increasingly gaining attention.

While it is apparent that these ecosystems are subject to changing disturbance regimes under climate change, assessments of what these future disturbance regimes are likely to look like in the future have rarely been attempted and are often limited to single ecosystem and hazard pairs.

Therefore, we propose a global multi-layer hazard assessment for coastal ecosystems to assess i) the changing disturbance regimes coastal ecosystems are exposed to with regards to tropical cyclones, storm surge, sea level rise, and marine heatwaves, ii) potential ecological responses to these changes, and iii) implications for ecosystem service provision. We will present preliminary results as a starting point for further discussion.