Extended Abstract
Volume 9:11

Biodiversity & Endangered species

Open Access

Integrating social-ecological vulnerability assessments with climate forecasts to improve local climate adaptation planning for coral reef fisheries in Papua New Guinea

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Abstract

A major gap exists in integrating climate projections and social ecological vulnerability analyses at scales that matter, which has affected local-scale adaptation planning and actions to date. We address this gap by providing a novel methodology that integrates information on: (i) the expected future climate, including climate-related extreme events, at the village level; (ii) an ecological assessment of the impacts of these climate forecasts on coral reefs; and (iii) the social adaptive capacity of the artisanal fishers, to create an integrated vulnerability assessment on coastal communities in five villages in Papua New Guinea. We show that, despite relatively proximate geographies, there are substantial differences in both the predicted extreme rainfall and temperature events and the social adaptive capacity among the five fishing dependent communities, meaning that they have likely different vulnerabilities to future climate change. Our methodology shows that it is possible to capture social information and integrate this with climate and ecological modelling in ways that are best suited to address the impacts of climate-mediated environmental changes currentlyunderwayacrossdifferentscales..

This work is partly presented at International Conference on Coastal Zones

International Conference on Coastal Zones
May 16-18, 2016 Osaka, Japan