Folklore to reality? Global sea-level rise and the Maldivian "myth of extinction"

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The Republic of Maldives, an atoll nation in the central Indian Ocean, consists of more than 1200 islands (of which ~200 are inhabited) perched on marginal reefs of atoll rims or platform reefs in the atoll lagoons. Maldivian folklore has foretold a myth of extinction whereby a great catastrophe ends with the island nation being swallowed by the surrounding sea. Now due to global warming and sea-level rise, there may be some truth to the myth: Former president Mohamed Nasheed stated in 2012 that "if we do not act now, my island nation will be submerged by the sea", referring to evidence that the Maldives could be completely inundated by the end of the century (Anthoff et al., 2010). IPCC sea level projections show a rise of between 0.3 and 1.8 m by 2100 (Oppenheimer et al., 2014), which overtops the height of very low-lying reef islands (Anthoff et al., 2010). In order to gain insights into the future resilience of these islands, this research looks at past clues from island formation during a period of sea-level rise 8000 years ago. The study investigates the formation of lagoonal reef islands in Huvadhoo Atoll, Maldives by employing coring, sedimentological analyses, radiocarbon dating and ground penetrating radar. Results question assertions of island vulnerability over the course of sea-level rise: reef islands are dynamic and not only able to adjust morphologically, their reefs are able to adjust ecologically to rising sea levels. Nevertheless, reef islands are potentially threatened by a number of climate change effects besides sea-level rise, including increased storm intensity, changes in ocean chemistry, and sea surface temperature rise (Oppenheimer et al., 2014). These factors could present barriers to reef health and sediment supply that morphological or ecological adjustments may not be able to overcome. Furthermore, island landforms may physically persist but socioeconomic ramifications need to be considered as well.

References

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