

2023 Geodynamics Seminar

Four decades of change on coral reefs in the Caribbean and South Pacific: A long series of unfortunate events



Dr. Peter Edmunds

California State Northridge

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Clark Lab 507, Quissett Campus,
WHOI

The contemporary coral reef crisis presents modern coral reefs in a homogeneous state of greatly reduced coral cover, enhanced macroalgal abundance, and depleted fish populations. Within the context of the Anthropocene Epoch, this state does not bode well for the future of reefs in warmer seas at lower pH. Explanations of how we got to this point tend to emphasize the role of single disturbances (e.g., bleaching), which suggests that the cause(s) of the crisis, and its possible solutions, might require mitigation of one, or a few, stressors. Using up to four decades of ecological time series data from the shallow reefs of St. John, US Virgin Islands, and Moorea, French Polynesia, I make the case that the present state of coral reefs is: (a) more varied than often is described, and (b) a product of a long series of “unfortunate event” that have interactive and cascading effects that will be highly challenging to reverse. Yet, despite the gloomy state of modern reefs, a deeper understanding of coral ecology, and emerging functional analyses of scleractinian corals, reveals ways through which at least some corals might persist in a rapidly changing world.