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Abstract

OCEAN WARMING AND ACIDIFICATION SYNERGISTICALLY INCREASE CORAL MORTALITY

CO₂-driven ocean warming (OW) and acidification (OA) has prompted urgent research to assess their potential effects on the marine environment, with strong emphasis on calcifying organisms. To correctly predict how these stressors will affect marine organisms, their synergistic effects must be assessed. Here we investigate the interactive effects of OW and OA on the mortality and growth of three Mediterranean coral species: the solitary zooxanthellate *Balanophyllia europaea*, the solitary non-zooxanthellate *Leptopsammia pruvoti* and the colonial non-zooxanthellate *Astroides calycularis*. Corals were transplanted, in different seasons, in proximity to a volcanic CO₂ vent where water is naturally acidified to levels matching future IPCC scenarios. We show a strong synergistic adverse effect on mortality rates of the three species. Net calcification rates of the zooxanthellate species were not affected by reduced pH, while those of the two non-zooxanthellate species were negatively affected, indicating that different levels of resilience/resistance to OW and OA among species in symbiosis with photosynthetic algae or asymbiotic ones may be related to different modes of nutrition and/or biomineralization processes. Natural CO₂-leaking marine sites can provide essential information on the combined effects of OA and OW on Mediterranean scleractinian corals, which may help understand to which extent different corals will be threatened by increasing atmospheric CO₂ pollution.

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DETAILS

Oral presentation

Session #:32

Date: 06/23/2016

Time: 14:45

Location: 314

Presentation is given by student: No

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