

ACIDIFICATION RESPONSE OF MEDITERRANEAN SEA TEMPERATE AND COLD-WATER CORALS FROM MID- TO LONG-TERM EXPERIMENTS

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The Mediterranean Sea has certain characteristics that make it especially sensitive and vulnerable to changes in atmospheric CO₂. Recent studies are starting to confirm that the associated acidification, particularly in the Western Mediterranean, is taking place more rapidly than in the global oceans. Owing to these characteristics, we have run three mid- to long-term manipulative experiments to evaluate potential effects of acidification on corals from this basin. A first experiment (six months long) was run on the temperate corals *Cladocora caespitosa* and *Oculina patagonica*, and confirmed the *a priori* expected decrease in skeletal growth with decreasing pH for both species. Interestingly, a trend in calcification decrease was observed in colonies from the same species. Faster growing colonies were more affected by acidification than those that grew slower, which could be related to the energy requirements associated to the growing process. In a second experiment (ten months long), we tested the possible effects of acidification in the cold-water coral species *Lophelia pertusa*, *Dendrophyllia cornigera*, *Desmophyllum dianthus* and *Madrepora oculata*. Subtle differences in calcification were observed between the treatments, with the first three of these species growing slightly slower at low pH, although these changes were not statistically significant. In a third, still ongoing, experiment (expected to be ~twelve months long), we are combining pH and temperature manipulations in the temperate corals *Astroides calycularis* and *Leptopsammia pruvoti*. In this experiment, we are observing a synergistic decrease in coral calcification when pH is lowered and temperature is increased at the same time.

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