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Effects of rising CO₂ on algae in Japan

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Shimoda Marine Research Centre has set up a platform for international research to assess the benefits of reducing multiple stressors for sustainable development of the Blue Economy. A closely monitored gradient in seawater CO₂ is available to assess ocean acidification, deoxygenation, eutrophication, warming and harmful species. We welcome collaborations as CO₂ seep show profound effects of acidification on micro- and macroalgae, as well as the ecological tipping points that drive shifts in coastal systems¹.

Recent sea surface warming has killed-off kelp forests around Shikine island. Here, coralline algae decline as CO₂ levels rise from 300 ppm to 900 ppm near seeps and perennial macroalgae are replaced by opportunistic turf algae and summer diatom blooms². Benthic carbon fixation is increased at high CO₂ - but most of it is exported offshore and the resilience of coastal communities to typhoons is diminished³. In the UN Decade of Ocean Science, data from this field facility will be used help inform people that need to adapt to global changes affecting aquaculture, fisheries and coastal tourism.

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