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Projected shift of coral habitats around Japan under different future CO2 emission scenarios

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We estimate the effects of both global warming and ocean acidification on potential habitats for corals around Japan under different future CO2 emission scenarios (SRES A2 and B1), based on published estimates and newly developed datasets on sea surface temperatures (SSTs) and aragonite saturation states ($OMEGA_{arag}$). The difference in the future coral habitats caused by higher SSTs and lower $OMEGA_{arag}$ between the two scenarios was significant, suggesting possible conserve coral habitats under the A2 and B1 scenarios, respectively. We conclude that both reducing CO2 emissions and setting up conservation plans to reduce direct anthropogenic effects would be required to save corals in the future.

Keywords: Coral, Global warming, Ocean acidification, Climate model, CO2 emission scenario