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Coral records for anthropogenic CO_2 uptake in the NW Pacific over the last 100 years

Tsuyoshi Watanabe (1), Atsuko Yamazaki (1), Takashi Kawamura (1), Junpei Isasa (1), Saori Ito (1), Shiori Yoneta (1), Kaoru Sugihara (2), Keiichi Nomura (3), Fumihito Iwase (4), and Hiroya Yamano (2)

(1) Hokkaido University, Sapporo, Japan , (2) National Institute for Environmental Studies, Tsukuba, Japan, (3) Kushimoto marine park, Kushimoto, Japan, (4) Biological institute on Kuroshio, Outsuki, Japan

Increasing anthropogenic carbon dioxide (CO_2) emission has led the rapid global warming during last century and projected future, however, the sensitivity and mechanism of it's atmospheric and oceanic balance have not well been documented due to the lack of long-term observation. Here we present new coral carbon isotopic records around Japan, located at the western boundary of Kuroshio current, which is one of the largest sink source of carbon in the North Pacific. We found strong decadal variability in coral records with much more rapid increased rate of dissolved anthropogenic CO_2 (low δ13C) during last 100 years than those observed in other oceans (Atlantic, Indian, Caribbean, and tropical pacific). Our finding indicates that Kuroshio current could be powerful and sensitive driver controlling atmospheric CO_2 with air to sea mass balance in guess in the future warmth.