Ocean acidification detected in coastal water around Japan

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Ocean acidification causes significant damages on marine ecosystems in polar regions and coral reefs etc., together with global warming. Japan Ministry of Environment has conducted measurements of hydrogen ion concentration, pH in about 2100 fixed stations covering the whole of coastal area in Japan since 1987, in the monitoring program to monitor quality of water pollution. In this study, by using these data, situations of ocean acidification in coastal waters in Japan were examined, which have been difficult to understand in detail so far.
Apparent 368 acidification and 18 alkalization trends were detected. Among them, 78 acidification and 13 alkalization trends were statistically significant. Progressing speed of ocean acidification in coastal waters is averagely at -0.0015 pH/yr, which is comparable to the estimates at the other fixed monitoring stations in open ocean, such as JMA 137E line, BATS and HOT program stations. Some industrial port sites including Ishinomaki in Miyagi, Tomakomai in Hokkaido and Tokyo Bay in Tokyo prefectures show 10 times as fast progressing speed as the average. We would clarify the mechanisms of the differences among local regions, and possible influences on marine ecosystems, in future study.
Our talk will also provide a tendency of ocean acidification/alkalization in each prefecture, and a diagnostic estimation of aragonite saturation rate (Ω_{AR}) to see an influence on crustacean in present.

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