

## Analysis of the temporal and spatial variations of the CO<sub>2</sub> system in coral reef waters using rapid CO<sub>2</sub> system analyzer

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A Large number of samples must be measured for the analysis of rapidly changing temporal and spatial patterns of the CO<sub>2</sub> system in coastal oceans. Much time and experience, however, were required for the measurements of total alkalinity (TA) and total inorganic carbon (TIC), which are two of the four measurable parameters of the CO<sub>2</sub> system in seawater.

A rapid analyzer for TA and TIC were developed for numerous and precise measurements of these parameters in a short period. We first used the analyzer and achieved 300 measurements in 10 days with precisions of less than 0.1% for both TA and TIC. As a result, we succeeded in revealing time and spatial variations of TA and TIC among outer ocean, reef flat and lagoon in Palau barrier reef.