

## Field investigation and the path analysis of air-sea CO<sub>2</sub> flux in shallow waters of Ishigaki Island

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The Blue Carbon, which is carbon captured by marine living organism, is recently focused as an important option for climate change mitigation initiatives. The Blue Carbon is equivalent to approximately 55% of carbon fixed by photosynthesis activity of the earth. In particular, vegetated shallow waters have been recognized as significant carbon stocks due to the high burial rates and long term sequestration. However, the contribution of Blue Carbon sequestration to atmospheric CO<sub>2</sub> in subtropical shallow waters is unclear, because the investigation and analysis technologies are unmaturred.

In this study, using an approach combining field investigations and path analysis, we examined the mechanisms by which environmental factors directly and indirectly affecting air-sea CO<sub>2</sub> flux. Field investigations were performed to examine air-sea CO<sub>2</sub> flux and environmental factors (e.g., wind speed, water temperature, salinity, total alkalinity (TA), dissolved inorganic carbon (DIC)) in shallow waters (Fukido, Shiraho, Nagura, and Kabira) of Ishigaki Island, July 2013. In addition, we implemented the path analysis to infer important environmental factors and interactions affecting the air-sea CO<sub>2</sub> flux.

Keywords: blue carbon, coastal vegetation, air-sea CO<sub>2</sub> flux, path analysis