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Monitoring Seasonal Dynamics of Water Quality, Biogeochemical Cycles & Organic Matter Sources in a Mixed Seagrass (*Thalassia hemprichii*) and Coral (*Montipora digitata*) Bed. Case Study - Bise, Okinawa. Japan.

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**PE-2 Monitoring Seasonal Dynamics of Water Quality, Biogeochemical Cycles & Organic Matter Sources in a Mixed Seagrass (*Thalassia hemprichii*) and Coral (*Montipora digitata*) Bed. Case Study – Bise, Okinawa. Japan.**

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A comprehensive field survey was carried out in the seagrass bed of Bise. There are five species of seagrasses growing in Bise: *Thalassia hemprichii*, *Cymodocea rotundata*, *Halodule uninervis*, *Halodule pinifolia*, and *Halophila ovalis* with a mixed seagrass (*Thalassia hemprichii*) and coral (*Montipora digitata*) community. The water quality tests conducted from September 2006 until October 2007 revealed that the total suspended solids and dissolved inorganic nitrogen during spring and summer are twice as high as is recommended for submerged aquatic vegetation habitats. This could be attributed to the anthropogenic inputs via the wastewater pipes that are located in the beach area, which was confirmed from the results of the sediment nutrient study. There were also higher levels of ammonium, nitrites and nitrates detected in the sediments that are directly affected by the wastewater discharge during January 2007, April 2007 and October 2007. The results for the fatty acid biomarkers of the organic sources revealed the wastewater pipes are also contributing sources of organic matter into this area, especially high levels of bacterial biomarkers throughout the year, with diatoms dominating in the autumn seasons and macroalgae in winter. The seasonal differences in the fatty acid biomarkers of the organic sources in the subtidal regions suggest that there is an equilibrium maintained in the subtidal soil sediments possibly due to the different climatic conditions, which controls productivity. Finally, the lab experiments conducted suggests that the mixed community of *Thalassia hemprichii* and *Montipora digitata* have very low nutrient uptake capacity. This indicates that the currently thriving mixed seagrass and coral community may be susceptible to increased nutrient loading in the environment.