

Interaction of Coral Reef and Mangrove ecosystem

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[Objective] Detection of terrestrial loading to reef ecosystem is important for prediction of land soil run off caused by future land use development. Using n-alkane originating terrestrial vegetation is the quantitative methodology to estimate land originated run off contribution to the reef. In contrast, tropical and sub-tropical mangrove ecosystem traps terrestrial sediment within its coastal system is known as peat layer. The peat layer contains organic matter, mostly from mangrove originated organic matter, while some are from adjacent coastal seaweed area or from upstream vegetation. These interaction is not well clarified and will be necessary for decision making in environmental management of total coastal ecosystems. I evaluate the the origin of organic matter within these ecosystems using n-alkane that has different composition between algae, seaweed and terrestrial vegetation.

[Methods] The surface sediment were sampled at coastal benthic area, mangrove area and upstream area of Fukido mangrove reserve, Ishigaki island, Japan. Samples were freeze dried by Freeze dryer, followed by ultra sonic extraction to organic solvent. The n-alkane in the extracts were separated and concentrated and analyzed and determined by FID gas chromatograph (Shimadzu, GC-17A).

[Results] Contribution of marine originated n-alkane in mangrove sediment was small. The n-alkane profile in surface layer of mangrove floor was corresponded to those of mangrove, however, the n-alkane in reef sediment also showed the contribution of mangrove originated n-alkane, suggesting organic matter supply from mangrove ecosystem to reef systems.