Aquatic Ecology Lab Microbial Processes and Carbon Cycle in the Ocean

Marine microorganisms drive biogeochemical cycle in the ocean and have significant impacts on changes in the global environment. We are studying the carbon cycle in the ocean and the sea-air interaction by focusing on dynamics of organic matter derived from the microorganisms.

Sea-air interaction of volatile organic compounds

Volatile organic compounds (VOC) emitted from sea to air form aerosol and cloud precursors, affecting climate and the Earth's energy balance



Observation of VOC flux in the Pacific [Omori et al. 2017]

Experimental analysis of microbial production of VOC [Omori et al. 2015]

Bacterial production of refractory dissolved organic matter

Bacteria are "producer " of refractory dissolved organic matter (DOM) which accumulates huge amount of carbon into the ocean



- Seasonal distirbution of florescent DOM in the subtropical Pacific [Omori et al. 2011]
- Carbon flow through membrane vesicles produced by marine bacteria



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