

IMS-1:

Organic matter-microbe interactions in the ocean - Towards a global synthesis

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The processing (transformation and degradation) of organic matter (OM) by microbial food webs consisting of bacteria, protists and viruses plays a major role in the regulation of carbon cycles in the oceans. Numerical modeling of the OM-microbe interactions is essential to assess how marine microbes and associated biogeochemical cycles may respond to climate change. However, there have been surprisingly few studies that have explicitly incorporated microbial food web - OM interactions into global biogeochemical models. The present talk introduces the results of our study using a global three-dimensional numerical model of the ocean general circulation and biogeochemistry. The initial model consisted of planktonic (nutrients, phytoplankton, zooplankton and detritus), microbial (dissolved organic matter and bacteria), and physical (ocean general circulation) processes. Our aim was to evaluate how microbial processes and OM interact with each other and affect ocean biogeochemical cycles and productivity. The results of sensitivity analyses are then used as a basis for identifying the major gaps in our understanding of key microbial processes in the ocean.

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