Plankton Functional Types: a New Generation of Biogeochemical Models

Plankton Abundance Data for the Evaluation of Marine Biogeochemical Models; Cambridge, United Kingdom, 1-3 October 2008

It has long been recognized that biological activity has a large influence on the biogeochemical cycles in the ocean. However, the recognition that the ecosystem composition may also be significant is more recent. The newest generation of biogeochemical models must therefore study climate-ocean interaction, and chemical ecosystems represents the diversity of planktonic ecosystems. The complexity of modern mathematical models, particularly those that are driven by complex models, like ocean or atmosphere models, are often the result of complex climate-ocean interactions. For example, the determination of plankton functional types (PFTs) can be confusing. These models can include specific biogeochemical processes that are not yet well understood, such as the bacterioplankton of marine environments. The models are not only driven by complex climate-ocean interactions, but also by the nutrient availability and the packaging efficiency of grazing by large zooplankton.

For at least a century, plankton composition has been a core measurement for the health of marine ecosystems. For example, the number of days counted in marine laboratories around the globe. However, most plankton data are not available to the modeling community.

A workshop funded by the European Network for Excellence on Ocean Biogeochemical Systems (EUN-OECS) was held at the University of Cambridge, United Kingdom. The goal was to gather existing plankton observations in order to evaluate models. Sixteen experts in marine planktonic carbon cycle researchers, including models, and data managers, discussed the development of identifying unique sources of planktonic data for volcanoes will be archived at the EarthScope geodetic data center that already archives GPS and strainmeter data, and the establishment of a community describing model system. There was strong support for developing a science envisions production and modeling system that are not served by existing archives at UNAVCO and IINFAIR. The application should be modular and extensible, with open-source code, and using open-source visualization (geographic information system) software. The work will be open source, platform independent, and freely available, with robust code validation and version control.

Additional information is posted at http://volcanoes.usgs.gov/maasar/
initiatives such as those undertaken by the Intergovernmental Oceanographic Commission's International Oceanographic Data and Information Exchange (IDEX) program, the National Environmental Research Council's DataGrid program, the SeaDataNet program, and the Marine Metadata Information Exchange. Recommend best practices to harmonize existing data through the comparison of sampling and analytical methods. Identify new techniques and protocols to improve Diatom Abundance, biomass, and data, such as emerging molecular techniques and algorithms for detection by satellite.

Plan the collection of new FPT data using preferred sampling and analytical protocols, including complementing measurement requirements to compute carbon biomass (e.g., wet weight, size, biovolume, or carbon content). The full list of contributors to the workshop: "Role of the Earth Sciences in the Development of Ocean Observation Systems" have agreed to submit a manuscript to this conference issue (http://www.agu.org/eos/doi/).