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Thursday, October 11

Poster Session 4

10:30–12:00

Poster 156

EVALUATING TIME-SERIES OBSERVATIONS OF PHYTOPLANKTON COMMUNITY DYNAMICS AT THE MARTHA'S VINEYARD COASTAL OBSERVATORY IN THE CONTEXT OF REGIONAL VARIABILITY

The northeastern U.S. continental margin is a highly productive ecosystem and is increasingly experiencing the impacts of changing climate and human activity. Phytoplankton community dynamics can profoundly influence food web and biogeochemical processes, but sustained temporal observations of phytoplankton variability in relation to environmental drivers are limited. An ongoing, multi-year time series at the Martha's Vineyard Coastal Observatory (MVCO), located between the highly productive waters of the Georges Bank and the Middle Atlantic Bight, has provided preliminary evidence pointing to trends in phytoplankton community response to changing ecological and environmental drivers, including changes in major taxa, persistence of seasonal diatoms blooms despite environmental extremes (warming conditions), and optical proxies consistent with an overall increase in the composite cell size index for the phytoplankton community. We describe efforts involving a combination of high temporal and spectral resolution radiometry at MVCO complemented by in situ time-series of environmental variables and boat-based observations (~monthly at MVCO including depth and optical profile sampling). Additional information includes in situ characterization of diversity in the phytoplankton through the automated submersible flow cytometers (FlowCytobot and Imaging FlowCytobot). Satellite-based (MODIS, VIIRS) remote sensing enable the interpretation of the observations at MVCO in the context of regional scale spatial-temporal variability. We examine the MVCO time-series in the context of regional patterns in satellite-derived indices of phytoplankton biomass and community composition with the objective of providing an improved understanding of drivers of coastal ecosystem change in the New England shelf region.

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