Thursday, October 11
Poster Session 4
10:30–12:00

Poster 104

A 20-YEAR ANALYSIS OF PHYTOPLANKTON IN THE NORTHEAST U.S. CONTINENTAL SHELF LARGE MARINE ECOSYSTEM WITH IMPLICATIONS FOR FISHERIES

The Northeast U.S. Continental Shelf (NES) Large Marine Ecosystem is a highly productive, temperate system that is warming much faster than the global ocean. With two decades of continuous ocean color remote sensing data, we can now observe long-term spatio-temporal patterns in phytoplankton biomass and primary production. Furthermore, advances in phytoplankton size class and functional group algorithms have expanded the ability to assess spatial and temporal variability in phytoplankton community composition. To increase the accuracy of the remote sensing observations, in situ phytoplankton pigments, primary production, species composition, and radiometry data are being used to generate and validate regional algorithms of phytoplankton parameters in the NES. These data are then used in a bottom-up food web based approach to estimate ecosystem production and fisheries exploitation rate potentials. In some regions of the NES, primary production has been steadily increasing since 1998, while the ratio of microplankton to smaller nano- and picoplankton has more sharply increased since 2005. These changes correspond to a general increase in fish and invertebrate biomass in the NES. Changes in total production and the fraction of microplankton production ultimately control fish and shellfish production and set constraints on the amount of production available to be extracted from the ecosystem at sustainable levels. By gaining a better understanding of the spatial and temporal changes in the phytoplankton community composition and associated primary production, we can better predict overall ecosystem production and subsequently, sustainable harvest levels and possible consequences of climate change.

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