
Woods Hole Oceanographic Institution
Biology Department Seminar



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Redfield Auditorium – 12:00 Noon

Copepod biogeography in a changing Arctic Ocean

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Dramatic changes have occurred in the Arctic Ocean over the past few decades, especially in terms of sea ice loss and ocean warming. Those environmental changes may modify the planktonic ecosystem with changes from lower to upper trophic levels. My study aimed to understand how the biogeographic distribution of an important endemic copepod species, *Calanus glacialis*, may respond to both abiotic (ocean temperature) and biotic (phytoplankton prey) drivers. A copepod individual-based model, coupled to an ice-ocean-biogeochemical model, was utilized to simulate temperature- and food-dependent life cycle development of *C. glacialis* annually from 1980 to 2014. The annual success rates of diapausing *C. glacialis* individuals in a circumpolar transition zone substantially increased over the 35-year study period. The overall poleward expansion of the northern boundaries was associated with the lengthening growth season and shortening development time. The changing copepod biogeography may be linked to the large scale oceanic processes, particularly diminishing sea ice cover, upper ocean warming, and increasing and prolonging food availability, which could have potential consequences to the entire Arctic shelf/slope marine ecosystem.