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High Sea Surface Temperatures on Northeast U.S. Shelf Moderated in 2013, Other Ecosystem Shifts Noted

Sea surface temperatures for the Northeast Shelf Large Marine Ecosystem (LME) remained high during the first half of 2013, but were lower than the record high levels that occurred in 2012, according to NOAA's Northeast Fisheries Science Center (NEFSC). Sea surface temperatures (SST) for the Northeast Shelf in the first half of 2013 were just above 9 degrees Celsius; as a whole, they declined more than 1 degree C, making 2013 the third warmest year in the time series. The results are reported in the Center's latest Ecosystem Advisory.

"Surface and bottom temperatures have moderated since 2012, when temperatures reached record highs, but still remain above average, continuing the trend of above average temperatures observed during autumn and winter months," said Kevin Friedland, an oceanographer in the NEFSC's Ecosystem Assessment Program. Bottom ocean temperatures are being influenced by water entering the ecosystem.

The moderation in temperature from 2012 was not uniform over the Northeast Shelf. Northern "ecoregions", such as the Gulf of Maine and Georges Bank, remained relatively warm, while the Middle Atlantic Bight cooled to a greater extent. Sea surface temperature (SST) in the Middle Atlantic Bight declined by nearly 2 degrees C, making it the ninth warmest year on record in that region.

Spring plankton blooms, which usually peak in April in the Gulf of Maine and on Georges Bank, were well below average in 2013. Along the coast of Long Island a strong spring bloom occurred, which is not typical for this part of the ecosystem. The below-average plankton bloom in the Gulf of Maine appears to have adversely affected zooplankton populations that are critical to the base of the food chain.

"An abrupt shift is evident in the time when key spring warming occurs. We believe that the changes in the timing of warming events have affected plant and animal reproduction," Friedland said. The date of the spring thermal transition - which marks the average temperature between winter and spring - was relatively constant between 1982 and 2006, but since 2006 has occurred two weeks earlier.

The Northeast Shelf ecosystem continues to experience wide swings in physical conditions. The biological responses to these pronounced physical fluctuations have significantly influenced the dynamics of the Northeast Shelf LME, according to the advisory.

To view the spring 2013 summary of conditions for the Northeast Shelf Ecosystem and related background data, go to Ecosystem Advisory (<http://nefsc.noaa.gov/ecosys/advisory/current/>)