

Timescales of Change in the Coastal Ocean: Seasonal changes between physical, chemical and biological processes in the Gulf of Maine

The physical structure of the water column is a critical control on nutrient dynamics and the production of planktonic organisms in the Gulf of Maine.

Questions:

1. After watching the mid-latitude productivity animation, what are some methods you might use to help students visualize how different components of this system interact?
2. Observe the temperature and salinity (T and S) profiles. How does the degree of stratification change over the course of the 4 seasons?
3. Based on the T and S profiles and what you have learned about nutrients and sunlight, make a prediction about what month the biggest phytoplankton bloom occurred in 2004.
4. Test this prediction by examining the SeaWiFS chlorophyll-a data. According to these data, when did the biggest phytoplankton bloom occur?
5. Is the spatial and temporal resolution of these data appropriate to the questions asked? What other timescales would you like to investigate in the Gulf of Maine, and what types of physical, biological, and chemical data might be helpful? There are vast amounts of Gulf of Maine monitoring data that are readily accessible online.