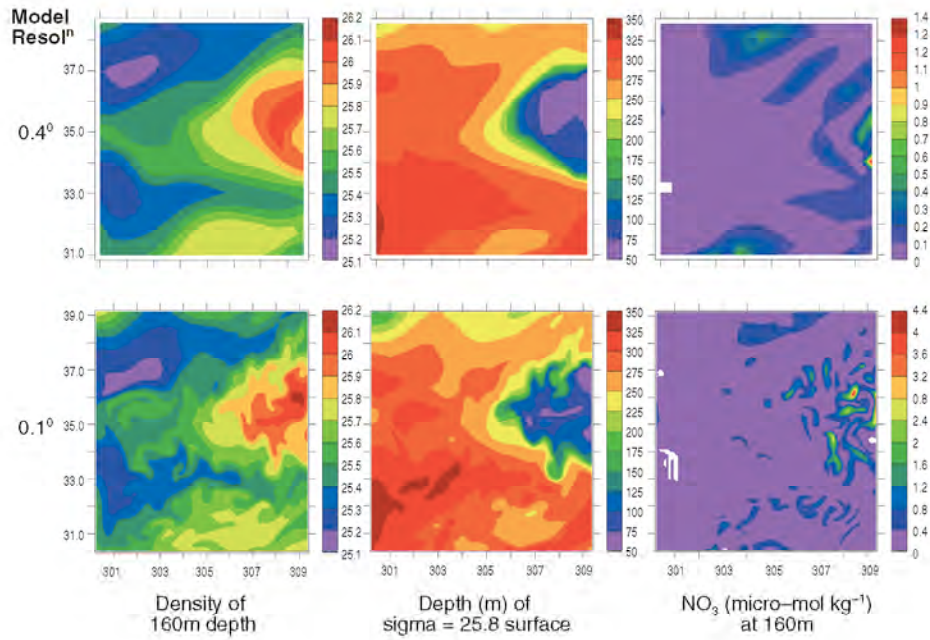
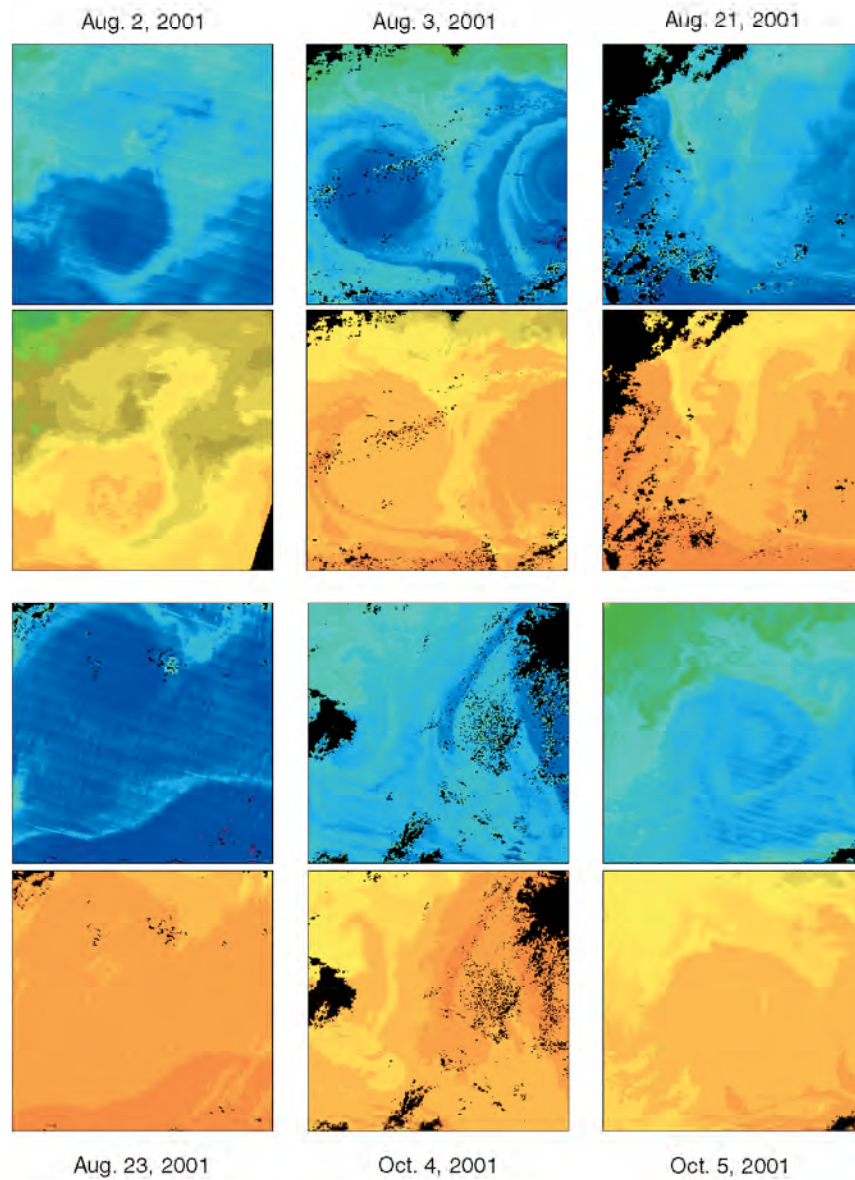
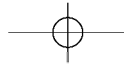


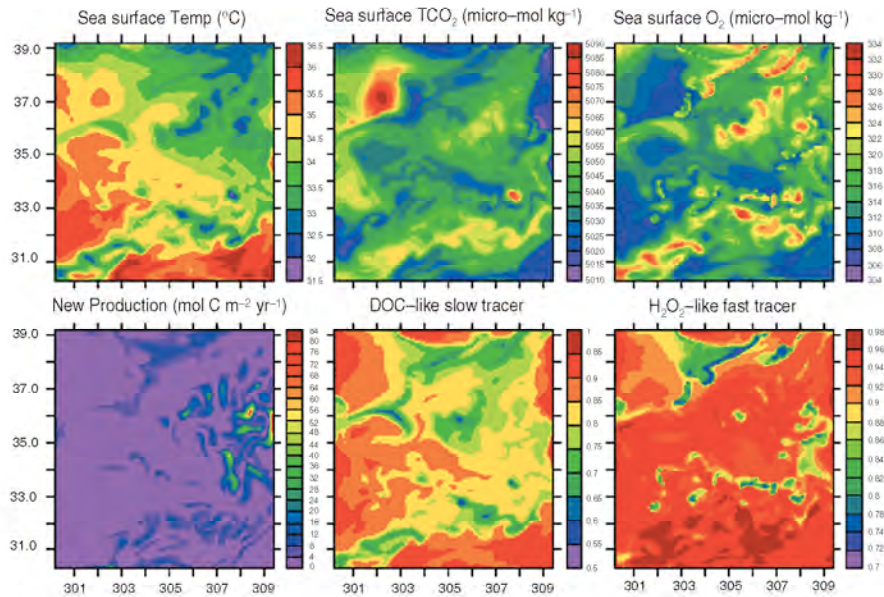
**COLOR FIGURE 14.1** Simultaneous satellite images of Chl (lower left) and SST (upper center and lower right) in the western Atlantic Ocean south of Nova Scotia acquired by the Moderate-resolution Imaging Spectroradiometer (MODIS) on October 1, 2000. The region shown in the two lower panels is indicated by a dotted outline in the upper panel and is approximately  $512 \times 512 \text{ km}^2$ . The resolution of the data is approximately  $1 \times 1 \text{ km}^2$ . The color scale is logarithmic for Chl, but linear for SST. Black areas in the two lower panels are clouds.



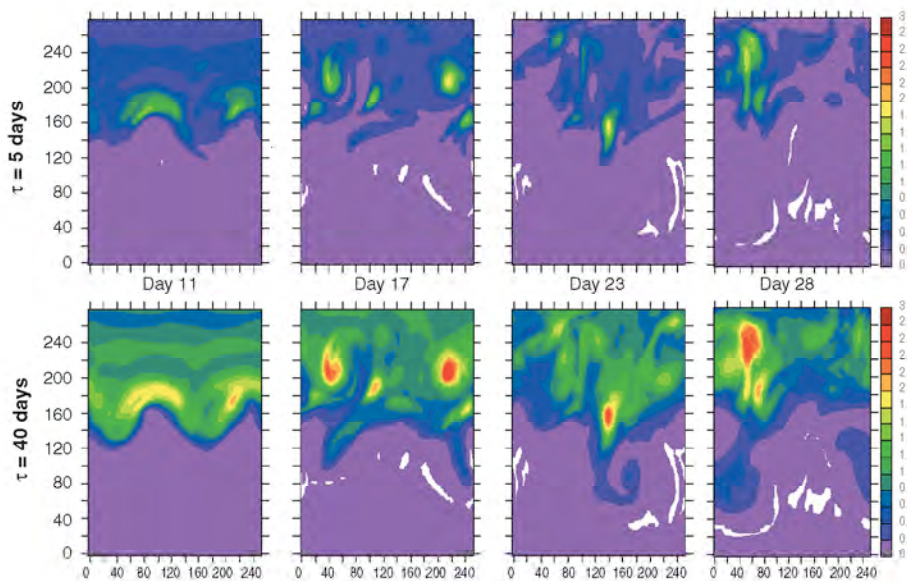
**COLOR FIGURE 14.3** Model potential density and nitrate fields from a  $10^\circ \times 10^\circ$  region representative of the oligotrophic subtropics near Bermuda depict that nitrate is fluxed into the euphotic zone where isopycnals outcrop. The fields are shown at two different model resolutions to demonstrate the importance of resolving the small scales (less than the internal Rossby radius) in capturing vertical advective transport. The dimensions of the domain are in degrees latitude and longitude.



**COLOR FIGURE 14.4** Simultaneous satellite images of chlorophyll (Chl) and sea-surface temperature (SST) for domains of size  $256 \times 256 \text{ km}^2$  and resolution  $1 \times 1 \text{ km}^2$  in the western Atlantic continental shelf and slope region acquired by MODIS on six dates between August 2 and October 5, 2001. In each case, the Chl image is above the SST image. Color scales are the same as those shown in Color Figure 14.1.



**COLOR FIGURE 14.6** Sea surface distribution of temperature, DIC,  $\text{O}_2$ , new production, DOC, and  $\text{H}_2\text{O}_2$  from a limited region model of a  $10^{\circ} \times 10^{\circ}$  region in the subtropical Atlantic near Bermuda (Mahadevan and Archer, 2000). The model was driven at the open boundaries by dynamic fields from a global circulation model (Semtner and Chervin, 1992). The picture depicts a typical snapshot view of the ocean surface in the autumn, modeled at  $0.1^{\circ}$  resolution. The different tracers exhibit different scales of variability.



**COLOR FIGURE 14.8** Concurrent views of the surface concentration of the nutrient-like tracers with different response times  $\tau$ , averaged over the upper 95 m in the model. The tracer with smaller  $\tau$  is patchier. The domain dimensions are in km.