

Oscillation (NAO) and the Arctic Oscillation (AO) and their likely interrelationships.

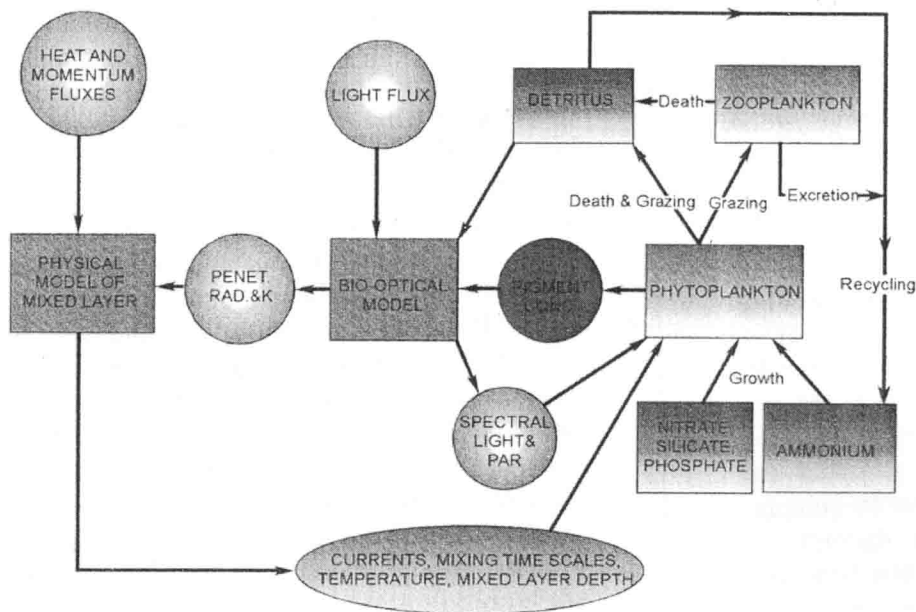


Figure 2. A conceptual model illustrating coupling of physical and biological processes through optical processes. PENET. RAD. and K represent the penetrative component of solar radiation and the diffuse attenuation coefficient of solar radiation. The schematic portrayal of the biological state variables (phytoplankton, zooplankton, nitrate, silicate, phosphate, ammonium, and detritus) basically follows Friedrichs and Hofmann (2001).

The present chapter is organized as follows. First, a brief introduction to relevant processes and their time-space domains is presented. Next, some of the emergent methodologies involving sampling strategies, platforms, sensors, and systems are reviewed. Then, examples of biogeochemical studies in different oceanic environments are used to highlight some new research advances and paradigm shifts. Finally, we consider some emerging research approaches that involve merging observations and models.