This code was developed during **Lake Tahoe Clarity Analysis and Modeling Phase I: Biogeochemical and Ecological Modeling.**

We have implemented a coupled aquatic ecological model (AEM) to a parallelized three-dimensional (3D) hydrodynamic model (PSi3D) that we will refer to as PSi3D-AEM. The AEM component simulates the cycling of carbon (C), nitrogen (N), and phosphorus (P), and phytoplankton dynamics including shifts regulated by zooplankton grazing. For details about the 3D hydrodynamic model, refer to Section 7. The main features of the current version of PSi3D-AEM are:

* Phytoplankton are represented as particulate carbon
* Four phytoplankton functional groups, differentiated by cell size with particular attention to *Cyclotella* spp., are included:
  + Group 1: Size < 2 μm (representative of picoplankton)
  + Group 2: Size 2-6 μm (exemplified by *Cyclotella*)
  + Group 3: Size 6-30 μm (exemplified by *Cryptomonas*)
  + Group 4: Size > 30 μm (exemplified by *Synedra*)
* A Tahoe-specific grazing model driven by the zooplankton counts for those years when data existed for Lake Tahoe and literature-based grazing rates