Like the Gulf of Mexico and Chesapeake Bay, Lake Erie's hypoxic "dead zone" has caused concern since 1970. Harmful algal blooms occur in both coastal marine waters and large lakes, although toxic marine dinoflagellates and diatoms are replaced by Cyanobacteria in lakes. Both water types undergo eutrophication primarily from non-point sources of nutrients, although in lakes phosphorus is more important than nitrogen in stimulating algal growth. To date, models of lake and marine coastal eutrophication have focused on the role of external and internal nutrient loading on algal growth, but have largely ignored the role of direct algal loading from rivers on hypoxia. However, Landsat-7 images from 18 August and 10 September 2003 show huge plumes of algae entering Lake Erie from both the Maumee and Sandusky Rivers, and these riverine algae can continue to grow after mixing with waters in the lake. Here, we use our extensive Lake Erie algal abundance and nutrient loading data from 1970 to 2002 to further compare and contrast patterns of eutrophication in large lake and marine coastal waters.