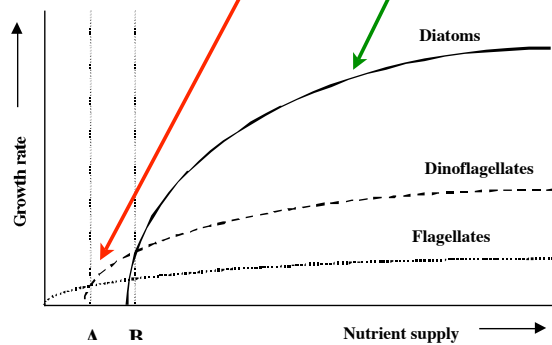


Diatoms & Nutrients



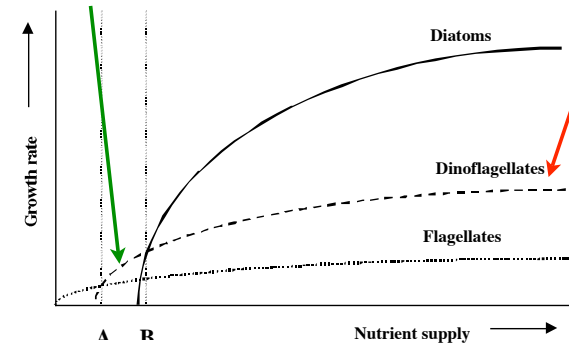
- High growth rate with ample nutrients
 - Dominant in upwelling & spring/fall bloom conditions
 - Poor survival with scarce nutrients



Dinoflagellates & Nutrients



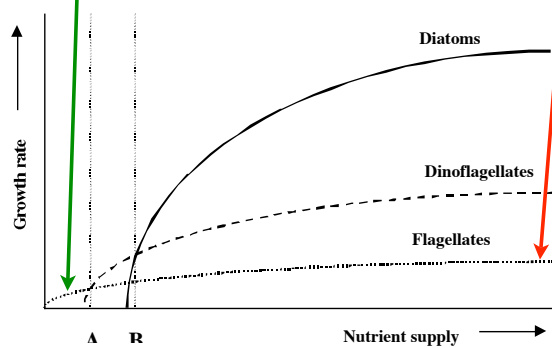
- Moderate maximum growth rate
 - Outcompeted by diatoms when nutrients are ample
 - Dominant in situations of declining nutrients



Microflagellates & Nutrients



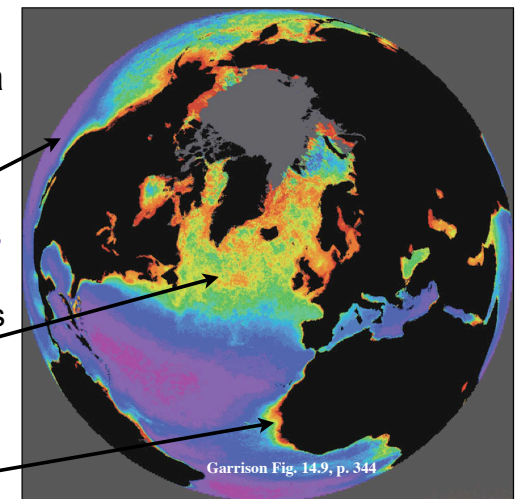
- Low maximum growth rate
 - Least competitive when nutrients are ample
 - Dominant in situations of very low nutrients



Geography of Phytoplankton



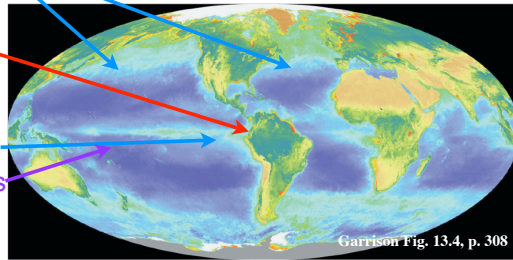
- Dominant species by area
 - Open ocean (latitudes ~5–30°) **microflagellates**
 - Neritic & open ocean (latitudes ~30–70°) **diatoms spring, dinoflagellates summer**



Geography of Phytoplankton



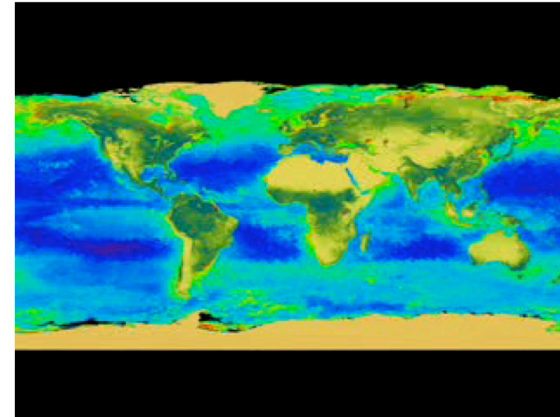
- Dominant species by area
 - Boundary between low-latitude & temperate/subpolar open ocean (latitudes ~30-40°)
 - dinoflagellates**
 - Upwelling
 - diatoms**
 - Moving offshore
 - **Dinoflagellates**
 - **Microflagellates**



Global Seasonal Productivity



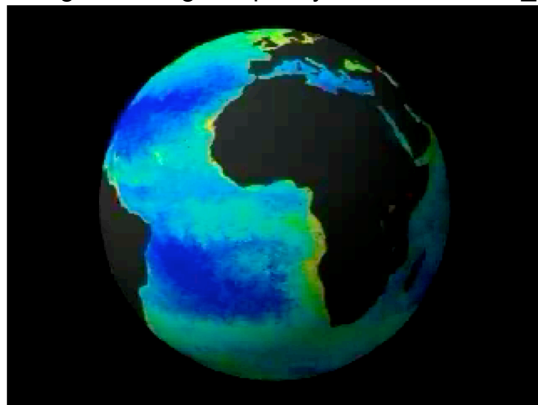
- Seasonal changes in biomass animations
 - www.gsfc.nasa.gov/topstory/20010327colors_of_life.html



Global Seasonal Productivity



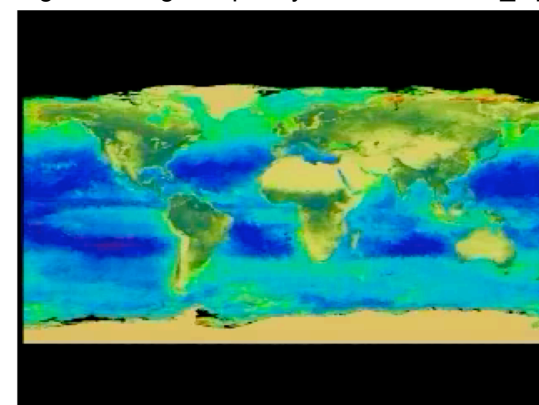
- Seasonal changes in biomass animations
 - www.gsfc.nasa.gov/topstory/20010327colors_of_life.html



Global Seasonal Productivity

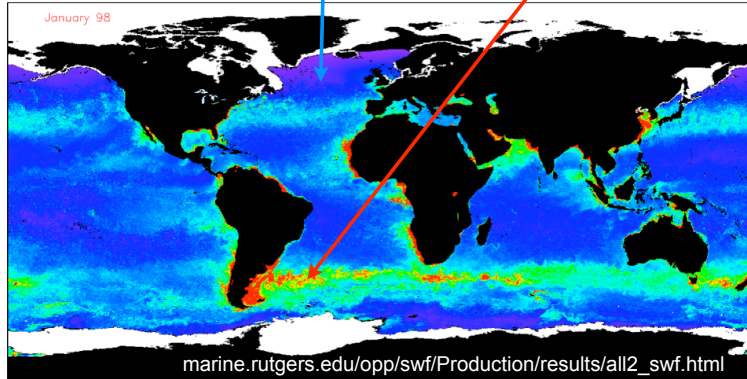


- Seasonal changes in biomass animations
 - www.gsfc.nasa.gov/topstory/20010327colors_of_life.html



Global Seasonal Productivity

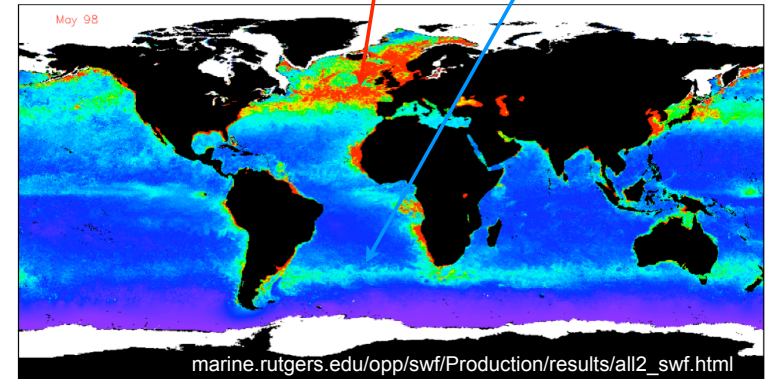
- Seasonal changes in biomass snapshots
 - January: Low biomass in N. Hemisphere, high in South



9

Global Seasonal Productivity

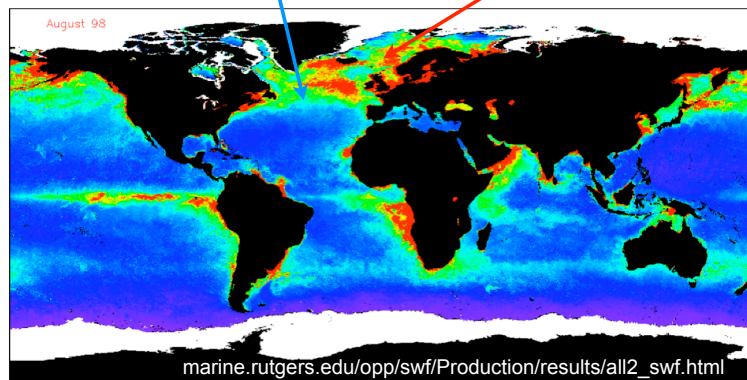
- Seasonal changes in biomass snapshots
 - May: Spring bloom in N. Hemisphere, decrease in South



10

Global Seasonal Productivity

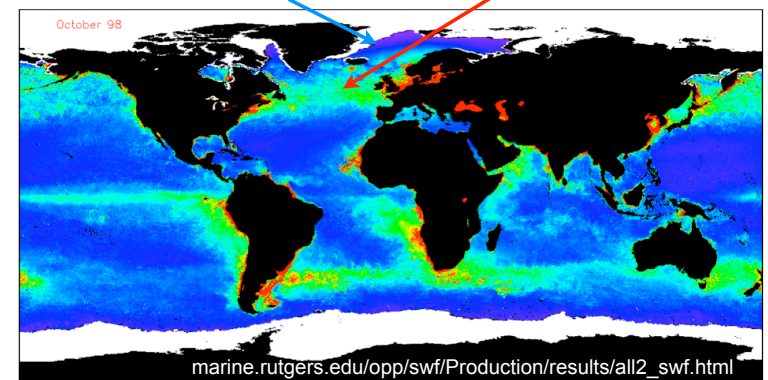
- Seasonal changes in biomass snapshots
 - August: Decline in N. Hemisphere, biomass moves north



11

Global Seasonal Productivity

- Seasonal changes in biomass snapshots
 - October: Decline in N. Hemisphere, biomass moves south



12