

Ocean Productivity

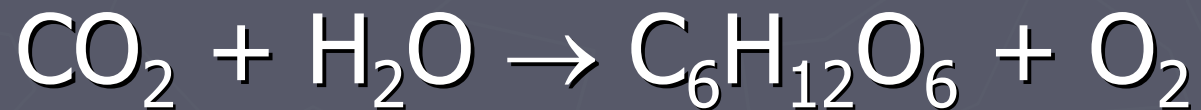
Chapter 15.3

Definitions

Productivity: to produce something (food, cars)

Primary Productivity: production of food through photosynthesis (plants, algae) or chemosynthesis (bacteria).

Photosynthesis: Algae and plants use light energy from the sun to make food (sugar).



Limiting factors: Sunlight and the availability of nutrients.

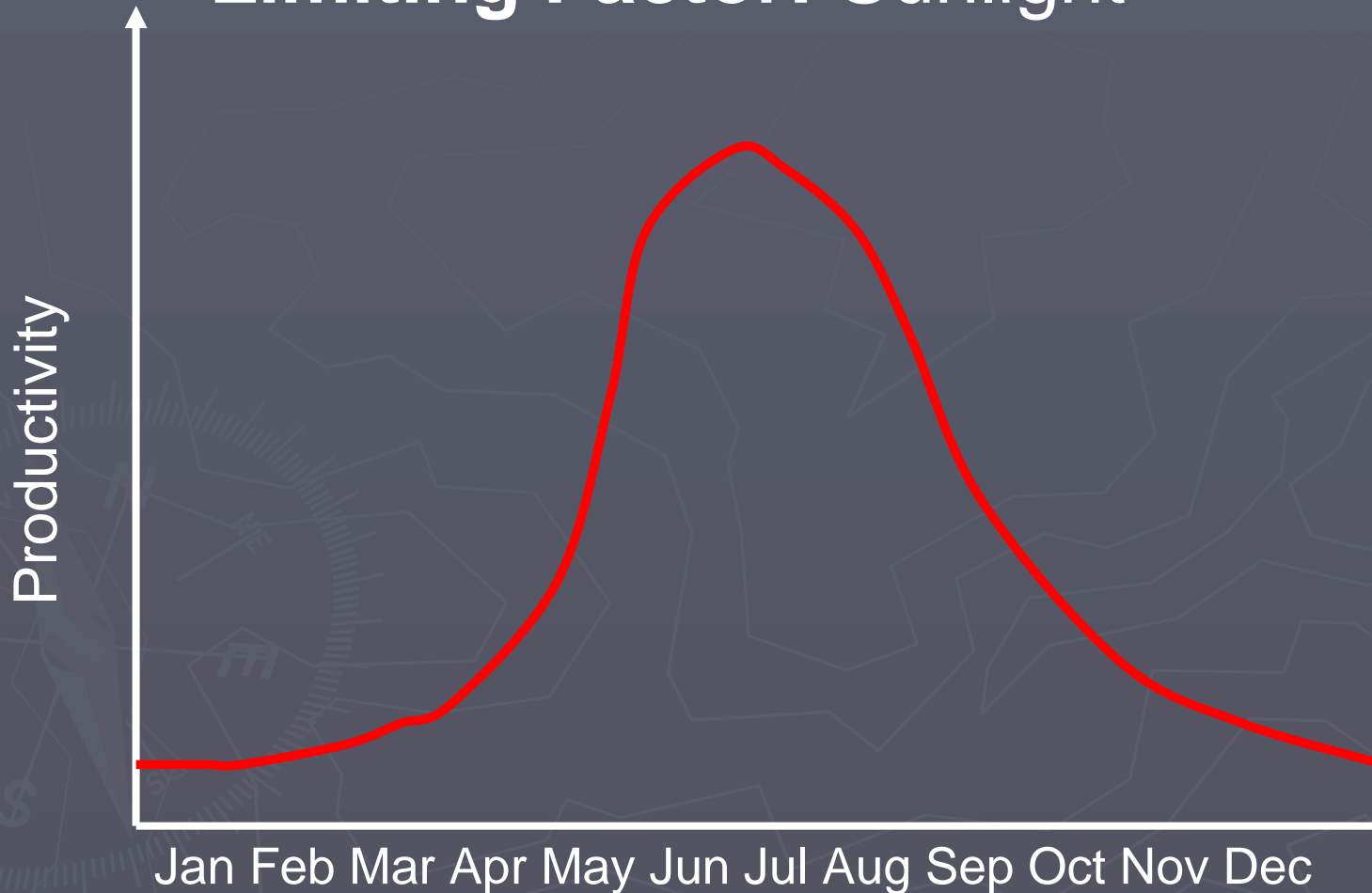
Chemosynthesis: Bacteria use the energy stored in chemicals (hydrogen sulfide) to make food (sugar).

- ▶ Important source of productivity near hydrothermal vents.

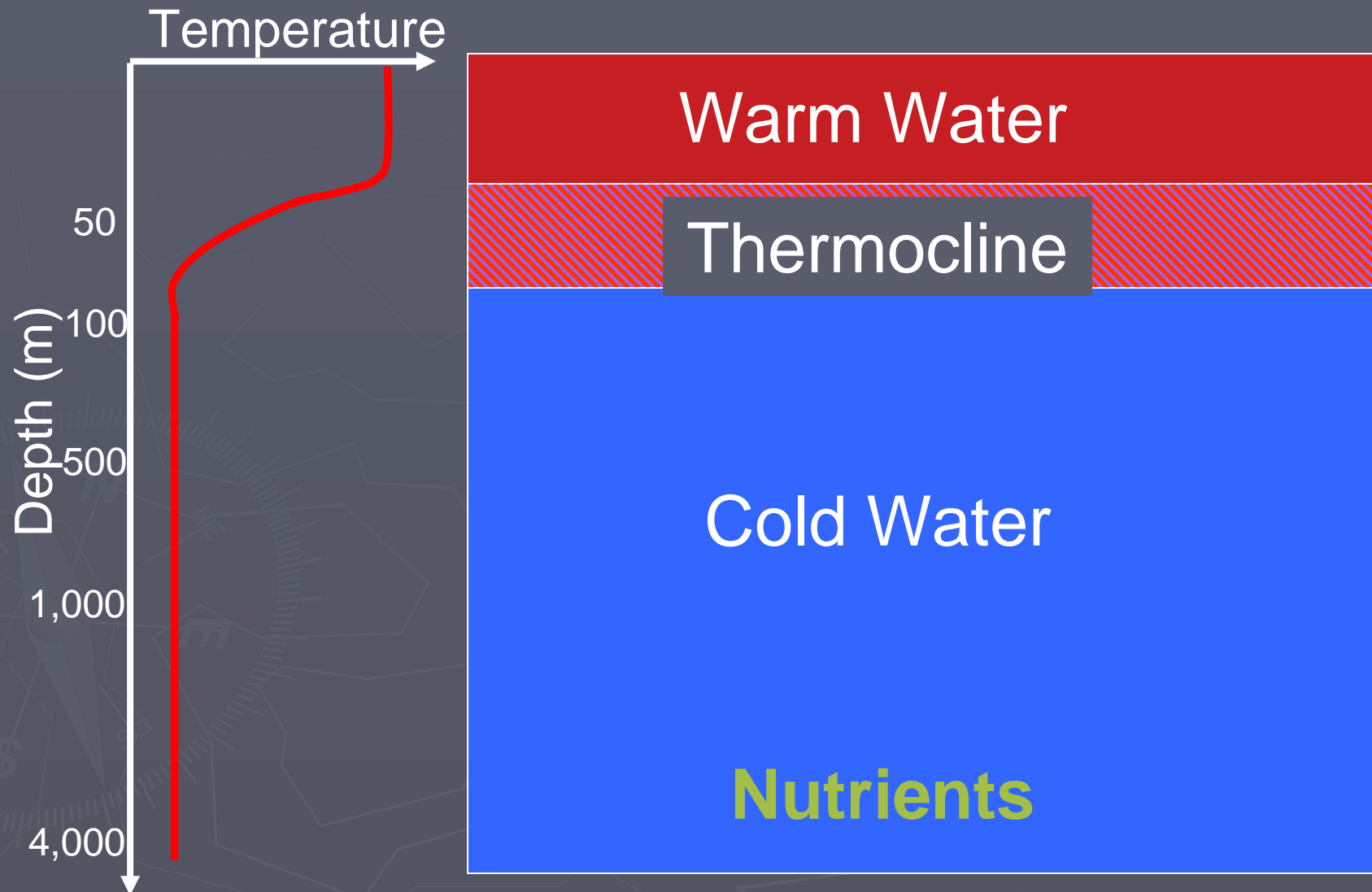


Productivity in Polar Oceans

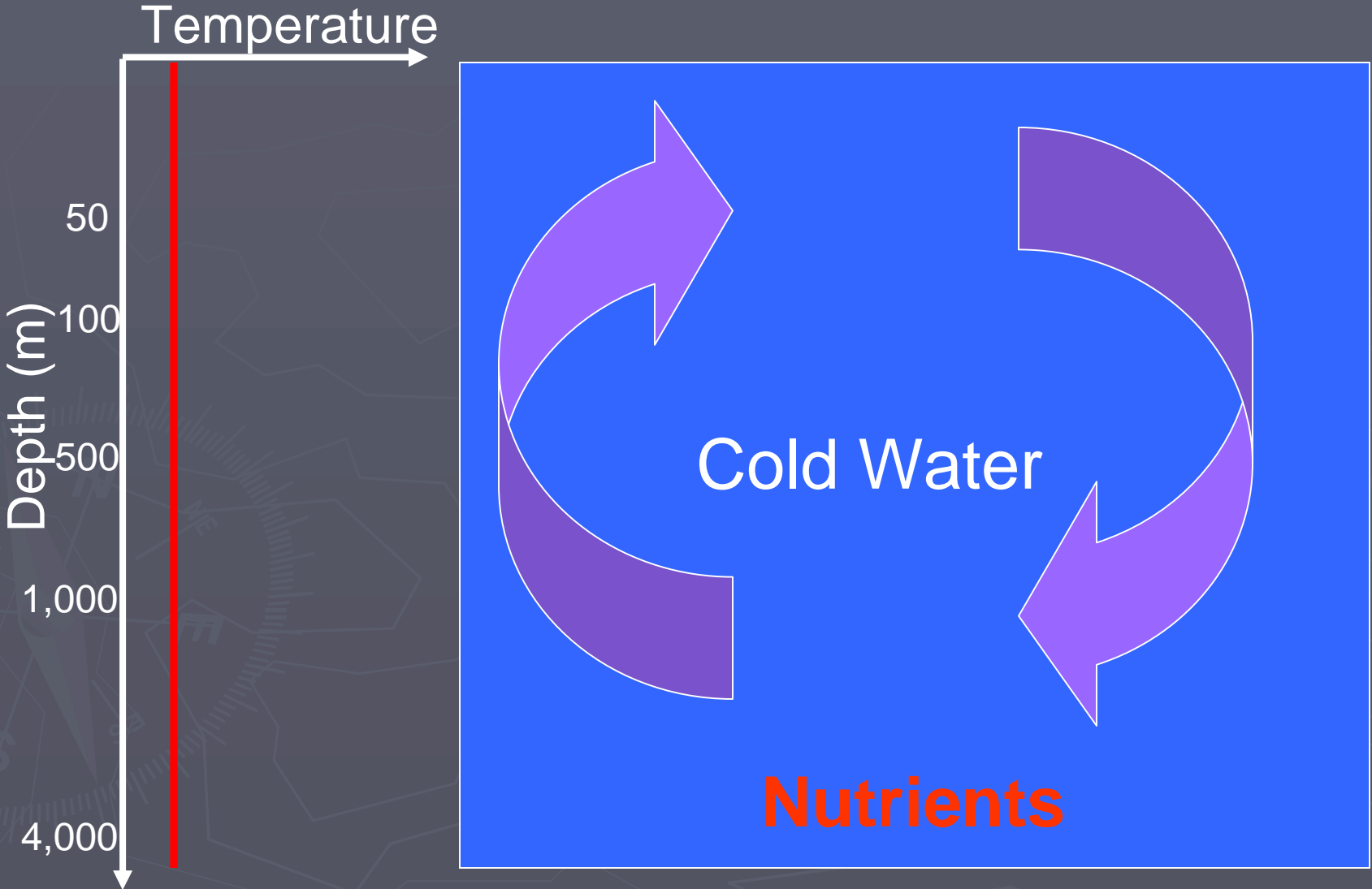
Limiting Factor: Sunlight



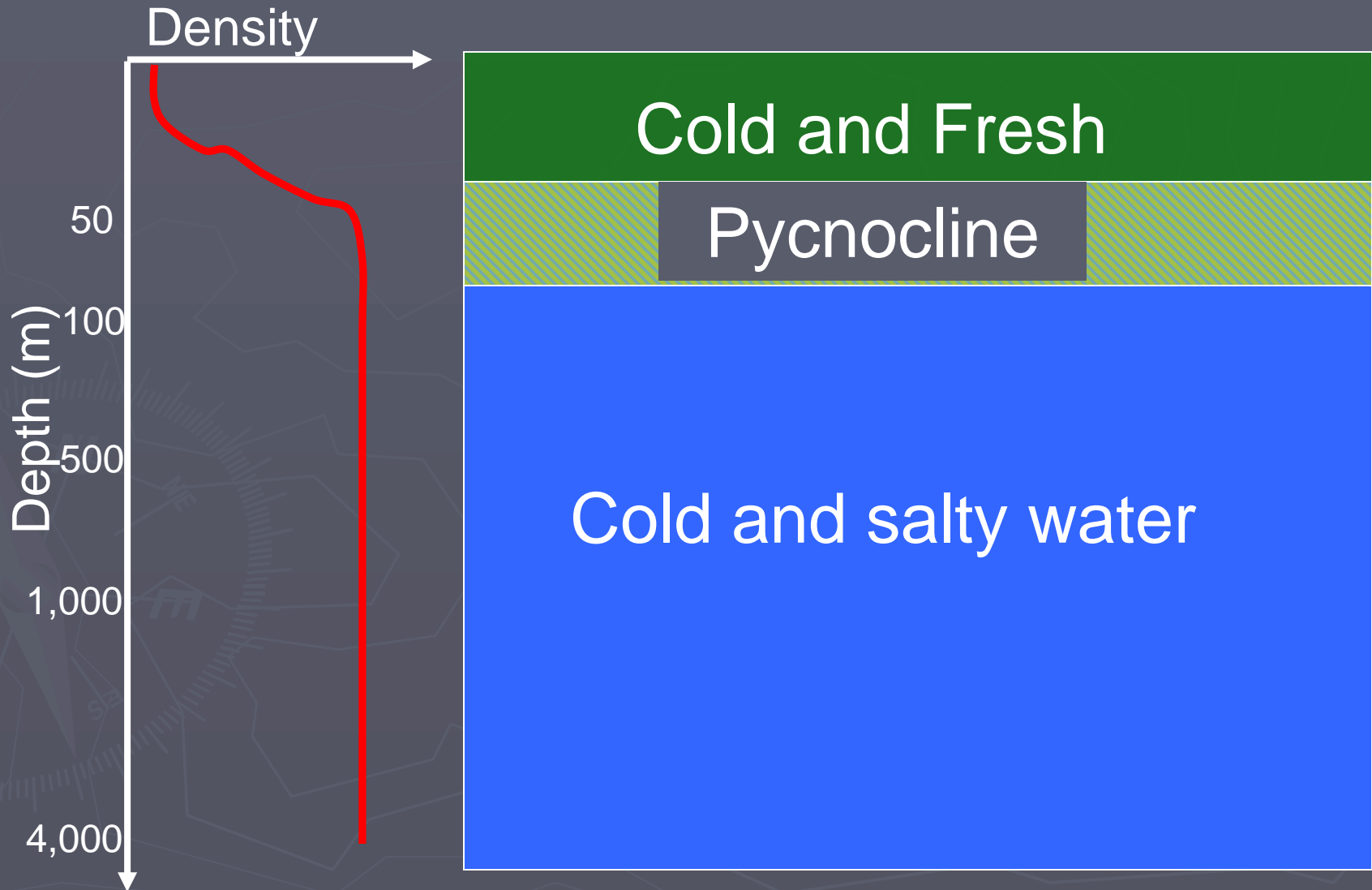
But, the story is more interesting...



In the winter...

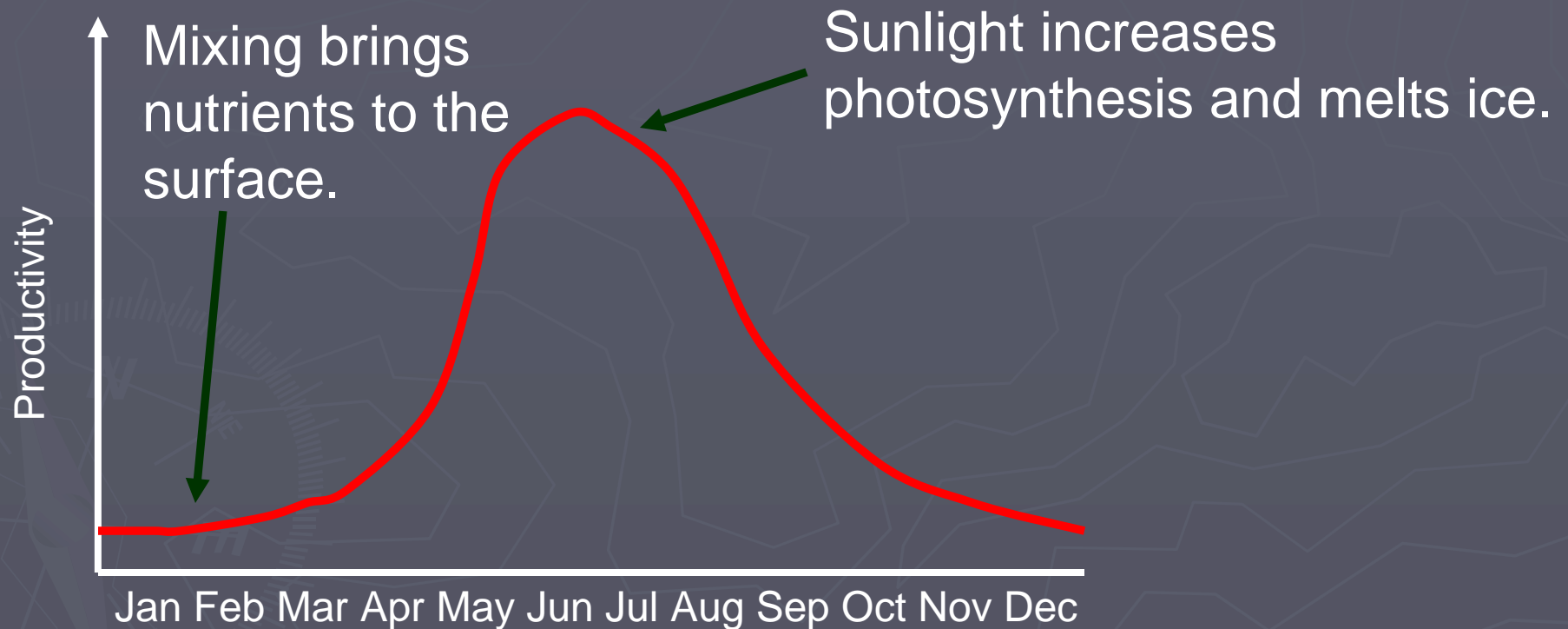


In Summer, the Ice Melts



Productivity in Polar Oceans

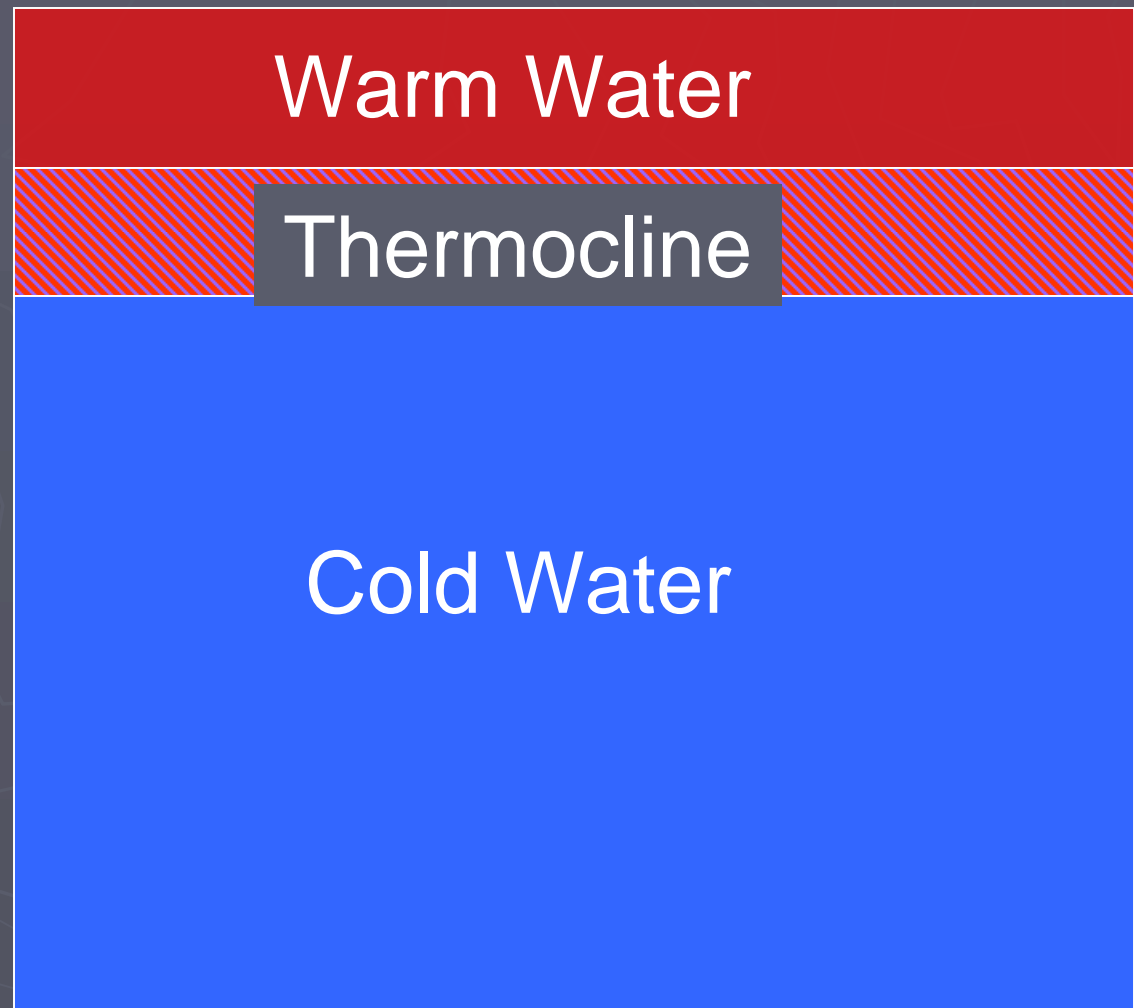
Limiting Factor: Sunlight



Productivity in Tropical Oceans

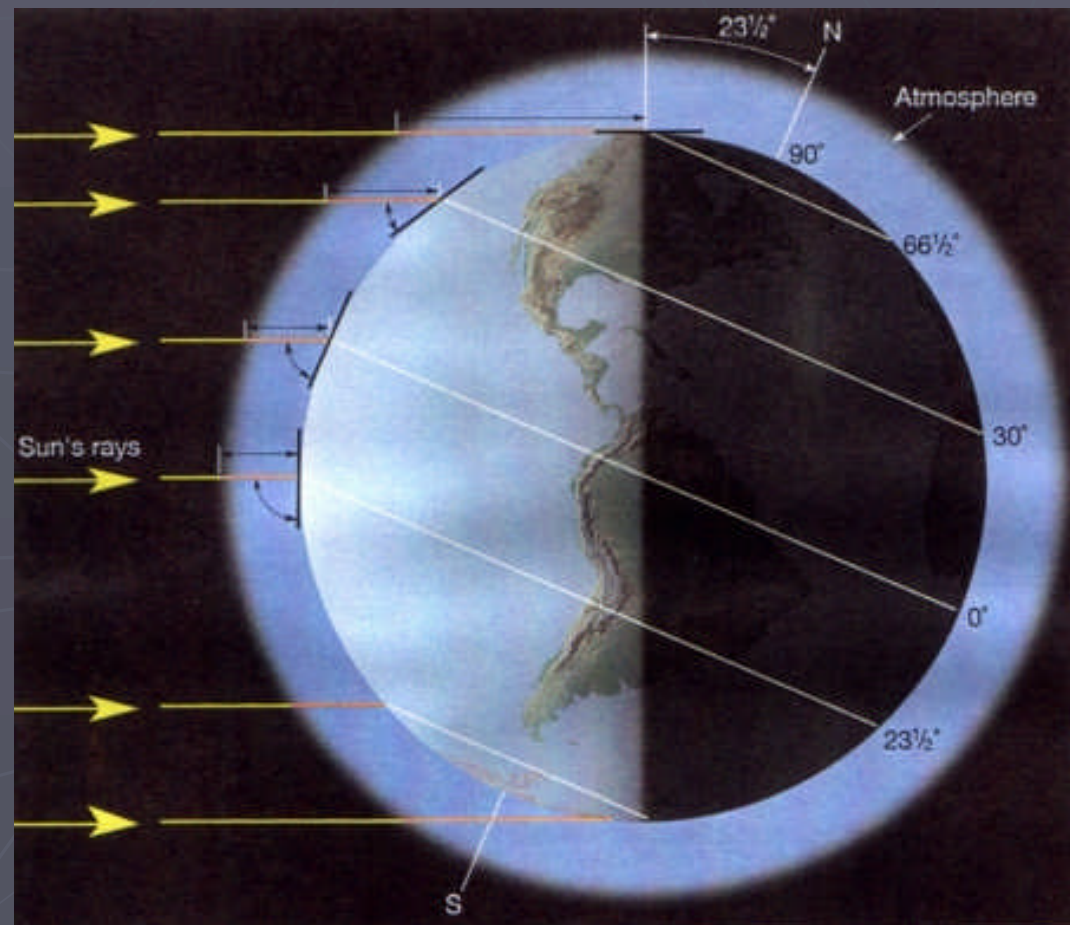
Limiting Factor: Nutrients

Thermocline is present year-round, therefore, nutrients at the bottom cannot reach the surface.



Productivity in Temperate Oceans

The temperate areas are between the tropical and polar regions.



Assignment

1. Draw density-depth graphs for winter, spring, summer, and fall.
2. Draw a productivity-time graph to show productivity in the temperate regions throughout the year.