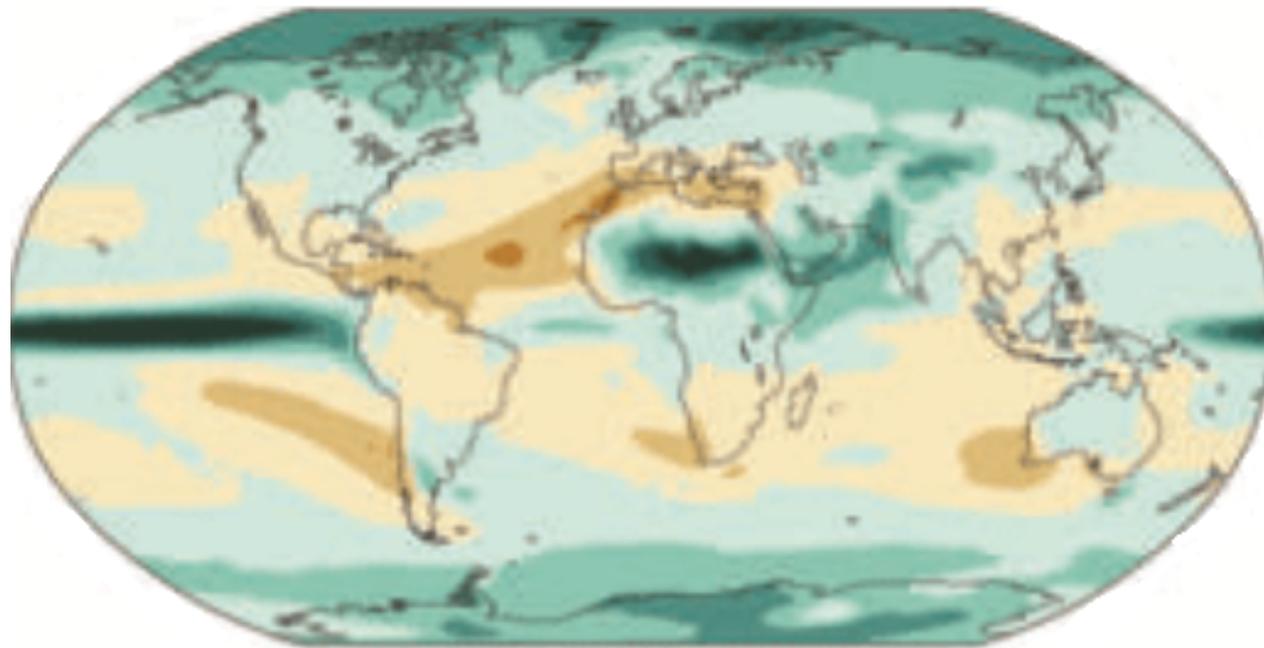
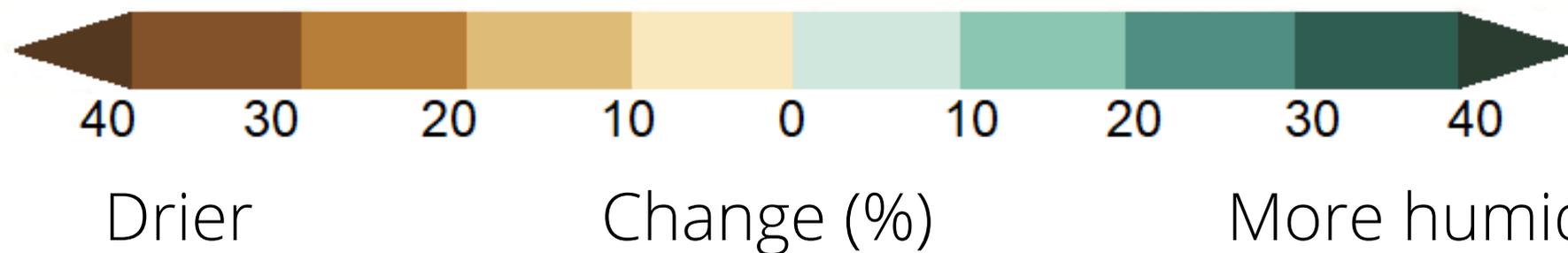
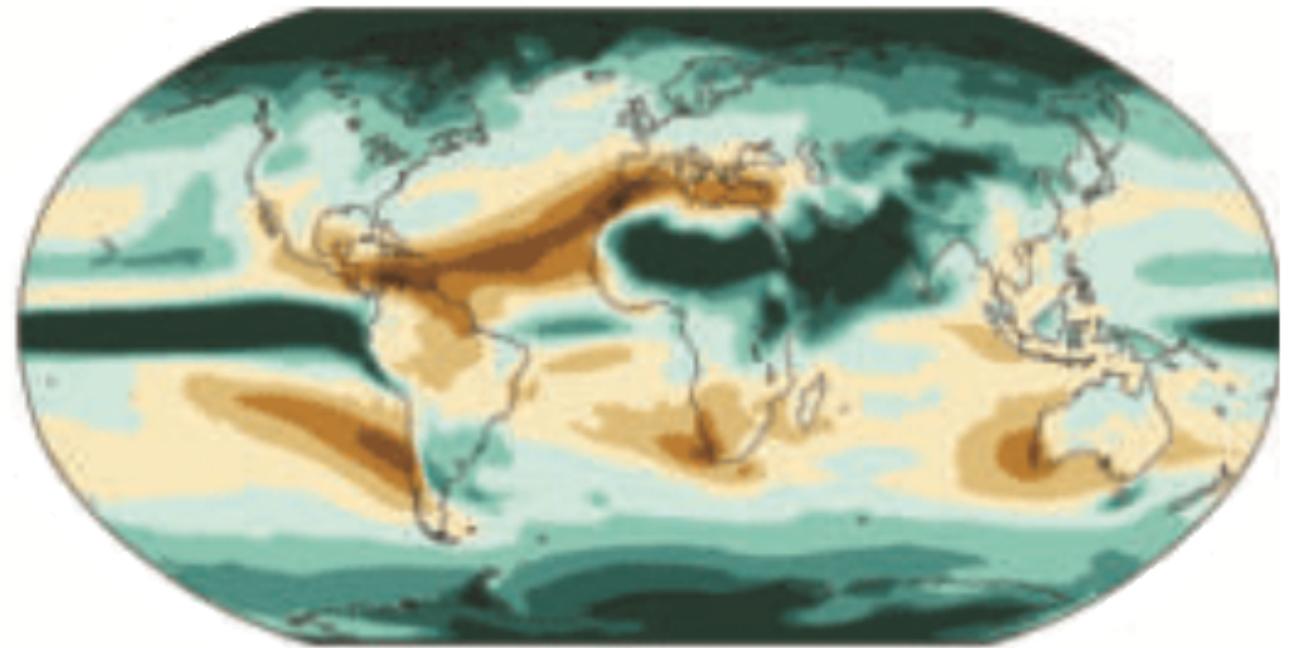


Increased precipitation at the poles

Simulated change for a +2°
global warming

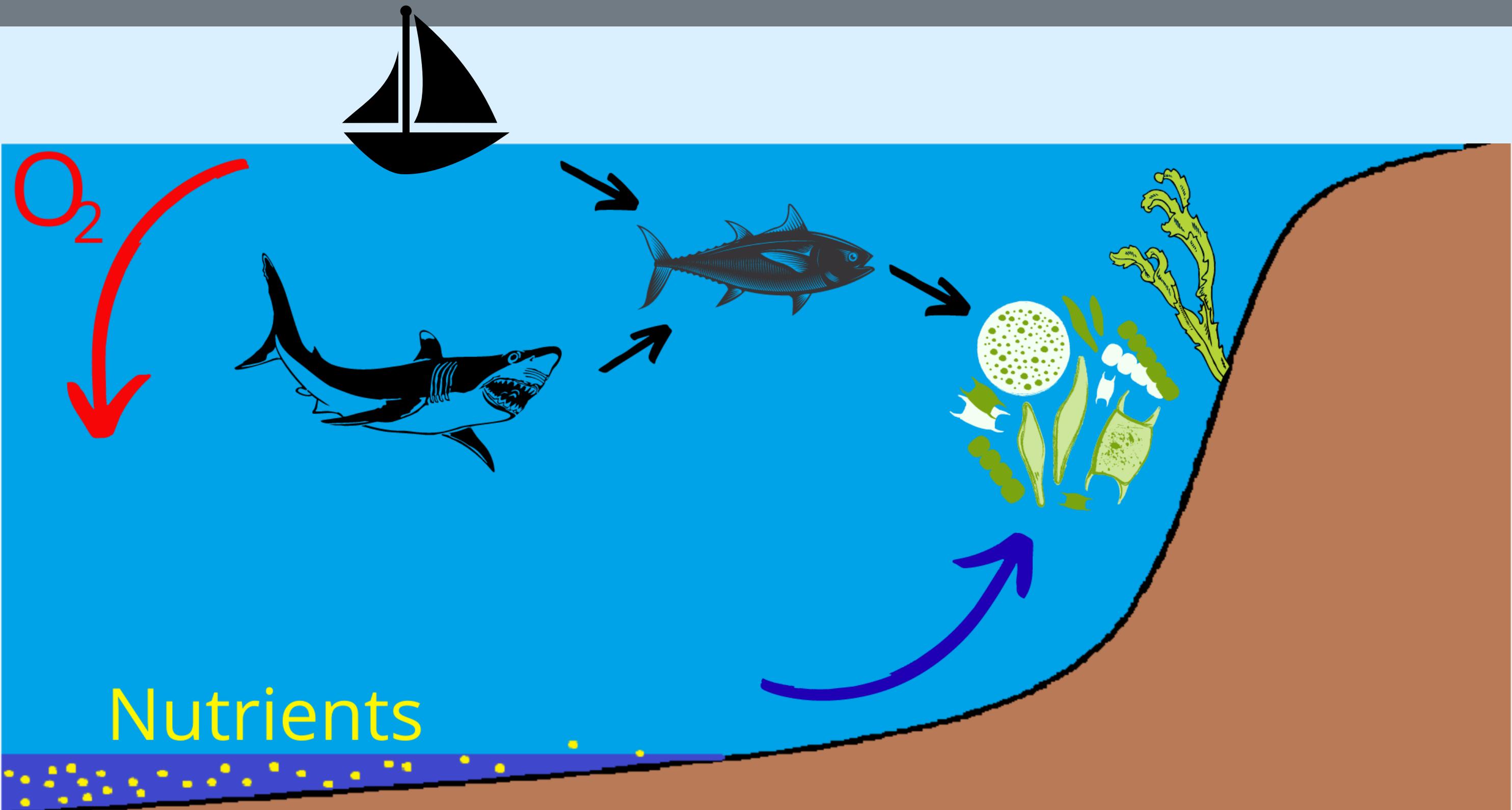


Simulated change for a +4°
global warming



With global warming, rainfall will intensify in some regions of the globe, especially at the poles.

Marine life cycle



With the slowdown of the marine currents that link the surface and the bottom of the oceans, surface plankton are no longer sufficiently supplied with nutrients, and it is the entire food chain that is endangered.

Cooling of Europe and North America



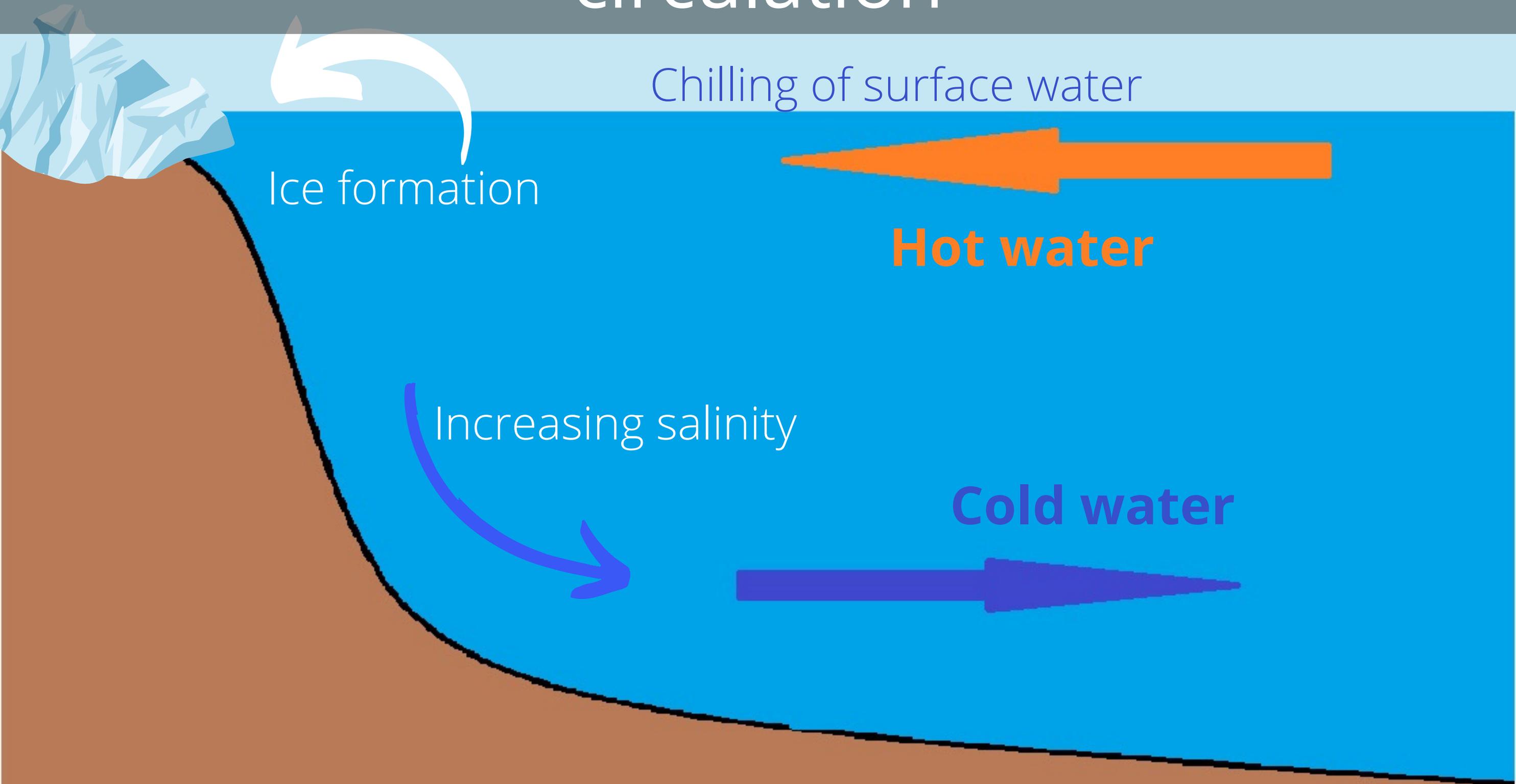
The slowdown of the thermohaline circulation in the Atlantic Ocean will result in the relatively rapid cooling (a few decades) of Europe (1 to 2 °) and the North American East Coast (2 to 3 °)
Nothing Hollywood though, so.

Increased and enhanced effects of climate disasters in the Atlantic Ocean



The strength and frequency of hurricanes will increase as rainfall differences increase between dry and wet areas.

Functionning of the thermohaline circulation



The thermohaline circulation (THC) is based on density difference at points where "hot" water meets ice, it becomes colder and more salty, to go deep. The melt of the ice sheet adds soft water and decrease the loss of temperature, making the mechanism diminish.

Weakening Gulf Stream





The Gulf Stream is part of the ocean's thermohaline circulation. It could weaken in response to freshwater input from Greenland's melting ice sheet. This could disrupt the water cycle even more and reduce the ocean's capacity to absorb more carbon and heat.

Marine Biodiversity

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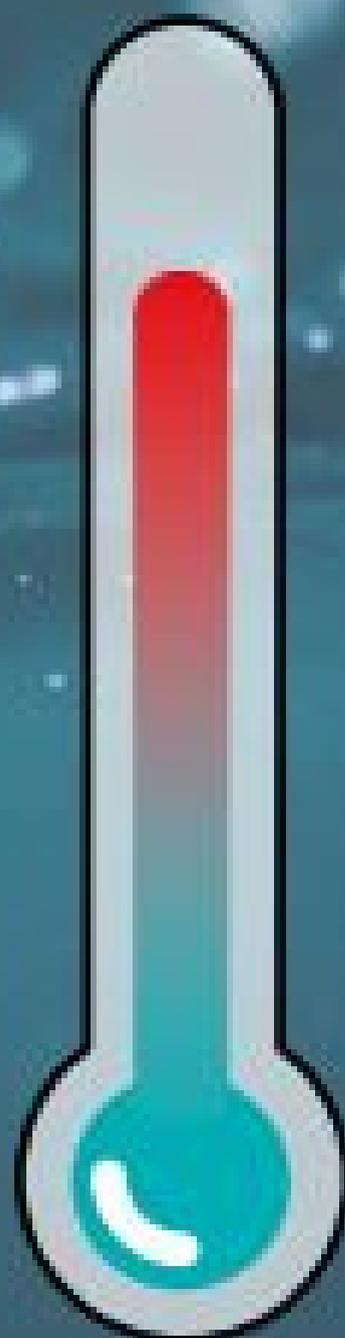


Pteropods and coccolithophores are at the base of the ocean food chain. If they are driven to extinction, all marine biodiversity will be threatened.

Warming ocean waters also threaten marine biodiversity.

Rising Water Temperatures

17

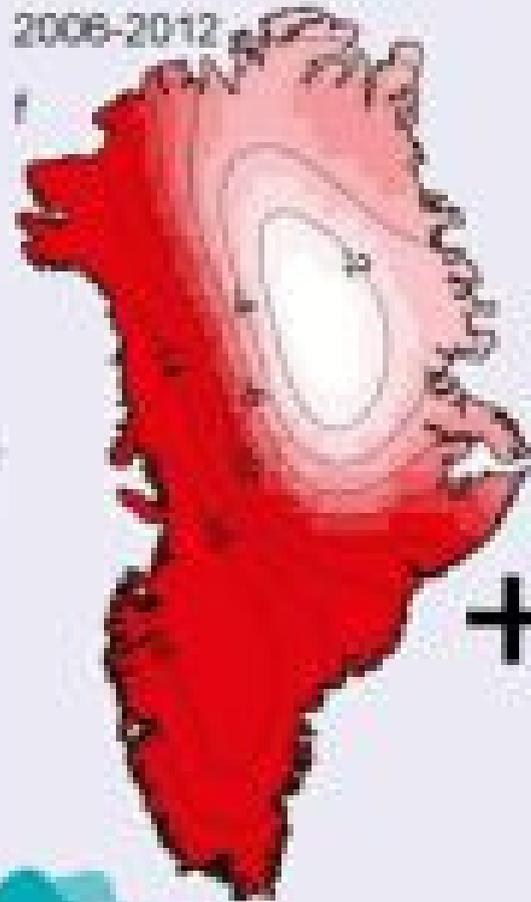




Oceans absorb 91% of the energy accumulated on Earth. The water temperature has therefore increased, especially close to the surface. Water expands as it warms.

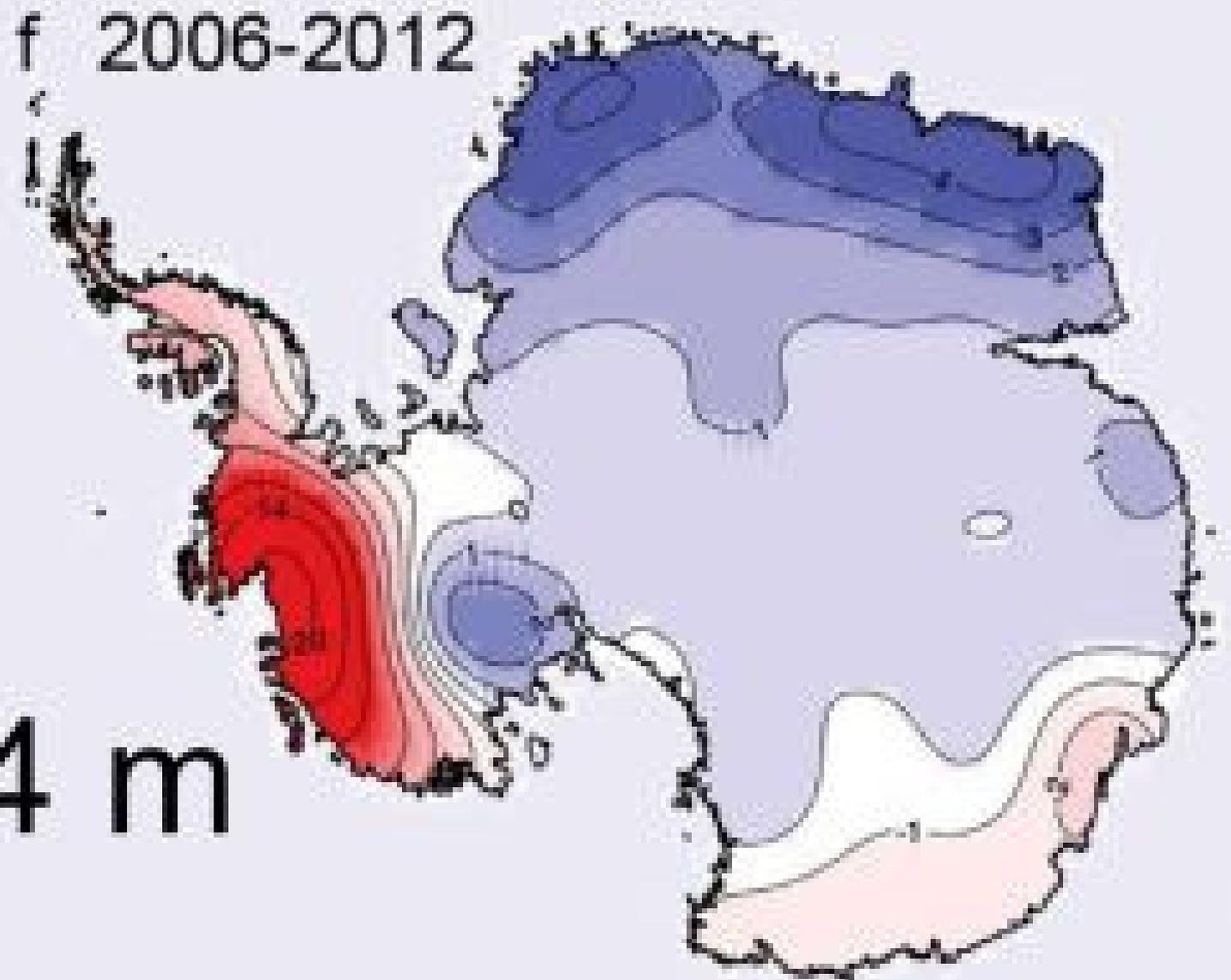
Melting Ice Sheets

2006-2012



+ 7 m

f 2006-2012



+ 54 m

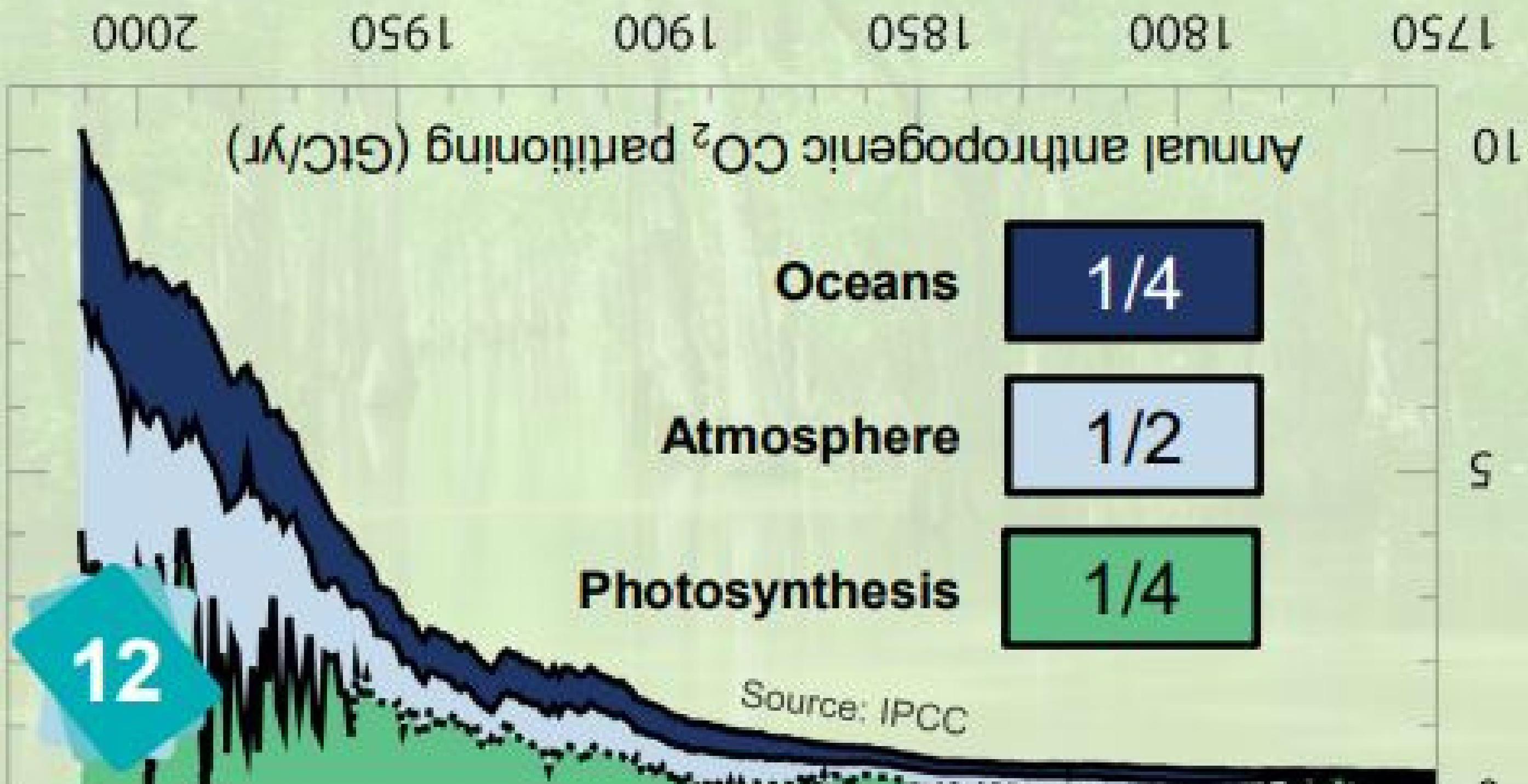
19

Source: IPCC



Greenland and Antarctica are ice sheets (or continental glaciers). If they were to completely melt, they will cause the sea level to rise by 7 metres for Greenland and 54 metres for Antarctica. During the last ice age, ice sheets were so much larger that the sea level was 120 metres lower than today.

Carbon Sinks



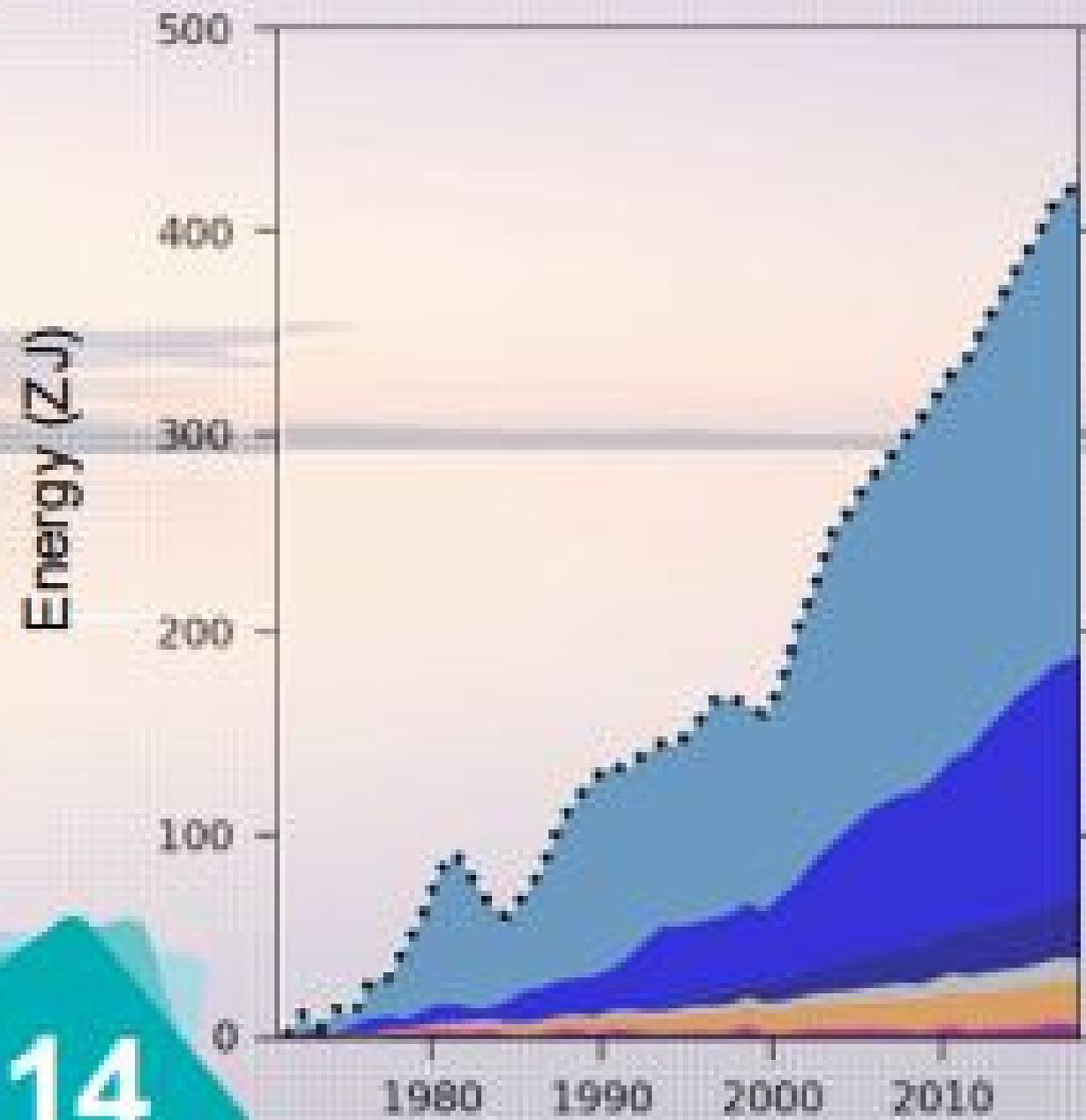


Half of the CO₂ we emit every year is absorbed
by carbon sinks:

- 1/4 by vegetation via photosynthesis
- 1/4 by the oceans

The remaining half stays in the atmosphere.

Energy Budget



91%

Ocean

3%

Melting ice

5%

Soil

1%

Atmosphere

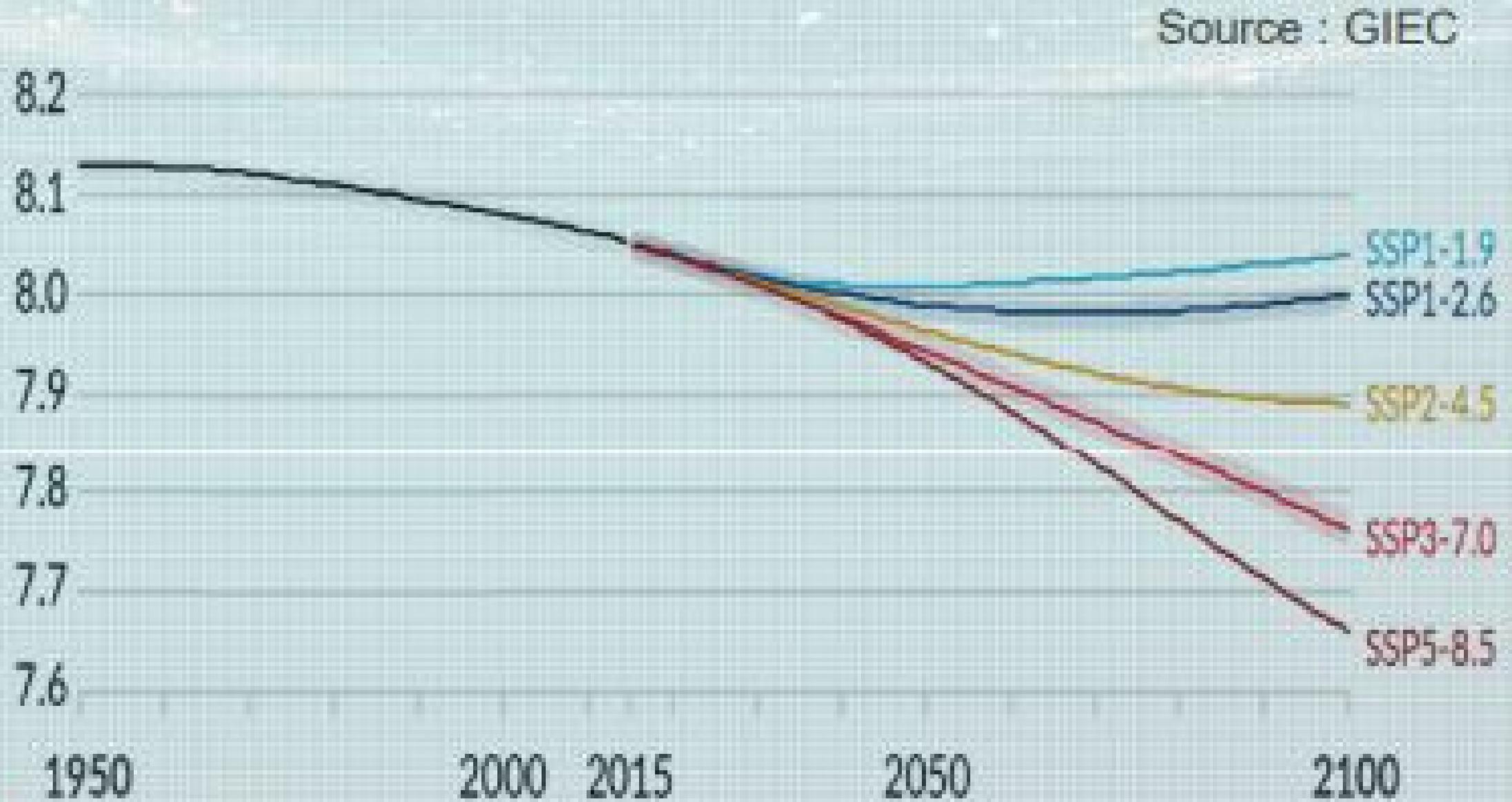
Source: IPCC



This graph explains where the energy accumulated on Earth due to radiative forcing goes. It warms up the ocean, melts ice, dissipates into the ground and warms up the atmosphere.

Ocean Acidification

Ocean acidification according to RCP scenarios (pH)





When CO_2 dissolves in the ocean, it turns into acid ions (H_2CO_3 and HCO_3^-). This makes the oceans more acidic and the pH drops.