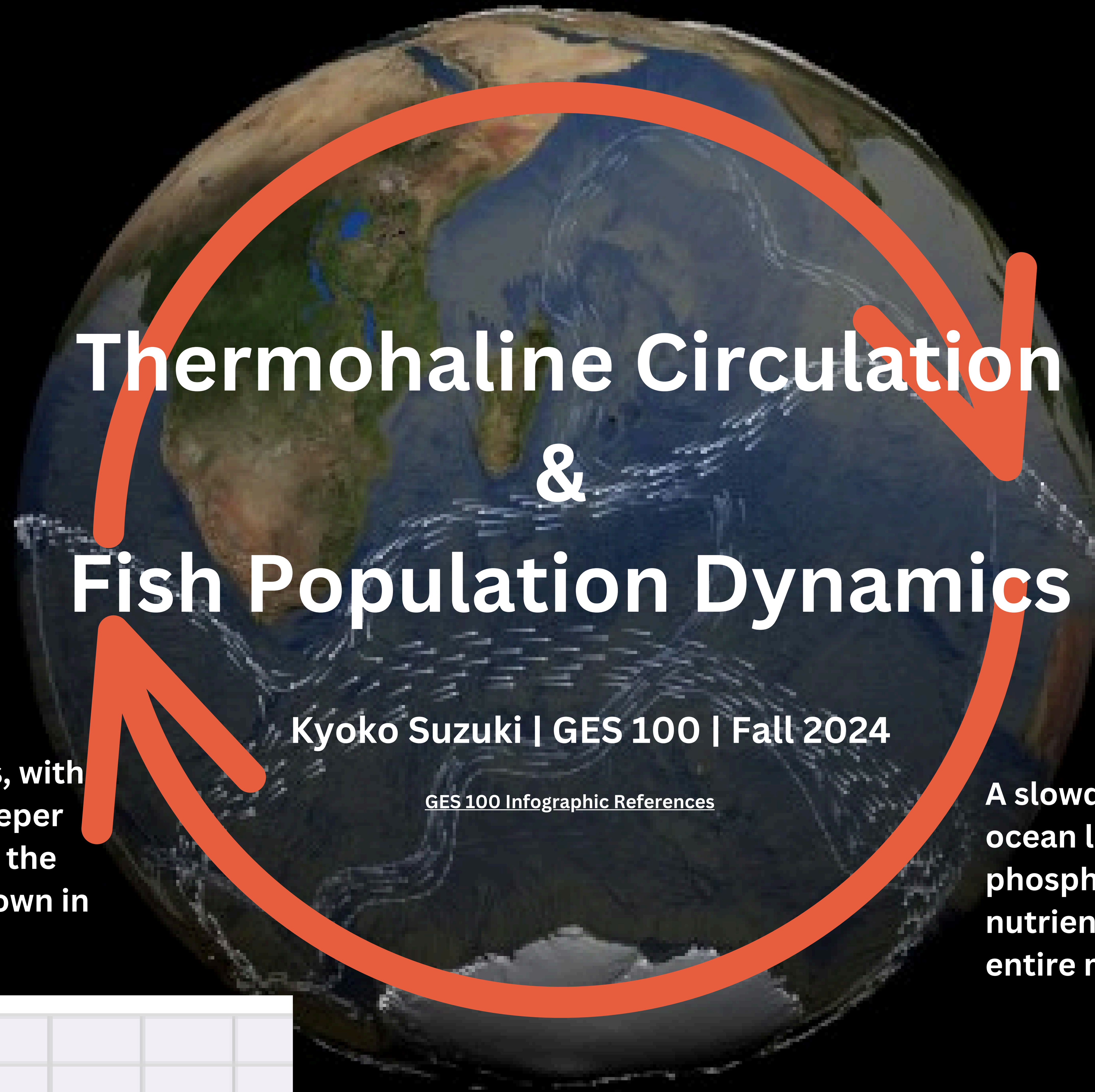
Thermohaline Circulation & Fish Population Dynamics

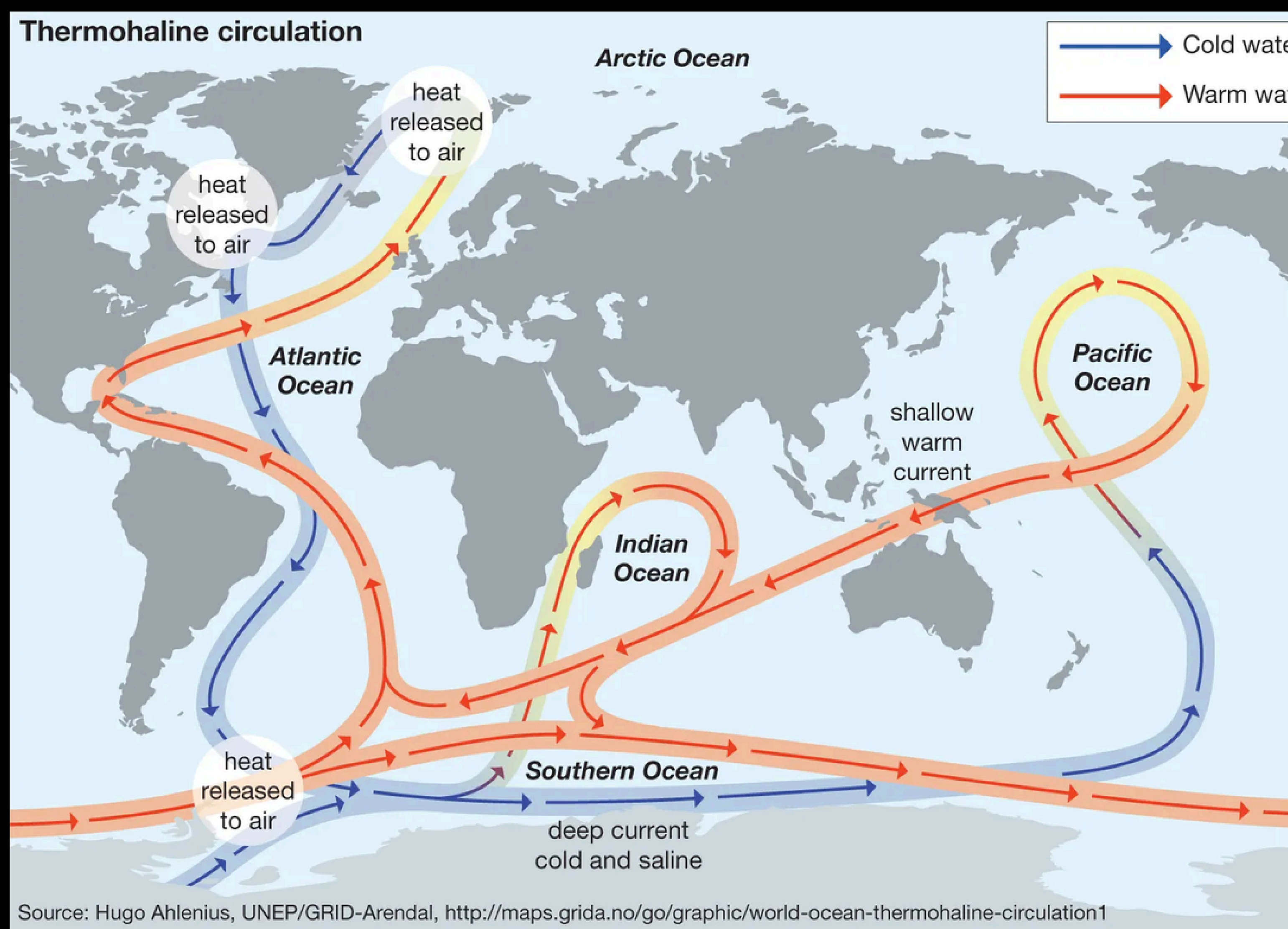
Kyoko Suzuki | GES 100 | Fall 2024

GES 100 Infographic References



1: What is Thermohaline Circulation (THC)

Known as the “Global Ocean Conveyor Belt”, it is a deep-ocean current that carries oxygen from the surface to the deep sea and nutrients from back up to surface water. This process is driven by differences in density controlled by temperature (thermo) and salinity (haline).



2: Climate Change Slowing the Circulation

Due to climate change, sea water temperature is rising and salinity is decreasing as a result of melting ice sheets. Climate change may have a direct impact on global ocean circulation, slowing the entire circulation cycle.

3: Biogeochemical Cycle

A slowdown in THC reduces oxygen transport to deeper ocean layers and disrupts upwelling, trapping nutrients like phosphates and nitrates in the deep sea. This lack of surface nutrients limits plankton growth, which can disrupt the entire marine food chain.

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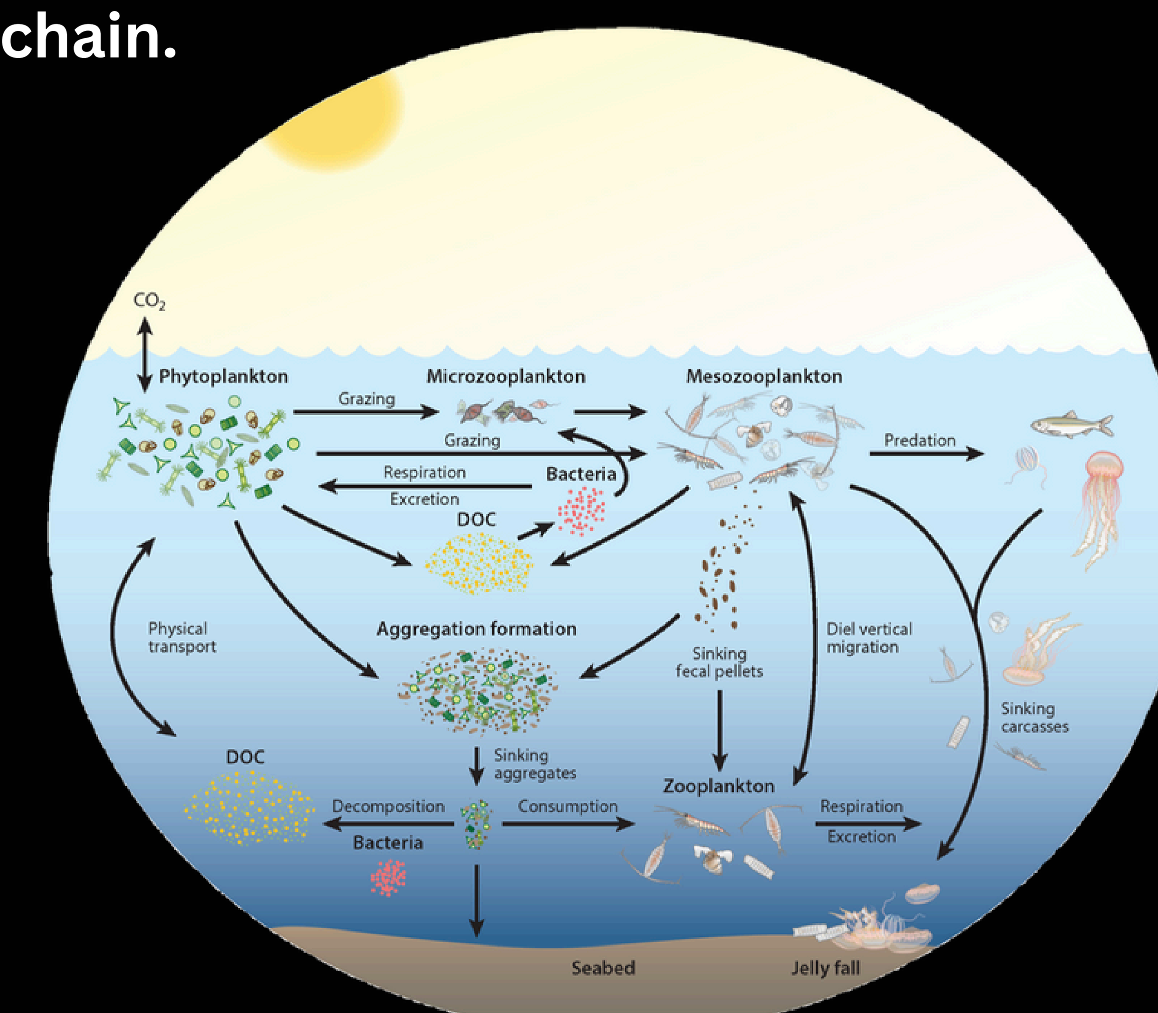

4: Impacts on the Fish Population Dynamics

The data shows changes in fish population dynamics, with more marine species migrating northward and to deeper waters. These shifts have had noticeable impacts on the fishing community, possibly as a result of the slowdown in THC.