Deep dive: What do polar oceans conceal?

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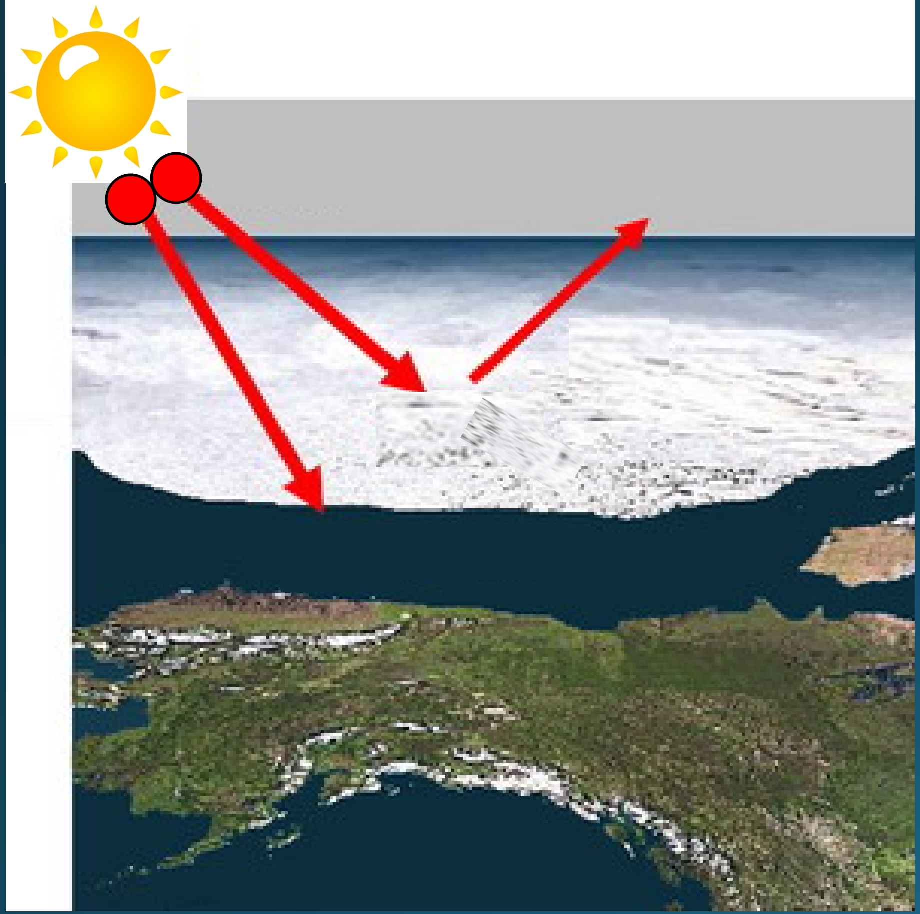

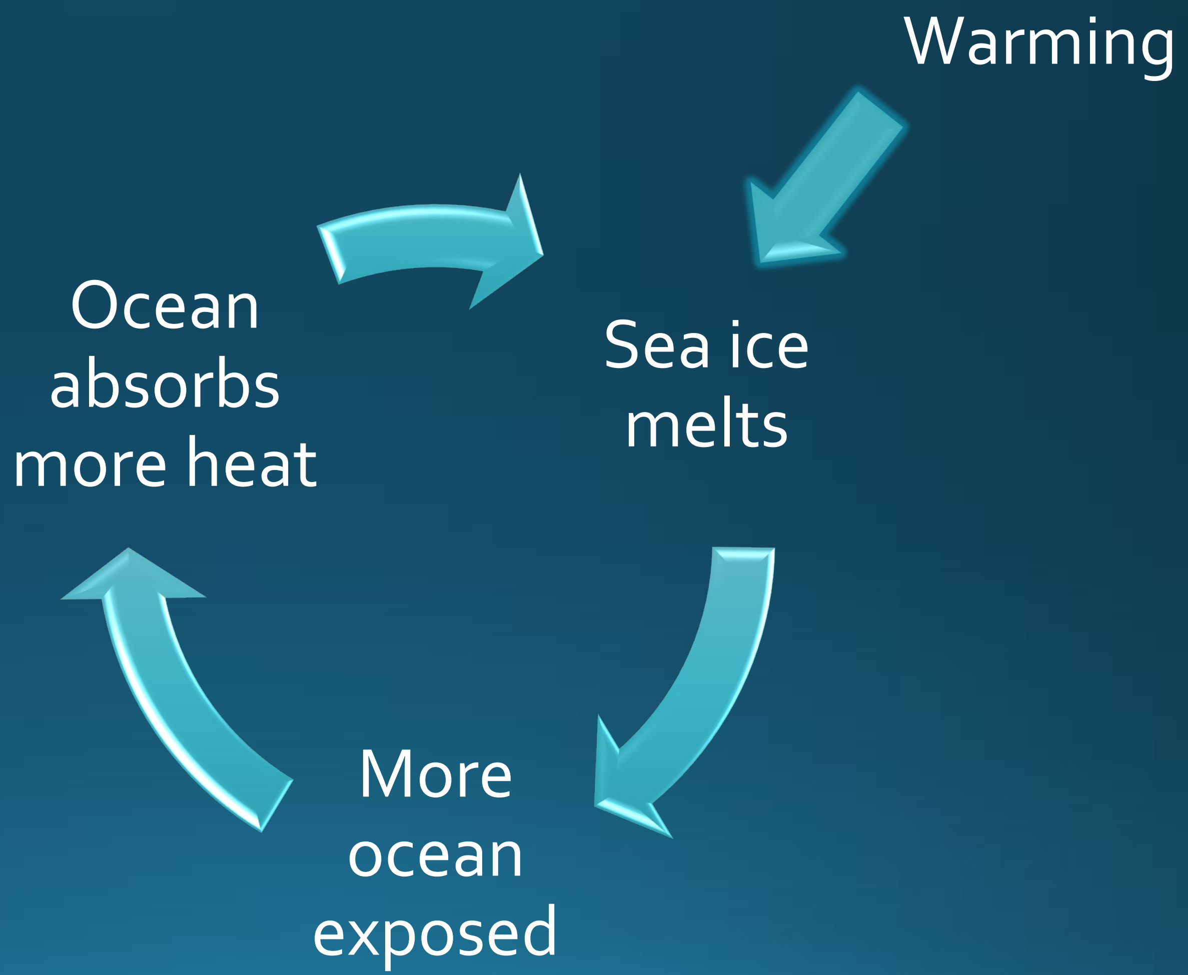

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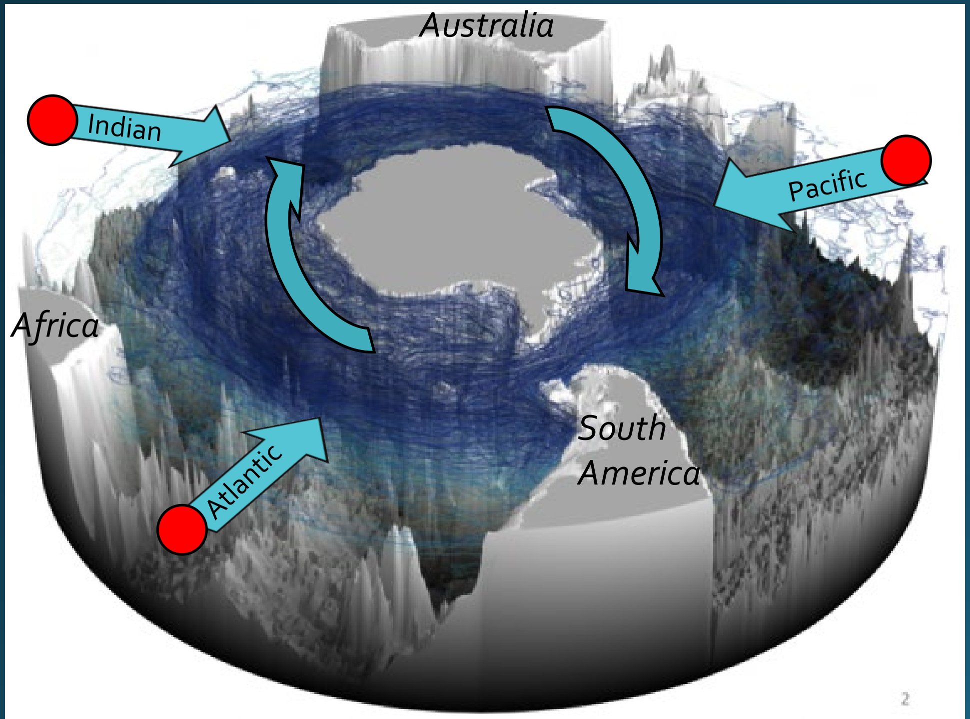
Schematic of the Southern Ocean circulation



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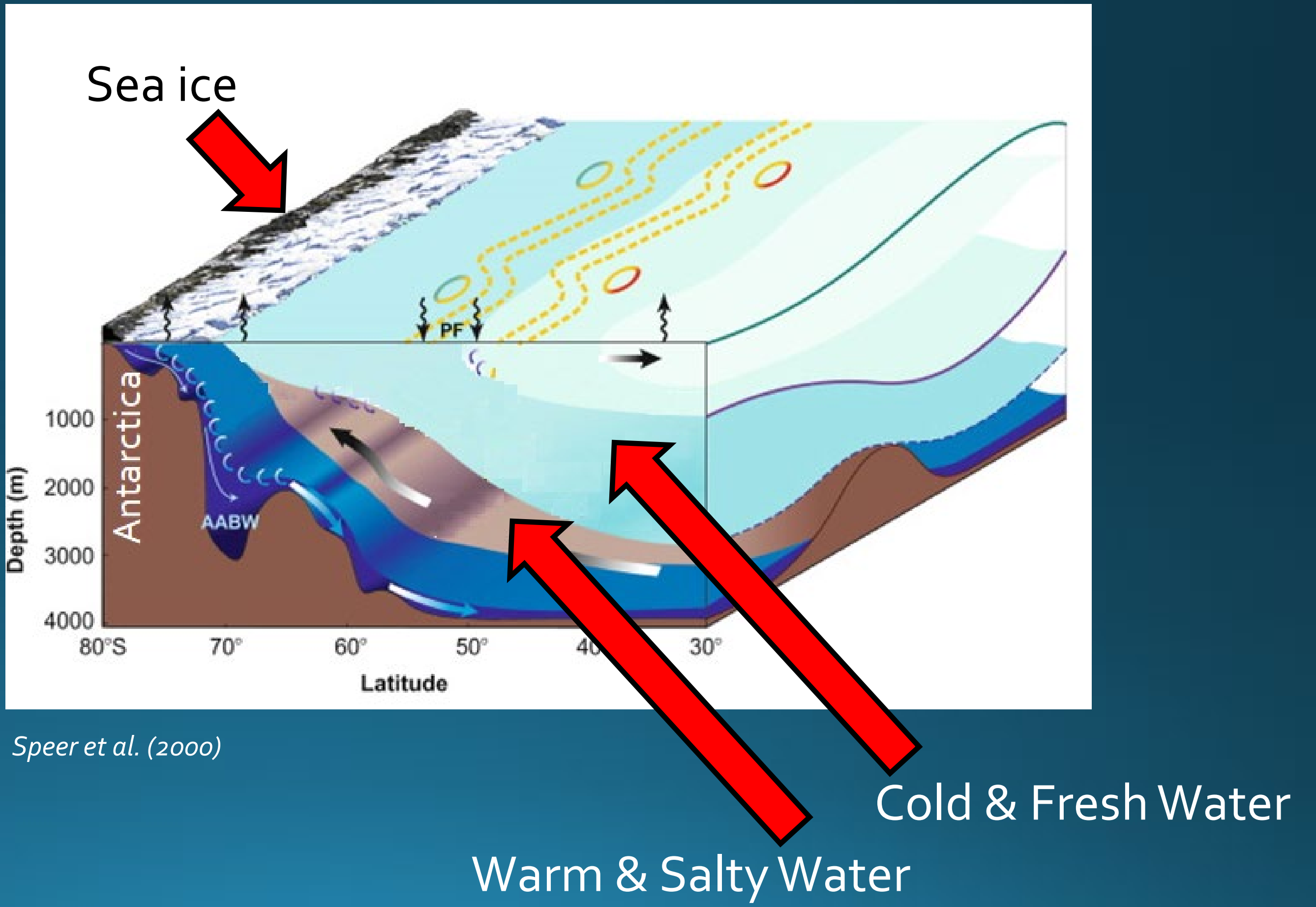
Vertical slice through the Southern Ocean



Speer et al. (2000)

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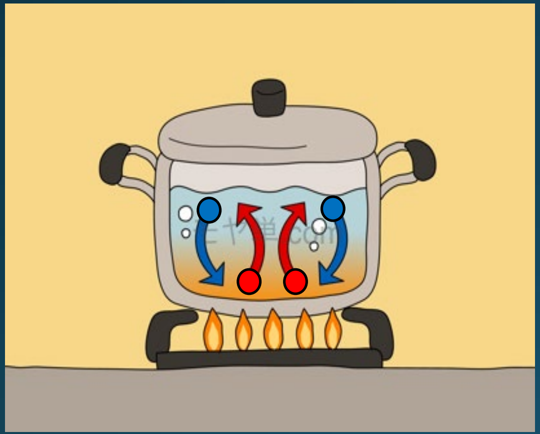
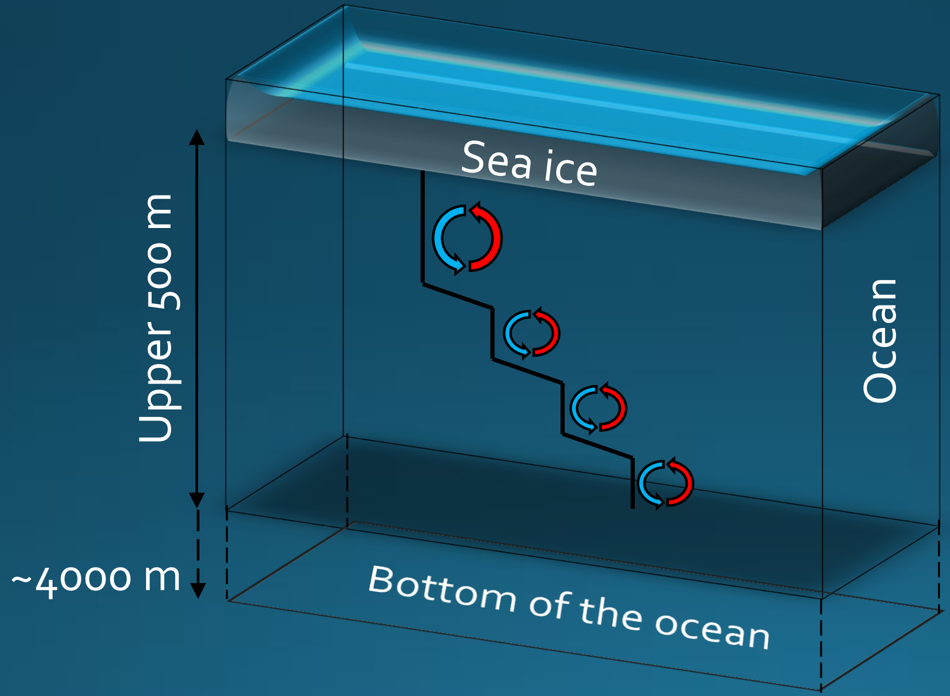
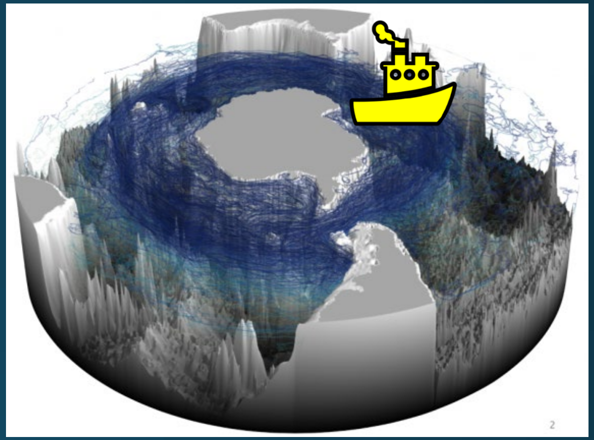
Convection



Typical vertical structure





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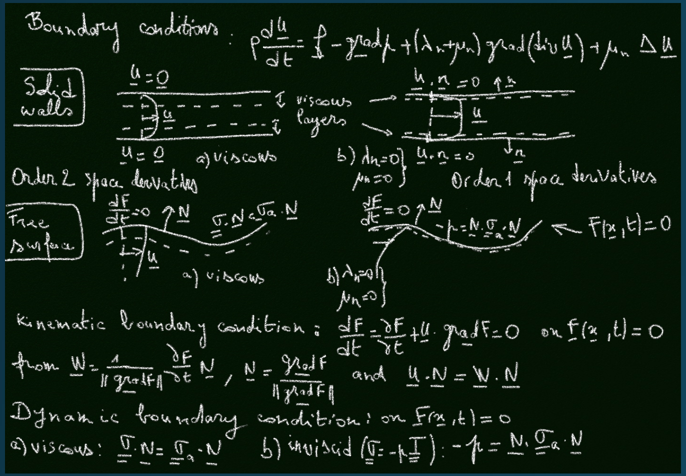

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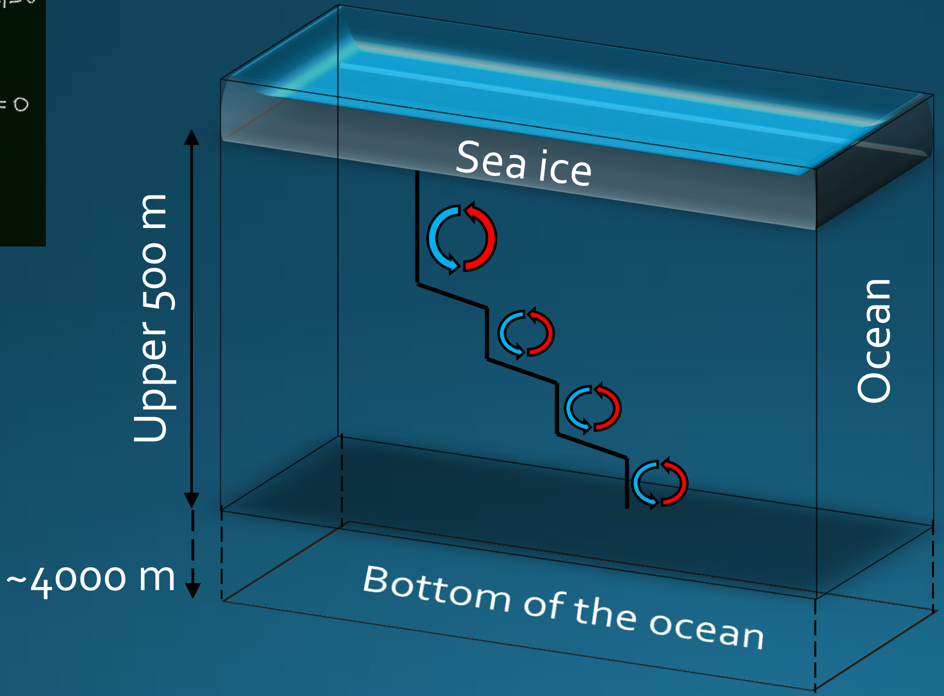
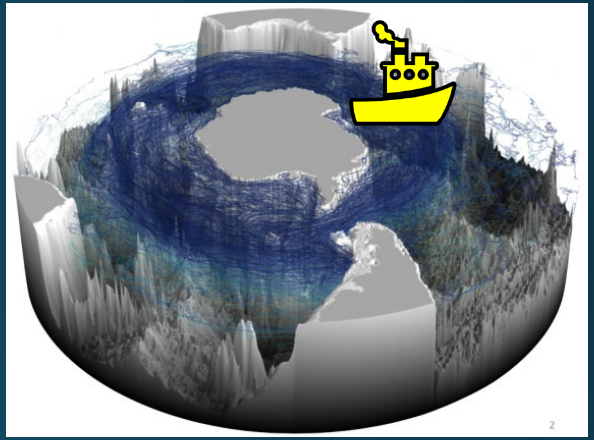
Typical vertical structure





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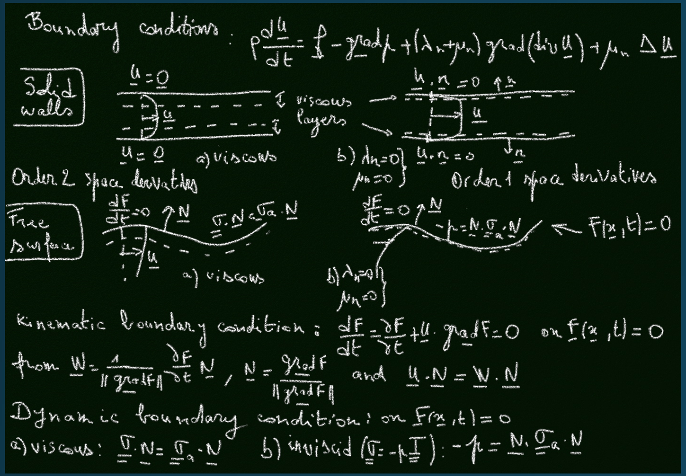

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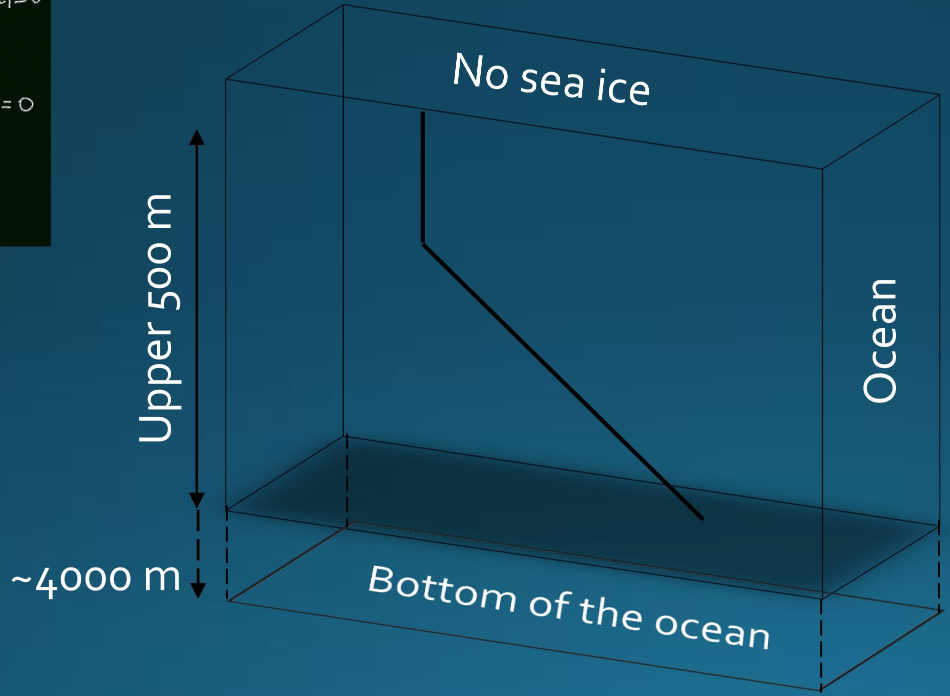

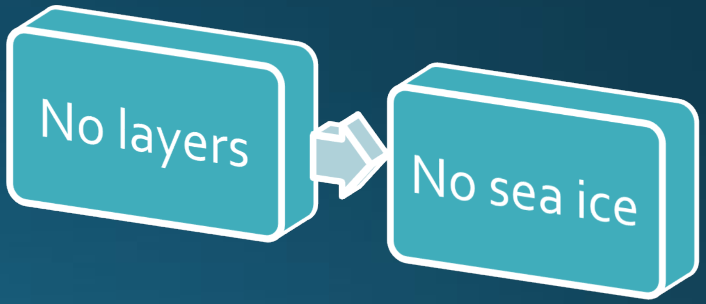

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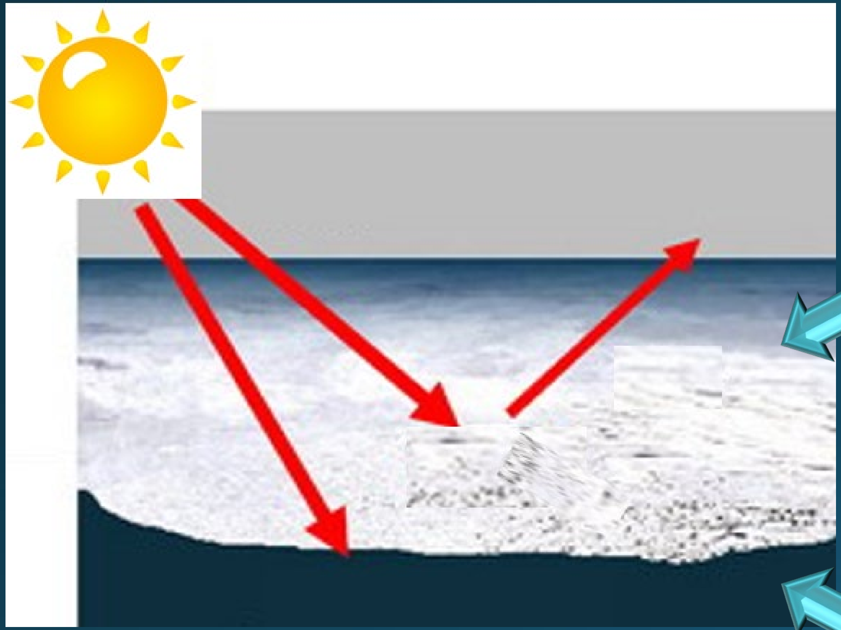

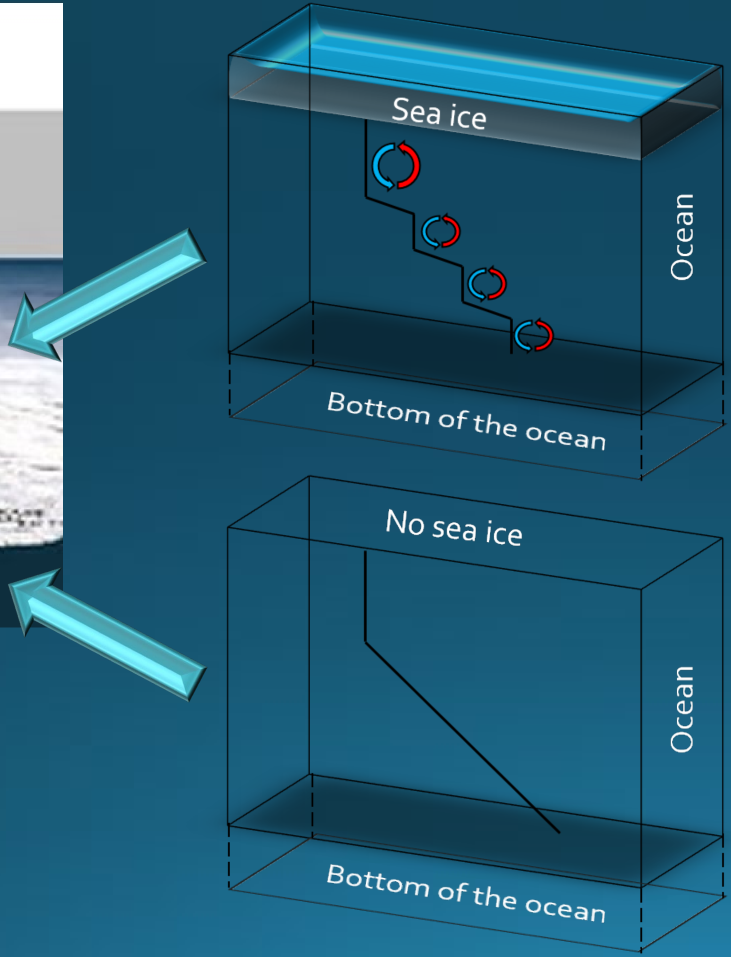

Take home messages:

1. In the Southern Ocean, sea ice forms if there are layers in the upper ocean.
2. Layers slow down the overall ocean warming.

Implication:

Our results improve climate modeling.