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Climate responses to regional wind shifting

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By shutting down surface wind stress, MOC will become weaker. When AMOC collapses, STC in Pacific-Indian Ocean will become stronger in the Northern Hemisphere and weaker in the Southern Hemisphere. But when Pacific-Indian Ocean STC declines, AMOC's strength won't change. Less mass transport will lead to heat transport decrease. Then Atmospheric heat transport (AHT) increases to compensate a smaller Oceanic heat transport (OHT). Best compensation happens when OHT is weakened by AMOC's collapse, while the worst compensation happens when OHT is weakened by Pacific-Indian Ocean STC's collapse. In the Northern Hemisphere, the compensation relation is always good in the low latitude, bad compensation happens in the low latitude of Southern Hemisphere, as well as high latitude of both hemispheres. The primary contribution to AHT's growing is stronger meridional circulation in the low latitude and more powerful eddy transport in mid-high latitude. In the low latitude, vapour traps heat in the tropics, which counteracts the AHT by meridional circulation. Also, in the mid-high latitude, AHT by meridional circulation counteracts that by eddy activity. From local feedback view, in the mid-high latitude, there is linear relation between net flux at the top of the atmosphere and surface temperature, while the relationship is quite complicate in the low latitude, cloud feedback is considered as a primary factor to impact this relation. When the cloud long wave flux is not strong enough, heat flux may escape to the outer space, which will cause a bad compensation.