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Dynamical amplification of Arctic and global warming

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The Arctic is coupled with global climate system by the atmosphere and ocean circulation that provides a major contribution to the Arctic energy budget. Therefore increase of meridional heat transport under global warming can impact on its Arctic amplification. Contribution of heat transport to the recent warming in the Arctic, Northern Hemisphere and the globe are estimated on base of reanalysis data, global climate model data and proposed special index. It is shown that significant part of linear trend during last four decades in average surface air temperature in these areas can be attributed to dynamical amplification. This attribution keeps until 400 mb height with progressive decreasing. The Arctic warming is amplified also due to an increase of humidity and cloudiness in the Arctic atmosphere that follow meridional transport gain. From October to January the Arctic warming trends are amplified as a result of ice edge retreat from the Siberian and Alaska coast and the heating of expanded volume of sea water.
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