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Decadal Arctic Climate Variability and the role of oceanic and atmospheric heat transports

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Recent publications have shown that, on decadal and longer time scales, compensation occurs between oceanic and atmospheric heat transports at high northern latitudes. Since Arctic climate variations depend strongly on lateral exchanges of water and energy, the so-called Bjerknes compensation (BC) could act as an effective moderator of the high latitude climate. Using coupled ocean-atmosphere-sea ice models we investigate the relative role of oceanic and atmospheric heat transports. In long control and scenario integrations using ECHAM5/MPIOM, BC is a frequent but not dominant process. We investigate under which conditions BC occurs and analyze sensitivity experiments for different climate states.