

Geophysical Research Abstracts,
Vol. 10, EGU2008-A-09919, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-09919
EGU General Assembly 2008
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Arctic Ocean warming and its overflow reduction potential

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A series of anomalously large lateral heat inflows into the Atlantic Water Layer of the Arctic Ocean have occurred since the late 1980s. As a consequence temperatures of the Arctic basins at mid-depth have increased considerably in comparison to earlier decades. Large part of this warming has not been density-compensated. Due to the decadal timescales of advection and small vertical heatloss, a large pool of anomalously light water has formed which will slowly drain back into the Nordic Seas. Due to reducing density contrasts and lowering interface heights here it has the potential to influence the overflow waters which feed the lower branch of the overturning circulation. We discuss causes and consequences and compare with available observational data.