Improved results in the ¹/₁₂-degree resolution NAOSIM ?

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AWI 🥌





















The hierarchy ...

LRM: 1°, 19 levels, whole Atlantic + Arctic
HRM: 0.25°, 33 levels, northern North Atlantic + Arctic
FRM: 0.08°, 50 levels, northern North Atlantic + Arctic

HIRHAM-NAOSIM, regional climate model based on HRM (AWI Potsdam, Dethloff, Dorn, Rinke, ..)





The hierarchy ...

MOM (GFDL, z-coordinate, FCT)

Rotated spherical grid

Hibler-type sea ice model

Open boundary conditions at southern boundary

Daily forcing (NCEP reanalysis) Forcing following AOMIP specs: daily SLP and SAT, climatological P, clouds, rel.humidity, river water

Surface salinity restoring





Ice thickness, March 2000







Freshwater Content, upper 350 m, Annual Mean, 2003







Freshwater Content, Ice Volume 95 – 03





AOMIP 9th workshop, Montreal, June 6 &7, 2005



red = FRM

blue=HRM

Potential temperature, 50m









Salinity, 100m







Fram Strait Bathymetry [m]







Velocity and potential temperature at 300m, summer







Fram Strait T [C]: Annual Mean 2002





















Net volume flux through Fram Strait







Net heat flux through Fram Strait







Ice export through Fram Strait







Net volume flux through Davis Strait







Conclusions

- Many integrated quantities are little affected
- Local conditions deviate substantially
- Comparison with observations is difficult
 - Not measured, estimates contain errors
 - Insufficient resolution of measurements



