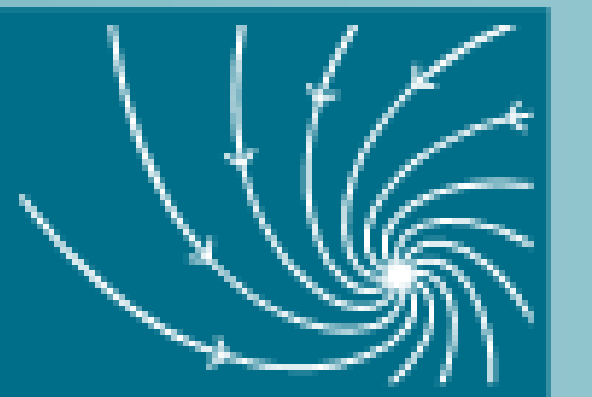


NorESM/BLOM going towards high[er] resolution

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Global Scale NorESM setups

Contacts: Mats Bentsen, Aleksi Nummelin, Ingo Bethke, Fei Li, Alok Gupta

Ocean/ice: $2^\circ \rightarrow 1^\circ \rightarrow 1/4^\circ \rightarrow 1/8^\circ$

Atmosphere/land: $2^\circ \rightarrow 1^\circ \rightarrow 1/4^\circ$

Global CESM-HR ($1/4^\circ$ atm/land $1/10^\circ$ ocn/ice) data available locally

Contacts: Chuncheng Guo, Andreas Klocker

Local scale in the ocean

Contacts: Mats Bentsen, Aleksi Nummelin, Mehmet Ilicak, Alok Gupta

Re-entrant channel, double periodic, 1D-column

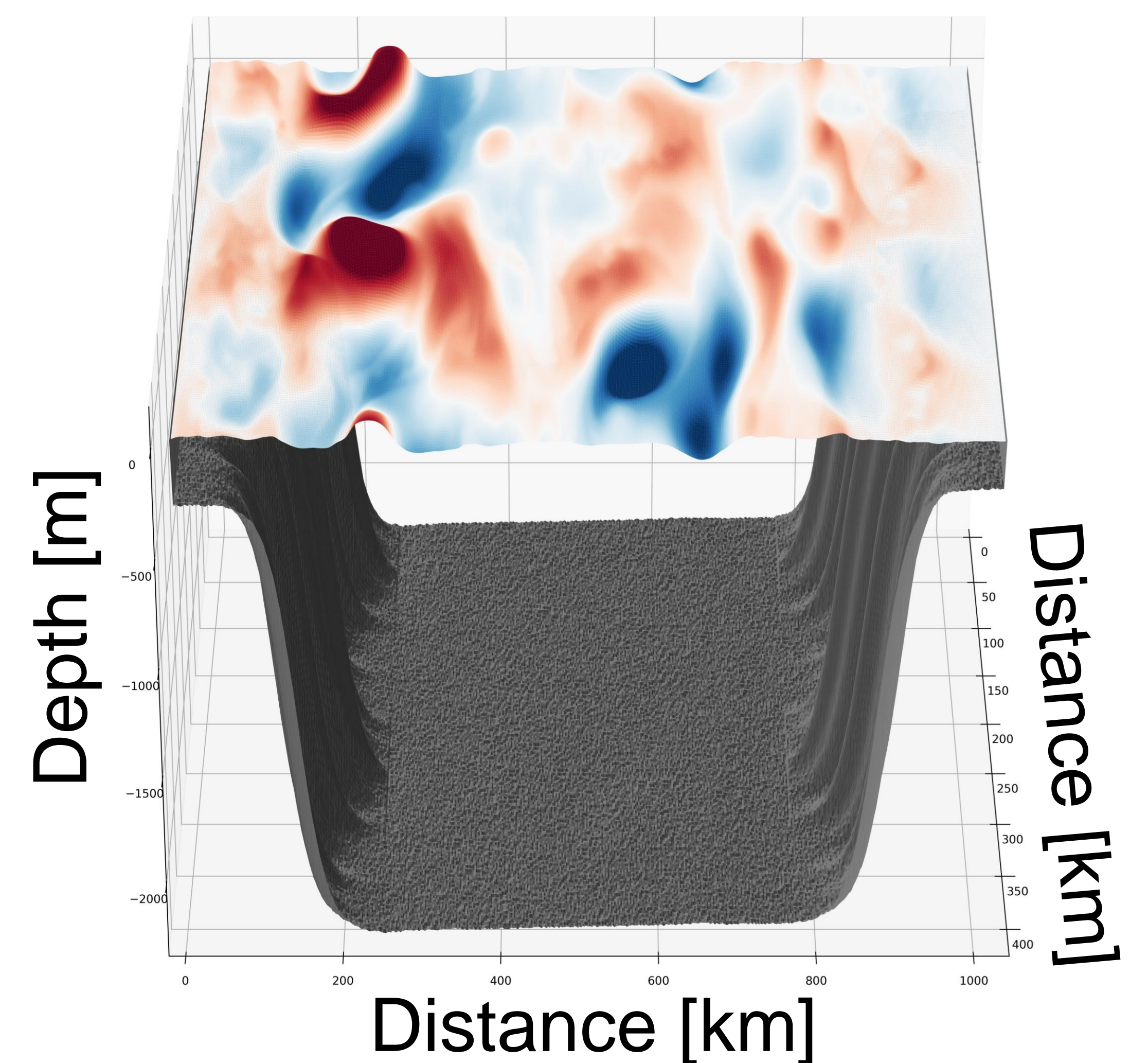


Figure 1. Example of instantaneous SSH anomalies (scaled) and bottom bathymetry in BLOM re-entrant channel setup.

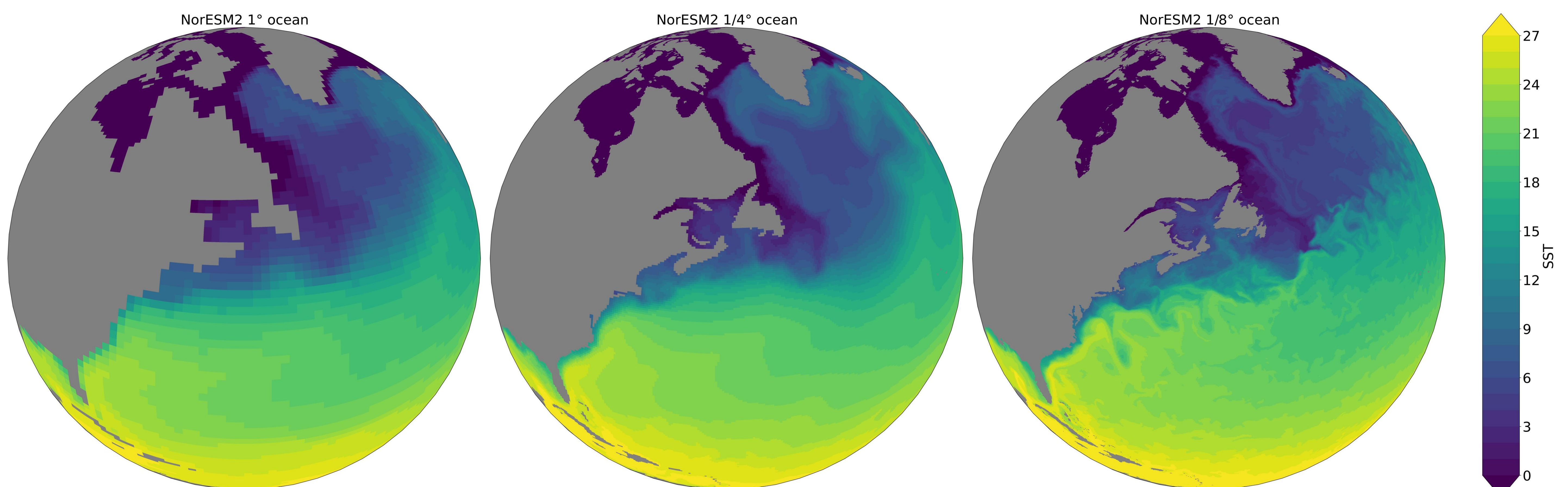
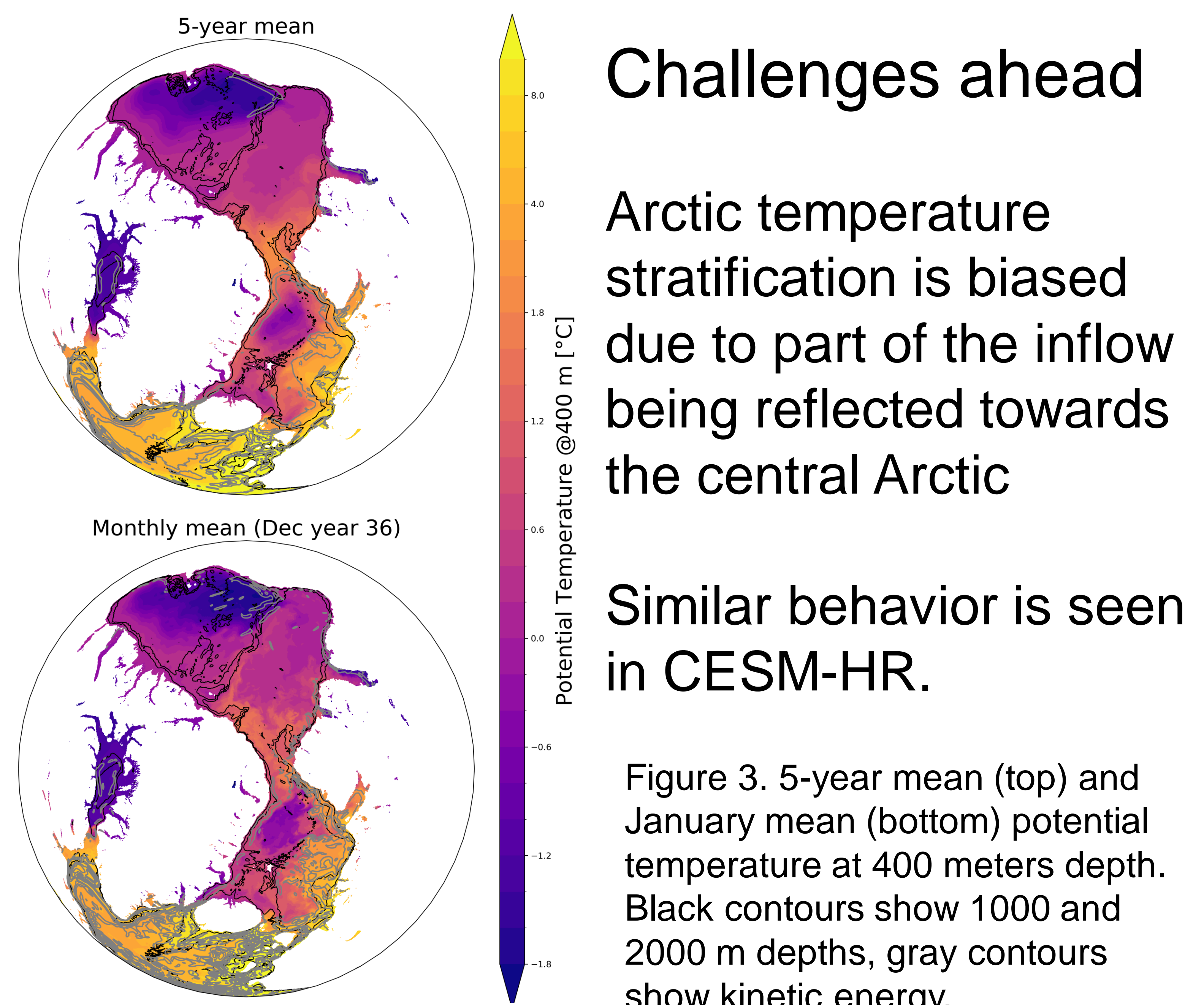


Figure 2: daily mean SST in the North Atlantic in 3 different ocean simulations under the same (1°) atmosphere

New science opportunities

- Hierarchy from process resolving ocean to fully parameterized ESM
- $1/4^\circ$ atmosphere
- Tropical storms
- $1/8^\circ$ and higher ocean
- Eddy dynamics
- Air-sea interaction
- hfreq diagnostics needed



Challenges ahead

Arctic temperature stratification is biased due to part of the inflow being reflected towards the central Arctic

Similar behavior is seen in CESM-HR.

Figure 3. 5-year mean (top) and January mean (bottom) potential temperature at 400 meters depth. Black contours show 1000 and 2000 m depths, gray contours show kinetic energy.