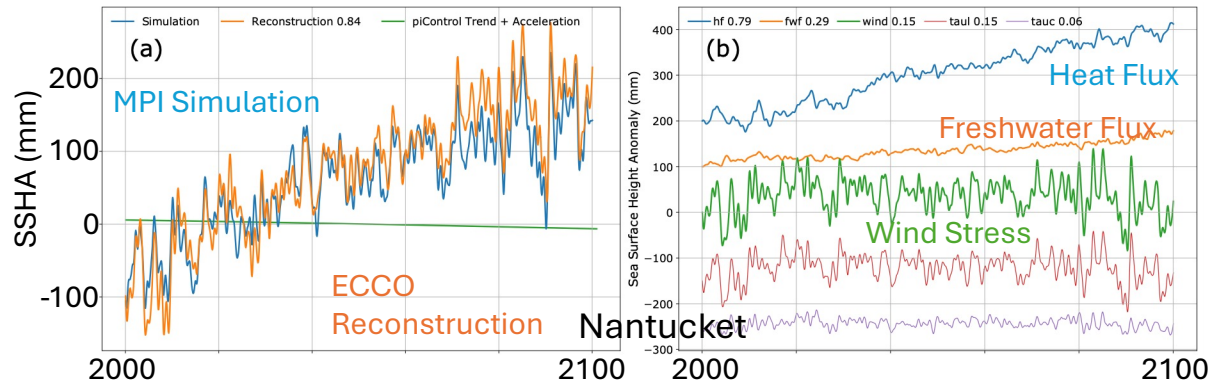


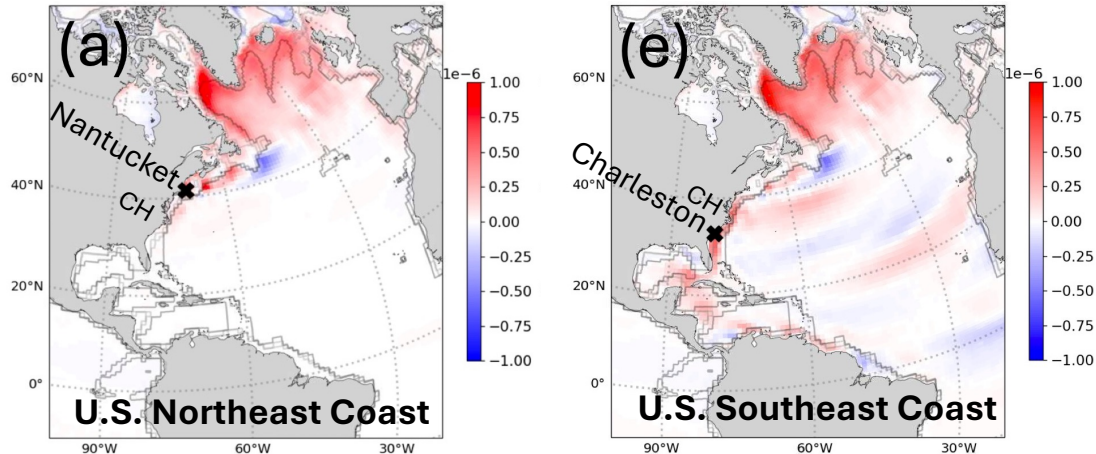
Subpolar North Atlantic Heat Flux Drives Projected U.S. East Coast Sea-Level Trend in a Climate model

Projected & reconstructed dynamic sea-level variations

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Heat-flux contributions to sea-level changes



- Heat flux from the subpolar North Atlantic is the key forcing

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Recent Findings:

- Motivation & Objective:** U.S. East Coast sea level has been rising and is projected to continue rising. What drives projected dynamic sea-level changes along the U.S. East Coast?
- Method:** ECCO adjoint sensitivities + CMIP6 forcing anomalies (MPI-ESM1.2-HR) => Reconstruction and attribution of projected sea-level change at Nantucket (Northeast Coast) and Charleston (Southeast Coast)
- Results:**
 - Subpolar North Atlantic surface heat flux is the key forcing for the 21st century sea-level trend along U.S. East Coast. Wind stress plays a major role in interannual-to-decadal sea-level variability
 - ECCO adjoint sensitivities can be used to attribute regional sea-level changes on interannual-to-centennial timescales in climate models

Surprise:

- ECCO adjoint sensitivities convolved with forcing anomalies from a 3D non-linear climate model (MPI-ESM1.2-HR) reconstruct its interannual-to-centennial sea-level projections
- This demonstrates that regional sea-level dynamics along the U.S. East Coast on these timescales are predominantly linear and governed by classical ocean physics