

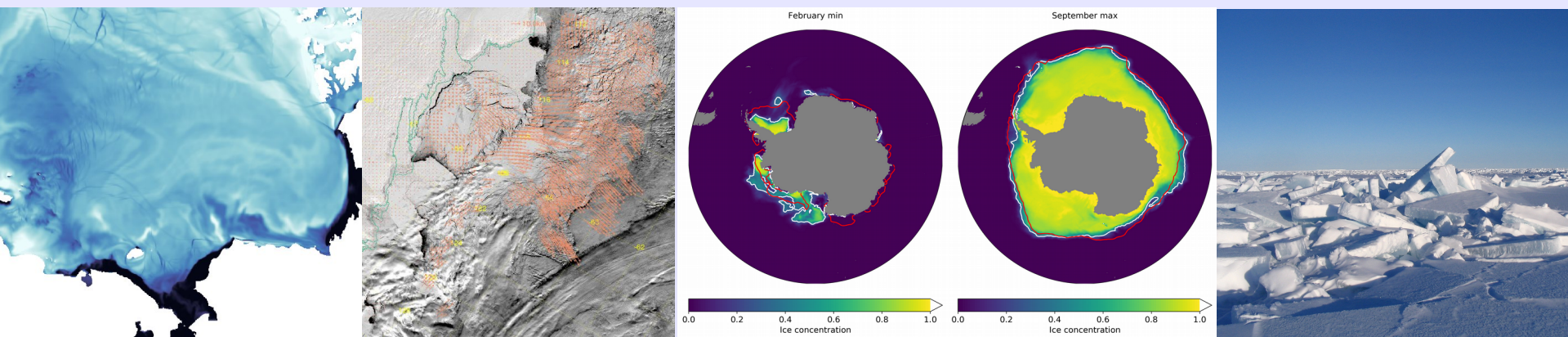
Sea ice in the ACCESS-OM2-01

A first view

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With Andrew Kiss [ANU] and COSIMA



ACCESS-OM2_01

→ High-resolution ocean-ice model:

Modular Ocean Model (MOM) 5.1

Community sea-ice model (CICE) 5.1

OASIS3-MCT coupler

JRA55 atmospheric forcing (0.5625°, 3h)

Initial condition & salinity restoring: World Ocean Atlas 2013v2

Grids: global (90°N - 81°S); tripolar in Arctic; Mercator for 65°N - 65°S

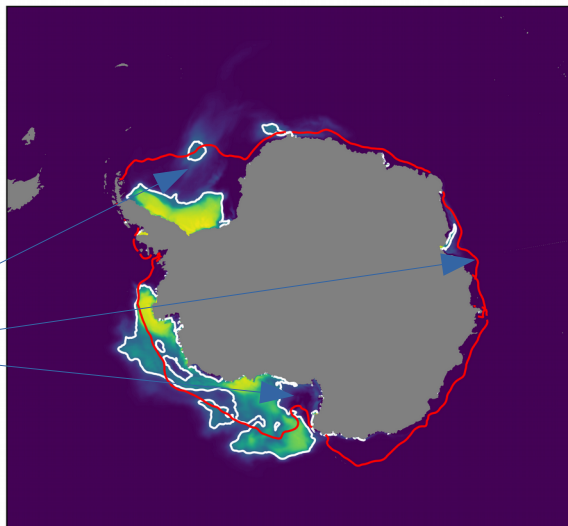
Spin-up: Repeat year forcing (May1984/Apr1985)

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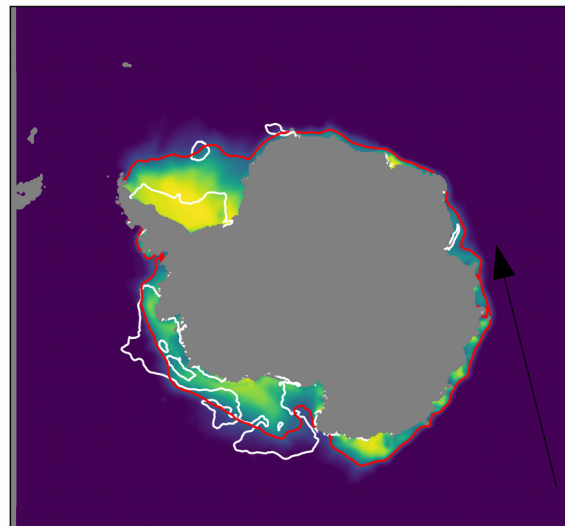
Too little
summer si.

Low si conc
in the winter
interior.

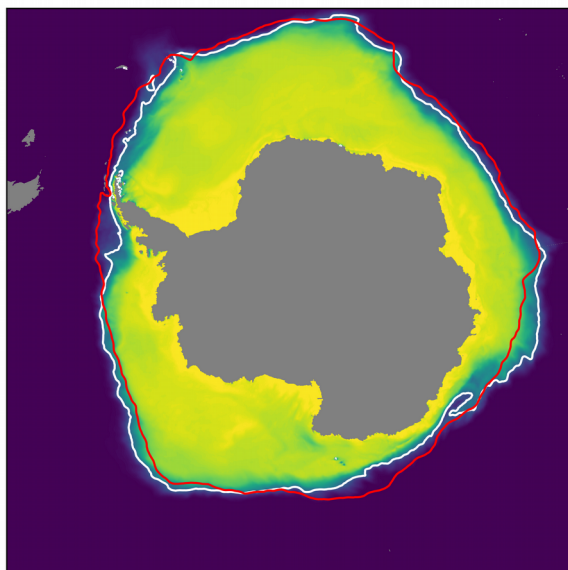
February min, model



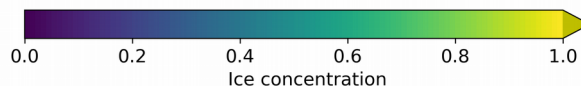
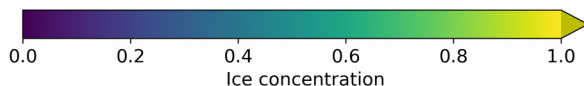
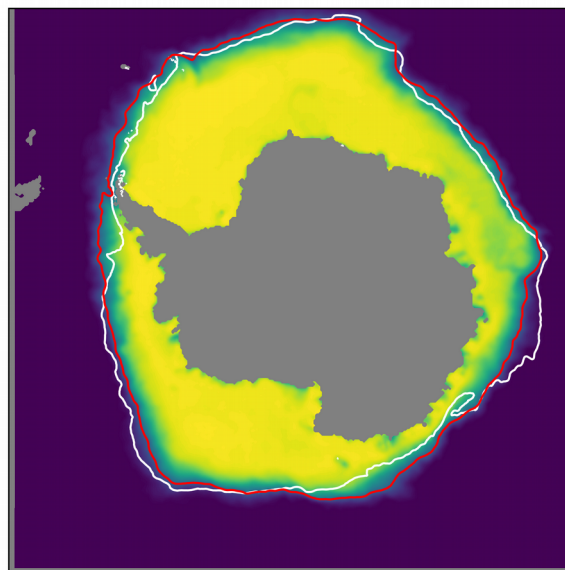
February min, obs



September max, model



September max, obs



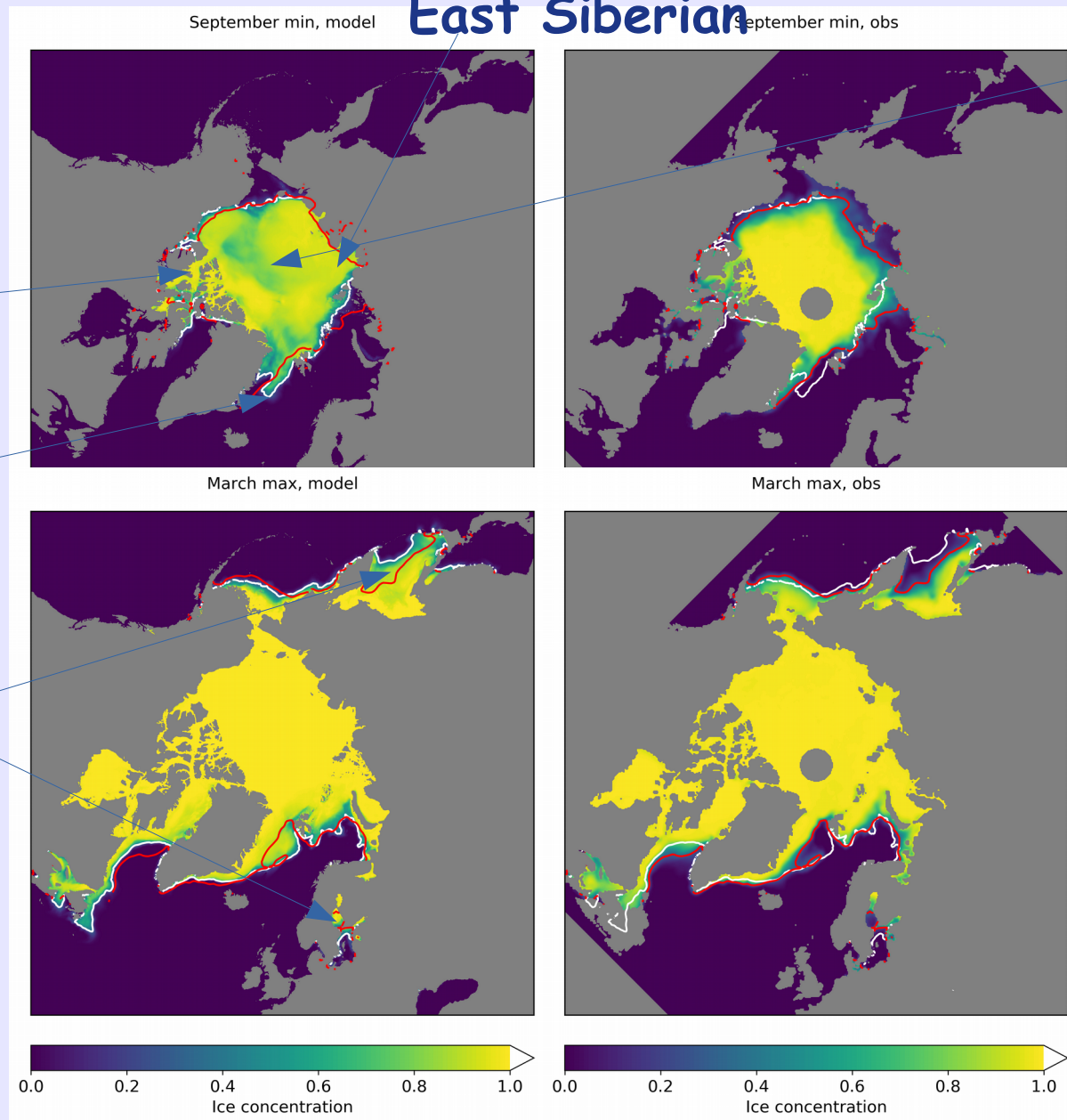
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Canadian Archipelago

Fram Strait — offshore issue

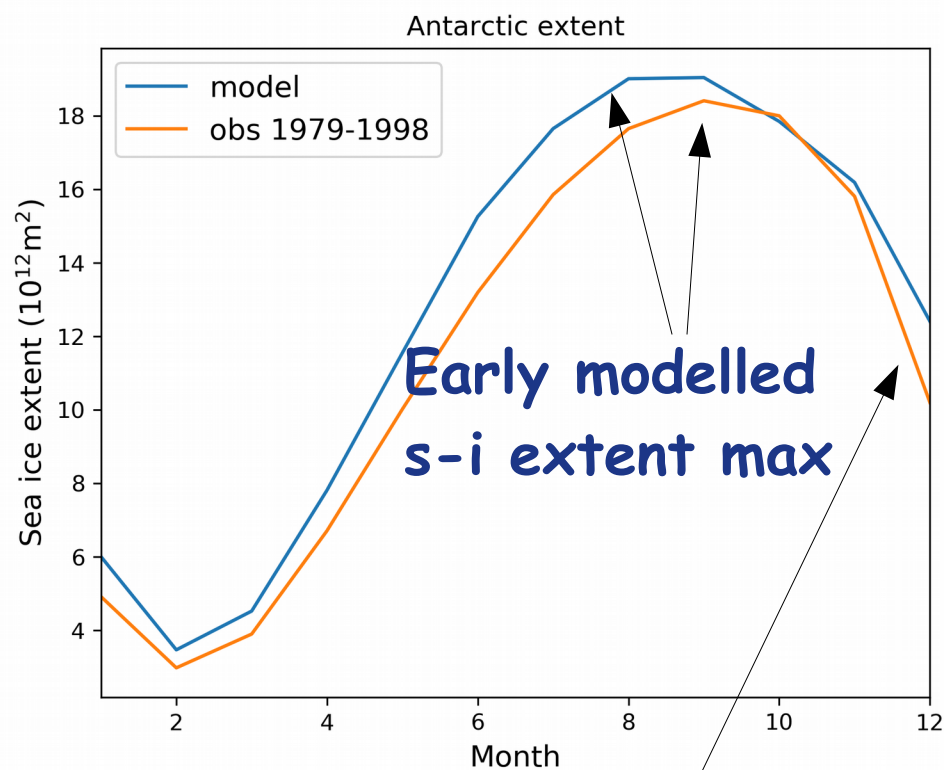
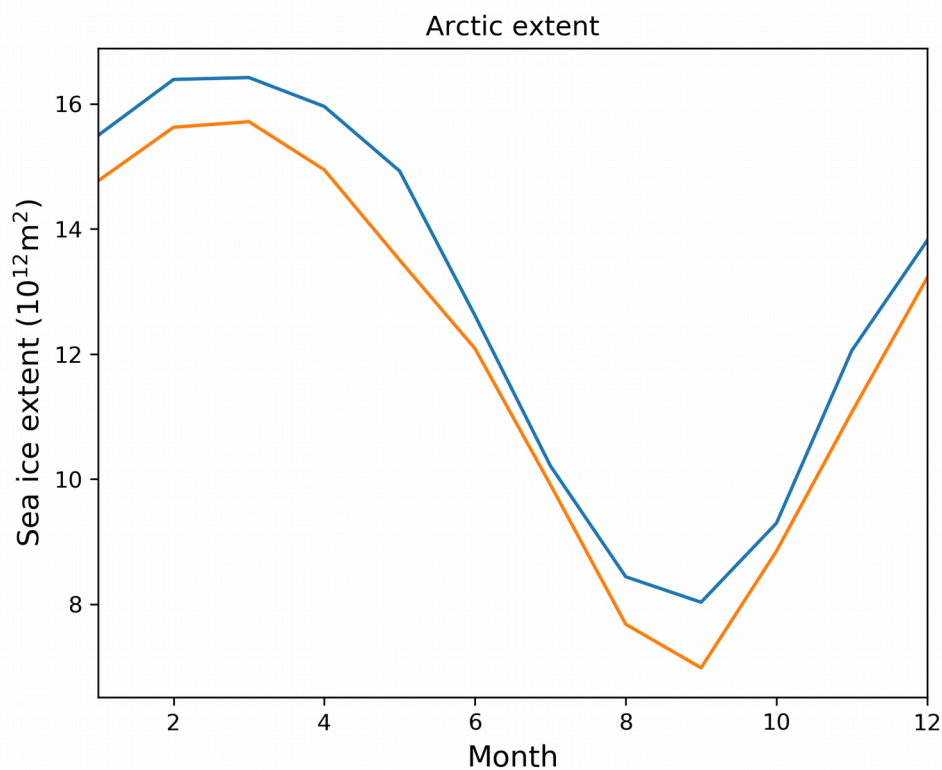
Too much si

East Siberian



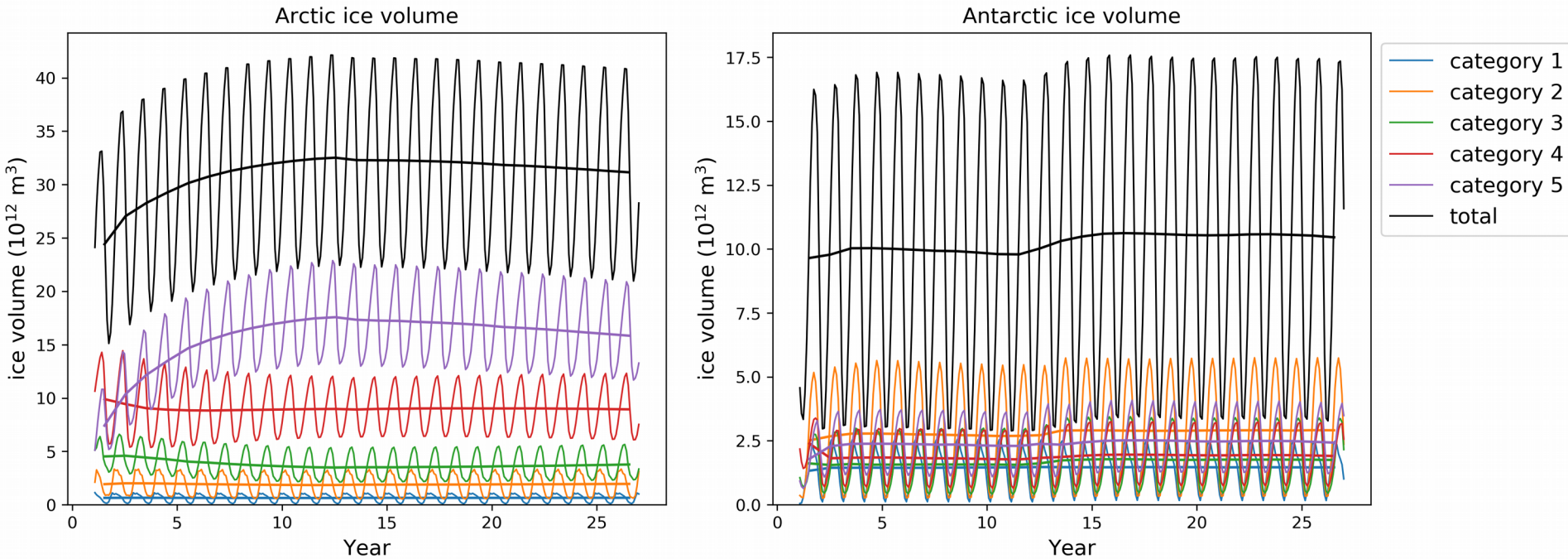
Low
SIC in
interior

ACCESS-OM2_01



Fast s-i retreat

ACCESS-OM2_01

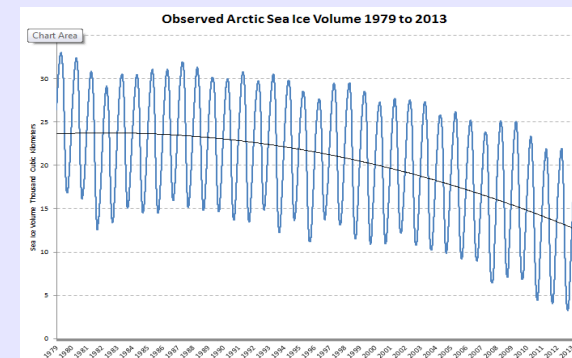


→ Arctic:

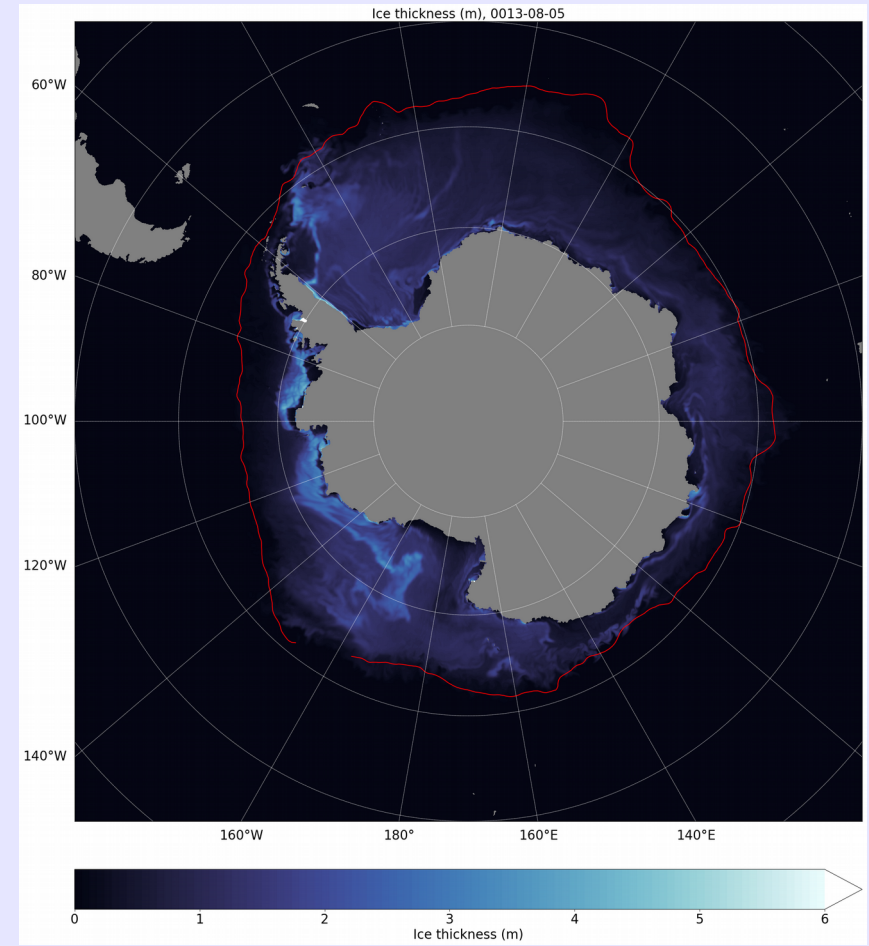
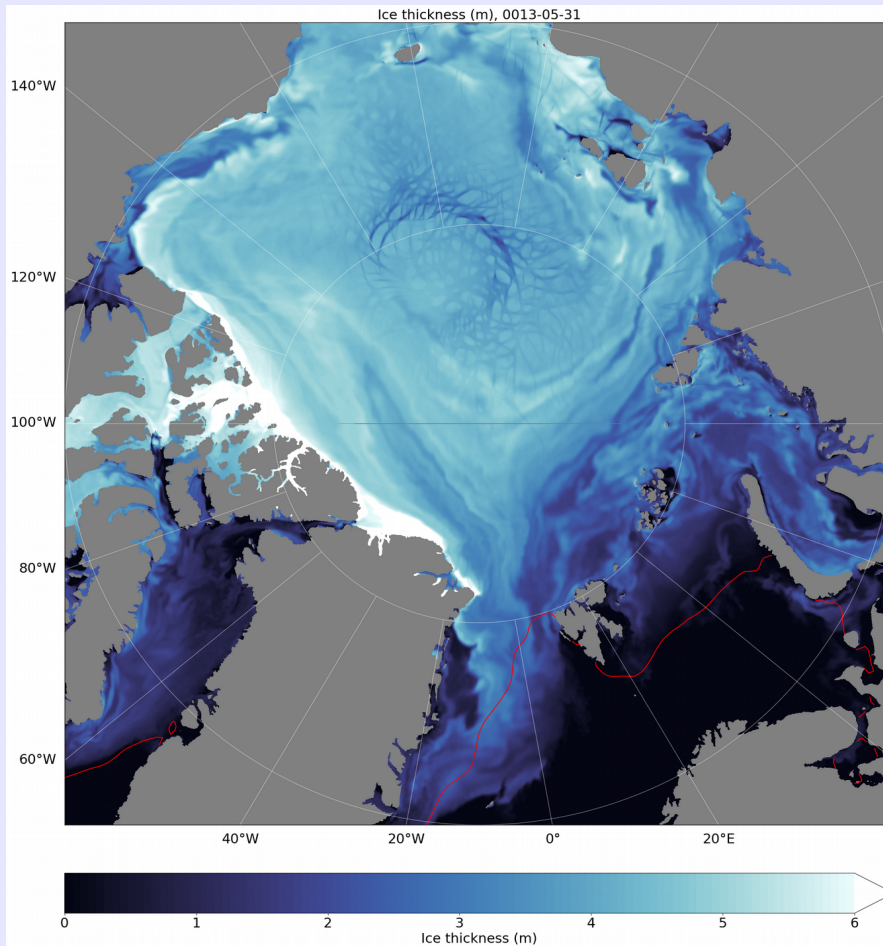
Modelled ice volume too large compared to PIOMAS.

Preferential redistribution to thickest ice category.

Thickness bounds: $0\text{m} < 0.64\text{m} < 1.39\text{m} < 2.47\text{m} < 4.57\text{m}$



ACCESS-OM2_01



Ice-distribution issues:

- ice redistribution
- ice motion

Sea-ice assessment/validation in ACCESS-OM2_01

- * Ice dynamics, incl. wind-forced components:
 - (Beauford) Gyre
 - Trans (Polar) Drift → Fram Strait transport
 - Coastal polynyas
- * Ice-thickness redistribution:
 - Thickness distribution → SIC?
 - Sea-ice volume
- * Seasonality in ice growth/decay
 - * Arctic ice volume
 - * Ice thermodynamics → Melt ponds?

ACCESS-OM2: What next?

→ Explore current issues:

- * Seasonality in ice growth/decay
- * Sea-ice distribution (3D)
- * LTRs

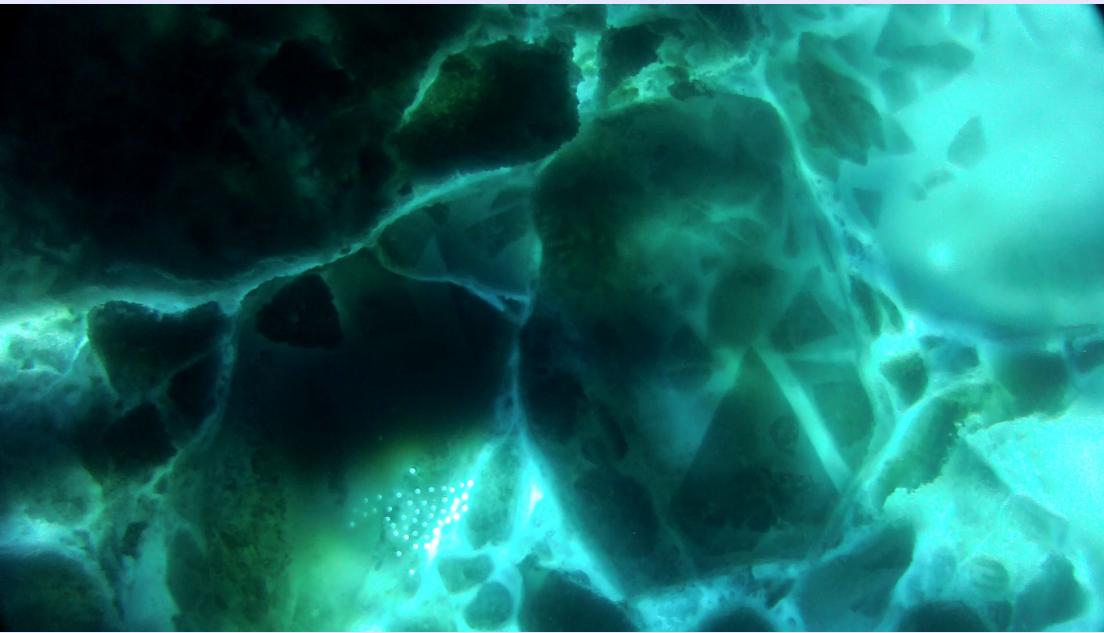
→ Fix:

- * Unify MOM vs CICE parameters
- * Ice advection and redistribution

→ CICE Consortium:

- * IcePack has been released (Feb 2018).
 - Test on NCI, use for cal/val.
- * CICE6: Anticipated release: Late 2018

View from underneath (Oct 2012)



2m

