What sets the Southern Hemisphere Sea Ice Extent?

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Southern Hemisphere Sea Ice Extent
Climatological Seasonal Cycle

![Graphs showing climatological seasonal cycle of Southern Hemisphere Sea Ice Extent.](image-url)
Atmospheric Setting

- Semiannual Oscillation (SAO): The North-South movement of the Circumpolar Trough. (Stammerjohn et al. 2008; Raphael and Holland 2006; Enomoto and Ohmura 1990)

- Strongest and most poleward in March and October during the advance and retreat of the sea ice

- Weaker and more equatorward in January and June.
Semiannual Oscillation
Ocean Setting
High resolution and ice-ocean coupled.

CORE forced
NCEP/NCAR reanalysis with adjustments based on satellite observations.

PetaApps
0.5-degree CAM4/CLM
HRC: 0.1-degree POP/CICE
LRC: 1-degree POP/CICE
Summary

- SH sea ice extent advance and retreat is set by SAO in the winds and ocean heat flux convergence.

- SAO is generally well-simulated in all versions of the fully-coupled model. However, too strong, particularly in March during advance.

- Biases in ocean heat content can mitigate or exacerbate sea ice extent biases.


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