



How quickly can Southern Ocean anomalies influence global climate?

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Recent research has identified a rapid ocean response mechanism to salinity anomalies in the Southern Ocean using an idealised ocean model. We use a coupled climate model with realistic bottom topography and land relief to examine a teleconnection between the Southern Ocean anomaly and the equatorial Pacific. The equatorial ocean responds to a Southern Ocean salinity anomaly after only 30 days. Barotropic and baroclinic ocean wave propagation enable such a rapid response to occur. A second, atmospheric, response is seen in the Northern Hemisphere (NH) high latitudes on the same timescale, driven by atmospheric Rossby waves. The ocean quickly responds to the atmospheric signal above it, resulting in sea surface temperature anomalies at NH high latitudes.