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Connecting Antarctic Sea Ice and Mid-latitude Precipitation

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Climatic changes induce many significant changes to long standing weather patterns. These mechanisms interact to drive consequences that may not be immediately obvious. One such connection involves the apparent relationship between polar sea ice extent and mid-latitude precipitation timing and location. This correlation, its mechanisms, and possible influences on weather are decently understood with respect to the Northern Hemisphere. However, the analogous relation for the Southern Hemisphere has been less studied. This provides an opportunity to examine connections between polar conditions and mid-latitude weather.

We explore the teleconnection between sea ice extent and lower latitude precipitation over the Southern Hemisphere. We investigate this relationship through observations of sea ice coverage using ICESat and ICESat-2 compared with reanalysis data via MERRA-2 in order to understand the variability of sea ice extent and its impact on midlatitude precipitation over the Southern Hemisphere. This study particularly examines the importance of seasonality and regional variations of the relationship.