Recent temperature change on the Antarctic Peninsula

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Significant summer warming over the eastern Antarctic Peninsula in the last 50 years has been attributed to a strengthening of the circumpolar westerlies, widely believed to be anthropogenic in origin. On the western side of the Peninsula, significant warming has occurred mainly in austral winter and has been attributed to the reduction of sea ice. We show that austral fall is the only season in which spatially extensive warming has occurred on the Antarctic Peninsula, along with a significant reduction of sea ice cover off the west coast. In winter and spring, the warming is mainly observed in the west side of the Peninsula. The most important large-scale forcing of the significant wide-spread warming trend in fall is the extratropical Rossby wave train associated with tropical Pacific sea surface temperature anomalies. Winter and spring warming on the western Peninsula reflects the persistence of sea ice anomalies arising from the tropically forced atmospheric circulation changes in austral fall.