

# **ENSO and SAM Relationships Across the Antarctic Peninsula in Contrast to West Antarctica**

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Recent analysis has suggested that the warming trends in West Antarctica and the Antarctic Peninsula are primarily of tropical origin, through atmospheric teleconnections. There is a strong seasonality to these connections, and the relationship also varies in space in time. Here, connections with tropical (specifically, the El Niño-Southern Oscillation, ENSO) and hemispheric circulation patterns (specifically, the Southern Annular Mode, SAM) are contrasted across the Antarctic Peninsula and West Antarctica. We note that during austral winter and spring, ENSO has a persistent relationship across the western Antarctic Peninsula temperatures, while SAM has a persistent relationship with temperatures across the northeastern Antarctic Peninsula. Meanwhile, the ENSO relationship with temperatures across the northeastern Antarctic Peninsula, and the SAM relationship with temperatures along the western Peninsula vary in time, especially in austral spring. In contrast, the relationship of these two climate patterns and temperatures across West Antarctica is more complicated and less persistent. Using the newly reconstructed Byrd temperature time series, we find significant relationships with SAM and temperatures across West Antarctica, but only in certain seasons. The ENSO relationship is weaker and statistically insignificant and varies in time and season as a function of the location and magnitude of the teleconnection to the South Pacific. Together, these results suggest that linking the warming across both the Antarctic Peninsula and West Antarctica to either changes in ENSO or SAM requires careful consideration of temporal and spatial variations in the atmospheric response in the Amundsen-Bellingshausen Seas associated with these patterns.