

## **Identification of Evaporation/Wind and Evaporation/SST Regimes in the Southern Ocean from Satellite Data**

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The goal of this study is to identify mechanisms that determine the surface turbulent flux of latent heat in the Southern Ocean, and provide quantitative descriptions of their relative importance as a function of space and time. We investigate the behavior of the surface latent heat fluxes under “dynamical” regimes which are identified based on the joint frequency distributions of fields that are known to affect them, namely the surface wind speed and sea surface temperature. Using a cluster analysis method, we describe the variability of the turbulent latent heat flux and its input variables in space and time in order to identify characteristic patterns of variability among these fields (the “regimes”). The regimes, which can be directly related to physical processes, can then themselves be analyzed as functions of space and time over the study period, leading to a concise description of the variability of latent heat flux in terms of the variability of the processes which influence it.

This study identifies and compares regimes in HOAPS3 and GSSTF2b data at daily resolution. Differences between the two dataset’s input variables and cluster analysis results are noted, and advantages and limitations of using satellite data for this analysis are discussed.

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