

Poster.4: . **An Evaluation of High-Resolution Model Simulation Variations of Orographic Precipitation and Snowpack in the Southern Andes**

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Abstract

Orographic precipitation and snowpack are important for water resources and hydrometeorological disasters in the Andes Mountain range. Improved understanding of orographic precipitation and snowpack in a warming climate is needed to provide a foundation for understanding future hydroclimate change over the Andes. The goal of this research is to evaluate how well variations in high-resolution regional climate simulations agree with observations of (1) orographic precipitation and (2) snowpack over the southern Andes (35-55deg S). We use ERA-5-forced Weather Research and Forecasting (WRF) simulations with 4-km grid spacing that were run for 2000-2015 over South America by the NCAR-led South America Affinity Group (SAAG). The fine grid spacing of the SAAG-WRF simulations allows better resolution of the complex terrain. Precipitation results are compared to rain gauge observations from national networks in Argentina and Chile to examine how well each captures orographic effects on precipitation patterns and intensity. The Andean Snow Reanalysis (ASR) by Cortés and Margulis (2017) provides probabilistic estimates of snow variables over the complex Andean terrain where in situ data are scarce. SAAG-WRF SWE are compared to ASR to assess spatiotemporal variations. Important biases will be assessed if they exist, and analysis may lead to better representation of orographic precipitation and snow cover over the Southern Andes.