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A CASE STUDY OF A HIGH IMPACT SNOWFALL EVENT IN THE SOUTHERN ANDES OF PERU: DYNAMICS AND EVALUATION OF THE ETA MODEL

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ABSTRACT

The performance of the Eta model predictions was evaluated during the occurrence of the generalized snowfall event that caused the greatest social impact in the southern highlands of Peru (SSP) during August 2013. The evaluation focused on the synoptic scale of South America (A1), and in the regions close to SSP (A2), 96, 48 and 24 hours in advance compared to the ERA-Interim Reanalysis, focusing on the meteorological variables that trigger its occurrence. The event was associated with the invasion of the subtropical jet stream (JST) and a deep trough close to SSP in the upper troposphere, a Cut Off Low (COL) in the middle troposphere and high values of relative humidity on SSP. It was found that a good prediction of the location of the JST on A2 leads to a better prediction of vertical movement and divergence, variables that intensifies the occurrence of snowfall, resulting in 24-hour forecast being the most accurate. Higher errors were obtained at high troposphere levels because of the intensification of dynamic parameters due to the invasion of the JST.

Keywords: Eta model; Performance; snowfall; Peruvian Andes