



Assessing a snow frequency reconstruction in the central Argentinean Andes without using instrumental precipitation records

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During the last two decades a number of studies have evidenced the large potential of South America for the study of past climate. However, when trying to calibrate any reconstructed series in this part of the world, every study finds the obstacle of the scarce number of instrumental data in the area to compare with. This problem is especially relevant for the calibration of daily or subdaily reconstructions. In these cases it is mandatory to envision different approaches to assess the climatic signal.

This work is intended to test the consistency of a daily snow frequency reconstruction in the central Argentinean Andes by studying the synoptic patterns related to the occurrence of precipitation in the area. The reconstruction is based in the analysis of newspaper reports between 1885 and 1996. During this period, it was possible to obtain a continuous record of snow occurrence in the central Andes at the Argentinean side of the Chile-Argentina frontier, close to the 33°S latitude. However the insufficiency of overlapping instrumental data limits the calibration to a short 15-year interval. In this work we evaluate the performance of the reconstructed series for the entire 45-year period between 1958 and 1996 by analyzing the displacement in the jet stream and the patterns of geopotential height related to anomalies in the reconstructed snow frequency series. We found that the reconstructed series reproduces the expected jet shifts and the geopotential height anomalies related to precipitation in the area. In addition we found a significant link between snow occurrence in the central Andes

and the ice extent around the Antarctic Peninsula through the ENSO-PSA pattern.