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Analysis and forecast of wind conditions in Patagonia, Argentina.

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The knowledge of wind behavior can be particularly important when modeling the efficiency and operability of systems for wind energy conversion. In this paper the characteristics of wind in the region of Central Patagonia (Argentina) on both short and long time scales are analyzed. In order to attain this goal, real data sets for a period of 53 years and the results of simulations with WRF mesoscale model for a specific year are taken into account.

Prior to the simulation different calibration experiments of the WRF at a particular configuration have been performed, showing a fairly high performance of the model.

In the comparative analysis of the results obtained from both sources, significant differences on the Weibull frequency distributions of flow intensity have been observed, differences that are also discussed. Despite this, it has been observed that Pearson correlation coefficient between observations and simulations acquires values around 0,6 for several points of study.

In general, important currents of westerly flow along the entire study region can be observed, being the Deseado River basin one of the areas where greatest intensities of mean flow speed (10 m/s) and cube root-mean flow speed (14 m/s) take place. Finally, it has been detected a remarkable decrease in the intensity of flow through time, a trend which seems to behave independently against variations in the western South Pacific anticyclone. Possible causes of this effect are also taken up for discussion.