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EVALUATION OF EXTREME EVENTS WIND SPEED ON THE ANTARCTICA PENINSULA: CASE STUDY OF MARAMBIO ARGENTINA STATION

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RESUMO

Antarctica presents geographic and physical characteristics that allow the generation of strong winds in the coastal region of the continent, due to the influence of synoptic systems such as extratropical cyclones and topography. Therefore, the objective of the present study is to evaluate the occurrence of extreme events in wind speed in Marambio Argentina Station, located to the northeast of the Antarctica Peninsula. Were used daily data of Surface Atmospheric Pressure in hPa, Wind Speed in m/s, Direction of the Wind in degrees and Air Temperature at 2 Meters in °C, kindly provided by the Argentine Antarctica Institute, the period of January 1979 to December 2015. For evaluate the atmospheric pattern during the extreme events of the wind speed, the wind data were used Wind Zonal, Wind Meridional, Air Temperature at 2 Meters, Mean Sea Level Pressure and Geopotential Height of 500 hPa, the was database Era-Interim with a grid spacing $0.75^\circ \times 0.75^\circ$. To set the threshold that classifies the winds as strong, we used the 95% percentile variable per month, with the objective of obtaining 12 thresholds (i.e. a threshold for each month of the year). The analysis of the period of 1979 to 2015 Marambio Station, showed that the average value of the Atmospheric Pressure of 988.87 hPa, however, it was found that the magnitude of such variable has a negative trend during the period studied. One possible explanation for such behavior, may be due to the increased acting of Extratropical Cyclones over the Weddell Sea. However, wind speed has a daily average of 6.42 m/s climatological, therefore, possessed during the analysis period a positive trend in your magnitude. With the most intense winds identified at the station are from Southwest. Analyzing the extreme events was identified 680 cases of strong winds, highlighting the magnitude of 30.40 m/s occurred in July of 1982. It was found in the composition of atmosphere during the 680 cases of strong winds was the presence of an Extratropical Cyclone over the region. It was observed that before and during the Event Extreme in wind speed, there is an increase in Air Temperature at 2 Meters due to the advection of warmer air caused by the passages of the Extratropical Cyclones.. Therefore, in this study identified that during extreme events in wind speed, had presence of Extratropical Cyclones over the Weddell Sea region.