Identification and characterization of an atmospheric blocking event over the South Pacific from August 31 to September 05, 2019

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Atmospheric circulation in mid-latitudes is characterized by a westerlies zonal flow. On blocking conditions, this flow is interrupted by a large almost-stationary anticyclone. This situation, there is a splitting of the jet stream, what modify zonal flow pattern and change the normal eastward displacement of transients. There are two blocking types frequently observed in South Hemisphere (SH): dipole type blocking – occurs when a cut-off low is located north of the anticyclone, which characterize a dipole; omega type blocking – occurs when there is an arrangement of two cut-off lows and the blocking high like Greek letter Ω (omega, inverted in SH). First, the subjective methods were created to identify these systems, later, aiming at numerical modeling, the objective methods, called zonal index, were created. Thus, the purpose of this study was to identify, through subjective and objective methods, a blocking system that occurred over South Pacific, on the west coast of South America, from August 31 to September 05, 2019. In this study, surface synoptic chart from Navy Hydrography Center (NHC) and images from Geostationary Operational Environmental Satellite (GOES-16) in channel 13 (infrared) were used. In addition, data from Era5 reanalysis of the European Centre for Medium-Range Weather Forecasts (ECMWF), with a horizontal resolution of 0.25°, were used to elaborate meteorological fields and zonal index calculation. The identification criteria proposed by Casarin and Kousky (1982) were used for subjective analysis, and the Lejeñas (1984) for objective one. The analyzed fields indicate that the system had persisted for six days. In this period, the flow was split, the blocking high didn't move more 25° of longitude and the zonal index remained negative, what satisfied all criteria used. Therefore, this event was characterized as atmospheric blocking of dipole kind.