

ENSO influence on precipitation in Chile

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The influence of El Niño/Southern Oscillation (ENSO) phenomenon on precipitation in Chile is analyzed using precipitation data recorded in various Chilean cities at latitudes varying from 29°S to 53°S, for time intervals between 56 and 128 years. Spectral analysis was performed using Morlet wavelet transform. Among the twelve cities object of this study seven towns present higher precipitation associated to El Niño 7 yr periodicities. These periodicities were found between 1910 and 1920 at Valparaíso (32°S), Punta Angeles (33°S), Santiago (33°S) and Valdivia (39°S). For Punta Arenas (53°S), Isla Guafo (43°S) and Puerto Aysen (45°S) these periodicities were more intense in the intervals 1922-1940, 1940-1950 and 1952-1963, respectively. Between 1910 and 1920 there occurred eight El Niño events; three of them were strong episodes (1911, 1912, 1917) and three others were moderate, short and more localized, (1910, 1914 and 1915). Between 1922 and 1940 there occurred eight events: two very strong episodes (1925 and 1926), two strong episodes (1932 and 1940) and one moderate episode (1939). Between 1940 and 1950, three events occurred: one strong (1941) and one moderate (1943). Between 1952 and 1963, three events occurred: two strong episodes (1957 and 1958) and one moderate episode (1953). Periodicities between 2 and 4 yr were found in eight cities and periodicities between 4 and 6 yr were found in five cities analyzed.

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