



The thermal amplitude at La Plata city, Argentine, and its relationship with the geomagnetic activity

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La Plata city (Lat: $-34^{\circ}.93$, long: $302^{\circ}.04$) is located at the center of South Atlantic Geomagnetic Anomaly. The ionospheric and magnetospheric effects covers a very wide region where the diurnal variations of the equatorial zone at this latitudes changes from 100 nT. to 40 nT., from the equator toward the La Plata city region. The Meteorological Station at La Plata city stores an extended series of temperature bihourly values. One of most interesting questions is the following: it is possible to find in temperature series any correlationable signs of events entailing the Sun-Magnetosphere-Atmosphere coupling? The average daily thermal amplitude was analyzed in function of Carrington Number for solar rotation, sun spot Number, the solar radiation flux at 10.7 nm., and the daily amplitude of ap index for the daily magnetic activity in units of nT. The results shows periodic and non-periodic processes in these data series, but the most important is the effect of the geomagnetic activity amplitude, wich allows us to determine four principal sequences of trend change: from 1944. yr to 1961yr., from 1961 yr.to 1978 yr., from 1978 yr. to 1989 yr. and from 1989 yr. to 2000 yr. In the first interval, the increasing geomagnetic activity shows a decrease of the thermal amplitude. From 1961 yr. to 1978 yr. the magnetic activity amplitude increases but in lesser amount with respect to the preceding period, therefore the thermal amplitude increases.. From 1978 yr. to 1989 yr. , the magnetic activity amplitude is greater than in the preceding period, therefore the thermal amplitude decreases. From 1989 yr. to 2000 yr., the magnetic activity ampliutude is smaller than in the preceding period and therefore it is observed a sustained growing of thermal amplitude. Intervals of aproximately 25 years are observed in the thermal series at La Plata Meteorological Station. The spectral analysis results by maximum entropy method shows a coincident aperi-

tion of a 33.64 yr. Wave in both series. The principal periods for the ap index series are, in unit of years,: 33.64 yr., 20.19 yr.,13.76 yr., 10.44 yr., 7.76 yr., 6.18yr., 5.31yr., 4.59 yr., 4.33 yr. The principal periods for the temperature amplitude series are: 33.64 yr., 25.23 yr., 16.82 yr., 12.11 yr., 9.77 yr., 8.91 yr., 6.44 yr., 5.61 yr., 4.88yr., 4.39 yr. Therefore we could conclude that a periodical effect related to the solar magnetic field inversion period and oscillating periods smaller than 11 yr. of the entire magnetosphere including the atmosphere, of approximately 4.5 yr. and 5 yr., cooscillate for produce this effect on the temperature parameter in this region.