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Localized analysis of geomagnetic jerk in the polar regions and South America

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The relatively sudden change of the geomagnetic field with respect to time or so called a geomagnetic jerk is studied over the polar regions. Recent Italian investigations of the global magnetic spherical harmonic CM4 and CHAOS models over the period 1960-2005 showed that the Antarctic events were followed by jerks in the Arctic region with a time delay from one to three years. The scope of the present study extends these events into earlier decades using the model gufm1 back to 1590 as well as the recent models. A spectral analysis from the sets of the spherical coefficients is available for the localized regions where the optimally band-limited, concentrated signals are considered by maximizing the energy inside to the whole globe. The comparison of polar geomagnetic observatory data will confirm the results. The South American Magnetic anomaly feature is also considered.