

## Study of the Kp (global) and Ksa (local) indices behavior during a period of solar minimum activity (2020)

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### Abstract

The geomagnetic indices are crucial for quantifying disturbances in the Earth's magnetic field, mainly caused by solar wind. These disturbances can lead to geomagnetic storms, which may disrupt the operation of electric power transmission systems, especially at high latitudes, as well as damage critical infrastructures relying on space-based assets. A well-known global indicator of the geomagnetic activity is the Kp index (INTERMAGNET-GFZ Potsdam) that do not consider the observatories in South America. On the other hand, we have recently developed the Ksa index, which is obtained from the Embrace Magnetometer Network (Embrace MAgNet -INPE). It is designed to obtain regional geomagnetic peculiarities such as South America Magnetic Anomaly (SAMA). Thus, in this study, we perform a comparison of these two indices during 2020, which is a period of minimum solar activity. We compared the seasonal variations of Kp and Ksa indices by analyzing the Pearson correlation coefficients. The results show that the correlation is moderate for both periods (solstices and equinoxes), and the Ksa index tends to exhibit higher values than the Kp index during the period of minimum solar activity, which we assume to be related to the SAMA's influence.