



## **On the long-term variability of the geomagnetic Kp and the local K indices measured at Swider and Niemegk**

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Recently the whole data base of the hourly means of H and D components registered during the time period 1921-1967 at the prof. Kalinowski's Geomagnetic Observatory at Swider (geog. lat 52.12, geog. long. 21.35), Poland, has been transferred to electronic form and prepared to submit to WDC by Trebicka (2004). This observatory practically worked continuously also during the period of the second world war as the exception in this part of Europe. These long series had approximately constant calibration and the measurements were performing by the same devices during the whole period. We use the daily sums of 3-hourly local K indices derived from Swider records of H component in the period 1937-1967 in order to compare with the analogous indices derived from Niemegk registration and planetary Kp series and we apply the modern and powerful wavelet technique with establishing of the significance levels and confidence intervals for the resultant power spectra. We discuss the cross wavelet transform and wavelet coherence for examining relationships in time frequency space between these data. Our analysis shows generally a good agreement between the data in long and short time scale. Simultaneously we discuss the results of this study in order to collate with some earlier searches of quasi-periodicities in geomagnetic activity based on other techniques of determination of the power spectra.