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# On the spectral and statistical properties of principal components of geomagnetic daily changes

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The ionospheric and magnetospheric current systems contribute to ground magnetic field daily changes, i.e. the daily variation along with all the day-to-day changes. Recently, Xu and Kamide (JGR, 2004) showed that it is possible to separate and recognize the different contribution of current systems to the daily fluctuation by means of a simple technique, the Natural Orthogonal Component (NOC) analysis. This technique permits to decompose a temporal signal in its natural components, the empirical orthogonal functions (EOF), and their corresponding amplitudes, the principal components (PCs). In this work we present a preliminary study of the PCs associated to the daily changes as observed in the geomagnetic field data recorded at "L'Aquila" (Italy). The spectral and statistical properties of the PCs are investigated and compared to those of a set of descriptors of the magnetospheric dynamics and solar wind changes: Dst, solar wind pressure, etc. A discussion in terms of current systems and their seasonal variations is also provided.