



## **MLT variations of sectorial geomagnetic activity indices: statistical and case event studies**

Michel Menvielle (1,2), Aude Chamboudout (3), Farida El-Lemdani Mazouz (1), Aurélie Marchaudon (4), and Chantal Lathuillère (5)

(1) Université de Versailles St-Quentin; LATMOS-IPSL, CNRS-INSU UMR 8190, Guyancourt, France., (2) Université de Paris-Sud, Département des Sciences de la Terre, Orsay, France, (3) EOST, Dep. of Magnetic Observatories; IPGS, CNRS-INSU UMR 7516, Strasbourg, France, (4) Université de Toulouse3;IRAP,CNRS-INSU -UMR 5277,Toulouse,France, (5) Université Joseph Fourier - Grenoble 1; IPAG, CNRS-INSU UMR 5274, Grenoble, France

Solar-wind/magnetosphere interactions are not symmetric and show a local time dependency. In order to better describe this effect, we define new Magnetic Local Time (MLT) sector geomagnetic activity indices. These K-derived 3-hour indices are calculated on the basis of  $a\lambda$  regional sector geomagnetic activity indices (themselves derived from an network observatories) and thus reflect the geomagnetic activity at sub-auroral latitudes; homogeneous data series of MLT sector geomagnetic indices can be derived from 1959 onwards.

In this study, we consider MLT sector geomagnetic indices computed for the 03-09, 09-15, 15-21, and 21-03 MLT sectors. We present a statistical study of their variations as a function of local time, seasons, and geomagnetic activity level.

Results of an analysis of the variation of the K-derived MLT sector indices during selected storm events are also presented giving consistent properties with the statistical study. The Midnight MLT-sector indices present generally the highest amplitude during disturbed geomagnetic activity period.