



Monitoring the plasmasphere by the MM100 ground magnetometer array

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MM100 is the synonym for a quasi-meridional magnetometer array established on existing observatory infrastructures in September, 2001 for pulsation study. The array consists of Finnish, Estonian, Polish, Slovak and Hungarian stations from high to mid latitudes ($L = 6.09$ to 1.84). The Finnish and Estonian sites belong to the IMAGE array. The Polish and Slovak and Hungarian stations are maintained by the national institutes. The instrumentation of the Hungarian part is partially supported by the USGS. To increase the array density for the IHY2007 campaign, new temporary stations were installed. The high resolution magnetometers are sampled at 1 Hz and synchronized with GPS. The project is registered as an IHY2007 Coordinated Investigation Program (CIP 39).

MM100 is the first initiation to fill the gap between existing high (IMAGE) and low latitude (SEGMA) arrays. The arrangement of the magnetometer chain makes it possible to continuously monitor the dayside geomagnetic field line resonances (FLR) inside the plasmasphere (in the L range 1.8 – 3.8). From the value of the resonant frequency the equatorial plasma mass density can be estimated with a few minute time resolution. In this way the plasma processes of the magnetosphere can be traced from ground measurements. The theory and the methodology of plasma density monitoring have been well established in the last decades. These measurements combined with routine ionospheric and plasmaspheric (e.g. whistler) measurements may significantly enhance our knowledge on the plasmasphere dynamics.

Here we introduce MM100 and present some examples of the possible use of the

inferred plasma data in the study of plasmasphere dynamics on different time scales.