INTRODUCTION TO THE SESSION: CONSEQUENCES OF IONOSPHERIC-MAGNETOSPHERIC PROCESSES ON MAGNETOTELLURIC RESPONSE FUNCTIONS

MICHEL MENVIELLE 1, László Szarka 2, Jan Lastovicka 3

1. CNRS, LATMOS/IPSL, 4 avenue de Neptune, F-94100 Saint Maur, France
   email: michel.menvielle@latmos.ipsl.fr
2. MTA GGKI, Sopron, H-9400 Csatkai u. 6-8., Hungary, email: szarka@gki.hu
3. Institute of Atmospheric Physics, Bocni II/1401 141 31 Prague 4, Czech Republic,
   email: jla@ufa.cas.cz

Magnetotellurics aims at imaging the subsurface electrical conductivity structure through electromagnetic induction, with natural electromagnetic signals of magnetosphere-ionosphere origin as source fields. The magnetotelluric method assumes that the source field can be described in terms of plane waves. From some very long (ground observatory) records more or less regular variations of the response function have been observed. If the subsurface is constant, any variation in the response function refer to processes in the source field, e.g. to plasmaphysical processes of the outer environment. Such changes are accordingly called source effects. The origin of source effects will be first discussed from the theoretical point of view, then the external sources to which source effects are likely to be associated (i.e. external sources for which the wavelength is not large compared to the penetration depth in the Earth), will be reviewed: auroral electrojets, diurnal variation, pulsations, polar cap variations, day time irregular variations in equatorial regions, etc.

source-effect, magnetotellurics, ionosphere, magnetosphere

Michel Menvielle, . CNRS, LATMOS/IPSL, 4 avenue de Neptune, F-94100 Saint Maur, France, email: michel.menvielle@latmos.ipsl.fr