Geophysical Research Abstracts
Vol. 17, EGU2015-3071, 2015
EGU General Assembly 2015

MIT: A Future Mission to Investigate Magnetosphere-Ionosphere-Thermosphere Coupling with Multipoint Observations

Yong Liu (1), Chi Wang (1), Jiyao Xu (1), Xiaoyu Li (1), and Berndt Klecker (2)

(1) State Key laboratory of Space Weather, Chinese National Space Science Center, Beijing, China, (2) Max-Planck-Institut für extraterrestrische Physik, Garching, Germany

The Magnetosphere, Ionosphere and Thermosphere (MIT) mission is one of the Space Science Strategic Pioneer Projects of the Chinese Academy of Sciences (CAS). Its major scientific objectives focus on the heating, acceleration and transport processes of ions in the polar regions and on their impact on the ring current and radiation belts. Because of the dynamic nature of these processes that also vary with altitude, it is imperative to cover with MIT altitudes from a few 100 km to several earth radii. This will be accomplished with a novel constellation of four spacecraft in polar orbits that provide periodic simultaneous measurements in the polar regions at three different altitudes. The two Ionospheric spacecraft have a polar orbit of 500km*1500km. The other two spacecraft have symmetric polar orbits with geocentric distances of 2Re*8Re (Re is the radius of the Earth). With instrument packages covering particle and field measurements over a wide energy range on all four spacecraft we will be able to monitor and investigate all relevant processes, including ion outflow from the source region in the ionosphere, their acceleration at mid-altitudes, to their final destination in the magnetosphere. Presently, MIT is in the background study stage that will be completed in 2015, with the engineering stage planed to start in 2016, if selected.