AOGS 2006

The Scope Mission

MASAKI FUJIMOTO
Department of Earth and Planetary Sciences,
Tokyo Institute of Technology

In order to open the new horizon of research in the plasma universe, SCOPE will perform formation flying multi-scale observations combined with high-time resolution electron detection and will enable data-based study on the key space plasma processes from the cross-scale coupling point of view. Key physics to be studied are magnetic reconnection under various boundary conditions, shocks in space plasma, collisionless plasma mixing at the boundaries, and physics of current sheets embedded in complex magnetic geometries. The SCOPE mission is made up of the 5 spacecraft formation put into the equatorial orbit with the apogee at 30Re (Re: earth radius). One of the spacecraft is a large mother ship which is equipped with a full suite of particle detector including ultra-high sampling cycle electron detector. Among other 4 small spacecraft, one remains near (∼10km) the mother ship and the spacecraft-pair will focus on wave-particle interaction utilizing inter-s/c communication. Others are used for wave-particle interaction study when the distance from the mother ship is small (∼100km) and are used as the plasma monitors at ion-scales when the distance is larger (100∼3000km). There is lively on-going discussion on the ISAS-ESA collaboration, which would certainly make the coverage over the scales of interest better and thus make the mission success to be attained at an even higher level.