

Space Environment Research by Using Global Network Observations during the CAWSES period

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SCOSTEP is promoting a new international STP program, i.e., the CAWSES (Climate and weather of the Sun-Earth system) project during 2004-2013, in order to produce improved scientific understanding of variations in the Sun-Earth System, especially those variations that have great impact on Space Weather and Climate (broadly defined) and that impact habitability of the human environment.

The SCOSTEP committee and associated institutes in Japan are discussing scientific targets to be pursued in the new CAWSES project in Japan.

We will talk on the global electro-magnetic network observations organized by the Kyushu University during the CAWSES period, that will provide new perspectives on Space Weather and Climate and new understandings of magnetospheric dynamics, and various phenomena in the solar wind-magnetosphere-ionosphere coupling system:

- (1) Sudden changes, such as solar flare, magnetic reconnection in the near Earth magnetotail, auroral brightenings in the polar ionosphere and magnetospheric substorms, may be explained by physics of collapse events and a bifurcation process.
- (2) Global magnetospheric and ionospheric responses to sudden changes of solar wind pressure and the interplanetary magnetic field direction.
- (3) Space plasma diagnosis and plasmopause detection by using the dual station H-ratio and the phase gradient of field-line resonance (FLR) structure in the iono-magnetosphere.