Space weather study in Kyushu University

Kiyohumi Yumoto[1]

[1] Space Environ. Res. Center, Kyushu Univ.

An objective of the STP researches is to support human activities in the geospace in the twenty-first century from an aspect of fundamental study. In order to understand the Sun-Earth system and effects to human lives, the international CAWSES (Climate and Weather of Sun-Earth System) program and LWS (Living with Star) program were decided to start from 2004.

The objective of CAWSES-WG 2 & 3 in Japan for the Solar surface-Solar wind-Magnetosphere-Ionosphere-Thermosphere is a creation of new physics; (1) couplings of the complex and composite systems and (2) macro-and-micro-scale couplings in the Solar-Terrestrial system. The goals of CAWSES-WG 2 & 3 in Japan are to construct Space Weather Stations (for observations) and Modeling Stations (for simulation/empirical modeling) during the period (2004-2008) of the international CAWSES program. Japanese STP groups will coordinate a research network to reach these goals for the Space Weather Study.

In order to study the complexity in the solar wind-Earth"s magnetosphere-ionosphere-the Earth"s surface system, the Space Environment Research Center and the Department of Earth and Planetary Sciences, Kyushu University, Fukuoka, Japan will conduct coordinated collaborations for Space Weather study, in cooperation with the Space Weather group, the Communication Research Laboratory (CRL), Tokyo, Japan and also with about 30 organizations in the world during the period (2004-2008) of the international CAWSES program.

The Kyushu University group will take care of the CPMN (Circum-pan Pacific Magnetometer Network) observations at 54 stations in the CPMN region, and the FM-CW radar observations along the 210-deg. magnetic meridian to study dynamics of geospace plasma changes during storms and auroral substorms, the electromagnetic response of iono-magnetosphere to various solar wind changes, and the penetration and propagation mechanisms of DP2-ULF range disturbances from the solar wind region into the equatorial ionosphere. And then we will establish the Space Weather studies.

In the present paper, we will introduce our real-time data acquisition and analysis of MAGDAS/CPMN system, and preliminary results of these systems; (1) monitoring and modeling of the global 3-dimensional current system to know the electromagnetic environment change, and (2) monitoring and modeling of the plasma density to know atmosphere and space plasma environment change.