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Large-scaled and Integrated Observation Plans for Realizing Forecasting Capabilities for the Geospace Environment

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Because of the close interaction between human beings and Near Space, Near Space is a vitally important system for us. It is imperative that we better understand its behavior through observation, experimentation, and modeling. Also, we need to improve our predictive capabilities for global warming and other environmental issues facing mankind. To accomplish that, it is necessary that we better integrate observation activities, modeling research activities, and experimentation efforts. Moreover, this integration must be carried out at scales from global to regional. The results of our investigation indicate that we must focus on the following four areas:

- (A) Observation of and at the region around the earth
- (B) Observation by orbiting satellites
- (C) Observation of the atmosphere, oceans, and lakes
- (D) Research and predictions based on climate models and environment models

In the present paper, we will introduce the large-scale projects on (A) Observation of and at the region around the earth. The main goals of these projects are as follows;

(a-1) Solar Terrestrial Environment Laboratory (STEL), Nagoya University quantitatively evaluate the effect of the sun on the Earth's atmospheric environment.

(a-2) Space Environment Research Center (SERC), Kyushu University will design a system that can observe in real time the global magnetospheric and ionospheric conditions of the earth, which will provide insight into the nature of solar flares, storms in space, etc.

(a-3) STEL and SERC plan to establish facilities (mainly computers) that can simulate the Earth's magnetosphere and electromagnetic environment.

(a-4) And most importantly, SERC also plans to complete a global network of 100 real time magnetometers. With this network, it becomes possible to make a truly global analysis of the electromagnetic environment changes in geo-space.

(a-5) STEL is planning to develop and integrate various observation systems to study the couplings and correlations among the sun, solar wind magnetosphere, ionosphere and atmosphere.