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## THE NECESSITY OF “SCIENTIFICALLY RELATED” DATABASE IN SOLAR-TERRESTRIAL PHYSICS

*M Ishii\*, Y Kubo, T Nagatsuma, H Kato and S Watari*

*Space Weather and Environment Informatics Laboratory, National Institute of Information and Communications Technology, 4-2-1 Nukui-kita, Koganei, Tokyo 184-8795 Japan  
Email: mishii@nict.go.jp*

“Space Weather” is the electro-magnetic condition on the vicinity of the Earth which affects to social infrastructure, e.g., radio propagation, satellite operation and electric facilities. Recently, the social necessity of space weather information is increasing. The ICAO prepares to use space weather information in civil aviation. This paper presents the present status of space weather monitoring and forecasting including domestic and international activities.

The space weather phenomena is a serious of several events which relates to each other in different regions, e.g., sun, interplanetary, magnetosphere and ionosphere.

The observations of space weather has a long history. The sunspot number on the solar disk has been observed for more than four hundred years, and even in ionosphere used by a kind of radar, the observing period exceeds half century. The geomagnetic observation on the ground is also the same situation. However, these sets of database are not considered to connect each other with scientific knowledge.

On March 2015, we had one of the biggest space weather phenomena named “St. Patrick’s event.” It was an extraordinary case that the flare as a source of this event is much smaller than usual and all of space weather forecasters in the world missed their forecasts. If we have such a “scientifically related” database, we could have found any similar events and considered the possibility that the small flare made a large magnetic storm. In addition, the database must contribute to research of solar-terrestrial physics.

One of the difficulties to build such databases is to make them relate to each other. Sometimes we cannot find any counter phenomena, or possible multi-phenomena. Space weather forecast report will help to solve this issue.