The Prospect for the simulator of high accuracy Solar Global Coronal Filed exploiting the "Space Weather Cloud" by NICT

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Solar flares and coronal mass ejections (CMEs) are essential causes of the space storm in our geospace. It is essential to understand the trigger mechanism of these phenomena to establish the space weather forecast. Although, the recent performance of the huge three-dimensional (3D) simulation, one reason of it remaining unresolved is that the simulation is not based on the clear facts of the observation. Therefore, many theoretical models exist and our understanding is kept saturated. Hinode satellite launched on September 2006 provides the photosheric vector-field data with unprecedented high space resolution. It is also possible to study the reconstruction of coronal magnetic field or solar active region, and the simulation of solar flare based on the Hinode vector-field data.

In this paper, we will introduce the result of 3D solar active region and coronal magnetic field reconstructed by Hinode observational data. One problem is that because the observational view is narrow, 3D reconstructed field is not reproduced enough in numerical box. Solar Dynamic Observatory (SDO) scheduled to be launched on April 2010 can observe the vector-field on global sun and can reproduce the high accuracy solar global coronal field including active region with combining the Hinode data. However, handling huge data with transferring to huge disk, analyzing, and visualizing, is never easy. Therefore, we will introduce the prospects to realize the high accuracy solar global coronal field simulator with the best possible use of "Space Weather cloud" being developed by NICT.

Keywords: Space Weather cloud, OneSpaceNet, Solar-Terrestrial Science, Solar Coronal Magnetic Field