

A03a      **Research activities of GEMISIS-Sun phase 2**

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Solar-Terrestrial Environment Laboratory (STEL) in Nagoya University started the GEMISIS (Geospace Environment Modeling System for Integrated Studies) project in 2007. In the phase 1 (2007-2009), a subgroup, GEMISIS-Sun, mainly promoted integrated studies based on simulation/modeling and data analysis in order to understand the acceleration/transport/loss processes in solar flares.

In the period of the GEMISIS phase 2 (2010 - 2015), the solar cycle 24 will reach its maximum. So we defined our final goal of systematically understanding the whole processes (energy-storage, trigger, energy-release, and particle acceleration) of solar flares, especially of large solar flares. In order to realize it, realistic models for specific scientific targets, e.g., flare-trigger, particle acceleration, and so forth, are constructed. Then, our solar flare researches are progressed through comparing these models with observations.

We have carried on the following research activities; (1) accurate coronal magnetic field modeling and flare-trigger simulation, (2) particle acceleration modeling in solar flares, (3) multi-wavelength data analysis for solar flare researches, (4) the Hinode flare database and the database of coronal magnetic field of the flare-productive active regions. In this presentation, we briefly report these research activities.