

## Observations on the sunspots which produce large solar flares

# Shin'ichi Nagata[1]; Takako Ishii[2]; Hiroki Kurokawa[3]; Kazunari Shibata[4]

[1] Hida Observatory, Kyoto Univ; [2] Kwasan and Hida Observatories, Kyoto-U.; [3] Kwasan Obs., Kyoto Univ; [4] Kwasan Obs., Kyoto Univ.

Solar flares significantly affect the space weather; the plasma erupting from the sun caused by solar flares can disturb the geomagnetic field and can cause geomagnetic storms. Thus, it is

crucial to understand the mechanism which trigger solar flares for the space weather research. The energy released in solar flares are stored in the non potential magnetic field at the solar surface. It is important to understand how such non potential magnetic field configurations are formed in order to predict the occurrence of solar flares. It has been shown that the so called delta type sunspots tend to produce large solar flares. Recently, it has been revealed that the magnetic helicity injections play a crucial part to store the energy for solar flares. Thus, the detailed observations on the sunspots magnetic field structures can lead us to predict solar flares. In this paper, we discuss the recent results on the magnetic field structures characteristics for the flare productive sunspots.