

## Ground-based observations of solar flares; current status

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Besides the remarkable progress of recent flare observations from space, i.e., those by SDO, Hinode, RHESSI, etc., ground-based observations also take an important role for flare research in the sense that they can provide high spatial and temporal resolutions and spectroscopic information. In the beginning of a flare, a number of bright points called as flare kernels are observed in Ha to rapidly evolve in space and time to form two ribbons of the flare in both sides of the magnetic neutral line. Each flare kernel changes its brightness in a time scale of a second or so is thought to be the location into which high energy particles accelerated in the corona precipitate. Therefore observations of flare kernels in high spatial and temporal resolutions provide valuable information on the structure of the flaring magnetic loop system in corona and sites of particle acceleration in there. The white-light flares are of a particular interest because they are thought to be associated with particles in extremely high energy range. Dopplergram observations in Ha give the velocity vector of erupting filaments associated with a flare, which serve as important information for predicting the following disturbance of interplanetary space. Furthermore, high cadence observations of vector magnetic field in photosphere are of crucial importance for the studies of energy storage and trigger mechanism of flares.

In this presentation, we discuss the current status and results of ground-based flare observations paying some attentions to the on-going projects at the Kwasan and Hida observatories of Kyoto University.

Keywords: sun, flare, h-alpha, ground based observation, particle acceleration