

# **Observational Study of Solar Magnetic Field and Eruption Phenomena at Huairou Solar Observing Station**

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In this paper, we would like to introduce the observing study of vector magnetic field and development of new instrumentations for the measurements of vector magnetic field on the space-weather at Huairou Solar Observing Station, National Astronomical Observatories. The presentations are following:

1. The developments of Huairou Solar Observing Station on the observational study of vector magnetic field and the relationship with the solar eruption phenomena.
2. A brief introduction of new full disk vector magnetograph on the study of large-scale properties of magnetic field of the source regions of flare-CMEs, which has been operated at Huairou since end of 2005 gradually.

The synthetical analysis between photospheric vector magnetic field and the morphological configuration in solar atmosphere provides the essential information on the developments of magnetic energy in source regions of Flare-CME Eruptions. The observational study on the evolution of photospheric vector magnetic field provides the basic information for the emergence, storage, relaxes of non-potential magnetic energy in solar active regions (such as, NOAA 9077, 10488 and 10720) and the relationship with the trigger of solar flare-CMEs. The photospheric vector magnetic field also provides the possible forming mechanism of helical magnetic configuration and transferring form in the solar atmosphere into the interplanetary space inferred from the observational vector magnetic field.