M15b Evolution of Magnetic Fields Associated with Five Solar Flares in Active Region 0375

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Studying the evolution of magnetic field associated with solar flares plays an important role in understanding the mechanism of solar flares and Coronal Mass Ejections. Many authors have studied the changes of photospheric magnetic field in active regions before, during, and after the solar flares. We are seeking some candidate active regions which consist of a number of large flares occurred at almost same place in active regions. Study of these homologous flares would help us to understand the continuous change of magnetic field through the flare producing period of an active region.

In this paper, we focus on one active region, NOAA Active Region 0375, in which six large solar flares with GOES classification larger than M5.0 successively occurred from 2003 Jun 9 to Jun 12. Five of the six events were covered by Solar and Heliospheric Observatory/Michelson Doppler Imager (SOHO/MDI). We study the change of magnetic flux and discuss the relationship between the evolution of this active region and the large flares.