[SE-15] Two types of active region EUV bright points observed by Hinode/EIS

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We have investigated seven Extreme-Ultraviolet (EUV) bright points in the active region (AR 0926) on 2006 December 2 by the EUV Imaging spectrometer (EIS) onboard Hinode spacecraft. We determined their Doppler velocities and non-thermal velocities from 15 EUV spectral lines (log T=4.7-7.2) by fitting each line profile to a Gaussian function. We present the Doppler velocity map as a function of temperature which corresponds to a different height. As a result, these active region bright points can be classified into two types according to the pattern of doppler shifts. Type 1 bright point shows a systematic increase of Doppler velocity from -56km/s (blue shift) at log T=5.8 to 12km/s (red shift) at log T=6.7, while type 2 bright points have Doppler velocities in the range of -20km/s and 20km/s. Using MDI magnetograms, we found that only type 1 bright point was associated with the cancelling magnetic feature at the rate of 2.1×10^{18} Mx /hour. When assuming that these bright points are caused by magnetic reconnection and the Doppler shift indicates reconnection outflow, the pattern of the Doppler shift implies that type 1 bright point should be related to low atmosphere magnetic reconnection. We also determined electron densities from line ratio as well as temperatures from emission measure loci using CHIANTI atomic database. The electron densities of all bright points are comparable to typical values of active regions (log Ne=9.9-10.4). For the temperature analysis, the emission loci plots indicate that these bright points should not be isothermal. We are examining the multi-thermal structures using DEM (Differential Emission Measure) method.

[SE-16] Hinode SOT Observation of Recursive Solar Tornados

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We report an observation of recursive Solar tornados by Hinode Solar Optical Telescope (SOT). The solar active region AR10930 on the west limb produced a C2.0 flare on 2006 December 17. One day later, Hinode SOT observed the active prominence of AR10930 continuously from 11:21 UT December 18 to 09:58 UT December 19, using the Ca II H broadband filter. The pixel resolution was 0.1 arcsec and the time cadence was 8 s. During the observation, rise and fall motion accompanying rotation, which resembles tornado, appeared recursively. There occurred a total of 14 tornados and the lifetime of each tornado was usually less than an hour. A tornado started near the surface, rose up with rapidly untwisting motion, and fell down with slowly untwisting or straight motion. We analyse and discuss their kinematic properties and magnetic field configuration.