

[7SE-11] Fast Dimming Associated with a Coronal Jet Seen in Multi-Wavelength and Stereoscopic Observations

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We have investigated a coronal jet observed near the limb on 2010 June 27 by the Hinode/X-Ray Telescope (XRT), EUV Imaging Spectrograph (EIS), and Solar Optical Telescope (SOT), and the SDO/Atmospheric Imaging Assembly (AIA), Helioseismic and Magnetic Imager (HMI), and on the disk by STEREO-A/EUVI. From EUV (AIA and EIS) and soft X-ray (XRT) images we have identified both cool and hot jets. There was a small loop eruption in Ca II images of the SOT before the jet eruption. Using high temporal and multi wavelength AIA images, we found that the hot jet preceded its associated cool jet by about 2 minutes. The cool jet showed helical-like structures during the rising period. According to the spectroscopic analysis, the jet's emission changed from blue to red shift with time, implying helical motions in the jet. The STEREO observation, which enabled us to observe the jet projected against the disk, showed that there was a dim loop associated with the jet. We have measured a propagation speed of ~800 km/s for the dimming front. This is comparable to the Alfvén speed in the loop computed from a magnetic field extrapolation of the HMI photospheric field measured 5 days earlier and the loop densities obtained from EIS Fe XIV line ratios. We interpret the dimming as indicating the presence of Alfvénic waves initiated by reconnection in the upper chromosphere.

[3SE-12] RBSP (Radiation Belt Storm Probes) Mission, Space weather and Science Topics

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Radiation Belt, discovered by Van Allen in 1958, is a region energetic particles are trapped by the Earth's magnetic field. To measure charged particles and fields in the radiation belt, RBSP(Radiation Belt Storm Probes) mission will be launched in September 2012 by NASA. RBSP mission consists of two spacecraft having orbit from 600 km to 30,000 km and rotates the Earth twice a day. This mission is not designed just for scientific purpose but have operational function broadcasting real time data for space weather monitoring. As a program of KASI-NASA cooperation, KASI is constructing RBSP data receiving antenna that will be installed by April in Daejeon. With this antenna system, NASA can receive RBSP data for 24 hours and KASI also get space weather information to protect Korean GEO satellites. In this presentation, we will discuss how we use RBSP data for space weather forecasting. In addition, we will talk about science topics that can be achieved by RBSP mission. Especially we focus on the dusk-side electron precipitation that has been considered as a main mechanism of electron dropout events. We show the dusk-side precipitation is closely associated with radiation belt electron loss with NOAA-POES data, and why RBSP mission is important to understand radiation belt physics.