indicated that the brightenings were primarily due to an increase in plasma temperature. Improvements and additions to the methods for obtaining temperatures have been made and will be applied to these events and compared to the earlier results.

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6.09

Filament Tether Cutting Before a Major Eruptive Flare
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The X1.5/3B flare on 1991 November 15, 22:33 UT was well observed by the Mees Solar Observatory CCD Imaging Spectrograph and Stokes Polarimeter and by the Yohkoh Soft X-ray Telescope. Five hours of preflare observations in Hα show a variety of dynamic phenomena prior to and during the filament eruption. Longer spatial scales characterize the eruption's early phase; smaller scales dominate later. The initial motions are not eruptive: rotation precedes disruption, and disruption precedes eruption. Both arc filaments and photospheric magnetograms indicate magnetic flux emergence. Ca II K-line wing images provide unambiguous evidence of flare heating; we find that detectable flare heating starts after filament motion. Detectable large-scale filament Doppler shifts start ~20 minutes before the impulsive phase, whereas K-line wing brightenings start ~10 minutes before. A new phenomenon has been discovered, which we associate with the suberuption of the flare and occurrence of the flare. We have observed short-lived Hα blueshifted events (duration ~1 minute, velocity ~10 km/s) near the neutral line, adjacent to a region of flux emergence. These blueshifted events are followed by linear structures that are redshifted, and then longer (static) fibrils that cross the magnetic neutral line, linking the emerging flux region with the active region filament. These events are concentrated in the two-hour period immediately before the flare, although flux was emerging for at least five hours before. Some of these events show a rolling motion; some are cotemporal with filament velocity episodes. We associate these phenomena with what has been termed "tether cutting" by Sturrock and others.

We conclude that this flare resulted from active region destabilization, not the other way around; preflare motions preceded significant heating. We conclude that emerging flux played a dual role; it globally destabilized the active region, through tether cutting, and it reconnected with other flux systems during the flare.

6.11

Comparison of YOHKOH, ULYSSES, and PVO Data With Thick-Target Electron Beam Models for the 15-NOV-1991 Flare
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We present preliminary results from a comparison of thick-target electron beam models with data obtained from multiple spacecraft for the X 1.5 class flare observed on 15 November 1991 at 2238 UT. In particular, we compare the variation of the spectral index with observation angle with steady-state thick-target electron beam models, which include energy loss and pitch angle scattering due to Coulomb collisions. The preliminary calculations indicate that the results are consistent with an isotropic electron injection, with the electron distribution becoming anisotropic due to transport effects. A discussion of the uncertainties inherent in this kind of comparison is included. We also compare spatially dependent hard X-ray spectra obtained from YOHKOH HXT data with the spectra expected from thick-target electrons, including comparisons with isotropic and anisotropic electron beam models. Future work will include time dependent models, and more realistic geometrical assumptions.

* Retired

6.12

The Yohkoh Software and Database System
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The Yohkoh mission adopted a common data file format for all instruments on the spacecraft. This approach has greatly facilitated analysis and access to the data, especially when datasets from more than one instrument are being considered. In addition to having a common raw data file format, the Yohkoh mission has created an extensive ancillary database which includes observing logs, event logs, daily X-ray reference images, background images, pointing logs, synoptic images and engineering logs. The Yohkoh approach includes multiple databases from ground-based observatories and other satellites: H-alpha, magnetograms, He 10830, GOES event logs and light curves, NOAA active region information, BATSE event logs and light curves. Data from several other institutes have been incorporated into the Yohkoh system, allowing easy cross referencing. The Yohkoh analysis software package is based on IDL and is currently supported on a variety of platforms (Sun, Mips, SGI, Ultrix, VMS). An example of the access to the Yohkoh database will be presented on a workstation display.

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