

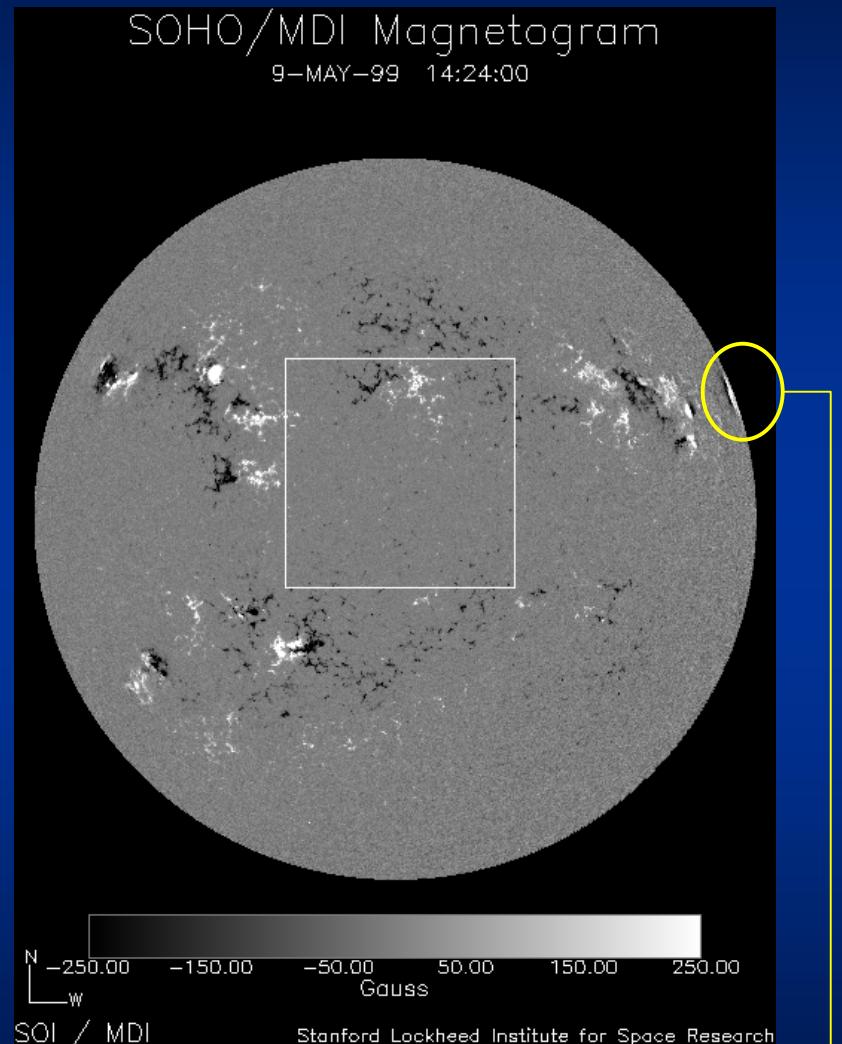
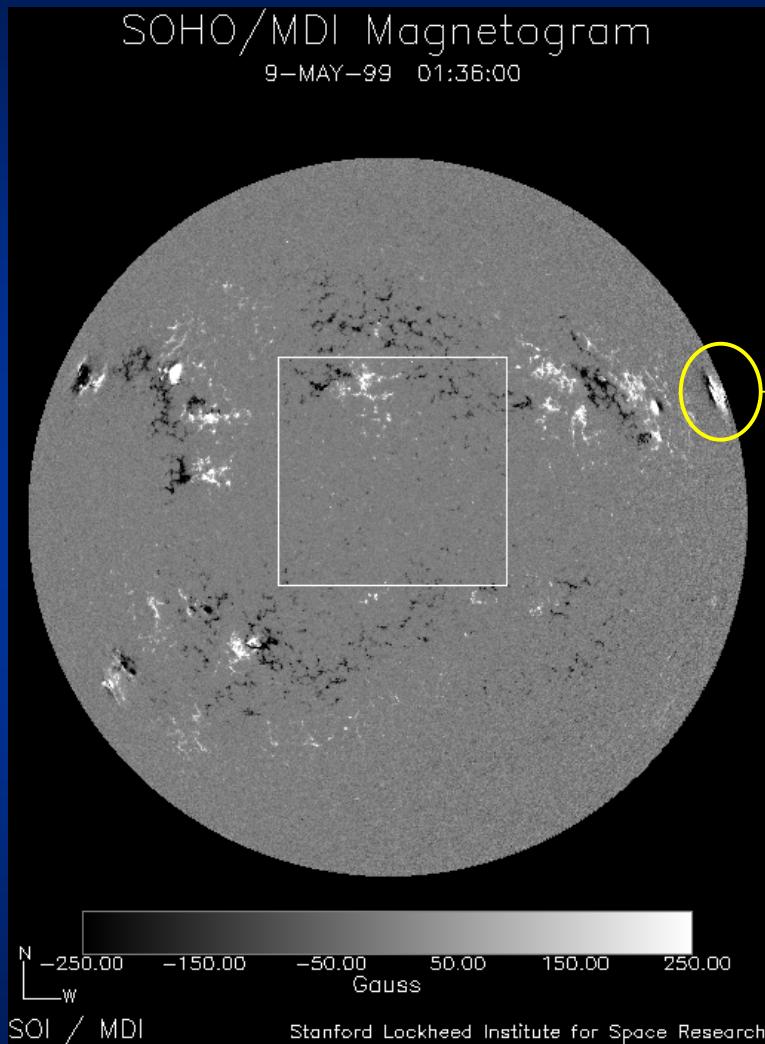
Solar flare observations from SOHO, MICA and YOHKOH in relation with a coronal shock wave

G. Stenborg
D. E. Innes
R. Schwenn

**Max Planck Institut für Aeronomie
Katlenburg-Lindau**

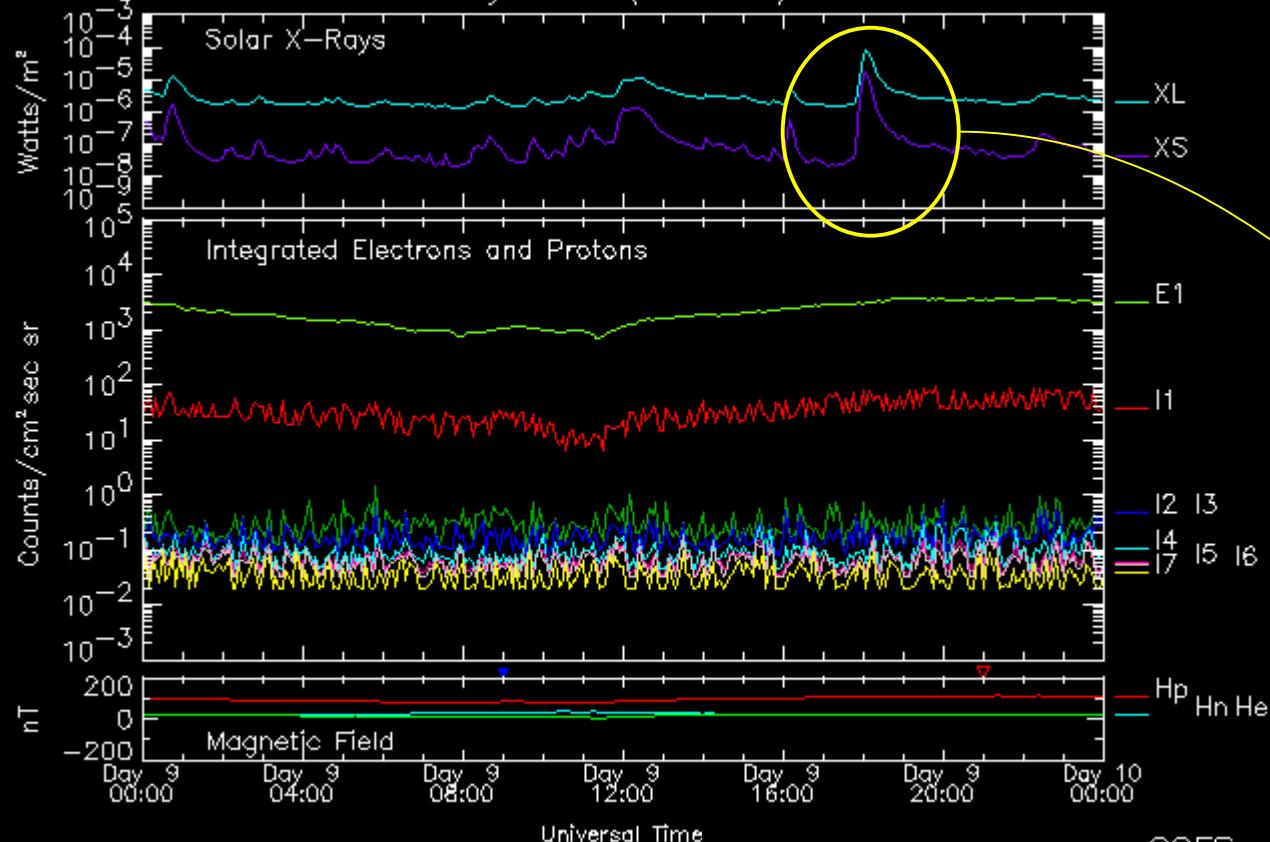


WHERE ?



NOAA AR 8537

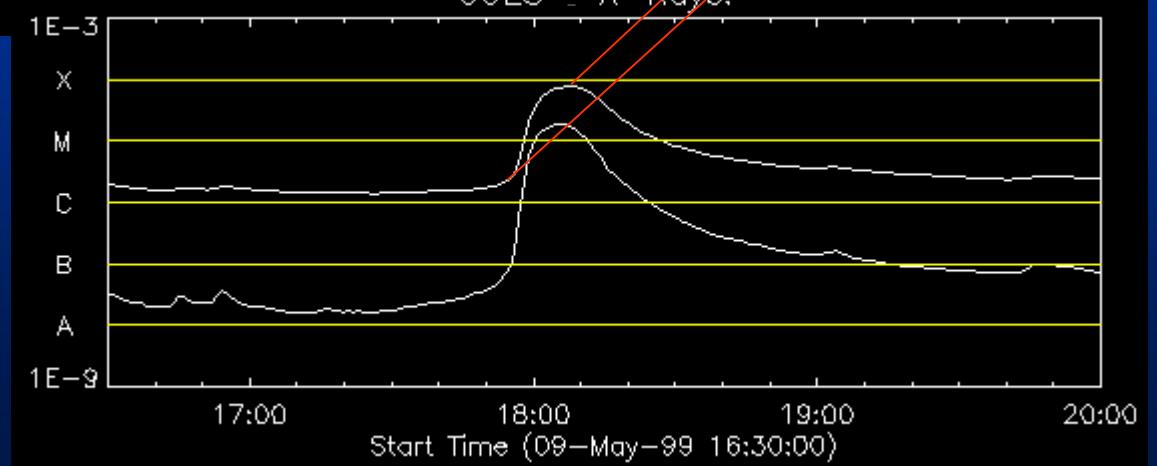
GOES-10 Space Environment Monitor (5-Min Averages)
May 1999 (135.4°W)



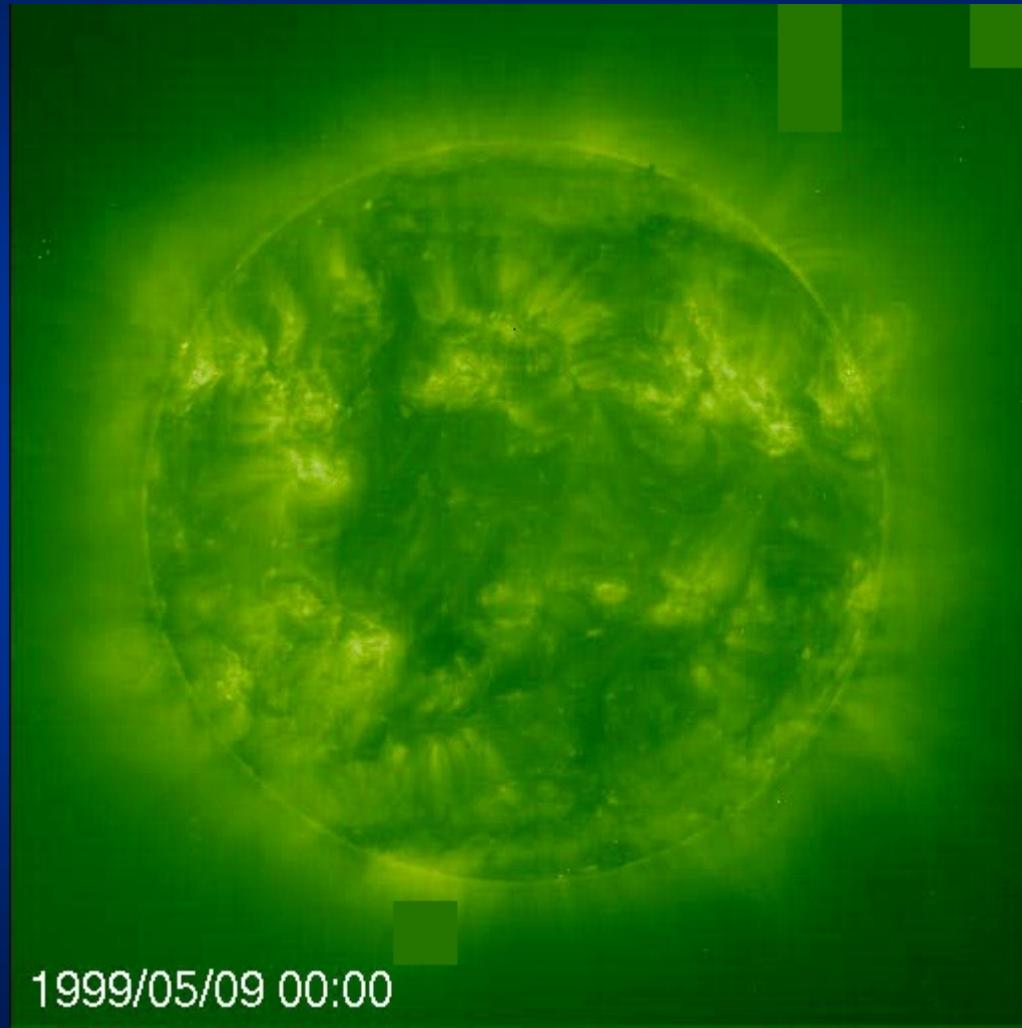
**WHAT
did happen ?**

18:07 UT
17:53 UT

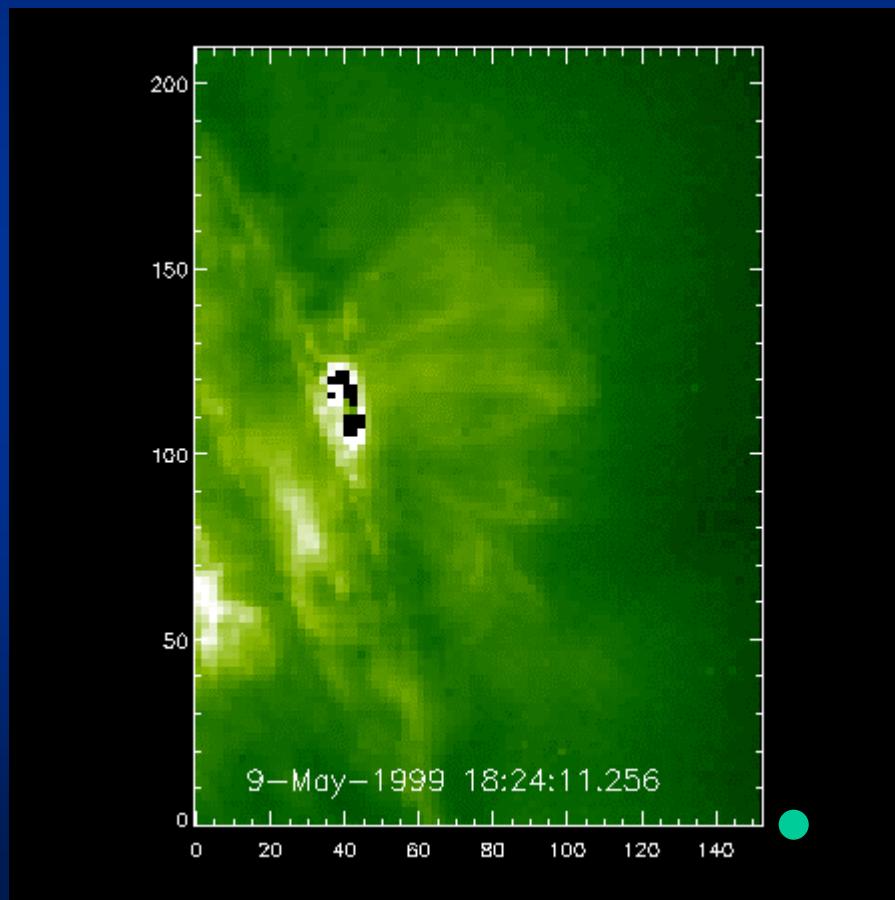
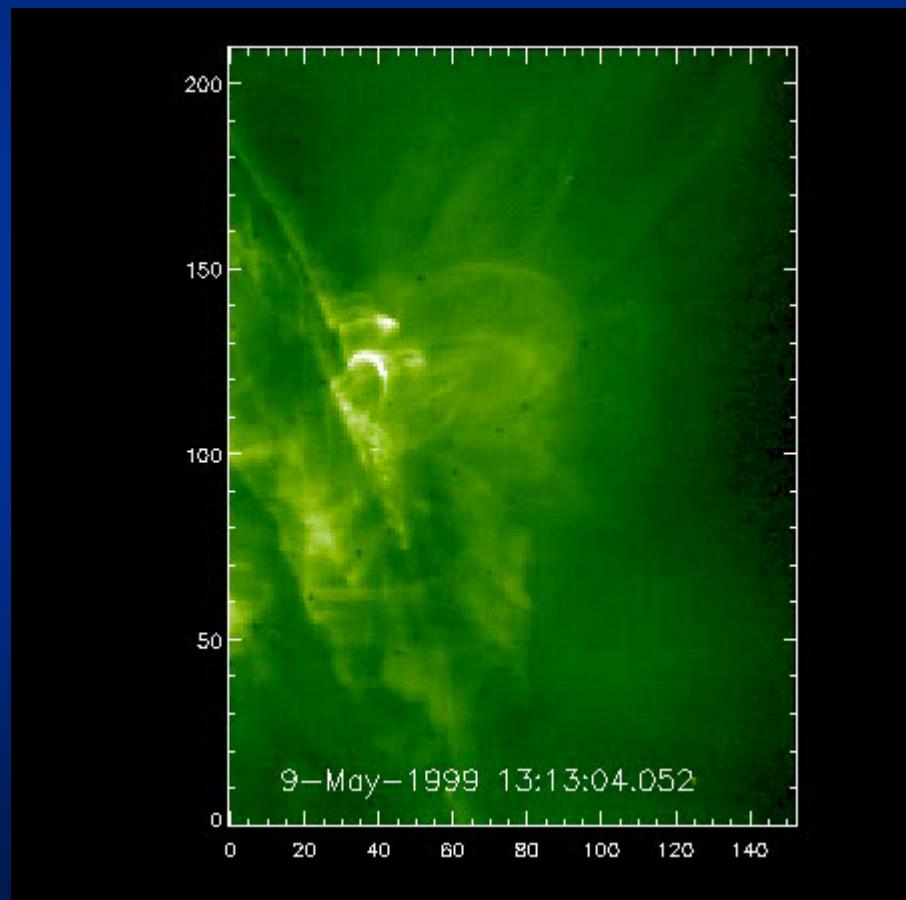
GOES M7.6 flare



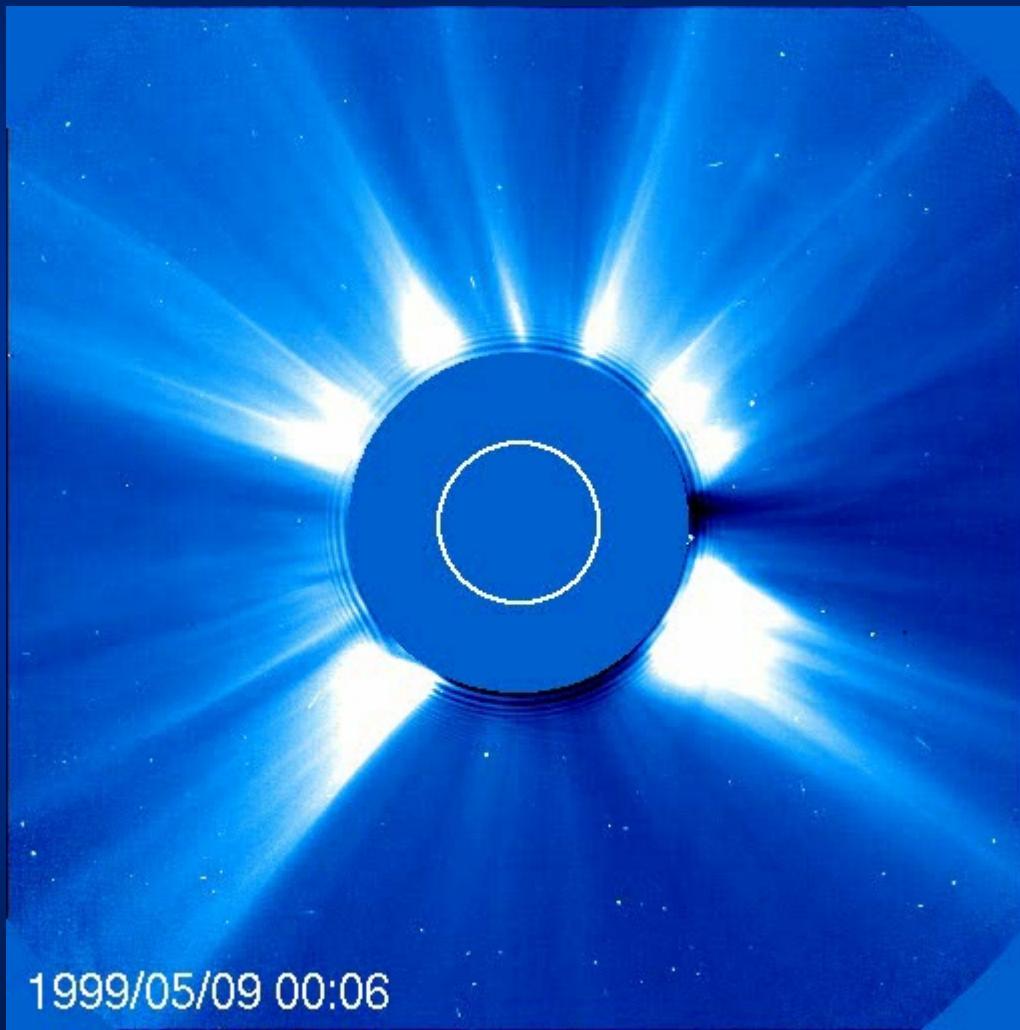
**Fe XII EIT/SOHO
on 09.05.99 between 00:00 UT- 23:59 UT**



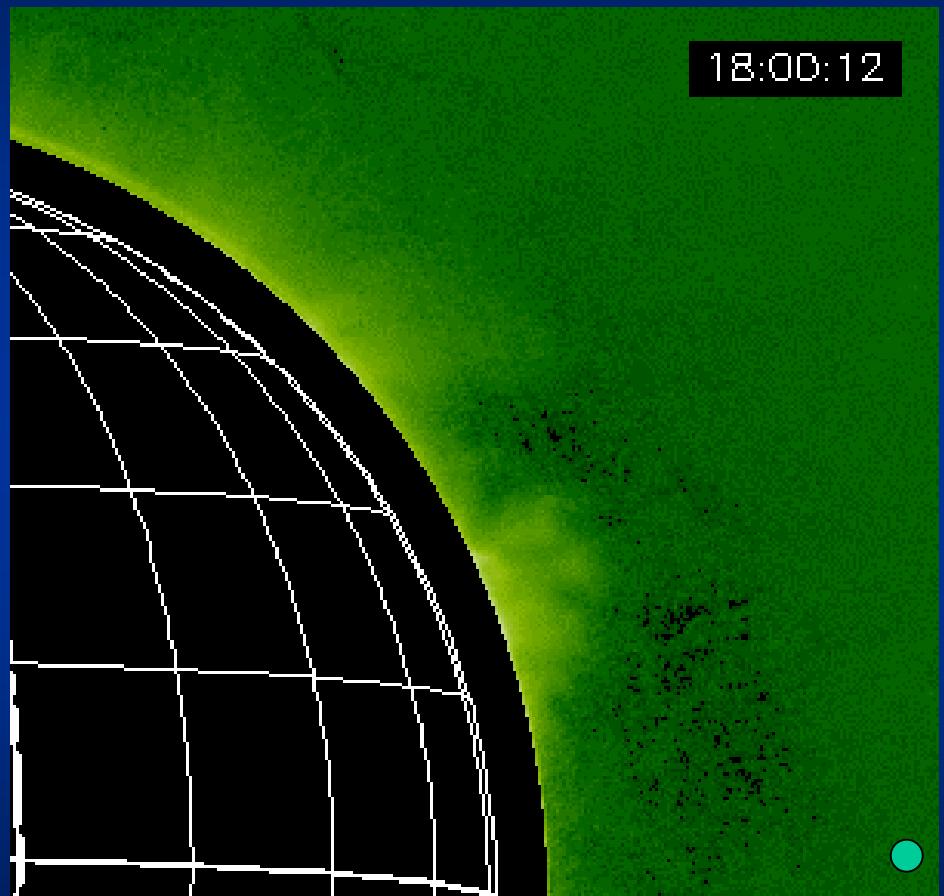
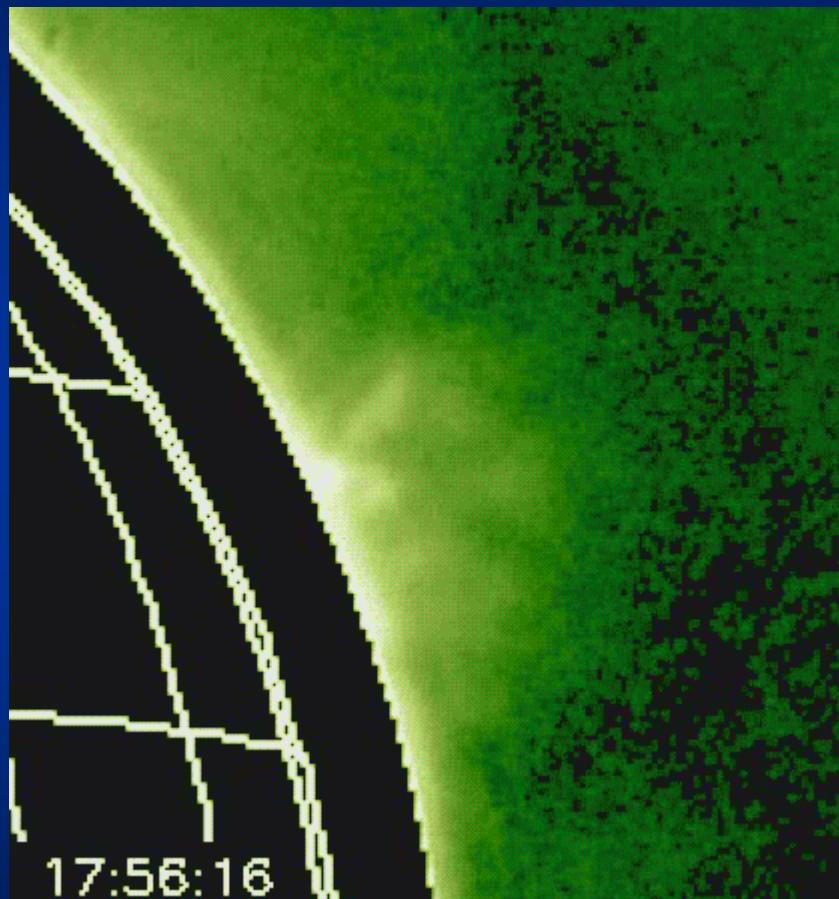
**Fe XII EIT/SOHO
on 09.05.99 between
13:13 UT - 18:48 UT**



LASCO-C2/SOHO
on 09.05.99 between 00:00 UT- 23:59 UT

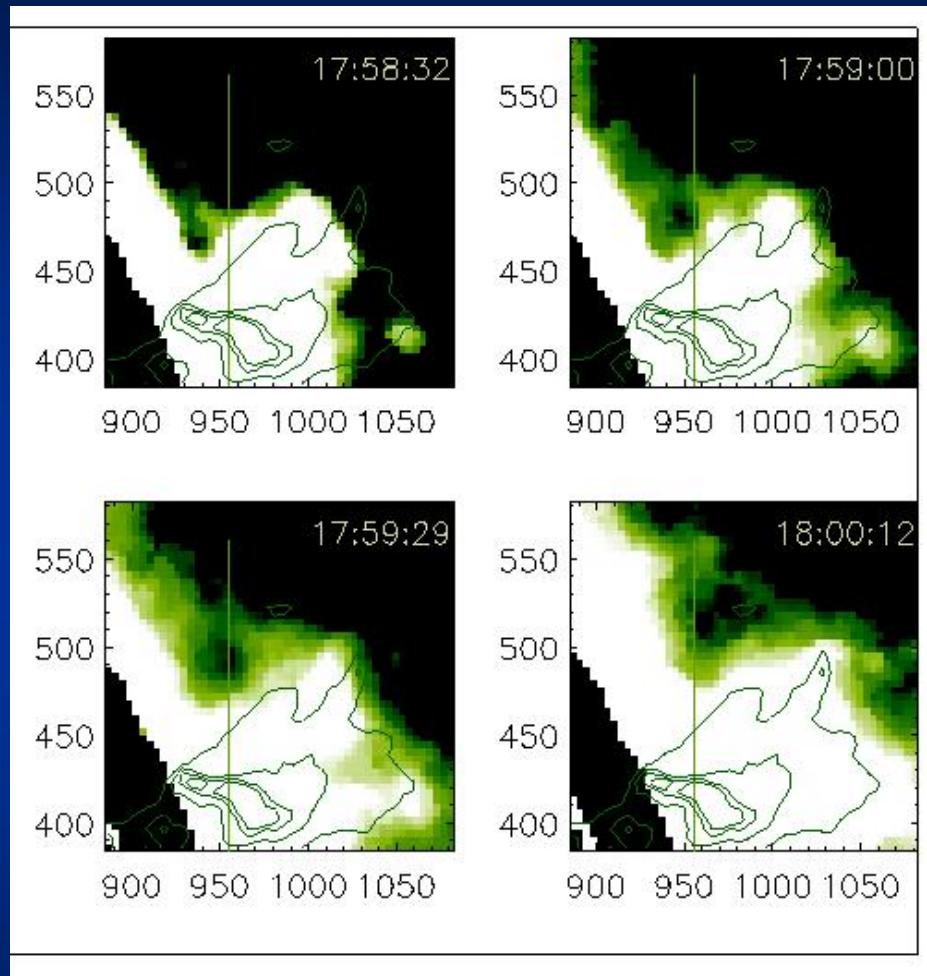


**Fe XIV MICA
on 09.05.99 between 17:21 UT- 18:12 UT**

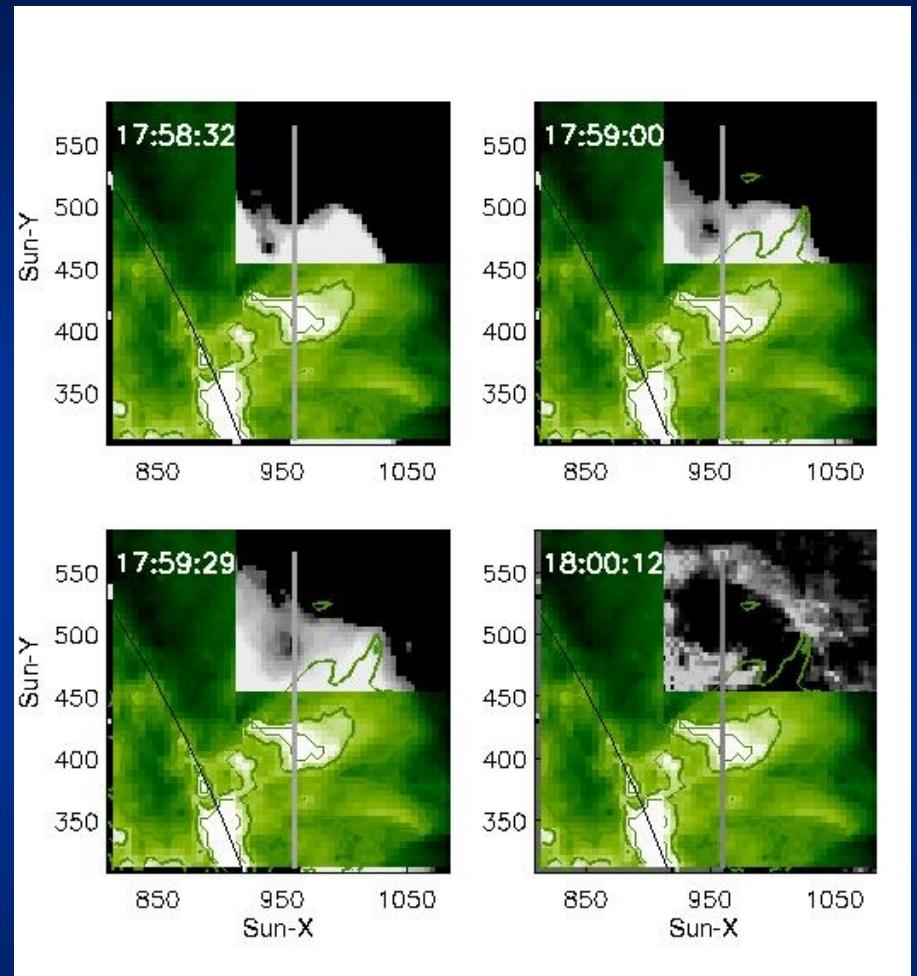


MICA (optical) front

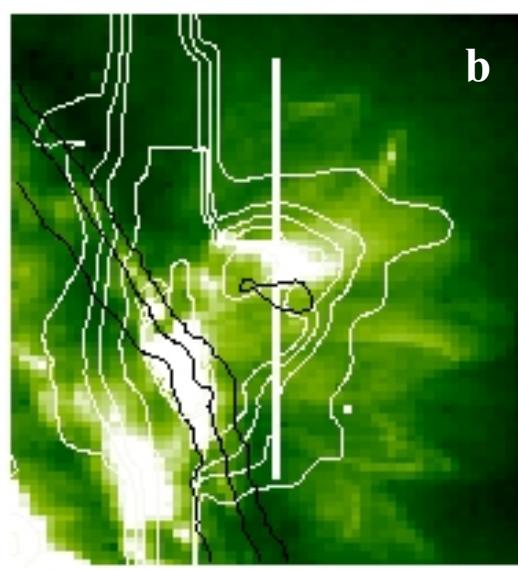
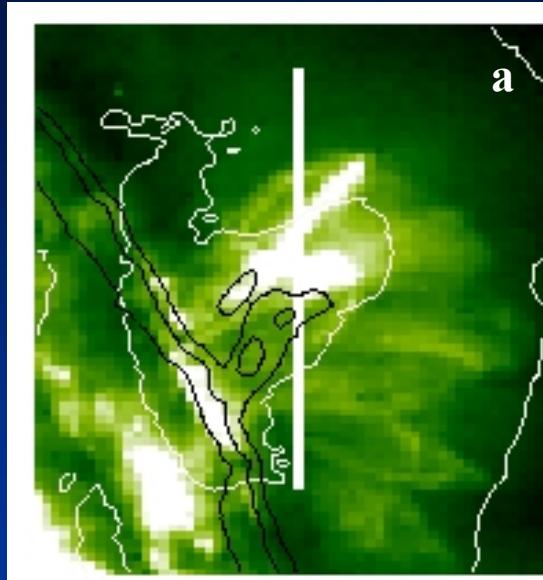
Images of the fast optical emission front



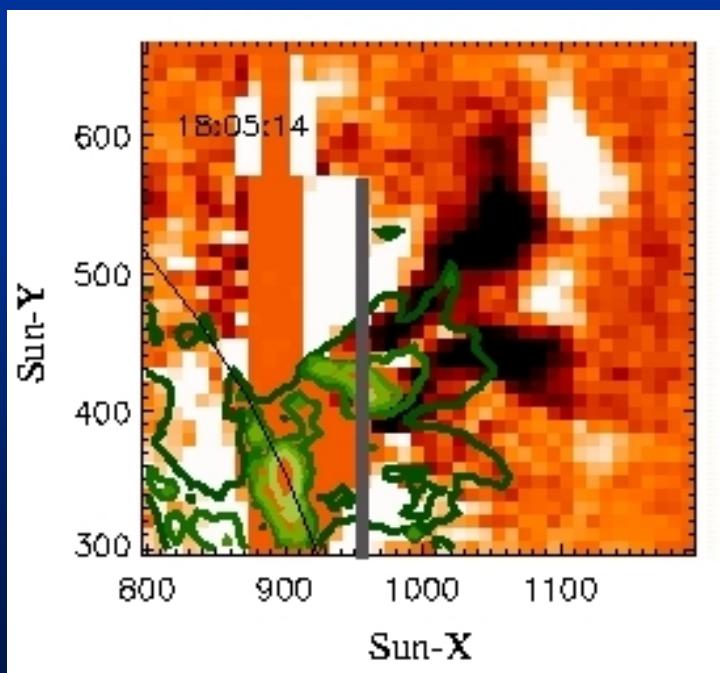
- Contours
Fe XII (EIT) at 18:00:11 UT
Background (20 sec exp)
Fe XIV + continuum emission (MICA)



- Contours + Background
Fe XII EIT at 18:00:11 UT
- Grey
Fe XIV+continuum emission (MICA)

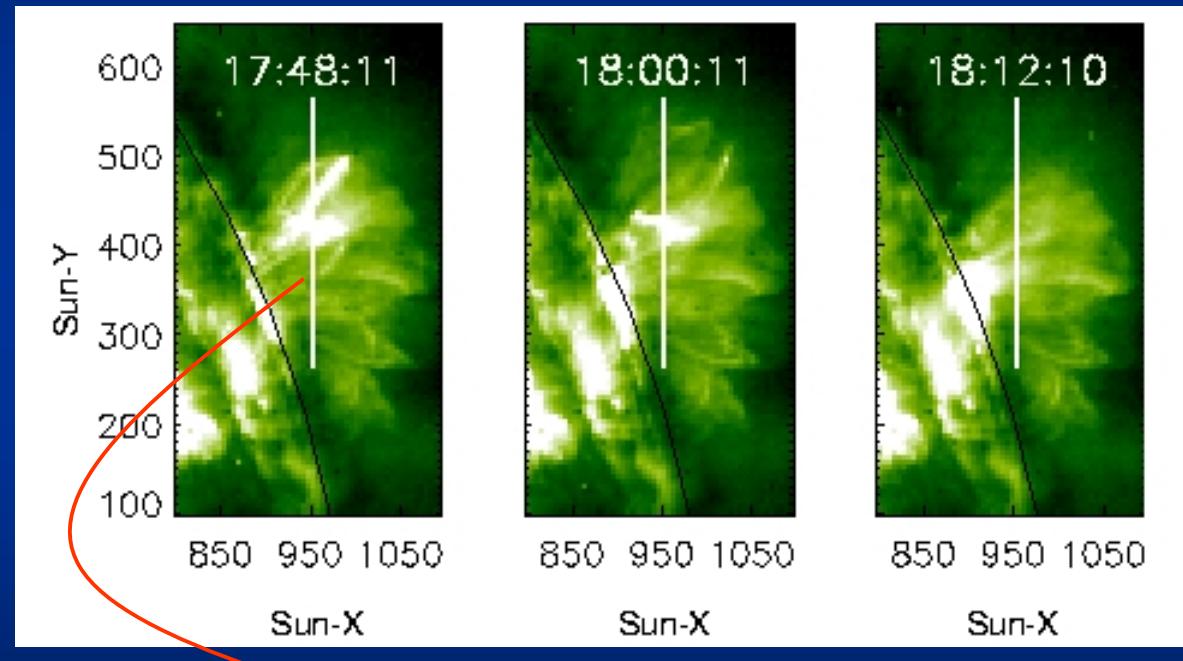


Ejection of soft X-ray plasma



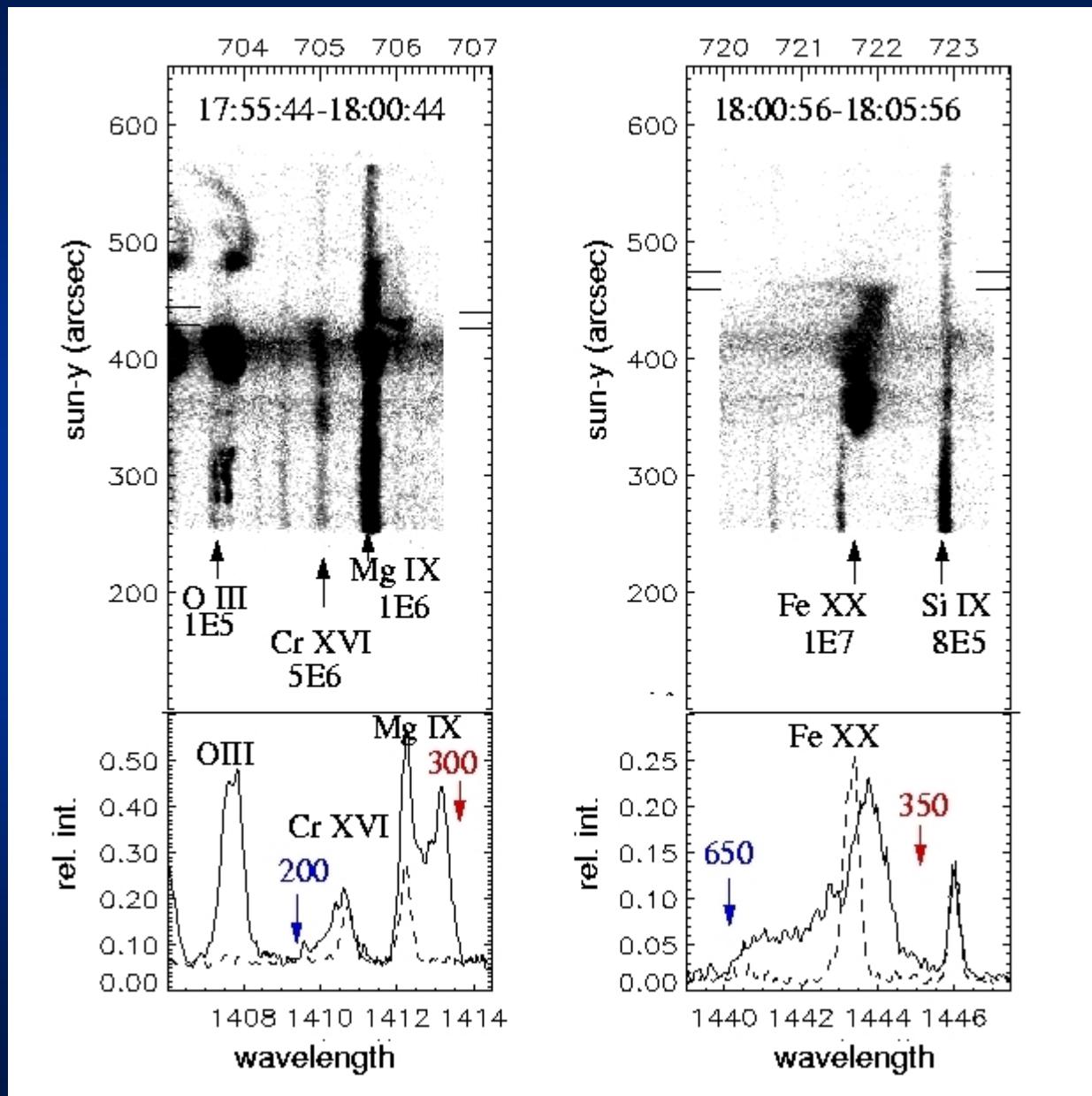
- Background: Fe XII/EIT at
 - a) 17:48:11 UT
 - b) 18:00:11 UT
- White Contours: SXT/YOHKOH at
 - a) 17:37:00 UT
 - b) 18:04:14 UT
- Black Contours: H_{α} /HASTA at
 - a) 17:48:49 UT
 - b) 17:58:59 UT
- Contours: Fe XII/EIT at 18:00:11 UT
- Background: SXT/YOHKOH Image difference (18:05:14 UT - 18:04:14 UT)

Line-of-sight plasma flow observations SUMER spectra

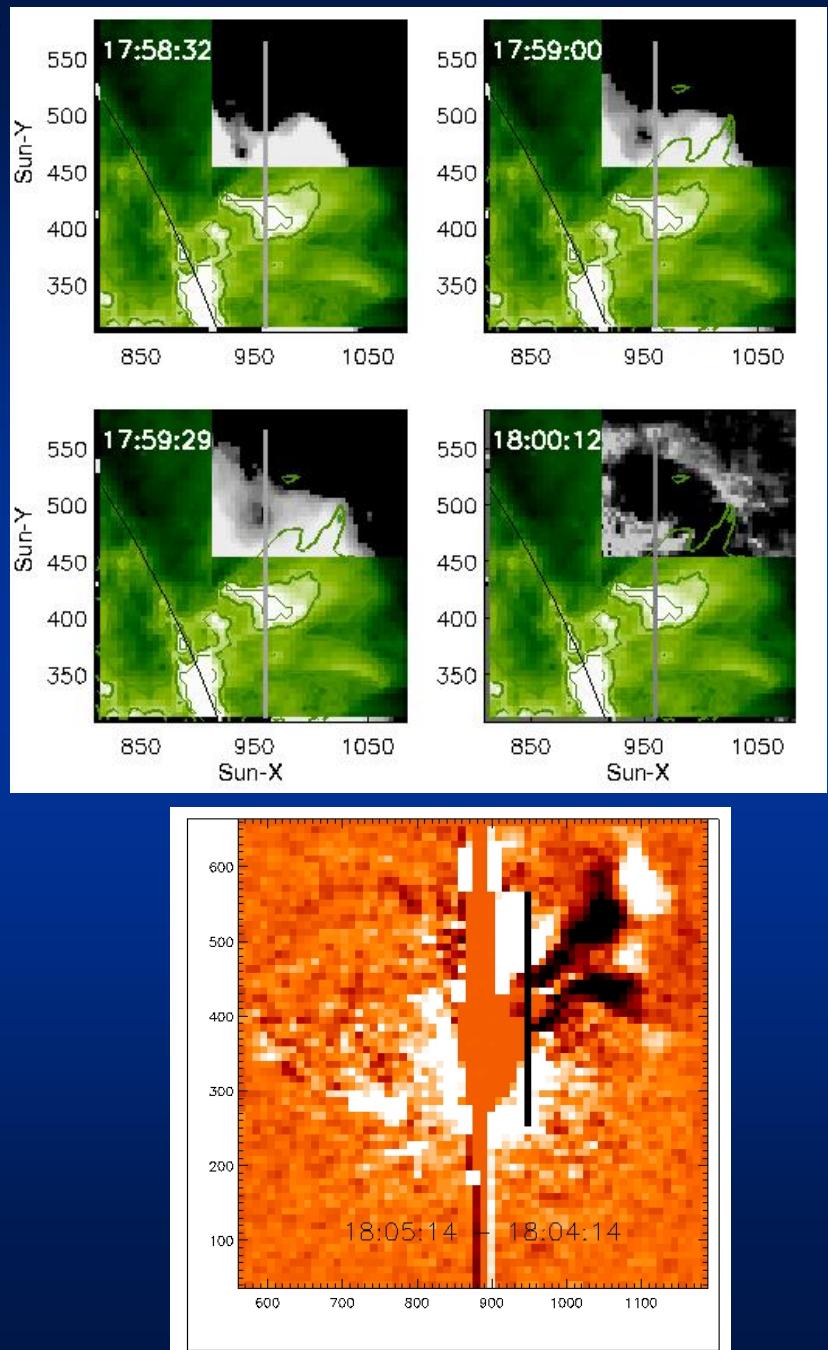
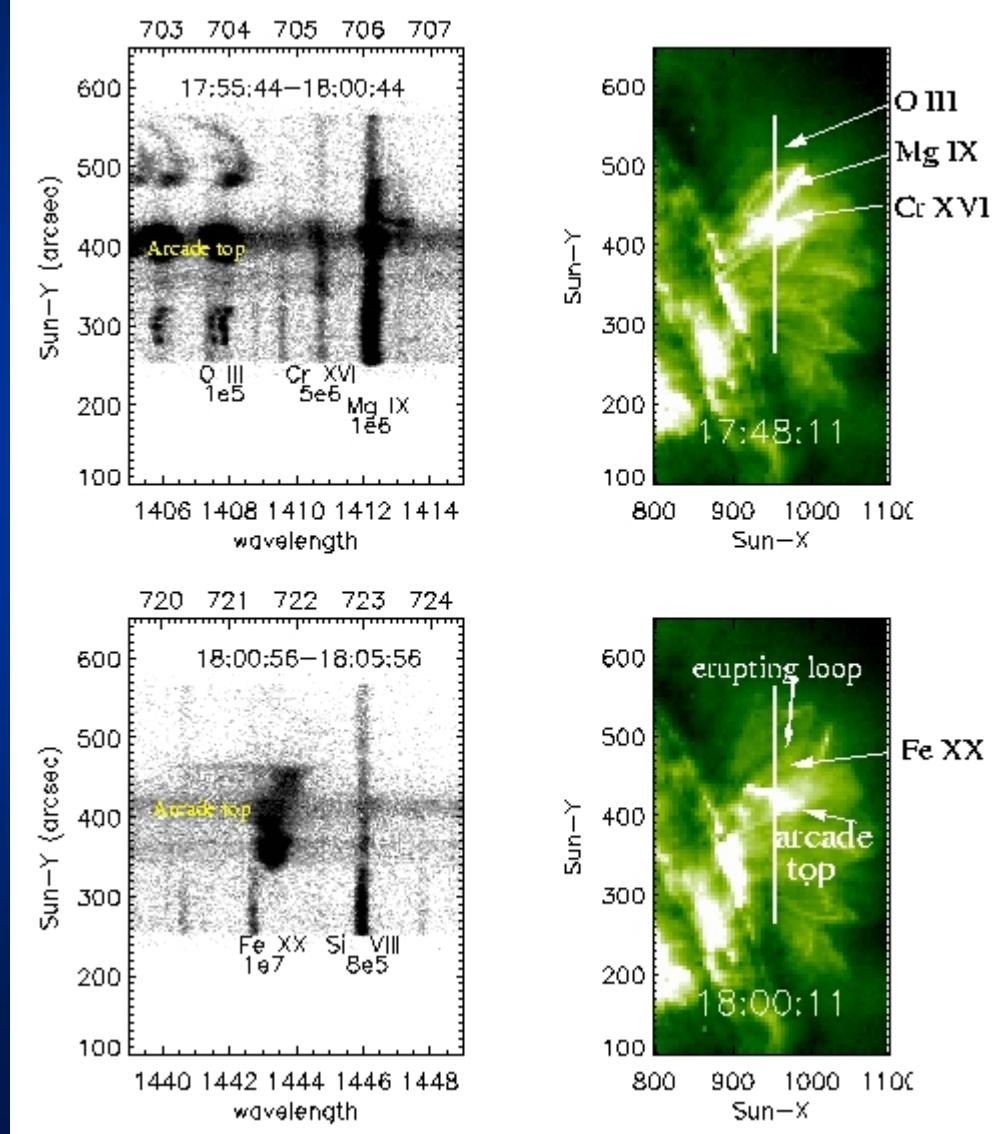


SUMER slit (1 sec x 300 sec)

SUMER spectra



Line-of-sight plasma flow observations SUMER spectra



Interpretation

- **3-D plasma motion:**
explosive energy release at the site
- **Fast moving optical emission front:**
density enhancement behind fast shock
- **X-ray plasmoid ejection:**
as loop top is overtaken by shockwave

