Source region magnetic field of STEREO CMEs

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The Magnetic Cloud of Dec. 14-15, 2006 at ACE and STEREO IMPACT A

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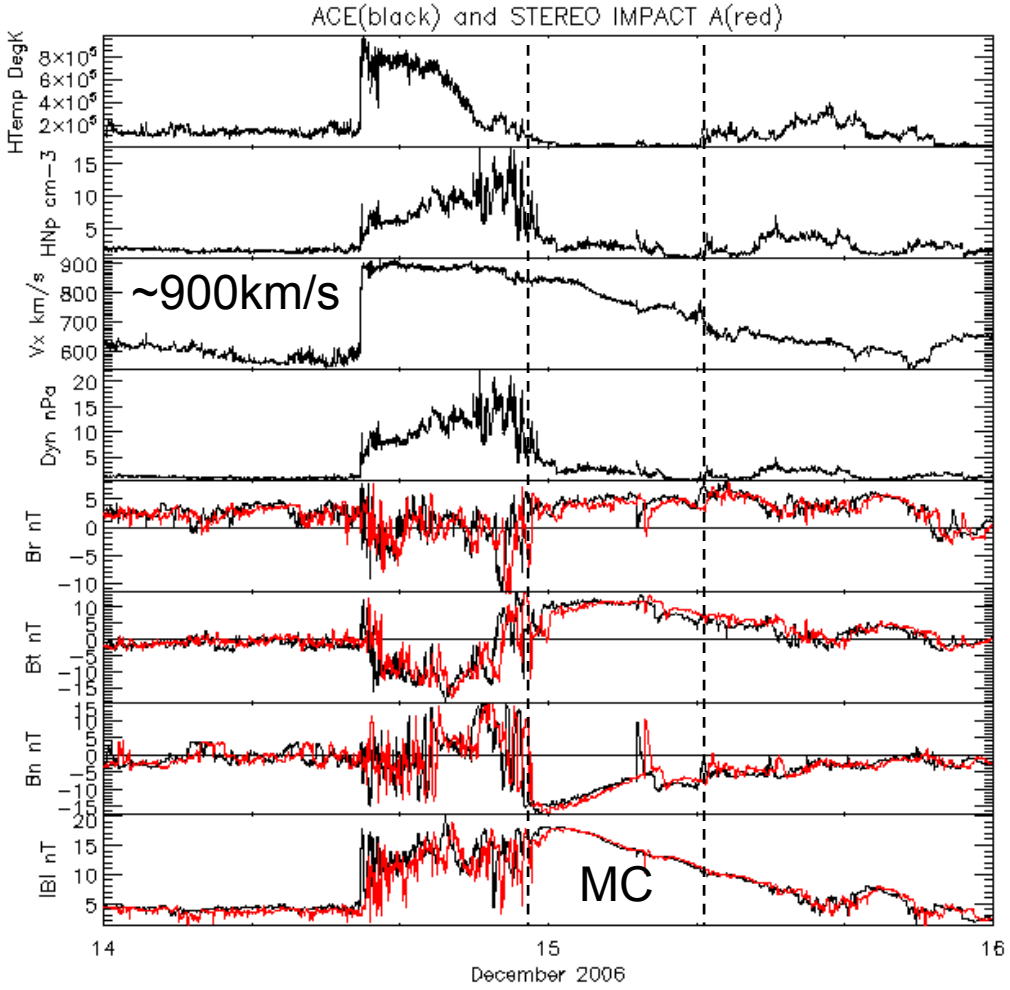
- ACE at L1 Observed the ICME at ~900km/s.
- Left: T, Np, Vx, Dyn, Br,t,n, |B|.
- The ICME shock arrived at ~1400UT, and MC ~2300UT.
- STEREO IMPACT(A) IMF (Red) are overplotted on ACE data (Black). The ICME has a ~25min delayed at IMPACT, but features are otherwise almost identical.



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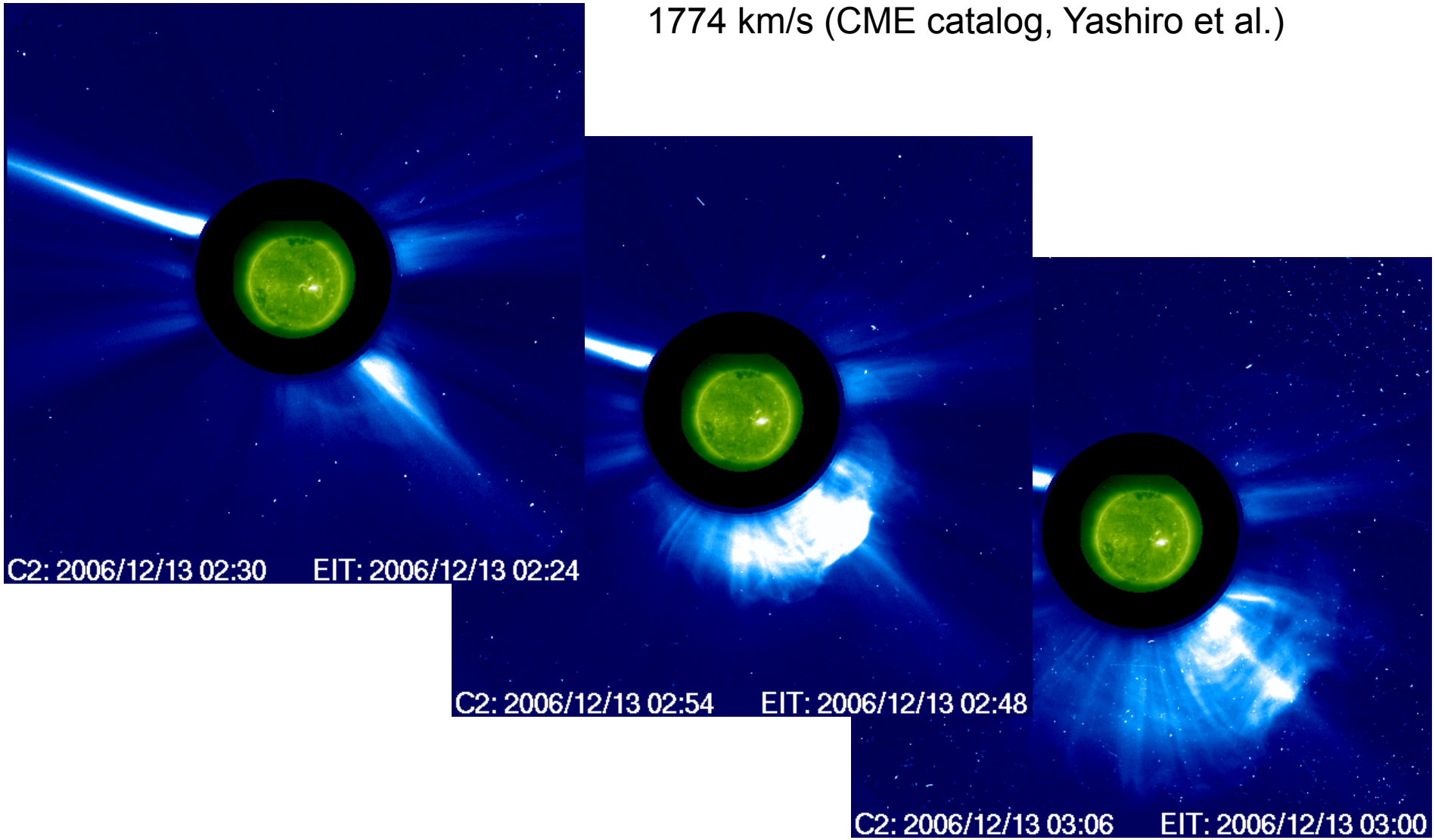
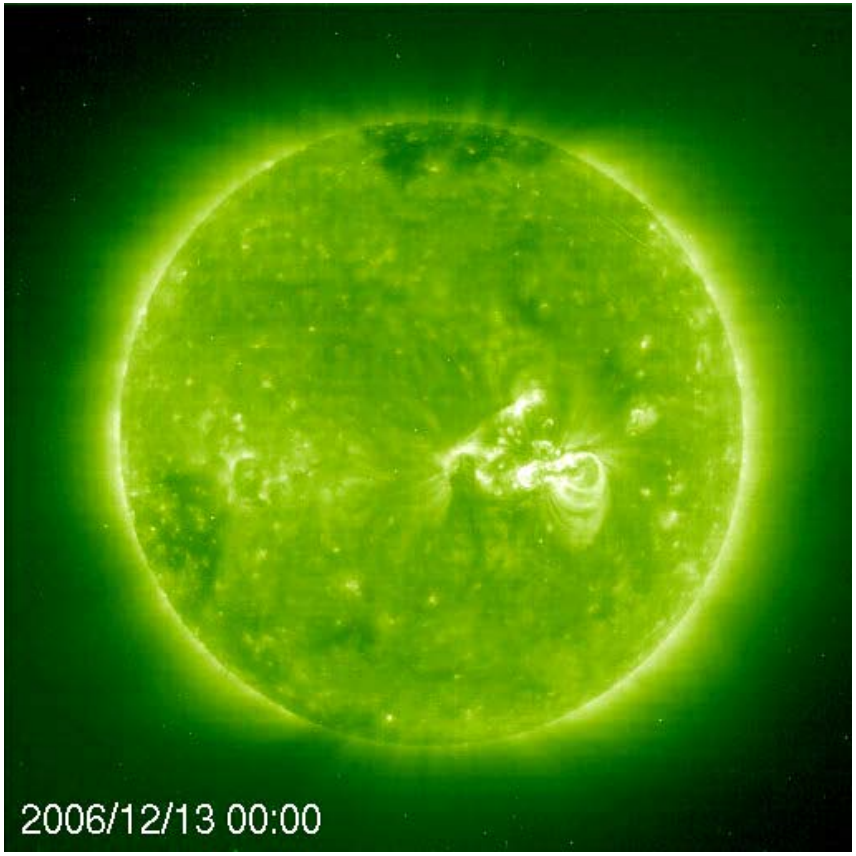
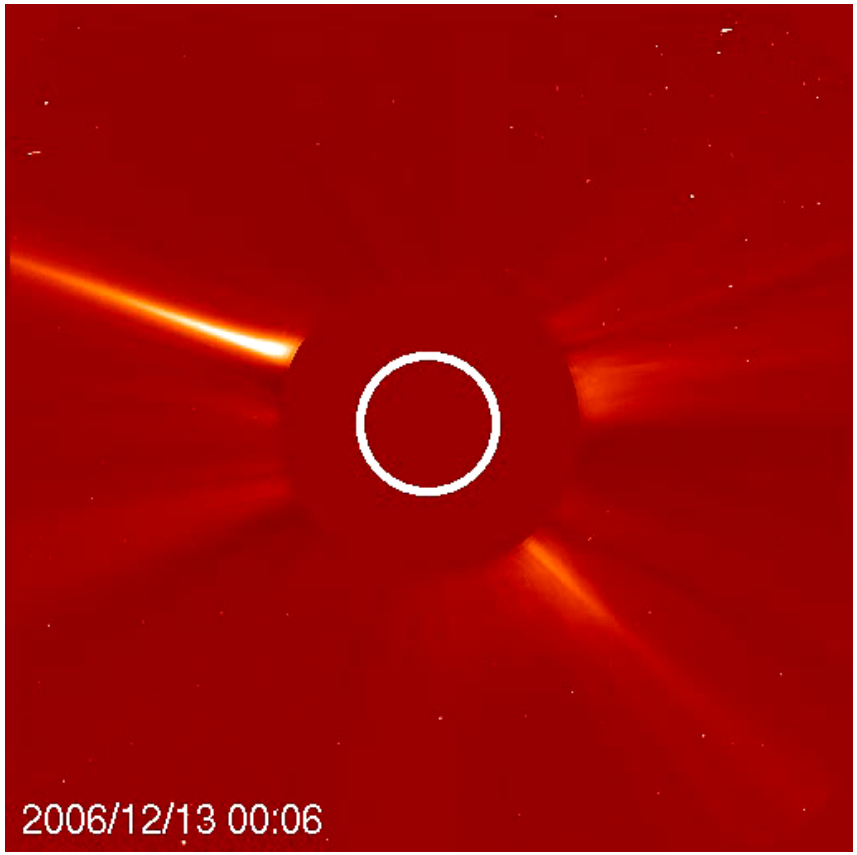
SOHO LASCO Halo CME on 2006/12/13 02:54:04 UT

1774 km/s (CME catalog, Yashiro et al.)

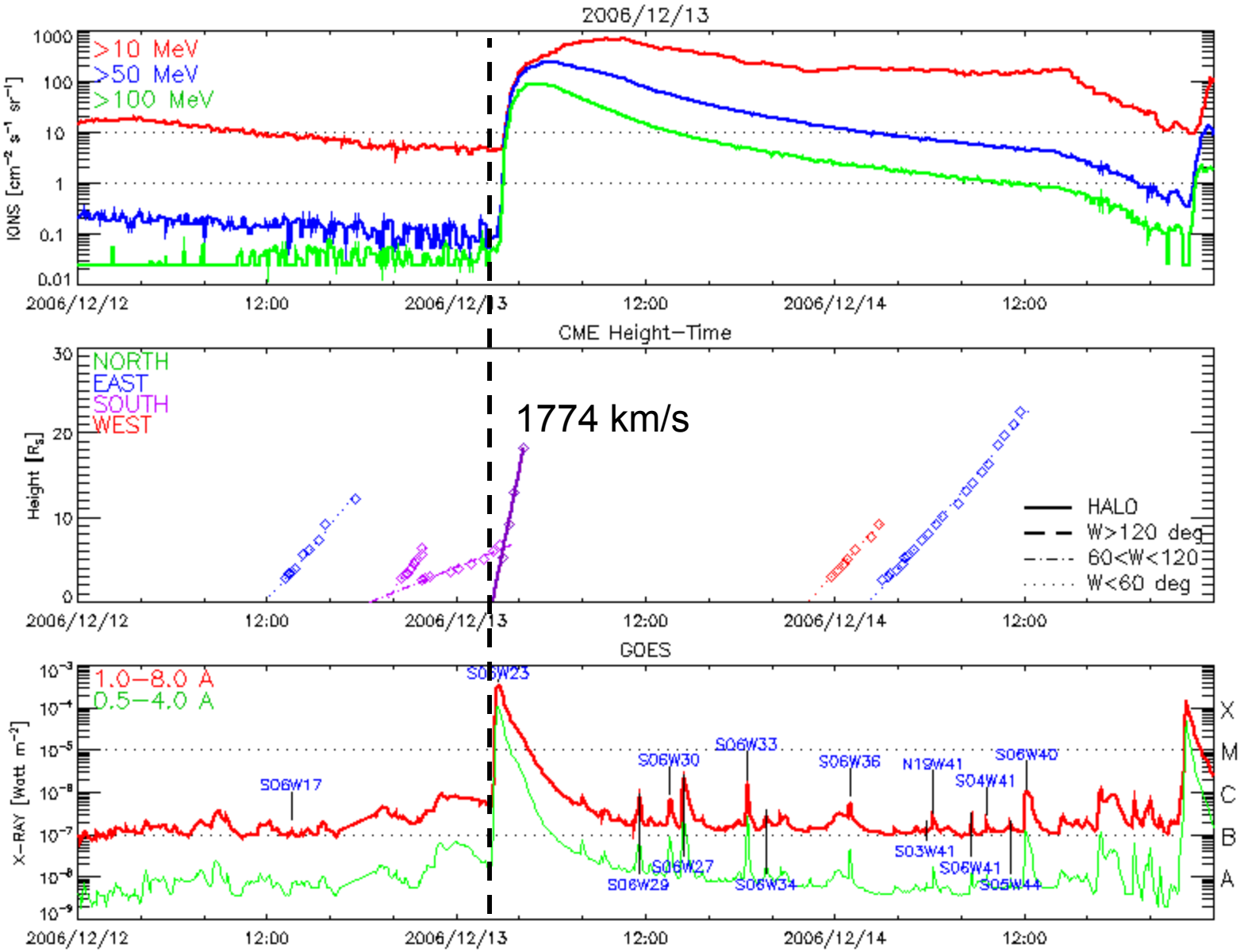


Dec-13-2006 flare and CME

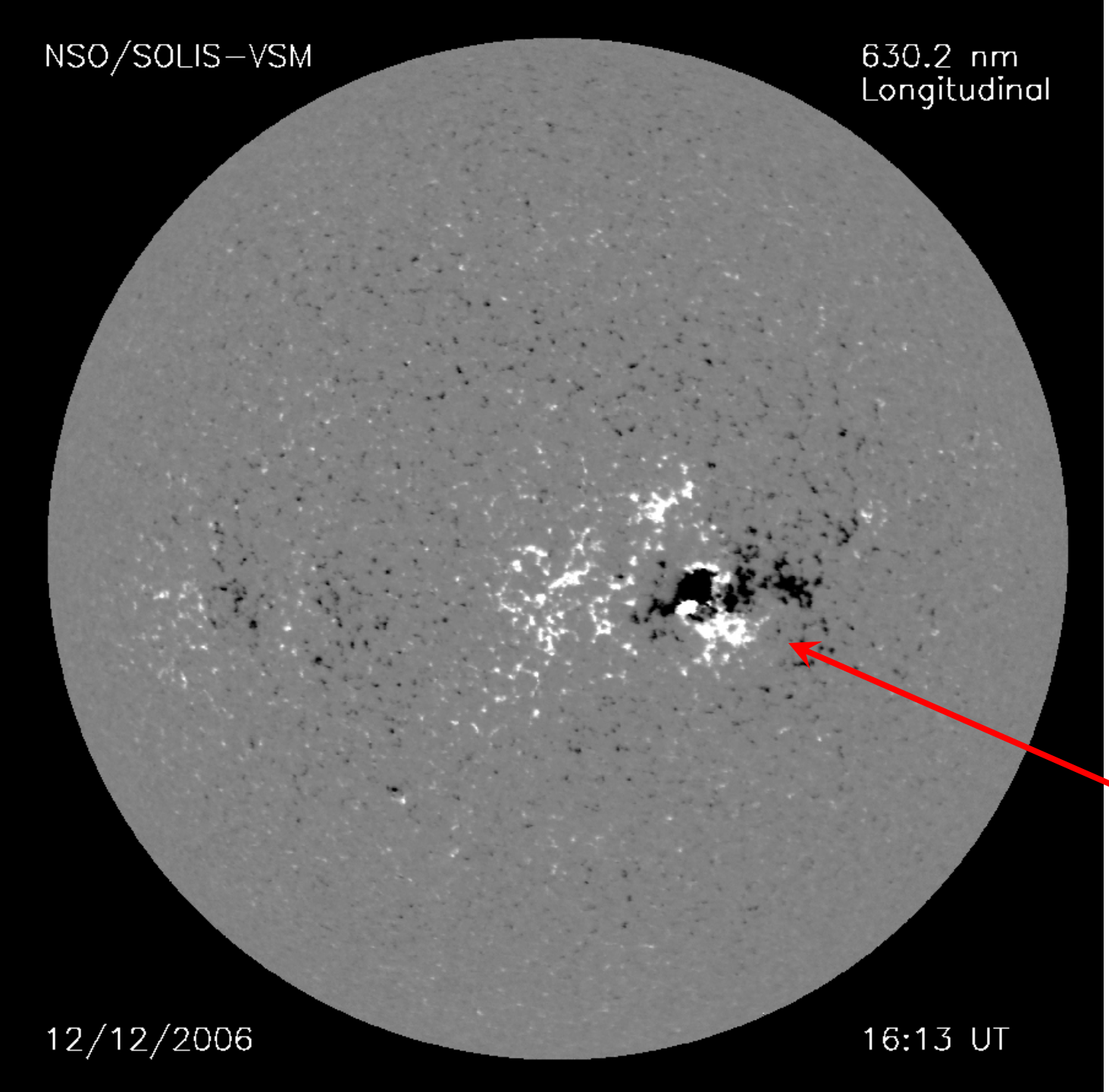




Yashiro et al.

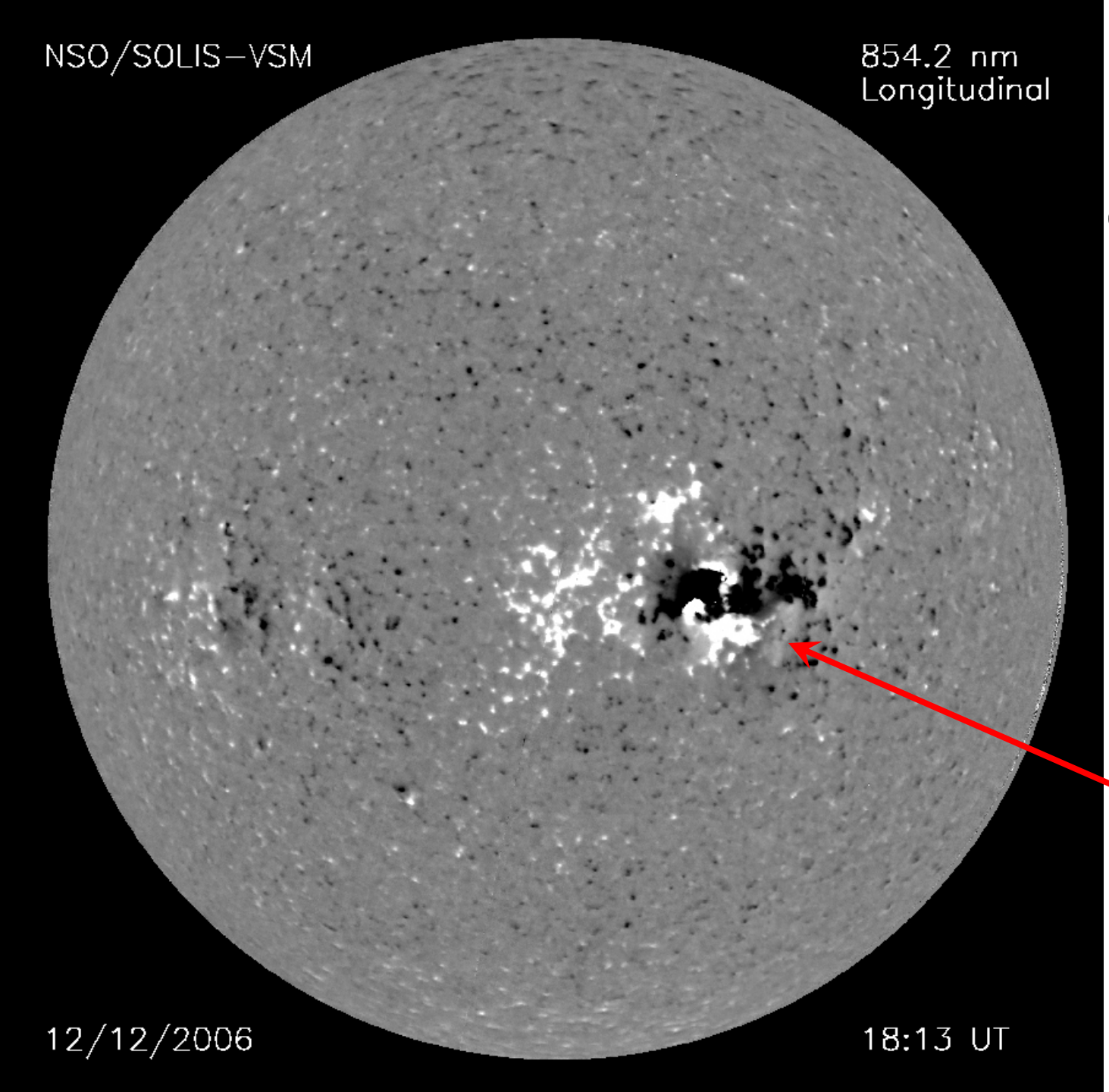


The Active region (AR10930) observed in multi-wavelength



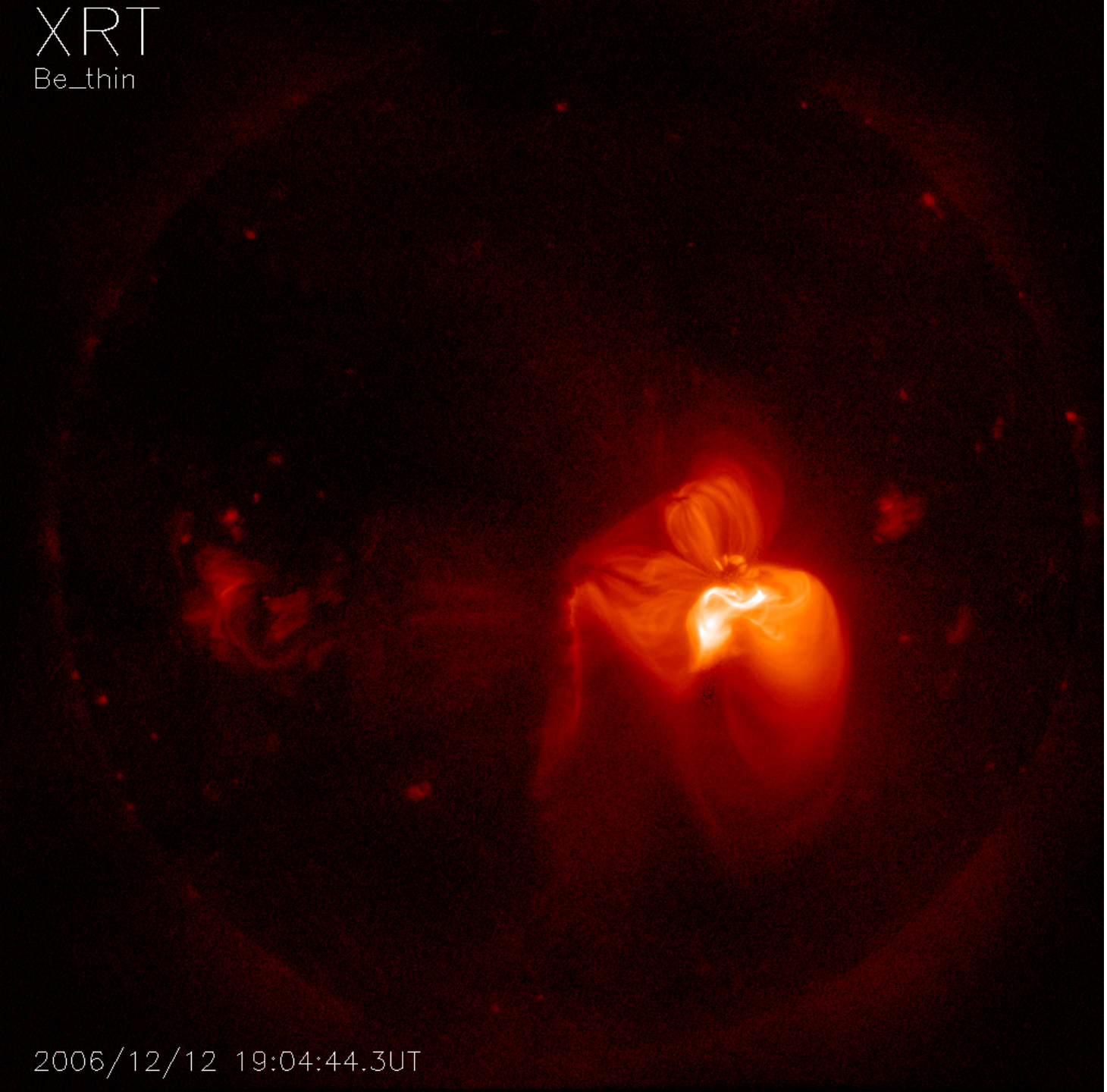
Photosphere Magnetic Field

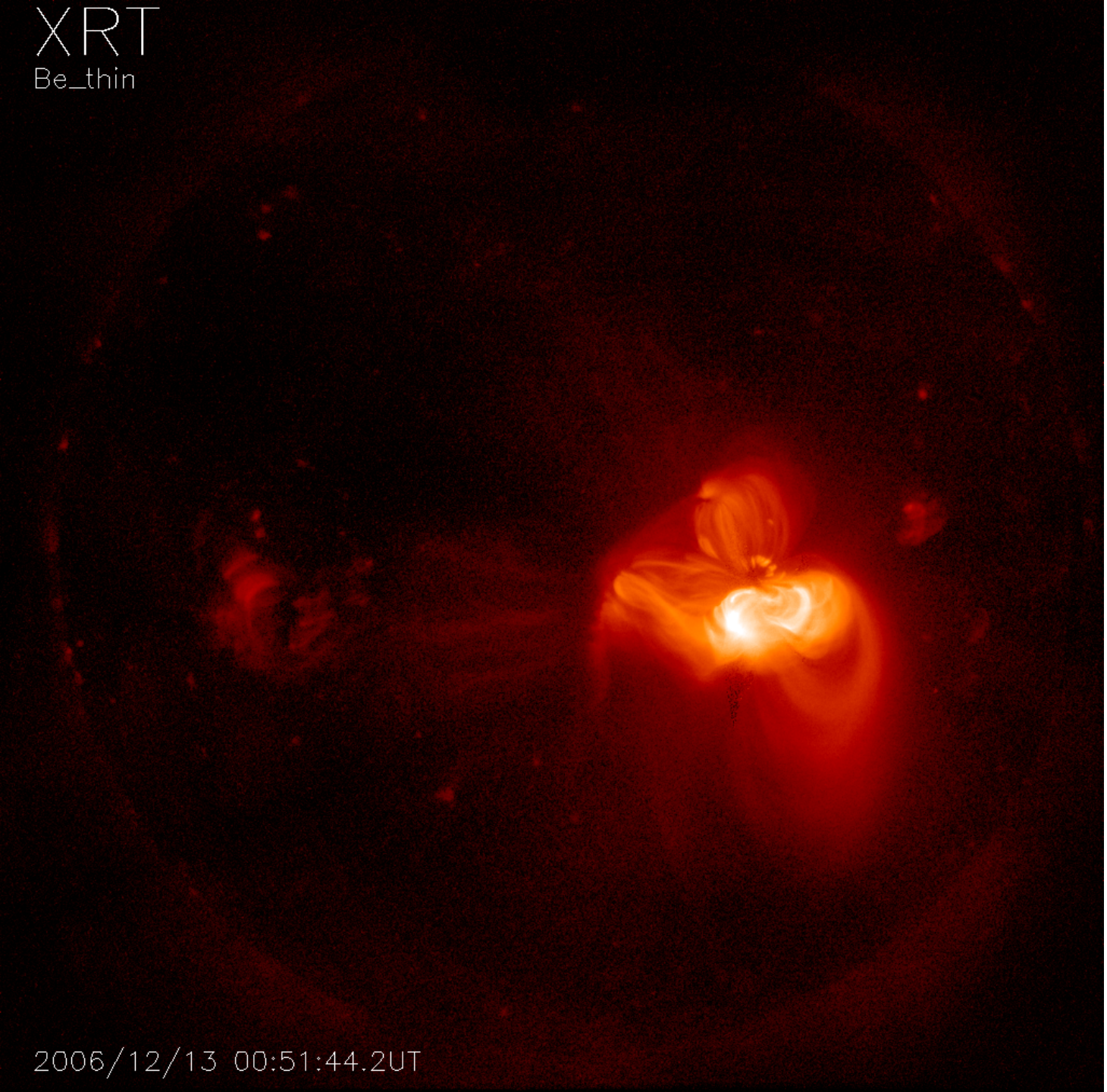
AR10930



Chromosphere Magnetic Field

AR10930


XRT
Be_thin
2006/12/12 19:04:44.3UT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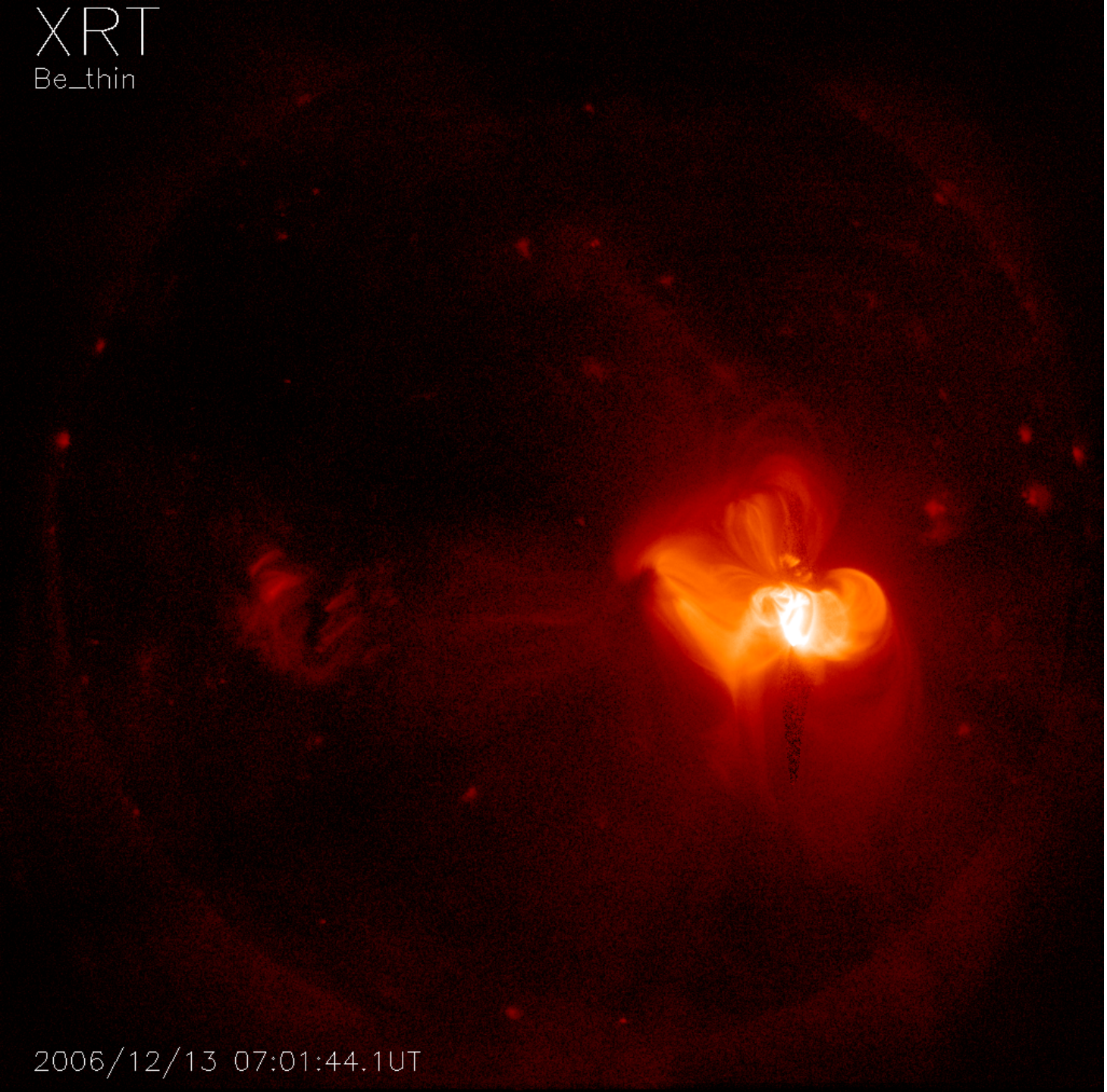
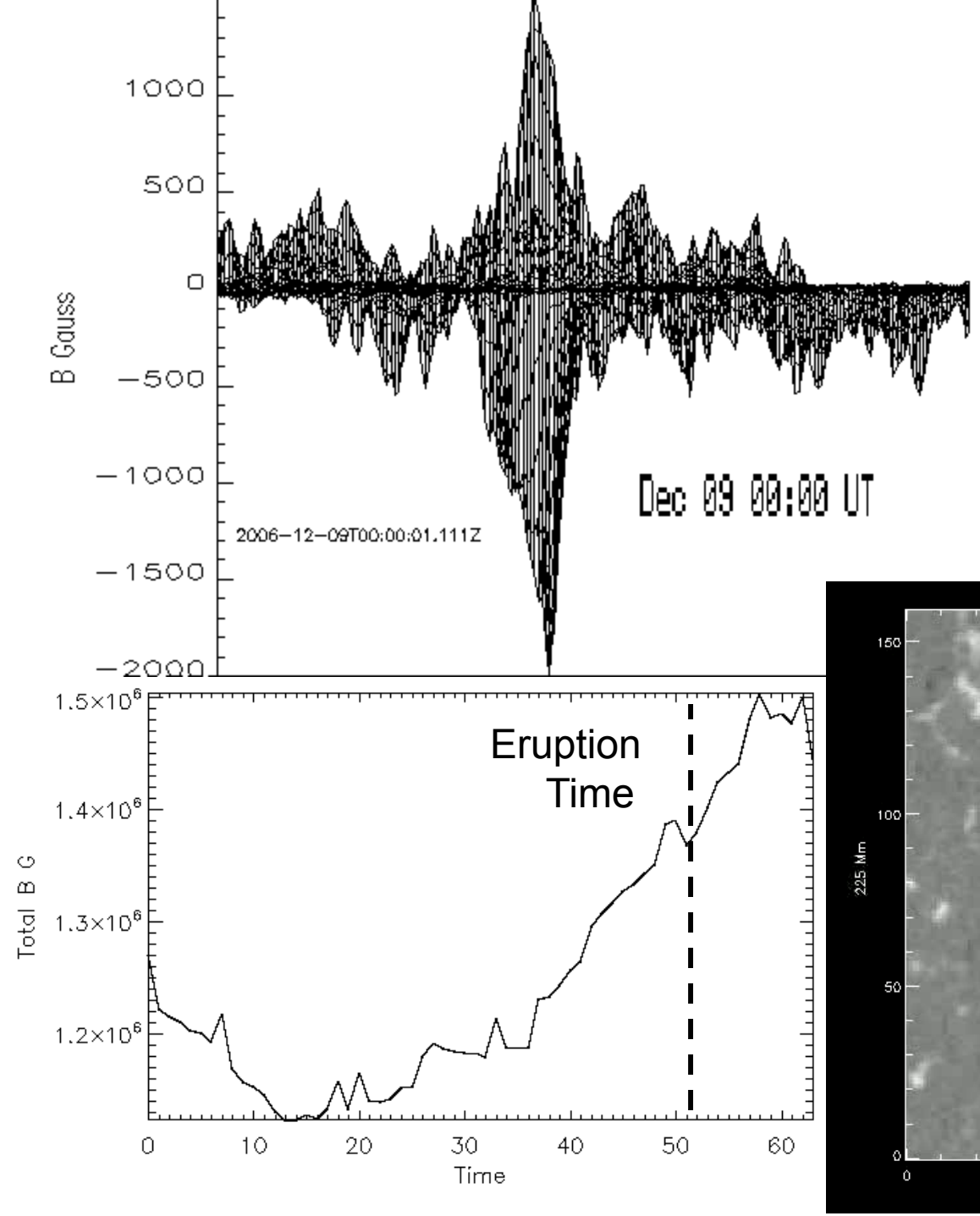
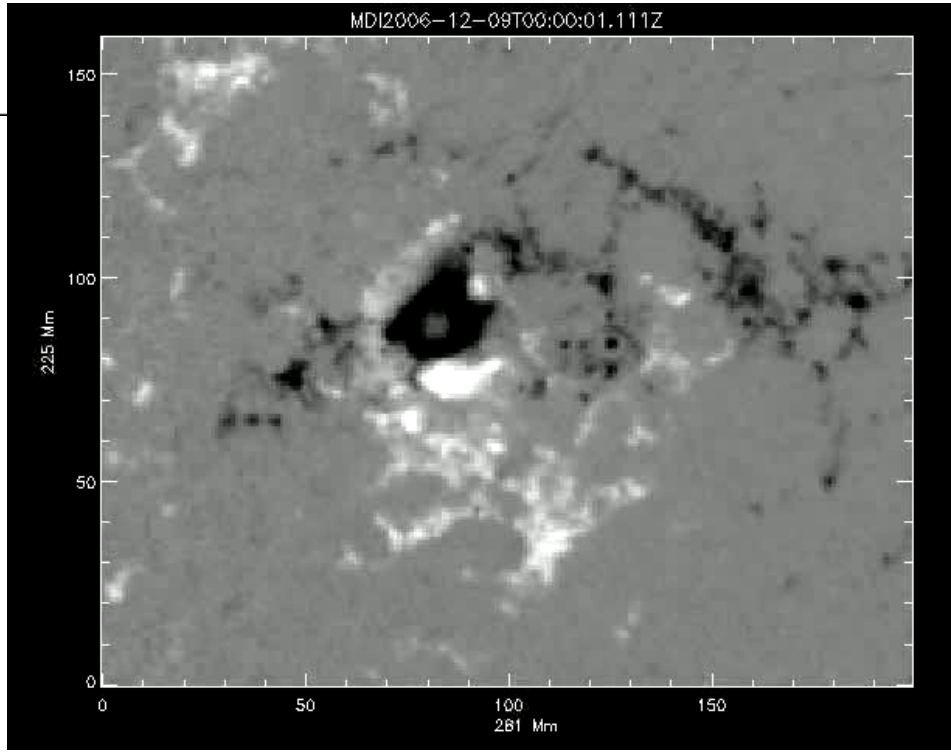
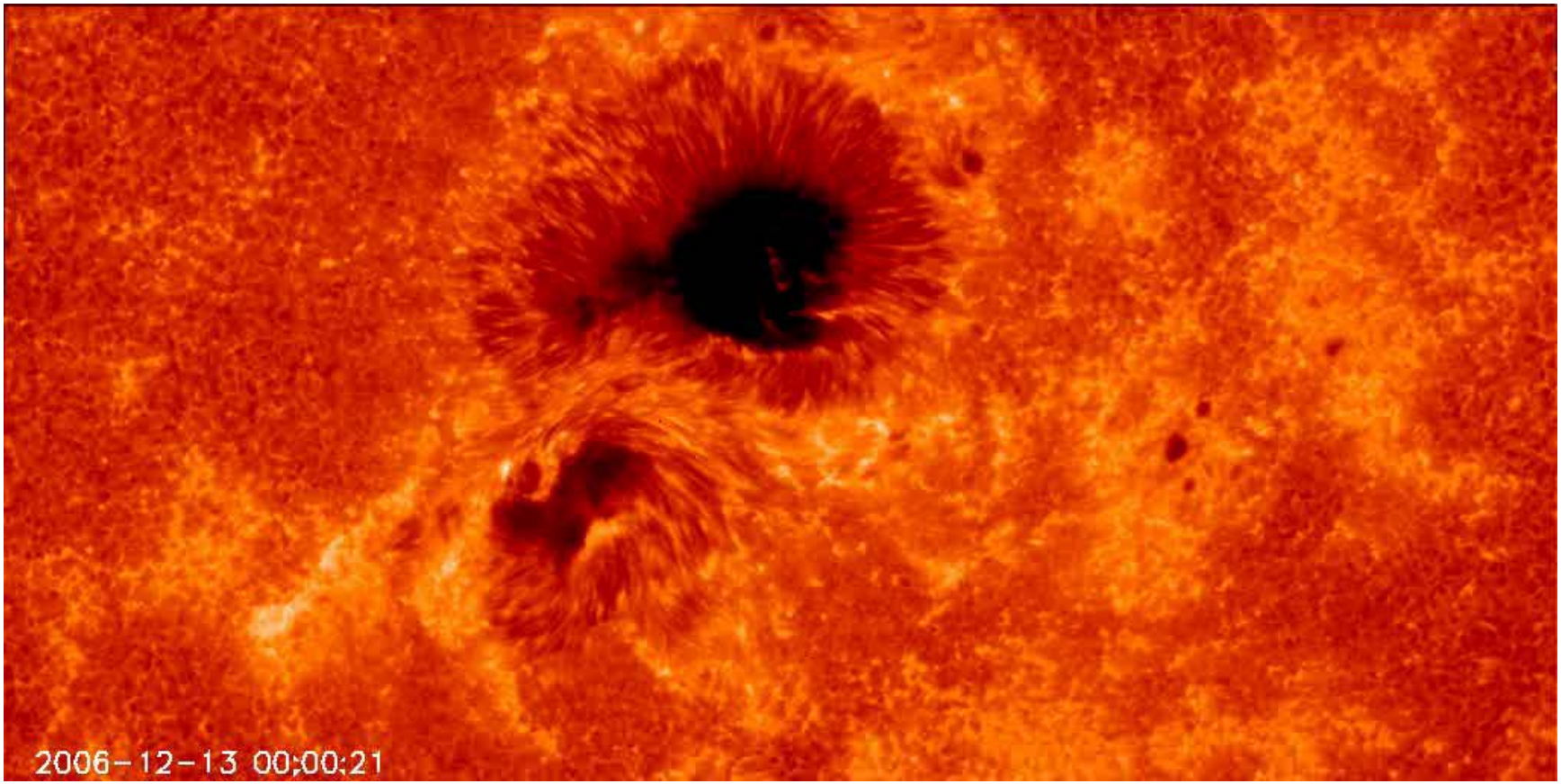

XRT
Be_thin
2006/12/13 07:01:44.1UT

AR magnetc field and
Evolution (MDI 96min)
Dec 09 to 13, 2006





Dec 13 2006 flare (HINODE SOT)



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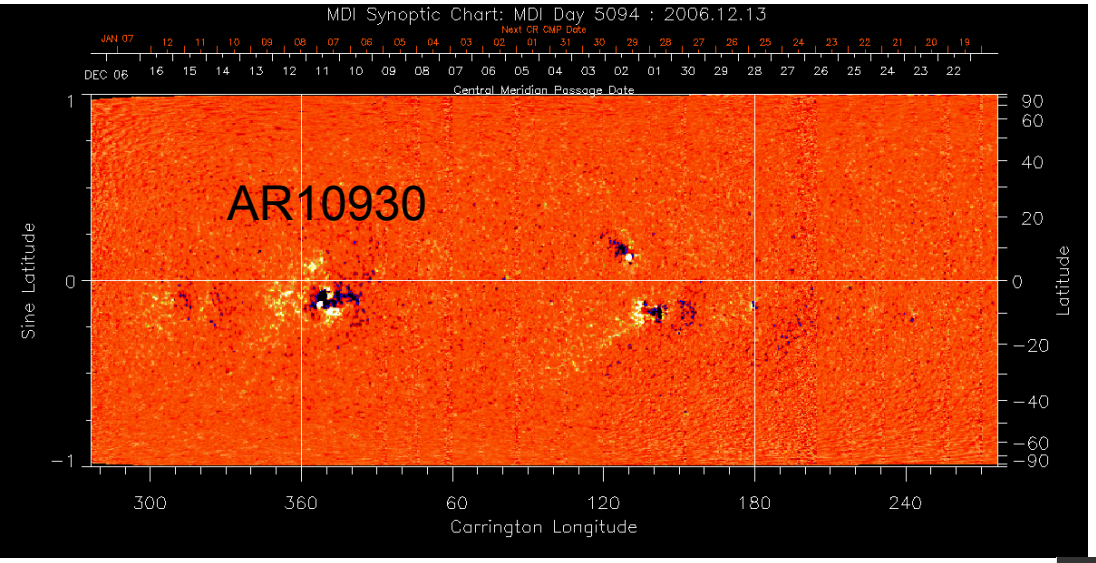
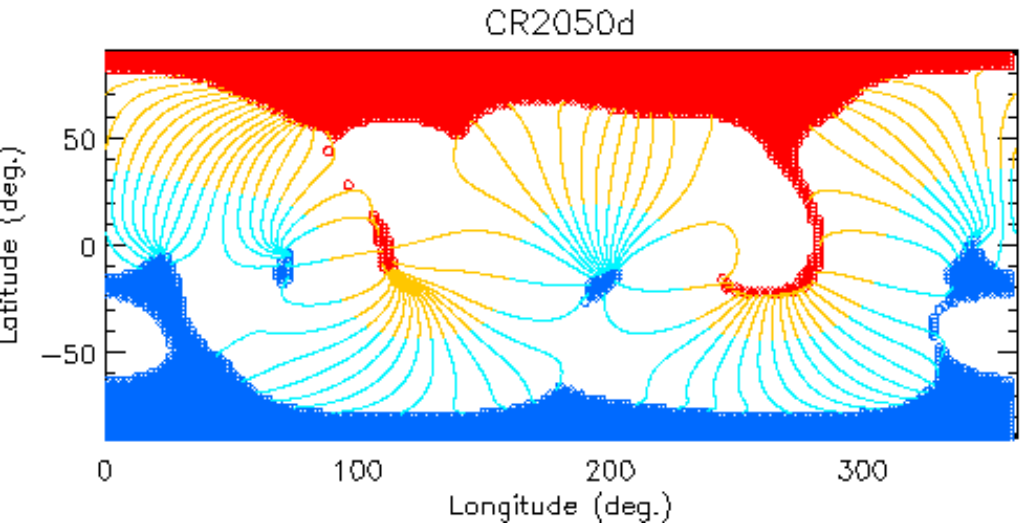
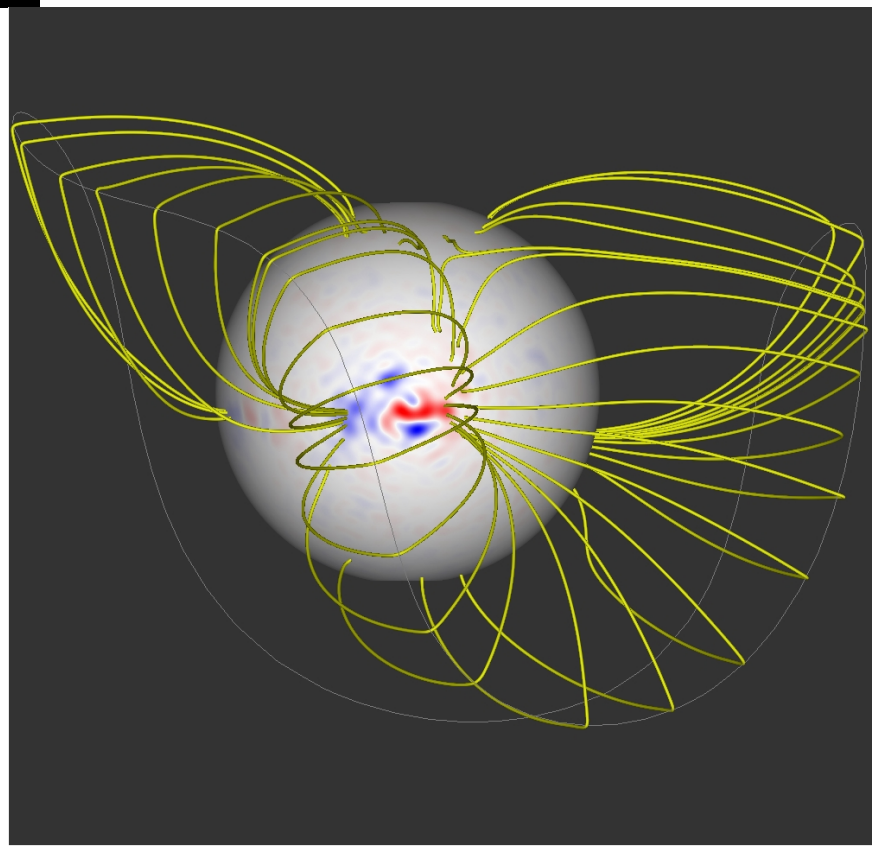


Left: Global solar magnetic field (MDI) for Dec. 13, 2006. The large active region (AR) 10930 is the source region of the CME.





PFSS model based on MDI synoptic map.
Above: coronal holes and streamer arcade.
Right: 3D streamer arcade on magnetogram with center view of AR10930. (Blue: + Red: -)

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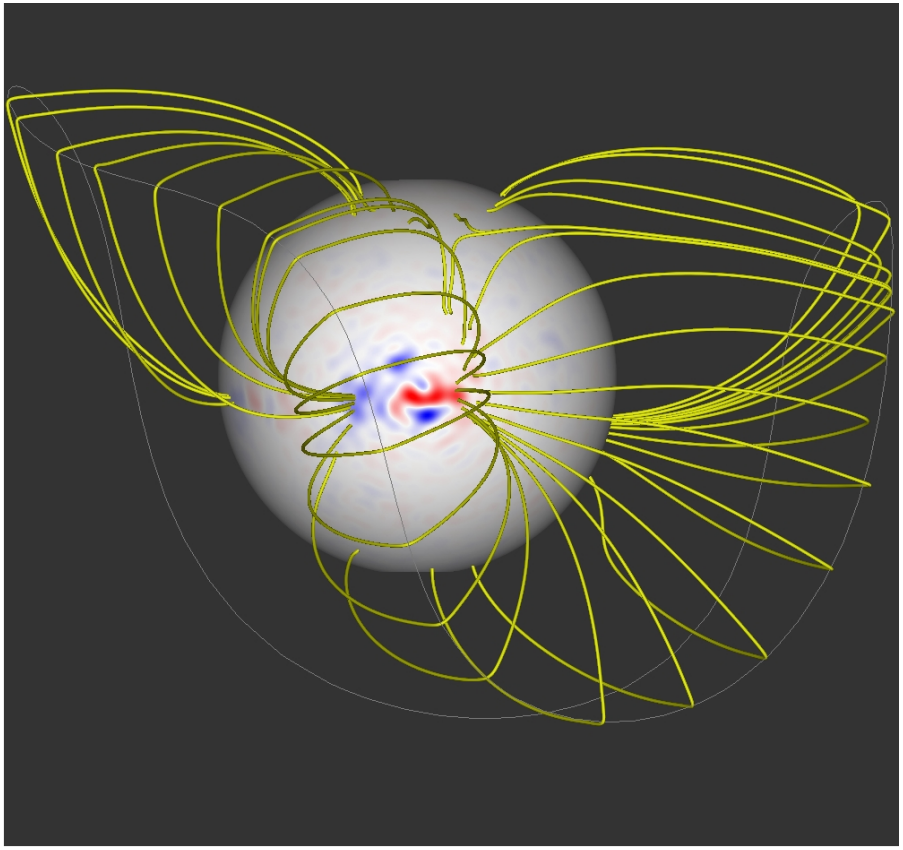

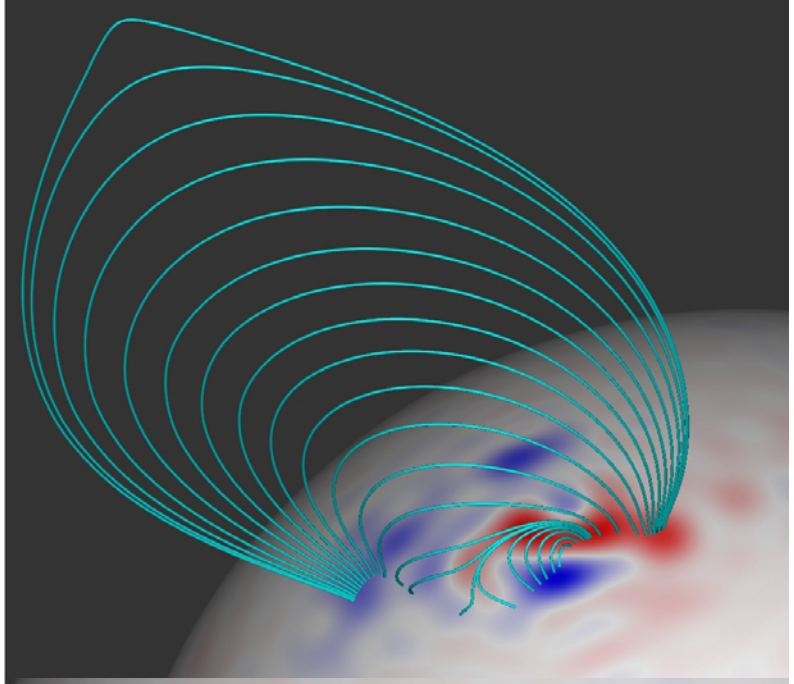

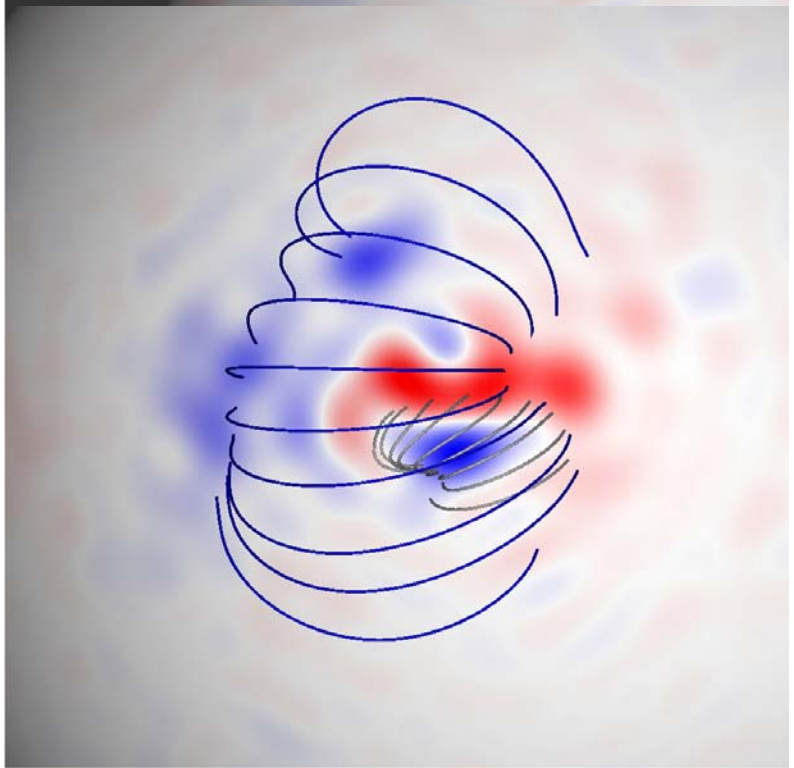

Above: 3D streamer arcade and AR10930.
Top-right: Field arcades from photosphere to source surface over the erupting neutral line. No magnetic null point found at this resolution, but finer scale will be analyzed.
Bottom-right: Near surface field arcades over the erupting neutral line.

The Magnetic Cloud of Dec. 14-15, 2006 at ACE and STEREO IMPACT A

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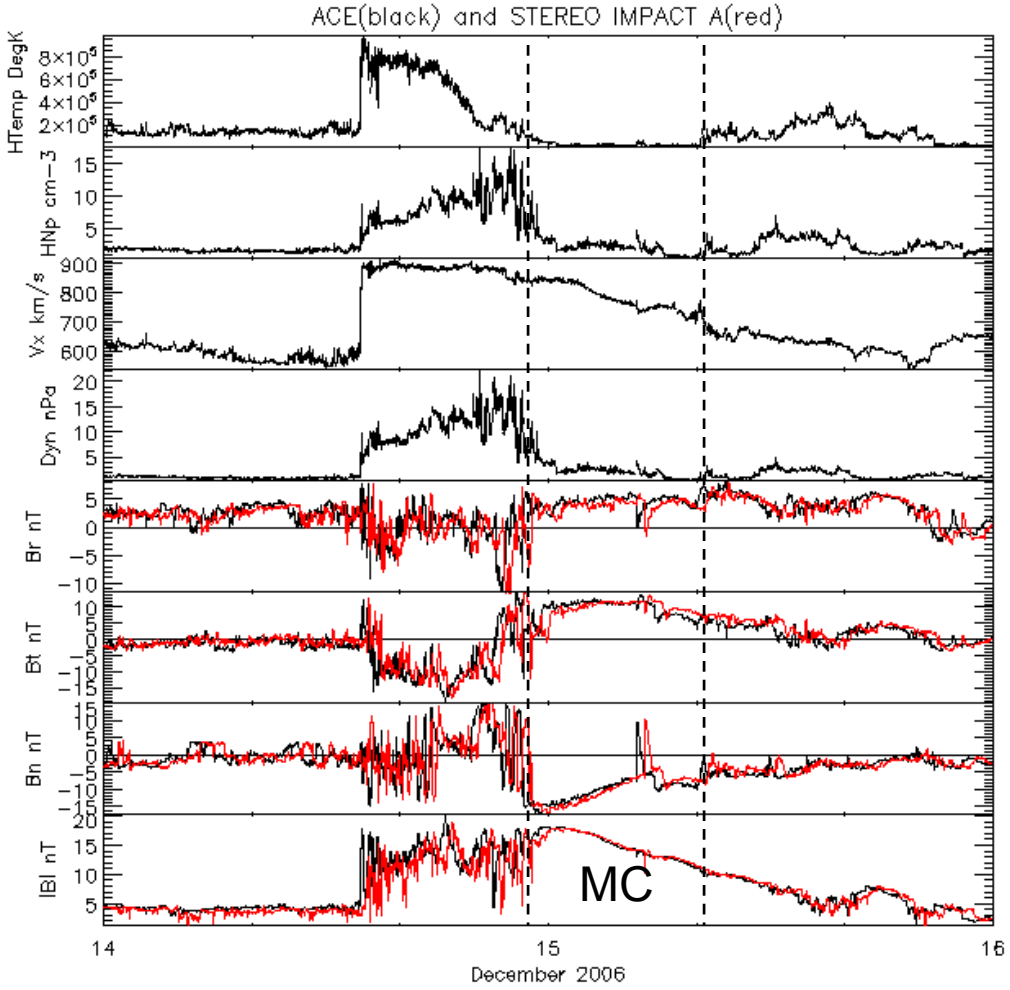
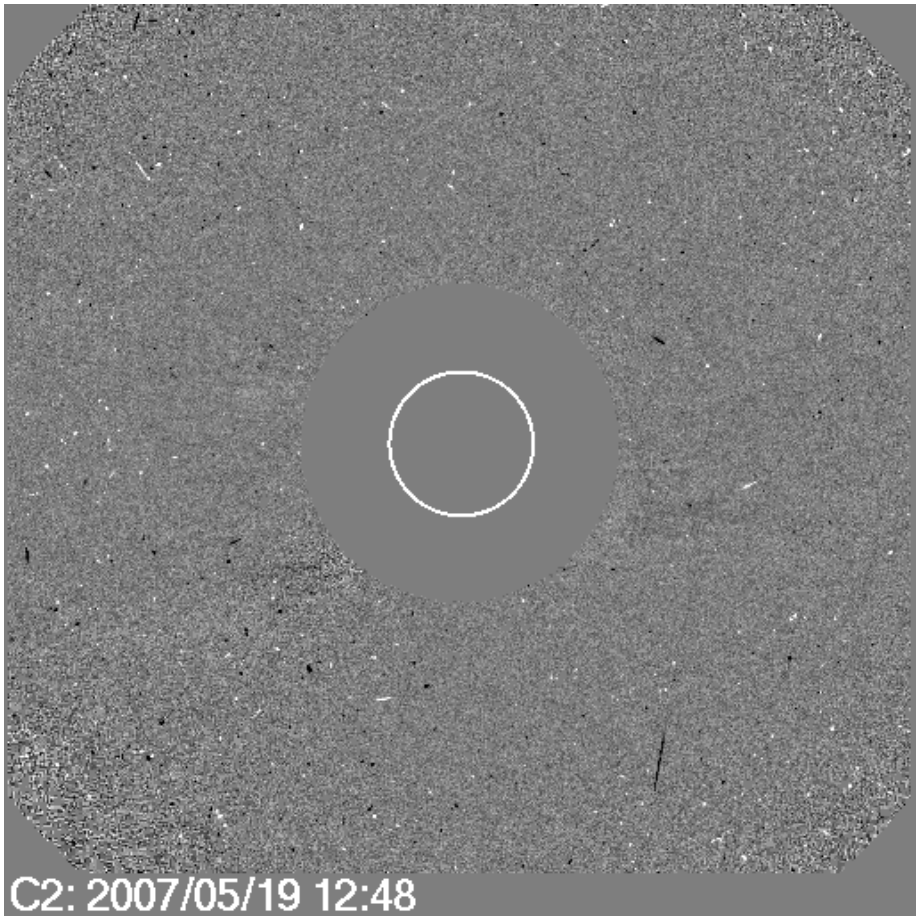
- STEREO IMPACT(A) IMF (Red) are overplotted on ACE data (Black).
- The dashed lines mark the leading and trailing boundaries of the Magnetic Cloud.
- The MC fluxrope orientation (see Ying Liu et al.) agrees better with the overlying streamer belt, and nearly orthogonal with the erupting neutral line and post-flare arcade.

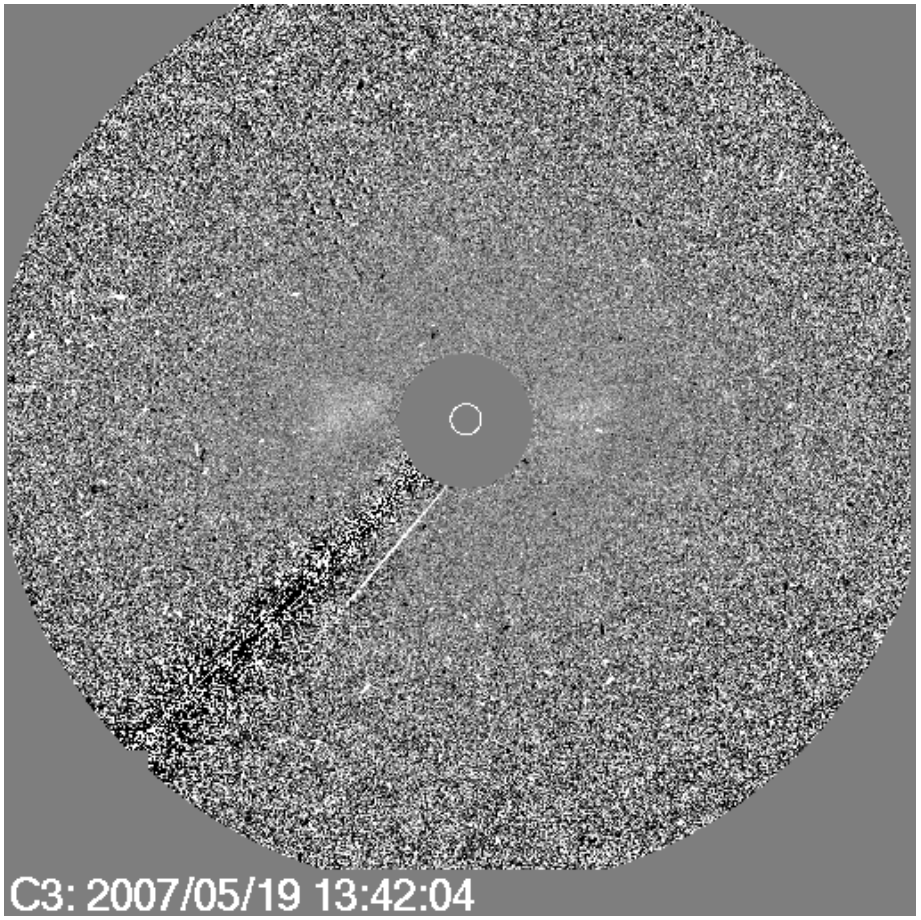


CME May-19-2007 13:24UT
958km/s (LASCO CME catalog, Yashiro et al.)

C2 difference images



C3 difference images

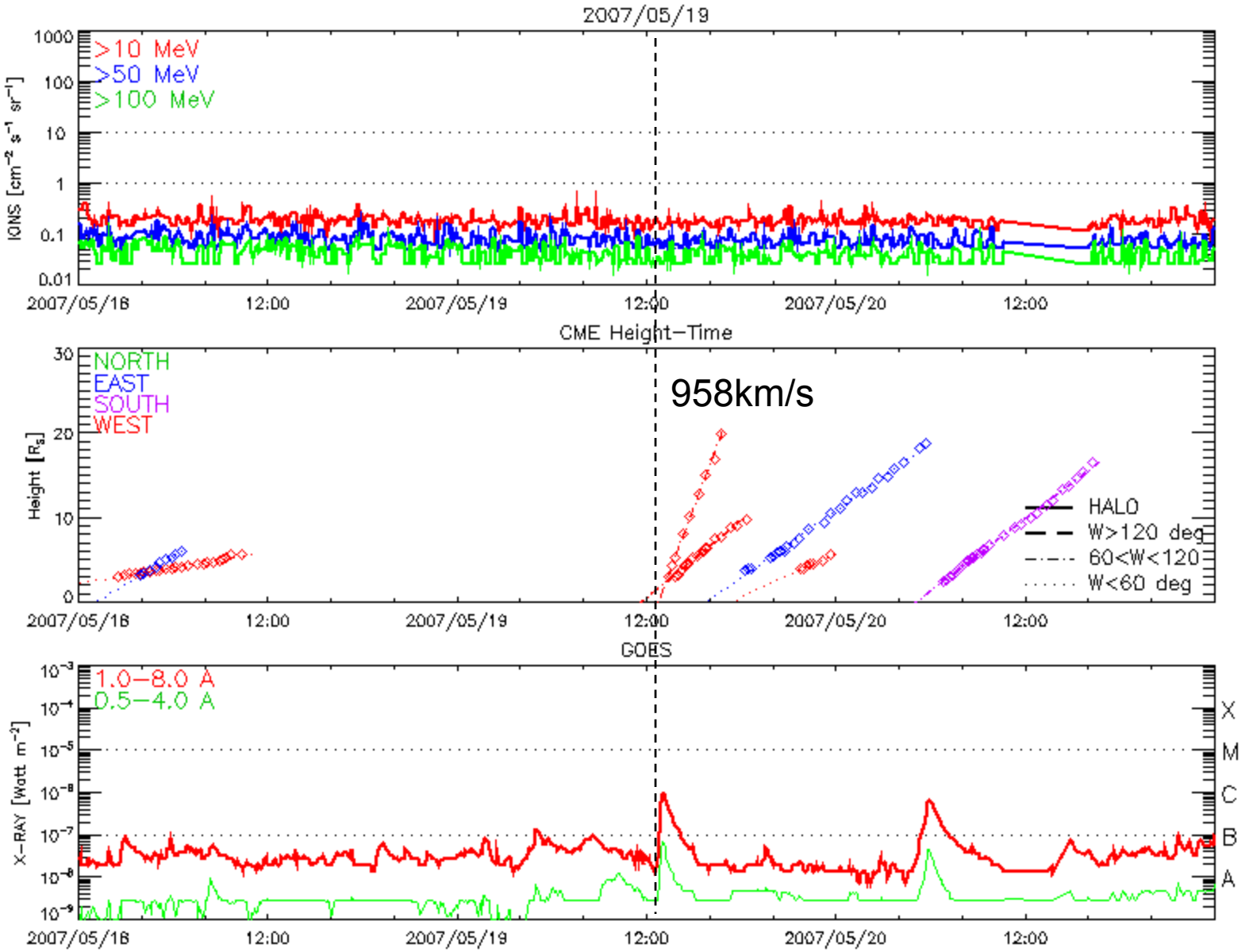


The eruption on May-19-2007

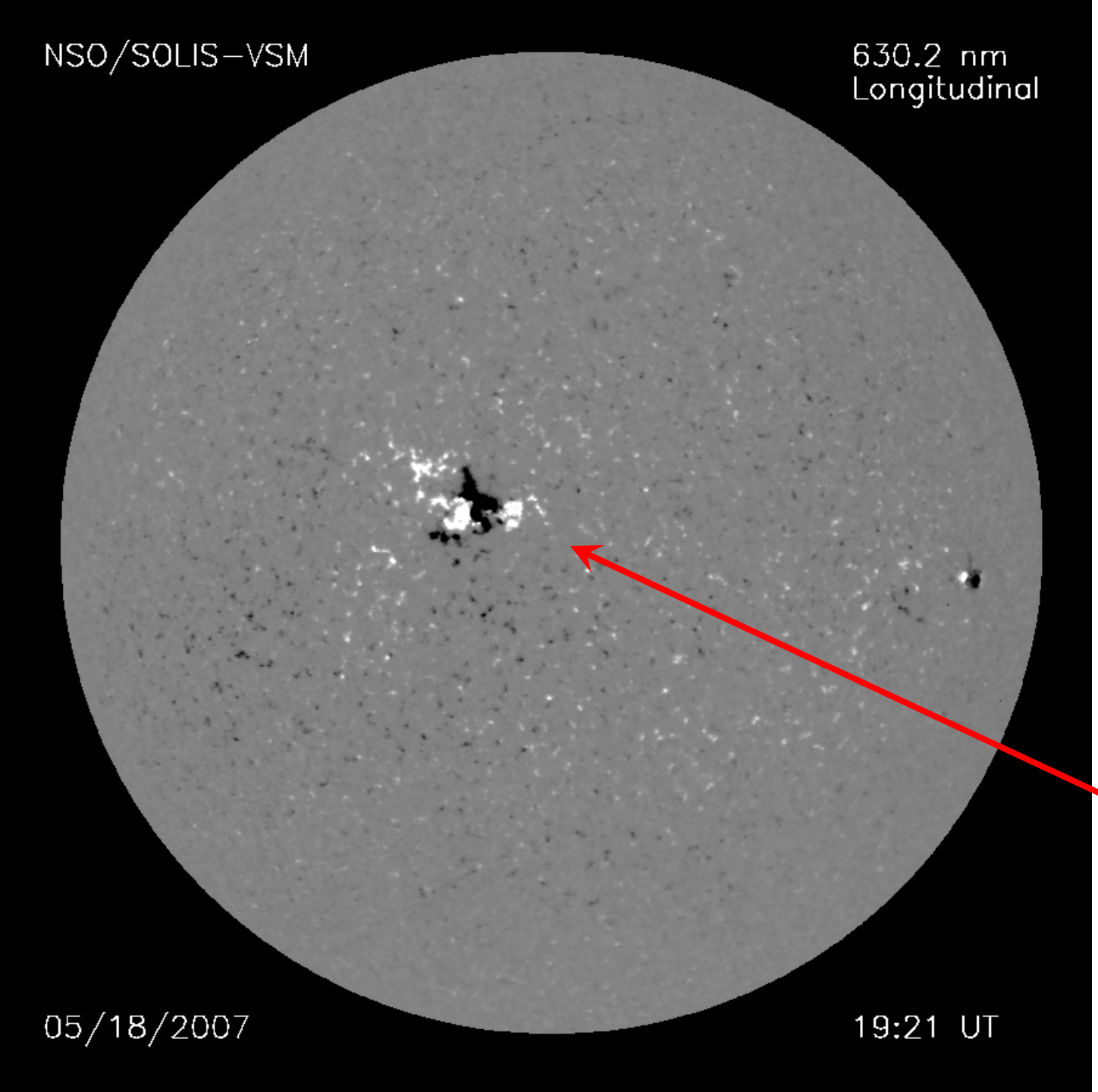
wavelet enhanced STEREO EUVI anaglyph movies

by *Dr. Guillermo Stenborg*

Yashiro et al.

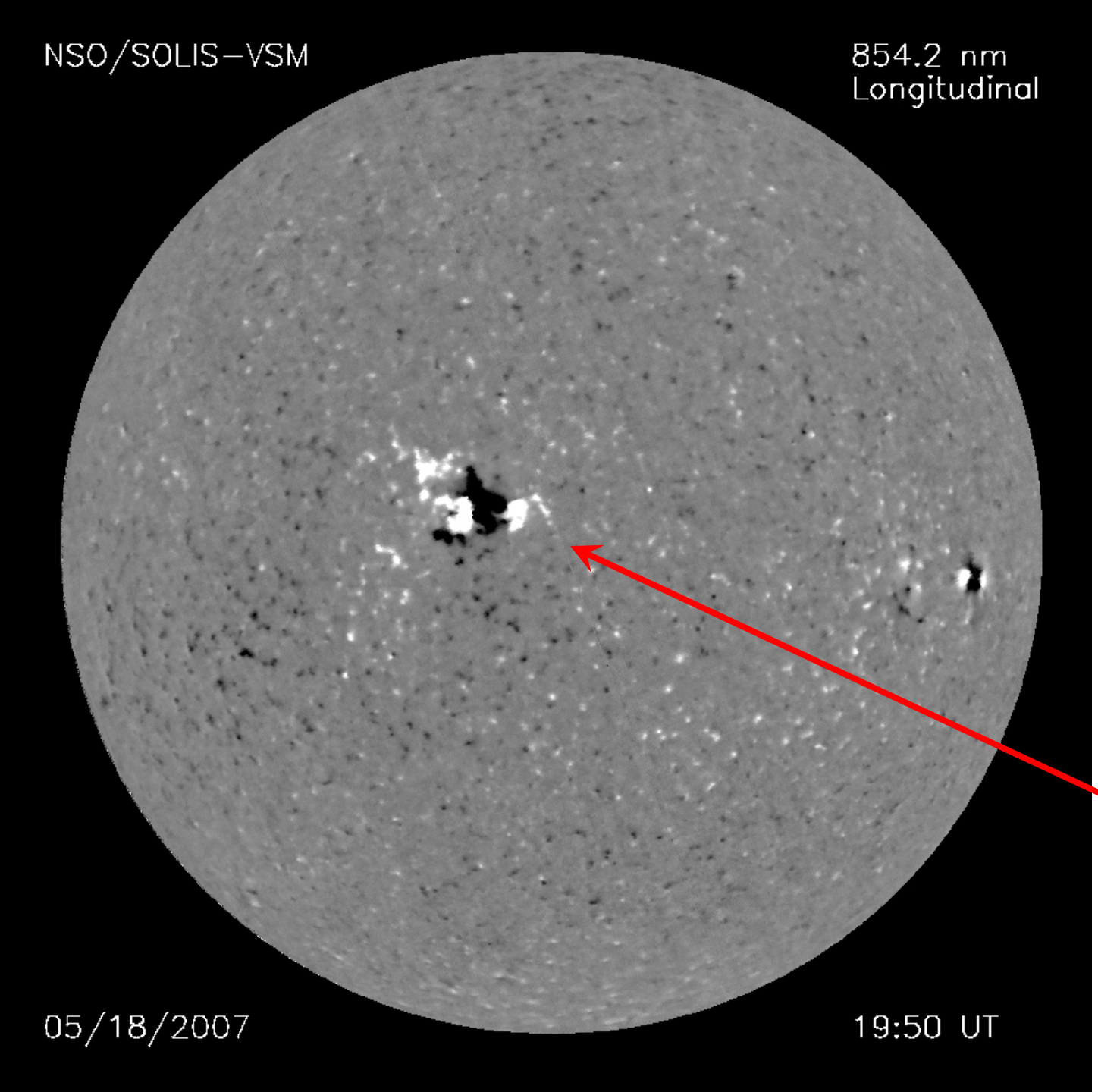


The Active region (AR10956) observed in multi-wavelength



Photosphere Magnetic Field

AR10956

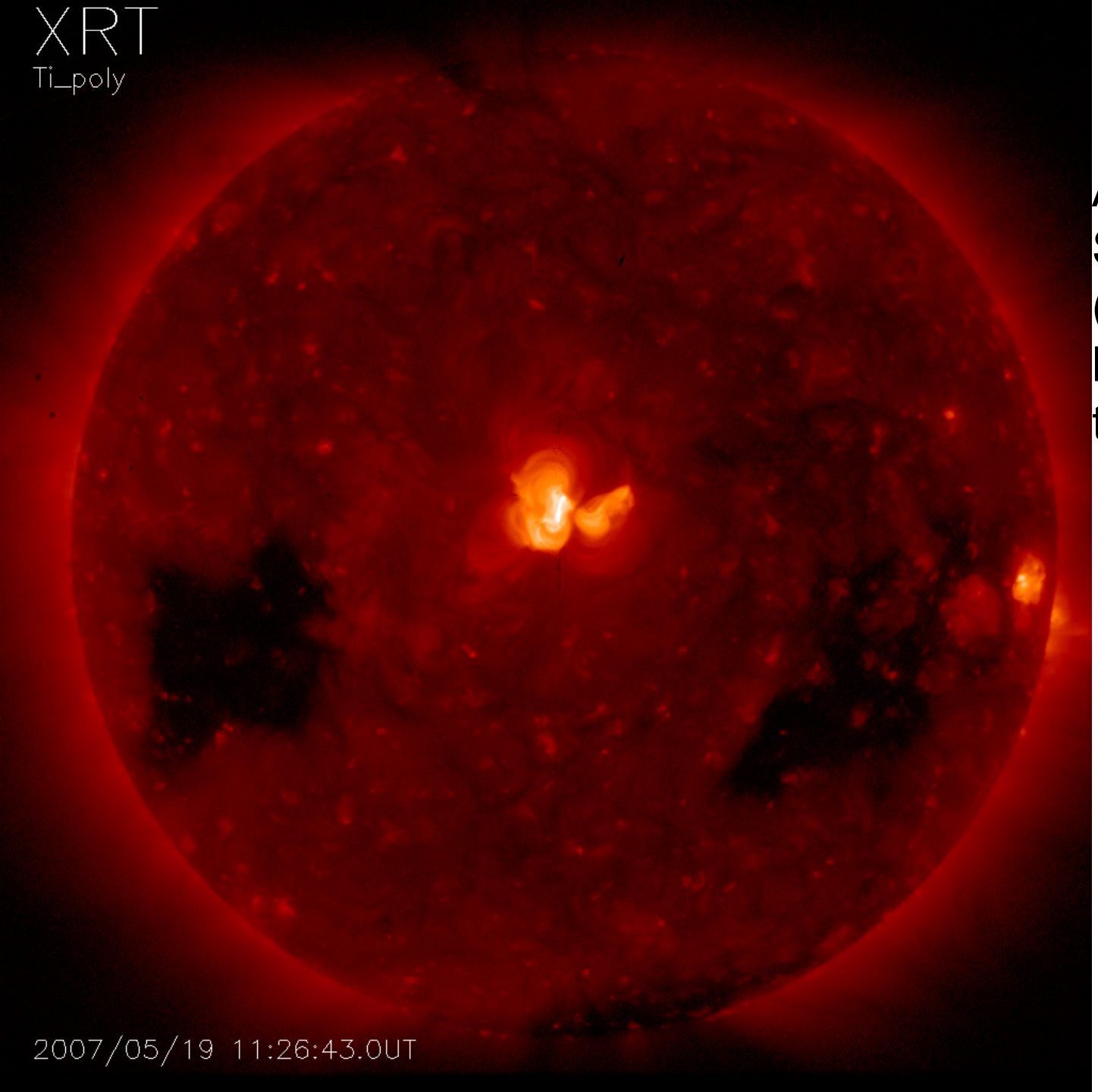


Chromosphere Magnetic Field

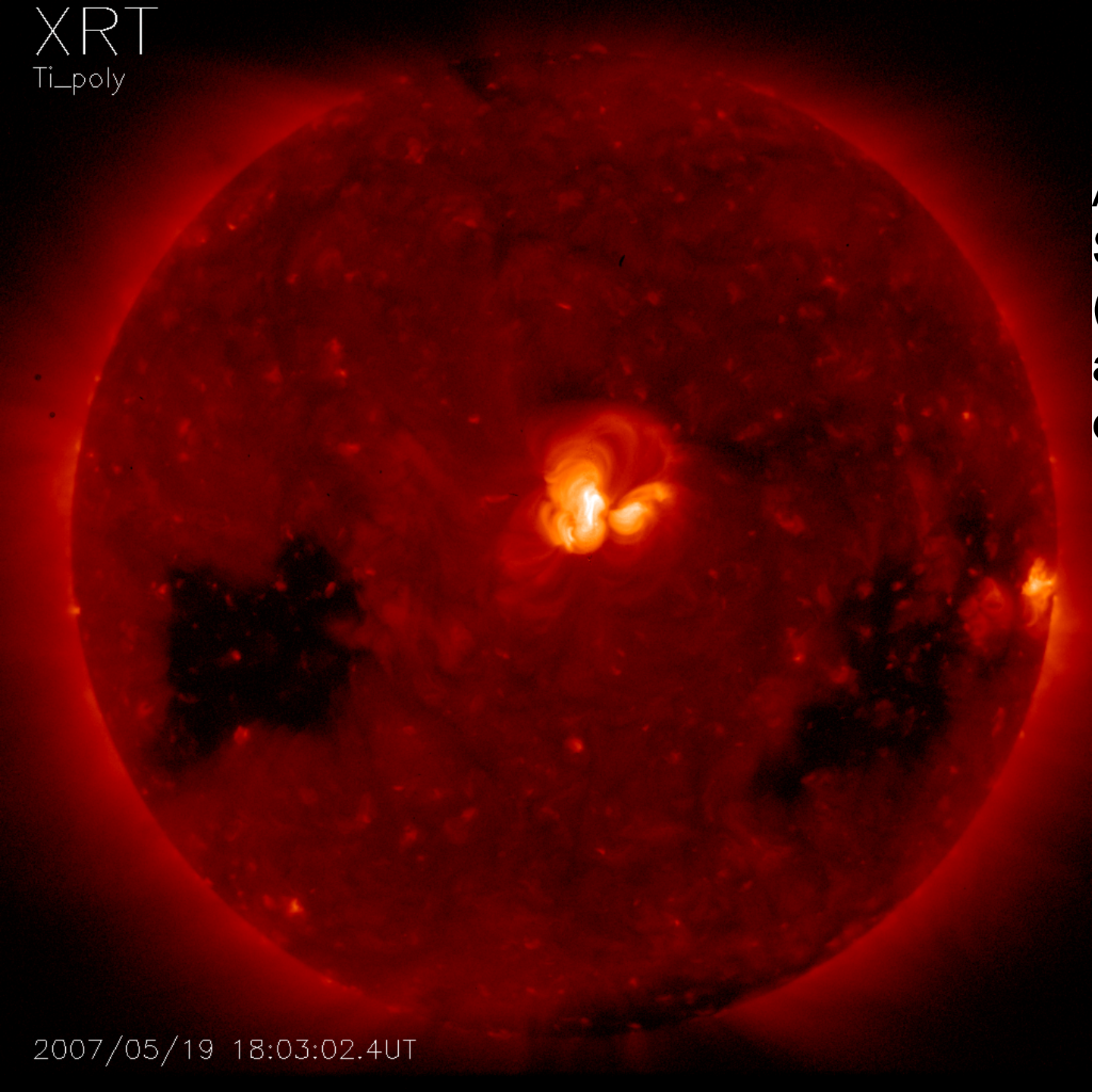
AR10956

Erupting Filament 19-May-2007 (BBSO Hα network)

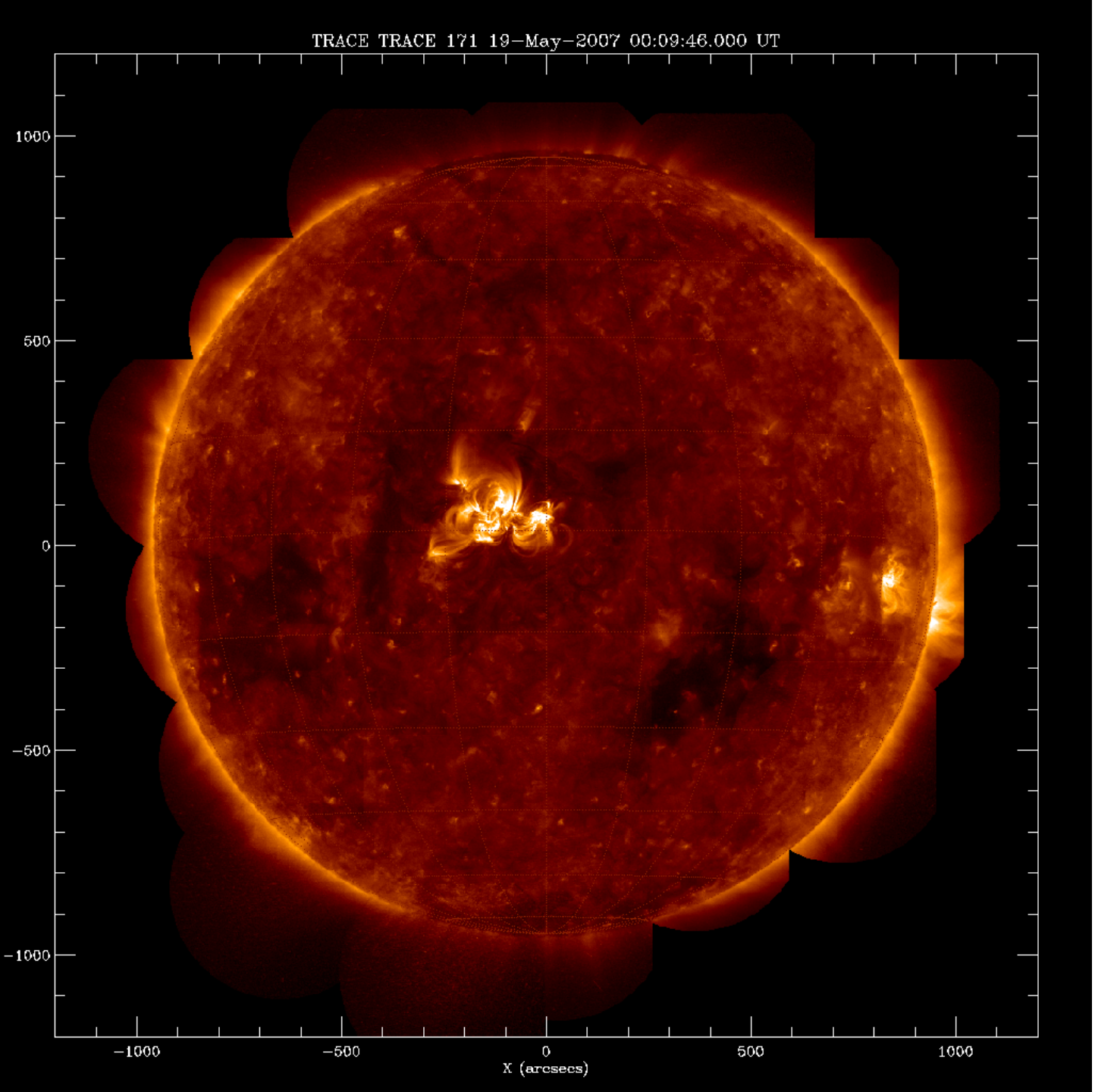
After the Eruption 20-May-2007 (BBSO Hα network)



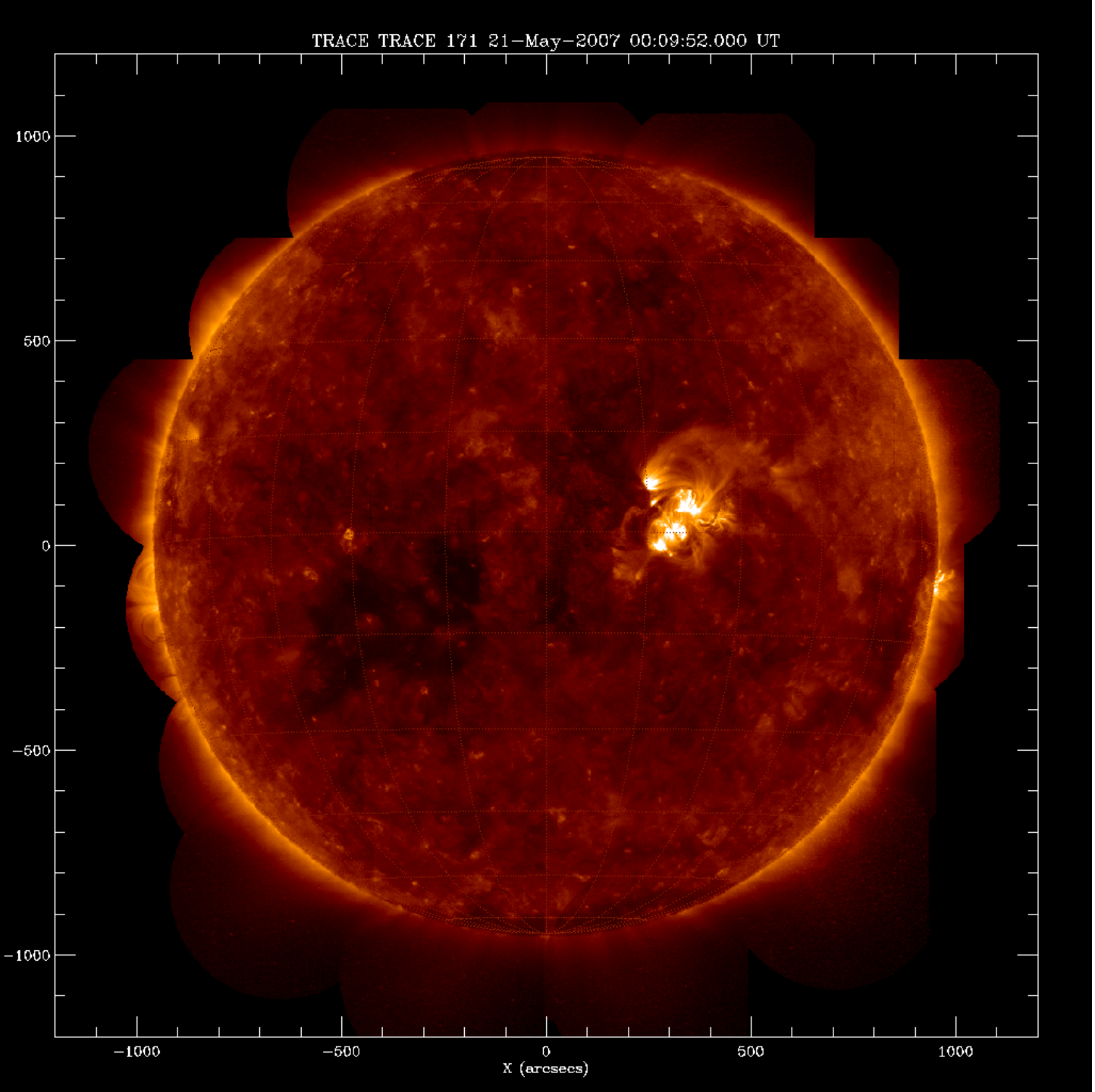
AR10956 in
Soft X-Ray
(HINODE)
before
the eruption



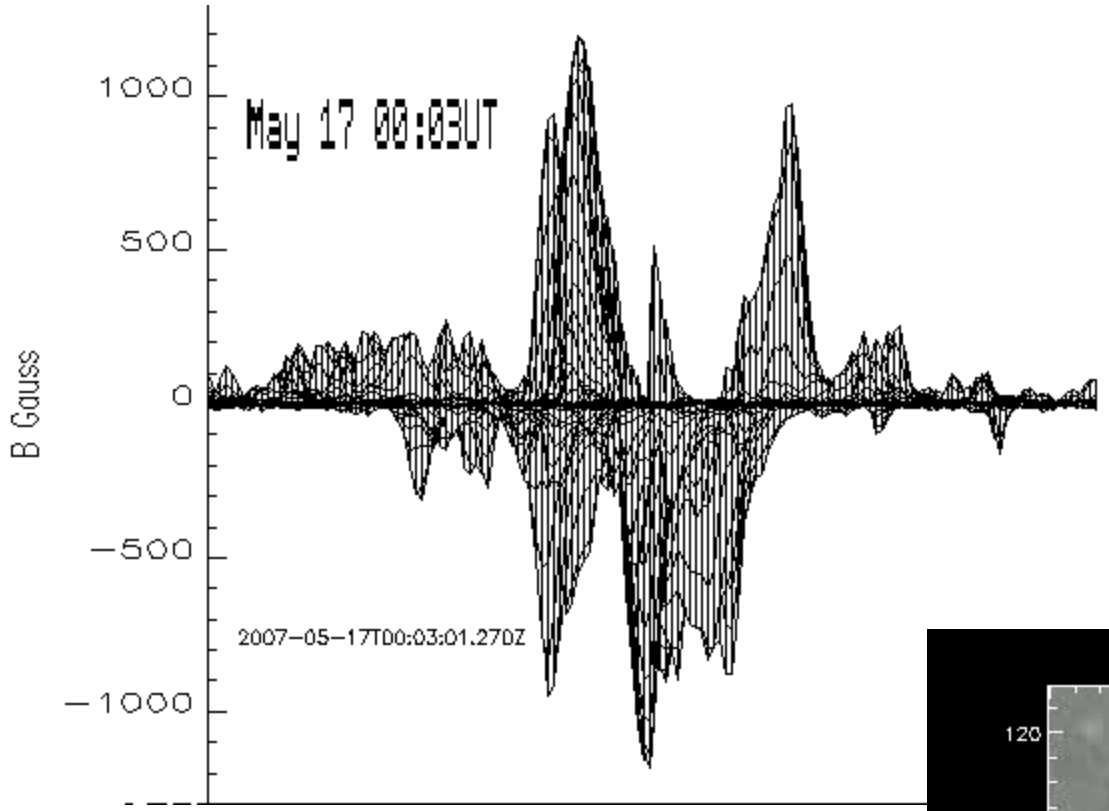
AR10956 in Soft X-Ray (HINODE) after the eruption



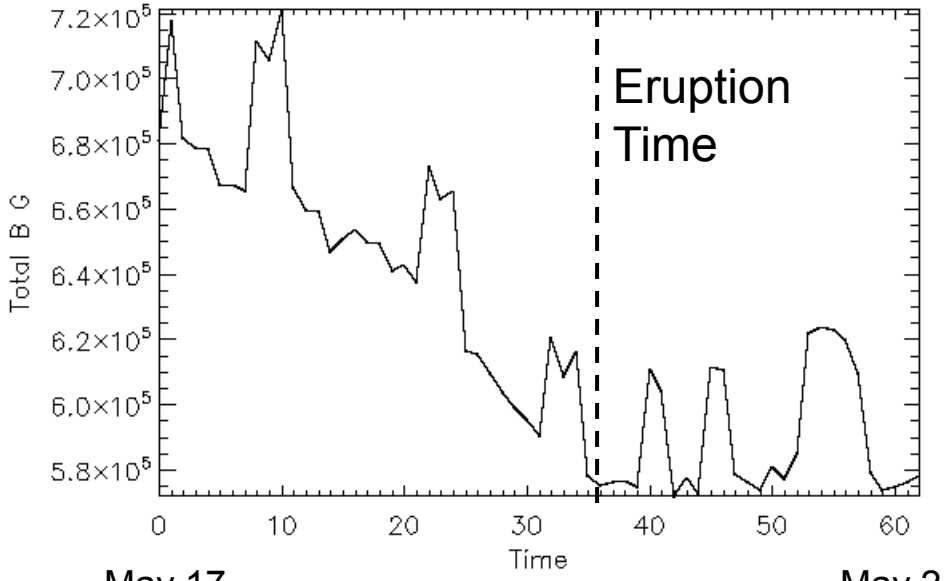
AR10956
In EUV171
(TRACE
Mosaic)
May 19
00:09 UT



AR10956
In EUV171
(TRACE
Mosaic)
May 21
00:09 UT

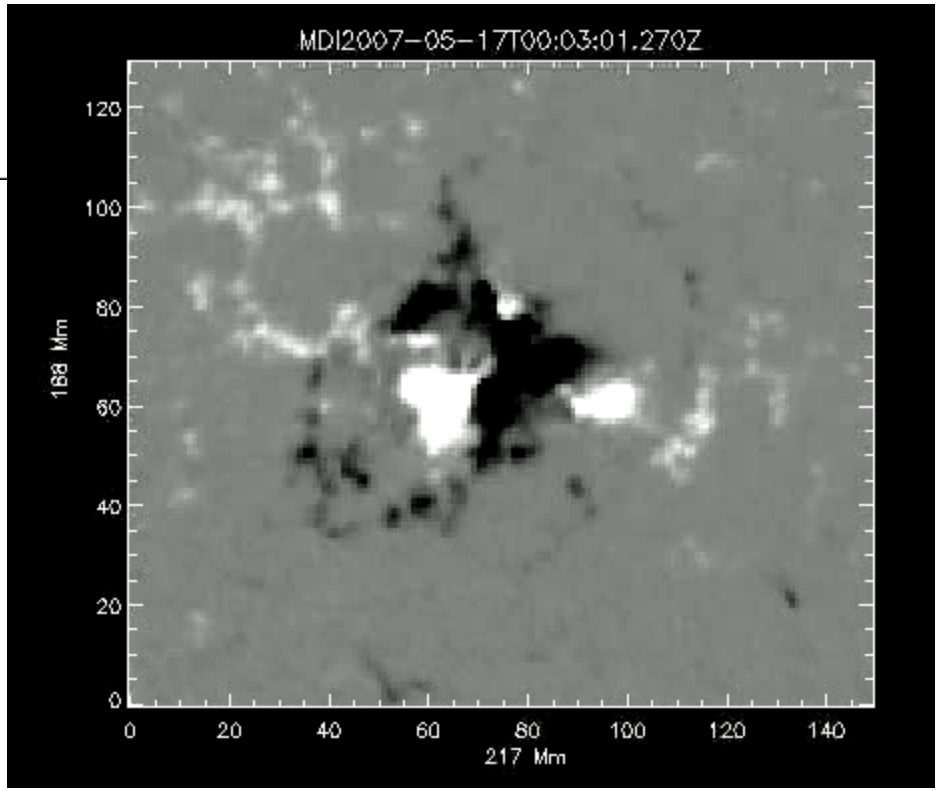


AR magnetc field and Evolution (MDI 96min) May 17 to 21, 2007

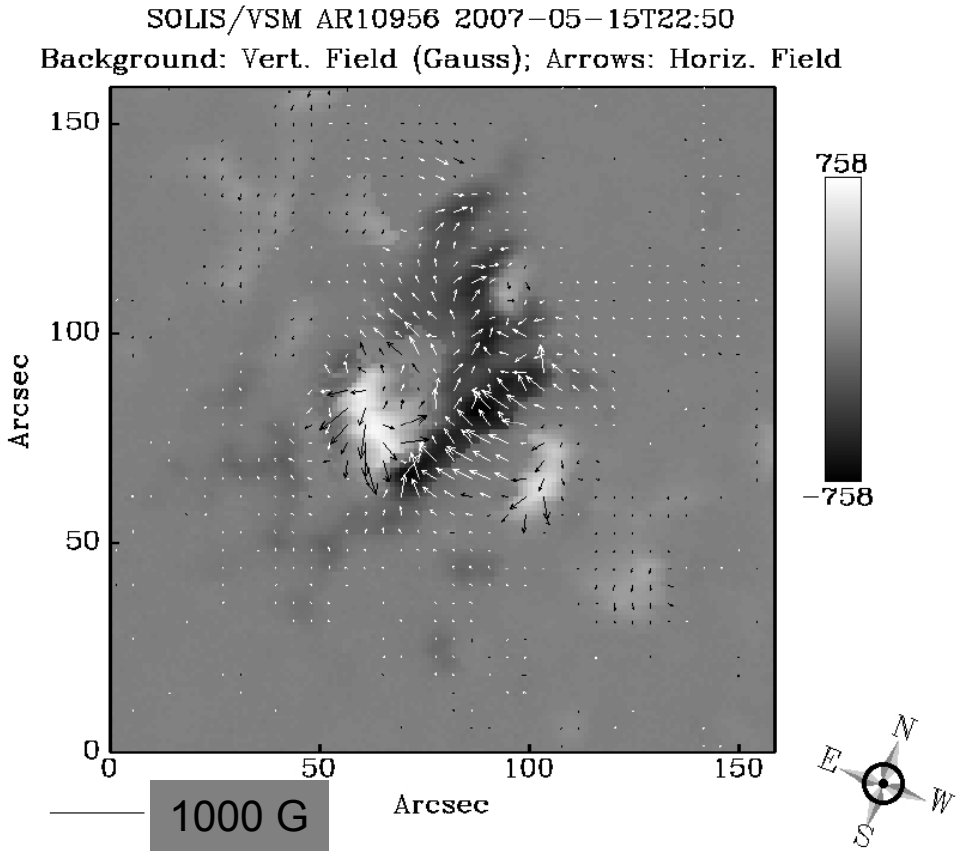


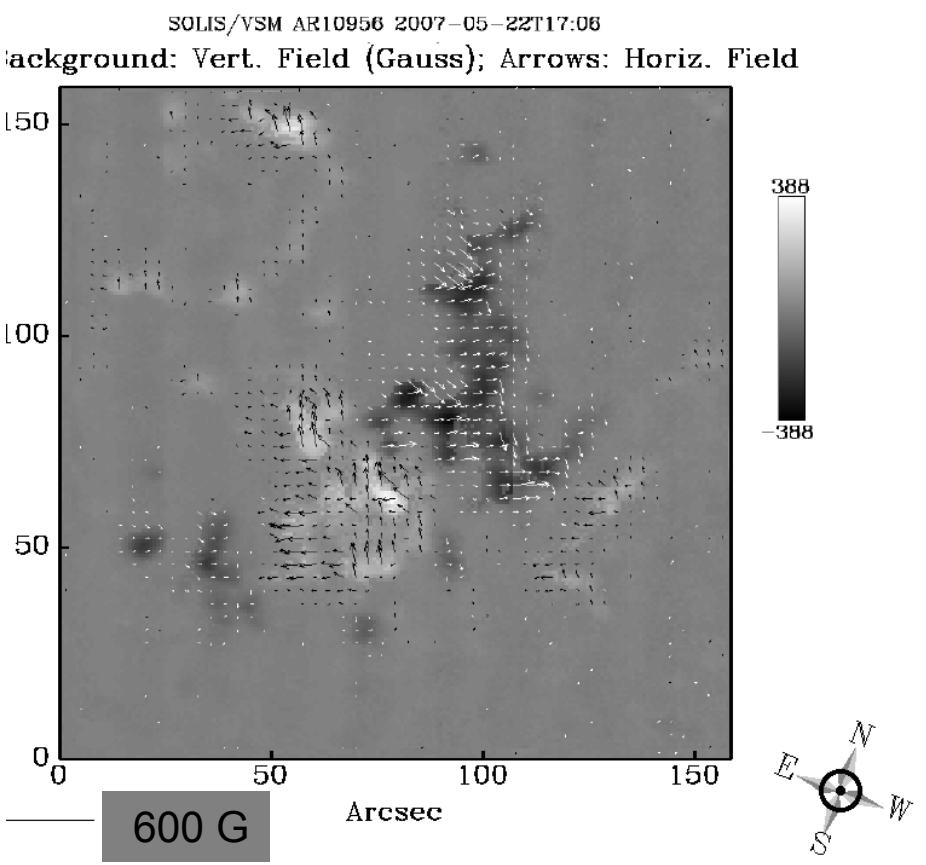
May 17

May 21

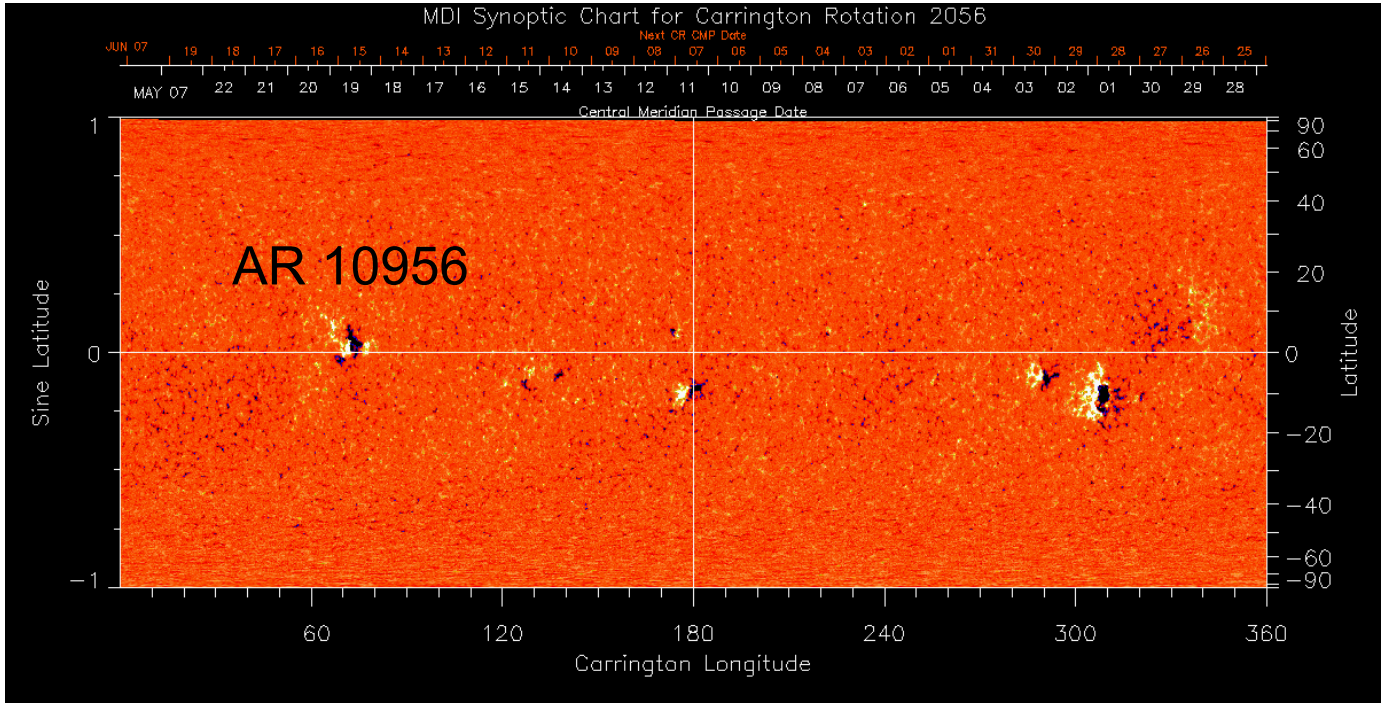


Vector magetic field (NSO SOLIS) on May 15 and 22

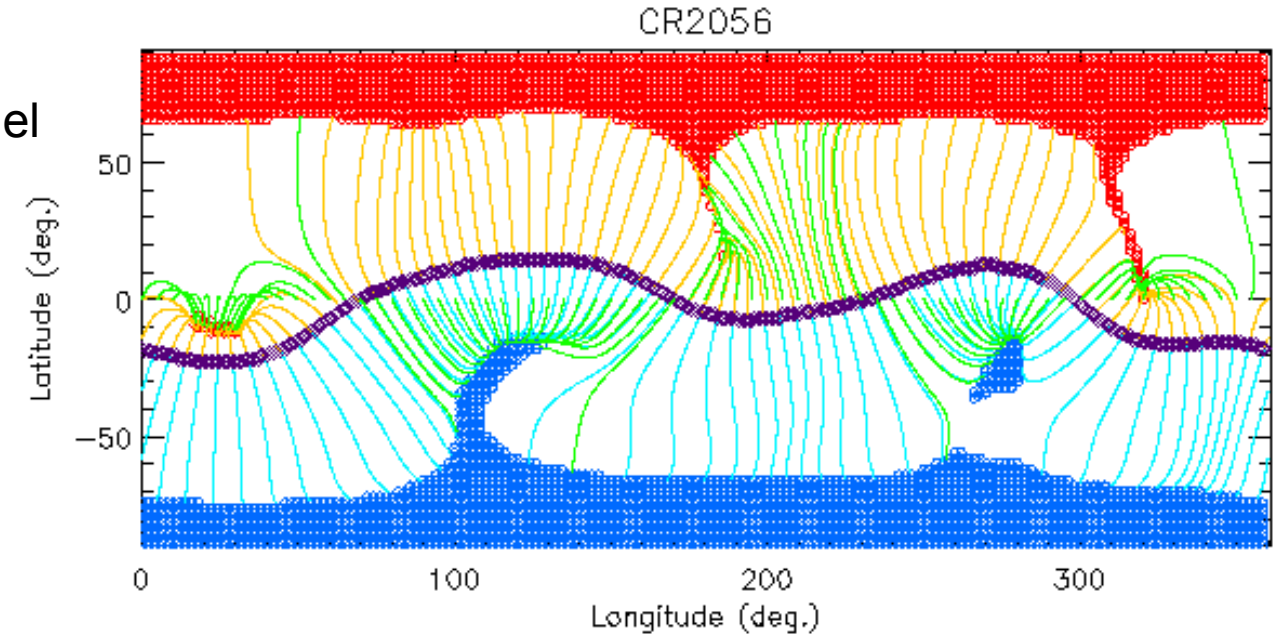


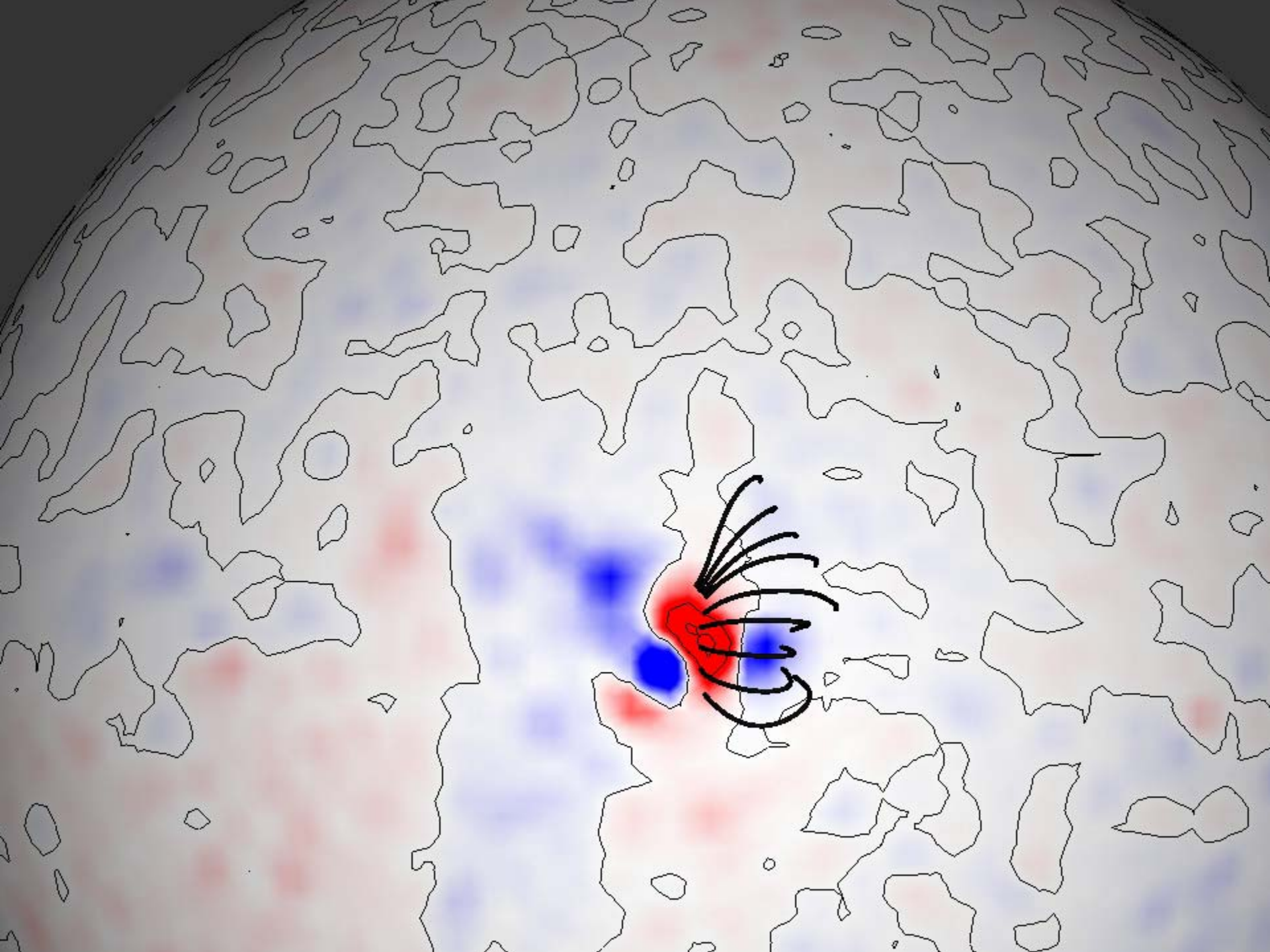


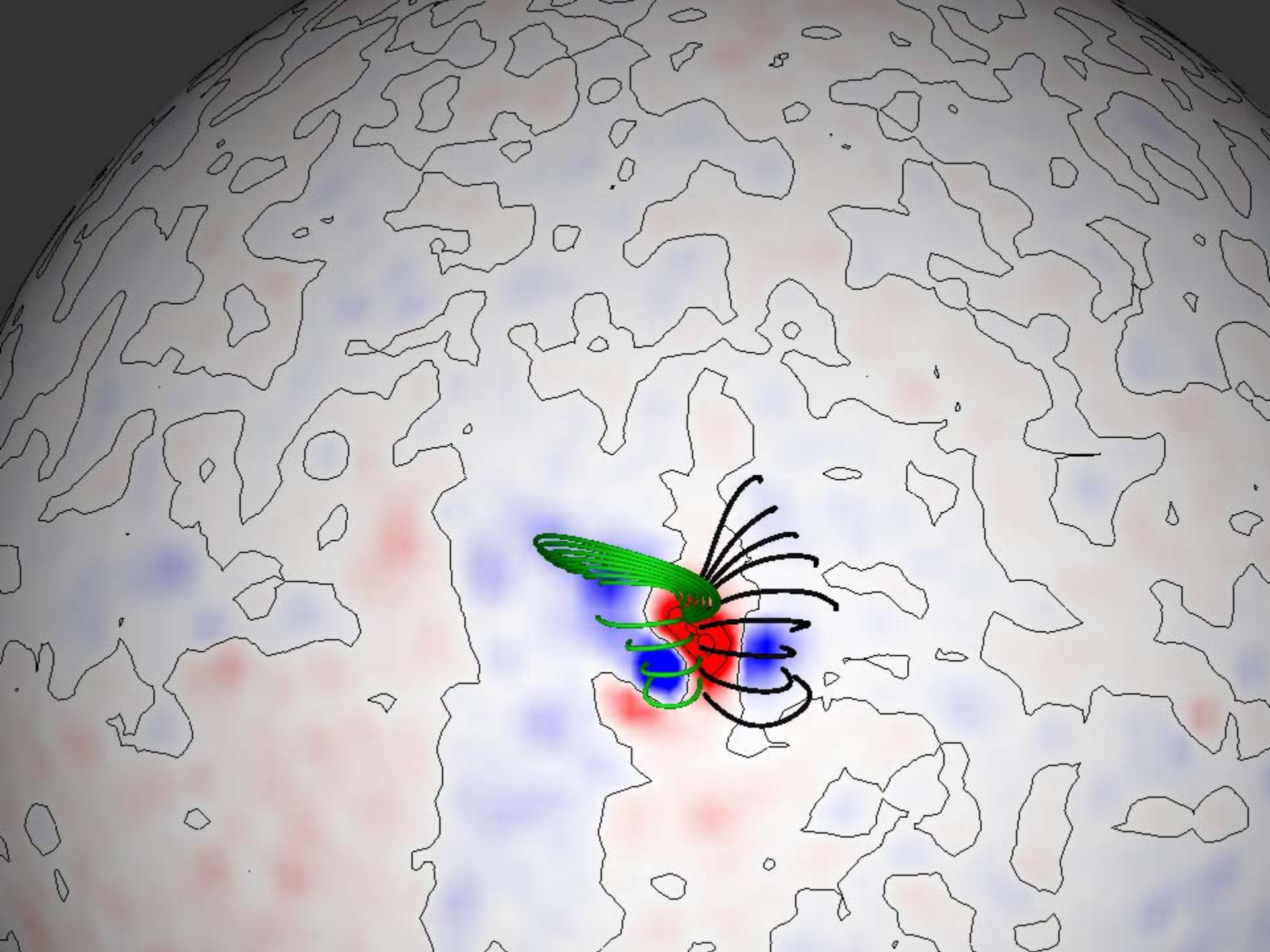
MDI synoptic map
A proxy of the global solar magnetic field.
White: + Black: -

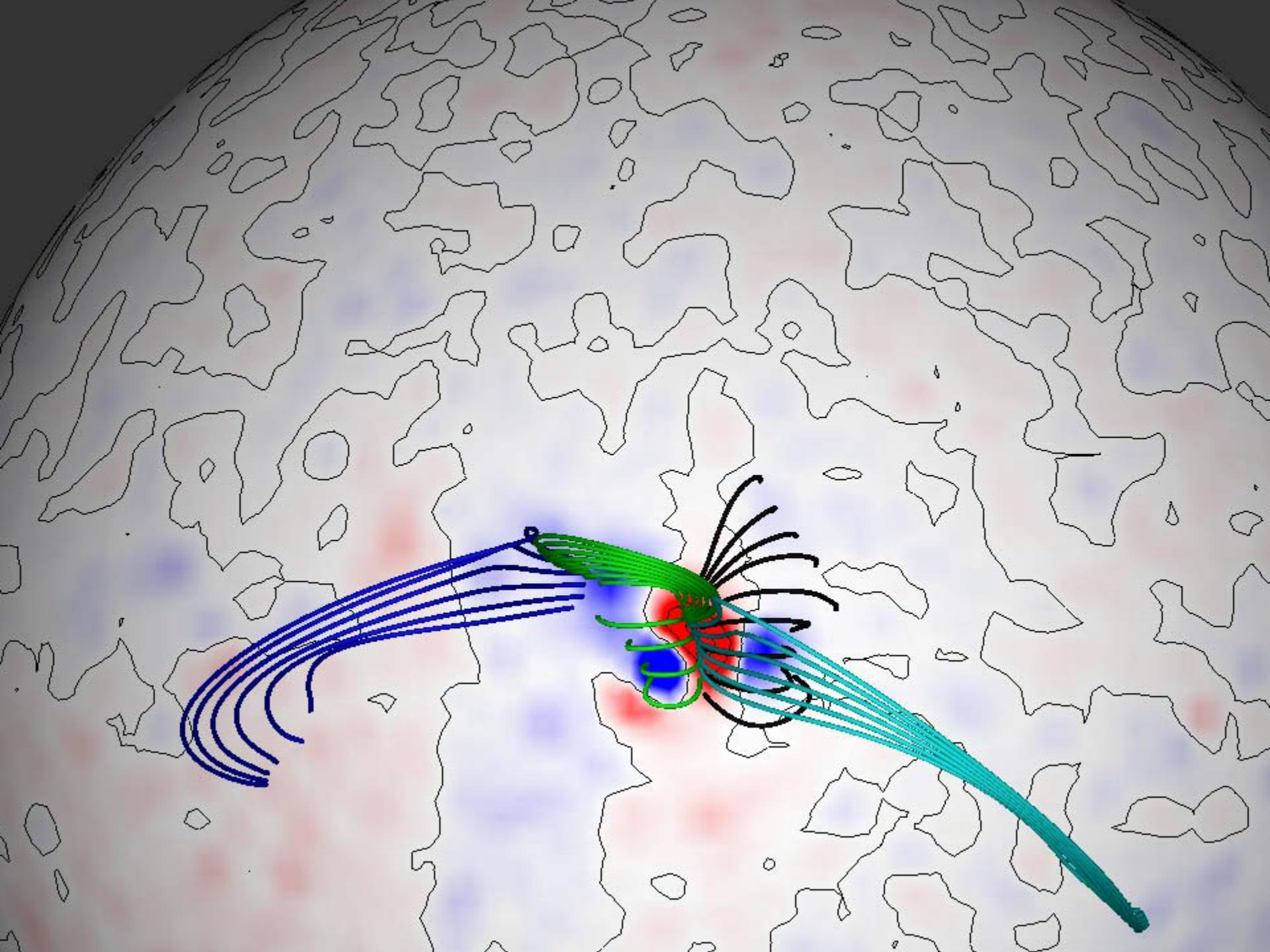


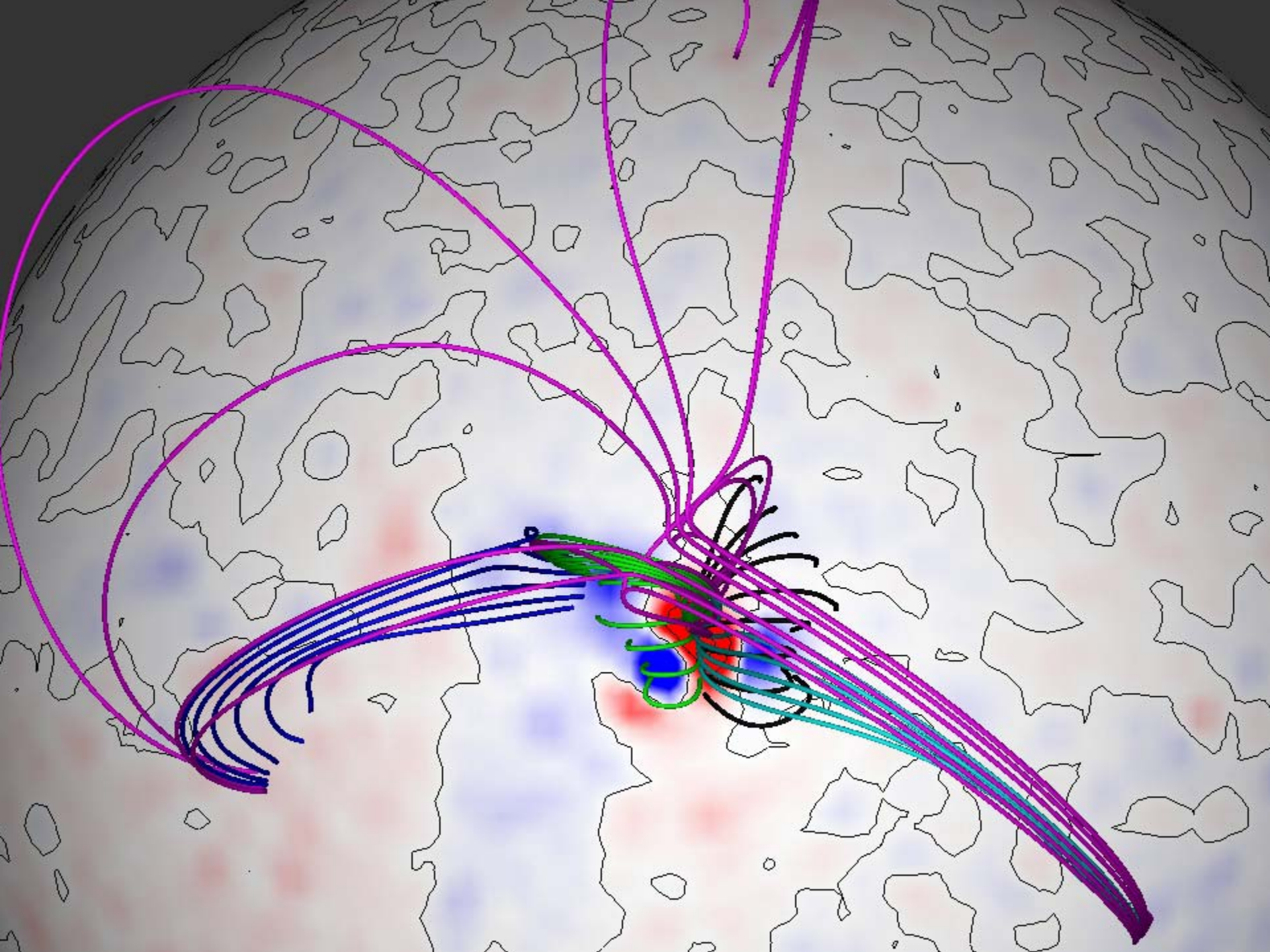
Coronal magnetic
Structure by PFSS model
Red: coronal holes -;
Orange and aqua lines: streamer belt;
Purple: heliospheric current sheet;
Green lines: equatorial field lines.
Blue: coronal holes +

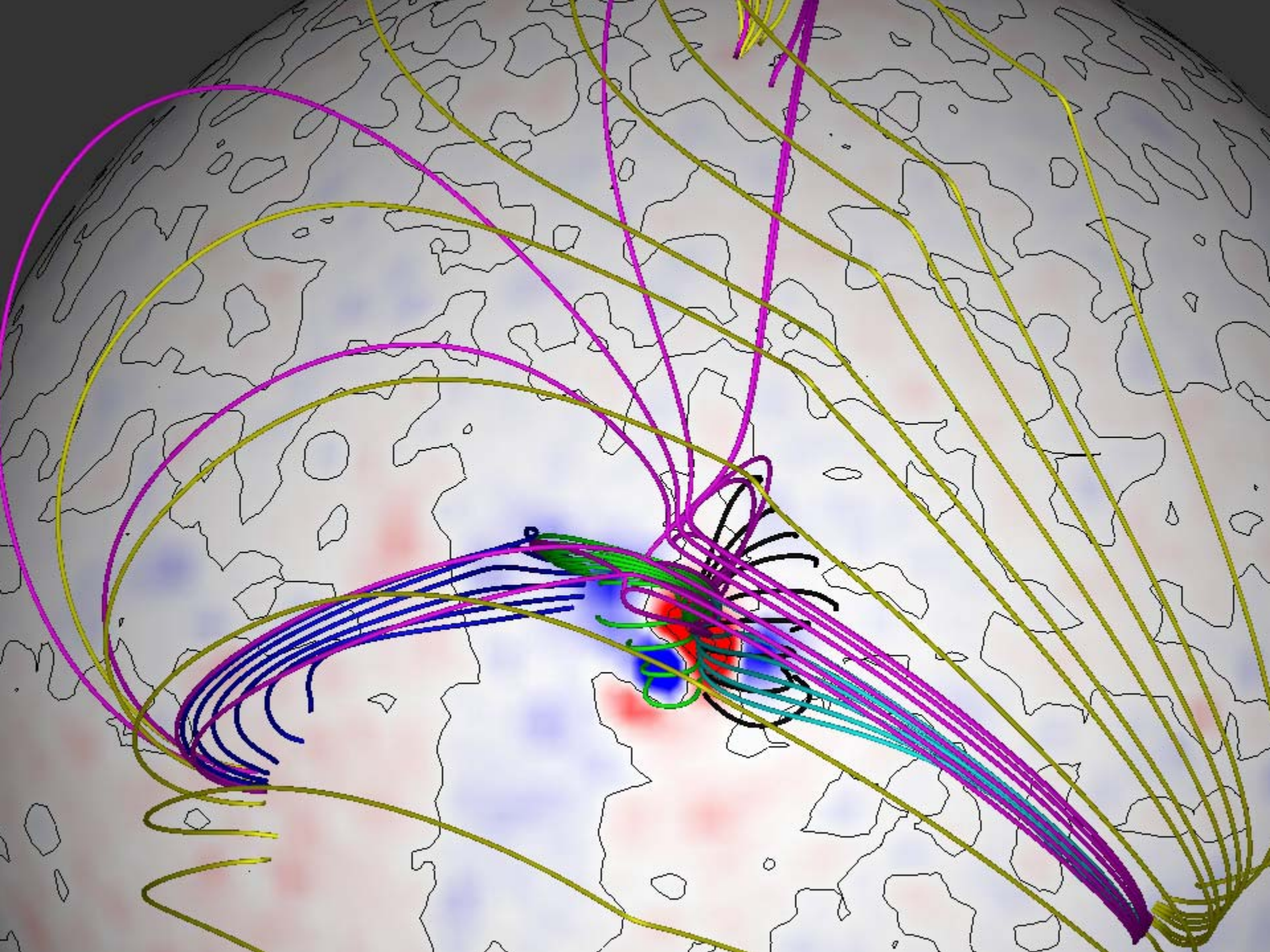


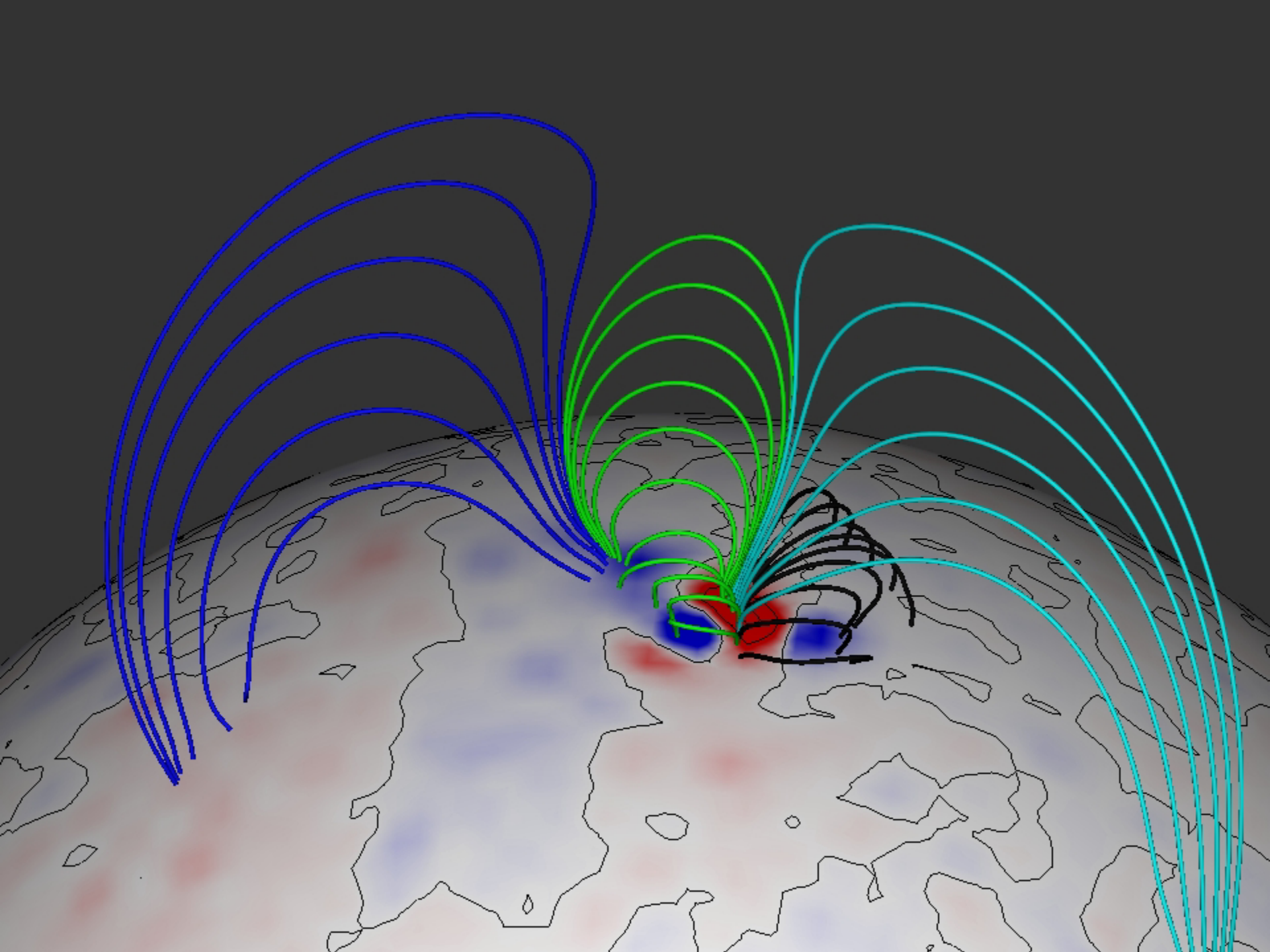


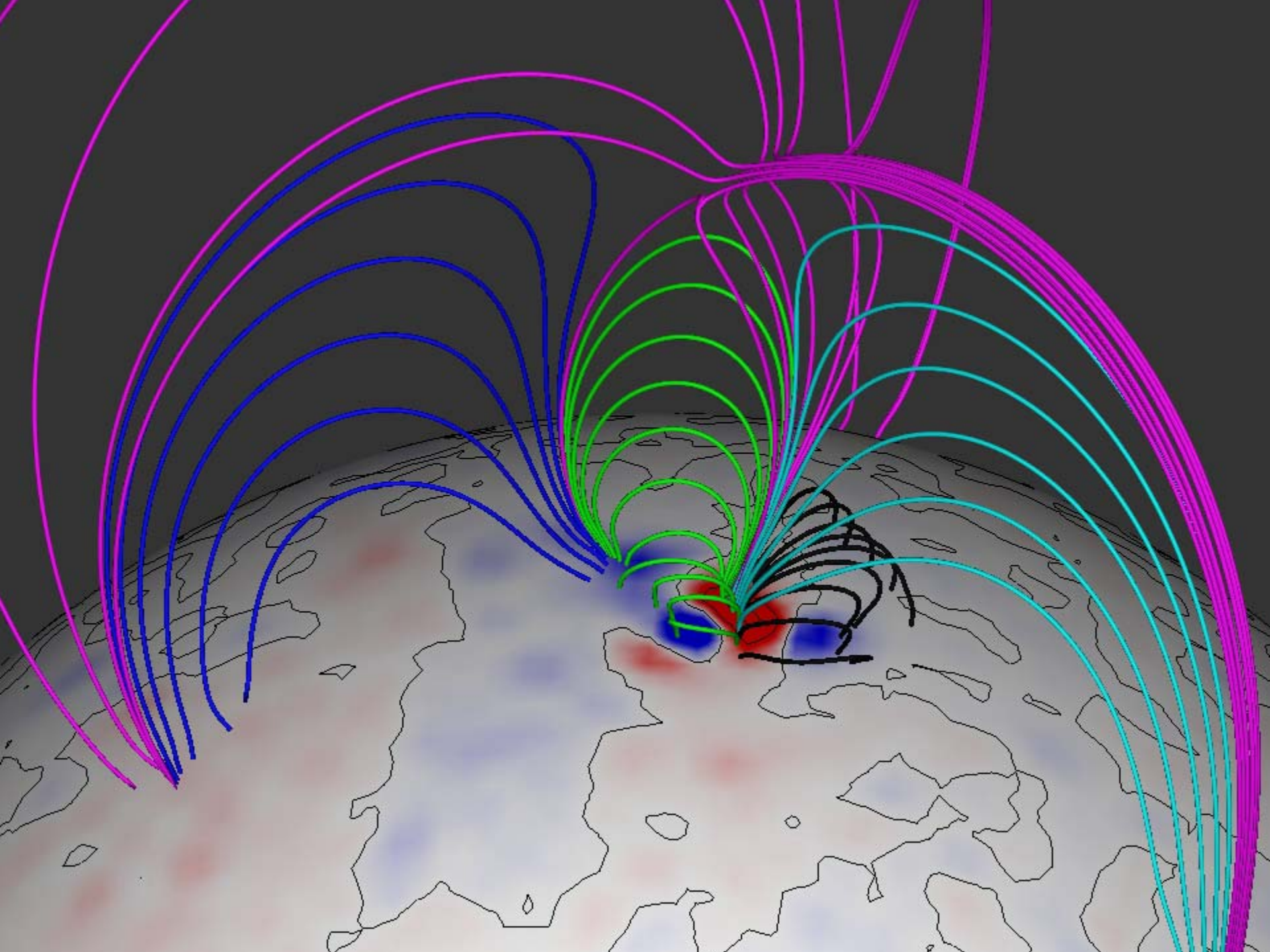








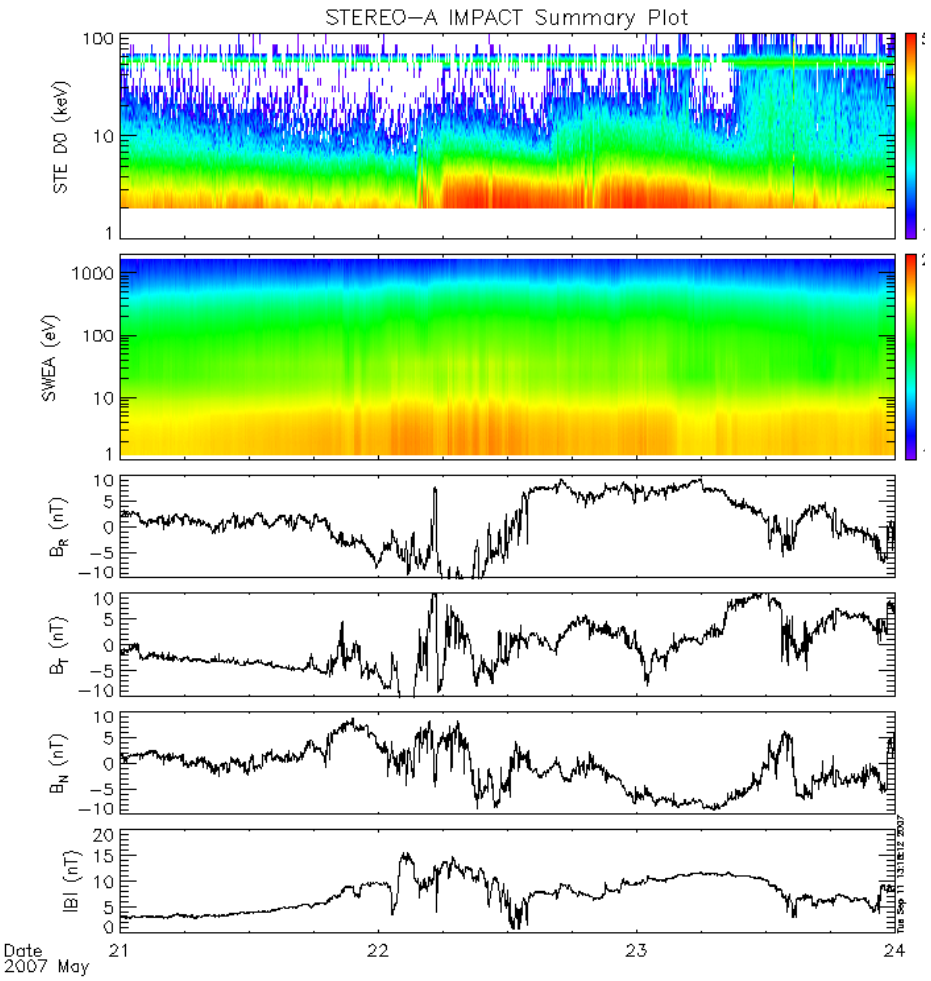




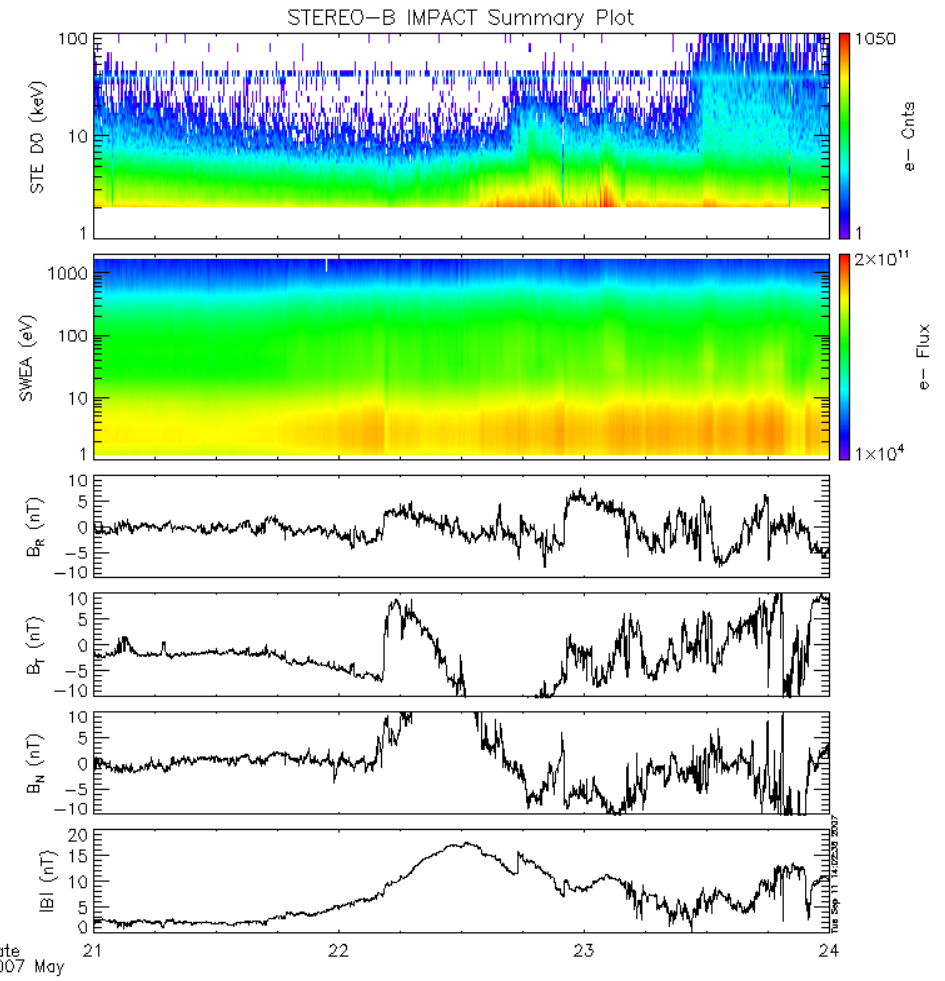
Summary plots and events page at http://sprg.ssl.berkeley.edu/impact/

May 21 – May 23, 2007

STEREO-A IMPACT



STEREO-B IMPACT



Goals

- CME initiation
- CME and ICME connection