



SECCHI Status

Russell A. Howard & The SECCHI Team

3 Feb 2009

STEREO SWG - Pasadena

Instrument Status

- **Mechanisms**
 - A mechanism calibration is done every few months to check timing in performing standard operations.
 - All mechanisms are nominal.
- **CCDs**
 - Calibrations are done periodically (every few months).
 - No deviations from nominal performance
- **SECCHI Electronics Box**
 - Watchdog Resets: “Random” resets of the 750 CPU of unknown origin. Numbers 7 & 8 on S/C-A occurred on 9/11/2008 1/23/2009. B has not had a reset since Feb, 2008.
- **Flight SW**
 - Current revision is 5.09.00 on both A and B, loaded 2008-04-09.
- **EUVI Filters**
 - The number of small pinholes are increasing, but effect is minimized by secondary filter

Instrument Status

- All 10 telescopes have been working extremely well.
- However, last Friday (1/30/2009) an event occurred on COR1B that increased the background stray light level. It was presumably due to dust particle(s) on the front objective lens. Now COR1B is at the level of COR1A. It was detected in the space weather images, so when the full data becomes available, it can be analyzed to determine whether there are features in the increased background, e.g.

Operations

- **Observations are going very smoothly. We are scheduling about 7500 images/day. Images are generally on the web site within 3 days.**
- **Discussion of the extended operations is underway. Simon Plunkett to give a detailed proposal. Priority is observations of CME shocks and source of SEPs**
- **The space weather channel will be modified to put significantly more bits into the HI-2 image. Requires fewer COR1 and EUVI.**
 - **RAL has proposed several suggestions to improve the quality of the HI-2 SPW images. The images are particularly challenging because of the large galactic background and F-corona relative to the CME and CIR structures.**
- **A lot of analysis has been done to improve the CME detection algorithm to eliminate false detections. The idea was to take images at a higher cadence & put them into the recirculating SSR2 memory and inhibit new images on a detection.**
- **Calibration refinements on all telescopes continue. (eg HI: Brown, Brewsher & Eyles, 2008)**
- **Discussion on the operations during the L4/L5 encounter has begun.**

SECCHI Instrument Events in 2008

SECCHI-A

SECCHI-B

3-Jan-08	Stepped Cal Roll	7-Jan-08	Campaign #2 Start
7-Jan-08	Campaign #2 Start	14-Jan-07	Recovery from Maint Mode 5
10-Jan-08	JOP 200 - EUVI ROI	20-Jan-08	Campaign #2 End
20-Jan-08	Campaign #2 End	19-Feb-08	Stepped Calib Roll
24-Jan-08	Recovery from Maint Mode 6	29-Feb-08	Recovery from Maint Mode 6
1-Apr-08	Stepped Calib Roll	9-Apr-08	FSW 5.08 IP module
9-Apr-08	FSW 5.08 IP Module	20-May-08	Stepped Calib Roll
24-Jun-08	Stepped Calib Roll	30-Jun-08	EUVI/GT calib
30-Jun-08	GT calib	7-Jul-08	EUVI/GT calib
7-Jul-08	GT calib	24-Jul-08	SSR 2 Solar Eclipse Test
24-Jul-08	SSR 2 Solar Eclipse Test	1-Aug-08	Solar Eclipse
1-Aug-08	Solar Eclipse	26-Aug-08	Stepped Calib Roll
23-Sep-08	Stepped Calib Roll	2-Dec-08	Stepped Calib Roll
16-Dec-08	Stepped Calib Roll		

SECCHI Meetings

- **Last consortium meeting at NRL, October 22-24, 2008**
 - **Proceedings posted at <http://secchi.nrl.navy.mil/wiki/pmwiki.php?n=Main.Meetings>**
- **Intercalibration Meeting Jan 24-25, 2009**
 - **COR1 and COR2 groups plus LASCO**
 - **Joan Burkepile (HAO/Mauna Loa),**
 - **Rich Frazin (Univ Michigan) and students**
 - **Philippe Lamy (LAM)**
 - **Wiki page at <http://secchi-ical.wikidot.com/start>**
- **Furture SECCHI Consortium meetings.**
 - **April 2010 in Dublin Ireland**

Telemetry Statistics

- The statistics of missing packets from SSR1 are maintained at
 - <http://sohowww.nascom.nasa.gov/solarsoft/stereo/secchi/data/statistics/SSR1/>
 - Example [Dec 2008](#)
- The statistics of time intervals for which we have received SSR2 images are maintained at
 - <http://sohowww.nascom.nasa.gov/solarsoft/stereo/secchi/data/statistics/SSR2/>
 - Example [Dec 2008](#)
- Space weather missing packets are maintained at
 - <http://sohowww.nascom.nasa.gov/solarsoft/stereo/secchi/data/statistics/SPW/>
 - Example [Dec 2008](#)

SECCHI Publications

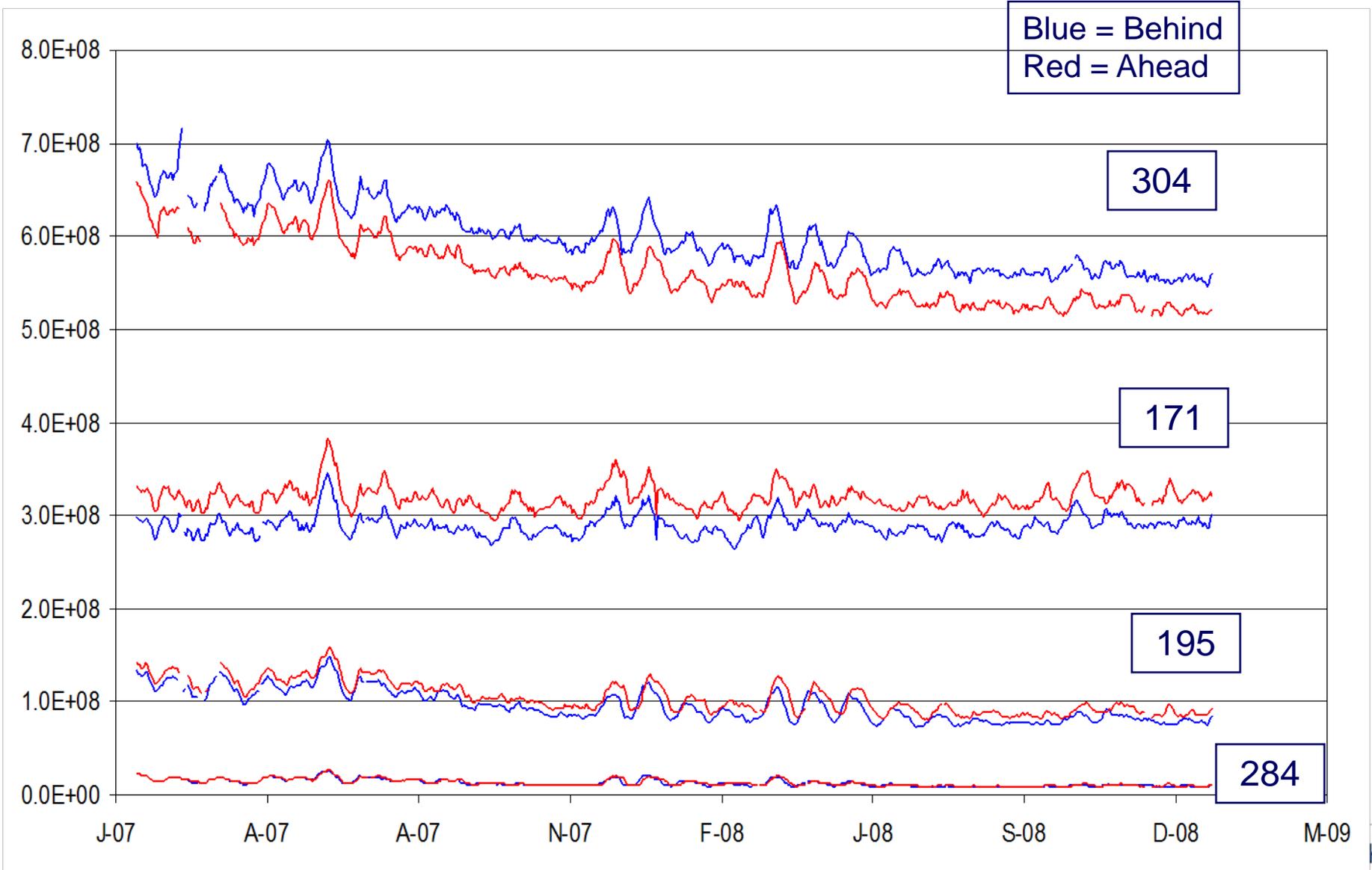
- **2008**
 - **16 Journal Papers**
 - **13 Refereed conference proceedings papers**
 - **29 Talks**
- **>35 papers submitted to special issue (out of 73).**

ON-GOING SCIENCE TOPICS

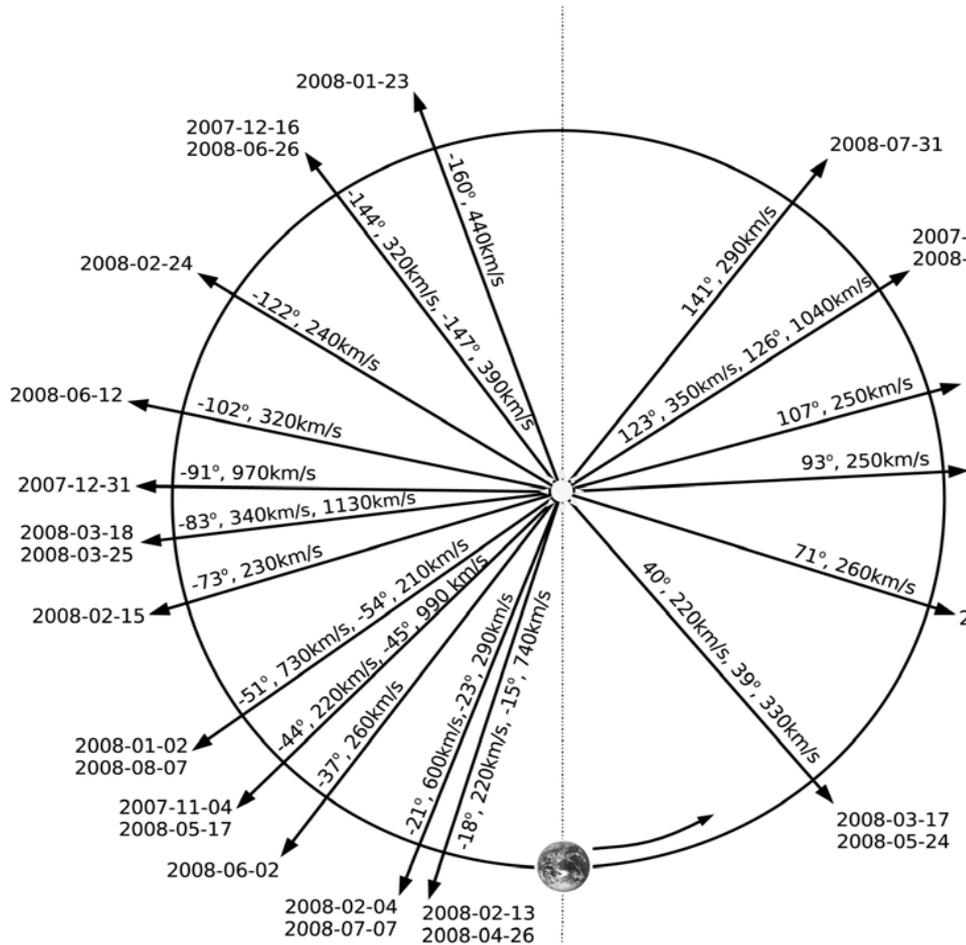
- **Modeling and stereographic interpretation of CMEs and other structures**
- **Imaging and Interpretation of CIRs**
- **Comet observations and analyses**
- **Initiation of CMEs**
- **F-corona**
- **Binary Star Photometry**
- **Relation to Other Observations (in-situ, Radio, SMEI, etc**
- **Calibrations**
- **More ??**

EUVI Total Irradiance

(McMullin)



Forward Modeling of CMEs

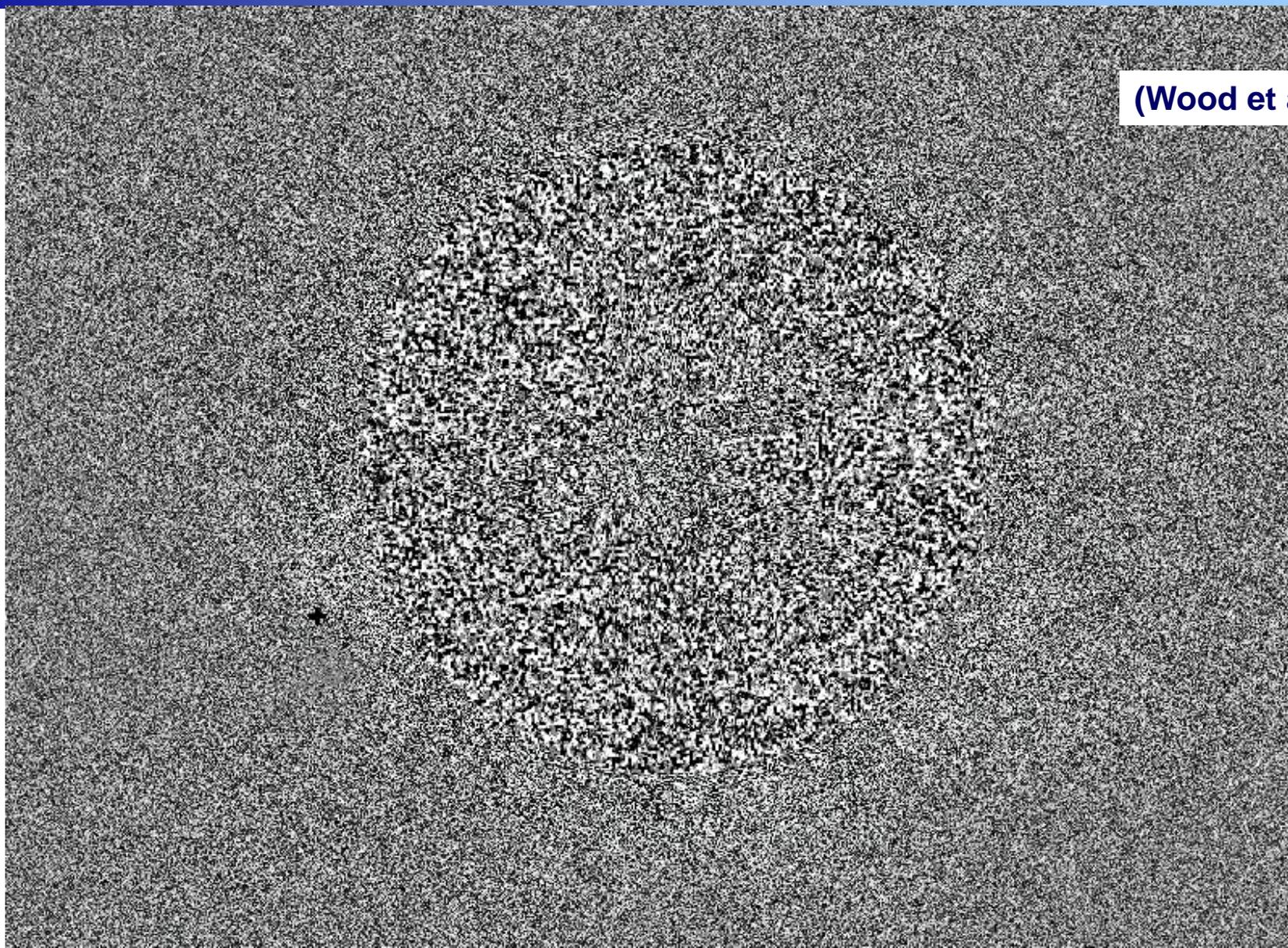


- Separation >40 degrees: CMEs observed between 11/2007 and 8/2008
- Our “flux rope” geometric model used to fit all CMEs
- Determination of central axis could be determined for 18 of 26 CMEs to within 4 degrees in long and 2 degrees in lat.

(Thernisien et al, 2009)

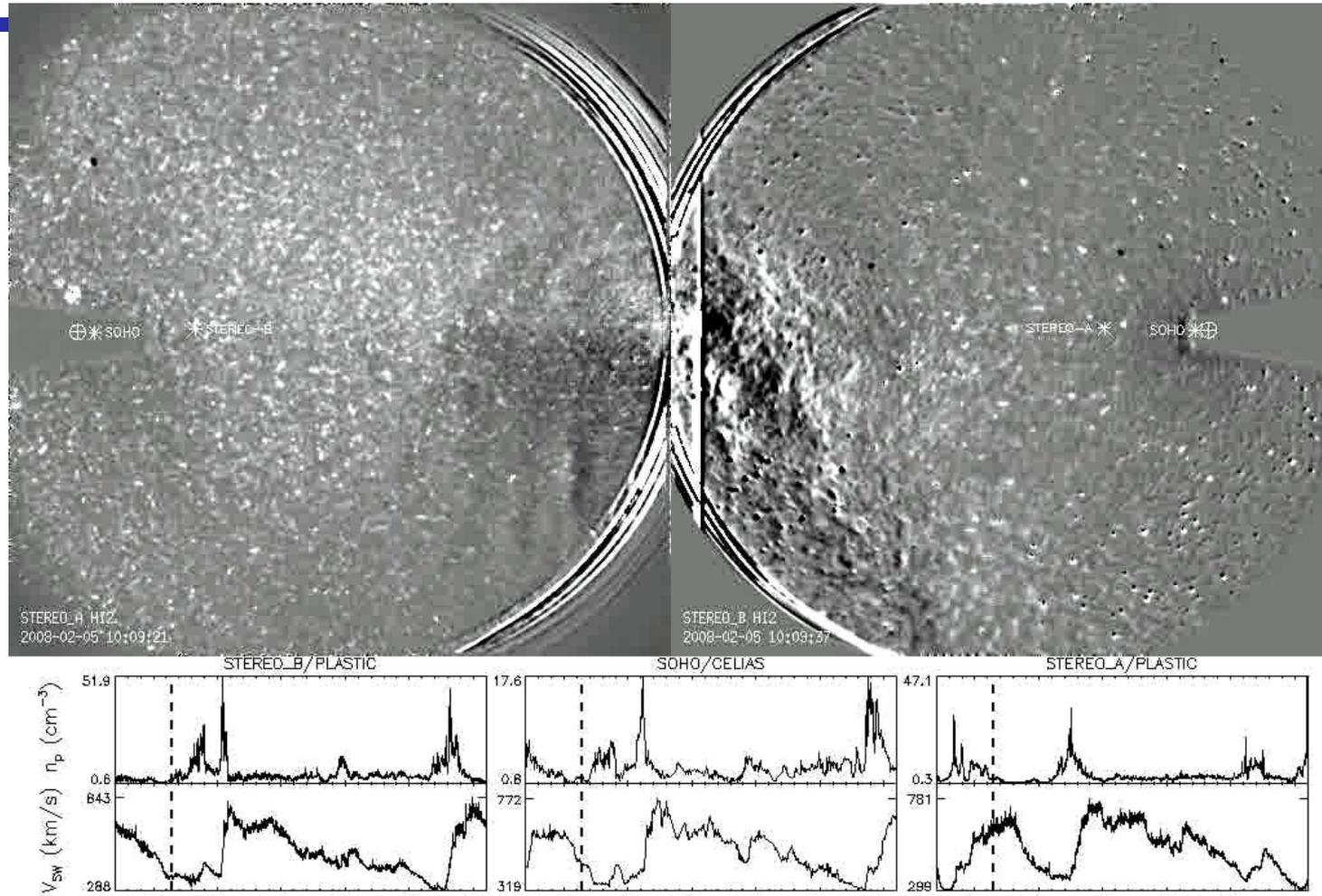
Analysis of the 2008 February 4 CME

(Wood et al, 2009)



2008 February 4 CME

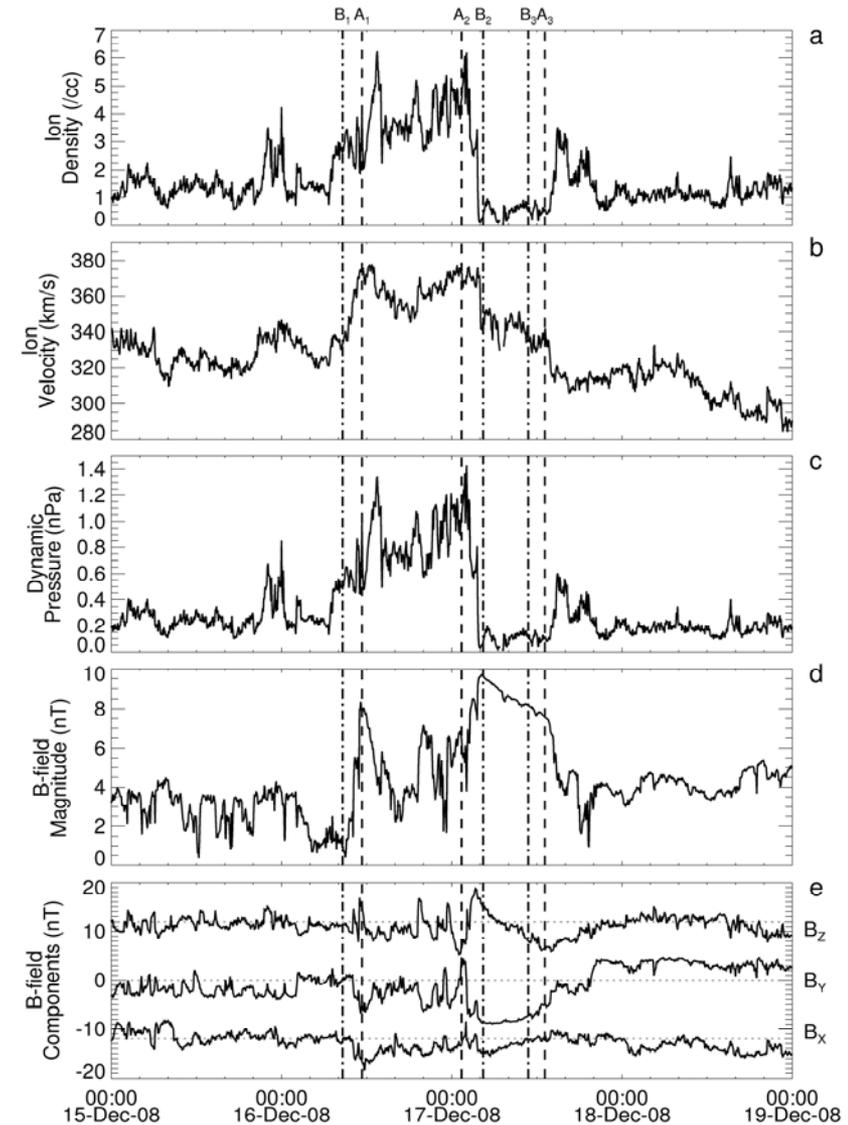
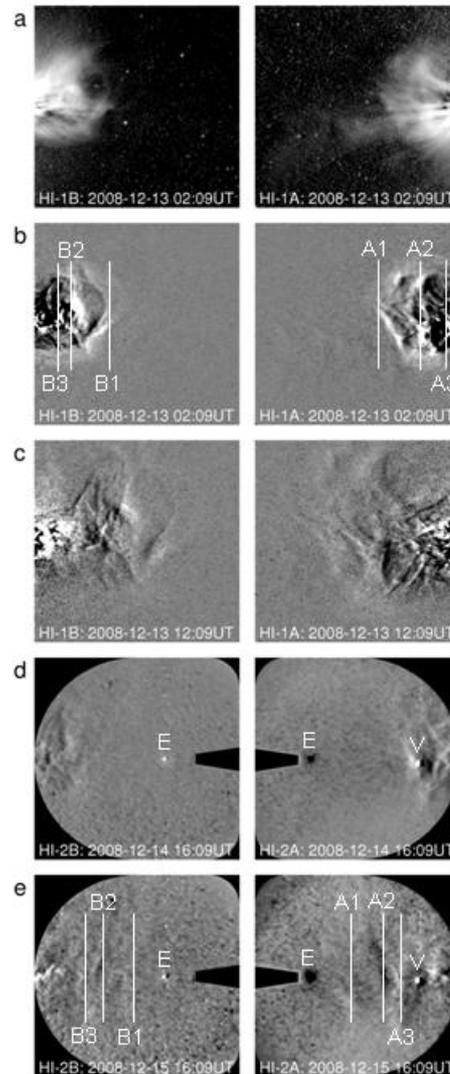
(Wood et al, 2009)



- This movie demonstrates that the in situ instruments on STEREO-B (particularly PLASTIC) do see a particle response to the CME and CIR fronts seen by HI2-A crossing the position of STEREO-B.
- HI2-B sees faint, fast, broad fronts pass through the foreground at this time.
- SOHO/CELIAS sees the CME, but before the visible HI2-A front reaches SOHO's position.
- STEREO-A/PLASTIC sees the CIR, but not the CME, providing an upper limit to the CME's angular extent.

Analysis of Dec 12, 2008 CME

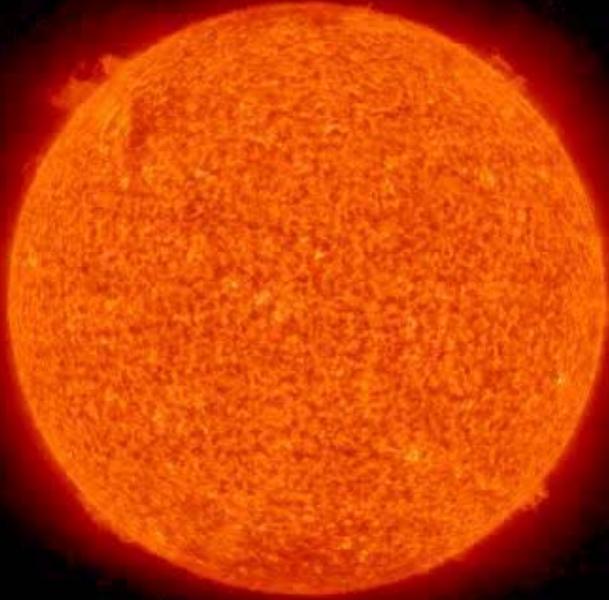
- Eruptive prominence
- Earth Directed
- Seen at ACE
- Dotted lines are at the times when the structure boundary in HI2 is crossing the LOS to ACE
- Davis et al (2009)



EUVI Prominence Eruption 12/12/08



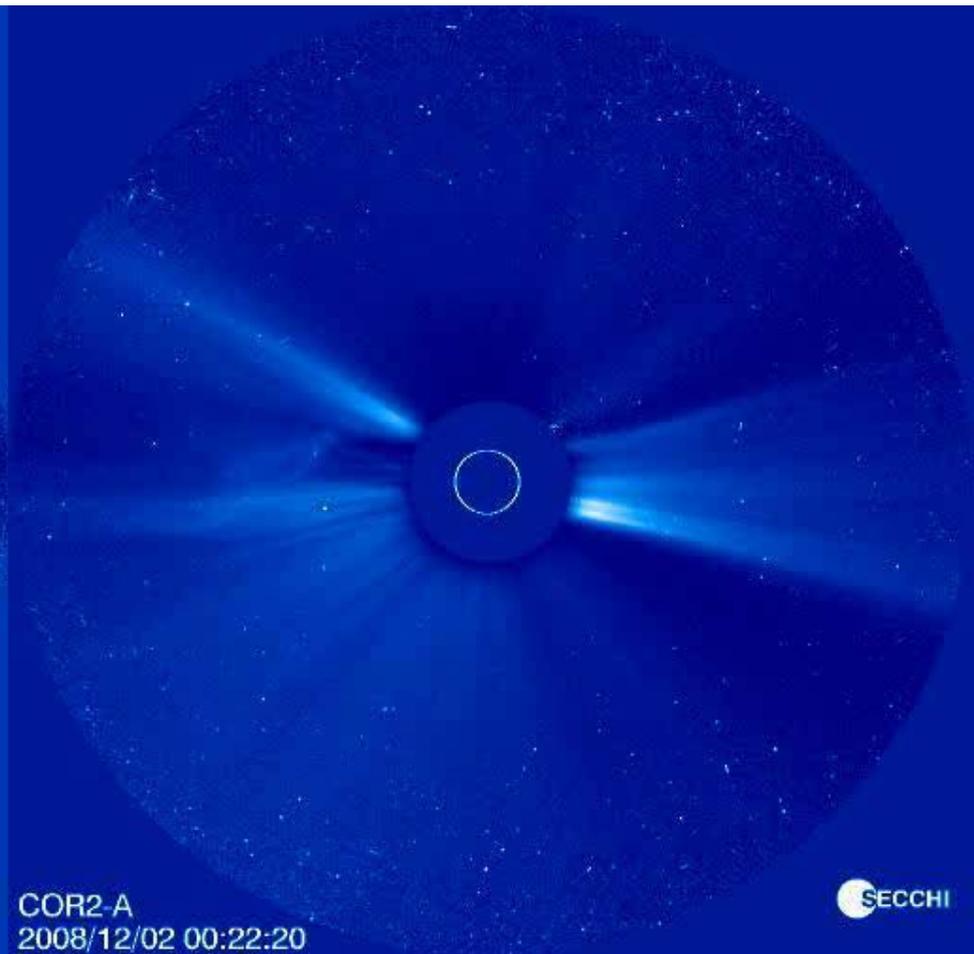
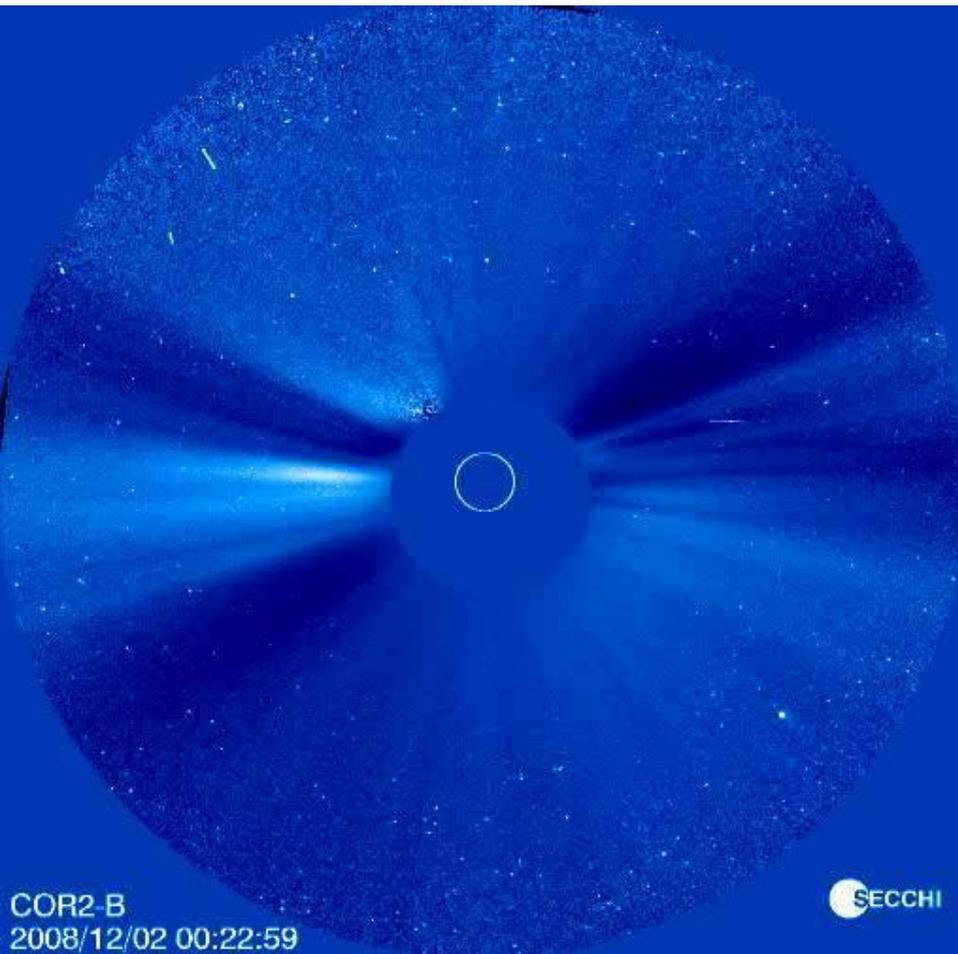
EUVI-B
2008/12/09 00:26:52



SECCHI EUVI-A
2008/12/09 00:26:15

SECCHI

COR2 CME 12/12/08



EPO

- **Recent activities**

- **NASA Sees the 'Dark Side' of the Sun**

- http://science.nasa.gov/headlines/y2009/23jan_darkside.htm?list20318

- **STEREO in Quadrature**

- <http://stereo.gsfc.nasa.gov/news/Quadrature.shtml>

- **SECCHI Makes a Fantastic Recovery!**

- <http://stereo.gsfc.nasa.gov/gallery/item.php?gid=1&id=85>

- **Twisting Solar Jets in STEREO**

- <http://stereo.gsfc.nasa.gov/gallery/item.php?gid=1&id=66>

- **Chris Davis (RAL) will be on Sky at Night about the aurora and HI was used to show the solar wind**

- **Planetarium show by JPL of various events.**

- **Propose to use the Dec 12 event for the upcoming GSFC press event on CME structure**



Summary

- **WOW**
- **Thanks to Mike Kaiser for his great stewardship over these 10 years.**