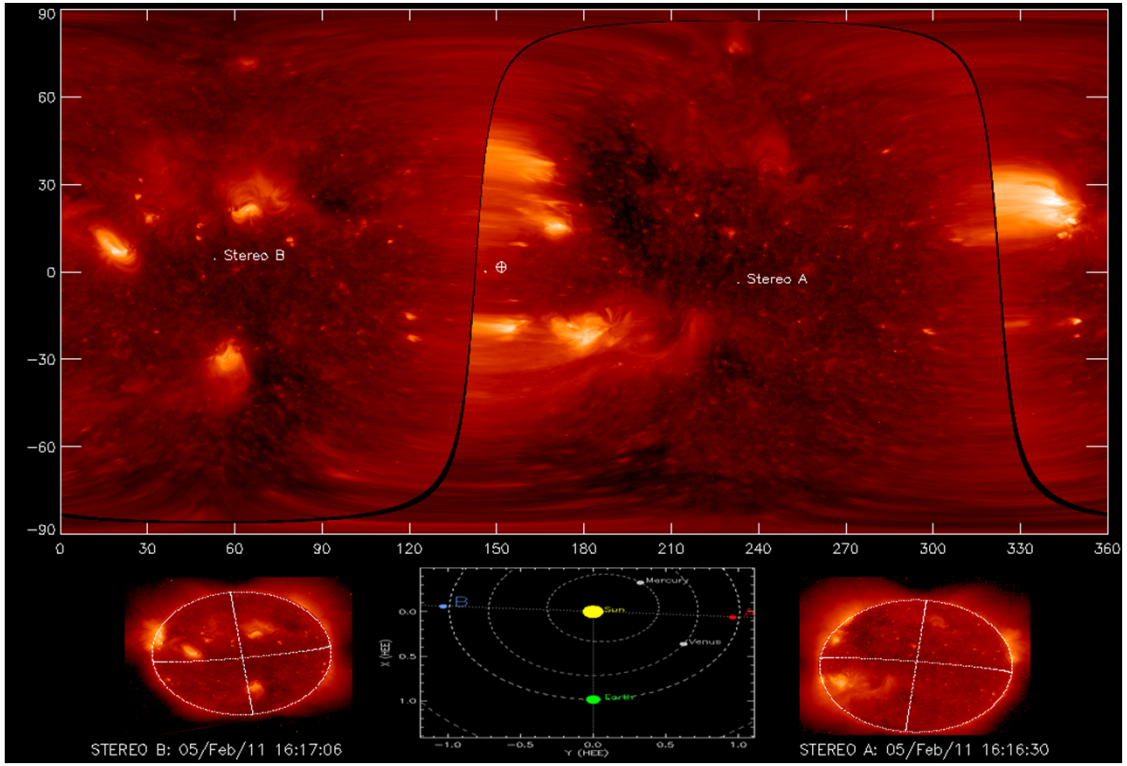

# EUVI Status

**J.-P. Wuelser, N. Nitta**

# Status

- **The two EUVI telescopes continue to operate very well.**
- **The EUVI team is excited about the recent data covering 360 deg on the sun.**
- **CME Trigger worked successfully.**
  - **The higher level of activity, and the successful operation of the event trigger has provided nice EUVI coverage of several events in spite of the lower telemetry rate in this phase of the mission.**




- **Calibration efforts:**
  - **An update to calibration items (flat field, degridding, pointing, response trending) is in the works. They're not in a sufficiently complete state to report on at this point.**

# Research Highlights

Nariaki Nitta (LMSAL)

- **Paper for the Solar Physics Topical Issue on WHI (*Observables Indicating Two Major Coronal Mass Ejections During the WHI, N. V. Nitta*) – almost accepted.**
- **Participation in a workshop on the eruptive events on 1 August 2010 (team includes RAL, UCB, U Graz, etc.) to understand the origin of the ICMEs starting on 3 August.**
  - **My emphasis has been on tracing several tracks j-maps of HI1 and HI2 back to COR2 and then COR1/EUVI. There were two workshops, in Abingdon, UK and Graz, Austria, to study the CMEs near the Sun, their propagation to HI and SMEI, and their consequences at L1.**
- **Study of EUV waves in February 2011 observed by AIA (on disk) and EUVI (at limbs) *(e.g.,http://www.lmsal.com/nitta/movies/aia_euvi/20110215_0140_aia0193_euvia195_rdiff/AIA0193_EUVIA195_RDIFF_20110215_0140.html).***
- **Preliminary study that tries to explain the time profiles of electron events in August 2010 at Earth, ST-A and ST-B in terms of magnetic field connection and how it is traversed by an EIT wave (10th International Astrophysics Conference, Hawaii).**
- **Markus has been studying coronal loops, and loop oscillations observed with STEREO/SECCHI and SDO/AIA. He has a couple of papers in press on these topics (see http://www.lmsal.com/~aschwand/publications/publ.html).**


# COR1 Status

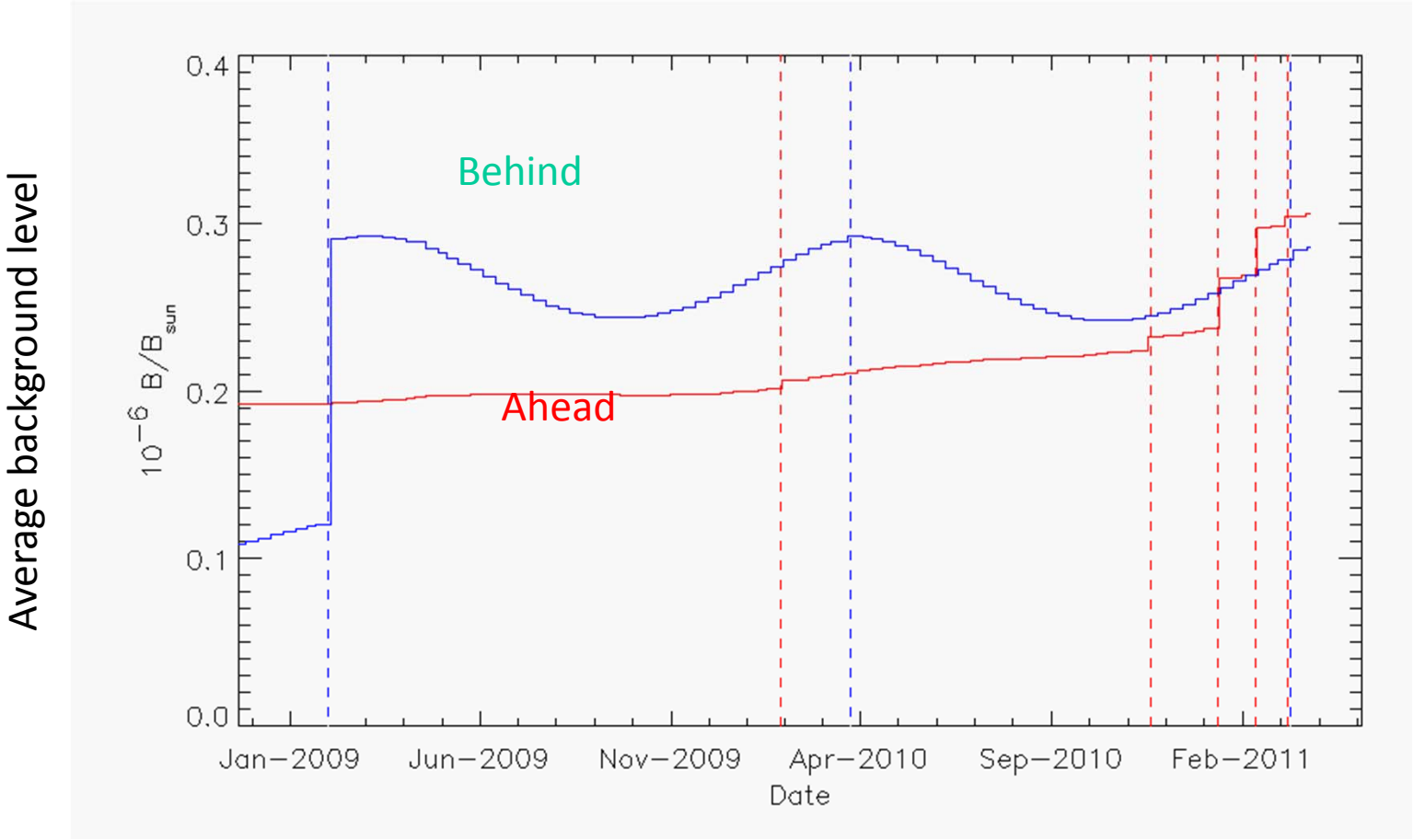
**Bill Thompson**

# COR1 Operations

- **Standard operating mode is to bring down 3 polarizer angles (0°, 120°, 240°) to form both *B* and *pB*.**
- **Normal cadence is 5 minutes.**
- **Changed image format to 512×512 on 19 April 2009 due to decreasing telemetry rate (was 1024×1024).**
- **Next telemetry decrease will require bringing down total *B* images summed onboard.**
  - **COR2 already does this.**
  - **Will still sum 3 images to preserve signal-to-noise, and to maintain continuity.**
  - **Some images still planned to be *pB* sequences.**

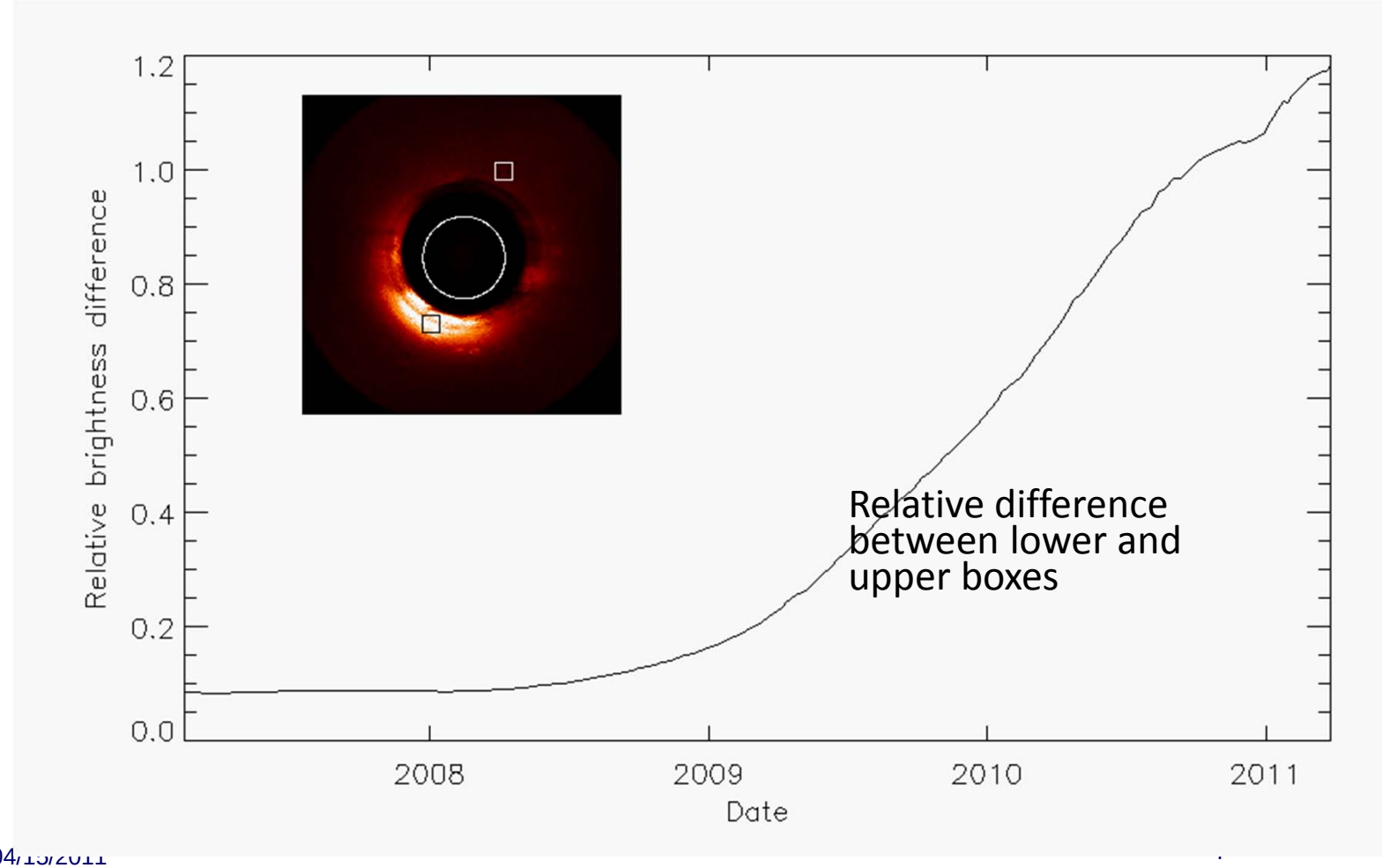
# Particle events on COR1 objective

- **There have been several events where new particles adhere to the COR1 front objective, changing the background level.**
- **This has happened four times recently on Ahead, and once on Behind.**



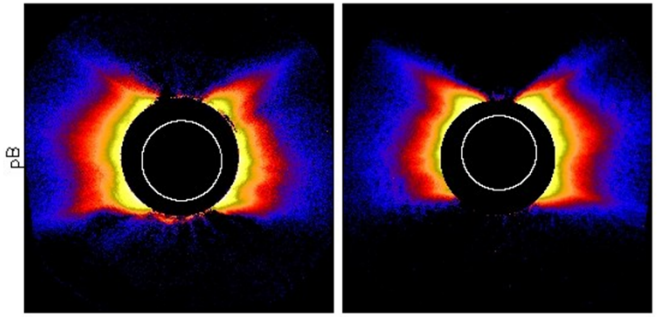
# COR1-A Background Evolution

- **There is a region in the COR1-A background that has been steadily growing since 2009. The cause for this is unknown.**
- **Only affects total brightness—*pB* is unaffected.**

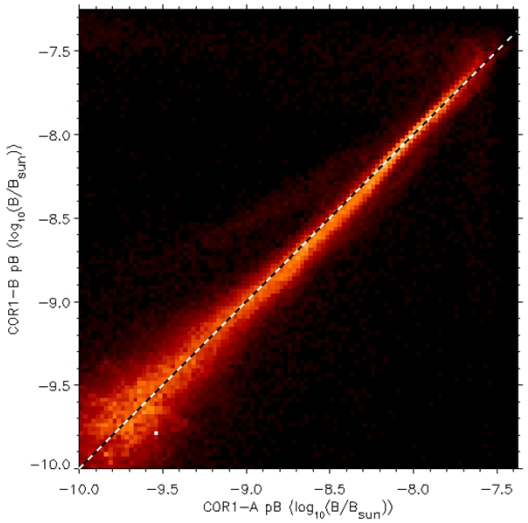


# COR1-A/B Intercalibration at 180° separation

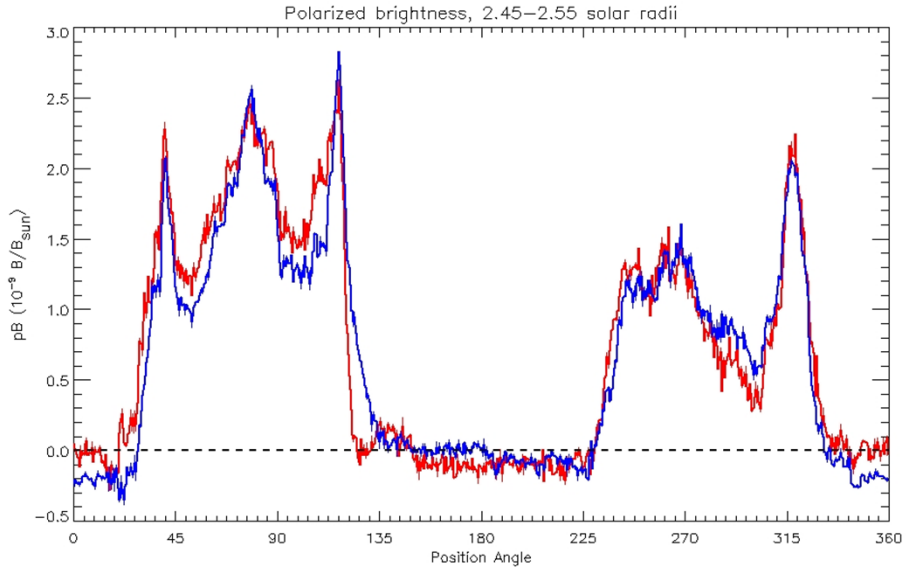
- **The two STEREO s/c reached 180° separation on 6 February 2011 at ~ 14:30 UT.**
  - **A unique opportunity to test the COR1-A and COR1-B intercalibration.**
  - **Both spacecraft see the same corona, but from opposite sides.**
  - **Tests both the radiometric calibration of the telescopes, and the background subtraction**
- **Important for deriving mass of coronal mass ejections, tomography of streamers.**




Mirror images




One-to-one relationship




Good match at all position angles and heights


# COR2 Status

**Angelos Vourlidas**

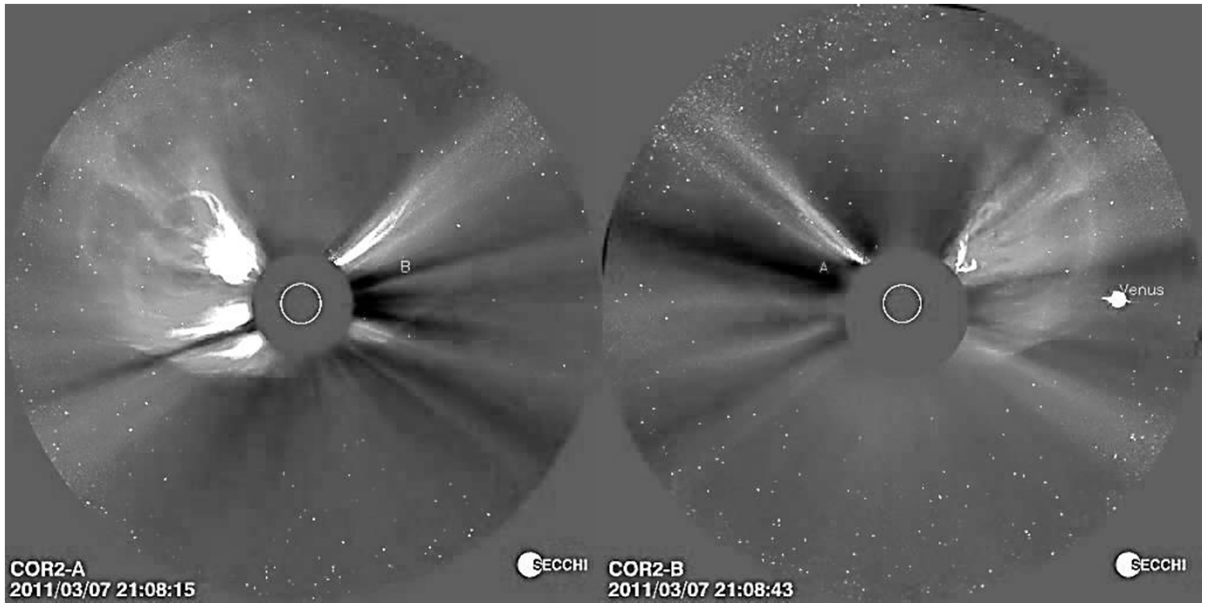
# Instrument Status

- **Nominal**
  - **Synoptic Observing Plan: 3 TB, 1 pB per hour**
- **Calibrations completed**
  - **Polarization Background**
  - **Pointing**
  - **Distortion**
  - **Photometry verification (using stars)**
  - **Polarization image rotation**
  - **Vignetting**
  - **Debris Catalogue**

# Research Highlights

- **CME trigger works!**
  - **Detections since Jan 1st 2011: 17 COR2-A, 9 COR2-B, 1 common .**
- **CME-driven shocks easily detected.**
- **First detection of a rapidly rotating CME (60º/day).**
- **…Too many CMEs to work on.**

First < 2000 km/s CME!

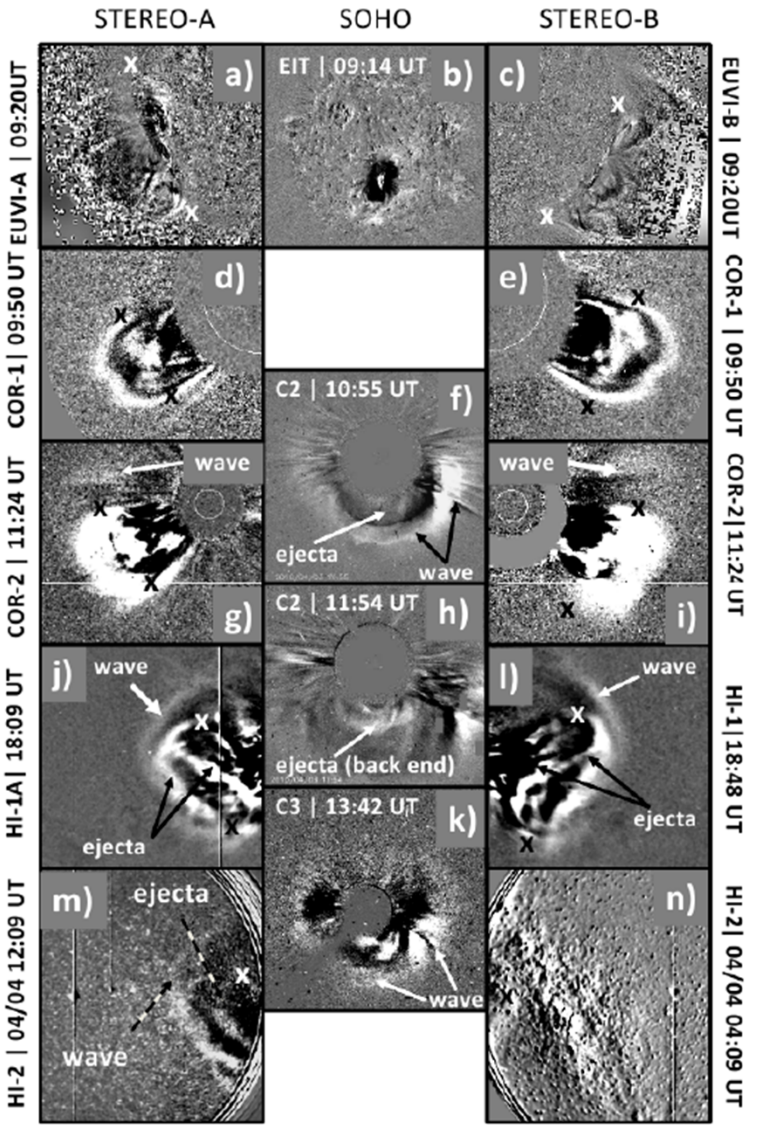



# HI-1/2 Status

**Angelos Vourlidas**

# Status/ Research Highlights

- **Nominal**
  - **Synoptic Observing Plan is unchanged.**
- **HI as a planet finder!**
  - **First paper on exoplanet detection and variable starts *(Wraight et al 2011, MNRAS).***
- **HI as a Space Weather tool.**
  - **HI observations from ~ L4/5 reduce time-of-arrival prediction error from +/- 12 hrs to (at least) +/- 6 hrs.**
  - **Connection of SEP events to CME shock (*Rouillard et al 2011).***




**Rouillard et al 2011**

# Current state of arrival predictions
## (…will change)

| | Predicted | Observed | Delta | S/C |
|---|---|---|---|---|
| Nov 15, 2007 | Nov 19 07:50 | Nov 19 13:50 | -8 | STEREO-B |
| Apr 26, 2008 | Apr 30 03:00 | April 29 15:30 | +12 | STEREO-B |
| Jun 2, 2008 | Jun 6 20:00 | June 6 22:00 | -2 | STEREO-B |
| Dec 12, 2008 | Dec 16 16:00 | Dec 16 10:00 | +6 | ACE (front) |
| | Dec 17 08:00 | Dec 17 04:00 | +4 | ACE (back) |
| Jan 22, 2009 | Jan 26 01:00 | Jan 25 22:00 | +3 | ACE |

**Current Earth-impact accuracy: >4 hours**
**Only 5 events checked so far.**

# SECCHI Operations Update
# 11 Apr 2011

**Nathan Rich**
**SECCHI Operations Lead**

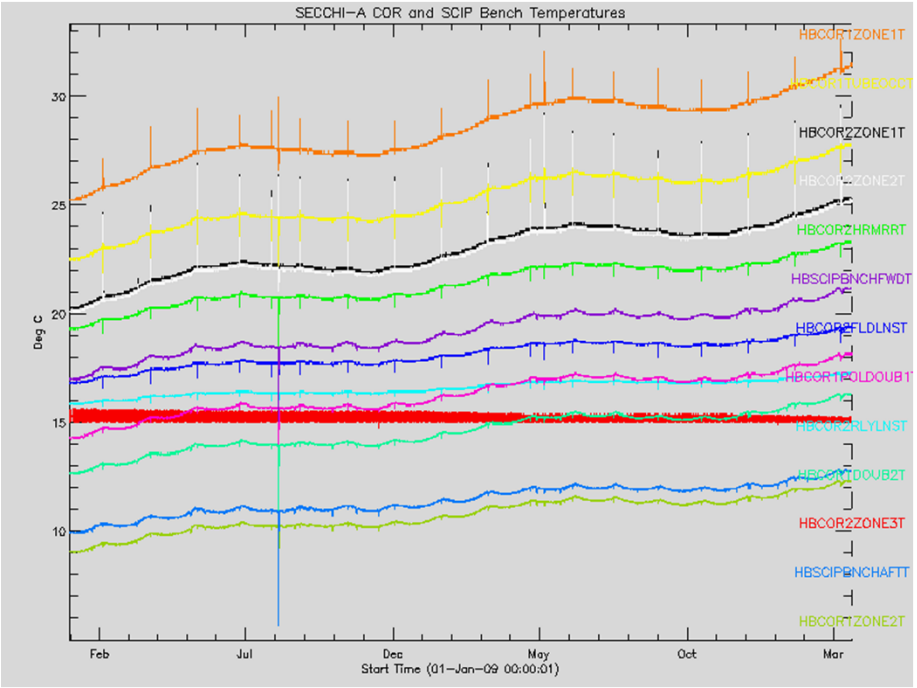
# FSW Updates

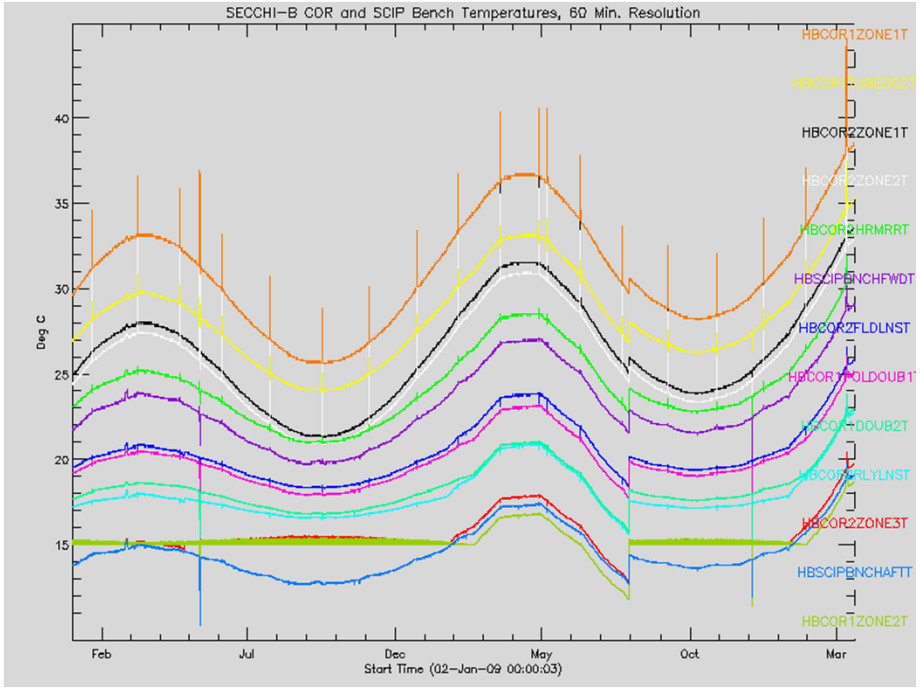
- **FSW (unprotek) modified 1 time between March 2, 2010 and April 11, 2011:**
  - **5.16.00 (2011-01-20) Modification of Image Processing module to enhance CME Event Detection reporting**
- **Table updates between March 2, 2010 and April 11, 2011:**
  - **Light travel time table annual update on 2011-01-20: lighttbb.cpp,v 1.13**
  - **Image processing table: 1 update: imagetbl.img,v 1.147 (2010/05/11)**
  - **Event-detect threshold table updates: thresha.img,v 1.44 (2011-02-03, 5 adjustments) threshb.img,v 1.49 (2011-02-04, 12 adjustments)**

# SECCHI Notable Events

| Description | A | B |
|---|---|---|
| JOPs | 2 | 2 |
| Onboard CME Event Detections | 25* | 8 |
| COR1 Particle Event (stray light change) | 4 | 1 |
| COR2 Particle Event (stray light change) | 0 | 1 |
| Calibration Roll (incl. 180 deg separation) | 6 | 4 |
| COR1/2 closed door cal (momentum dump) | 8 | 9 |
| Mechanism spin-timer tests | 5 | 4 |
| Watchdog Timer Resets | 5 | 1 |
| EUVI GT-driven flatfield offpoint | 1 | 1 |
| HI Stray Light Calibration Offpoints | 1 | 1 |
| HI1 cosmic ray scrub test | 1 | 0 |
| HI exposures looking for thruster plumes | 1 | 1 |

# Trends in Temperatures




- **Approximately 2-month periodicity in electronics temperatures on both SECCHI-A and SECCHI-B corresponds to momentum dumps.**
- **Two trends apparent in most SCIP temperatures:**
  - **Annual variation (presumably) corresponding to solar distance (A: up to 1.5 deg, B: up to 9.4 deg)**
  - **Overall upward trend (A: 3.3 deg/yr, B: 2.3 deg/yr)**

# SECCHI Image Statistics

- **Totals, April 1, 2010 - March 31, 2011:**

| | Cor1A | Cor1B | Cor2A | Cor2B | EuviA | EuviB | Hi1A | Hi1B | Hi2A | Hi2B |
|---|---|---|---|---|---|---|---|---|---|---|
| N Images (not incl. SPWX) | 335152 | 306771 | 60118 | 60027 | 260221 | 214116 | 13082 | 13078 | 4522 | 4491 |
| Size (Raw GB) | 32 | 29 | 30 | 30 | 69 | 58 | 21 | 20 | 9 | 8 |
| Size (FITS GB) | 171 | 157 | 423 | 422 | 2052 | 1688 | 52 | 52 | 18 | 18 |

Mission Total Images: 5,910,400
FITS volume: 30.2 TB
Telemetry volume: 1743 GB

- **For specific information about SECCHI telemetry statistics, use**

  **`IDL> sccgetinfo` in SolarSoft**

# Programmatic - Other

- **SECCHI Electronics Box**
  - **Watchdog Resets: "Random" resets of the 750 CPU of unknown origin, continue at approximately the same rate. Attempts to fix them failed.**
- **New Data Products:**
  - **EUVI A-B synoptic map for the whole mission (updated daily).**
  - **EUVI two-wavelength ('blended') monthly movies for the whole mission.**
  - **10-telescope combined movies (weekly).**
- **Extra 15% cut on top of reduced SECCHI budget impacts science efforts.**
  - **SSR1/SSR2 management requires considerable Ops effort.**
- **Efforts to leverage other resources to enable science.**
  - **'Shared' postdoc with COR1 team at GSFC.**
  - **'Shared' postdoc with 671 & N. Sheeley's group.**
  - **NRC postdoc at NRL (already started).**
  - **LWS Postdoc Fellow at NRL (starting mid-July).**
  - **SECCHI ops team also supports software development/maintenance.**

# Backup Slides