



# PLASTIC

PLAsma And Supra-Thermal  
Ion Composition investigation



## STEREO SWG: PLASTIC STATUS

Toni Galvin (UNH)  
for the PLASTIC Team

Katherine Singer  
For the Operations

Special thanks to Lorna Ellis (Data), Mark Popecki (Ops)

### **STEREO PLASTIC Institutions:**

**UNH, U Bern, MPE, U Kiel, NASA/GSFC  
IDPU/LVC provided by UCB (IMPACT)**

# Outline

- **PLASTIC status since last SWG**
  - Papers and Conferences
  - Online Data Status
  - EPO
  - Operational Status (Singer)

## Paper Updates... (since last meeting)

- Galvin et al., Space Science Review, doi: 10.007/s11214-007-9296-x, in press.
- Möstl et al., ***Two-spacecraft reconstruction of a magnetic cloud and comparison to its solar source***, Ann. Geophys., in press.
- Liu et al., **Reconstruction of the May 22 2007 magnetic cloud....**, Astrophys. J. Lett., 677, L133, 2008
- Podesta, JJ., A.B. Galvin, C.F. Farrugia, ***Correlation length of solar wind fluctuations measured tangent to the earth's orbit: First results from STEREO***, re-submitted to JGR .
- Daoudi et al., ***The STEREO/PLASTIC response to slow solar wind ions (flight measurements and models)***, in review, Astrophys. Space Sci. Trans.
- Eriksson et al., ***Shear-flow effects on magnetic field configuration within a solar wind reconnection exhaust***, re-submitted to GRL.
- Opitz et al., **Temporal variation of the solar wind bulk velocity...**, in preparation.

## Conferences:

Fall AGU (Dec 2007), Berkeley Heliospheric Workshop (Feb 2008), EGU (April 2008)

## In Progress Dissertations and Theses:

Hagar Daoudi, **STEREO PLASTIC Observations of the Slow Solar Wind**, Ph.D. dissertation, U Bern, Bern, Switzerland, submitted.

Kristin Simunac, *Multi-spacecraft Observations of the Geometry of Stream Interfaces (STEREO)*, Ph.D. dissertation, UNH, Durham, NH.

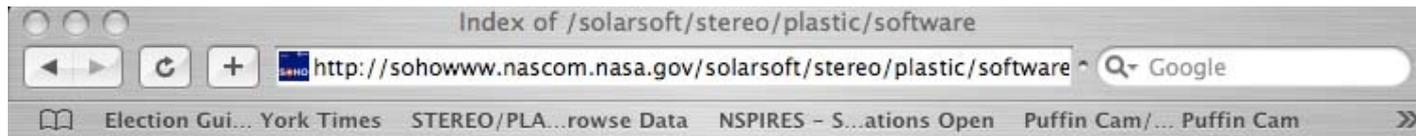
Joshua Barry, **STEREO PLASTIC Observations of Heliospheric O+**, M.S. thesis, UNH Durham, NH.

## New Hire:

Research Scientist II, Dr. Yong Liu, joined UNH team last week. Will be working on solar wind composition products.

# Data and S/W Status

- Public Domain at [SSC](#) Site
  - STEREO PLASTIC Analysis Software (*SPLAT*) and documentation Interactive plotting software for L1 CDF files. (*SPLAT* uses *TPLOT* heritage.)
  - *Read\_CDF* (s/w and documentation for making ascii versions of data)
  - *Science\_Overview* (s/w for making science summary plots)
  - **NEW!** STEREO PLASTIC PHA Analysis Software (*PHA\_Play*) and documentation for Level 1 CDF files and documentation (for analysis of pulse height events for detailed composition). **Beta version.**



## Index of /solarsoft/stereo/plastic/software

<a href="#">Name</a>	<a href="#">Last modified</a>	<a href="#">Size</a>	<a href="#">Description</a>
 <a href="#">Parent Directory</a>		-	
 <a href="#">SPLAT_V1.2.zip</a>	31-Jul-2007 11:18	1.9M	
 <a href="#">pha_play_20080410.zip</a>	10-Apr-2008 13:31	1.5M	
 <a href="#">read_cdf_06.zip</a>	28-Nov-2007 11:14	53K	
 <a href="#">science_overview_04.zip</a>	09-Mar-2007 22:15	40K	

# Data and S/W Status

- Public Domain at <http://stereo.sr.unh.edu> , validated level 2 data
  - Proton bulk parameters (validated 1-min, 10-min, 1 hr bulk parameters with data quality flags), data from Feb(A)/Mar(B) through February 2008.
  - **NEW**: Flow angles are being included in 10-minute files (Feb-Mar-Apr 2007, STA; rest in progress).
- Public Domain at [SSC](http://ssc.lamost.edu.cn) , Level 1/2 data
  - Level 1 CDFs and documentation, up to present
  - **NEW**: Level 2 CDF files for 1-min data now mirrored at SSC (STA, STB: April - Nov 2007)

The screenshot displays the STEREO PLASTIC Instrument Resources website. The main heading is "Validated (L2) Data Sets" for "SOLAR WIND PROTON BULK PARAMETERS". Below this, there are two columns for "STEREO A PLASTIC" and "STEREO B PLASTIC", each with a "README 1 minute files" link. A list of dates and file formats (XLS or TXT) is provided for each instrument, ranging from 04-2007 to 02-2008. A note at the bottom states: "NOTE: Data provided are for purpose of identifying interesting event periods. These data are publishable, but please read the README file concerning data quality! If used in presentations or publications, please acknowledge STEREO PLASTIC and NASA Contract NASS-00132. For reporting purposes, we request bibliography information for any presentation, publication, etc., using these data. (Please send information on the use of this data to the PLASTIC PI, A.B. Galvin, toni.galvin@unh.edu)".

# Data and S/W Status

- Public Domain at <http://stereo.sr.unh.edu> , validated level 2 data
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STEREO PLASTIC Instrument Resources

[http://stereo.sr.unh.edu/data/PLASTIC\\_Resources/Bulk\\_Parameter\\_L...](http://stereo.sr.unh.edu/data/PLASTIC_Resources/Bulk_Parameter_L...)

**PLASTIC**  
Plasma And Supra-Thermal Ion Composition Investigation

## Validated (L2) Data Sets

### SOLAR WIND PROTON BULK PARAMETERS

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STEREO A PLASTIC      STEREO B PLASTIC

[README 1 minute files](#)      [README 1 minute files](#)

(in progress - 1 min beta version available for)

04-2007 1-minute [XLS](#) or [TXT](#)  
05-2007 1-minute [XLS](#) or [TXT](#)  
06-2007 1-minute [XLS](#) or [TXT](#)  
07-2007 1-minute [XLS](#) or [TXT](#)  
08-2007 1-minute [XLS](#) or [TXT](#)  
09-2007 1-minute [XLS](#) or [TXT](#)  
10-2007 1-minute [XLS](#) or [TXT](#)  
11-2007 1-minute [XLS](#) or [TXT](#)  
12-2007 1-minute [XLS](#) or [TXT](#)  
01-2008 1-minute [XLS](#) or [TXT](#)  
02-2008 1-minute [XLS](#) or [TXT](#)

[README 10 minute files](#)

Index of /data/ins\_data/plastic/level2/ahead/2007/

[http://stereo.ssc.nasa.gov/data/ins\\_data/plastic/level2/ah...](http://stereo.ssc.nasa.gov/data/ins_data/plastic/level2/ah...)

STEREO SCIENCE CENTER

HOME CONTACT

### STEREO Science Center : /data/ins\_data/plastic/level2/ahead/2007/

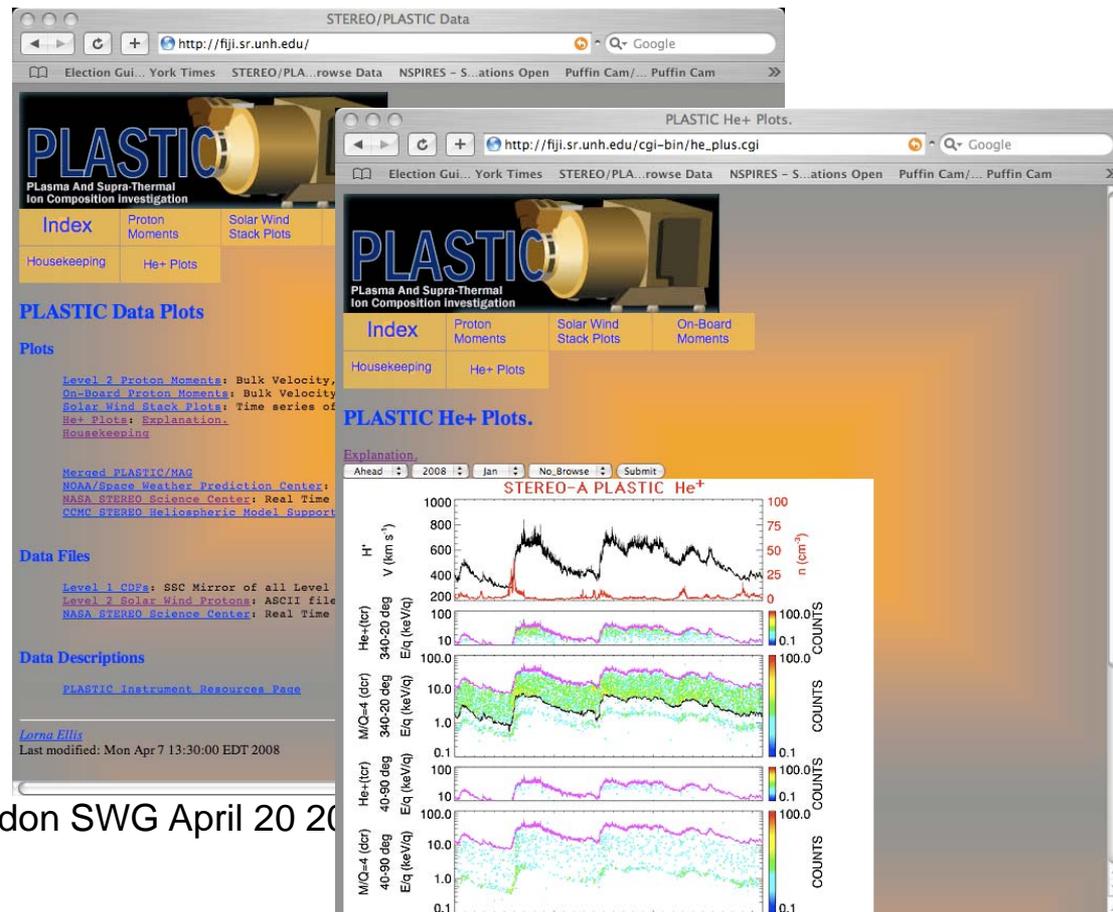
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04-Apr-2008 08:28	106k	

# Data and S/W Status

- **NEW!** Public Domain linked from <http://stereo.sr.unh.edu>, or go directly to <http://fiji.sr.unh.edu>,
  - CDF file links and PLOTS: **All plots are generated from the public domain SPLAT s/w :**
    - Weekly proton stack plots
    - Monthly Level 2 bulk parameters
    - Daily OnBoard Moments
    - Helium Plus

## NEW!

He+ plots show energy spectra, cut off energies, angular distribution (in the ecliptic) and are used for pickup ion studies, including **the focus cone**, and suprathermal acceleration at CIR compression regions. (Response to GI requests.)



# Data and S/W Status

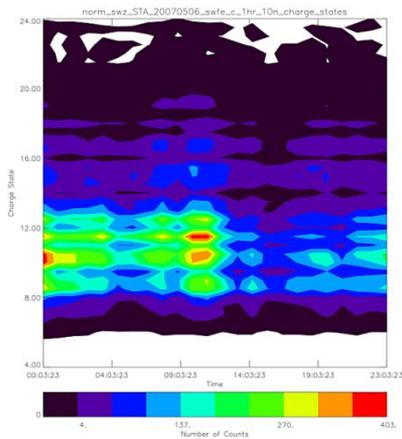
- **New product under development: Solar Wind Iron**
  - Uses Public Domain Pha\_Play and Level 1 data files
  - Daily Iron Charge Distribution Time Series
  - Average Charge States
  - Selected Fe speeds
  - Hour Resolution

# Data and S/W Status

- **New product under development: Solar Wind Iron**
  - Uses Pha\_Play and Level 1 data files
  - **Daily Iron Charge Distribution Time Series - Fast and slow solar wind studies**
  - Average Charge States
  - Selected Fe speeds
  - Hour Resolution on STA

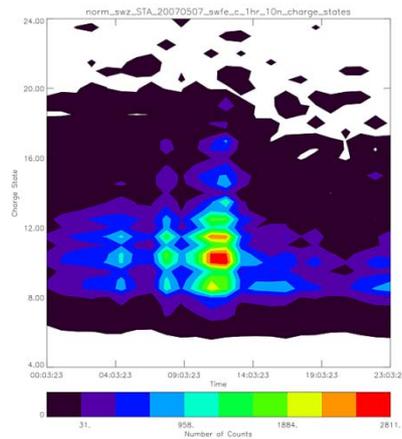
**Time>>>>>>**

**Q\_Fe (bins) >>**



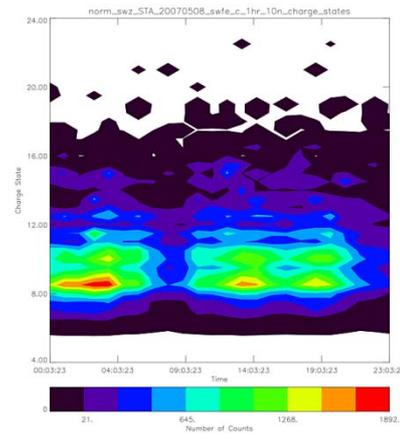
**May 6 2007**

**Slow SW**



**May 7 2007**

**Interface/Compression**



**May 8 2007**

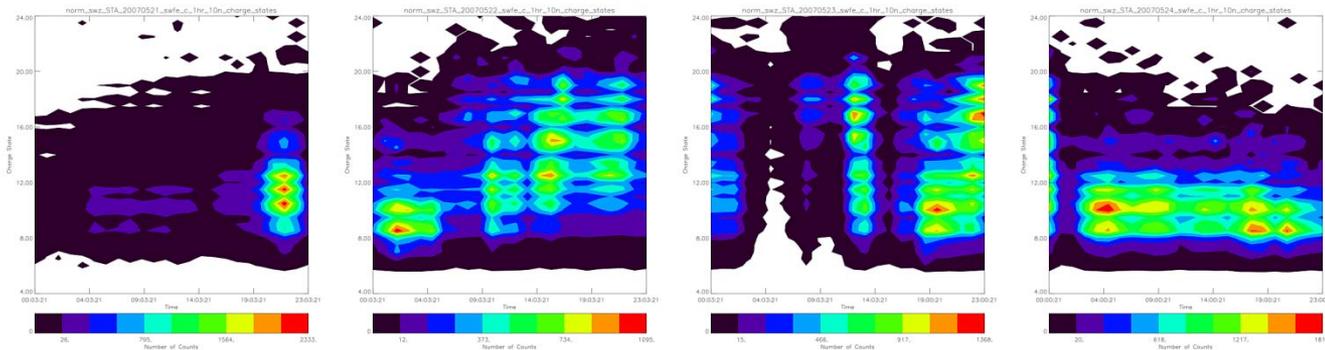
**High Speed SW**

# Data and S/W Status

- **New product under development: Solar Wind Iron**
  - Uses Pha\_Play and Level 1 data files
  - **Daily Iron Charge Distribution Time Series : ICME identification and studies**
  - Average Charge States
  - Selected Fe speeds
  - Hour Resolution on STA

Time>>>>>

Q\_Fe (bins)



May 21

May 22

May 23

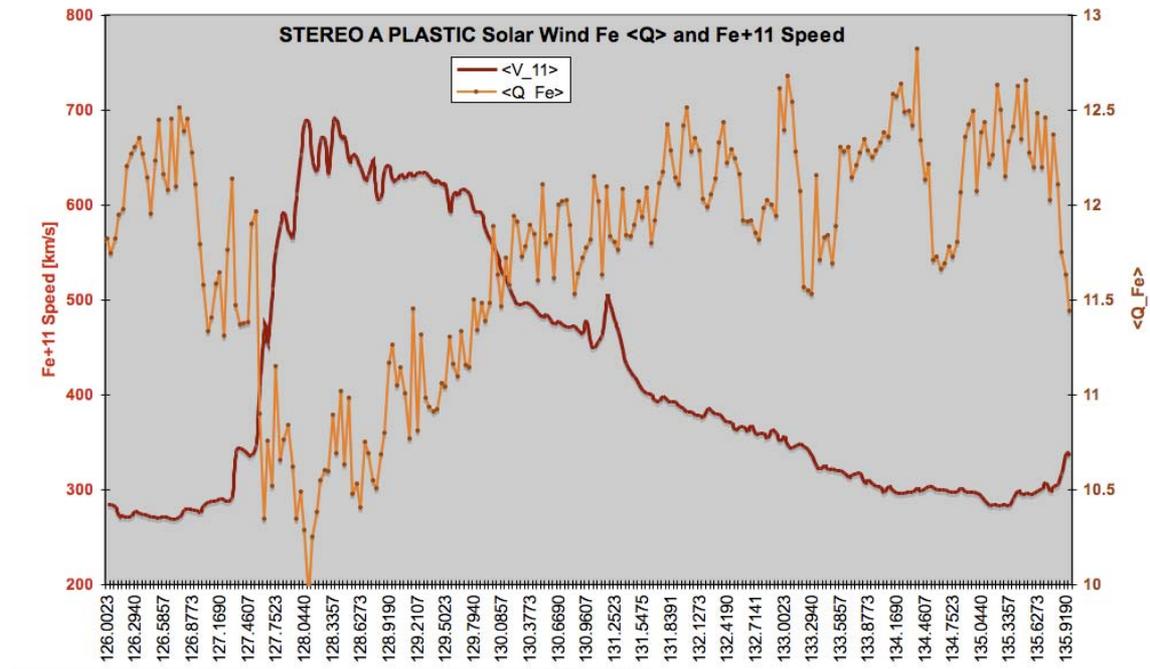
May 24

**STEREO A PLASTIC:**

**ICME/Flux Rope Identification**

# Data and S/W Status

- **New product under development: Solar Wind Iron**
  - Uses Pha\_Play and Level 1 data files
  - Daily Iron Charge Distribution Time Series
  - **Average Charge States**
  - **Selected Fe speeds**
  - **Hour Resolution (STA)**



# EPO - UNH Partnership with Christa McAuliffe Planetarium and NASA



- CMP: Spacetacular Saturday Astronomy Fair: First week in May- coming soon!
- CMP: Superstellar Teen Nights
- CMP: Scholarships for Teacher Workshops
- CMP: ViewSpace **NOW UP AND RUNNING**
- UNH: Jay Carroll (UNH STEREO Intern and NASA Academy alumnus) working as UNH STEREO liaison with CMP. Leaving for Glenn Space Center, as a logistics manager for their academy program.

Operational Summary  
will be given by Katherine Singer