Doug Biesecker

NOAA/Space Environment Center

Beacon Ground Station Network

- Almost together
  - CNES – signed letter of agreement received
    - Toulouse – 9m
  - NOAA – interdepartmental memo received
    - Wallops Island – 13m
    - Fairbanks – 13m
  - Japan likely the fourth
  - Others for backup/outyears
    - RAL
    - Australia/ACRES
    - USAF
- NOAA 'interested' in tracking STEREO as long as possible – fill the 'GAP' between SOHO and a NOAA Coronagraph (yeah, right)

Data Flow

- s/c testing
  - P. Karn's Viterbi decoding software ready to be tested
- Turbo encoding
  - Desired due to Eb/No
  - Licensing issue likely completed soon
  - The lawyers are talking
    - Down to who has jurisdiction in disputes
- Data transfer to SSC - swx_ingest
  - Testing to take place in January from SEC to SSC

DATA BROWSERS and VIEWERS

- **SSC Beacon Data pages** – **links to other browsers?**
- **Solar Weather Browser** B. Nicula, D. Berghmans, R. van der Linden ROB
  – **User-friendly browser tool for finding & displaying solar data & (SWB) context information.**
  – **Uses fast internet access & caching.**
  – **Test version available at http://sidc.oma.be/SWB/.**
- **STEREO Key Parameters** C. Russell & IMPACT, PLASTIC & SWAVES teams UCLA
  – **An easily browseable Merged Key Parameter data display including the in-situ & SWAVE radio data from STEREO.**
- **Carrington Rotation In-situ Browser** J. Luhmann, P. Schroeder UCB
  – **Browser for identifying in-situ events & their solar sources at CR-time scales.**
  – **Includes near-Earth (ACE) data sets for third point views & image movies from SECCHI & near-Earth (SOHO).**
  – **See: http://sprg.ssl.berkeley.edu/impact/data_browser/index.html.**
- **JAVA-3D Synoptic Information Viewer** J. Luhmann, P. Schroeder UCB
  – **JAVA-3D applet for viewing 3D Sun & solar wind sources based on synoptic solar maps & potential field models of the coronal magnetic field.**

3-D IMAGING TOOLS

- **Tie Point Tool** E. DeJong, P. Liewer, J. Hall, J. Lorre   JPL
  - **Manually create tiepoints between features in SECCHI image pair & solve for 3D location in heliographic coordinates.**

- **Geometric Localization Of CMEs** V. Pizzo, D. Biesecker NOAA
  - **Tool utilizing a series of LOS's from two views to define the location, shape, size and velocity of a CME.**
  - **To be automated & used to decide whether and when a CME will impact Earth.**

- **3D Structure of CMEs** V. Bothmer, H. Cremades, D. Tripathi MPI, Ger.
  - **Program to compare analysis of SECCHI images on the internal magnetic field configuration & near-Sun evolution of CMEs with models based on SOHO observations.**
  - **Forecast flux rope structure; 3D visualization of CMEs.**

AUTOMATED DETECTION and IDENTIFICATION

- **Computer Aided CME Tracking (CACTus)** E. Robbrecht, D. Berghmans, G. Lawrence, R. van der Linden ROB
  - **Near-realtime tool for detecting CMEs in SECCHI images.**
    - **Outputs: QL CME catalog w/measures of time, width, speed; NRT CME warnings.**
  - **Successfully tested on SOHO LASCO CMEs.**
  - **Test version available at http://sidc.oma.be/cactus.**
- **Computer Aided EUVI Wave & Dimming Detection** O. Podladchikova, D. Berghmans, A. Zhukov   ROB
  - **NRT tool for detecting EUV waves & dimming regions.**
  - **To be tested on SOHO EIT images.**
- **Velocity Map Construction** J. Hochedez, S. Gissot ROB
  - **Program to analyze velocity flows on SECCHI images; detect CME onsets & EUV waves; NRT warnings of fast CMEs; reconstruct 3D velocity maps of CMEs from 2D maps from each STEREO.**
- **Automatic Solar Feature** D. Rust, P. Bernasconi, B. LaBonte, JHU/APL
  - **Tool for detecting and characterizing solar filaments and sigmoids Recognition & Classification in solar images. Goal is to meas. magnetic helicity parameters & forecast eruptions using filaments & sigmoids.**

HELIOSPHERIC STUDIES

- **WSA Model Predictions** N. Arge, J. Luhmann, D. Biesecker AFRL, UCB, NOAA
  - The Wang-Sheeley-Arge and ENLIL 3D MHD solar wind models will be integrated
  - Provide routine predictions of vector s.w. velocity, polarity, s.w. density & temp. anywhere you like
- **Identifying & Tracking CMEs with the Heliospheric Imagers** R. Harrison, C. Davis RAL
  - Produce simulations to show model CMEs can be identified & tracked with the HIs.
  - Use triangulation to measure speed & direction of CMEs & forecast their Earth arrival.
- **Structural Context of Heliosphere Using SMEI Data** D. Webb, B. Jackson BC/AFRL, UCSD
  - Use analyses of SMEI images to provide structural context of the heliosphere for STEREO HI
  - Also provide complementary observations of transient disturbances.
- **Interplanetary Acceleration of ICME's** M. Owens BU
  - Construct acceleration profiles of fast ICMEs over a large heliocentric range using multi-poHI to understand the forces acting on ejecta in interplanetary space.
  - Improve predictions of arrival times of ICMEs at Earth.
- **Relationship between CMEs and Magnetic Clouds** S. Matthews, MSSL
  - Assess the potential geoeffectiveness of CMEs based their association with magnetic clouds.
  - What particular characteristics lead to production of a magnetic cloud?