SECCHI Status

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Outline

- Instrument Status
- Data Products
- Data Display
- Beacon Data
- Observation Timing
- First Light Press Releases
- 3D Visualization Status
Instrument Status

• Flight Hardware Development Is Well Underway
  – Delivered:
    - Flight Shutter and Polarizer/filter Wheel Mechanisms
    - Flight Focal Plane Assemblies With Ccds
    - SCIP Bench
    – “First Light” on FM EUVI and COR2 Telescopes
    – MEB, CEB in Unit Level Environmental Testing
    – Final Fabrication: COR1, GT, SEB
    – HI Well Underway

• Manufacturing Problems Have Caused Extensive Replanning of Schedule
  – E.G. Coating Problems in All Countries Have Been Surprising
  – Fab of PC Boards Has Shown Lifting of Traces

• Mass Is a Major Issue
  – SCIP Bench Has Measured More Than Expected
  – Harness Between Electronics and Telescopes Is Longer (Heavier) Than Estimated
Instrument Performance Status

• No descoping of instrument performance has occurred in parameters that have been measured to date

• No descoping is forseen
Data products

- Catalogs and FITS Images of the Data
- Movies
  - Multipanel Synchronized to 2 (3?) Spacecraft and Multiple Sensors
  - Anaglyph
  - Formats (2Kx2K and 1Kx1K)
    - GIF/PNG, MPEG I or II
  - Must Meet Needs of Amateur Comet Hunters
- Synoptic Maps Showing Intensity at Selected Heights
- Lists (Automatically Generated)
  - CME, Prominence or Filament Eruption, Disappearance
  - Coronal Holes, UV Waves and Dimmings
  - Total Flux in EUV
Data Display

• Display Capabilities
  – Anaglyph Prints Viewed With Red/blue Glasses
  – Stereo Image Pairs Viewed on Crt/projector With LCD Goggles
  – Coronal “Fly Through”
  – Orbit Display With Planet Locations
  – Movies From Up To 3 Locations
  – Inset of One Image Type Into Another Type

• STEREO Browser
  – Interface to Instrument Databases Is Via VSO Data Query
  – Thumbnails Customizable by User to Incorporate Any VSO Compatible Data Set
  – Should Display All the Instruments Plus Modeling Output (S) Tying Remote Sensing to In-situ
Beacon Data

• NOAA Is the Prime User
• Objective Is to Provide Sufficient Visibility to
  – Identify When CME Has Been Launched Toward Earth
  – Track CME Through Space
  – Provide a Warning and Then Better Indication of Impact
• Software (Ground)
  – Reconstitute (Low Resolution) Image
  – Background Removal
  – Automatic Detection of CME.
    - During Extended Phase – Automatic Detection Will Be Performed On-board
  – Reformat to Utilize Existing CME Measuring Software
• Data Type
  – Reduced Resolution Images
  – Exact Definition Is Uploaded at the Time of Operations (Weekly)
Observation Timing

Need to be able to synchronize observations based on actual location of the CME
“First Light” Press Releases

• Topics Under Consideration
  – 3D Deconvolution of EUV Structures
    - Loops, Prominence
  – 3D Deconvolution of Coronal Structure
    - Streamer, Coronal Hole, Polar Plumes, Cmes
      - Good Opportunities Apt to Be Present Immediately Except for Cmes, for Which a Good Opportunity Might Not Be Present for Some Time
      - Would Involve 1-5 Days of Observations
  – 3D Deconvolution of Streamer Belt and the Inner Heliosphere
    - Would Involve 14-27 Days of Observation
    - Could Include All Stereo Instrument Data Plus Modeling

• Data Must Be Embargoed Before Release
  – Implies That 1st Observations Should Not Be Put Onto Web Immediately

• Public Interest in Data Is Greatly Enhanced If They Are Real-time. The Interest Is Lessened the Less Real-time It Is. Therefore We Must Prevail on APL to Make the Data Available Quickly
3D Visualization

• 3D Deconvolution
  – Pixon Method Chosen for Speed (Large # Voxels, up to $10^9$): Small Number of Iterations, Intelligent Guidance to Declining Complexity Per Iteration. Sample Times Have Been 32x32x32 <15 Minutes, 64x64x64 ~60 Minutes, 128x128x128~6 Hrs, (1 Ghz PC).
  – Minimum Complexity: With This Underdetermined Problem, We Make Minimal Assumptions in Order to Progress. Another Possibility Is Forward Modelling, I.E. Parameter Fitting. Complementary Approach.
  – Received Cme Models From J. Chen, P. Liewer, S.T. Wu and Z. Mikic, and Have Used Them to Generate a 3D Reconstruction
  – Example of the Results of the Deconvolution for the Chen Model Are Shown in the Next Slide
  – Future Work
    - Continue Refining Reconstruction Algorithm, I.E. Hierarchical Gridding
    - Use Lasco/eit Data for Rotational Tomography.
    - Time Dependent Reconstructions

• Forward Modeling Program Using Conceptual Structures Is Underway
3D Reconstruction: CME model (J. Chen)
Three Ecliptic Viewpoints
2 Views in Ecliptic and 1 Above Ecliptic

Figure 2. Rendered DATA

Logarithmic \([6.00e+11, 2.00e+16]\) photons sec\(^{-1}\) cm\(^{-2}\) sr\(^{-1}\)