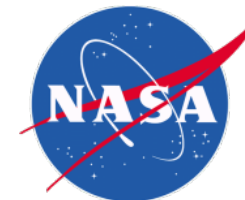




Advanced Composition Explorer (ACE)



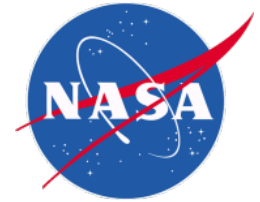
ACE Mission Health and Future Plans

Eric Christian
NASA/GSFC Code 672
ACE Deputy Project Scientist

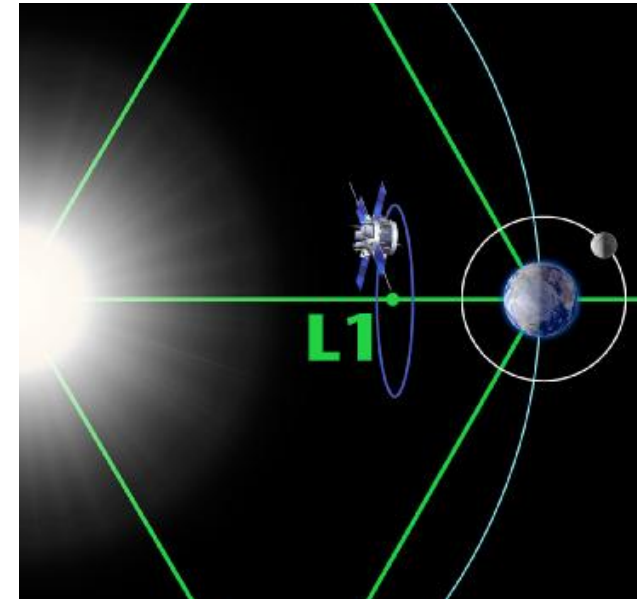
September 18, 2014



Advanced Composition Explorer (ACE) History



- Launched August 25, 1997
- L1 Halo orbit
- 9 instruments
 - Cosmic Ray Isotope Spectrometer (CRIS)
 - Solar Isotope Spectrometer (SIS)
 - Ultra Low Energy Isotope Spectrometer (ULEIS)
 - Solar Energetic Particle Ionic Charge Analyzer (SEPICA)
 - Solar Wind Ion Mass Spectrometer (SWIMS)
 - Solar Wind Ion Charge Spectrometer (SWICS)
 - Electron, Proton, and Alpha Monitor (EPAM)
 - Solar Wind Electron, Proton, and Alpha Monitor (SWEPAM)
 - Magnetometer (MAG)

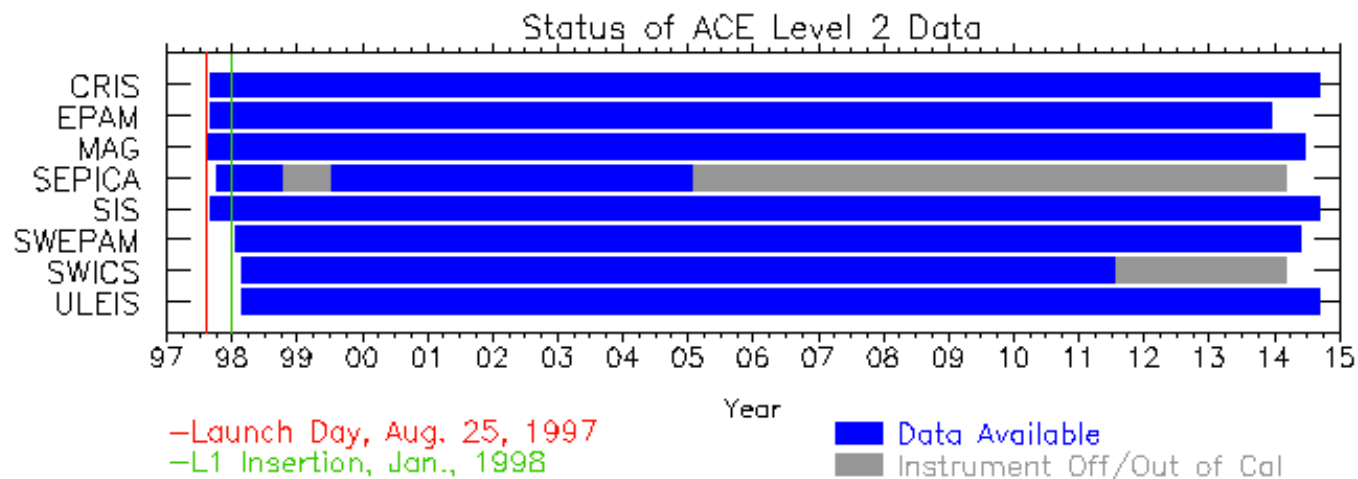




Advanced Composition Explorer (ACE) ACE Science Data



- Verified Level 2 Data is available at
 - <http://www.srl.caltech.edu/ACE/ASC/level2/>
 - CDAWeb
-



September 18, 2014



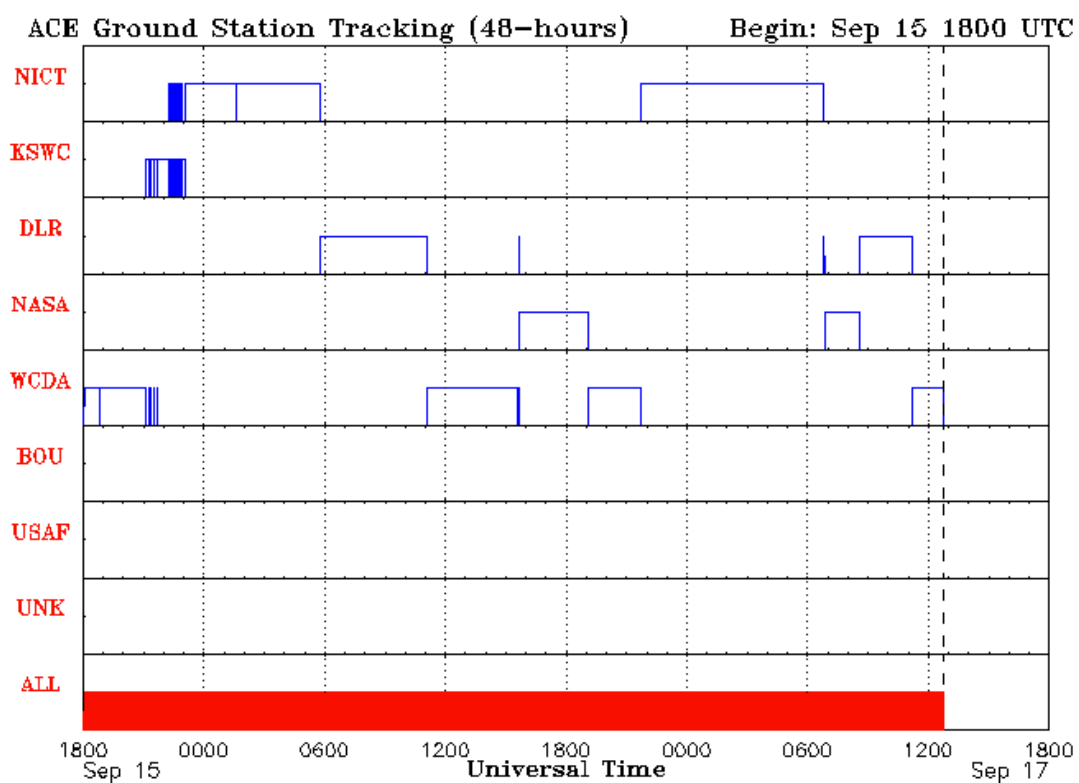
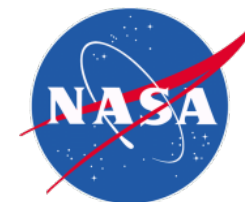
Advanced Composition Explorer (ACE) NOAA Real Time Solar Wind (RTSW)



- NOAA gets low rate data (434 bps) for ~ 21 hours per day
 - Data from four instruments (SWEPAM, EPAM, MAG, and SIS) and limited housekeeping
- During regular ACE telemetry pass from NASA, which includes real time data, the same 434 bps are stripped out for NOAA
- The NOAA RTSW partners are:
 - National Institute of Information and Communications Technology (NICT) in Tokyo, Japan
 - Korean Space Weather Center (KSWC) in Jeju, Korea
 - German Aerospace Center (DLR) from Neustrelitz, Germany
 - NASA's Deep Space Network (NASA) (Goldstone, CA; Madrid, Spain; Canberra, Australia)
 - NOAA's Wallop Command and Data Acquisition (WCDA) station at Wallop's Island, VA
 - NOAA's Space Weather Prediction Center (BOU) in Boulder, CO
 - United States Air Force (USAF) stations within the Air Force Satellite Control Network



Advanced Composition Explorer (ACE) NOAA coverage



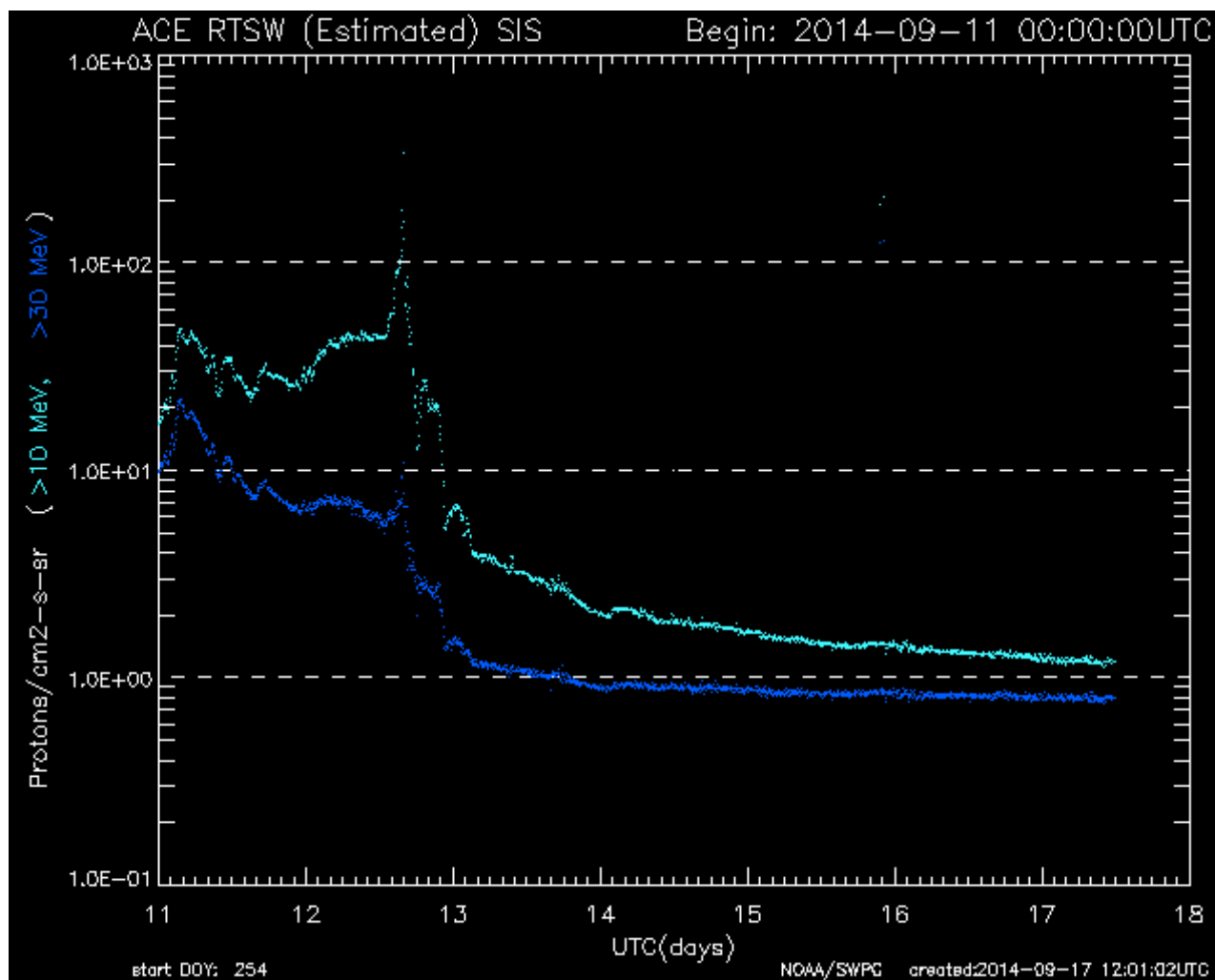
Updated: 2014 Sep 17 12:45 UTC

NOAA/SWPC Boulder, CO US

September 18, 2014



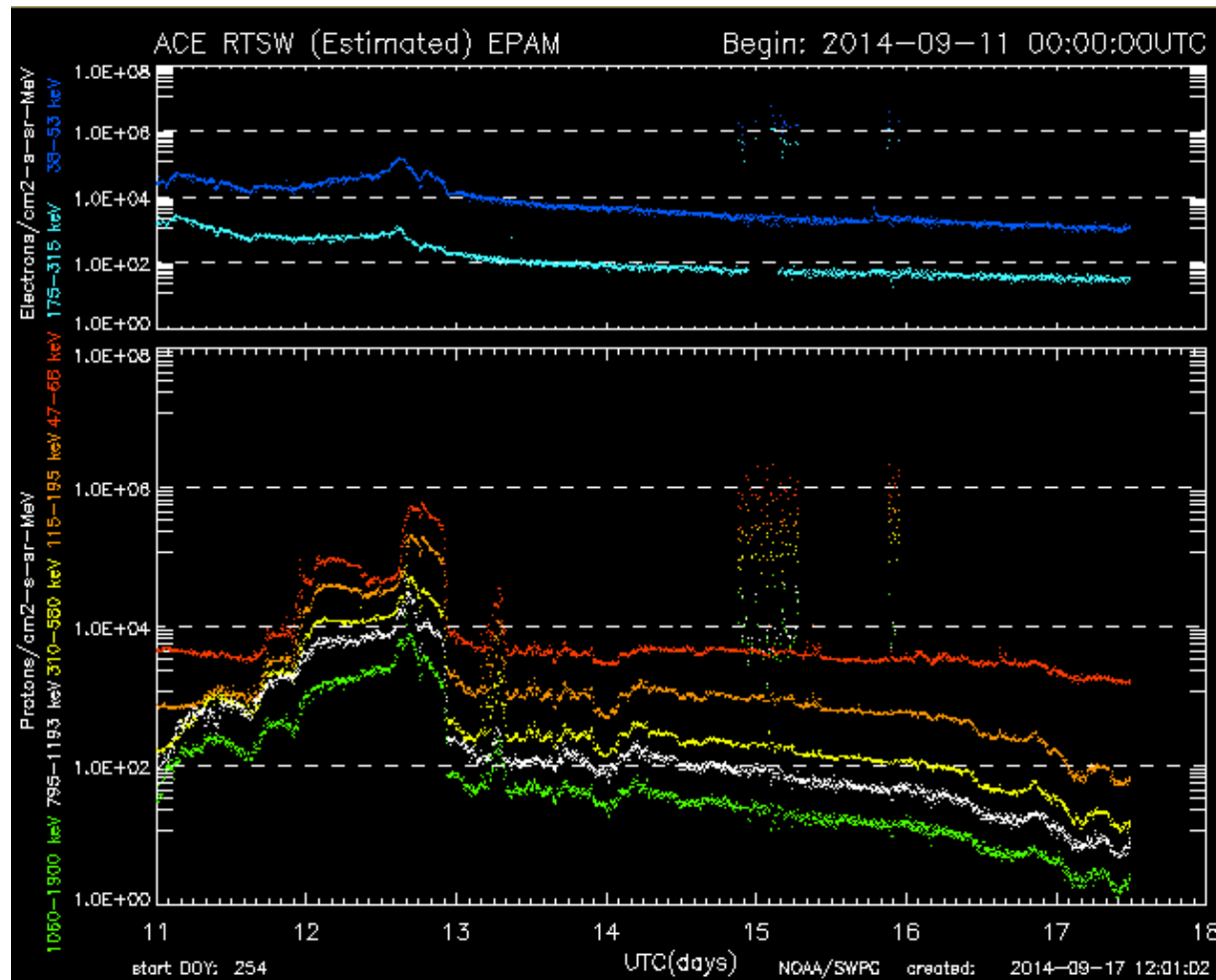
Advanced Composition Explorer (ACE) SIS



September 18, 2014



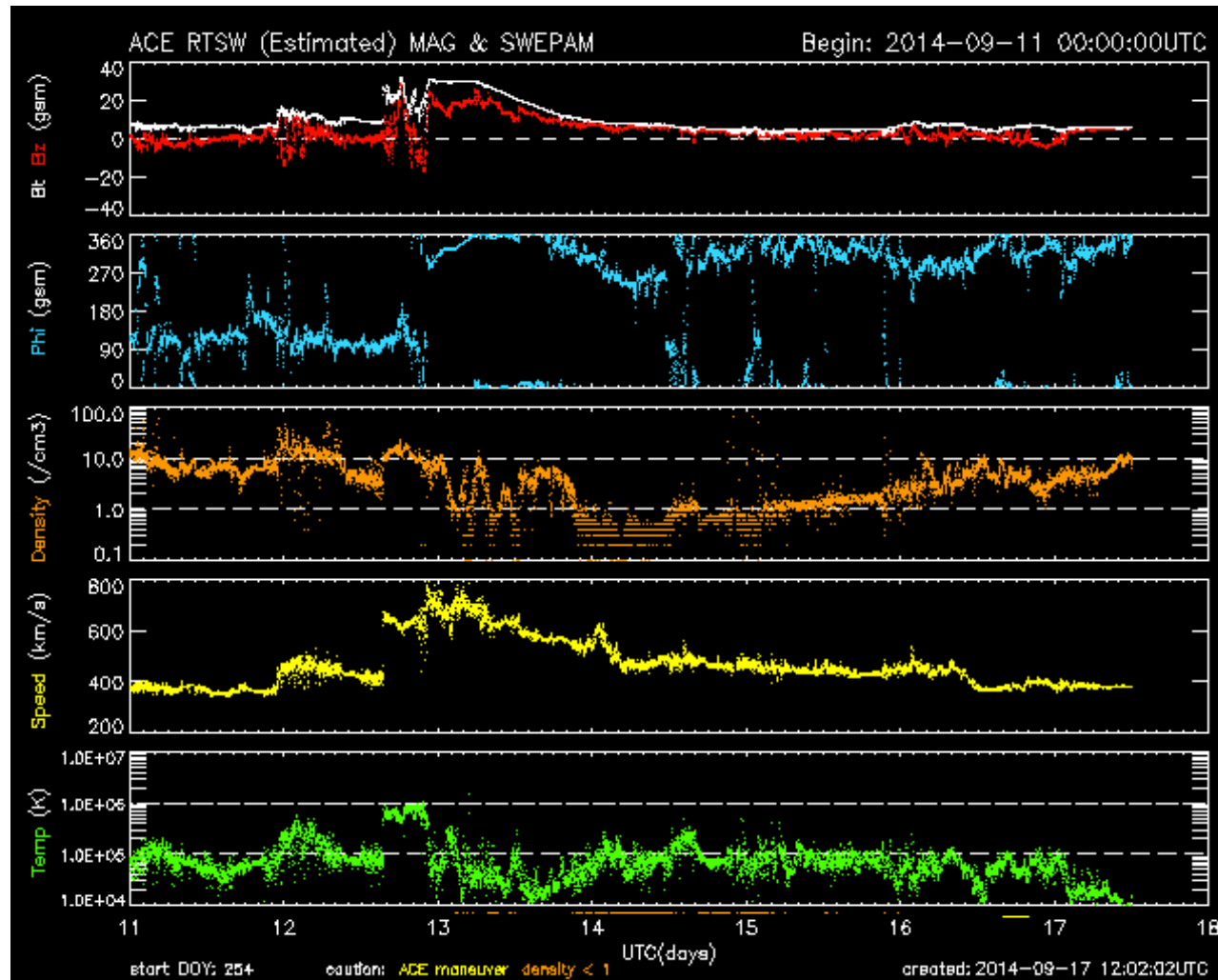
Advanced Composition Explorer (ACE) EPAM



September 18, 2014



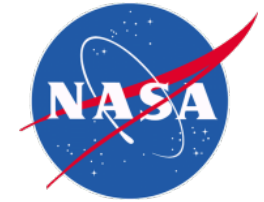
Advanced Composition Explorer (ACE) MAG and SWEPAM



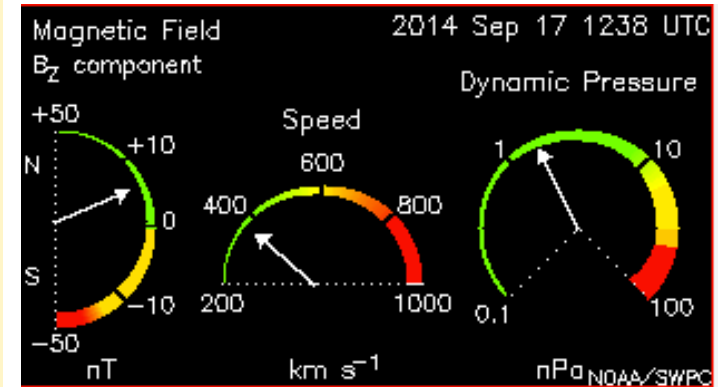
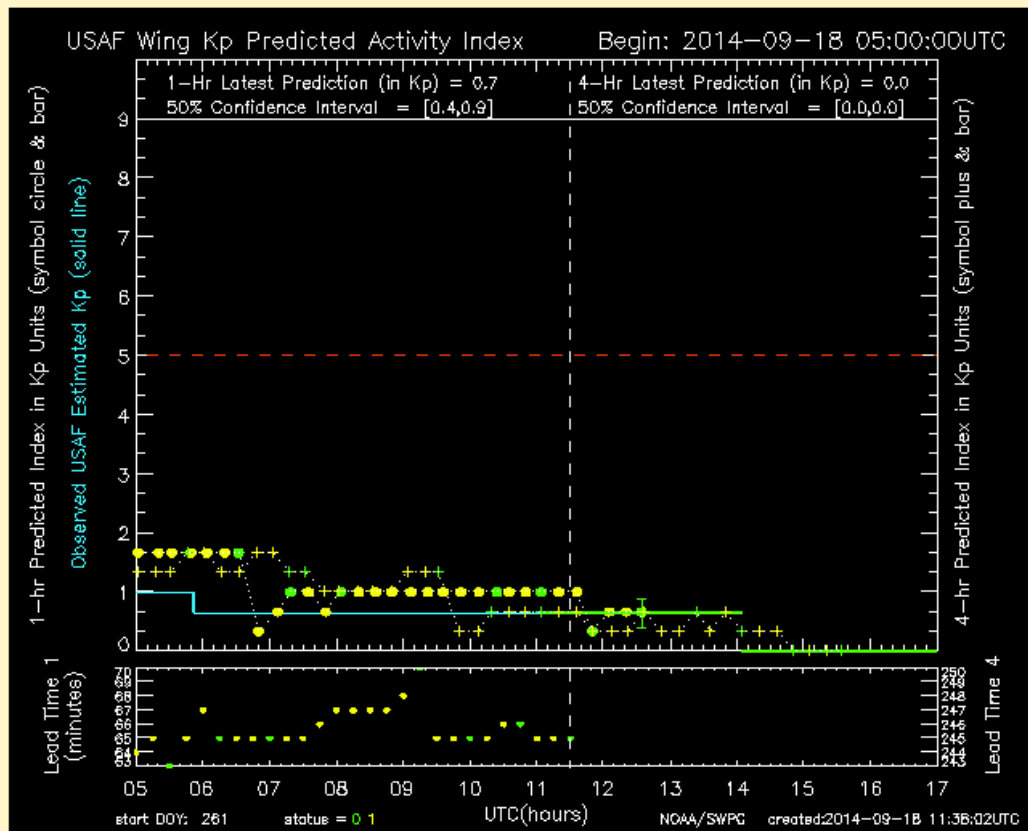
September 18, 2014



Advanced Composition Explorer (ACE) Space Weather Products from NOAA



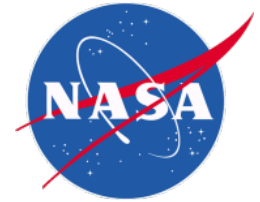
Predicted Geomagnetic Activity Index using Wing Kp Model -- 12-hour Plot



September 18, 2014



Advanced Composition Explorer (ACE) Status and Prognosis

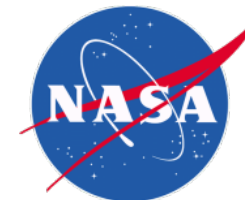


- Spacecraft is in excellent health
 - Enough fuel to last until at least 2026
 - Power positive for >15 more years
- Some instruments showing age
 - SEPICA failed in 2005
 - SWICS TOF failed, August 2011
 - SIS too warm, noisy strips need to be shut off
 - ULEIS lost one of two TOF Starts
 - SWEPEM . . .

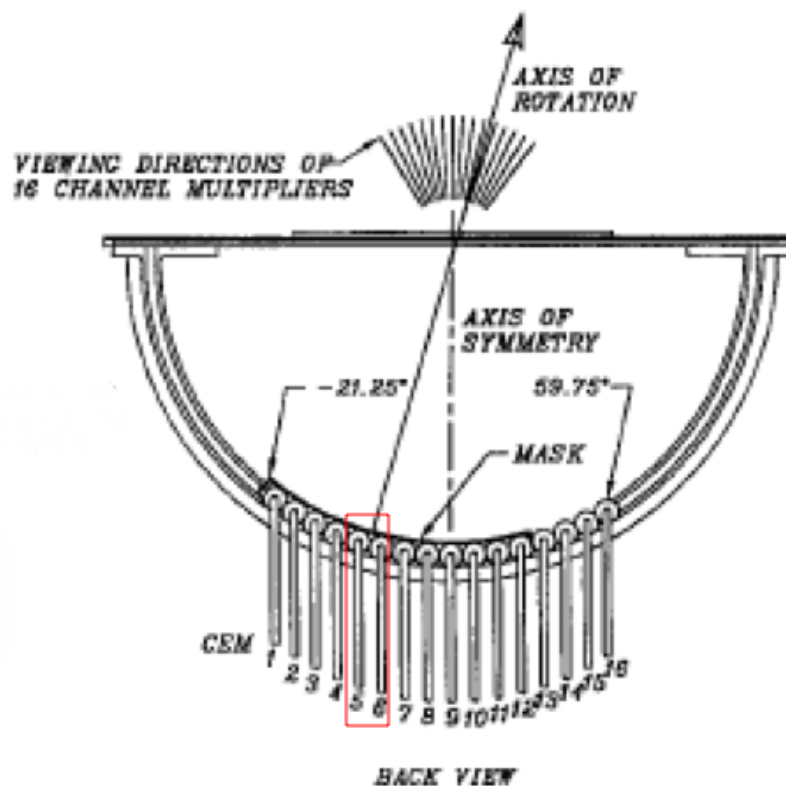
September 18, 2014



Advanced Composition Explorer (ACE) SWEPAM Issue



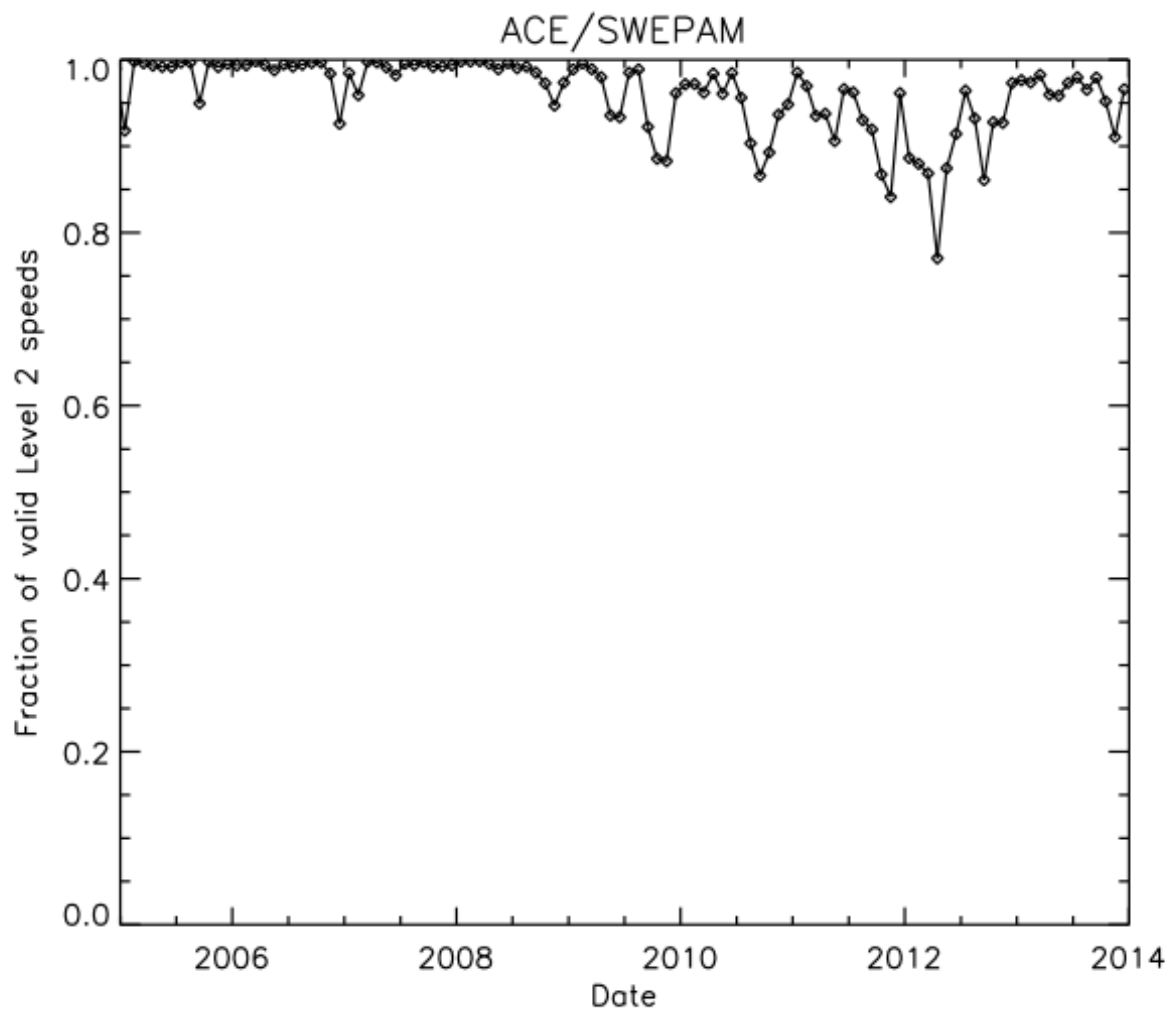
SWEPAM has lost its two most important Channel Electron Multipliers (CEMs)



September 18, 2014



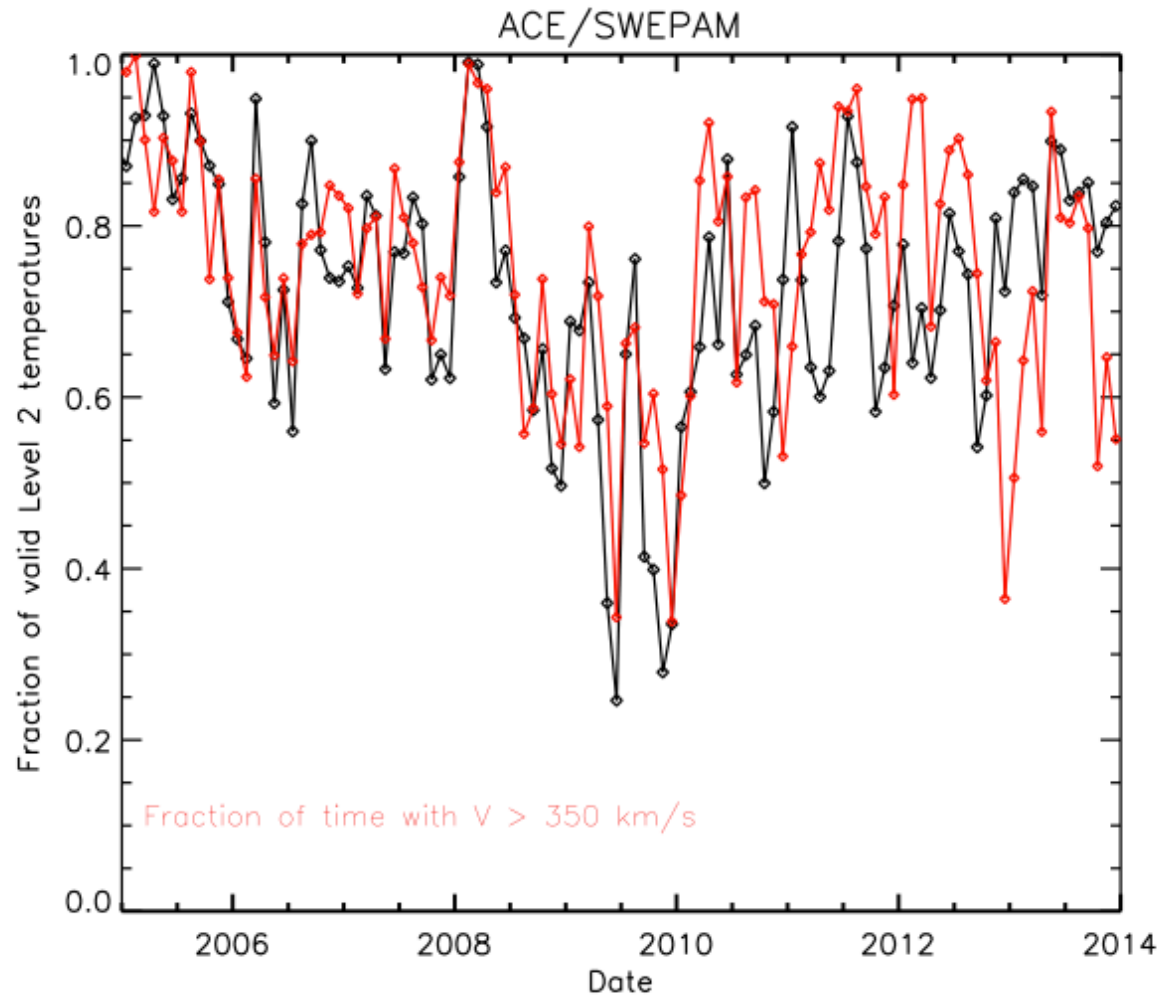
Advanced Composition Explorer (ACE) SWEPAM Solar Wind Speed



September 18, 2014



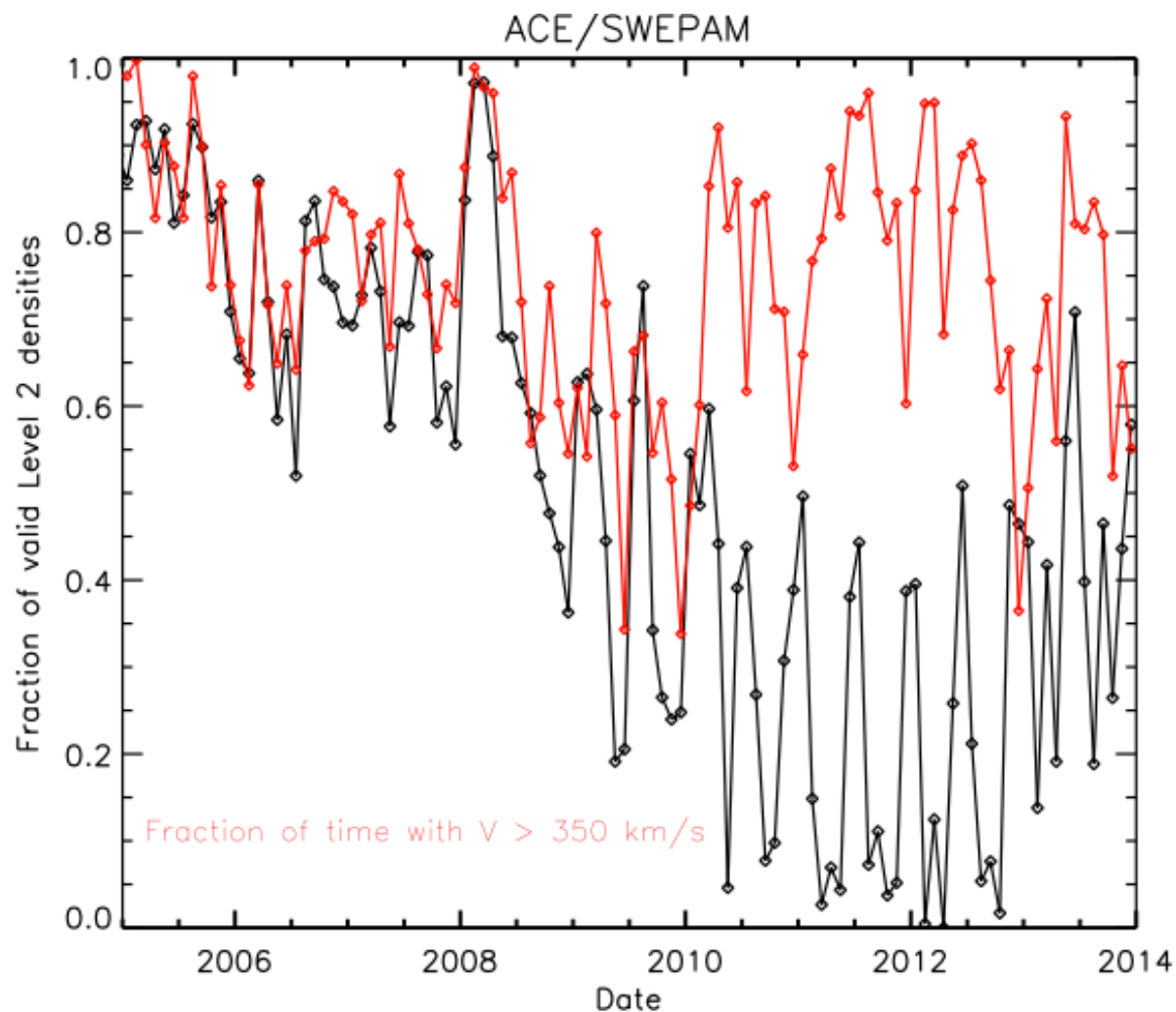
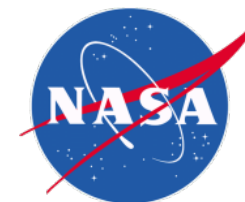
Advanced Composition Explorer (ACE) SWEPAM Solar Wind Temperature



September 18, 2014



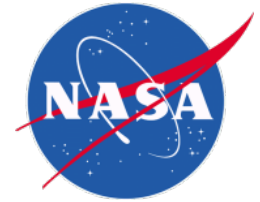
Advanced Composition Explorer (ACE) SWEPAM Solar Wind Density



September 18, 2014



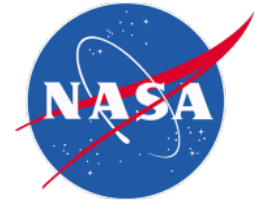
Advanced Composition Explorer (ACE) Biggest Issue for ACE RTSW



September 18, 2014



Advanced Composition Explorer (ACE) Biggest Issue for ACE RTSW



September 18, 2014