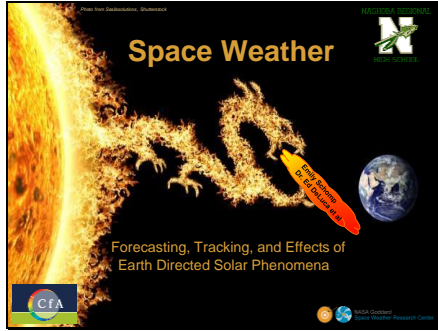


Slide 1



Slide 2



Slide 3

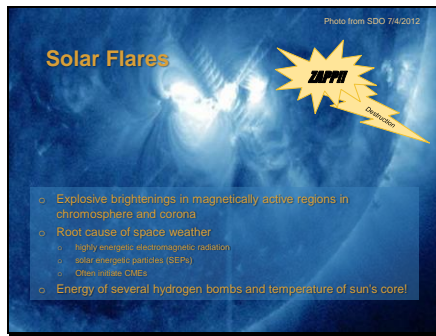


Slide 4

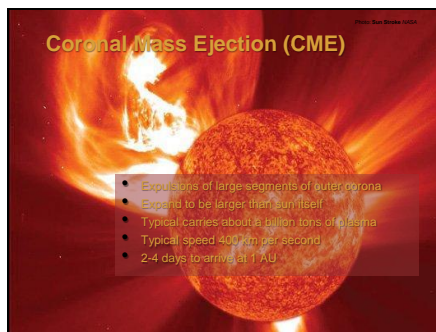


----- Meeting Notes (8/5/13 16:01) -----
connectivity separate, events of interest to forecasters

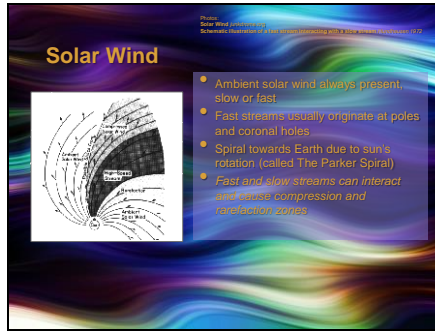
Slide 5



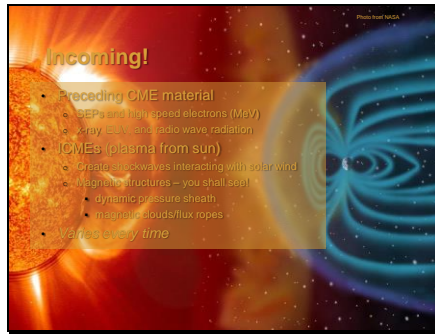
Slide 6



Slide 7



Slide 8



----- Meeting Notes (8/5/13 16:01) -----
flare optical signature on sun
CME eruption of material
stuff that erupted in interplanetary space
group ICME with magnetic structure

----- Meeting Notes (8/5/13 16:18) -----
no flux rope
ICME features

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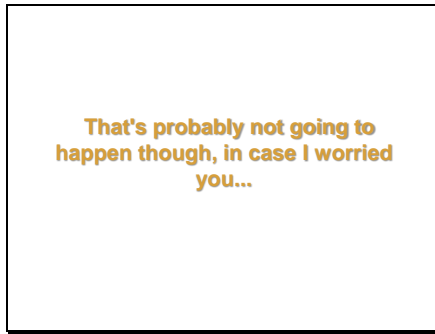


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----- Meeting Notes (8/5/13 16:18) -----
no cosmic rays
no water vapor/lightning
focus on
astronaut safety
computer upsets
magnetic attitude control
ground currents

Slide 11



Slide 12



antiparallel) field lines connect to Earth and funnel through open field lines at the poles
North-directed are deflected but formation of neutral field lines in magnetotail allow entry become ionized to O⁺, O₂⁺, and NO⁺
Near-UV spectrum produces ozone

Slide 13



Expansion of
thermosphere
increase in the
density of medium
craft fly through

Electrostatic discharge
(ESD) release of electric
energy from static charge
such as a spacecraft
Single Event Upsets
(SEU)-charged particles
interacts with atom and
disrupts circuits

Near Ultraviolet
9%

*Far-Ultraviolet,
EUV, and x-ray are
negligible at 0%*

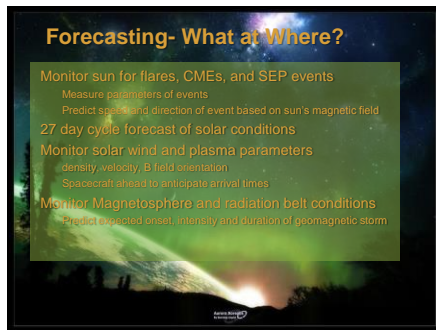
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Slide 15



Slide 16



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Programs and Facilities

- National Space Weather Program (NSWP)**
 - interagency initiative to speed improvement of space weather services
 - partnership among academia, industry, and government
 - National Science Foundation
 - National Oceanic and Atmospheric Administration (NOAA)
 - Departments of Defense, Energy, Transportation, and Interior
- Space Radiation Analysis Group (SRAG)**
 - Janet's Space Center (JSC)
 - monitor space radiation environment for national exposure
 - Track cumulative radiation
 - Event planning
- Space Weather Prediction Center (SWPC)**
 - National Weather Service (NWS) and National Oceanic and Atmospheric Admin (NOAA)
 - occurrence of geomagnetic storms and auroral displays

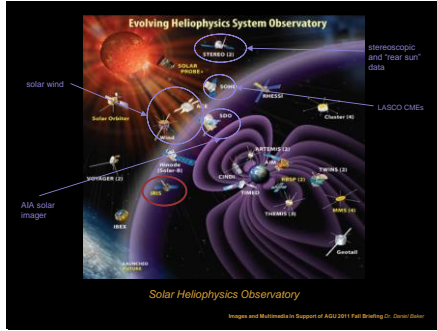
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Space Weather Modeling

- Hosted by Community Coordinated Modeling Center (CCMC)**
 - community access to modern space science simulations
 - situated at NASA Goddard Space Flight Center (GSFC)
 - slew of Agencies
- The Integrated Space Weather Analysis System (ISWA)**
 - web-based dissemination system for NASA
 - combines forecasts and observational data
 - specify and forecast space environment's and impacts for NASA missions
 - situated within CCMC
- Magnetohydrodynamics (MHD) Codes used in Forecasting**
 - Wang-Sheeley-Argo (WSA) model
 - ENLIL model
 - SWMF

National Aeronautics and
Space Administration
Air Force Materiel
Command
Air Force Office of
Scientific Research
Air Force Research
Laboratory
Air Force Weather
Agency
National Science
Foundation
NOAA Space Weather
Prediction Center
Office of Naval Research

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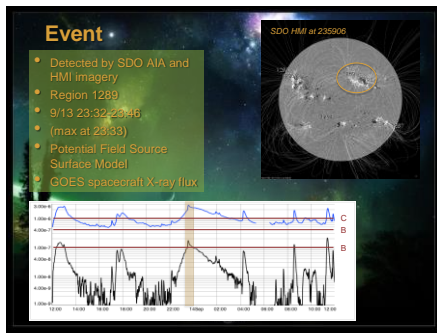


Solar Dynamics Observatory –
Atmospheric Imaging Assembly,
Helioseismic and Magnetic Imager
Advanced Composition Explorer (ACE)
Comprehensive Solar Wind Laboratory
Solar and Heliospheric Observatory -
Large Angle and Spectrometric
Coronagraph

Slide 20



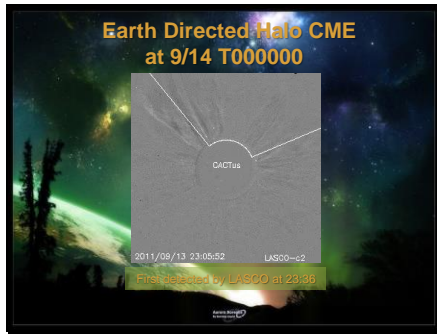
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Slide 22

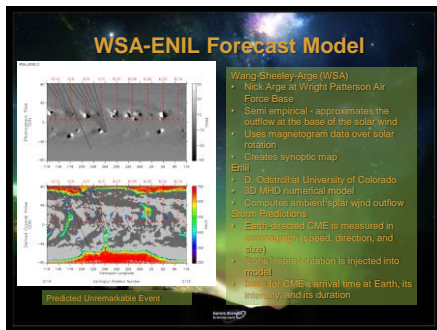


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Duration: 4 hours
Principal Angle: 346°
counterclockwise from N
Angular Width: 106°
Initial Velocity: 289 km/s
Type II Halo: $da > 90$

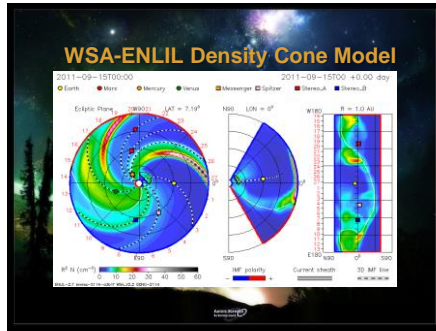
Slide 24



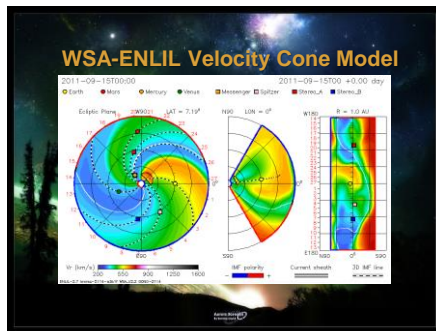
Flux-Corrected-Transport (FCT) algorithm
Structure
Inner Boundary at $21.5 R_S$
Outer Boundary Adjustable ($2 AU$)
 120° In Latitude 360° azimuth

Density: 6 cm^{-3}
30000-36000 K
Velocity: 440-460 km/s
Magnetic Field Strength
Radial: 1.5 - 2 nT
Lateral: -0.04 - 0.04
Longitudinal: -1.2 - -1.7 nT

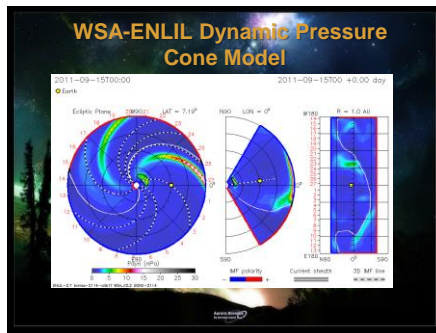
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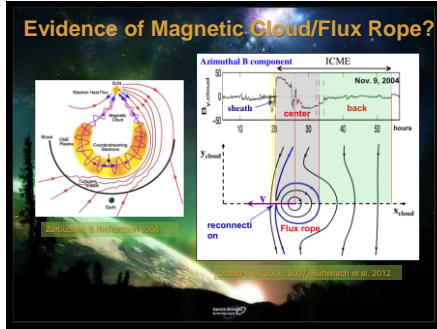
Slide 26



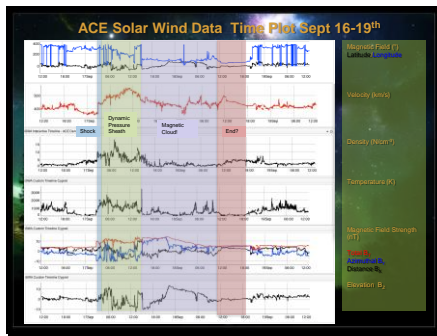
Slide 27



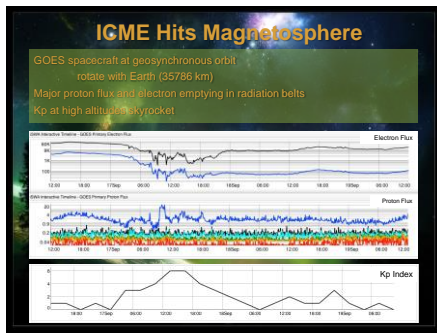
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Slide 29

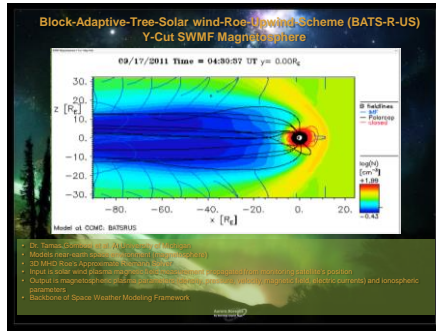


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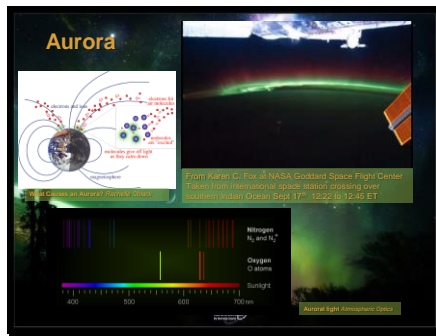


K-index quantifies disturbances in the horizontal component of earth's magnetic field with an integer in the range 0-9 with 1 being calm and 5 or more indicating a geomagnetic storm. It is derived from the maximum fluctuations of horizontal components observed on a magnetometer during a three-hour interval.

Slide 31



Slide 32



Slide 33

