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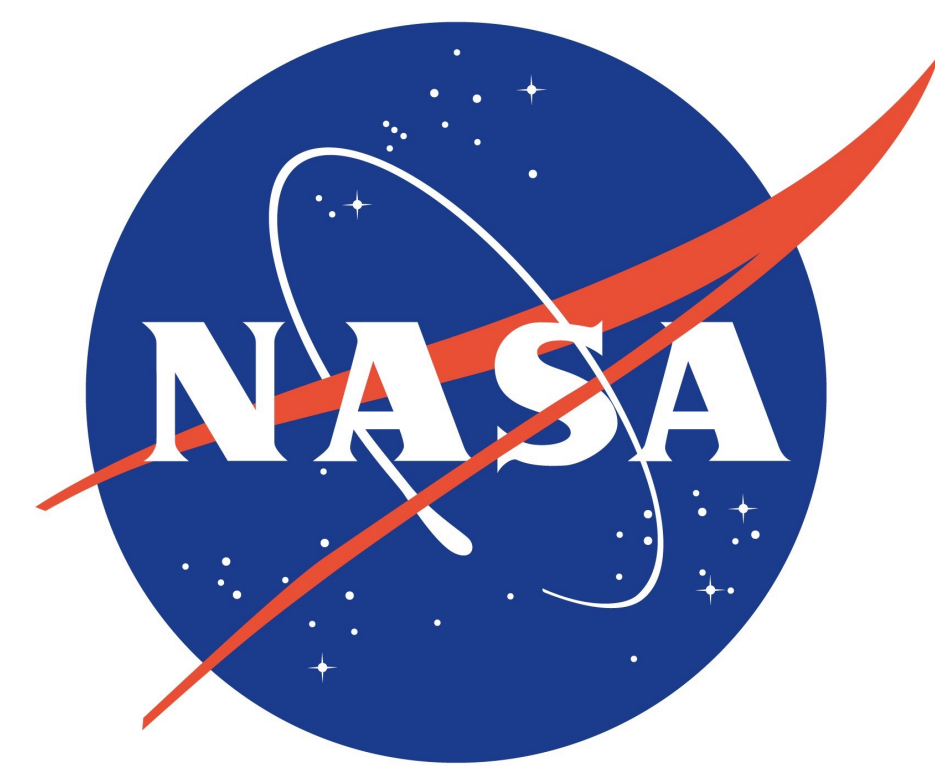
Visualization of WSA Coronal & Solar Wind Forecasts

Introduction

The WSA Dashboard is an interactive, browser-based tool providing:

1) An **operations-oriented** centralized snapshot of the solar wind across the solar system.
2) A **research-oriented** dynamic visualization method for satellite observations and ensemble predictions from the established WSA and ADAPT models.

Background

The Wang-Sheeley-Arge (WSA) model uses global photospheric magnetic field maps as the input boundary condition to solve for the coronal magnetic field configuration. Solar wind speed predictions are empirically produced based on the derived field structure. The Air Force Data Assimilative Photospheric Transport (ADAPT) model yields more realistic input magnetic field maps. The WSA outer coronal boundary then serves as the inner boundary condition for various solar wind models, including the WSA 1D kinematic and Enlil magnetohydrodynamic (MHD) solar wind models.
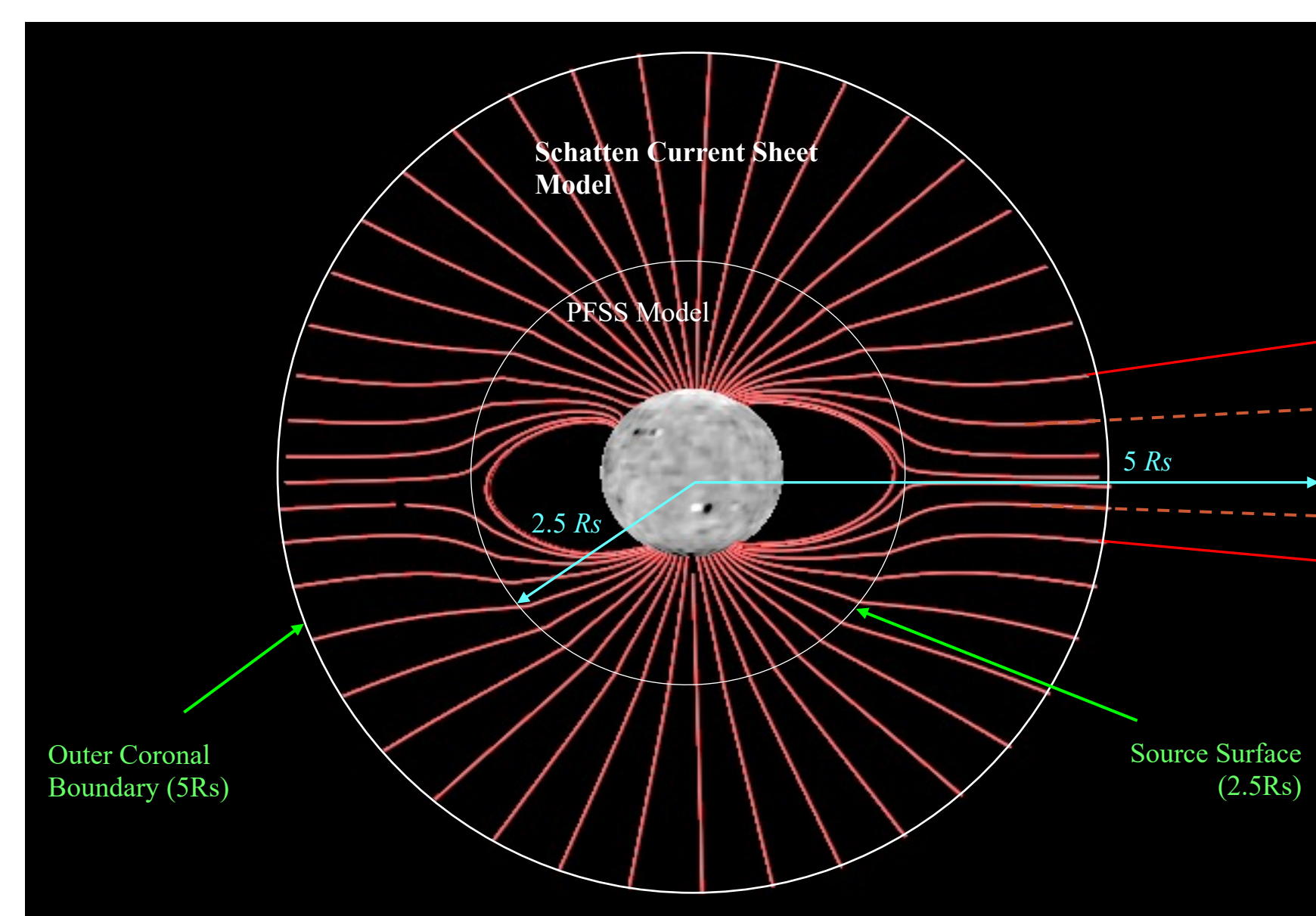
Visualized Data

1) Derived coronal holes
2) Current sheet location
3) Time Series Plots
   • Solar wind speed
   • Interplanetary Magnetic Field (IMF) polarity
4) Footpoint connectivity between satellites & the Sun
5) Satellite Observations
   • ACE & DSCOVR
   • STEREO-A
   • MAVEN
   • SDO
   • PSP
   • SoIO

ADAPT Ensemble Modeling

NOAA Forecast Tooling