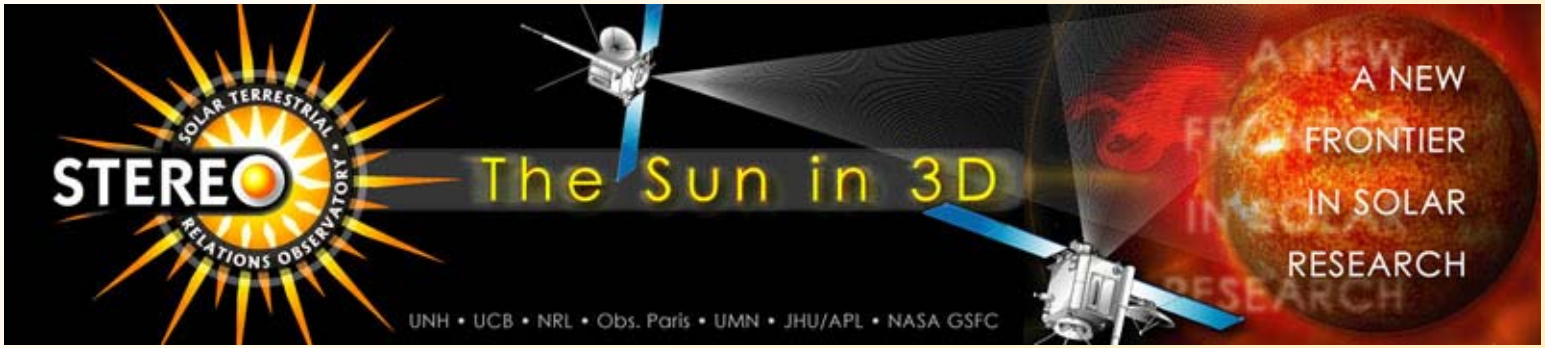
STEREO Mission



Nick Chrissotimos
NASA GSFC STEREO Project Manager

Mission Description

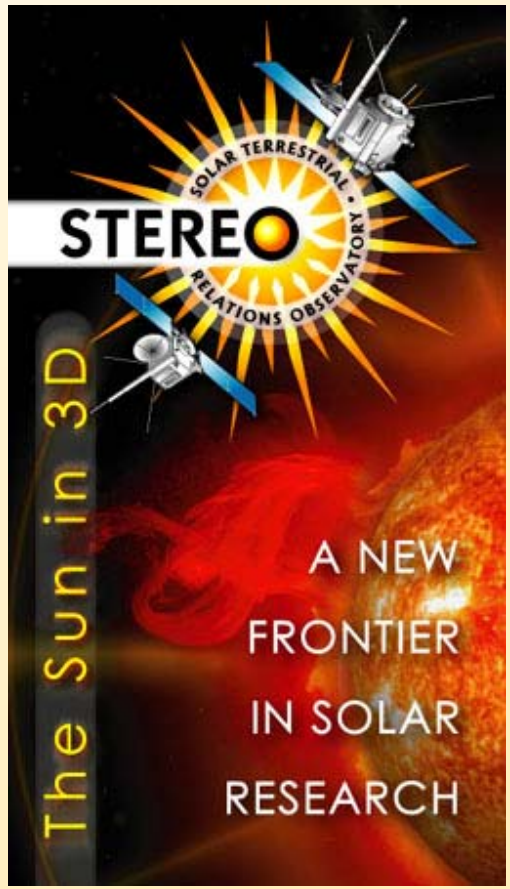
Mission Objectives: 2-year mission to measure the causes and mechanisms of CME initiation and characterization of their propagation through the heliosphere. 1-year extended data analysis.

Organizations: NASA GSFC, JHU/APL, Naval Research Laboratory, University of California at Berkeley, University of New Hampshire, University of Minnesota, Observatoire de Paris.

Mission Description: Two functionally identical spacecraft in heliocentric orbits at 1 AU (22°/yr drift from Earth orbit leading/lagging configuration).

Each Observatory:

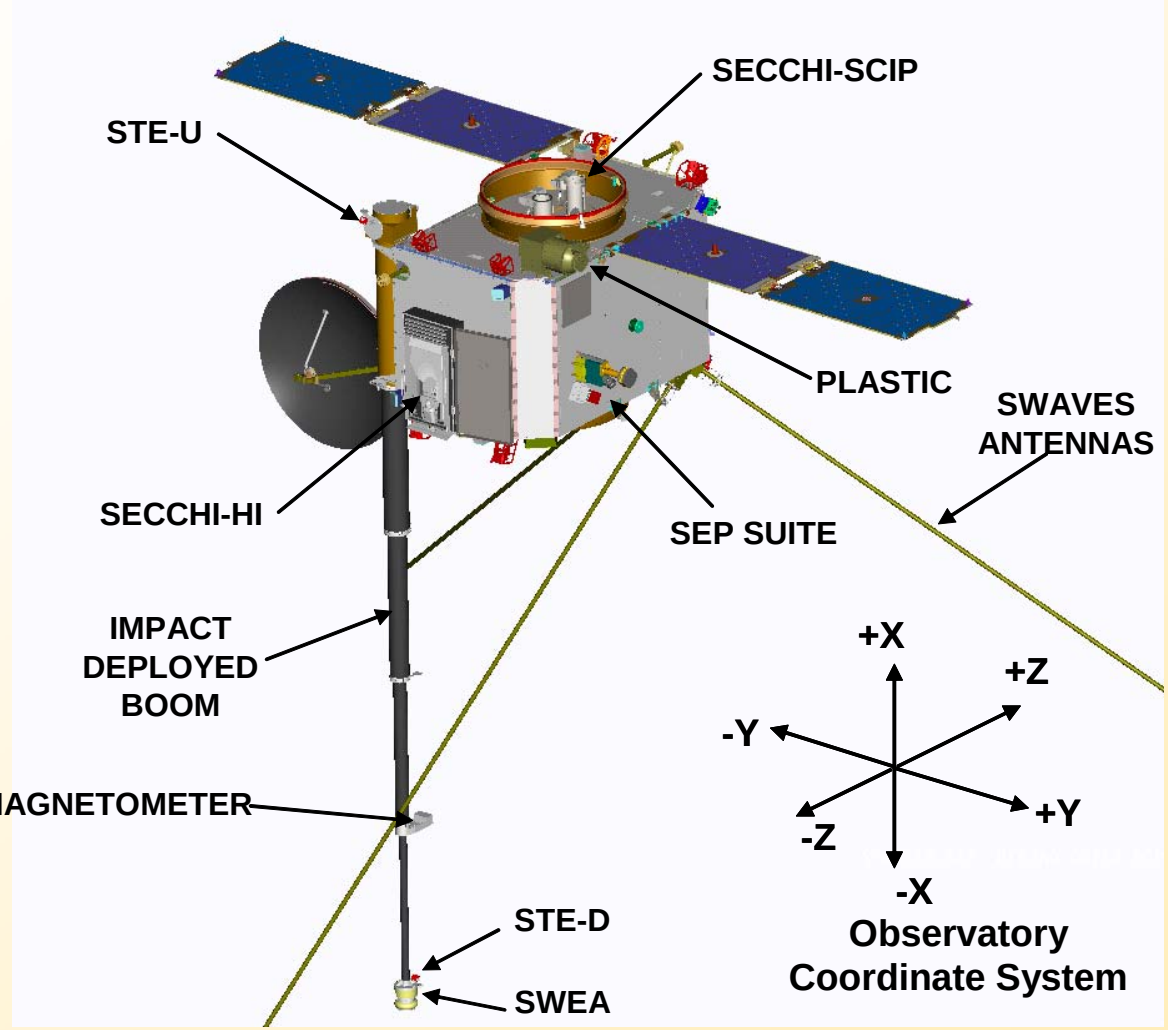
Volume:	1.2 w x 2.0 l x 1.5 h meters
Dry Mass:	A: 535 kg B: 561 kg
Power:	509 W (EOL)



Launch: To be launched from KSC on a Delta 2925-10L.

Website: http://stereo.gsfc.nasa.gov

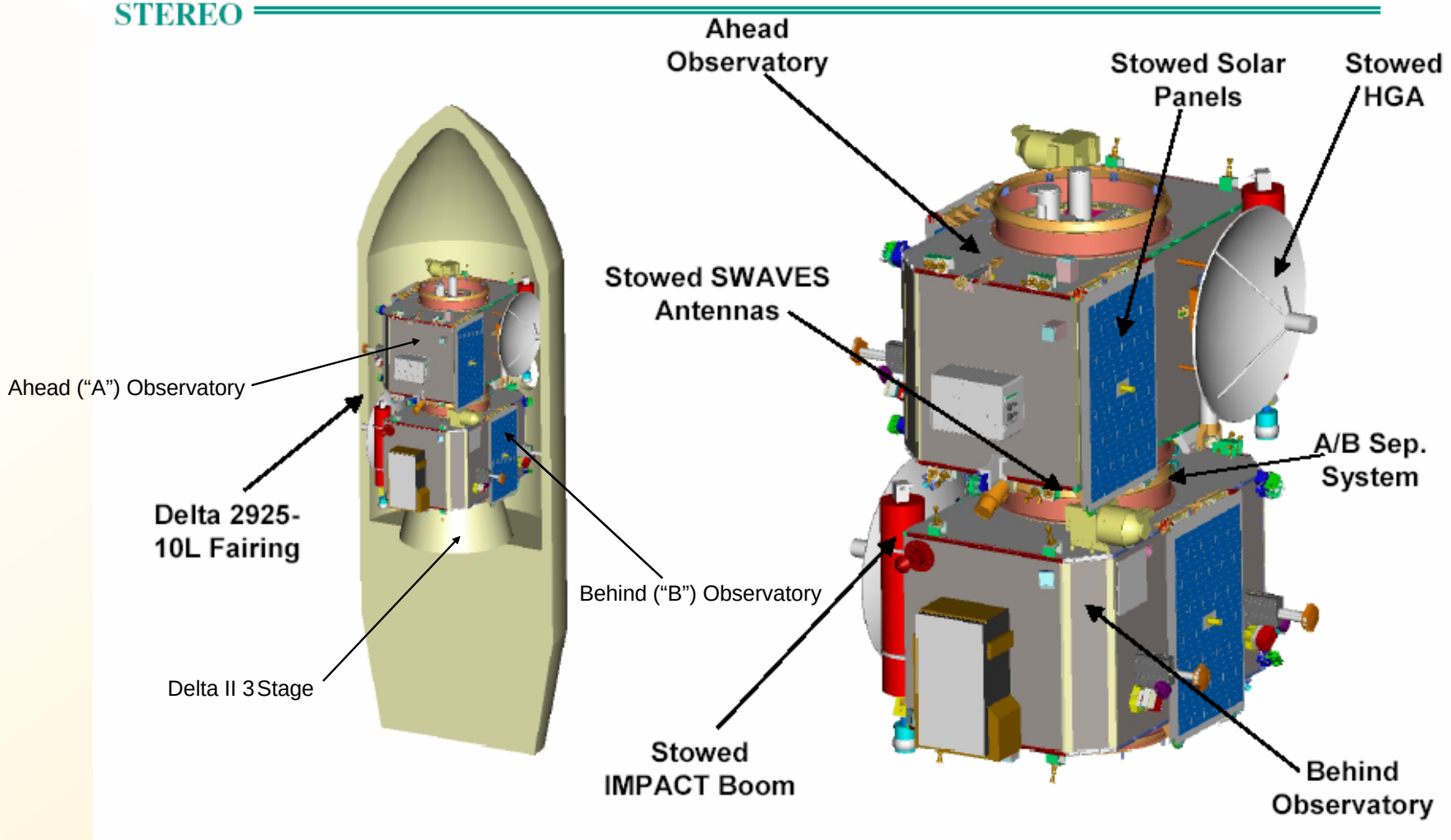
Observatory Configuration



"B" Observatory Deployed View

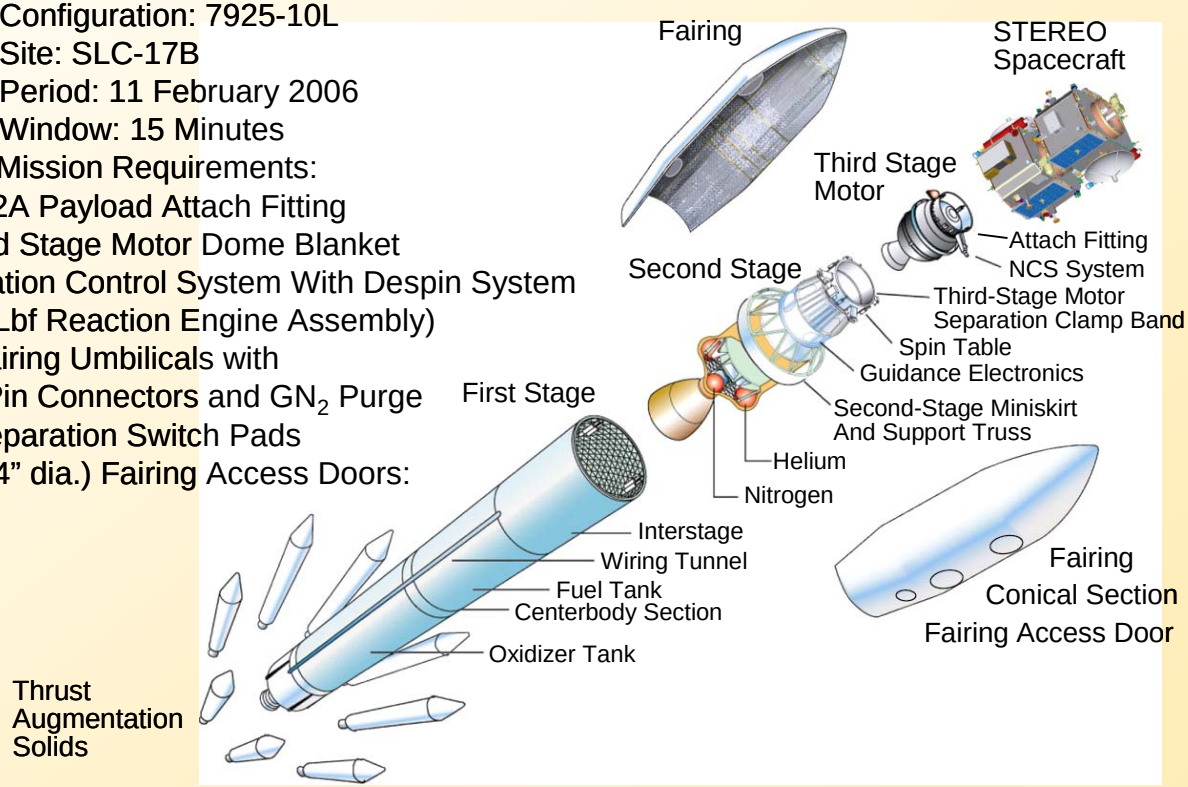
Observatories Stacked in the Launch Vehicle Fairing

STEREO



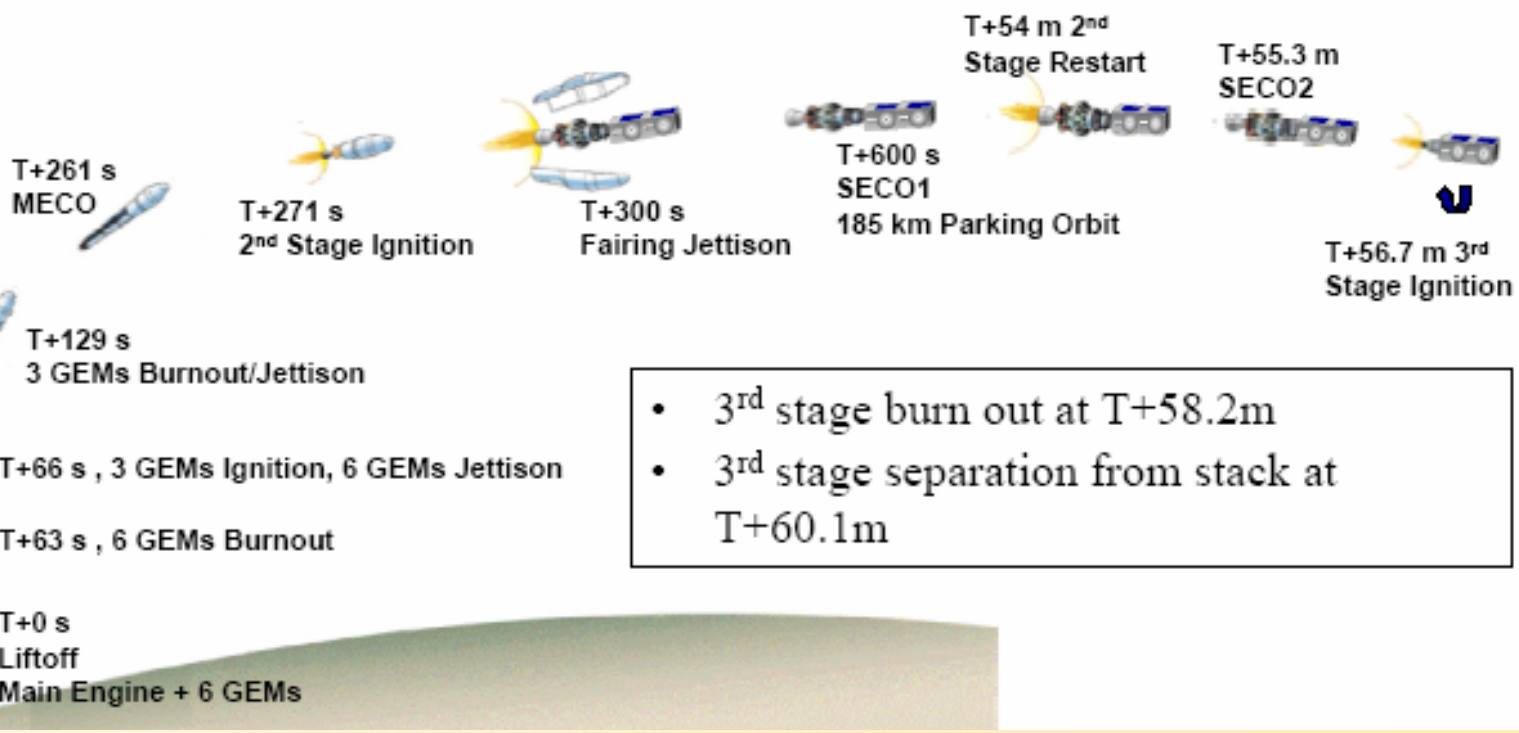
Launch Vehicle

- Vehicle Configuration: 7925-10L
- Launch Site: SLC-17B
- Launch Period: 11 February 2006
- Launch Window: 15 Minutes
- Unique Mission Requirements:
  - 3712A Payload Attach Fitting
  - Third Stage Motor Dome Blanket
  - Nutation Control System With Despin System (37 Lbf Reaction Engine Assembly)
  - 2 Fairing Umbilicals with 61 Pin Connectors and GN_2 Purge
  - 2 Separation Switch Pads
  - 3 (24” dia.) Fairing Access Doors:



Launch Timeline

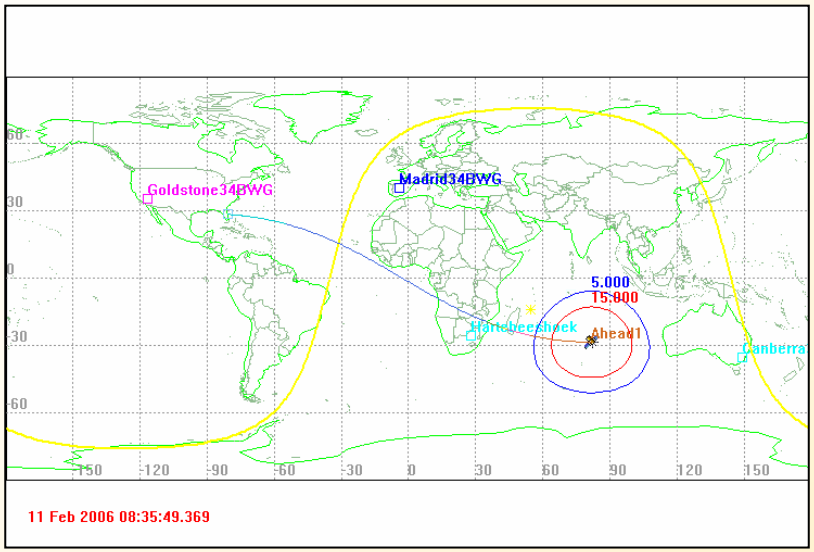
- Simultaneously launch both observatories on a single Delta 2925-10L.
- Launches 1255 kg to an energy of C_3 = -1.62 km^2/s^2 from the ETR with a 99.7% PCS.



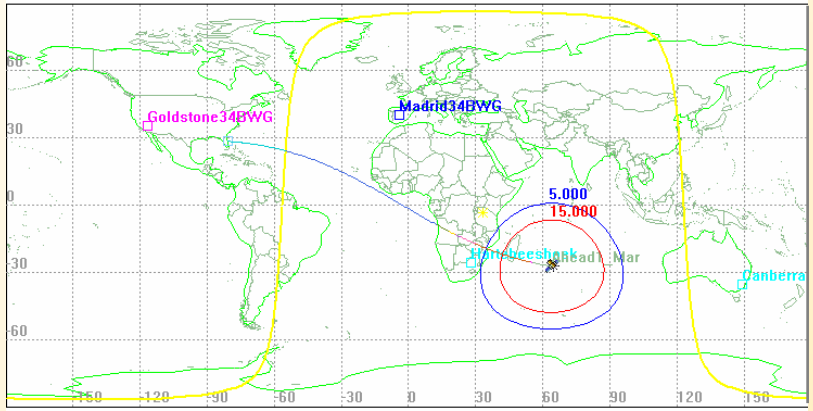
- 3rd stage burn out at T+58.2m
- 3rd stage separation from stack at T+60.1m

Coverage Maps

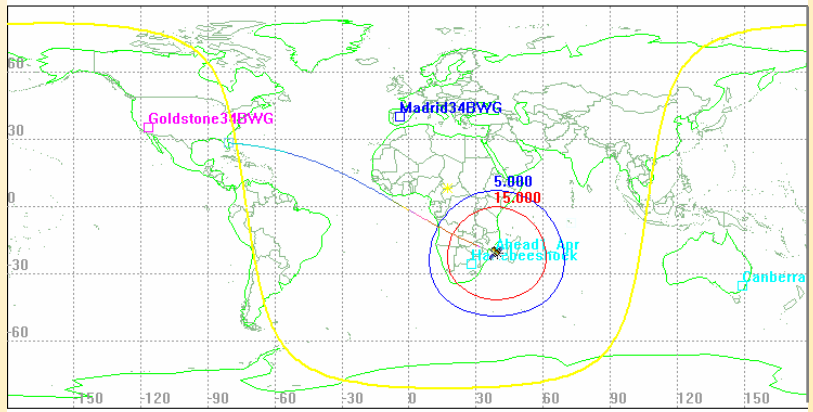
February 2006



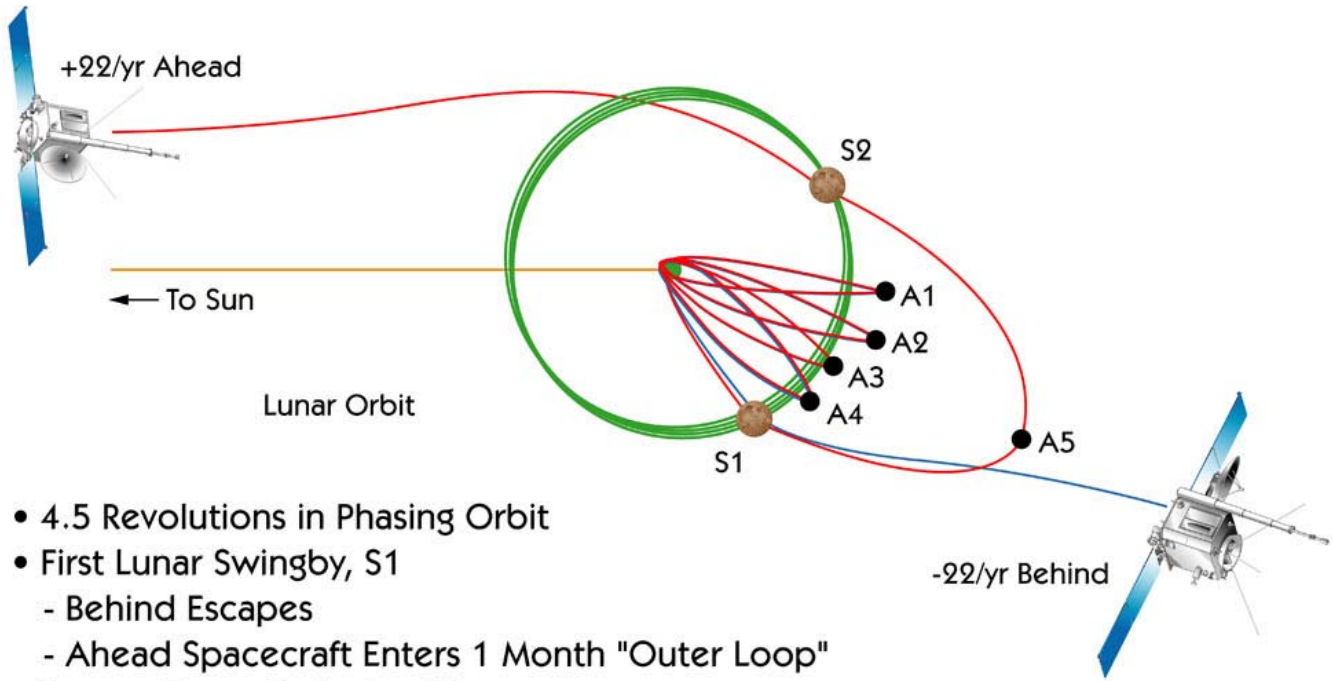
March 2006



April 2006

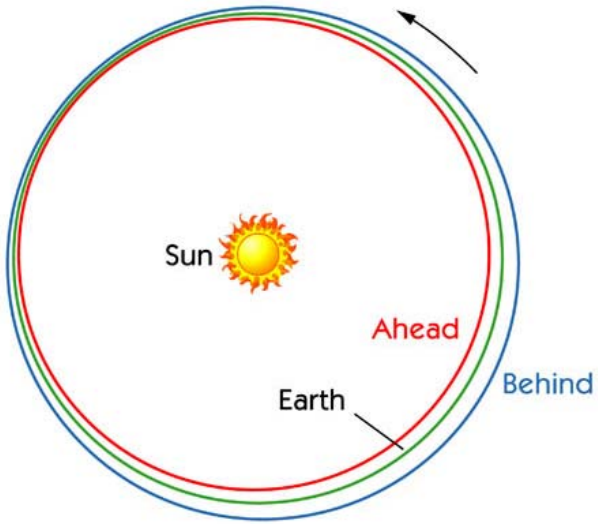


STEREO PHASING ORBIT

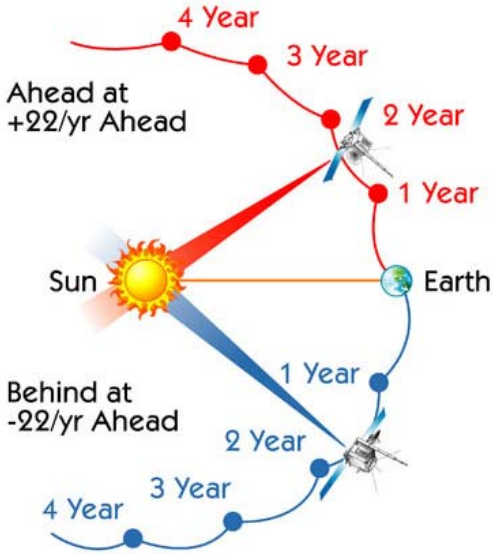


- 4.5 Revolutions in Phasing Orbit
- First Lunar Swingby, S1
  - Behind Escapes
  - Ahead Spacecraft Enters 1 Month "Outer Loop"
- Second Lunar Swingby, S2
  - Ahead Escapes

STEREO HELIOCENTRIC ORBIT



Heliocentric Inertial Coordinates
(Ecliptic Plane Projection)



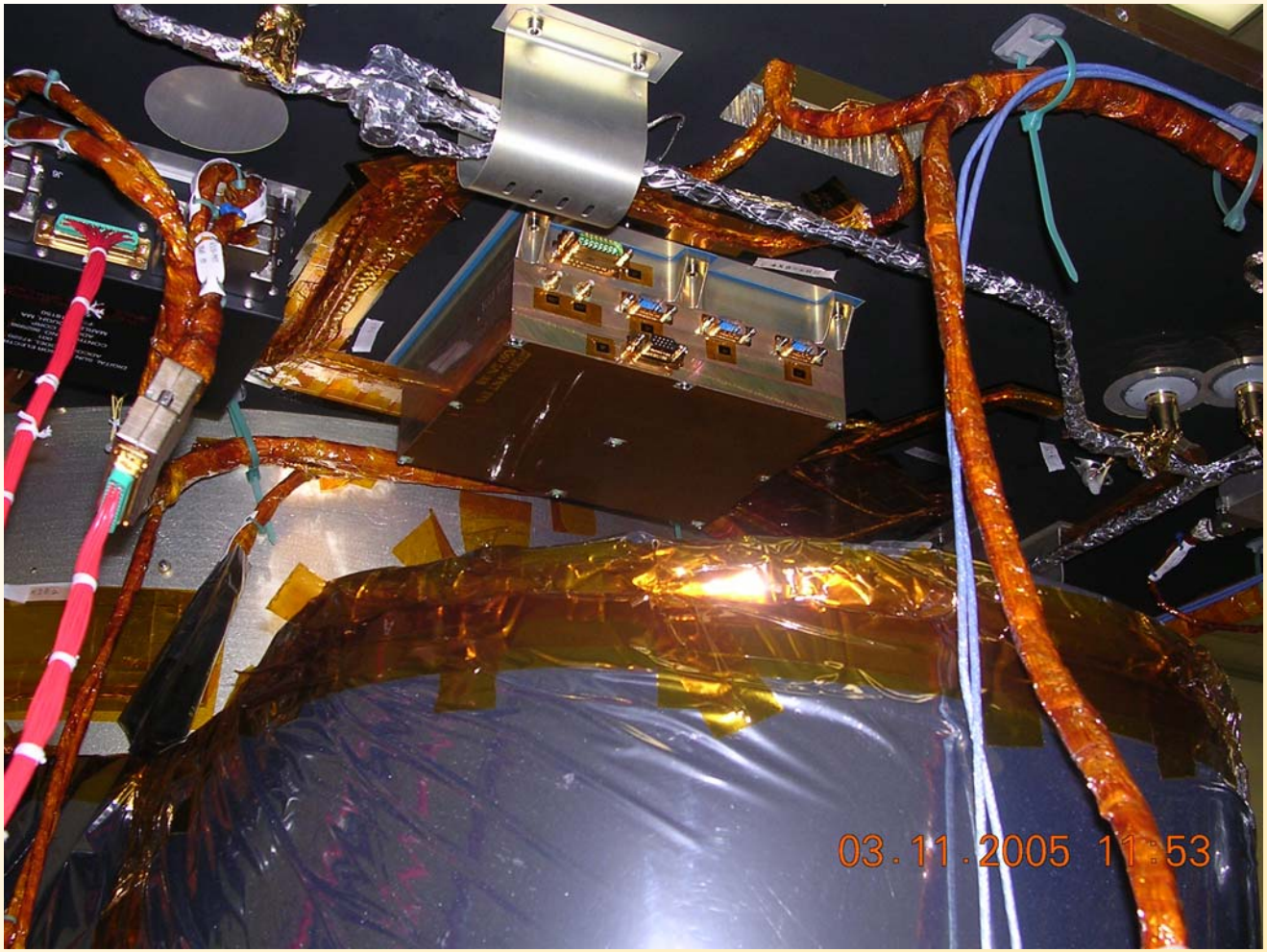
Geocentric Solar Ecliptic Coordinates
Fixed Earth-Sun Line
(Ecliptic Plane Projection)

Separation and Solar Array Deployments

Spacecraft B and A

Spacecraft A

IMPACT IDPU Mechanically Integrated



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