




Division Status

April 29, 2009

Richard Fisher

Heliophysics Mission Events

CY	2009	2010	2011	2012
Development Missions	Nov Oct SDO	2010 ST7 Lisa Pathfinder		May RBSP NET Sep SET
Operating Missions	STEREO THEMIS AIM Hinode	TWINS CINDI		
Suborbital	Rocket/ Research Range Program Mar HERSHEL, Mesquito (2) Apr RockOn2, SUMI Jun Sep VERSIS, RAISE Helio Missions Mar Mesquito (2) ACES (2) Turbopause (4) CASCADES-2	Jan Bailey, Conde, CHARM-2, Lessard Oct FOXSI		
Other missions	Feb CIBER 1 Jun TacSat-3 May, Jun, Jul DICE, CyXESS, Student Scramjet TBD PICTURE	TBD HRF #2	Jan ACCESS#1 Micro-X Sep ACCESS#2	
Opportunities	NET March 2009 Solar Probe Plus AO			

 End of Prime Mission
 Actual Launch Date
 Planned Launch Date

Status as of 03/17/09

National Aeronautics and Space Administration



Solar and Space Physics: A Science Strategy for a New Era

Recommended Roadmap for Science and Technology
2009-2035

Heliophysics

SOLAR AND SPACE PHYSICS IN A NEW ERA

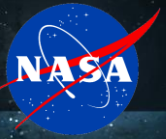
Recommended Roadmap for
Science and Technology 2009-2035

heliophysics

Roadmap

- 2009 HPD Roadmap currently in review for HPS meeting on 19-21 May 2009

Heliophysics SIGNIFICANT ACCOMPLISHMENTS And Upcoming Events



- **Program Implementation Review conducted for Explorers, LWS, and STP Programs on Feb 10-11**

Presentations scheduled:

- DPMC – May 18
- APMC – May 19

Explorers Program

Accomplishments/Upcoming Events

SMEX 12/13

- Concept studies (Phase A) received December 16, 2008
- Site visits and plenary sessions are underway and scheduled through April
- Selections for flight scheduled for late Spring 2009



Heliophysics SIGNIFICANT ACCOMPLISHMENTS And Upcoming Events

Living With a Star Program

Accomplishments

- **BARREL** – Piggyback payload captured an energetic x-ray event on February 15
- **DSCOVR** – Working action from NASA Authorization Bill
- **RBSP** - Quarterly Review, Phase C kickoff, and SWG Meeting March 3 – 5
- LV selection announced – Atlas V
- **SET-1** in storage at Kirtland AFB. DSX launch delayed to NET Sept 2012
- **SDO** - Atlas launch queue delays (WGS) pushing SDO launch window into an early November start of the window (from our current Oct. 8 – Nov. 6 window)

Upcoming Events

- **Solar Probe Plus** AO Release – NET March 2009
- **DSCOVR** – Plan due to Congress April 15
- **SDO Pre-Ship Review** Part 2, concentrating on launch site activities May 13
- Astrotech processing facility congestion - Ship date TBD
- **RBSP**- First instrument CDR June 2009

Heliophysics SIGNIFICANT ACCOMPLISHMENTS and Upcoming Events (cont'd)

New Millennium Program

- **ST7** Payload delivery: awaiting ESA decision for ship date and location
- **ST8** - All Thermal Loop TRL6 criteria were certified by the TRB
 - Sailmast splice repair was completed
 - Dependable Multiprocessor - final TRL 6 report is being drafted by Honeywell
 - Ultraflex successfully completed their air deployment tests. The vibration tests in vacuum will be delayed due to the unavailability of the test chamber

Solar Terrestrial Probes (STP) Program

- **MMS** Presentation to CMC on KDP-C costs completed March 20
- **MMS** Mission PDR/NAR May 4-8; DPMC KDP-C June 8; APMC June 17

Heliophysics Accomplishments:

- **Geospace MOWG** meeting Mar 17-18
- **THEMIS/Artemis**- Integrated Independent Review held, single RFA concerning orbit insertion of 2 outer probes to moon
- “**Causes and Consequences of the Minimum of Solar Cycle 23**”- New proposal opportunity released
- Sun-Earth Day March 20

Sounding Rockets and Range Progress and Upcoming Events

- **Poker Flat 2009 Geospace Campaign**

- **Turbopause** launched successfully Feb 18.
 - Investigation of uppermost levels of neutral air turbulence in the Earth's atmosphere
 - Four Terrier Orion missions launched over a two hour period
 - Flight experiments employed multiple chemical releases and in-situ measurements combined with ground based observations from multiple locations
- **CASCADES-II** successful launch March 20. (An investigation of motions & structures of electron precipitation in pre-midnight pole-ward edge discrete aurora)

- **White Sands field operations**

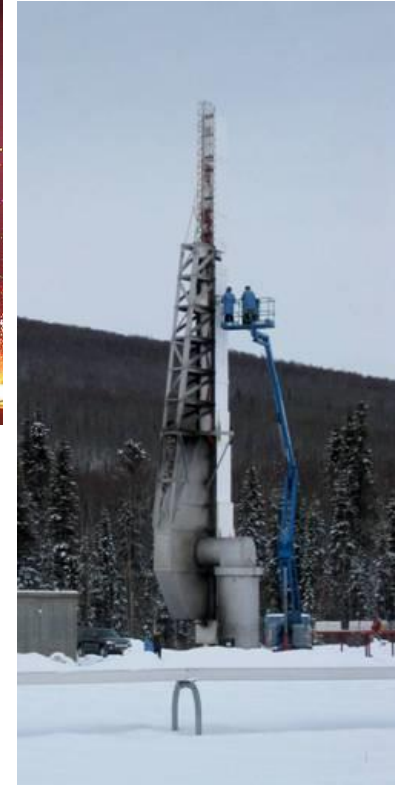
- **CIBER** (Cosmic Infrared Background Experiment) launched successfully Feb 25.



Turbopause Launch



CIBER on the Rail



CASCADES II on the Launcher

High Resolution Telescope Payload Readied for Summer 09



KAO (Germany) and HAO/NCAR recently integrated the KAO Solar Telescope (1.3 M) to the balloon gondola at the Swedish Space Corporation's Esrange facility, some 200km North of the Arctic Circle, in preparation for Summer 2009 Flight Operations

Heliophysics SIGNIFICANT ACCOMPLISHMENTS And Upcoming Events

Solar Orbiter

Goal: To produce images of the Sun at an unprecedented resolution and perform closest ever in-situ measurements

NASA selected three instrument proposals for ESA-led Solar Orbiter mission:

- **Solar Orbiter Heliospheric Imager**

Russell Howard, principal investigator, NRL

This instrument will provide revolutionary measurements to pinpoint coronal mass ejections or CMEs.

- **Spectral Imaging of the Coronal Environment**

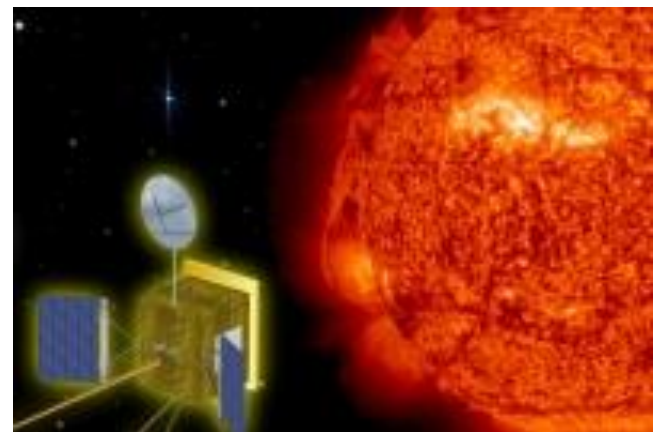
Donald Hassler, principal investigator, Southwest Research Institute, Boulder, Colo.

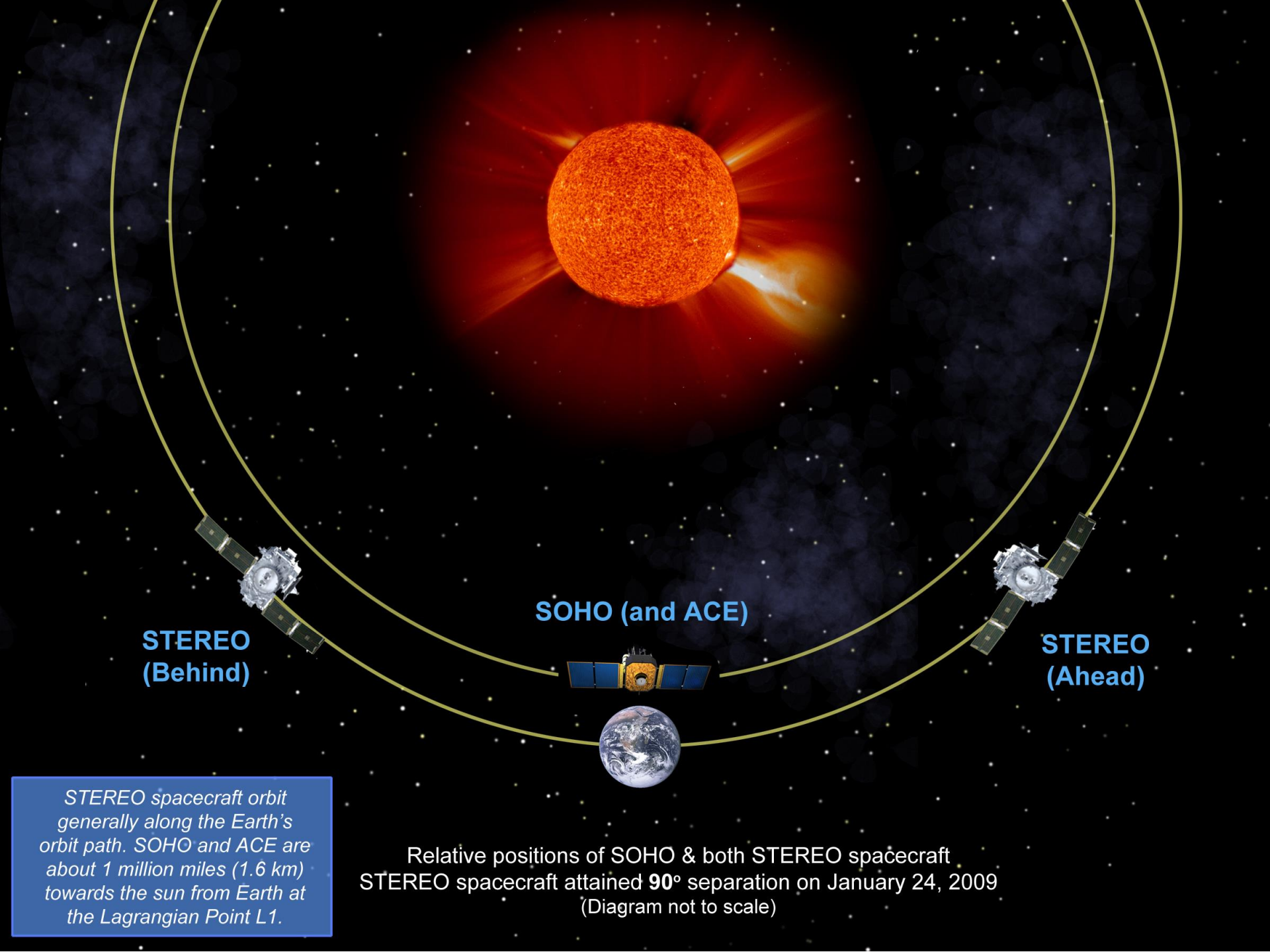
This instrument will provide an extreme ultraviolet spectrometer or optical instrument that will measure different wavelengths of light emitted from the sun.

- **Suprathermal Ion Spectrograph**

Lead co-investigator Glenn Mason, Applied Physics Laboratory

This experiment will measure energetic particles ejected from the sun.





**STEREO
(Behind)**

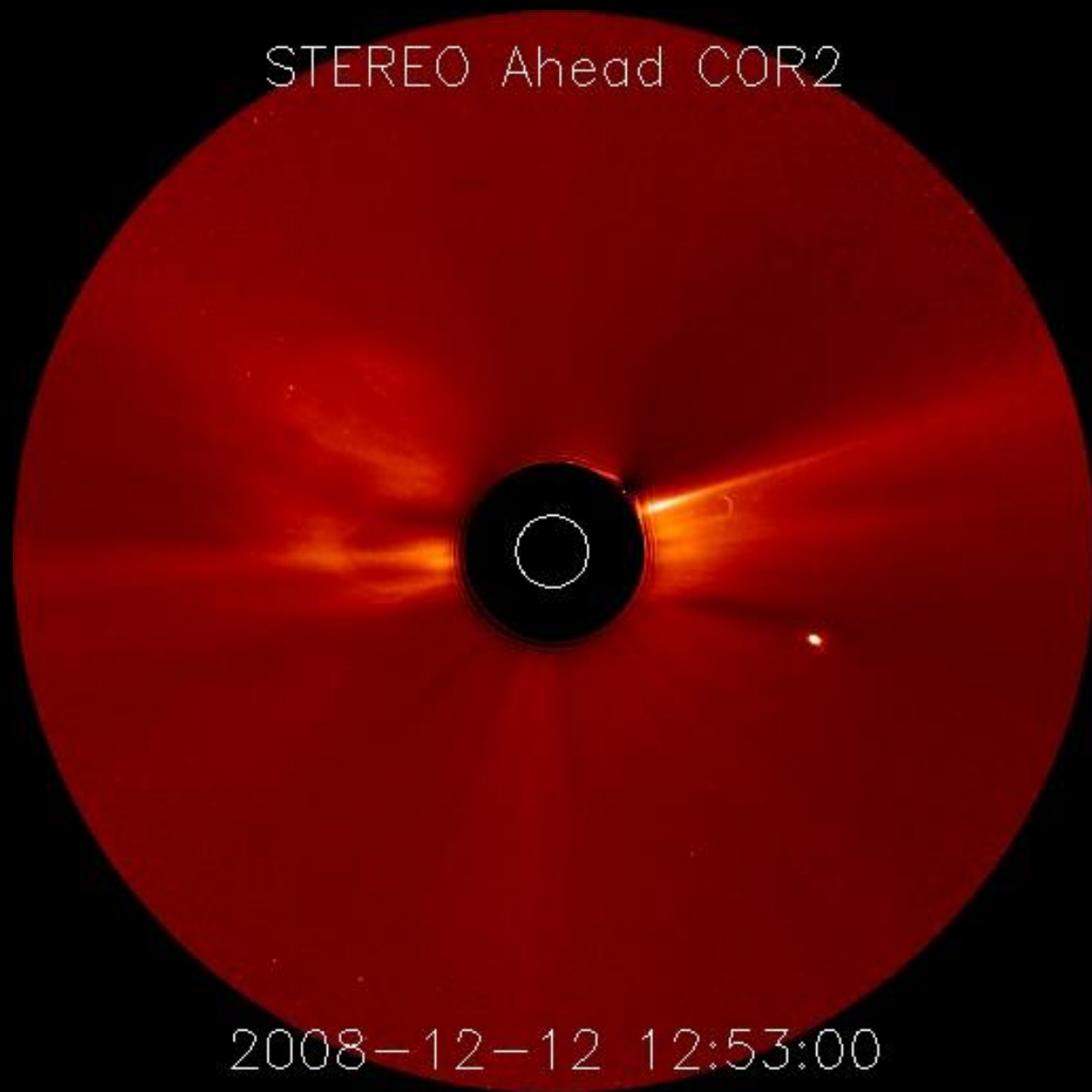
SOHO (and ACE)

**STEREO
(Ahead)**

STEREO spacecraft orbit generally along the Earth's orbit path. SOHO and ACE are about 1 million miles (1.6 km) towards the sun from Earth at the Lagrangian Point L1.

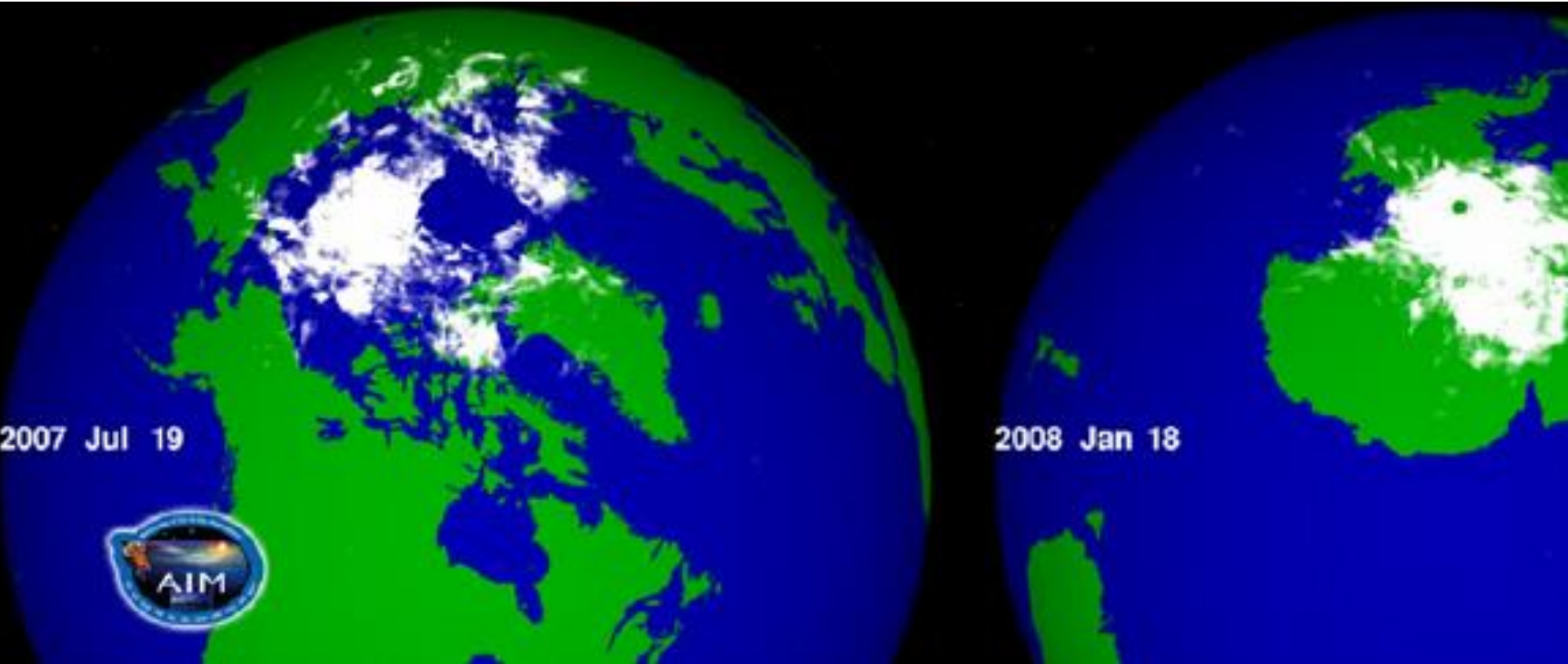
Relative positions of SOHO & both STEREO spacecraft
STEREO spacecraft attained 90° separation on January 24, 2009
(Diagram not to scale)

STEREO Ahead COR2



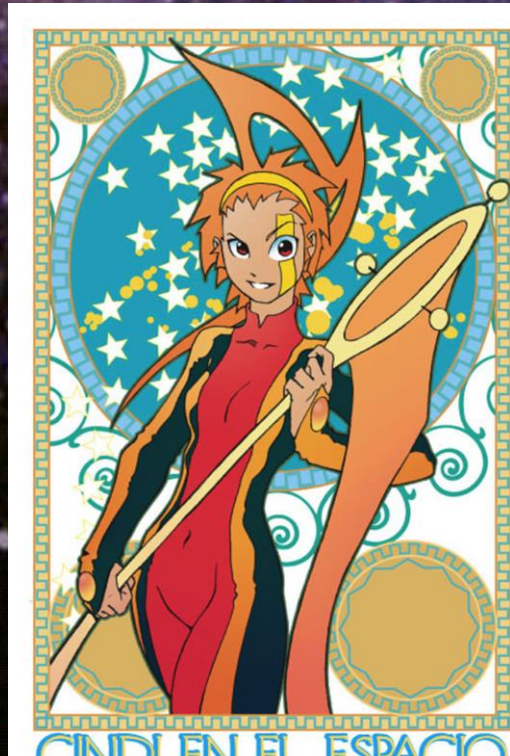
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AIM

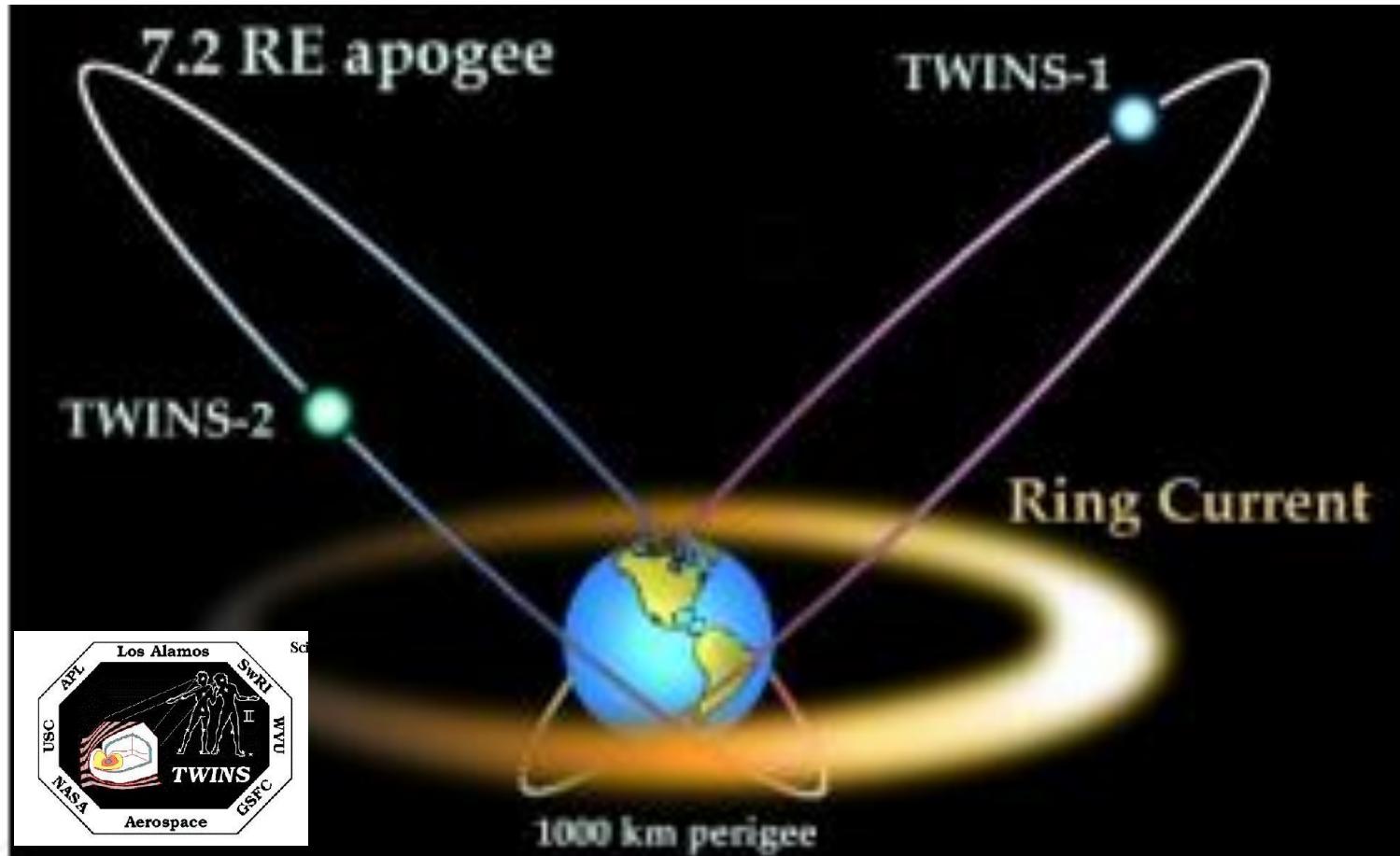


- Completing 2nd Year of planned prime mission

C/NOFS - CINDI



TWINS - Stereo Imager of the Earth's Magnetosphere



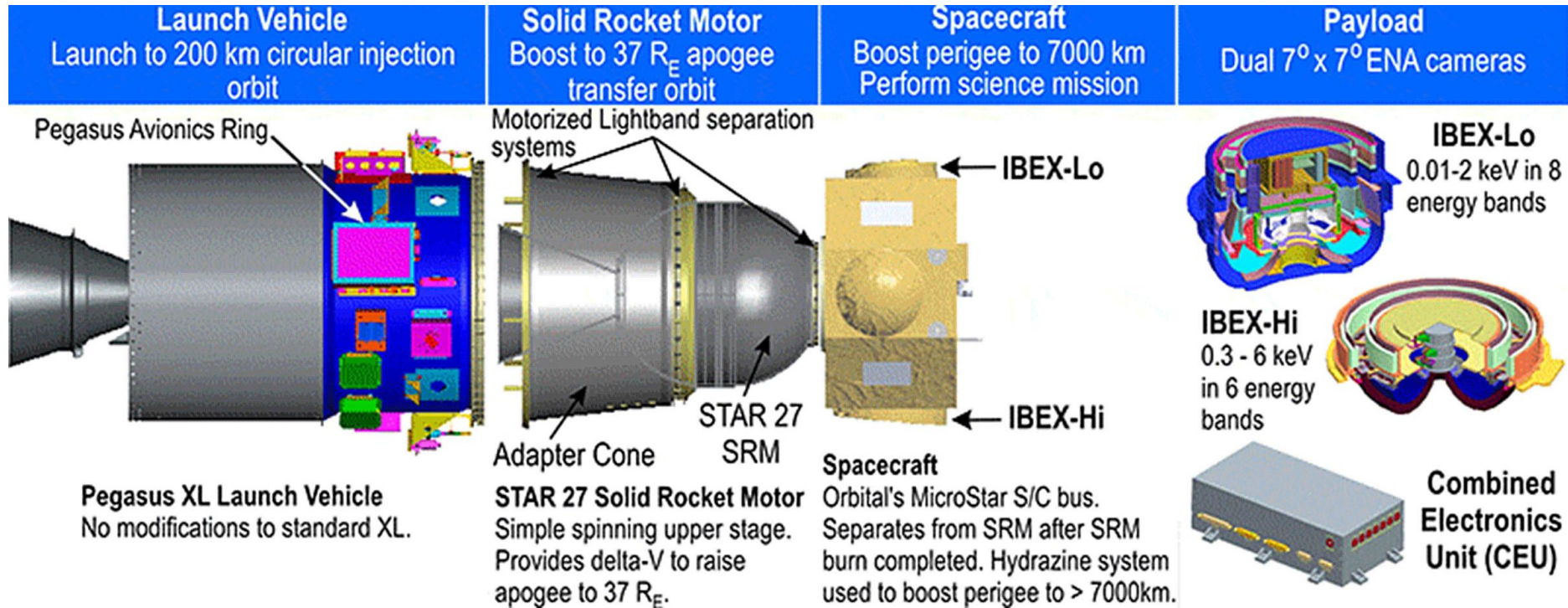
Special Session scheduled for Spring AGU 2009 Meeting

THEMIS

Space Tornadoes: > 100,000 Amps



IBEX

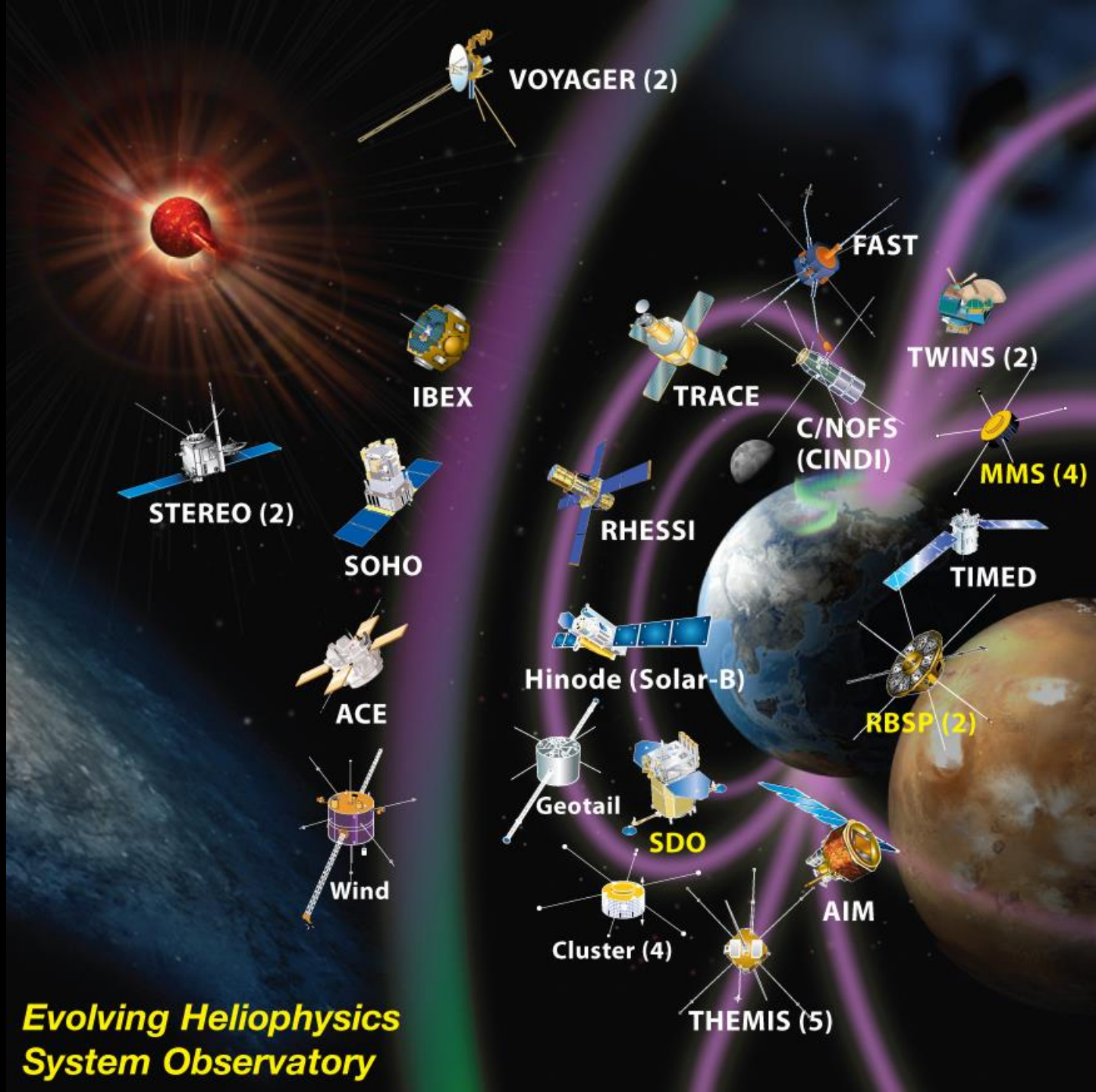


- First All-Sky Map Anticipated Q3 2009
- Orbit slightly better than original plan
- Remaining fuel levels are high
- Possibility of investigation of longer term variation of the Heliosphere

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

- **CCMC Mission Statement** The CCMC is a multi-agency partnership to enable, support and perform the research and development for next-generation space science and space weather.
- **Latest Additions to the CCMC Services** - [Kameleon software](#): model output from different models can now be stored uniformly in a common science data format. Users can request the [CDF-formatted output](#) for a CCMC run. - [Movies on Request](#): you can now request to generate a movie, images and ASCII data files for each time step of a model run. - [CCMC Space Weather on Google Earth](#): CCMC is now providing space weather-related Google Earth overlays.





***Evolving Heliophysics
System Observatory***

Heliophysics: Science for SWx

