

National Aeronautics and Space Administration



SCIENCE

Solar-C: NASA Point of View

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Heliophysics Division Mission News

- **17 Operating Missions with 26 spacecraft**
- **Solar Dynamics Observatory – Launched Feb. 11, 2010**
- **Radiation Belt Storm Probes (RBSP) – Launch May 2012**
- **Magnetosphere Multi-Scale (MMS) – Launch 2014**
- **Solar Orbiter (FOSO selection) – Entering Phase B, waiting ESA Cosmic Vision downselect, Launch 2017?**
- **Solar Probe Plus – Instrument Selection Announced- Launch 2018?**
- **Small Explorers – SMEX Selected:**
 - **Interface Region Imaging Spectrograph – IRIS – LRD Dec 1, 2012**
 - **Explorer AO – Fall 2010, includes Mission of Opportunity**

Operating Missions

Mission	Launch	Phase	Extension to (*)	June	July	Aug	Sept	Remarks
Geotail	7/24/92	Extended	9/30/2014					
Artemis (Helio)	4/01/98	Approved	9/30/2014 (+)					P1 had 2nd Sta. Keeping Man. on 9/8.
STEREO	10/25/06	Extended	9/30/2014					
THEMIS	2/17/07	Extended	9/30/2014					
AIM	4/25/07	Extended	9/30/2014					
Hinode	9/23/06	Extended	9/30/2014					XRT experienced a safemode 8/28, and recovered by 8/30.
Cluster	7/16/00	Extended	9/30/2014 (+)					
ACE	8/27/97	Extended	9/30/2014					
RHESSI	2/05/02	Extended	9/30/2014					
SOHO	12/02/95	Extended	9/30/2014					
TIMED	12/07/01	Extended	9/30/2014					
Voyager 1 + 2	8/20/77	Extended	9/30/2014					
TWINS A + B	6/06 & 3/08	Extended	9/30/2014					Successful EoPM Review 9/28.
CINDI:C/NOFS	4/16/08	Extended	9/30/2014					Successful EoPM Review 9/24.
IBEX	10/19/08	Prime	10/19/2010					
Wind	11/01/94	Extended	9/30/2014					
SDO	2/11/10	Prime	2/11/15					



Mission proceeding to meet science requirements



Area of concern - possible reduction in capability



Significant problem - possible or probable loss of mission



Heliophysics SIGNIFICANT ACCOMPLISHMENTS And Upcoming Events

Living With a Star Program

- **RBSP**
 - The reworked propulsion system service valve successfully completed acceptance testing.
 - The final propulsion tank has completed installation on spacecraft B
 - SIR Oct 12-14
- **Solar Probe Plus**
 - Instrument Selections announced, letter contracts in process
 - Thermal Protection System – Structural analysis underway, initial results show potential 20-30% drop in stress in foam, coupled with prior increase in foam mechanical properties indicate design heading in right direction
- **Solar Orbiter Collaboration**
 - Completed SRR/SDR/PNAR
 - CMC Review Oct 18 or 19; KDP-B DPMC Oct 26
- **BARREL**
 - Equipment shipped to Antarctica for payload test flight in December 2010
 - Potential impact from Balloon MIB—launch window opens Dec 1



Heliophysics SIGNIFICANT ACCOMPLISHMENTS and Upcoming Events (cont'd)

Solar Terrestrial Probes (STP) Program

- **Magnetospheric Multiscale (MMS)**
 - Completed Mission CDR briefing to SMD DPMC Oct 6
 - Successful Clean Room 50% Design Review Sept 10
 - APMC (CDR Results) Oct 6 (info briefing only)
 - Ground System SRR at GSFC Oct 13-14
 - SDP CDR at UNH Oct 27-28

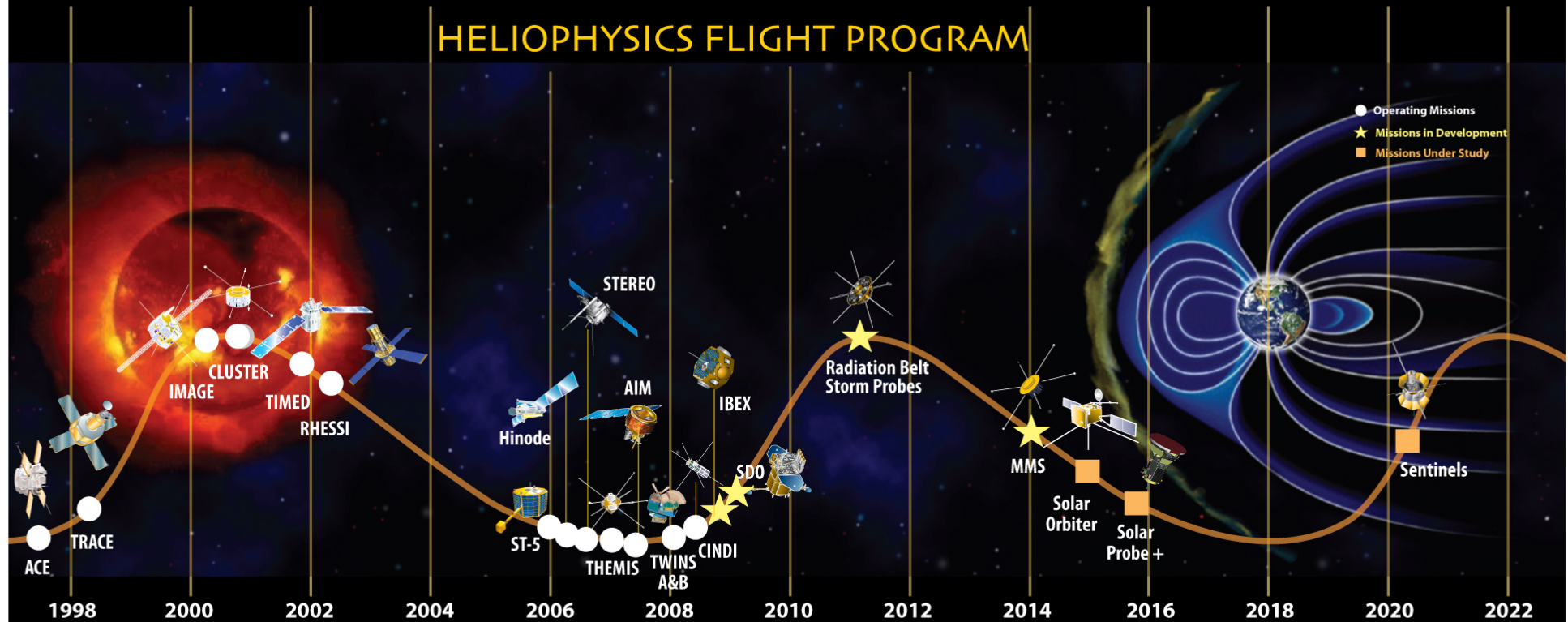
Explorers Program

- **Interface Region Imaging Spectrograph (IRIS)**
 - Project Plan signed
 - Letter Agreement with Norwegian Space Agency for ground station support provided to State Department for Circular 175 interagency review
 - First Mission Integration Working Group (MIWG) with Orbital Sciences/Pegasus
 - Mission CDR is planned for December 7-9

Other

- **DSCOVR** – Draft MOU is in discussion with NOAA
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Planned Missions to 2020



NASA Science Mission Launches (Fiscal Years 2010-20)

As of 4/16/10

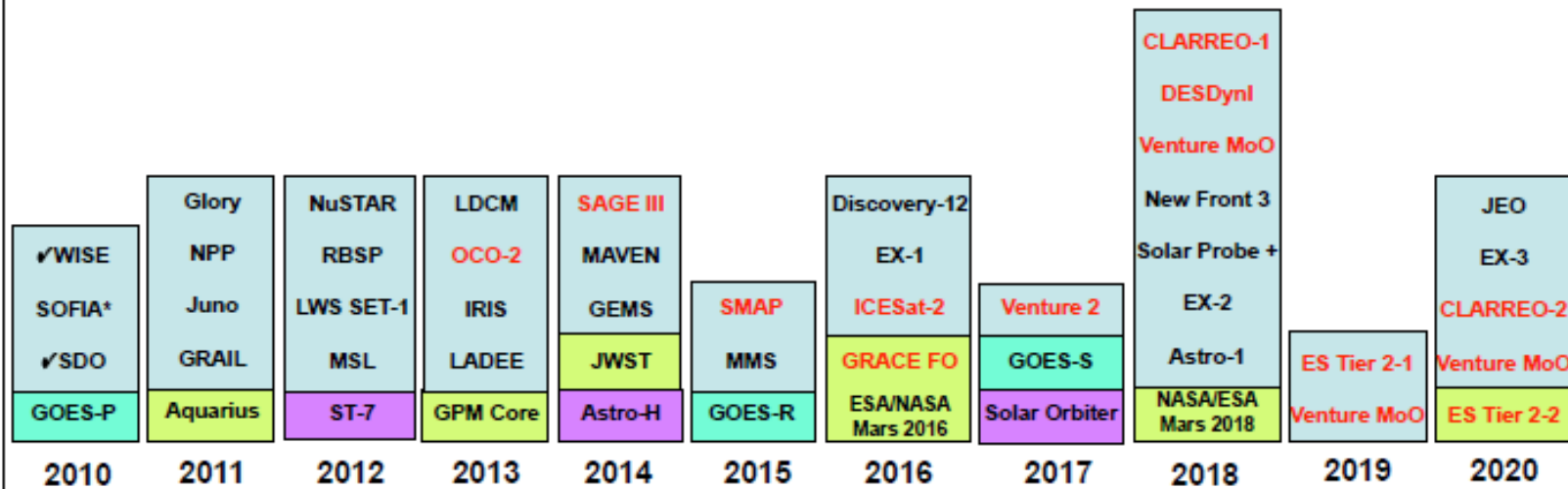
For planning purposes only



• = Early science flights begin

✓ = Mission successfully launched

Red Text = new or accelerated in FY11 Budget Request





SMD Science Strategies

Pursue answers to big science questions for which the view from space makes a defining contribution

Design programs that accomplish breakthrough science and applications within the available budget

Partner with other nation's space and science agencies to pursue common goals

Mature technologies through focused efforts prior to committing to implement missions that need them

Share the story, the science, and the adventure of NASA missions to engage the public and improve STEM education



SMD Science Selection Principles

Substantial progress on NRC decadal surveys in all four Science areas is the measure of success

Investment choices are based on scientific merit via peer review and open competition


Active participation by the research community outside NASA is critical to success

Effective international and interagency partnerships leverage NASA resources and extend the reach of our science results

A balanced portfolio of space missions and mission-enabling programs sustains progress toward NASA's science goals

The pace of scientific progress is enhanced by rapid, open access to data from science missions

The NASA mandate includes broad public communication and input



“When developing a strategic plan, the agency shall consult with the Congress, and shall solicit and consider the views and suggestions of those entities potentially affected by or interested in such a plan.”

How do we do that?

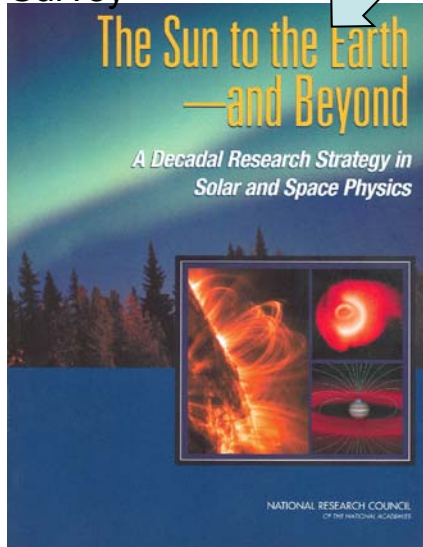
Wide variety of specialized studies, both internal and National Academy of Science studies

How do all these documents relate to each other?



Community White Papers

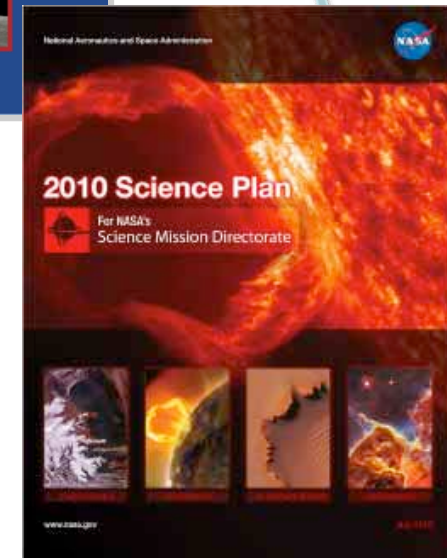
2002 /2012 National Academy Decadal Survey



2009 /2012 Heliophysics Roadmap



2006 /2010 NASA Strategic Plan



2010 NASA Science Plan



Decadal Survey Status

Earth Science – First survey published in January 2007

Astrophysics – Last survey in 2001; released Aug. 13, 2010

Planetary Science – Last survey in 2002; next survey expected in Spring 2011

Heliophysics – Last survey in 2002; next survey expected in March 2012

- http://sites.nationalacademies.org/SSB/CurrentProjects/SSB_056864
- **White Papers: November 12, 2010**



NASA-JAXA Joint Solar-C Science Assessment Committee (JSSAC)

Not a Science & Technology Definition Team

The primary purpose is to generate and to document scientific goals and priorities for each plan (plan A and plan B).

Assess how these scientific goals are aligned with JAXA and NASA agency priorities, specifically how these goals are aligned with the NASA science strategy as given in the NASA 2010 Science Plan and 2009 Heliophysics Roadmap.

Generate and assess Science Traceability matrix

Inputs: JAXA Solar-C WG and sub-WG Interim Report;
SCSDM1-3

=> Deliver a science assessment report – Enables NASA to quickly act upon recommendations by the Decadal Survey



JSSAC Schedule

Agreed to establish in the Inter-Agency Meeting after SCSDM2 (March 2010).

JAXA-NASA discipline-level meeting at NASA HQ on Sep. 17 on JAXA-NASA SOLAR-C collaboration

Kick-off Telecon – 4-Oct-2010

3rd Solar-C Science Definition Meeting (today)

Telecons, emails

Draft – 12 Dec. 2010 = Meeting during the AGU (Sunday, 12-Dec-2010) – finalize major decisions

Final report – End of January?



JSSAC Report Rough Draft Outline

Executive summary

Introduction

Plan A

Overview

Science Objectives

Science Traceability

Mission Concept, Science implementation

Assessment

Benefits and Impacts

Findings

Plan B – repeat above

Science Goals	Science Requirements	Measurement Requirements	Instrument Functional Requirements	Mission Functional Requirements
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Possible Areas of Collaboration with NASA and JAXA for Solar-C

Provisional areas of collaboration – Strategic Partnership

- Launcher
- Ka and/or X band downlink station
- Science instruments
- Similar to Hinode, Solar Orbiter, SOHO

Future – Wait for Decadal Survey – actually aligned with budget prospects, i.e. new mission “starting” in 2013-2015 timeframe