F1	F2	F3	F4	F5	H1	H2	H3	H4	J1	J2	J3	J4	Abbrev	Mission	Type	Advocat	Objectives	Description	Measurement	Technologies	Risk	Class	Pri-ord	Sequen	Status
													AMS	Auroral Multiscale	MS05	Cattell	To	Four spacecraft	Measure j: B &	No “enabling”		Strategic			
		10	10					10					BC	Bepi-Colombo	MOO	Murphy	Measure	2-3 ESA/ISAS	Planetary orbiter	Solar Electric		MOO			ESA AO Issued 4/04
													CINDI	Coupled Ion Neutral Dynai	EXP	TBD				N/A		EXP			In Development
10	10								10	10			DBC	Dayside Boundary Layer (	STP	Fuselier	Measure	Orbits: 3 orbit	Minimum	No “enabling”		Strategic			STDT Report Update
													DOPPLE	Solar Atmospheric Dopple	MS05	Hassler	•	• Example	• UV/EUV	• High cadence					
													GEC	Geospace Electrodynamic	STP	Earle	•Understan	•A constellation	•Measure in-situ	Aerodynamic		Strategic			SDT Report
													GSRI	Geospace System Respor	STP	Fennell	Determine	Mission Design	Two high	No “enabling”		Strategic			
													ITSP	Geospace Ionosphere-The	LWS	Grebow	• Identify	•Two spacecraft	•In situ	Low magnetic		Strategic			STD Report, AO soon
													RBSP	Geospace Radiation Belt S	LWS	Sibeck	•	•Two spacecraft	(Concurrent	Enabling		Strategic			STD Report, AO soon
													HIGO	Heliosperic Imager and Ga	STP	Roelof	• Establish	• Example	• Image the	• High		Strategic			Report 7/04
													HS	HelioStorm	MS05	Gopals	•	• Example	• Energetic	• Solar Sail					
													IE	Io Electrodynamics	OTHE	Cattell	•	• Example	• Multiple	• Rad-Hard		Flagship			
													IHS	Inner Heliosphere Sentinel	LWS	Liewer	•	• Example	• Magnetic	• High		Flagship			SDT Initiated 2004
	10				10						10		IMC	Inner Magnetospheric Con	LWS	Moore	Create	2 “petal” low	The large-scale	No “enabling”		Strategic			Report 6/03
													IsP	Interstellar Probe (2)	VM	Roelof	• Explore	• Example	• Measure, in	• Solar Sail: < 1					VM (2): 2001-2 Reports
													ITMC	Tropical Ionosphere Therm	STP	German	Understan	3 satellites with	A suite of 10	Spacecraft with		Strategic			
													ITMW	Ionosphere Thermosphere	MS05	Earle	Global	2 satellites in	Type	None enabling.					
													JPO	Jupiter Polar Orbiter	OTHE	Liemoh	• The	• Example	• Measure	• Radiation		Flagship			New Frontiers Step 2-
													L1D	L1-Diamond	LWS	Pizzo	• Measure	• Example	• 4-s/c	• Solar Sail		Strategic			Report 10/04
					10		10		10		10		L1Star	L-one Star	OTHE	Pizzo	• Measure	• Mission	This 3-axis	N/A		EXP			Mission based on Triana
													MAP	Mars Aeronomy Probe	MS05	Forbes	•	• Example	• Neutral	• Low					variants studied at JPL
10	10				10				10	10			MC	Magnetsospheric Constell:	STP	Moore	•	• Constellation	Synoptic vector	None enabling.		Strategic			SDT Report Update 2004
													MD	Mars Dynamics	MS05	Forbes	•	• Example	• F-P	• Low					
													MiLiMI	Geospace System Respor	MS05	German	Determine	Mission Design	Two high	None enabling.					
	10	10								10			MIO	Magnetosphere-Ionospher	STP	Fuselier	Determine	Main s/c	Find the	Exploits		Strategic			
													MMS	Magnetospheric Miultiscal	STP	Slavin	Understan	4 spin-stabilized	4 suites of	None enabling.		Strategic			Phase A Study Selection
													MTRAP	Magnetic TRAnsition Regi	LWS	Bogdan	• Discover,	• Example	•	• Large, light		Strategic			Report Due 10/04
													NO	Neptune Orbiter	VM	Russell	Map	Example	Thermal	Aerocapture					VM: Planetary with
													PASO	Particle Acceleration Solar	STP	Stracha	See IHS	• Example	• High energy	• Solar Sail @ 9		Flagship			
													RAM	Reconnection and Microsc	STP	Hassler	What	Mission Design	Ultra-high	Enabling		Strategic			Report 10/03
													SCOPE	Solar Connection Observa	OTHE	Russell	Compare	Dual meter-	Global imaging	LLight-weight,		Flagship			
													SDO	Solar Dynamics Observatc	LWS	Hoekse	Understan	NASA GSFC	Helioseismic	C&DH Ethernet		Strategic			In Development
													SEEC	Sun-Earth Energy Connec	LWS	Bailey	Quantify	MIDEX or STP	EUV imaging of	Ionospheric		strag			
													SEPP	Solar Energetic Particles F	MS05	Stracha	What are	A Near-Sun	The following	Mission can be					
													SHECon	Sun-Heliosphere-Earth Co	LWS	Roelof	Provide	Establish an	Remote sensing	Constellation					Obsolete?
													SHIELD	Solar Heliospheric and Inte	MS05	Liewer	Understan	• Two	• EUV Imaging	• Low					
													SI	Stellar Imager	VM	Stracha	Explore	Days to weeks	Angular						Vision Mission
													SIRA	Solar Imaging Radio Array	MS05	Gopals	• Enhance	• Mission	• Imaging at ~12	• Low cost					
													SO	Solar Orbiter	OTHE	Hassler	Fundamen	ESA mission:	In situ solar	Solar electric		MOO			ESA Mission Report Fall
													Solar-B	Solar-B	STP	LaBonte	To follow	Japan (ISAS)	Three	N/A		MOO			In Development
													SP	Solar Probe	LWS	LaBonte	Determine	Mission Design	In situ	Thermal		Flagship			JPL/APL Reports; STDT
													SPI	Solar Polar Imager	VM	Liewer	What is the	SC in highly	Surface &	Solar Sail					VM : Report 2004
													SPP	Space Physics Package	MS05	Kletzing	• Fields,	Instrument	• Support	Radiation-					
													STEREO	Solar-TERrestrial Relation	STP	Bogdan	•	• Two	• Determine the	N/A		Strategic			In Development
													SWBs	Solar Weather Buoys	MS05	Roelof									
													TE	Titan Explorer (2)	VM	TBD									VM (2) Reports
													THEMIS	Time History of Events an	EXP	Liemoh				N/A		EXP			In Development
													TLM	Telemachus	STP	Roelof	•	• Example	• Continuous	• High		Strategic			Report 10/03
		10			10	10		10		10			TWINS	Two Wide-angle Imaging N	EXP	Fennell				N/A		MOO			Launch 2005
		10	10					10				10	VAP	Venus Aeronomy Probe	OTHE	Moore	•	• Example	• In-situ	None enabling.		Strategic?			variants studies at JPL
20	40	40	20	0	40	10	10	30	30	40	20	10													

Notes:

0. Cells can be expanded by clicking on them once or twice.
1. Rows can be sorted or subsets selected using the pulldown menus for each column.
2. POC is the person responsible for the Quad, and for weighting the RFA contributions (scale of 0-10).
3. Roman numerals and letters refer to our Research Focus Areas, according to the definitions given below.
4. Risk and Class are to be supplied as a result of our mission studies. Class is in units of MIDEXs.

5. Status notes give the current status of mission studies.
6. Link to Quad Charts and other mission data: http://sec.gsfc.nasa.gov/rdmteam/ or click link to right -> Link to

Objectives and RFAs:

Opening the frontier to space environment prediction

F Understand the fundamental physical processes of the space environment – from the Sun to Earth, to other planets, and beyond to the interstellar medium.
F.1 Understand magnetic reconnection to reveal the causes of solar flares, coronal mass ejections, and geospace storms.
F.2 Understand the plasma processes that accelerate and transport particles
F.3 Delineate how planetary upper atmospheres are affected by energy inputs.
F.4 Determine how solar and planetary magnetic dynamos are created and why they vary.
F.5 Understand the interaction of different space plasma regimes.

Understanding our home in space

H Understand how society, technological systems, and the habitability of planets are affected by the variable space environment.
H.1 Develop the capability to predict solar activity and the evolution of solar disturbances as they propagate through the heliosphere and affect space climate/environment.
H.2 Determine changes in the Earth's magnetosphere, ionosphere, and upper atmosphere to enable specification, prediction, and mitigation of their effects
H.3 Understand the role of the Sun as an energy source to the Earth's atmosphere, and in particular the role of solar variability in driving change.
H.4 Apply our understanding of space plasma physics to the role of stellar activity and magnetic shielding in planetary system evolution and habitability

Safeguarding our outbound journey

J Maximize the productivity and safety of human and robotic explorers by developing predictive capability for the extreme and dynamic conditions in space.
J.1 Characterize the energetic particle, plasma and neutral particle environments, and electromagnetic radiation that will be encountered by human and robotic explorers.
J.2 Develop the capability to predict the origin and onset of solar activity and disturbances (CMEs/SPEs/GLEs) associated with potentially hazardous space weather events.
J.3 Develop the capability to predict the energetic particle radiation and other hazards associated with the propagation of solar disturbances. (Shocks/CMEs/SEPs/ CIRs) to enable safe travel for human and robotic explorers.
J.4 Understand and characterize the space weather effects on and within planetary environments to minimize risk in exploration activities.