

NOVEMBER 2019
NASA SOUNDING ROCKETS
FISCAL YEAR 2020

NASA MISSIONS

<u>NO.</u>	<u>MISSION</u>	<u>DISCIPLINE</u>	<u>EXPERIMENTER</u>	<u>ORGANIZATION</u>	<u>PROJECT</u>	<u>RANGE</u>	<u>DATE</u>	<u>TIME</u>	NSROC <u>RESPONSIBILITY</u>	NASA MISSION <u>OVERSIGHT MONITOR</u>
1.	52.006 UE	GEOSPACE SCIENCES	CONDE	UNIV OF ALASKA	C-REX 2	NOR	11/25/19	NIGHT	M. KING	S. BISSETT
2.	36.349 UE	GEOSPACE SCIENCES	LARSEN	CLEMSON UNIVERSITY	CHI	SVAL	11/25/19	NIGHT	D. BOWDEN	G. MARSH
3.	46.029 IE	GEOSPACE SCIENCES	MOEN	UNIVERSITY OF OSLO	ICI-5	SVAL	11/25/19	NIGHT	D. BOWDEN	S. BISSETT
4.	36.322 GS	SOLAR & HELIOSPHERIC	DAW	NASA/GSFC	EUNIS	WS	01/06/20	DAY	M. DANOWSKI	G. MARSH
5.	36.356 UE	GEOSPACE SCIENCES	BAILEY	VA TECH	PolarNOx	FB	01/26/20	NIGHT	J. SCOTT	G. MARSH
6.	36.281 UG	UV/OPTICAL ASTROPHYSICS	ZEMCOV	MIT	CIBER-2	WS	02/24/20	NIGHT	E. ROPER	C. MILLINER
7.	36.355 UH	HIGH ENERGY ASTROPHYSICS	FIGUEROA	NORTHWESTERN	Micro-X	WS	03/15/20	NIGHT	M. KING	C. BRODELL
8.	36.324 US	SOLAR & HELIOSPHERIC	HARRIS	UNIV OF ARIZONA	SHIELDS	WS	04/20/20	NIGHT	T. GASS	G. MARSH
9.	36.353 US	GEOSPACE SCIENCES	WOODS	UNIV OF COLORADO	EVE	WS	04/28/20	DAY	T. PAUL	L. WEST
10.	36.319 NS	SOLAR & HELIOSPHERIC	WINEBARGER	NASA/MSFC	MaGIXS	WS	05/12/20	DAY	R. WEAVER	L. WEST
11.	36.307 DS	SOLAR & HELIOSPHERIC	TUN	NAVAL RESEARCH LAB	HERSCHEL	WS	06/09/20	DAY	M. KING	S. HESH
12.	41.130 UO	STUDENT OUTREACH	KOEHLER	COLORADO SPACE GRANT	ROCKON	WI	06/25/20	DAY	T. PAUL	G. MARSH
13.	46.028 UE	GEOSPACE SCIENCES	BONNELL	UNIV. OF BERKELEY	VIPER	WI	07/01/20	NIGHT	M. KING	C. HESH
14.	36.347 UH	HIGH ENERGY ASTROPHYSICS	MCCAMMON	UNIV. OF WISCONSIN	XQC	AUS	07/09/20	NIGHT	D. BOWDEN	J. HICKMAN
15.	36.339 UG	UV/OPTICAL ASTROPHYSICS	FRANCE	UNIV OF COLORADO	SISTINE	AUS	07/15/20	NIGHT	J. SCOTT	S. BISSETT
16.	36.350 UG	UV/OPTICAL ASTROPHYSICS	GREEN	UNIV OF COLORADO	DEUCE	AUS	07/21/20	NIGHT	E. ROPER	L. WEST
17.	46.030 UO	STUDENT OUTREACH	KOEHLER	COLORADO SPACE GRANT	ROCKSAT-X	WI	08/01/20	DAY	D. BOWDEN	L. WEST
18.	36.357 GE	GEOSPACE SCIENCES	PFAFF	GSFC	DYNAMO-2	WI	08/17/20	DAY	T. GASS	C. MILLINER
19.	36.358 GE	GEOSPACE SCIENCES	PFAFF	GSFC	DYNAMO-2	WI	08/17/20	DAY	T. GASS	C. MILLINER

REIMBURSABLE MISSIONS

<u>NO.</u>	<u>MISSION</u>	<u>DISCIPLINE</u>	<u>EXPERIMENTER</u>	<u>ORGANIZATION</u>	<u>PROJECT</u>	<u>RANGE</u>	<u>DATE</u>	<u>TIME</u>	NASA/NSROC <u>RESPONSIBILITY</u>	NASA MISSION <u>OVERSIGHT MONITOR</u>
1.	12.088 NR	TEST & SUPPORT	GILBERT	NESC	ABFT	WS	06/30/20	DAY	E. ROPER	C. BRODELL

NOVEMBER 2019
NASA SOUNDING ROCKETS
FISCAL YEAR 2021

NASA MISSIONS

<u>NO.</u>	<u>MISSION</u>	<u>DISCIPLINE</u>	<u>EXPERIMENTER</u>	<u>ORGANIZATION</u>	<u>PROJECT</u>	<u>RANGE</u>	<u>DATE</u>	<u>TIME</u>	NSROC	NASA MISSION
									<u>RESPONSIBILITY</u>	<u>OVERSIGHT MONITOR</u>
1.	52.007 UE	GEOSPACE SCIENCES	DELAMERE	UNIV OF ALASKA FAIRBANKS	KINET-X	WI	11/03/20	NIGHT	J. SCOTT	C. BRODELL
2.	36.363 UH	HIGH ENERGY ASTROPHYSICS	GALEAZZI	UNIV OF MIAMI	DXL-3	WI	12/01/20	NIGHT	T. PAUL	C. BRODELL
3.	36.351 GE	GEOSPACE SCIENCES	JONES	GSFC	LAMP	FB	12/07/20	NIGHT	D. BOWDEN	G. MARSH
4.	36.337 DS	SOLAR & HELIOSPHERIC	KORENDYKE	NRL	VERIS-2	WS	03/01/21	DAY	M. KING	C. BRODELL
5.	36.335 CE	GEOSPACE SCIENCES	CLEMMONS	AEROSPACE CORP.	TOMEX-Plus	WI	03/22/21	NIGHT	T. GASS	S. BISSETT
6.	41.123 CE	GEOSPACE SCIENCES	CLEMMONS	AEROSPACE CORP.	TOMEX-Plus	WI	03/22/21	NIGHT	T. GASS	S. BISSETT
7.	41.124 CE	GEOSPACE SCIENCES	CLEMMONS	AEROSPACE CORP.	TOMEX-Plus	WI	03/22/21	NIGHT	T. GASS	S. BISSETT
8.	36.360 UE	GEOSPACE SCIENCES	KAEPPLER	CLEMSON UNIVERSITY	INCAA	FB	04/01/21	NIGHT	E. ROPER	G. MARSH
9.	41.129 UE	GEOSPACE SCIENCES	KAEPPLER	CLEMSON UNIVERSITY	INCAA	FB	04/01/21	NIGHT	E. ROPER	G. MARSH
10.	52.009 AE	GEOSPACE SCIENCES	REEVES	LOS ALAMOS NATIONAL LAB	Beam-PIE	FB	04/02/21	NIGHT	J. SCOTT	G. MARSH
11.	46.025 US	SOLAR & HELIOSPHERIC	BARJATYA	EMBRY RIDDLE	SEED	KWAJ	06/26/21	NIGHT	M. KING	N. EMPSON
12.	46.026 US	SOLAR & HELIOSPHERIC	BARJATYA	EMBRY RIDDLE	SEED	KWAJ	06/26/21	NIGHT	M. KING	N. EMPSON

REIMBURSABLE MISSIONS

<u>NO.</u>	<u>MISSION</u>	<u>DISCIPLINE</u>	<u>EXPERIMENTER</u>	<u>ORGANIZATION</u>	<u>PROJECT</u>	<u>RANGE</u>	<u>DATE</u>	<u>TIME</u>	NASA/NSROC	NASA MISSION
									<u>RESPONSIBILITY</u>	<u>OVERSIGHT MONITOR</u>
1.	36.354 DR	DEFENSE REIMBURSABLE	KRUEGER	MDA	SOFE-1	WI	11/17/20		T. PAUL	G. MARSH
2.	46.027 DR	DEFENSE REIMBURSABLE	LEYVA	USAF	BOLT-2	WI	06/01/21		T. GASS	L. WEST

NOVEMBER 2019
NASA SOUNDING ROCKETS
FISCAL YEAR 2022

NASA MISSIONS

<u>NO.</u>	<u>MISSION</u>	<u>DISCIPLINE</u>	<u>EXPERIMENTER</u>	<u>ORGANIZATION</u>	<u>PROJECT</u>	<u>RANGE</u>	<u>DATE</u>	<u>TIME</u>	NSROC	NASA MISSION
									<u>RESPONSIBILITY</u>	<u>OVERSIGHT MONITOR</u>
1.	36.298 UH	HIGH ENERGY ASTROPHYSICS	MCENTAFFER	PENN STATE UNIV	OGRE	WI	10/05/21	NIGHT	T. GASS	C. HESH
2.	21.146 UE	GEOSPACE SCIENCES	BOUNDS	UNIV OF IOWA	ACES-2	NOR	11/20/21	NIGHT	J. SCOTT	L. WEST
3.	36.359 UE	GEOSPACE SCIENCES	BOUNDS	UNIV OF IOWA	ACES-2	NOR	11/20/21	NIGHT	J. SCOTT	L. WEST
4.	41.127 UE	GEOSPACE SCIENCES	LEMACHER	CLEMSON UNIV	VortEX	NOR	01/25/22	NIGHT	E. ROPER	N. EMPSON
5.	41.128 UE	GEOSPACE SCIENCES	LEMACHER	CLEMSON UNIV	VortEX	NOR	01/25/22	NIGHT	E. ROPER	N. EMPSON
6.	46.023 UE	GEOSPACE SCIENCES	LEMACHER	CLEMSON UNIV	VortEX	NOR	01/25/22	NIGHT	E. ROPER	N. EMPSON
7.	46.024 UE	GEOSPACE SCIENCES	LEMACHER	CLEMSON UNIV	VortEX	NOR	01/25/22	NIGHT	E. ROPER	N. EMPSON
8.	35.041 GE	GEOSPACE SCIENCES	COLLINSON	GSFC	Endurance	SVAL	04/01/22	NIGHT	M. KING	S. BISSETT

REIMBURSABLE MISSIONS

<u>NO.</u>	<u>MISSION</u>	<u>DISCIPLINE</u>	<u>EXPERIMENTER</u>	<u>ORGANIZATION</u>	<u>PROJECT</u>	<u>RANGE</u>	<u>DATE</u>	<u>TIME</u>	NASA/NSROC	NASA MISSION
									<u>RESPONSIBILITY</u>	<u>OVERSIGHT MONITOR</u>

NASA SOUNDING ROCKETS
MISSIONS LAUNCHED
FISCAL YEAR 2020

NASA MISSIONS

<u>NO.</u>	<u>MISSION</u>	<u>DISCIPLINE</u>	<u>EXPERIMENTER</u>	<u>ORGANIZATION</u>	<u>PROJECT</u>	<u>RANGE</u>	<u>DATE</u>	<u>TIME (Z)</u>	<u>NSROC RESPONSIBILITY</u>	<u>NASA MISSION OVERSIGHT MONITOR</u>
1.	36.343 G	LAB ASTRO	NUTH	NASA GSFC	DUST	WS	10/07/19	15:00:00	E. ROPER	N. EMPSON
2.	46.020 GT	TEST & SUPPORT	HESH	NASA WFF	SUBTEC 8	WI	10/24/19	0:00:00	J. SCOTT	C. HESH
3.	36.352 UG	UV/OPTICAL ASTROPHYSICS	MCCANDLISS	JOHNS HOPKINS	FORTIS	WS	10/27/19	04:30:00	T. PAUL	L. WEST

FLIGHT RESULTS			
VEHICLE	PL SUPPORT SYSTEMS	SCIENTIFIC INSTRUMENT(S)	OVERALL MISSION SUCCESS
S	S	S	S
S	S	S	S
S	S	S	S

REIMBURSABLE MISSIONS

<u>NO.</u>	<u>MISSION</u>	<u>DISCIPLINE</u>	<u>EXPERIMENTER</u>	<u>ORGANIZATION</u>	<u>PROJECT</u>	<u>RANGE</u>	<u>DATE</u>	<u>TIME (Z)</u>	<u>NSROC RESPONSIBILITY</u>	<u>NASA MISSION OVERSIGHT MONITOR</u>
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FLIGHT RESULTS			
VEHICLE	PL SUPPORT SYSTEMS	SCIENTIFIC INSTRUMENT(S)	OVERALL MISSION SUCCESS

* MISSION IS SUCCESSFUL UNLESS THERE IS AN "F" IN ANY FLIGHT RESULT COLUMN

* N/A DENOTES NOT APPLICABLE IN MISSION SUCCESS/FAILURE ASSESSMENT

NASA SOUNDING ROCKETS
MISSIONS LAUNCHED
FISCAL YEAR 2019

NASA MISSIONS

NO.	MISSION	DISCIPLINE	EXPERIMENTER	ORGANIZATION	PROJECT	RANGE	DATE	TIME (Z)	NSROC RESPONSIBILITY	NASA MISSION OVERSIGHT MONITOR	FLIGHT RESULTS			
											VEHICLE	PL SUPPORT SYSTEMS	SCIENTIFIC INSTRUMENT(S)	OVERALL MISSION SUCCESS
1.	35.039 GE	GEOSPACE SCIENCE	ROWLAND	NASA GSFC	VISIONS 2	SVAL	12/07/18	11:06:00	T. GASS	J. HICKMAN	S	S	S	S
2.	35.040 GE	GEOSPACE SCIENCE	ROWLAND	NASA GSFC	VISIONS 2	SVAL	12/07/18	11:08:00	T. GASS	J. HICKMAN	S	S	S	S
3.	52.003 UE	GEOSPACE SCIENCE	KLETZING	UNIVERSITY OF IOWA	TRICE-2	NOR	12/08/18	08:26:00	J. SCOTT	L. WEST	S	S	S	S
4.	52.004 UE	GEOSPACE SCIENCE	KLETZING	UNIVERSITY OF IOWA	TRICE-2	NOR	12/08/18	08:28:00	J. SCOTT	L. WEST	S	S	S	S
5.	36.331 UG	UV/OPTICAL ASTROPHYSICS	GREEN	UNIVERSITY OF COLORADO	DEUCE	WS	12/18/18	07:46:00	E. ROPER	N. EMPSON	S	S	S	S
6.	52.005 UE	GEOSPACE SCIENCES	LABELLE	DARTMOUTH COLLEGE	CAPER-2	NOR	01/04/19	09:27:00	D. BOWDEN	N. EMPSON	S	S	S	S
7.	46.018 UO	STUDENT OUTREACH	KOEHLER	UNIV. OF COLORADO	RockSat-XN	NOR	01/13/19	09:13:00	M. KING	G. MARSH	S	S	S	S
8.	51.001 UE	GEOSPACE SCIENCES	LARSEN	CLEMSON UNIVERSITY	AZURE	NOR	04/05/19	22:14:00	D. BOWDEN	B. HALL	S	S	S	S
9.	51.002 UE	GEOSPACE SCIENCES	LARSEN	CLEMSON UNIVERSITY	AZURE	NOR	04/05/19	22:16:00	D. BOWDEN	B. HALL	S	S	S	S
10.	36.332 NS	SOLAR & HELIOSPHERIC	MCKENZIE	NASA MSFC	CLASP 2	WS	04/11/19	16:51:00	R. WEAVER	N. EMPSON	S	S	S	S
11.	36.344 UE	GEOSPACE SCIENCES	HYSELL	CORNELL UNIVERSITY	TooWINDY	KWAJ	06/19/19	11:28:00	J. SCOTT	N. EMPSON	S	S	S	S
12.	36.345 UE	GEOSPACE SCIENCES	HYSELL	CORNELL UNIVERSITY	TooWINDY	KWAJ	06/19/19	11:33:00	J. SCOTT	N. EMPSON	S	S	S	S
13.	41.126 UO	STUDENT OUTREACH	KOEHLER	COLORADO SPACE GRANT	RockOn	WI	06/20/19	09:30:00	D. BOWDEN	G. ROSANOVA	S	S	S	S
14.	36.346 UG	UV/OPTICAL ASTROPHYSICS	FRANCE	UNIV. OF COLORADO	SISTINE	WS	08/11/19	06:07:00	M. DANOWSKI	G. MARSH	S	S	-	TBD
15.	46.022 UO	STUDENT OUTREACH	KOEHLER	COLORADO SPACE GRANT	RockSat-X	WI	08/12/19	09:44:30	T. PAUL	C. MIILINER	S	S	S	S
16.	36.320 US	SOLAR & HELIOSPHERIC	KANKELBORG	MONTANA STATE UNIVERSITY	ESIS	WS	09/30/19	18:04:00	E. ROPER	C. MIILINER	S	S	S	S

REIMBURSABLE MISSIONS

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											VEHICLE	PL SUPPORT SYSTEMS	SCIENTIFIC INSTRUMENT(S)	OVERALL MISSION SUCCESS
1.	36.340 DR	DOD	ABBETT	TOYON RESEARCH CORP.		WI	09/17/19	9:36:00	T. GASS	C. HESH	S	S	S	S

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NASA SOUNDING ROCKETS
MISSIONS LAUNCHED
FISCAL YEAR 2018

NASA MISSIONS

NO.	MISSION	DISCIPLINE	EXPERIMENTER	ORGANIZATION	PROJECT	RANGE	DATE	TIME (Z)	NSROC RESPONSIBILITY	NASA MISSION OVERSIGHT MONITOR	FLIGHT RESULTS			
											VEHICLE	PL SUPPORT SYSTEMS	SCIENTIFIC INSTRUMENT(S)	OVERALL MISSION SUCCESS
1.	36.311 UG	UV/OPTICAL ASTROPHYSICS	GREEN	UNIV. OF COLORADO	DEUCE	WS	10/30/17	10:00:00	E. ROPER	C. HESH	S	F	-	F
2.	36.329 UH	HIGH ENERGY ASTROPHYSICS	GALEAZZI	UNIVERSITY OF MIAMI	DXL	FB	01/19/18	12:17:00	B. MCKINLAY	G. MARSH	S	S	S	F*
3.	41.119 CE	GEOSPACE SCIENCE	AZEEM	ASTRA	SUPER SOAKER	FB	01/26/18	14:48:00	J. SCOTT	L. WEST	S	S	S	S
4.	41.120 CE	GEOSPACE SCIENCE	AZEEM	ASTRA	SUPER SOAKER	FB	01/26/18	14:11:15	J. SCOTT	L. WEST	S	S	S	S
5.	41.122 CE	GEOSPACE SCIENCE	AZEEM	ASTRA	SUPER SOAKER	FB	01/26/18	14:49:30	J. SCOTT	L. WEST	S	S	S	S
6.	46.019 UO	STUDENT OUTREACH	VIERIA	NASA GSFC WFF	USIP	WI	03/25/18	10:51:30	M.KING	G. MARSH	S	S	S	S
7.	36.330 UH	HIGH ENERGY ASTROPHYSICS	MCENTAFFER	PENN STATE UNIV	WRX-R	KWAJ	04/04/18	10:40:00	T. GASS	N.EMPSON	S	S	S	S
8.	36.333 UG	UV/OPTICAL ASTROPHYSICS	FRANCE	UNIVERSITY OF COLORADO	CHESS	KWAJ	04/16/18	10:16:47	M. DANOWSKI	N.EMPSON	S	S	S	S
9.	36.342 NS	SOLAR & HELIOSPHERIC	WINEBARGER	NASA/MSFC	Hi-C	WS	05/29/18	18:54:00	R. WEAVER	C. HESH	S	S	S	S
10.	36.336 UE	GEOSPACE SCIENCES	WOODS	UNIVERSITY OF COLORADO	EVE	WS	06/18/18	19:00:00	M. DANOWSKI	L. WEST	S	S	S	S
11.	41.125 UO	STUDENT OUTREACH	KOEHLER	UNIVERSITY OF COLORADO	ROCKON	WI	06/21/18	09:30:00	E. ROPER	L. WEST	S	S	S	S
12.	36.245 UH	HIGH ENERGY ASTROPHYSICS	FIGUEROA	NORTHWESTERN	MICRO-X	WS	07/23/18	06:00:00	M.KING	C. BRODELL	S	F	S	F
13.	46.021 UO	STUDENT OUTREACH	KOEHLER	UNIVERSITY OF COLORADO	ROCKSAT-X	WI	08/14/18	10:13:00	E. ROPER	G. MARSH	S	S	S	S
14.	36.325 US	SOLAR & HELIOSPHERIC	GLESENER	UNIVERSITY OF MINNESOTA	FOXSI	WS	09/07/18	17:21:00	M.KING	G. MARSH	S	S	S	S

*External contamination precluded collection of science data. All payload subsystems and scientific instruments operated properly.

REIMBURSABLE MISSIONS

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											VEHICLE	PL SUPPORT SYSTEMS	SCIENTIFIC INSTRUMENT(S)	OVERALL MISSION SUCCESS
1.	36.326 NR	TEST AND SUPPORT	CLARK	NASA - JPL	ASPIRE	WI	10/03/17	10:45:00	J. SCOTT	B. HALL	S	S	S	S
2.	12.085-SZ DR	DOD	CHRISLEY	SMDC	ZOMBIE	WS	11/16/17	15:00:00	J. SANFILIPPO	C. BRODELL	S	S	S	S
3.	36.327 NR	TEST AND SUPPORT	CLARK	NASA - JPL	ASPIRE	WI	03/31/18	16:19:00	J. SCOTT	B. HALL	S	S	S	S
4.	12.081-BZ DR	DOD	CREEKMORE	SMDC	ZOMBIE	WS	06/07/18	15:17:00	B. HAGNER	C. BRODELL	S	S	S	S
5.	36.328 NR	TEST AND SUPPORT	CLARK	NASA - JPL	ASPIRE	WI	09/07/18	1:30:00	J. SCOTT	B. HALL	S	S	S	S

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NASA SOUNDING ROCKETS
MISSIONS LAUNCHED
FISCAL YEAR 2017

NASA MISSIONS

NO.	MISSION	DISCIPLINE	EXPERIMENTER	ORGANIZATION	PROJECT	RANGE	DATE	TIME (Z)	NSROC RESPONSIBILITY	NASA MISSION OVERSIGHT MONITOR	FLIGHT RESULTS			
											VEHICLE	PL SUPPORT SYSTEMS	SCIENTIFIC INSTRUMENT(S)	OVERALL MISSION SUCCESS
1.	36.302 UE	GEOSPACE SCIENCE	BAILEY	VIRGINIA TECH	POLARNOX	FB	1/27/2017	13:45:00	B. MCKINLAY	S. HESH	S	S	S	S
2.	36.303 UE	GEOSPACE SCIENCE	LYNCH	DARTMOUTH COLLEGE	ISINGLASS	FB	02/22/17	10:14:00	J. SCOTT	J. HICKMAN	S	F	S	S
3.	36.301 GE	GEOSPACE SCIENCE	PFAFF	GSFC	JETS	FB	03/01/17	05:41:00	T. GASS	L WEST	S	S	S	S
4.	36.306 GE	GEOSPACE SCIENCE	PFAFF	GSFC	JETS	FB	03/01/17	05:42:30	T. GASS	L WEST	S	S	S	S
5.	36.304 UE	GEOSPACE SCIENCE	LYNCH	DARTMOUTH COLLEGE	ISINGLASS	FB	03/01/17	07:50:00	J. SCOTT	J. HICKMAN	S	S	S	S
6.	36.309 US	SOLAR & HELIOSPHERIC	HASSLER	SWRI	RAISE	WS	05/05/17	18:24:58	B. MCKINLAY	G. ROSANOVA	S	S	S	S
7.	36.317 GP	SPECIAL PROJECTS	HESH	NASA-GSFC-WFF	SUBTEC 7 KUKUN - RockSAT-C	WI	05/16/17	09:45:00	J. SCOTT	C. HESH	S	S	S	S
8.	41.121 UO	STUDENT OUTREACH	KOEHLER	UNIV. OF COLORADO	RockSAT-C	WI	06/22/17	09:30:00	B. HAGNER	C. MILLINER	S	S	S	S
9.	36.323 UG	UV/OPTICAL ASTROPHYSICS	FRANCE	UNIV. OF COLORADO	CHESS	WS	06/27/17	05:10:00	E. ROPER	L. WEST	S	S	S	S
10.	46.015 GT	TEST & SUPPORT	HALL	NASA-WFF		WI	06/28/17	08:25:00	D. BOWDEN	B. HALL	S	S	S	S
11.	46.017 UO	STUDENT OUTREACH	KOEHLER	UNIV. OF COLORADO	RockSat-X	WI	08/13/17	09:30:00	M. KING	C. MILLINER	S	S	S	S
12.	36.321 UE	GEOSPACE SCIENCES	HYSELL	CORNELL UNIVERSITY	WINDY	KWAJ	09/09/17	11:34:00	T. GASS	J. HICKMAN	S	S	S	S
13.	29.042 UE	GEOSPACE SCIENCES	HYSELL	CORNELL UNIVERSITY	WINDY	KWAJ	09/09/17	11:39:03	T. GASS	J. HICKMAN	F	-	-	F

REIMBURSABLE MISSIONS

NO.	MISSION	DISCIPLINE	EXPERIMENTER	ORGANIZATION	PROJECT	RANGE	DATE	TIME (Z)	NSROC RESPONSIBILITY	NASA MISSION OVERSIGHT MONITOR	FLIGHT RESULTS			
											VEHICLE	PL SUPPORT SYSTEMS	SCIENTIFIC INSTRUMENT(S)	OVERALL MISSION SUCCESS
1.	12.080-PZ DR	DOD	CHRISLEY	SMDC	ZOMBIE	WS	12/15/16	16:15:00	J. SANFILIPPO	C. BRODELL	S	S	S	S
2.	12.086-SZ DR	DOD	CHRISLEY	SMDC	ZOMBIE	WS	06/14/17	15:45:24	J. SANFILIPPO	C. BRODELL	S	S	S	S

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* N/A DENOTES NOT APPLICABLE IN MISSION SUCCESS/FAILURE ASSESSMENT

NASA SOUNDING ROCKETS
MISSIONS LAUNCHED
FISCAL YEAR 2016

NASA MISSIONS

<u>NO.</u>	<u>MISSION</u>	<u>DISCIPLINE</u>	<u>EXPERIMENTER</u>	<u>ORGANIZATION</u>	<u>PROJECT</u>	<u>RANGE</u>	<u>DATE</u>	<u>TIME (Z)</u>	<u>NSROC RESPONSIBILITY</u>	<u>FLIGHT RESULTS</u>		
										<u>VEHICLE</u>	<u>PL SUPPORT SYSTEMS</u>	<u>EXPERIMENT</u>
1.	36.310 GT	TEST & SUPPORT	HESH	NASA-WFF	N/A	WI	10/07/15	23:07:00	N. CRANOR	S	S	S
2.	36.293 UG	UV/OPTICAL ASTROPHYSICS	CHAKRABARTI	U. OF MASS. -LOWELL	PICTURE	WS	11/21/15	04:17:00	D. JENNINGS	S	S	F
3.	49.003 UE	GEOSPACE SCIENCE	LABELLE	DARTMOUTH COLLEGE	CAPER	NOR	11/27/15	07:25:00	N. EMPSON	F	-	F
4.	36.305 UH	HIGH ENERGY ASTROPHYSICS	GALEAZZI	UNIVERSITY OF MIAMI	DXL-2	WS	12/04/15	06:00:00	T. GASS	S	S	S
5.	52.002 UE	GEOSPACE SCIENCE	LESSARD	UNIV. OF NEW HAMPSHIRE	RENU 2	NOR	12/13/15	07:32:00	J. SCOTT	S	S	S
6.	36.312 UG	UV/OPTICAL ASTROPHYSICS	MCCANDLISS	JHU	FORTIS	WS	12/14/15	06:52:00	B. MCKINLAY	S	S	S
7.	36.297 UG	UV/OPTICAL ASTROPHYSICS	FRANCE	UNIVERSITY OF COLORADO	CHESS-2	WS	02/22/16	04:15:00	D. JENNINGS	S	S	S
8.	46.011 GP	SPECIAL PROJECTS	MILLINER	NASA-WFF	MUSIC	WI	03/01/16	14:50:00	J. SCOTT	S	S	S
9.	41.114 NP	SPECIAL PROJECTS	DELEON	NASA-ARC		WI	03/07/16	12:05:00	N.CRANOR	S	S	S
10.	36.318 UE	GEOSPACE SCIENCE	WOODS	UNIVERSITY OF COLORADO	SDO-EVE	WS	06/01/16	19:00:00	B. MCKINLAY	S	S	S
11.	41.116 UO	STUDENT OUTREACH	KOEHLER	UNIVERSITY OF COLORADO	ROCKON - RockSAT-C	WI	06/24/16	10:06:00	N.EMPSON	S	S	S
12.	36.314 NS	SOLAR & HELIOSPHERIC	CIRTAİN	NASA/MSFC	HiC	WS	07/27/16	19:26:00	N. EMPSON	S	S	F
13.	46.014 UO	STUDENT OUTREACH	KOEHLER	UNIVERSITY OF COLORADO	RockSAT-X	WI	08/17/16	11:33:30	B. MCKINLAY	S	S	S

REIMBURSABLE MISSIONS

<u>NO.</u>	<u>MISSION</u>	<u>DISCIPLINE</u>	<u>EXPERIMENTER</u>	<u>ORGANIZATION</u>	<u>PROJECT</u>	<u>RANGE</u>	<u>DATE</u>	<u>TIME (Z)</u>	<u>NSROC RESPONSIBILITY</u>	<u>FLIGHT RESULTS</u>		
										<u>VEHICLE</u>	<u>PL SUPPORT SYSTEMS</u>	<u>EXPERIMENT</u>

* MISSION IS SUCCESSFUL UNLESS THERE IS AN "F" IN ANY FLIGHT RESULT COLUMN

* N/A DENOTES NOT APPLICABLE IN MISSION SUCCESS/FAILURE ASSESSMENT

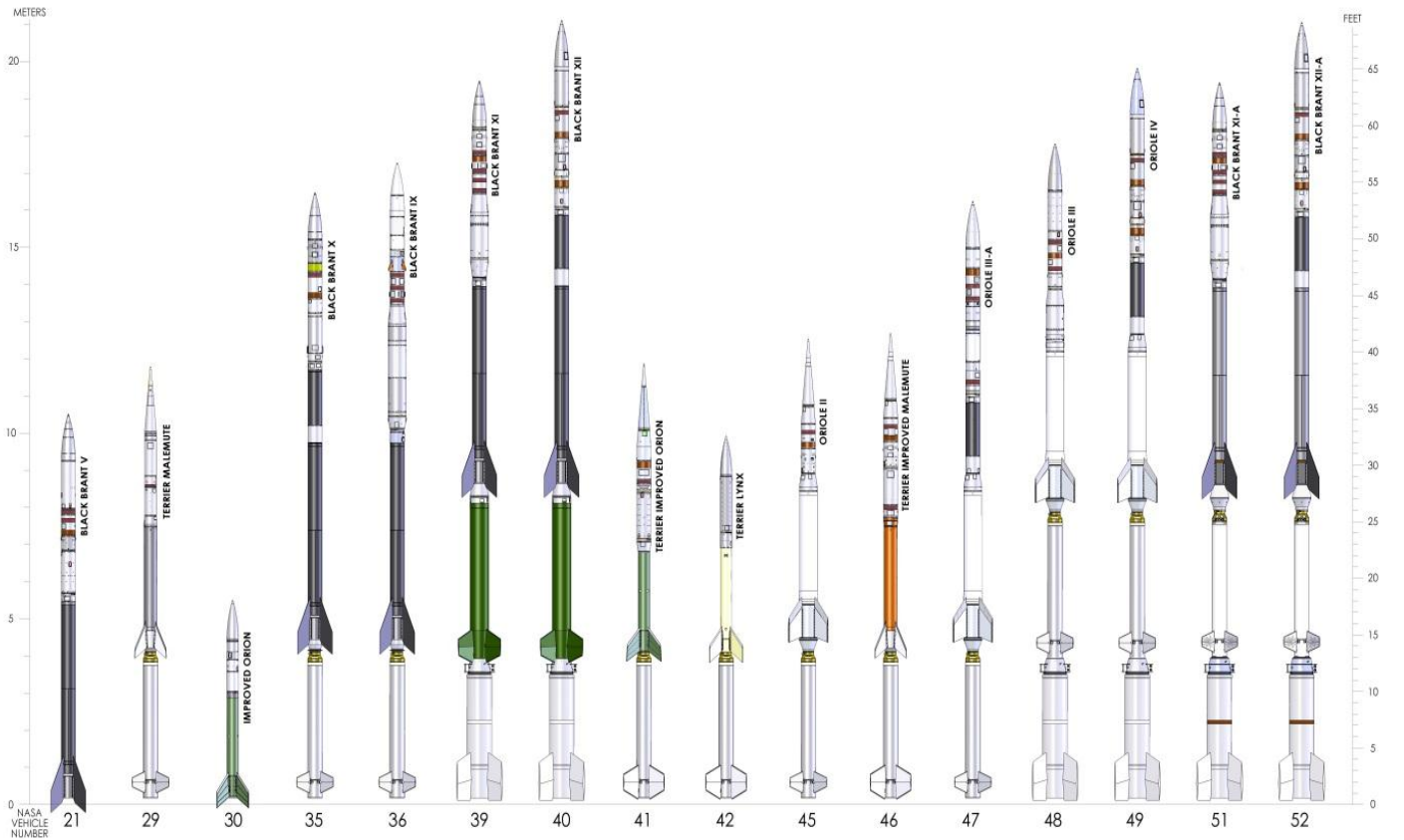
Mission Acronyms 2017 - 2020

ABFT	Aerodynamic Buffet Flight Test
ACCESS #1	Absolute Color Calibration Experiment for Standard Stars
ACES-2	Aurora Current and Electrodynamics Structure
ASPIRE	Advanced Supersonic Parachute Inflation Research and Experiments
AZURE	Auroral Zone Upwelling Rocket Experiment
Beam-PIE	Beam - Plasma Interactions Experiment
CAPER-2	Cusp Alfvén and Plasma Electrodynamics Rocket
CHESS	Colorado High-resolution Echelle Stellar Spectrograph
CHI	Cusp Heating Investigation
CIBER-2	Cosmic Infrared Background Experiment
CLASP-2	Chromospheric LAyer Spectro-Polarimeter 2
C-REX-2	Cusp-Region Experiment 2
DEUCE	Dual-channel Extreme Ultraviolet Continuum Spectrograph
DUST	Determining Unknown yet Significant Traits
DXL	Diffuse X-ray emission from the Local galaxy
ESIS	EUV Snapshot Imaging Spectrograph
EUNIS	Extreme Ultraviolet Normal-Incidence Spectrograph
FORTIS	Far-ultraviolet Off Rowland-circle Telescope for Imaging and Spectroscopy
FOXSI	Focusing Optics X-ray Solar Imager
HERSCHEL	HElium Resonance Scatter in the Corona and HELiosphere
INCAA	Ion-Neutral Coupling During Active Aurora
ISINGLASS	Ionospheric Structuring: In Situ and Ground based Low Altitude StudieS
KINET-X	Kinetic-scale Energy and momentum Transport eXperiment
LAMP	Loss through Auroral Microburst Pulsations
MaGIXS	Marshall Grazing Incidence X-ray Spectrometer
OGRE	Off-Plane Grating Rocket Experiment
POLARNOX	Polar Night Nitric Oxide
XQC	X-ray Quantum Calorimeter
RAISE	Rapid Acquisition Imaging Spectrograph Experiment
SEED	Sporadic E Electrodynamics
SHIELDS	Spatial Heterodyne Interferometric Emission Line Dynamics Spectrometer
SISTINE	Suborbital Imaging Spectrograph for Transition region Irradiance from Nearby Exoplanet host stars
SOFE	Suborbital Flight Experiment
SUBTEC 7	Sub-orbital Technology
TOMEX-Plus	Turbulent Oxygen Mixing Experiment-Plus
TRICE-2	Twin Rockets to Investigate Cusp Electrodynamics
USIP	University Student Instrument Program
VERIS-2	Very high angular Resolution Imaging Spectrograph
VIPER	Vlf trans-Ionospheric Propagation Experiment Rocket
VortEX	Vorticity Experiment
VISIONS 2	VISualizing Ion Outflow via Neutral atom imaging during a Substorm
WINDY	Waves and Instabilities from a Neutral Dynamo
WRX-R	Water Recovery X-ray Rocket

Mission Names (not acronyms)

JETS	Neutral Jets Associated with Auroral Arcs
MICRO-X	X-ray microcalorimeter
SUPER SOAKER	Transport, Chemistry, and Energetics of Water in the Mesosphere and Lower Thermosphere and Implications for Polar Mesospheric Cloud Occurrence (aka Super Soaker)
ENDURANCE	Mission is named after Ernest Shackleton's ship Endurance.

NASA SOUNDING ROCKET LAUNCH VEHICLES



12 – IS A GENERIC NUMBER ASSIGNED TO TEST VEHICLES

LEGEND

LAUNCH SITES

- ANT -Antarctica
- AUS -Woomera, Australia
- BRAZ -Alcantara, Brazil
- CRR -Fort Churchill, Canada
- FB -Poker Flat Research Range
- GRN -Sondre Stromfjord, Greenland
- KWAJ -Kwajalein
- NOR -Andoya, Norway
- PERU -Punta Lobos, Peru
- PR -Puerto Rico, Camp Tortuguero
- SM -San Marco (Italian)
- SP -El Arenosillo, Spain
- SVAL -Svalbard (NOR)
- SW -Kiruna, Sweden
- TAB -Thule Air Base, Greenland
- WI -Wallops Island, Virginia
- WS -White Sands Missile Range, New Mexico
- HI -Kauai, Hawaii

AGENCY

- A - Government Agency Other than N or D
- C - Industrial Corporation
- D - DOD
- G - Goddard
- I - International
- N - NASA Center other than GSFC
- U - College or University

DISCIPLINE

- E - Geospace Sciences
- S - Solar and Heliospheric Sciences
- H - High Energy Astrophysics
- G - UV/Optical Astrophysics
- P - Special Projects
- L - Solar System Exploration
- M - Microgravity Research
- O - Student Outreach
- T - Test and Support
- R - Reimbursable

Example of Mission Number - 36.120 UE

36.
Black Brant IX

120
120th Assigned
Mission

U
College or
University

E
Geospace Sciences

<u>MISSION</u>	<u>EXPERIMENTER</u>	<u>PROJECT</u>	<u>SCIENCE DESCRIPTION</u>
12.081 DR	CREEKMORE	ZOMBIE	The purpose of the Zombie missions is to conduct flight tests of new guided vehicle configurations for use as DOD targets and defense systems testing. The 12.081 mission will be the first test flight for the guided Pathfinder configuration that utilizes a MK70 first stage booster. The MK70 enhances performance and increases range capabilities.
12.085 DR	CHRISLEY	ZOMBIE	The purpose of the Zombie missions is to conduct flight tests of new guided vehicle configurations for use as DOD targets and defense systems testing. The 12.085 and 12.086 missions are the first two guided launches to be used as actual targets. Defense systems will be used to engage the vehicles in flight.
12.086 DR	CHRISLEY	ZOMBIE	The purpose of the Zombie missions is to conduct flight tests of new guided vehicle configurations for use as DOD targets and defense systems testing. The 12.085 and 12.086 missions are the first two guided launches to be used as actual targets. Defense systems will be used to engage the vehicles in flight.
21.144 UE 21.145 UE	PFAFF	DYNAMO-2	Two identical instrumented payloads will be launched to an apogee of 135 km with instruments to measure DC electric fields, plasma density, currents, neutral winds, neutral density, temperature and ions mass distribution. Additionally, data from the ICON satellite, ground based magnetometers, and ionosonde will be incorporated in this mission.
29.042 UE	HYSELL	WINDY	The science goals for the WINDY (Waves and Instabilities from a Neutral Dynamo) equatorial spread F (ESF) missions are to study the stability of the post sunset equatorial F region ionosphere and the factors that predispose it to equatorial spread F, a spectacular phenomenon characterized by broadband plasma turbulence which degrades radio and radar signals at low magnetic latitudes. The goal of the investigation is to lay the foundation for a strategy to forecast this disruptive phenomenon.
35.039 GE	ROWLAND	VISIONS 2	The purpose of the VISualizing Ion Outflow via Neutral atom Sensing-2 (VISIONS-2) missions is to study the nature and extent of low altitude ion outflow (>10 eV) from the cusp. The investigation will determine the spatial and temporal variations of ion outflow; the total energetic ion outflow in the remotely sensed volume; and how regions of enhanced ion outflow compare in detail to the locations of field aligned currents, optical auroral emissions, enhanced electric fields, energetic particle precipitation, wave activity, and regions of enhanced/depressed electron density.
35.040 GE	ROWLAND	VISIONS 2	The purpose of the VISualizing Ion Outflow via Neutral atom Sensing-2 (VISIONS-2) missions is to study the nature and extent of low altitude ion outflow (>10 eV) from the cusp. The investigation will determine the spatial and temporal variations of ion outflow; the total energetic ion outflow in the remotely sensed volume; and how regions of enhanced ion outflow compare in detail to the locations of field aligned currents, optical auroral emissions, enhanced electric fields, energetic particle precipitation, wave activity, and regions of enhanced/depressed electron density.
35.041 GE 35.042 GE	COLLINSON	Endurance	The goal of the Endurance mission is to make the first measurement of the magnitude and structure of the electric field generated by Earth's ionosphere.

36.245 UH	FIGUEROA	MICRO-X	The Micro-X sounding rocket payload will obtain the first imaging X-ray microcalorimeter spectra from an astronomical source. The microcalorimeter array and associated transition edge sensors (TES) will be cooled to a temperature of about a hundredth of a degree above absolute zero by utilizing an Adiabatic Demagnetization Refrigerator (ADR). The first flight of Micro-X will investigate the plasma conditions (such as temperature, electron density and ionization) and the velocity structure of the Bright Eastern Knot of the Puppis A Supernova remnant (SNR). It will also search for the presence of supernova ejecta, measure or place upper limits on turbulent flows, and measure bulk motions of the plasma.
36.262 UG	KAISER	ACCESS #1	The Absolute Color Calibration Experiment for Standard Stars (ACCESS-1), is the first of four flights of a new payload to obtain absolute spectrophotometric calibration of the National Institute of Standards and Technology (NIST) laboratory irradiance standards to a precision of 1% in the 0.35 – 1.7 μ m bandpass at a spectral resolution greater than 500 by directly tracing the observed stellar fluxes to NIST laboratory irradiance standards. Transfer of the NIST detector standards to the target stars will produce an absolute calibration of these standards in physical units, including the historic absolute standard Vega. This improved network of standard stars, extending to 10 th magnitude, will be available to all telescopes as standard sources.
36.281 UG	BOCK	CIBER-2	The primary scientific objective of the <u>C</u> osmic <u>I</u> nfrared <u>B</u> ackground <u>E</u> xpe <u>R</u> iment (CIBER-2) mission is to conduct a deep multi-band search for extragalactic background fluctuations from the first generation of stars. These first stars and their remnants are likely responsible for the reionization of the intergalactic medium, which is observed to be ionized out the most distant quasars at a redshift of 6.
36.298 UH	MCENTAFFER	OGRE	The purpose of the Off-Plane Grating Rocket Experiment (OGRE) mission is to observe Capella in the soft X-ray spectrum and to flight test the instrument concept of the Off-Plane Grating Spectrometer for use on future X-ray missions.
36.301 GE	PFAFF	JETS	The purpose of the JETS investigation is to understand the height-dependent coupling processes that create localized neutral “jets” in the upper atmosphere associated with the aurora, their driving conditions, and their associated heating and neutral structuring.
36.302 UE	BAILEY	POLARNOX	The purpose of Polar Night Nitric Oxide (Polar NOx) experiment is to measure the concentration of nitric oxide in the mesosphere and lower thermosphere in the nighttime polar region. The reason this experiment needs to be conducted in the polar region is twofold. First, the NO is created by the reaction of atomic nitrogen (N) and O ₂ . A major source of atomic nitrogen (N) is auroral energetic electrons impacting Nitrogen (N ₂) and splitting the atom into two. Secondly, the primary destruction mechanism of NO is photo dissociation and thus in the absences of sunlight, the NO loss mechanism disappears. Hence, the experiment needs to be conducted in the polar region at night to measure what is expected to be peak concentrations of NO.
36.303 UE	LYNCH	ISINGLASS	The purpose of the Ionospheric Structuring: In Situ and Ground Based Low Altitude Studies (ISINGLASS) investigation is to study how auroral energy sources impact ionospheric response gradients and the effects of ionspheric structures on M-I coupling.
36.304 UE	LYNCH	ISINGLASS	The purpose of the Ionospheric Structuring: In Situ and Ground Based Low Altitude Studies (ISINGLASS) investigation is to study how auroral energy sources impact ionospheric response gradients and the effects of ionspheric structures on M-I coupling.

36.306	GE	PFAFF	JETS	The purpose of the JETS investigation is to understand the height-dependent coupling processes that create localized neutral “jets” in the upper atmosphere associated with the aurora, their driving conditions, and their associated heating and neutral structuring.
36.307	DS	TUN	HERSCHEL	The scientific objectives of the HERSCHEL II mission are to: 1) Investigate the origin of the slow solar wind; 2) Investigate the variation of helium abundance in the coronal structures (a) departures from primordial composition (b) fractionation region for helium in the solar atmosphere; 3) Facilitate future investigation of Coronal Mass Ejections (CMEs), kinematics, and solar cycle evolution of the electron, proton, and helium corona.
36.309	US	HASSLER	RAISE	The Rapid Acquisition Imaging Spectrograph Experiment (RAISE) Sounding Rocket payload is a high speed scanning-slit imaging spectrograph designed to observe and analyze dynamics and heating of the solar chromosphere and corona. RAISE is a UV/EUV Imaging Spectrographs that use only two reflections to provide high cadence stigmatic imaging over multiple wavelengths and spatial fields simultaneously. This third flight will explore active region loop dynamics, high frequency waves in the corona and mechanisms of small scale energy release.
36.311	UG	GREEN	DEUCE	The goal of the DEUCE (Dual-channel Extreme Ultraviolet Continuum Spectrograph) mission is to measure the amount of the Lyman continuum (LyC) radiation that is being produced by the only two non-white-dwarf stars in our galaxy known to have a sufficiently low enough neutral hydrogen column density to measure their ionizing radiation directly. The results of this mission will help to answer one of the major questions of modern astrophysics concerning how and when galaxies first formed and how did their formation “feedback” into their circumgalactic environments to modify early galaxy formation during the Epoch of Re-ionization at $Z=6-11$.
36.317	GP	HESH	SUBTEC 7	The primary objectives of the SubTec7 flight are to demonstrate the NSROC Forward OGIVE Recovery System (N-FORSe) with a representative vehicle and payload prior to the need date for science missions, and to perform water recovery on a representative BBIX telescope payload. The secondary objectives of this mission are to provide NASA and NSROC an opportunity to test new technology experiments.
36.319	NS	WINEBARGER	MaGIXS	The purpose of the Marshall Grazing Incidence X-ray Spectrometer (MaGIXS) mission is to determine the frequency of heating in active region cores of the Sun by observing different solar structures to establish: the relative amount of high-temperature plasma; the elemental abundance; the temporal variability at high temperatures; and the likelihood of Maxwellian or non-Maxwellian distributions.
36.320	US	KANKELBORG	ESIS	The purpose of the ESIS/MOSES mission is to make direct observations of the Sun surface to view explosive events, reconnection, and waves in the solar transition region. This will be achieved by using two instruments that are designed to map Doppler shifts and line widths over a wide field view and at rapid cadence.
36.321	UE	HYSELL	WINDY	The science goals for the WINDY (Waves and Instabilities from a Neutral Dynamo) equatorial spread F (ESF) missions are to study the stability of the post sunset equatorial F region ionosphere and the factors that predispose it to equatorial spread F, a spectacular phenomenon characterized by broadband plasma turbulence which degrades radio and radar signals at low magnetic latitudes. The goal of the investigation is to lay the foundation for a strategy to forecast this disruptive phenomenon.

36.322	GS	DAW	EUNIS	The purpose of the EUNIS (Extreme Ultraviolet Normal-Incidence Spectrograph) mission is to: 1) probe the structure and dynamics of the solar corona with high cadence enabled by unprecedented sensitivity (100 times the throughput of the highly successful SERTS payload that preceded EUNIS); 2) study diagnostics of wave heating and reconnection in the solar wind acceleration region and inner corona; and 3) provide absolute intensity calibration of orbital instruments such as Hinode/EIS, SOHO/CDS, SDO/AIA.
36.323	UG	FRANCE	CHESS	The Colorado High-resolution Echelle Stellar Spectrograph (CHESS-3) mission will be the third flight of a payload designed to enable new scientific studies of the local interstellar medium. The CHESS instrument allows for observations of the local interstellar medium by observing nearby stars that are too bright for the Hubble Space Telescope or the Far Ultraviolet Spectrograph Explorer (FUSE) satellite, thus providing detailed composition and temperature maps at the diffuse/transitional interstellar medium boundary for the first time.
36.324	US	HARRIS	SHIELDS	The purpose of the Spatial Heterodyne Interferometric Emission Line Diagnostic Spectrometer (SHIELDS) mission is to study the physics associated with the Heliopause, which is the point where the Local interstellar Cloud (LIC) and solar wind plasmas meet. It will accomplish this by taking measurements of Hydrogen Lyman-alpha (H Ly- α) light reflected by interplanetary hydrogen (IPH).
36.325	US	GLESENER	FOXSI	The purpose of the Focusing Optics X-ray Solar Imager (FOXSI) mission is to measure High-energy X-rays and photon energies from the “quiet” part of the Sun.
36.326	NR	CLARK	ASPIRE	The purpose of the ASPIRE series of missions (36.326, 27, & 28) is to demonstrate the high velocity deployment of parachute systems towards the ultimate goal of developing a system that can be utilized to land payloads onto the surface of Mars.
36.327	NR	CLARK	ASPIRE	The purpose of the ASPIRE series of missions (36.326, 27, & 28) is to demonstrate the high velocity deployment of parachute systems towards the ultimate goal of developing a system that can be utilized to land payloads onto the surface of Mars.
36.328	NR	CLARK	ASPIRE	The purpose of the ASPIRE series of missions (36.326, 27, & 28) is to demonstrate the high velocity deployment of parachute systems towards the ultimate goal of developing a system that can be utilized to land payloads onto the surface of Mars.
36.329	UH	GALEAZZI	DXL	The purpose of the Diffuse X-Rays from the Local Galaxy (DXL-3) mission is to study the physics associated with the Solar Wind Charge Exchange (SWCX) and the Local Hot Bubble (LHB). The investigation will obtain geometric measurements of the SWCX and differentiate the foreground SWCX emission from the background LHB emissions. It will also determine the compound cross section with helium and hydrogen.
36.330	UH	MCENTAFFER	WRX-R	The Water Recovery X-ray - Rocket (WRX-R) is a X-ray spectroscopy payload that is capable of providing moderate spectral resolution, $R(\lambda/\Delta\lambda) \approx 30$ and will be used to study the Vela Supernova Remnant on a flight from Kwajalein, Marshall Islands. The mission will attempt to measure the key lines that indicate the temperature and ionization state of this plasma. Characterization and comparison of the soft X-ray emission will lead to a more complete understanding of the evolution of supernova remnants and their interaction with the surrounding interstellar medium as well as shedding light on matter and energy feedback in the galaxy in general.

36.331 UG	GREEN	DEUCE	The goal of the DEUCE (Dual-channel Extreme Ultraviolet Continuum Spectrograph) mission is to measure the amount of the Lyman continuum (LyC) radiation that is being produced by the only two non-white-dwarf stars in our galaxy known to have a sufficiently low enough neutral hydrogen column density to measure their ionizing radiation directly. The results of this mission will help to answer one of the major questions of modern astrophysics concerning how and when galaxies first formed and how did their formation “feedback” into their circumgalactic environments to modify early galaxy formation during the Epoch of Re-ionization at $Z=6-11$. This mission is a re-fly of 36.311 UG.
36.332 NS	MCKENZIE	CLASP-2	The Chromospheric LAYER Spectro-Polarimeter 2 (CLASP2) mission will serve as a pathfinder for potential satellite missions to measure the magnetic field in the upper chromosphere and transition region of the Sun, by extending spectro-polarimetric measurements to UV lines with a range of magnetic sensitivities relevant for field strength found in this layer of the solar atmosphere. CLASP2 will measure all four Stokes parameters in the 280nm range to study wavelength-dependent variations in polarization caused by the joint action of scattering processes and the Hanle and Zeeman effects
36.333 UG	FRANCE	CHESS	The Colorado High-resolution Echelle Stellar Spectrograph (CHESS) is designed to study the interstellar medium (ISM) in the ultraviolet part of the spectrum, the matter between stars, and specifically translucent clouds of gas which provide fundamental building blocks for star and planet formation. These clouds have very low densities and the only way to study them is to measure absorption spectra of light from stars passing through the cloud. CHESS will be pointed at the star Gamma Ara, in the southern constellation Ara. With this fourth flight of the Colorado High-resolution Echelle Stellar Spectrograph (CHESS-4) sounding rocket payload, sightlines at the lower-edge of the translucent cloud regime can be sampled. This mission aims to study translucent clouds by analyzing the ultraviolet absorption spectra of the two most abundant molecules (H ₂ and CO) that reside within them.
36.334 NR	CLARK	ASPIRE	The purpose of the ASPIRE series of missions (36.326, 27, & 28) is to demonstrate the high velocity deployment of parachute systems towards the ultimate goal of developing a system that can be utilized to land payloads onto the surface of Mars.
36.336 UE	WOODS	EVE	The primary objective for this mission is to provide an underflight calibration for the EUV Variability Experiment (EVE) aboard the NASA Solar Dynamics Observatory (SDO) satellite. The EVE program provides solar EUV irradiance data for NASA’s Living With the Star (LWS) program, including near real-time data products for use in operational atmospheric models that specify the space environment and to assist in forecasting space weather operations.
36.337 DS	KORENDYKE	VERIS-2	VERIS-2 combines very high spatial resolution (0.32" or 240 km) with spectroscopic observations of emission lines formed in the chromosphere, transition region, and corona (931-1076 Å) at high cadence (5s nominal). By combining high spatial and spectral resolution with high cadence the investigation will measure the time-dependent transition region velocity structure in active region moss. Spectrometer measurements will investigate the origins of high temperature active region plasma by observing the Doppler signatures of nano flare and Alfvén wave heating in the corona.

36.335 CE 41.123 CE 41.124 CE	CLEMMONS	TOMEX-Plus	Turbulent Oxygen Mixing Experiment-plus (TOMEX-Plus) builds on the TOMEX mission launched in 2000 from WSMR and examines how turbulence and mixing of atomic oxygen are related to each other and to underlying instabilities. TOMEX-Plus aims to determine how the vertical profile of the atomic oxygen mixing ratio varies as the atmosphere changes from regions of large layered turbulence at or below the mesopause to decreasing and possibly vanishing turbulence around the turbopause. Additionally, the horizontal variations in the atomic oxygen density that can be related to variations in turbulent fluctuations are studied. TOMEX-Plus will also characterize the 3D turbulence spectrum, its spatial variability and relationship to larger scale features of the flow, especially those relatable to instabilities.
36.339 UG 36.340 DR	FRANCE ABBETT	SISTINE	Investigation of low-mass star UV environments and their effects on potential exoplanet atmospheres. This mission will test high definition cameras to view free flying test objects ejected from the payload under exo-atmospheric conditions.
36.341 UH	MCENTAFFER	WRX2	The Water Recovery X-ray rocket (WRX-2) is a X-ray spectroscopy payload that is capable of providing moderate spectral resolution, $R(\lambda/\Delta\lambda) \approx 30$ and will be used to study the Vela Supernova Remnant on a flight from Australia. The mission will attempt to measure the key lines that indicate the temperature and ionization state of this plasma. Characterization and comparison of the soft X-ray emission will lead to a more complete understanding of the evolution of supernova remnants and their interaction with the surrounding interstellar medium as well as shedding light on matter and energy feedback in the galaxy in general.
36.342 NS	WINEBARGER	Hi-C 2	The purpose of this sounding rocket mission is to identify the connections between the solar corona and the cooler chromosphere and transition region. Hi-C 2 will observe the high transition region/low corona at the same resolution as IRIS.
36.343 GG	NUTH	DUST	Measure important variables in the end-to-end process of grain formation in circumstellar outflows around AGB stars and model the physical and chemical properties of the dust.
36.344 UE 36.345 UE	HYSELL	TooWINDY	The science goals for the TooWINDY (Waves and Instabilities from a Neutral Dynamo 2) equatorial spread F (ESF) missions are to study the stability of the post sunset equatorial F region ionosphere and the factors that predispose it to equatorial spread F, a spectacular phenomenon characterized by broadband plasma turbulence which degrades radio and radar signals at low magnetic latitudes. The goal of the investigation is to lay the foundation for a strategy to forecast this disruptive phenomenon.
36.346 UG 36.347 UH 36.348 UE	FRANCE MCCAMMON BONNELL	SISTINE XQC VIPER	Investigation of low-mass star UV environments and their effects on potential exoplanet atmospheres. The objective is to measure high resolution spectra of the diffuse X-ray background at 0.1-3 keV. The VIPER mission is an observational and modeling effort to understand VLF wave penetration through and propagation above the Earth's ionosphere.
36.349 UE	LARSEN	CHI	Obtain high resolution measurements of the fluctuating plasma drifts and estimates of the associated Joule heating over a horizontal region of several hundred kilometers within the cusp region.

36.350 UG	GREEN	DEUCE	The goal of the DEUCE (Dual-channel Extreme Ultraviolet Continuum Spectrograph) mission is to measure the amount of the Lyman continuum (LyC) radiation that is being produced by the only two non-white-dwarf stars in our galaxy known to have a sufficiently low enough neutral hydrogen column density to measure their ionizing radiation directly. The results of this mission will help to answer one of the major questions of modern astrophysics concerning how and when galaxies first formed and how did their formation “feedback” into their circumgalactic environments to modify early galaxy formation during the Epoch of Re-ionization at $Z=6-11$. The science target is Alpha Centauri A+B.
36.351 GE	JONES	LAMP	The LAMP mission will seek to answer how microbursts are related spatially and temporally to optical signatures of pulsating aurora.
36.352 UG	MCCANDLISS	FORTIS	The FORTIS mission aims to demonstrate the scientific utility and feasibility of multi-object spectroscopy over wide angular fields in the far-UV.
36.360 UE 41.129 UE	KAEPPLER	INCAA	The INCAA mission will investigate the role ion-neutral coupling has on the altitude profile of energy deposition. This is accomplished by measuring in situ the ion-demagnetization altitude and the altitude-resolved Joule heating rate.
41.119 CE 41.120 CE 41.122 CE	AZEEM	SUPER SOAKER	The purpose of the Super Soaker missions is to study the time dependent neutral chemistry and transport of water in the upper atmosphere and to determine the resultant impact on the local temperature and Polar Mesospheric Cloud (PMC) formation.
41.121 UO	KOEHLER	ROCKON - RockSAT-C	The primary objective of the RockOn/RockSat mission is to provide university undergraduate level students and instructors with a space flight opportunity that involves minimal cost, minimal time investment, minimal complexity, and minimal impact on the NASA Sounding Rocket Program. The mission is intended to be an introductory flight opportunity to provide exposure to, and spark interest in, space-based science missions.
46.015 GT	HALL		The purpose of the 46.015 mission is to provide risk mitigation for rocket propelled ejectable chemical ampoule systems that will be employed on future science missions. The mission goals are to demonstrate repeatable success of the ignition trains of both the ampoule rocket motors and the ampule deflagration.
41.127 UE 41.128 UE 46.023 UE 46.024 UE	LEHMACHER	VORTEX	The science goal of VortEX is to better understand nonlinear gravity wave (GW) interactions in the upper mesosphere and lower thermosphere (MLT), and the formation of vortices and stratified turbulence (ST).
46.016 CE	AZEEM	SUPER SOAKER	The purpose of the Super Soaker missions is to study the time dependent neutral chemistry and transport of water in the upper atmosphere and to determine the resultant impact on the local temperature and Polar Mesospheric Cloud (PMC) formation.
46.017 UO	KOEHLER	RockSat-X	The primary objective of the RockSat-X mission is to provide university undergraduate level students and instructors with a space flight opportunity that involves the use of a standard carrier payload with predefined mechanical, telemetry, power and attitude control capabilities and parameters that participating schools can adapt to in order to meet their individual experiment objectives. The mission is intended to provide expanded opportunities to RockOn participants and other interested schools with experiment bays exposed to the space environment.

46.018 UP	KOEHLER	RockSat-XN	The purpose of the RockSat-XN mission is to provide university undergraduate level students and instructors (both domestic and foreign) a space flight opportunity that involves minimal cost, time investment, complexity and impact to the NASA Sounding Rocket Program. This exposure to space based scientific investigations will encourage participants to seek career paths that result in future involvement in space-based scientific research.
46.019 UO	VIERIA	USIP	The purpose of the University Student Instrument Program (USIP) is to encourage participants to seek future involvement in space-based science missions by providing university undergraduate level students and faculty with a space flight opportunity that will allow their custom built experiments to be exposed to the space environment.
46.025 UE 46.026 UE	BARJATYA	SEED	The goal of the SEED missions is to collect the first simultaneous multipoint spatial and temporal observations of low-latitude Sporadic-E layers and their associated electrodynamics and neutral dynamics.
51.001 UE	LARSEN	AZURE	The purpose of the Auroral Zone Upwelling Release Experiment (AZURE) missions is to determine the relative contribution of the barometric (compression and expansion) and dynamic (divergence and convergence) vertical velocity components in the lower E region across the altitude range of maximum Joule heating.
51.002 UE	LARSEN	AZURE	The purpose of the Auroral Zone Upwelling Release Experiment (AZURE) missions is to determine the relative contribution of the barometric (compression and expansion) and dynamic (divergence and convergence) vertical velocity components in the lower E region across the altitude range of maximum Joule heating.
52.003 UE	KLETZING	TRICE-2	The purpose of the Twin Rockets to Investigate Cusp Electrodynamics II (TRICE-2) missions is to measure cusp signatures of reconnection occurring at the magnetopause during steady IMF Bz southward conditions. This will be accomplished by launching two nearly identical instrumented payloads, flying at low and high altitudes, with a variety of separations in time and space.
52.004 UE	KLETZING	TRICE-2	The purpose of the Twin Rockets to Investigate Cusp Electrodynamics II (TRICE-2) missions is to measure cusp signatures of reconnection occurring at the magnetopause during steady IMF Bz southward conditions. This will be accomplished by launching two nearly identical instrumented payloads, flying at low and high altitudes, with a variety of separations in time and space.
52.005 UE	LABELLE	CAPER-2	The Cusp Alfvén and Plasma Electrodynamics Rocket (CAPER) is designed to investigate the interactions between electrical waves and charged particles in a region of space known as the "polar cusp." The dayside high-latitude polar cusp is a unique environment where direct access of solar wind particles to low altitudes leads to similar particle precipitation and acceleration processes as on the nightside, but dominated by a rather different set of magnetospheric processes, such as dayside reconnection and interactions with interplanetary pressure pulses and discontinuities. CAPER will establish the role and nature of Alfvén wave acceleration in the cusp and discover the causes of the observed differences in the Langmuir waves in the cusp versus the nightside. CAPER also includes the first ever wave-particle correlator measurements in the cusp. The results affect a range of NASA programs in geospace, planetary, heliospheric and astrophysical sciences and are pertinent to multiple objectives of NASA's Heliophysics research program.

52.006 UE	CONDE	C-REX-2	<p>The purpose of the Cusp-Region Experiment Version 2.0 (C-REX-2) mission is to identify mechanisms responsible for creating a region of enhanced neutral mass density at 400 km altitude that appears to be a permanent feature of Earth's cusp-region thermosphere. The foundation of the investigation will be to obtain absolute neutral wind measurements by following the drift of 20 neutral strontium clouds released from the rocket at altitudes between 200 and 400 km. Drift tracking will be done by photographic triangulation, using cameras located on Svalbard and aboard a NASA aircraft flying along the east coast of Greenland.</p>
52.007 UE	DELAMERE	KiNET-X	<p>KiNET-X studies how momentum transport is affected by kinetic-scale physics, i.e. formation of parallel electric fields and dissipation, how electromagnetic energy is converted into plasma kinetic and thermal energy, and what the interplay is between fluid- and kinetic-scale processes.</p>
52.009 UE	REEVES	Beam-PIE	<p>The Beam-PIE mission will use an electron beam to produce VLF radiowaves. The radio waves are to be detected with an antenna on a separate receiver payload section. Additionally, ambient plasma conditions, and the possible effects of the radio waves on the local plasma environment, will be measured. Optical and radar measurements will be used to detect effects of the waves on the atmosphere.</p>