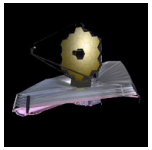

8173 - The evolution of comet-impact products in Jupiter's atmosphere: a benchmark for auroral chemistry in giant (exo)planets

Cycle: 4, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Observation Folder				
	1	JUPITER-FIXED-62N	MIRI Medium Resolution Spectroscopy	(1) JUPITER-FIXED-62N
	2	JUPITER-FIXED-62N-bis	MIRI Medium Resolution Spectroscopy	(2) JUPITER-FIXED-62N-bis
	3	JUPITER-FIXED-68N	MIRI Medium Resolution Spectroscopy	(3) JUPITER-FIXED-68N
	4	JUPITER-FIXED-45N	MIRI Medium Resolution Spectroscopy	(4) JUPITER-FIXED-45N

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
	5	JUPITER-FIXED-22N	MIRI Medium Resolution Spectroscopy	(5) JUPITER-FIXED-22N
	6	JUPITER-FIXED-05N	MIRI Medium Resolution Spectroscopy	(6) JUPITER-FIXED-05N
	7	JUPITER-FIXED-20S	MIRI Medium Resolution Spectroscopy	(7) JUPITER-FIXED-20S
	8	JUPITER-FIXED-40S	MIRI Medium Resolution Spectroscopy	(8) JUPITER-FIXED-40S
	9	JUPITER-FIXED-62S	MIRI Medium Resolution Spectroscopy	(9) JUPITER-FIXED-62S
	10	JUPITER-FIXED-68S	MIRI Medium Resolution Spectroscopy	(10) JUPITER-FIXED-68S

ABSTRACT

We propose to extend the monitoring of exogenous species in Jupiter's atmosphere by leveraging JWST's MIRI/MRS observations, focusing on the evolution of H2O, CO2, and HCN. These species, initially introduced by the comet Shoemaker-Levy 9 (SL9) impact in 1994, have since exhibited a puzzling chemical behavior.

Our analysis of archived JWST data from programs ERS#1373 and GTO#1247 demonstrates that MRS can effectively map the meridional distribution of CO2, H2O, and HCN, revealing unexpected trends in their abundances across Jupiter's southern hemisphere. Notably, CO2 and H2O exhibit intricate latitudinal evolution in the South Polar Region, suggesting oxygen exchange between the two species, with the direction of exchange varying with latitude . These findings challenge existing models of polar chemistry and point to the involvement of multiple processes such as auroral ion-neutral chemistry, polar aerosol heterogeneous chemistry, and possibly an external oxygen influx from Io's torus.

To disentangle these processes, we propose a comprehensive mapping of HCN, H2O, and CO2 across both hemispheres, targeting regions within and outside auroral zones. By comparing the temporal abundance trends since 1994, and by studying the impact of auroral precipitation, we aim to uncover the key chemical pathways governing the destruction and production of these molecules. These observations will not only refine our understanding of Jupiter's atmospheric chemistry but also provide insights into similar processes occurring on other giant planets and exoplanets, with potential implications for understanding the chemical evolution of exoplanetary atmospheres under cometary impacts.

OBSERVING DESCRIPTION

Jupiter - MIRI

We require nine MIRI/MRS pointings with a 4-dither pattern to scan the entire east limb of the planet from north to south. The time constraint ensures that the pointings sample the northern auroral oval. A tenth pointing, the second in the sequence, will observe the west limb at high northern

latitudes, i.e. opposite to the northern auroral oval.

Our scientific objectives require to use only the SHORT and MEDIUM subbands, using the H2O band at , the HCN band at 712 cm-1, the CO2 band at 667 cm-1, and the CH4 band at 1300 cm-1 to measure the temperature. In the SHORT subband, the number of groups, five, is optimized for the high flux in channel 3. In the MEDIUM subband, eight groups will ensure a high signal-to-noise ratio (SNR) for the water lines at 1660 cm-1. Given Jupiter’s strong mid-IR brightness, desaturation techniques will be applied near the strongest emission lines, particularly in channel 3.

We used the ‘torus’ definition to ensure that all observations will be focused on the planet’s limb, as this is critical for increasing radiance from low-abundance species and maximizing the SNR.

Timing and Constraints: We will avoid interference from moons or their shadows blocking the target. The field of view (FOV) must remain fixed on the planet's limb to ensure consistent meridional coverage across 10 separate MIRI exposures. The first exposure (62°N, west limb) must capture the auroral oval within the MIRI/MRS FOV (110° ± 20°W) to obtain a reference non-auroral region in the second exposure (62°N, east limb).

(1-10) Jupiter limb scan - MIRI MRS 4.9–28.5 microns

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	JUPITER-FIXED-62N	STD=JUPITER	TYPE=TORUS,LONG=-89,LAT=62,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	
Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric. 62 deg N Extended=YES				
(2)	JUPITER-FIXED-62N-bis	STD=JUPITER	TYPE=TORUS,LONG=89,LAT=62,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	
Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric. 62 deg N (other limb!!!) Extended=YES				
(3)	JUPITER-FIXED-68N	STD=JUPITER	TYPE=TORUS,LONG=1,LAT=68,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	
Comments: FIXED (non-rotating) northern hemisphere target. Planetocentric. 68 deg N (close to the pole) Extended=YES				
(4)	JUPITER-FIXED-45N	STD=JUPITER	TYPE=TORUS,LONG=-89,LAT=45,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	
Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric. 45 deg N Extended=YES				
(5)	JUPITER-FIXED-22N	STD=JUPITER	TYPE=TORUS,LONG=-89,LAT=22,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	
Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric. 22 deg N Extended=YES				
(6)	JUPITER-FIXED-05N	STD=JUPITER	TYPE=TORUS,LONG=-89,LAT=5,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	
Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric. 05 deg N Extended=YES				
(7)	JUPITER-FIXED-20S	STD=JUPITER	TYPE=TORUS,LONG=-89,LAT=-20,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	
Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric. 20 deg S Extended=YES				
(8)	JUPITER-FIXED-40S	STD=JUPITER	TYPE=TORUS,LONG=-86,LAT=-40,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	
Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric. 40 deg S Extended=YES				
(9)	JUPITER-FIXED-62S	STD=JUPITER	TYPE=TORUS,LONG=-86,LAT=-62,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	
Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric. 62 deg S Extended=YES				

	(10)	JUPITER-FIXED-68S	STD=JUPITER	TYPE=TORUS,LONG=1,LAT=-68,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0
	Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric. 68 deg S (close to the pole) Extended=YES			

Observation

Proposal 8173, Observation 1: JUPITER-FIXED-62N Tue Feb 10 19:00:10 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Comments: The planet must fit ~75% of the Total FOV

Diagnostics

(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(JUPITER-FIXED-62N (Obs 1)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	JUPITER-FIXED-62N	STD=JUPITER	TYPE=TORUS,LONG=-89,LAT=62,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	

Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric.
62 deg N
Extended=YES

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	FND	FAST	4	1	1	11.1	219379

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	NO	FULL	Allow Auto Reorder

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	EXTENDED SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	MEDIUM(B)	MRSLONG		FASTR1	8	8	1	Dither 1	4	32	788.111	
1	MEDIUM(B)	MRSSHORT		FASTR1	8	8	1	Dither 1	4	32	788.111	
2	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
2	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	

Special Requirements	
	Sequence Observations 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, Non-interruptible DEFAULT WINDOW: NOT OCCULTATION OF JUPITER-FIXED-62N BY JUPITER FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-62N BY IO FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-62N BY EUROPA FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-62N BY GANYMEDE FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-62N BY CALLISTO FROM JWST DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-62N IO FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-62N EUROPA FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-62N GANYMEDE FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-62N CALLISTO FROM JWST GREATER THAN 10" DEFAULT WINDOW: ANGULAR RATE JUPITER-FIXED-62N FROM JWST LESS THAN 0.075 CENTRAL MERIDIAN LONGITUDE OF JUPITER FROM JWST BETWEEN 130 90

Observation

Proposal 8173, Observation 2: JUPITER-FIXED-62N-bis Tue Feb 10 19:00:10 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Comments: The planet must fit ~75% of the Total FOV

Diagnostics

(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(JUPITER-FIXED-62N-bis (Obs 2)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(2)	JUPITER-FIXED-62N-bis	STD=JUPITER	TYPE=TORUS,LONG=89,LAT=62,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	

Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric.
62 deg N (other limb!!!)
Extended=YES

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	FND	FAST	4	1	1	11.1	219379

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	NO	FULL	Allow Auto Reorder

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	EXTENDED SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	MEDIUM(B)	MRSLONG		FASTR1	8	8	1	Dither 1	4	32	788.111	
1	MEDIUM(B)	MRSSHORT		FASTR1	8	8	1	Dither 1	4	32	788.111	
2	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
2	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	

Special Requirements	
	Sequence Observations 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, Non-interruptible DEFAULT WINDOW: NOT OCCULTATION OF JUPITER-FIXED-62N-bis BY JUPITER FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-62N-bis BY IO FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-62N-bis BY EUROPA FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-62N-bis BY GANYMEDE FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-62N-bis BY CALLISTO FROM JWST DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-62N-bis IO FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-62N-bis EUROPA FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-62N-bis GANYMEDE FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-62N-bis CALLISTO FROM JWST GREATER THAN 10" DEFAULT WINDOW: ANGULAR RATE JUPITER-FIXED-62N-bis FROM JWST LESS THAN 0.075

Observation

Proposal 8173, Observation 3: JUPITER-FIXED-68N Tue Feb 10 19:00:10 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Comments: The planet must fit ~75% of the Total FOV

Diagnostics

(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(JUPITER-FIXED-68N (Obs 3)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(3)	JUPITER-FIXED-68N	STD=JUPITER	TYPE=TORUS,LONG=1,LAT=68,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	

Comments: FIXED (non-rotating) northern hemisphere target. Planetocentric.
68 deg N (close to the pole)
Extended=YES

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	FND	FAST	4	1	1	11.1	219379

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	NO	FULL	Allow Auto Reorder

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	EXTENDED SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	MEDIUM(B)	MRSLONG		FASTR1	8	8	1	Dither 1	4	32	788.111	
1	MEDIUM(B)	MRSSHORT		FASTR1	8	8	1	Dither 1	4	32	788.111	
2	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
2	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	

Special Requirements	
	Sequence Observations 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, Non-interruptible DEFAULT WINDOW: NOT OCCULTATION OF JUPITER-FIXED-68N BY JUPITER FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-68N BY IO FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-68N BY EUROPA FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-68N BY GANYMEDE FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-68N BY CALLISTO FROM JWST DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-68N IO FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-68N EUROPA FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-68N GANYMEDE FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-68N CALLISTO FROM JWST GREATER THAN 10" DEFAULT WINDOW: ANGULAR RATE JUPITER-FIXED-68N FROM JWST LESS THAN 0.075

Observation

Proposal 8173, Observation 4: JUPITER-FIXED-45N Tue Feb 10 19:00:10 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Comments: The planet must fit ~75% of the Total FOV

Diagnostics

(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(JUPITER-FIXED-45N (Obs 4)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(4)	JUPITER-FIXED-45N	STD=JUPITER	TYPE=TORUS,LONG=-89,LAT=45,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	

Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric.
45 deg N
Extended=YES

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	FND	FAST	4	1	1	11.1	219379

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	NO	FULL	Allow Auto Reorder

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	EXTENDED SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	MEDIUM(B)	MRSLONG		FASTR1	8	8	1	Dither 1	4	32	788.111	
1	MEDIUM(B)	MRSSHORT		FASTR1	8	8	1	Dither 1	4	32	788.111	
2	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
2	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	

Special Requirements	
	Sequence Observations 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, Non-interruptible DEFAULT WINDOW: NOT OCCULTATION OF JUPITER-FIXED-45N BY JUPITER FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-45N BY IO FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-45N BY EUROPA FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-45N BY GANYMEDE FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-45N BY CALLISTO FROM JWST DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-45N IO FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-45N EUROPA FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-45N GANYMEDE FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-45N CALLISTO FROM JWST GREATER THAN 10" DEFAULT WINDOW: ANGULAR RATE JUPITER-FIXED-45N FROM JWST LESS THAN 0.075

Observation

Proposal 8173, Observation 5: JUPITER-FIXED-22N Tue Feb 10 19:00:10 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Comments: The planet must fit ~75% of the Total FOV

Diagnostics

(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(JUPITER-FIXED-22N (Obs 5)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(5)	JUPITER-FIXED-22N	STD=JUPITER	TYPE=TORUS,LONG=-89,LAT=22,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	

Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric.
22 deg N
Extended=YES

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	FND	FAST	4	1	1	11.1	219379

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	NO	FULL	Allow Auto Reorder

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	EXTENDED SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	MEDIUM(B)	MRSLONG		FASTR1	8	8	1	Dither 1	4	32	788.111	
1	MEDIUM(B)	MRSSHORT		FASTR1	8	8	1	Dither 1	4	32	788.111	
2	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
2	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	

Special Requirements	
	Sequence Observations 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, Non-interruptible DEFAULT WINDOW: NOT OCCULTATION OF JUPITER-FIXED-22N BY JUPITER FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-22N BY IO FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-22N BY EUROPA FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-22N BY GANYMEDE FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-22N BY CALLISTO FROM JWST DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-22N IO FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-22N EUROPA FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-22N GANYMEDE FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-22N CALLISTO FROM JWST GREATER THAN 10" DEFAULT WINDOW: ANGULAR RATE JUPITER-FIXED-22N FROM JWST LESS THAN 0.075

Observation

Proposal 8173, Observation 6: JUPITER-FIXED-05N Tue Feb 10 19:00:10 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Comments: The planet must fit ~75% of the Total FOV

Diagnostics

(Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(JUPITER-FIXED-05N (Obs 6)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(6)	JUPITER-FIXED-05N	STD=JUPITER	TYPE=TORUS,LONG=-89,LAT=5,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	

Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric.
05 deg N
Extended=YES

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	FND	FAST	4	1	1	11.1	219379

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	NO	FULL	Allow Auto Reorder

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	EXTENDED SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	MEDIUM(B)	MRSLONG		FASTR1	8	8	1	Dither 1	4	32	788.111	
1	MEDIUM(B)	MRSSHORT		FASTR1	8	8	1	Dither 1	4	32	788.111	
2	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
2	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	

Special Requirements	
	Sequence Observations 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, Non-interruptible DEFAULT WINDOW: NOT OCCULTATION OF JUPITER-FIXED-05N BY JUPITER FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-05N BY IO FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-05N BY EUROPA FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-05N BY GANYMEDE FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-05N BY CALLISTO FROM JWST DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-05N IO FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-05N EUROPA FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-05N GANYMEDE FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-05N CALLISTO FROM JWST GREATER THAN 10" DEFAULT WINDOW: ANGULAR RATE JUPITER-FIXED-05N FROM JWST LESS THAN 0.075

Observation

Proposal 8173, Observation 7: JUPITER-FIXED-20S Tue Feb 10 19:00:10 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Comments: The planet must fit ~75% of the Total FOV

Diagnostics

(Visit 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(JUPITER-FIXED-20S (Obs 7)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(7)	JUPITER-FIXED-20S	STD=JUPITER	TYPE=TORUS,LONG=-89,LAT=-20,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	

Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric.
20 deg S
Extended=YES

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	FND	FAST	4	1	1	11.1	219379

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	NO	FULL	Allow Auto Reorder

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	EXTENDED SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	MEDIUM(B)	MRSLONG		FASTR1	8	8	1	Dither 1	4	32	788.111	
1	MEDIUM(B)	MRSSHORT		FASTR1	8	8	1	Dither 1	4	32	788.111	
2	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
2	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	

Special Requirements	
	Sequence Observations 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, Non-interruptible DEFAULT WINDOW: NOT OCCULTATION OF JUPITER-FIXED-20S BY JUPITER FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-20S BY IO FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-20S BY EUROPA FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-20S BY GANYMEDE FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-20S BY CALLISTO FROM JWST DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-20S IO FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-20S EUROPA FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-20S GANYMEDE FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-20S CALLISTO FROM JWST GREATER THAN 10" DEFAULT WINDOW: ANGULAR RATE JUPITER-FIXED-20S FROM JWST LESS THAN 0.075

Observation

Proposal 8173, Observation 8: JUPITER-FIXED-40S Tue Feb 10 19:00:10 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Comments: The planet must fit ~75% of the Total FOV

Diagnostics

(Visit 8:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(JUPITER-FIXED-40S (Obs 8)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(8)	JUPITER-FIXED-40S	STD=JUPITER	TYPE=TORUS,LONG=-86,LAT=-40,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	

Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric.
40 deg S
Extended=YES

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	FND	FAST	4	1	1	11.1	219379

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	NO	FULL	Allow Auto Reorder

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	EXTENDED SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	MEDIUM(B)	MRSLONG		FASTR1	8	8	1	Dither 1	4	32	788.111	
1	MEDIUM(B)	MRSSHORT		FASTR1	8	8	1	Dither 1	4	32	788.111	
2	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
2	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	

Special Requirements	
	Sequence Observations 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, Non-interruptible DEFAULT WINDOW: NOT OCCULTATION OF JUPITER-FIXED-40S BY JUPITER FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-40S BY IO FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-40S BY EUROPA FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-40S BY GANYMEDE FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-40S BY CALLISTO FROM JWST DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-40S IO FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-40S EUROPA FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-40S GANYMEDE FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-40S CALLISTO FROM JWST GREATER THAN 10" DEFAULT WINDOW: ANGULAR RATE JUPITER-FIXED-40S FROM JWST LESS THAN 0.075

Observation

Proposal 8173, Observation 9: JUPITER-FIXED-62S Tue Feb 10 19:00:10 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Comments: The planet must fit ~75% of the Total FOV

Diagnostics

(Visit 9:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(JUPITER-FIXED-62S (Obs 9)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(9)	JUPITER-FIXED-62S	STD=JUPITER	TYPE=TORUS,LONG=-86,LAT=-62,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	

Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric.
62 deg S
Extended=YES

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	FND	FAST	4	1	1	11.1	219379

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	NO	FULL	Allow Auto Reorder

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	EXTENDED SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	MEDIUM(B)	MRSLONG		FASTR1	8	8	1	Dither 1	4	32	788.111	
1	MEDIUM(B)	MRSSHORT		FASTR1	8	8	1	Dither 1	4	32	788.111	
2	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
2	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	

Special Requirements	
	Sequence Observations 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, Non-interruptible DEFAULT WINDOW: NOT OCCULTATION OF JUPITER-FIXED-62S BY JUPITER FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-62S BY IO FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-62S BY EUROPA FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-62S BY GANYMEDE FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-62S BY CALLISTO FROM JWST DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-62S IO FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-62S EUROPA FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-62S GANYMEDE FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-62S CALLISTO FROM JWST GREATER THAN 10" DEFAULT WINDOW: ANGULAR RATE JUPITER-FIXED-62S FROM JWST LESS THAN 0.075

Observation

Proposal 8173, Observation 10: JUPITER-FIXED-68S Tue Feb 10 19:00:10 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Comments: The planet must fit ~75% of the Total FOV

Diagnostics

(Visit 10:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(JUPITER-FIXED-68S (Obs 10)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(10)	JUPITER-FIXED-68S	STD=JUPITER	TYPE=TORUS,LONG=1,LAT=-68,RAD=67451,POLE_LONG=0,POLE_LAT=+90,O_LONG=0,O_LAT=0,O_RAD=0	

Comments: FIXED (non-rotating) limb target, for MIRI scan. Planetocentric.
68 deg S (close to the pole)
Extended=YES

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	FND	FAST	4	1	1	11.1	219379

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	NO	FULL	Allow Auto Reorder

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	EXTENDED SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	MEDIUM(B)	MRSLONG		FASTR1	8	8	1	Dither 1	4	32	788.111	
1	MEDIUM(B)	MRSSHORT		FASTR1	8	8	1	Dither 1	4	32	788.111	
2	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
2	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	

Special Requirements	
	Sequence Observations 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, Non-interruptible DEFAULT WINDOW: NOT OCCULTATION OF JUPITER-FIXED-68S BY JUPITER FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-68S BY IO FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-68S BY EUROPA FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-68S BY GANYMEDE FROM JWST DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF JUPITER-FIXED-68S BY CALLISTO FROM JWST DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-68S IO FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-68S EUROPA FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-68S GANYMEDE FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF JUPITER-FIXED-68S CALLISTO FROM JWST GREATER THAN 10" DEFAULT WINDOW: ANGULAR RATE JUPITER-FIXED-68S FROM JWST LESS THAN 0.075