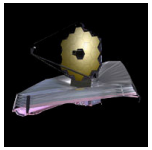

1415 - Mars observations: GTO program

Cycle: 1, Proposal Category: GTO

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Mars observations				
	1	NIRCam	NIRCam Imaging	(1) MARS
	2	NIRSpec	NIRSpec Fixed Slit Spectroscopy	(1) MARS
	3	NIRSpec	NIRSpec Fixed Slit Spectroscopy	(1) MARS
	4	NIRSpec	NIRSpec Fixed Slit Spectroscopy	(1) MARS

ABSTRACT

The distinctive vantage point of JWST at the Sun-Earth Lagrange point (L2) allows sampling the full observable disk, permitting the study of short-term phenomena, diurnal processes (across the East-West axis) and latitudinal processes between the hemispheres (including seasonal effects) with excellent spatial resolutions (0.07 arcsec at 2 um). Spectroscopic observations are achievable in the 0.7-5 um spectral region with NIRSpec at a maximum resolving power of 2700. Imaging will be attainable with NIRCam near 2 m, while the nightside will be accessible with several filters in the 0.5 to 2 m. Some science cases include the mapping of the water D/H ratio, investigations of the Martian mesosphere via the characterization of

the non-LTE CO2 emission at 4.3 um,high cadence mapping of the variability dust and water ice clouds, and sensitive searches for trace species and hydrated features on the Martian surface.

OBSERVING DESCRIPTION

The distinctive vantage point of JWST at the Sun-Earth Lagrange point (L2) allows sampling the full observable disk, permitting the study of short-term phenomena, diurnal processes (across the East-West axis) and latitudinal processes between the hemispheres (including seasonal effects) with excellent spatial resolutions (0.07 arcsec at 2 um). Spectroscopic observations are achievable in the 0.7-5 um spectral region with NIRSpec at a maximum resolving power of 2700. Imaging will be attainable with NIRCam near 2 m, while the nightside will be accessible with several filters in the 0.5 to 2 m. Some science cases include the mapping of the water D/H ratio, investigations of the Martian mesosphere via the characterization of the non-LTE CO2 emission at 4.3 um,high cadence mapping of the variability dust and water ice clouds, and sensitive searches for trace species and hydrated features on the Martian surface.

Proposal 1415 - Targets - Mars observations: GTO program

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	MARS	STD=MARS		

Comments: Mars
Extended=YES

Observation

Proposal 1415, Observation 1: NIRCam Tue Aug 30 22:00:29 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Comments: Because the observations with NIRCam and NIRSpec are used to derive common properties of the surface and the atmosphere of Mars, they need to be done in a non-interruptible sequence. This will allow us to accurately sample the same lats/lons/time on the planet and to get better inter-image calibration and photometry, which we need for quantifying weak surface/molecular features.

Diagnostics

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

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	MARS	STD=MARS		

Comments: Mars
Extended=YES

Template

Module	Subarray
B	SUB160P

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	SUBARRAY_DITHER	4	STANDARD		1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F212N	F430M	RAPID	2	10	40	4	33.642	

Special Requirements

DEFAULT WINDOW: ANGULAR RATE MARS FROM JWST LESS THAN 0.03

Observation

Proposal 1415, Observation 2: NIRSpec Tue Aug 30 22:00:30 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec Fixed Slit Spectroscopy

Comments: Because the observations with NIRCam and NIRSpec are used to derive common properties of the surface and the atmosphere of Mars, they need to be done in a non-interruptible sequence. This will allow us to accurately sample the same lats/lons/time on the planet and to get better inter-image calibration and photometry, which we need for quantifying weak surface/molecular features.

Diagnostics

(NIRSpec (Obs 2)) Warning (Form): NGROUPS=1 may suffer from low calibration accuracy.

(NIRSpec (Obs 2)) Warning (Form): NGROUPS=1 may suffer from low calibration accuracy.

(NIRSpec (Obs 2)) Warning (Form): NGROUPS=1 may suffer from low calibration accuracy.

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

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	MARS	STD=MARS		

Comments: Mars Extended=YES

Template

TA Method	Slit	Subarray
NONE	S200A2	SUBS200A2

Mosaic

Rows	Columns	Row Overlap %	Column Overlap %	Row shift	Column shift	Tile Order
4	1	-10.0	0.0	0.0	0.0	DEFAULT

Dithers

#	Primary Dither Positions	Sub-Pixel Pattern
1	NONE	NONE

Spectral Elements

#	Grating/Filter	Slit	Readout Pattern	Groups/Int	Integrations/Exp	#	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	G140H/F100LP	S200A2	NRSRAPID	1	10	1	NONE	1	10	31.365	
2	G235H/F170LP	S200A2	NRSRAPID	1	10	2	NONE	1	10	31.365	
3	G395H/F290LP	S200A2	NRSRAPID	1	10	3	NONE	1	10	31.365	

Special Requirements	DEFAULT WINDOW: ANGULAR RATE MARS FROM JWST LESS THAN 0.03

Observation

Proposal 1415, Observation 3: NIRSpec Tue Aug 30 22:00:30 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec Fixed Slit Spectroscopy

Comments: Because the observations with NIRCam and NIRSpec are used to derive common properties of the surface and the atmosphere of Mars, they need to be done in a non-interruptible sequence. This will allow us to accurately sample the same lats/lons/time on the planet and to get better inter-image calibration and photometry, which we need for quantifying weak surface/molecular features.

Diagnostics

(NIRSpec (Obs 3)) Warning (Form): NGROUPS=1 may suffer from low calibration accuracy.

(NIRSpec (Obs 3)) Warning (Form): NGROUPS=1 may suffer from low calibration accuracy.

(NIRSpec (Obs 3)) Warning (Form): NGROUPS=1 may suffer from low calibration accuracy.

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

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	MARS	STD=MARS		

Comments: Mars
Extended=YES

Template

TA Method	Slit	Subarray
NONE	S200A2	SUBS200A2

Mosaic

Rows	Columns	Row Overlap %	Column Overlap %	Row shift	Column shift	Tile Order
4	1	-10.0	0.0	0.0	0.0	DEFAULT

Dithers

#	Primary Dither Positions	Sub-Pixel Pattern
1	NONE	NONE

Spectral Elements

#	Grating/Filter	Slit	Readout Pattern	Groups/Int	Integrations/Exp	#	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	G140H/F100LP	S200A2	NRSRAPID	1	10	1	NONE	1	10	31.365	
2	G235H/F170LP	S200A2	NRSRAPID	1	10	2	NONE	1	10	31.365	
3	G395H/F290LP	S200A2	NRSRAPID	1	10	3	NONE	1	10	31.365	

Special Requirements	
	Offset -4.0 arcsec, 0.0 arcsec DEFAULT WINDOW: ANGULAR RATE MARS FROM JWST LESS THAN 0.03

Observation

Proposal 1415, Observation 4: NIRSpec Tue Aug 30 22:00:30 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec Fixed Slit Spectroscopy

Comments: Because the observations with NIRCam and NIRSpec are used to derive common properties of the surface and the atmosphere of Mars, they need to be done in a non-interruptible sequence. This will allow us to accurately sample the same lats/lons/time on the planet and to get better inter-image calibration and photometry, which we need for quantifying weak surface/molecular features.

Diagnostics

(NIRSpec (Obs 4)) Warning (Form): NGROUPS=1 may suffer from low calibration accuracy.

(NIRSpec (Obs 4)) Warning (Form): NGROUPS=1 may suffer from low calibration accuracy.

(NIRSpec (Obs 4)) Warning (Form): NGROUPS=1 may suffer from low calibration accuracy.

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

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	MARS	STD=MARS		

Comments: Mars
Extended=YES

Template

TA Method	Slit	Subarray
NONE	S200A2	SUBS200A2

Mosaic

Rows	Columns	Row Overlap %	Column Overlap %	Row shift	Column shift	Tile Order
4	1	-10.0	0.0	0.0	0.0	DEFAULT

Dithers

#	Primary Dither Positions	Sub-Pixel Pattern
1	NONE	NONE

Spectral Elements

#	Grating/Filter	Slit	Readout Pattern	Groups/Int	Integrations/Exp	#	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	G140H/F100LP	S200A2	NRSRAPID	1	10	1	NONE	1	10	31.365	
2	G235H/F170LP	S200A2	NRSRAPID	1	10	2	NONE	1	10	31.365	
3	G395H/F290LP	S200A2	NRSRAPID	1	10	3	NONE	1	10	31.365	

Special Requirements	Offset 4.0 arcsec, 0.0 arcsec DEFAULT WINDOW: ANGULAR RATE MARS FROM JWST LESS THAN 0.03