



Observing Application

Date : Jul, 27 2009
 Proposal ID : VLA/09B-208
 Legacy ID : AD617
 PI : Kiruthika Devaraj
 Type : Rapid Response - Target of Opportunity
 Category : Solar System
 Total Time : 24.0

Continuing VLA observations of Jupiter's troposphere after a recent impact

Abstract:

There has been evidence that an object has impacted Jupiter between 3.00 am and 9.00 am PDT on July 20th, 2009, near the South Pole (303 W longitude, 56 S latitude). When an object such as a comet bombards Jupiter, a plume of material from the comet as well as from Jupiter's atmosphere would be brought up from Jupiter's troposphere (below the clouds) into the stratosphere. There will also be changes to the physical temperature of the atmosphere and the shock-chemistry might produce new species in the atmosphere. The impact site is diffusing and will disappear in a few weeks. We propose to continue observing Jupiter with the VLA at 3.6 cm and 1.3 cm wavelengths for at least a month after the impact to monitor and study the temporal changes to the composition, temperature, and shock-chemistry of the upper and middle troposphere that resulted from the impact of the object. This short-term impact related study might reveal information about the dynamics of the atmosphere below the clouds, and also could possibly reveal the nature of the object that bombarded Jupiter.

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Related proposals:

Joint:

Not a Joint Proposal

Observing type(s):

Continuum

VLA Resources

Name	Conf.	Frontend & Backend	Setup
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Name	Conf.	Frontend & Backend	Setup
Xband	C	X Band 3.6 cm 8080 - 8750 MHz VLA Correlator - Single Channel Continuum	Rest frequencies: 8435.1,8485.1 MHz Bandwidth: 50 MHz
Kband	C	K Band 1.3 cm 18000 - 26500 MHz VLA Correlator - Single Channel Continuum	Rest frequencies: 22485.1,22435.1 MHz Bandwidth: 50 MHz

Sources:

Name	RA / RA Range	Dec / Dec Range	Epoch	Velocity / z	Group
Jupiter 1	21:40:00.0 00:00:00.0	-15:00:00 00:00:00	J2000	Velocity : 0.00	Jupiter

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
1	3.00	1	1 day	23:00:00	02:00:00	15
2	3.00	1	0 day	17:30:00	20:30:00	25
3	3.00	1	1 day	23:00:00	02:00:00	35
4	3.00	1	0 day	17:00:00	20:00:00	10
5	2.50	1	0 day	17:00:00	19:30:00	10
6	3.00	1	0 day	17:30:00	20:30:00	30
7	3.00	1	1 day	21:30:00	00:30:00	20
8	3.50	1	0 day	18:30:00	22:00:00	28

Session Constraints:

Name	Constraints	Comments

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
1	Jupiter 1	Xband	3.0 hour	0.011396 mJy/bm	
2	Jupiter 1	Kband	3.0 hour	0.044174 mJy/bm	
3	Jupiter 1	Kband	3.0 hour	0.044174 mJy/bm	
4	Jupiter 1	Xband	3.0 hour	0.011396 mJy/bm	
5	Jupiter 1	Xband	2.5 hour	0.026481 mJy/bm	
6	Jupiter 1	Xband	3.0 hour	0.011396 mJy/bm	
7	Jupiter 1	Kband	3.0 hour	0.024174 mJy/bm	
8	Jupiter 1	Xband	3.5 hour	0.024174 mJy/bm	

Present for observation: no

Staff support: None

Plan of Dissertation: no

