Science Advances

AAAS

advances.sciencemag.org/cgi/content/full/3/7/e1700022/DC1

Supplementary Materials for

ALMA detection and astrobiological potential of vinyl cyanide on Titan

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Published 28 July 2017, *Sci. Adv.* **3**, e1700022 (2017)
DOI: 10.1126/sciadv.1700022

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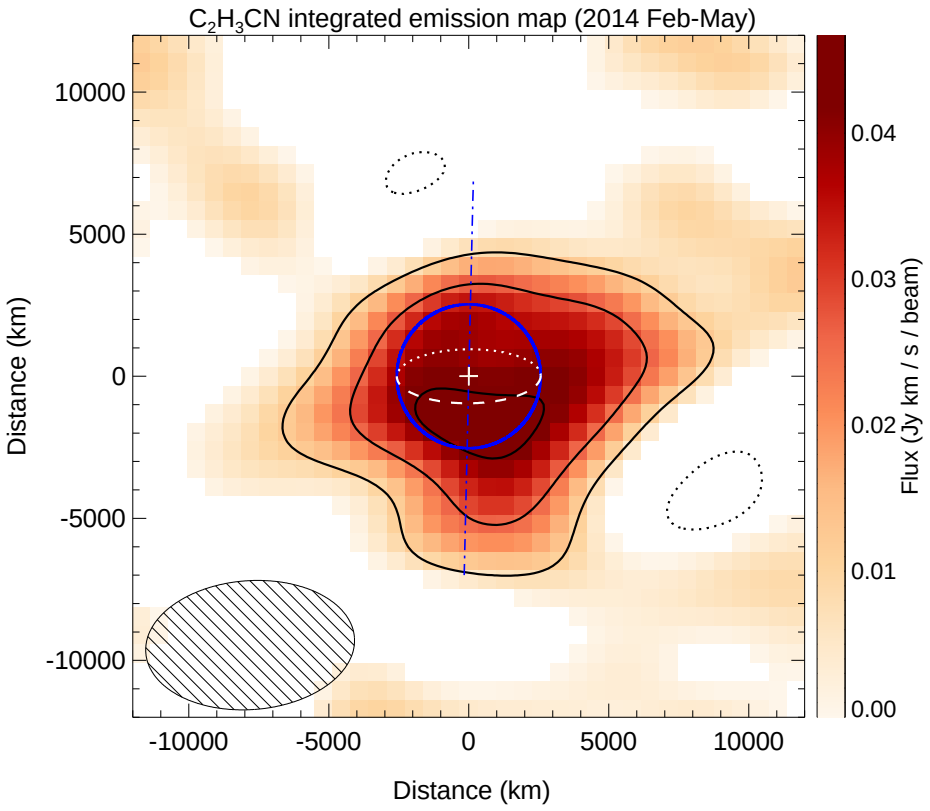

fig. S1. Integrated flux contour map for C_2H_3CN, summed over the three detected transitions. Contours are spaced at intervals of 2σ, where σ is the RMS noise level (7.2 mJy km s^{-1} bm^{-1}). Negative contours are dashed. The coordinate scale is in Titan-projected distances (white cross denotes the position of the phase center). Axes are aligned in the equatorial coordinate system. The blue circle represents Titan's 0.77"-diameter disk (dashed white curve is the equator), and the dot-dashed blue line is the polar axis, oriented 1.3° clockwise from vertical, with the north pole tilted toward the observer by 22°. The FWHM of the Gaussian restoring beam (1.1" × 0.7") and its orientation are shown as a hatched ellipse.

table S1. Observational parameters.

ID	Date	Frequency (GHz)	Obs. time (s)	Distance (AU)	# Antennas	Baselines (m)	Spect. Res. (kHz)	θ_{min} (")	PWV (mm)	RMS (mJy/bm)
Spectral Region 1										
2012.1.00437.S	2014-03-10	230-231	151	9.4	26	15.2-422	488	0.99 × 0.65	1.53	7.1
2012.1.00437.S	2014-03-10	230-231	151	9.4	28	15.2-423	488	1.11 × 0.62	1.40	6.7
2012.1.00336.S	2014-03-24	230-231	151	9.2	33	15.1-438	488	1.09 × 0.69	1.42	7.8
2012.1.00336.S	2014-03-24	230-231	151	9.2	33	15.1-438	488	1.38 × 0.69	1.37	7.9
2012.1.00336.S	2014-03-25	230-231	151	9.2	32	15.1-438	488	1.29 × 0.69	0.58	5.7
2012.1.00198.S	2014-03-26	230-232	151	9.2	32	15.2-438	976	1.08 × 0.68	0.64	5.0
2012.1.00261.S	2014-04-04	229-231	152	9.1	34	15.1-443	976	0.89 × 0.70	2.06	4.6
Combined								1.12 × 0.68		2.3
Spectral Region 2										
2012.1.00635.S	2014-02-22	231-233	311	9.7	27	15.1-399	976	1.67 × 0.89	0.69	5.8
2012.1.00635.S	2014-03-21	231-233	311	9.3	36	15.1-438	976	1.02 × 0.66	0.64	4.1
2012.1.00635.S	2014-04-25	231-233	156	8.9	35	19.6-558	976	0.73 × 0.58	1.22	4.7
2012.1.00635.S	2014-05-27	231-233	156	8.9	31	17.8-641	976	0.73 × 0.50	0.68	5.2
Combined								0.92 × 0.69		2.4