

Ancillary Data

This data set contains the Peter Thomas shape model for Saturn's satellite Janus (Saturn X), based on optical data from the Cassini Imaging Science Subsystem (ISS) Narrow-Angle Camera (NAC) instrument. The current version of this data set contains the following shape model file:

Janus_30k_plt.tab

This shape model file also has a detached label file, with a suffix of .xml, which describes the format and content. The shape model is in a plate model format and only represents the model shape, with no gravity or slope information.

Coordinate System

+X is Saturn-facing; + Y is opposite the direction of orbital motion; +Z is along the positive rotation axis. Because of orbital eccentricity, the x-axis deviates slightly from perfect Saturn alignment around the orbit; these small deviations are accounted for in the rotation model used.

The rotational model used in construction of this model is a binary kernel:

janus_mst2013.bpc prepared by M. S. Tiscareno, and available through the Navigation and Ancillary Information Facility (NAIF).

For information on using SPICE kernels, please see pck_req.txt - "PCK Required Reading", PCK required reading document, last revised on 2009 Apr 15 by B.V. Semenov.

Confidence Level Notes

Images used and their associated viewing geometries are listed in Table 1 below. Uncertainties in the shape model have been based on pixel scale and spatial density and solution residuals of control points.

Likely uncertainty of model radii for Janus range from 0.3 to 1.3 km, portions of the sub-Saturn region are the most uncertain.

Limitations

The shape model is intended for global geometric, geologic, and geophysical studies. The morphology of small craters is not reliably included; some relatively large craters can show approximate measures such as depth/diameter. Regional slopes can be calculated to accuracies estimated by the listed uncertainties.

Acknowledgements

The following people helped in the development of the software and/or models during the Cassini mission: Beatrice Mueller and Conor Kingston for direct assistance in formatting and submitting the data sets, Brian Carcich for software development used to derive the shape models, Matt Tiscareno for preparing small body kernels that improved the accuracy of the models, Mike Evans for assistance in modifying the plate model format to meet PDS Requirements, Chuck Acton for assistance in archiving kernels, Pam Smith for data management.

Table 1. Cassini ISS Images used for Janus shape model

Filt: filters used in each filter wheel. CL: clear; UV: ultraviolet; VIO: violet; BL: blue; GRN: green; MT: methane; RED: red; CB: methane continuum; IR: infrared; P: polarization. Details of filter bandpasses and use in Porco et al. (2004).

SC lat lon: Sub spacecraft position in degrees. Lon is West longitude where 90°W is the leading point.

Solar lat lon: sub solar position in degrees

Range: distance to object center from spacecraft, km

Noraz: image orientation of the projected object spin axis, degrees clockwise from up.

Samp: object center x-coordinate in image 0 is at left of image in pixels

Line: object center y-coordinate in image; 0 is at top of image in pixels

Phase: solar phase angle at center of image in degrees.

Images used in construction of model of JANUS:

Image	filt	filt	S/C		Solar		range	noraz	samp	line	phase
			lat	lon	lat	lon					
N1524964907_1	CL1	CL2	-0.37	231.06	-17.84	259.37	216289.5	359.95	606.10	551.50	32.86
N1524965317_1	CL1	CL2	-0.35	233.06	-17.84	261.82	219698.5	359.95	586.60	508.40	33.24
N1524965389_1	UV2	CL2	-0.35	233.34	-17.84	262.17	220194.6	359.95	586.90	508.60	33.30
N1524965478_1	CL1	GRN	-0.35	233.83	-17.84	262.78	221072.0	359.95	587.60	506.70	33.40
N1524966000_1	P12	GRN	-0.33	236.30	-17.84	265.90	225656.9	359.95	585.40	508.40	33.96
N1524966118_1	P60	MT2	-0.32	236.83	-17.84	266.58	226693.3	359.95	587.90	506.70	34.09
N1524966188_1	P12	MT2	-0.32	237.16	-17.84	267.00	227329.1	359.96	592.30	507.10	34.17
N1524966330_1	UV1	CL2	-0.31	237.64	-17.84	267.62	228283.6	359.96	593.60	507.80	34.29
N1537919879_1	CL1	CL2	15.51	161.27	-15.79	215.32	137975.7	269.91	345.50	213.70	61.86
N1537919935_1	CL1	GRN	15.71	161.71	-15.78	215.65	138187.9	269.91	347.20	260.60	61.86
N1537920449_1	CL1	CL2	17.48	165.81	-15.79	218.72	140392.8	269.91	375.80	351.70	61.85
N1537920669_1	CL1	IR3	18.20	167.57	-15.79	220.04	141474.8	269.91	385.90	339.70	61.84
N1537920809_1	P60	UV3	18.64	168.67	-15.79	220.86	142192.7	269.91	376.50	352.30	61.84
N1537921044_1	P12	GRN	19.39	170.58	-15.79	222.28	143515.7	269.91	381.60	355.60	61.82
N1537921184_1	P60	MT2	19.81	171.69	-15.79	223.11	144324.4	269.91	380.40	354.60	61.81
N1537921420_1	CL1	CL2	20.52	173.61	-15.79	224.54	145802.6	269.91	383.10	358.30	61.80
N1537922552_1	CL1	UV3	23.50	182.63	-15.78	231.30	154066.3	269.90	409.10	360.80	61.68
N1537922791_1	P60	UV3	24.04	184.50	-15.78	232.72	156046.2	269.90	410.40	362.10	61.66
N1537922949_1	P60	GRN	24.39	185.76	-15.79	233.68	157442.1	269.90	409.70	363.20	61.64
N1537923015_1	CL1	CL2	24.54	186.28	-15.78	234.08	158027.8	269.90	410.50	365.10	61.64
N1537923114_1	P60	GRN	24.74	187.05	-15.79	234.67	158909.5	269.90	411.50	365.30	61.63
N1537923147_1	P12	GRN	24.81	187.30	-15.79	234.86	159210.0	269.90	414.30	368.20	61.63
N1582238183_1	CL1	CL2	-71.33	92.57	-8.31	38.84	169684.9	89.53	308.20	515.90	71.08
N1582238216_1	CL1	UV3	-71.36	92.63	-8.30	39.03	169896.4	89.53	306.60	515.30	71.07
N1582238271_1	CL1	GRN	-71.42	92.74	-8.30	39.37	170262.5	89.52	304.80	515.80	71.04
N1582238842_1	CL1	CL2	-72.01	94.04	-8.31	42.79	173940.6	89.49	298.00	522.40	70.81
N1582239799_1	P12	GRN	-72.88	97.09	-8.30	48.52	179809.5	89.43	329.80	529.20	70.69
N1582239987_1	P12	UV3	-73.04	97.81	-8.31	49.63	180901.8	89.45	308.40	516.70	70.69
N1582240253_1	CL1	CL2	-73.26	98.94	-8.31	51.24	182468.1	89.42	334.00	529.10	70.72
N1582240474_1	P60	GRN	-73.43	99.93	-8.30	52.57	183731.8	89.42	336.10	526.00	70.76
N1590458717_1	CL1	CL2	-73.93	303.55	-6.73	32.68	183188.2	223.41	540.60	375.40	83.29
N1590458765_1	CL1	UV3	-73.90	303.86	-6.73	32.94	183780.2	223.05	539.30	374.10	83.28
N1590458893_1	CL1	IR3	-73.82	304.75	-6.73	33.72	185494.9	222.03	537.40	376.00	83.25
N1590459027_1	P60	UV3	-73.74	305.61	-6.73	34.49	187165.7	221.01	535.20	371.90	83.23
N1590459226_1	P12	GRN	-73.62	306.95	-6.73	35.72	189830.0	219.35	543.70	374.60	83.20
N1590461157_1	CL1	CL2	-73.05	317.76	-6.73	47.30	213018.8	200.73	567.80	541.90	83.43
N1593508083_1	CL1	CL2	21.36	100.64	-6.12	326.31	47700.7	102.05	300.80	498.80	133.31
N1593508178_1	CL1	GRN	19.70	101.22	-6.12	326.88	46065.8	100.51	292.40	501.60	133.65
N1593508211_1	CL1	IR1	19.09	101.42	-6.12	327.07	45505.8	99.94	294.70	501.20	133.76
N1593508244_1	CL1	IR3	18.49	101.62	-6.11	327.27	44964.9	99.38	285.60	509.70	133.86
N1593508487_1	P0	GRN	13.41	103.14	-6.11	328.73	41040.9	94.49	260.70	533.80	134.55
N1593509363_1	CL1	CL2	-14.16	109.03	-6.11	333.97	30943.2	68.42	267.70	-157.30	131.03
N1593509419_1	CL1	IR1	-16.43	109.43	-6.12	334.29	30617.5	66.58	277.30	-148.70	130.23
N1593509479_1	CL1	GRN	-18.91	109.88	-6.11	334.66	30318.7	64.65	288.00	-140.00	129.29
N1593509540_1	BL1	CL2	-21.46	110.33	-6.11	335.02	30077.3	62.76	297.40	-131.40	128.24
N1593509599_1	RED	CL2	-24.01	110.79	-6.11	335.38	29897.9	60.95	313.50	-127.30	127.12
N1593509659_1	CL1	CL2	-26.60	111.25	-6.12	335.73	29777.0	59.21	325.80	-123.40	125.92
N1594708747_1	CL1	CL2	71.85	324.19	-5.94	329.07	261862.4	321.59	544.80	575.70	77.86
N1594709210_1	P12	GRN	71.50	322.48	-5.95	331.86	256772.3	319.80	545.20	563.90	77.70
N1627318239_1	CL1	CL2	-45.36	163.44	-0.29	112.32	103670.6	36.98	693.00	594.30	63.60
N1627318272_1	RED	CL2	-45.24	163.66	-0.29	112.51	103509.2	36.93	690.00	593.20	63.56

N1627318305_1	CL1	GRN	-45.12	163.89	-0.28	112.71	103347.4	36.89	680.20	594.00	63.53
N1627318479_1	CL1	IR3	-44.48	165.10	-0.28	113.74	102520.9	36.63	635.90	594.70	63.32
N1627318975_1	CL1	CL2	-42.50	168.61	-0.28	116.71	100306.5	35.84	621.60	589.50	62.73
N1627319153_1	CL1	UV3	-41.80	169.78	-0.28	117.70	99633.9	35.58	629.70	588.70	62.52
N1627319215_1	CL1	IR3	-41.49	170.30	-0.29	118.13	99347.5	35.46	633.30	589.20	62.43
N1627319581_1	CL1	CL2	-39.82	172.92	-0.29	120.33	97998.9	34.88	643.30	586.90	61.98
N1627319647_1	CL1	GRN	-39.51	173.39	-0.28	120.72	97777.7	34.78	644.80	585.50	61.90
N1627319687_1	BL1	CL2	-39.33	173.67	-0.28	120.96	97648.3	34.72	645.10	586.60	61.85
N1627319759_1	CL1	UV3	-39.03	174.12	-0.29	121.33	97446.4	34.62	645.40	586.30	61.77
N1627323065_1	CL1	CL2	-19.97	197.08	-0.28	141.13	95994.3	31.15	650.70	408.10	58.14
N1627323098_1	RED	CL2	-19.77	197.29	-0.29	141.32	96083.2	31.13	652.40	407.60	58.11
N1627323305_1	CL1	IR3	-18.51	198.62	-0.28	142.55	96686.4	31.07	645.90	407.10	57.94
N1627323661_1	CL1	CL2	-16.32	200.91	-0.28	144.69	97942.8	30.99	637.90	403.60	57.66
N1627324197_1	CL1	CL2	-13.12	204.25	-0.29	147.89	100293.5	30.96	633.40	401.80	57.27
N1627324359_1	CL1	UV3	-12.22	205.19	-0.28	148.81	101067.1	30.97	640.00	400.10	57.17
N1627324437_1	CL1	IR3	-11.73	205.71	-0.28	149.32	101516.4	30.98	644.60	402.10	57.11
N1630068088_1	CL1	CL2	-5.04	73.15	0.09	48.99	267643.5	8.44	467.40	531.70	24.67
N1630068268_1	CL1	CL2	-4.94	73.60	0.09	50.08	266847.0	8.49	467.90	531.90	24.02
N1630068448_1	CL1	CL2	-4.85	74.05	0.09	51.15	266052.7	8.55	473.40	530.80	23.40
N1649342285_1	CL1	CL2	-1.45	144.32	3.66	106.14	74814.9	99.84	575.50	613.00	38.50
N1649342351_1	CL1	IR1	-1.45	144.59	3.66	106.53	74841.7	99.85	575.20	612.30	38.38
N1649342385_1	CL1	UV3	-1.45	144.73	3.66	106.73	74856.3	99.85	575.40	612.50	38.32
N1711579389_1	CL1	CL2	-2.24	179.53	13.85	67.71	44485.5	181.92	558.40	553.80	111.71
N1711579811_1	P12	GRN	-2.23	180.40	13.86	70.25	44967.4	181.99	566.30	577.70	110.09
N1711579979_1	P12	MT2	-2.22	180.74	13.85	71.22	45190.9	182.01	567.10	578.50	109.48
N1711580068_1	CL1	GRN	-2.21	180.95	13.86	71.81	45338.0	182.03	566.90	576.60	109.11
N1711580134_1	CL1	CL2	-2.21	181.10	13.85	72.21	45443.1	182.03	567.00	577.70	108.86
N1711583819_1	CL1	CL2	-1.75	191.15	13.85	94.44	57274.0	182.43	520.50	373.10	96.93
N1711583867_1	CL1	UV3	-1.74	191.28	13.86	94.68	57477.6	182.44	522.30	403.50	96.82
N1711583973_1	CL1	IR3	-1.72	191.65	13.85	95.35	58018.4	182.44	524.40	404.60	96.53
N1711584621_1	CL1	UV3	-1.61	193.84	13.85	99.24	61385.7	182.49	514.20	402.60	94.85
N1711584687_1	CL1	IR1	-1.60	194.09	13.86	99.67	61783.6	182.50	519.50	403.20	94.67
N1711584727_1	CL1	IR3	-1.60	194.23	13.86	99.91	61999.8	182.50	521.10	405.10	94.58
N1711585375_1	CL1	UV3	-1.49	196.52	13.85	103.78	65796.1	182.54	520.50	403.30	93.02
N1711585408_1	CL1	GRN	-1.48	196.67	13.85	104.02	66035.9	182.54	520.40	403.20	92.93
N1711585481_1	CL1	IR3	-1.47	196.93	13.85	104.45	66484.4	182.54	519.50	405.30	92.76
N1711586834_1	CL1	CL2	-1.26	202.03	13.86	112.62	75817.1	182.62	520.40	403.20	89.73
N1711588187_1	CL1	CL2	-1.06	207.33	13.86	120.77	86792.5	182.68	515.90	403.30	86.92