

## Ancillary Data

This data set contains the Peter Thomas shape model for Saturn's satellite Prometheus (Saturn XVI), 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:

Prometheus\_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. However, this deviation (optical libration) is too small to be detected in the data used.

Rotational elements applicable to this model: PROMETHEUS

BODY616\_POLE\_RA = ( 40.58 -0.036 0. )

BODY616\_POLE\_DEC = ( 83.53 -0.004 0. )

BODY616\_PM = ( 276.260 +587.284953 0. )

Rotational elements from Archinal et al. 2011.

For information on using SPICE kernels, please see pck\_req.asc - "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 Prometheus range from 0.2 to 0.4 km, portions of the leading side 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

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**Table 1. Cassini ISS Images used for Prometheus 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 PROMETHEUS:

Image	filt	filt	S/C		Solar		range	noraz	samp	line	phase
			lat	lon	lat	lon					
N1496869497_1	RED	CL2	-27.35	158.56	-21.46	167.94	438403.9	359.95	386.30	517.40	10.37
N1496869530_1	CL1	GRN	-27.36	158.82	-21.46	168.16	437997.3	359.95	385.80	518.20	10.34
N1496869564_1	BL1	CL2	-27.37	159.08	-21.46	168.38	437593.3	359.94	388.40	518.00	10.32
N1496869645_1	CL1	UV3	-27.40	159.70	-21.46	168.91	436651.6	359.94	392.40	518.00	10.27
N1640497752_1	CL1	CL2	1.67	100.28	2.10	67.39	56538.7	47.05	560.70	611.90	32.87
N1640497784_1	RED	CL2	1.73	100.17	2.10	67.61	56552.2	47.03	560.00	607.20	32.54
N1640497816_1	CL1	GRN	1.79	100.06	2.10	67.82	56567.0	47.00	557.40	603.50	32.22
N1640497849_1	BL1	CL2	1.84	99.95	2.10	68.04	56583.6	46.98	553.60	603.10	31.89
N1640497881_1	CL1	IR3	1.90	99.84	2.10	68.26	56601.5	46.95	552.20	603.60	31.56
N1640497927_1	CL1	UV3	1.97	99.70	2.10	68.55	56627.1	46.91	551.30	599.90	31.13
N1640499244_1	CL1	CL2	4.17	96.11	2.10	77.53	58544.0	44.82	546.00	595.60	18.67
N1640499341_1	BL1	CL2	4.32	95.92	2.11	78.18	58754.8	44.61	563.70	579.80	17.85
N1640499373_1	CL1	IR3	4.36	95.87	2.10	78.41	58826.3	44.54	564.60	587.60	17.58
N1640499419_1	CL1	UV3	4.43	95.79	2.10	78.70	58923.8	44.44	563.80	587.10	17.22
N1640500544_1	CL1	CL2	5.98	94.52	2.11	86.36	61951.0	41.62	625.50	581.90	9.01
N1640500576_1	RED	CL2	6.02	94.51	2.11	86.59	62046.8	41.53	631.20	582.00	8.81
N1640500608_1	CL1	GRN	6.06	94.50	2.11	86.80	62143.2	41.44	630.20	582.40	8.64
N1640500640_1	BL1	CL2	6.09	94.49	2.10	87.02	62238.7	41.36	634.40	587.80	8.45
N1640500673_1	CL1	IR3	6.13	94.48	2.10	87.24	62338.6	41.27	635.40	588.30	8.27
N1640500719_1	CL1	UV3	6.19	94.46	2.10	87.53	62471.1	41.15	637.30	585.00	8.03
N1640506032_1	CL1	CL2	10.37	108.03	2.10	123.66	79202.4	11.79	538.10	569.70	17.59
N1640506063_1	CL1	CL2	10.38	108.19	2.10	123.88	79288.4	11.77	538.00	569.30	17.65
N1643259662_1	CL1	CL2	13.49	247.27	2.59	119.76	33508.0	188.03	598.50	486.50	125.52
N1643259718_1	RED	CL2	13.68	247.05	2.59	120.15	33423.1	187.92	602.30	485.30	124.90
N1643259831_1	BL1	CL2	14.06	246.57	2.59	120.91	33262.8	187.69	604.00	484.90	123.64
N1643259887_1	CL1	IR3	14.25	246.32	2.59	121.28	33188.5	187.57	606.00	486.70	123.01
N1643259981_1	CL1	UV3	14.53	245.95	2.58	121.85	33086.5	187.39	608.90	483.00	122.06
N1643261394_1	CL1	CL2	18.54	237.60	2.59	131.54	32824.1	183.62	615.00	474.10	104.34
N1643261450_1	RED	CL2	18.66	237.21	2.59	131.92	32865.8	183.45	614.10	472.30	103.60
N1643261506_1	CL1	GRN	18.77	236.83	2.58	132.30	32926.1	183.28	609.50	473.10	102.87
N1643261713_1	CL1	UV3	19.12	235.52	2.59	133.64	33193.7	182.68	597.90	470.80	100.34
N1643262934_1	CL1	CL2	20.15	227.57	2.59	142.01	36338.9	178.91	588.50	474.20	84.94
N1643262990_1	RED	CL2	20.15	227.25	2.58	142.39	36544.7	178.74	590.70	473.20	84.29
N1643263046_1	CL1	GRN	20.14	226.93	2.58	142.76	36756.0	178.58	588.10	473.30	83.64
N1643263103_1	BL1	CL2	20.14	226.62	2.59	143.15	36974.8	178.42	587.70	473.60	82.98
N1643263159_1	CL1	IR3	20.13	226.31	2.59	143.53	37197.5	178.26	589.50	474.50	82.33
N1643263237_1	CL1	UV3	20.11	225.94	2.59	144.00	37483.3	178.07	586.50	472.40	81.54
N1828134597_1	CL1	CL2	-4.43	207.59	25.60	291.50	36731.6	179.91	450.30	515.30	86.44
N1828134697_1	BL1	CL2	-4.42	207.47	25.60	292.18	37412.2	179.91	451.30	515.30	87.16
N1828134730_1	CL1	IR1	-4.41	207.42	25.60	292.40	37643.7	179.91	450.80	516.00	87.39
N1828136577_1	CL1	CL2	-3.98	208.27	25.60	304.95	52472.9	179.91	790.20	525.10	97.74
N1828136610_1	RED	CL2	-3.97	208.34	25.60	305.19	52771.8	179.92	490.60	513.90	97.89
N1828136677_1	BL1	CL2	-3.95	208.44	25.60	305.63	53372.6	179.92	487.10	514.80	98.19
N1828136877_1	CL1	IR3	-3.90	208.87	25.60	306.98	55230.2	179.92	485.50	516.50	98.99
N1828137091_1	CL1	UV3	-3.84	209.31	25.60	308.37	57160.7	179.92	485.80	516.00	99.82