Ancillary Data

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

Pan_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: pan_mst2018.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 Pan range from 0.2 to 0.3 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 show approximate measures such as depth/diameter. Regional slopes can be calculated to accuracies estimated by the listed uncertainties.

Acknowledgements

Table 1. Cassini ISS Images used for Pan 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 90ºW 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 PAN:

			S/C		Solar						
Image	filt	filt	lat	lon	lat	lon	range	noraz	samp	line	phase
N1524968647_1	CL1	CL2	-0.08	201.37	-17.68	251.49	208961.1	359.91	592.70	510.80	52.31
N1524968705_1	CL1	CL2	-0.07	201.81	-17.68	251.91	209314.5	359.91	592.20	511.00	52.30
N1524970213_1	CL1	CL2	-0.03	212.98	-17.67	262.84	220399.8	359.91	592.00	511.00	52.09
N1524970909_1	CL1	CL2	-0.02	217.92	-17.68	267.88	226669.4	359.91	597.40	510.30	52.19
N1530371111_1	CL1	CL2	-0.35	105.79	-16.87	153.83	270031.4	359.91	506.90	520.20	50.09
N1530372126_1	CL1	CL2	-0.35	111.55	-16.88	161.18	260968.5	359.92	510.20	520.50	51.57
N1867600368_1	CL1	CL2	73.00	106.67	26.71	168.12	97965.6	19.41	508.00	511.20	56.31
N1867602962_1	CL1	CL2	71.20	162.91	26.71	186.91	50326.3	59.98	517.30	514.40	46.49
N1867604117_1	CL1	CL2	56.83	201.28	26.71	195.29	31068.7	100.63	503.50	469.40	30.42
N1867604259_1	UV2	CL2	54.13	204.52	26.71	196.07	29566.4	106.20	499.00	503.20	28.12
N1867604433_1	UV2	CL2	49.56	209.08	26.71	197.22	27540.6	116.17	495.10	503.30	24.61
N1867604488_1	CL1	GRN	46.08	211.97	26.71	197.99	26330.0	124.61	493.70	504.60	22.33
N1867604558_1	CL1	UV3	43.74	213.71	26.71	198.45	25638.9	130.89	490.30	505.90	21.03
N1867604614_1	CL1	IR3	41.45	215.28	26.71	198.89	25048.0	137.50	487.70	509.00	19.97
N1867604669_1	CL1	CL2	39.21	216.71	26.71	199.29	24541.8	144.40	483.20	507.80	19.17
N1867606181_1	CL1	CL2	-26.17	246.07	26.71	210.24	30343.5	233.97	424.70	481.00	63.14
N1867606229_1	CL1	UV3	-27.30	246.69	26.71	210.55	30932.6	234.05	423.70	482.00	64.22
N1867606284_1	CL1	GRN	-28.85	247.57	26.71	210.99	31804.5	234.12	423.00	482.40	65.71
N1867606339_1	CL1	IR1	-30.18	248.36	26.71	211.39	32614.2	234.15	420.90	483.30	66.98
N1867606643_1	P0	GRN	-36.41	252.49	26.71	213.59	37353.3	233.98	517.50	511.10	72.98
N1867606676_1	P60	GRN	-36.99	252.92	26.71	213.83	37890.9	233.93	519.60	512.10	73.54
N1867606709_1	P12	GRN	-37.55	253.34	26.71	214.06	38432.2	233.88	526.10	514.60	74.08
N1867606742_1	CL1	CL2	-38.11	253.77	26.71	214.31	38982.7	233.83	526.70	508.10	74.62
N1867606790_1	P0	MT2	-38.80	254.32	26.71	214.63	39698.6	233.76	534.20	512.70	75.28
N1867606838_1	P60	MT2	-39.54	254.92	26.70	214.98	40502.7	233.67	535.30	513.60	75.98
N1867606886_1	P12	MT2	-40.24	255.51	26.71	215.32	41312.9	233.58	538.60	516.10	76.67
N1867607239_1	CL1	CL2	-44.74	259.74	26.71	217.92	47505.5	232.83	535.60	515.90	81.00