DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

Prepared for the
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ATLAS OF MARS
1:5,000,000 TOPOGRAPHIC SERIES
MARGARITIFER SINUS QUADRANGLE
M 5M –15/22 RN, 1980
I-1293 (MC-19)

NOTES ON BASE

This is one map in a series of topographic map sheets covering the entire surface of Mars at nominal scales of 1:5,000,000 and 1:25,000,000. First-edition sheets in this series were compiled largely from Mariner 9 data. Selected parts of the series are being revised on the basis of Viking data. The mapping is described by Batson (1973, 1976, and 1978). The Mariner 9 television experiment is described by Masursky and others (1970). A series of papers on the Viking missions is contained in the Journal of Geophysical Research, v. 82, no. 28 (September 30, 1977).

ADOPTED FIGURE

The figure of Mars used for the computation of the map projection is an oblate spheroid (flattening of 1/192) with an equatorial radius of 3393.4 km and a polar radius of 3375.7 km.

PROJECTION

The Mercator projection is used for this sheet, with a scale of 1:5,000,000 at the equator and 1:4,336,000 at lat 30°. Longitudes increase to the west in accordance with usage of the International Astronomical Union (IAU, 1971). Latitudes are areographic (de Vaucouleurs and others, 1973).

CONTROL

Planimetric control is provided by photogrammetric triangulation using Mariner 9 pictures (Davies, 1973; Davies and Arthur, 1973) and the radio-tracked position of the spacecraft. The first meridian passes through the crater Airy-0 (lat 5.19° S.) within the crater Airy. In February 1978, the Mariner 9 control net was upgraded through the use of Viking data (Davies and others, 1978). Random discrepancies as large as 11 km exist between the Mariner 9 net (on which this sheet is based) and the new Viking net.

MAPPING TECHNIQUE

A series of mosaics of Mercator projections of Mariner 9 pictures was assembled at 1:5,000,000.

Shaded relief was portrayed with uniform illumination with the sun to the west, using airbrush techniques described by Inge (1972) and Inge and Bridges (1976). Sizes, shapes, and positions of features were taken from the base mosaic. In the first edition of the map (U.S. Geological Survey, 1975), various computer enhancements of many Mariner 9 pictures besides those in the base mosaic were examined in an attempt to portray the surface as accurately as possible. (Computer enhancement of Mariner 9 pictures is described by Levinthal and others, 1973, and Green and others, 1975). This rendition was revised through examination of Viking Orbiter pictures to produce the current version.

Shaded relief analysis and representation were made by Patricia M. Bridges. Shaded relief revisions were made by Susan L. Davis.

COLOR

No attempt was made on the map to precisely duplicate the color of the martian surface, although the color used may approximate it.

NOMENCLATURE

Names on this sheet are approved by the International Astronomical Union (IAU, 1974, 1977, and 1980) except for provisional names, which are listed below. Double- and triple-letter designations for craters refer to position on the map and are derived from a grid based on equidistant meridians and parallels; the alphabet (I and O omitted) runs in the direction of increasing longitude (W) and latitude (N). The complete designation of a crater is the name of the quadrangle followed by a double or triple letter. The prefix MAR (identifying the Margaritifer Sinus quadrangle) is part of the complete designation but, for brevity, is not shown on most craters. Some craters have commemorative names; letter designations for these craters are shown in parentheses. Where craters lie mostly on an adjoining map, their letters are derived from the other map; where craters lie exactly on the boundary of two maps, their letters are derived from the eastern or southern map.

Provisional names: Eos Chaos, Arsinoes Chaos, Pyrrhae Chaos, Loire Vallis

MC-19: Abbreviation for Mars Chart 19.

M 5M–15/22 RN: Abbreviation of Mars 1:5,000,000 series; center of sheet, 15° S lat, 22° long; shaded relief map, R, nomenclature N.

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Masursky, Harold, Batson, R. M., Borgeson, W. T., Carr, M. H., McCauley, J. F., Milton, D. J., Wildey, R. L., Wilhelms, D. E., Murray, B. C., Horowitz, N. H., Leighton, R. B., Sharp, R. V., Thompson, T. W., Briggs, G. A., Chandeysson, P., Shipley, E. N., Sagan, Carl, Pollack, J. B., Lederberg, Joshus, Levinthal, E. C., Hartmann, W. K., McCord, T. B., Smith, B. A., Davies, M. E., de Vaucouleurs, G. D., and Leovy, C. V., 1970, Television experiment for Mariner Mars 1971: Icarus, v. 12, p. 10-45.

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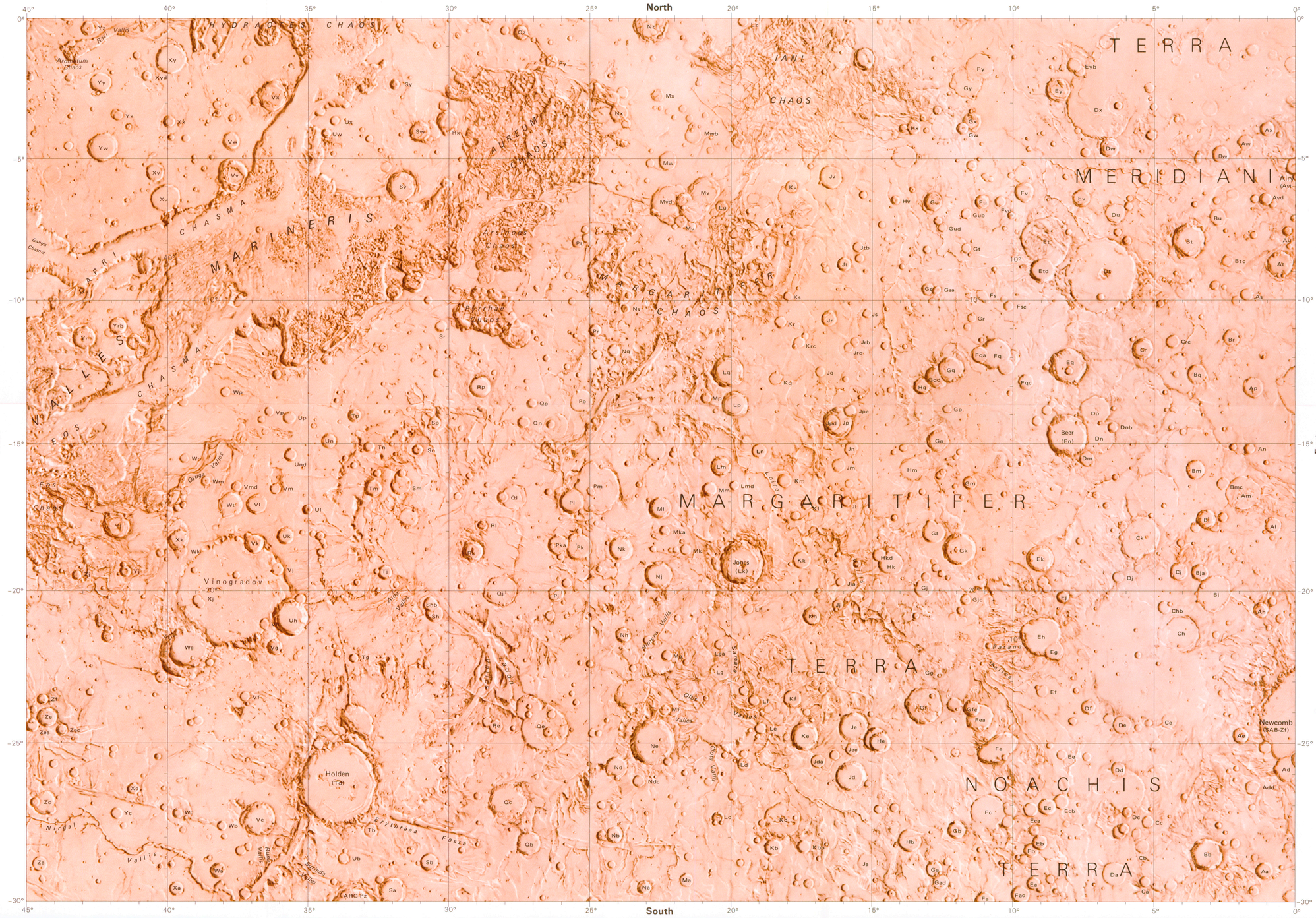
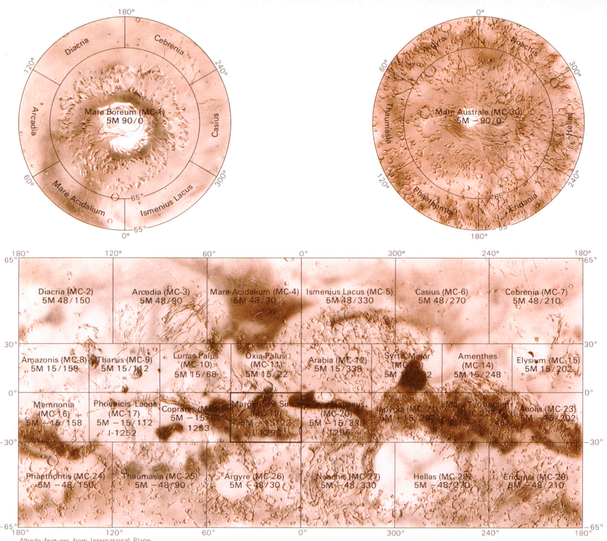


Interior—Geological Survey, Reston, Va.—1980—G80396

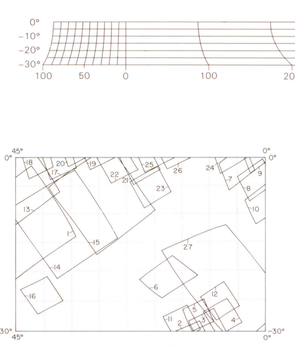
Revised in February 1980 on behalf of the Planetary Geology Program, Planetary Division, Office of Space Science, National Aeronautics and Space Administration under contract W-13,709.



Albedo features from International Planetary Patrol photographs, Lowell Observatory, Flagstaff, Ariz.

QUADRANGLE LOCATION
Number preceded by I refers to published shaded relief map

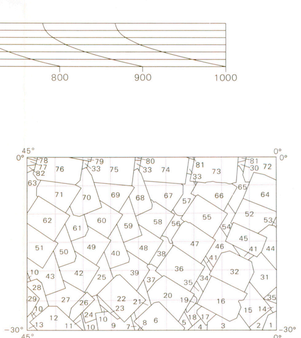
SCALE 1:5 000 000 (1 mm=5 km) AT 0° LATITUDE
MERCATOR PROJECTION



INDEX TO VIKING ORBITER PICTURES

This shaded relief map has been revised utilizing 1:2,000,000 controlled photomosaics and supplementary Viking pictures outlined above. Copies of various enhancements of these pictures are available from National Space Science Data Center, Code 601.4, Goddard Space Science Data Center, Greenbelt, MD 20771.

Index No.	DAS No.	Index No.	DAS No.
1	41A12	15	620A67
2	84A10	16	649A51
3	84A12	17	650A05
4	84A14	18	650A06
5	579A44	19	651A55
6	611A35	20	651A56
7	615A34	21	651A81
8	615A35	22	651A82
9	615A36	23	651A83
10	615A54	24	656A58
11	615A63	25	689A01
12	615A67	26	689A03
13	620A64	27	729A38
14	620A65		



INDEX TO MARINER 9 PICTURES

The mosaic used to control the positioning of features on this map was made with the Mariner 9 A-camera pictures outlined above. The DAS number may differ slightly (usually by 5) among various versions of the same picture.

A-camera pictures

Index No.	DAS No.	Index No.	DAS No.	Index No.	DAS No.	Index No.	DAS No.
1	8117303	22	6426803	43	9160869	64	6571003
2	5239393	23	7829883	44	8045623	65	7973803
3	8045413	24	9232689	45	6570863	66	7902053
4	5167433	25	9232759	46	7973663	67	7830163
5	7973453	26	6354913	47	7901913	68	9232969
6	6498623	27	7757993	48	7830023	69	7758273
7	5740803	28	9160799	49	7758133	70	9161079
8	6498553	29	6283023	50	9160939	71	7686383
9	9304509	30	5884793	51	7686243	72	6571353
10	5668773	31	8045553	52	6570933	73	7902403
11	9232619	32	6570793	53	8045693	74	7830513
12	6354843	33	5812763	54	7973733	75	7758623
13	9160729	34	7973583	55	7901983	76	7686733
14	5239463	35	6642683	56	9304789	77	7615333
15	8045483	36	7901843	57	9304859	78	7614913
16	6570723	37	9304649	58	7830093	79	7686803
17	5167503	38	9304719	59	9232899	80	7758693
18	7973523	39	7829953	60	7758203	81	7830583
19	6498693	40	9232829	61	9161009	82	10492689
20	7901773	41	5956753	62	7686313		
21	9304579	42	7758063	63	9089189		

SHADED RELIEF MAP OF THE MARGARITIFER SINUS QUADRANGLE OF MARS

MC-19

M 5M –15/22 RN

1980

NOTE TO USERS

Users noting errors or omissions are urged to indicate them on the map and to forward it to U. S. Geological Survey, Building 4, Room 64, 2255 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.

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