DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

Prepared in Cooperation with the
JET PROPULSION LABORATORY, CALIFORNIA INSTITUTE OF TECHNOLOGY
FOR THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ATLAS OF MARS
1:5,000,000 TOPOGRAPHIC SERIES
MARGARITIFER SINUS QUADRANGLE
M 5M -15/22 R, 1975
I–927 (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 1:25,000,000 and 1:5,000,000 (Batson, 1973). The major source of map data was the Mariner 9 television experiment (Masursky and others, 1970).

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-O (latitude 5.19° S) within the crater Airy. No simple statement is possible for the precision, but local consistency is 10-15 km, except along the southern edge where inconsistancies as large as 20 km exist.

MAPPING TECHNIQUE

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

Shaded relief was copied from the mosaics and portrayed with uniform illumination with the sun to the west. Many Mariner 9 pictures besides those in the base mosaic were examined to improve the portrayal (Levinthal and others, 1973). The shading is not generalized and may be interpreted with photographic reliability (Inge, 1972).

Shaded relief analysis and representation were made by Patricia M. Bridges.

COLOR

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

NOMENCLATURE

All names on this sheet are approved by the International Astronomical Union (IAU, 1974), except the following names which are provisional: Aureum Chaos, Erythraea Fossa, Hydraotes Chaos, Iani Chaos, Ladon Valles, Margaritifer Chaos, and Samara Valles. Double and triple letter designations for craters refer to position on the map. 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.

MC-19: Abbreviation for Mars Chart 19.
M 5M -15/22 R: Abbreviation for Mars 1:5,000,000 scale; center of sheet, 15° S latitude, 22° longitude; shaded relief map, R.

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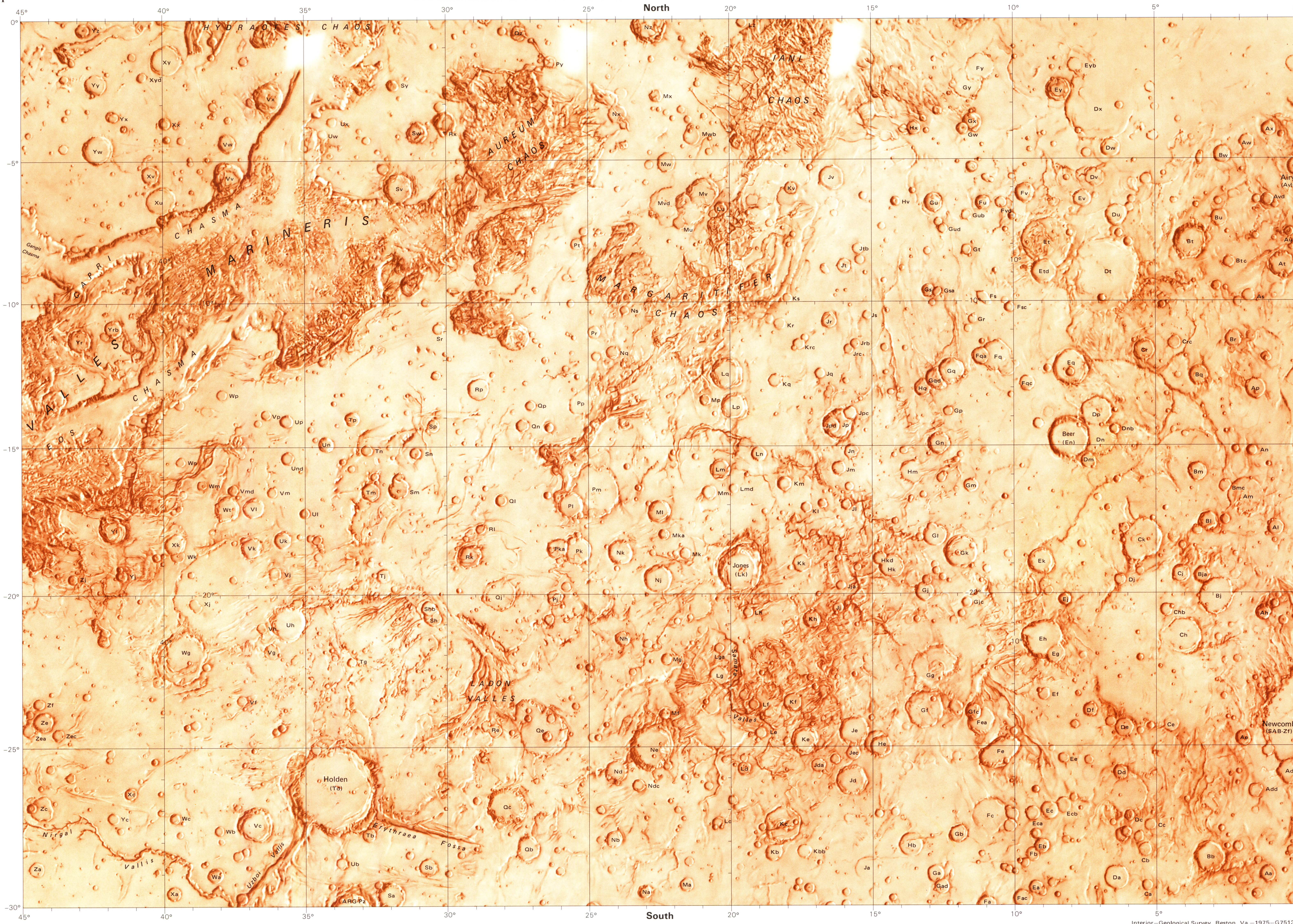
de Vaucouleurs, G. D., Davies, M. E., Sturms, F. M., Jr., 1973, The Mariner 9 areographic coordinate system: Jour. Geophys. Research, v. 78, no. 20, p. 4395-4404.

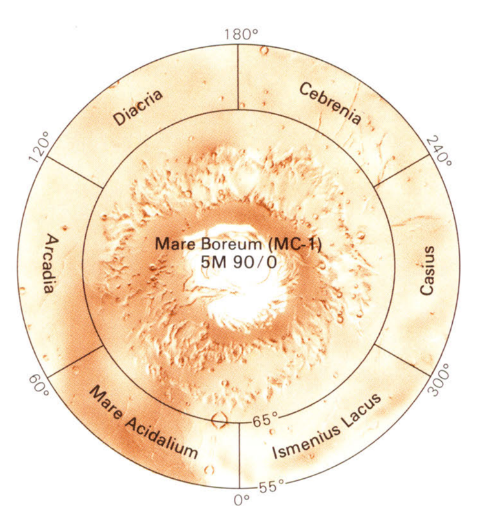


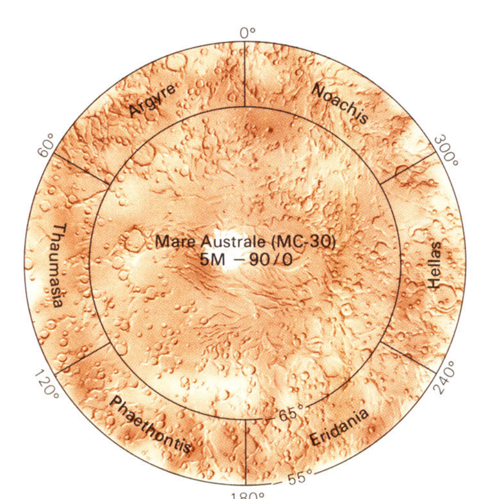
Interior—Geological Survey, Reston, Va.—1975—G75135

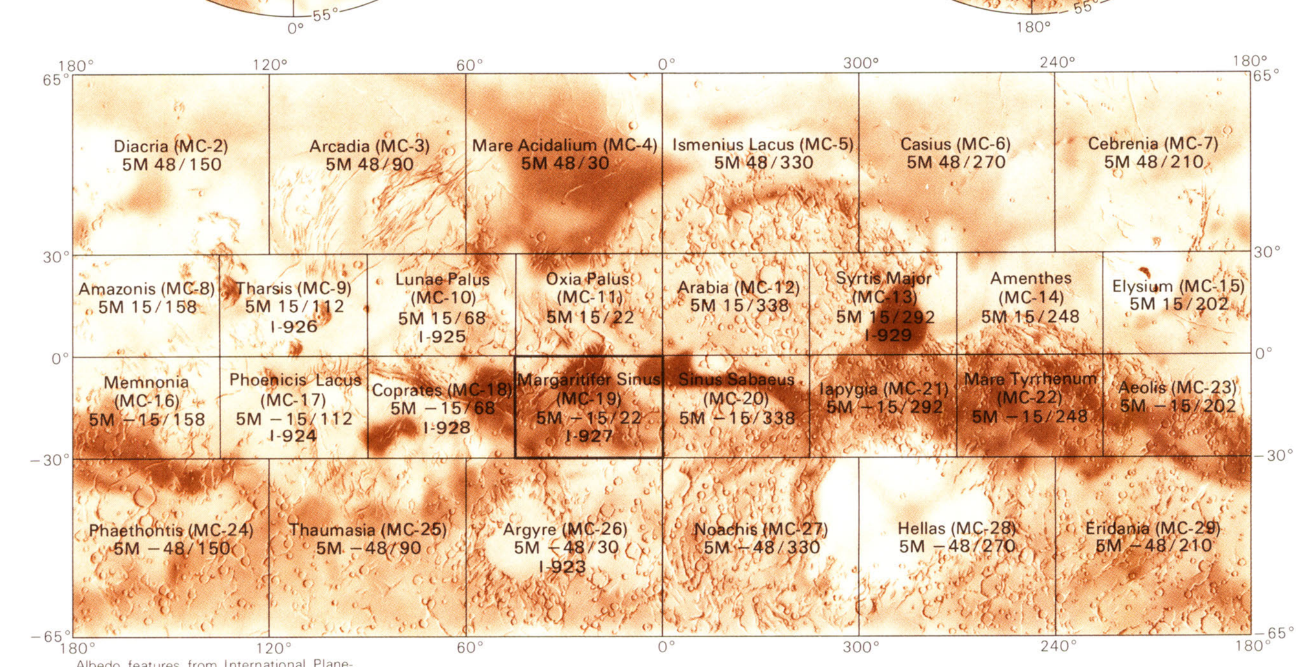
Prepared on behalf of the Planetary Programs Office, National Aeronautics and Space Administration under order no. W-13,687.

SCALE 1:5,000,000 AT 0° LATITUDE
MERCATOR PROJECTION

0° −10° −20° −30°
100 50 0 KILOMETRES 100 200 300 400 500 600 700 800 900 1000

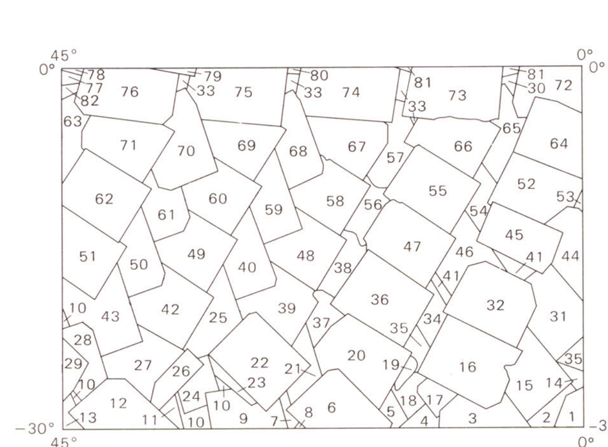






Albedo features from International Planetary Patrol photographs, Lowell Observatory, Flagstaff, Ariz.

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



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	7973593	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		

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. In three small areas (index no. 33) surface relief could not be portrayed because the only available picture lacks adequate photographic detail.

SHADED RELIEF MAP OF THE MARGARITIFER SINUS QUADRANGLE OF MARS

MC–19
M 5M -15/22 R
1975

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Mars (Margaritifer Sinus quad.) Relief. 1:5,000,000. 1975.
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