U.S. DEPARTMENT OF THE INTERIOR
U.S. 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, 1998
I–2531 (MC–19) SHEET 1 OF 2

NOTES ON BASE

This map is one in a series covering the entire surface of Mars at a nominal scale of 1:5,000,000. The series was originally compiled from Mariner 9 data (Batson and others, 1979). The original shaded relief base was revised and augmented with image data from Viking Orbiter, but feature positions were not shifted to fit controls derived from Viking.

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 3,393.4 km and a polar radius of 3,375.7 km.

PROJECTION

The Mercator, Lambert Conformal Conic, and Polar Stereographic projections are used for this map series. The scale of the series is 1:5,000,000 at the equator. The projections have common scales of 1:4,336,000 at lat ±30° and 1:4,306,000 at lat ±65°. Standard parallels for the Lambert Conformal Conic projection are at lat ±35.8° and ±59.2°. Longitude increases to the west in accordance with astronomical convention for Mars. Latitude is planetographic.

CONTROL

Planimetric control of the shaded relief is provided by photogrammetric triangulation using Mariner 9 images (Davies, 1973; Davies and Arthur, 1973) and the radio-tracked position of the Mariner 9 spacecraft. The first meridian passes through the center of a small crater, Airy-0 (lat 5.19° S., long 0°), within the crater Airy.

Primary controls used in the network include the Viking Orbiter Secondary Experiment Data Record, radio-occultation measurements from both Mariner 9 and Viking Missions (Lorell and others, 1972; Kliore and others, 1973; Lindal and others, 1979), Earth-based radar observations (Pettengill and others, 1971; Downs and others, 1975), and the Mars primary control network of the Rand Corporation (Davies and others, 1978).

MAPPING TECHNIQUE

Shaded relief was portrayed by photointerpretive methods described by Inge and Bridges (1976). Uniform sun illumination from the west was used throughout. The original rendition of feature positions, sizes, and shapes was taken from a controlled base mosaic of Mariner 9 images. Various computer enhancements of many Mariner 9 and Viking Orbiter images besides those in the base mosaic were examined in an attempt to portray the surface as accurately as possible.

Initial shaded relief analysis and representation were made by Barbara J. Hall; revisions were made by Patricia M. Bridges.

COLOR

No attempt was made on the map to duplicate precisely 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, 1980, 1983, 1998).

MC–19: Abbreviation for Mars Chart 19.

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

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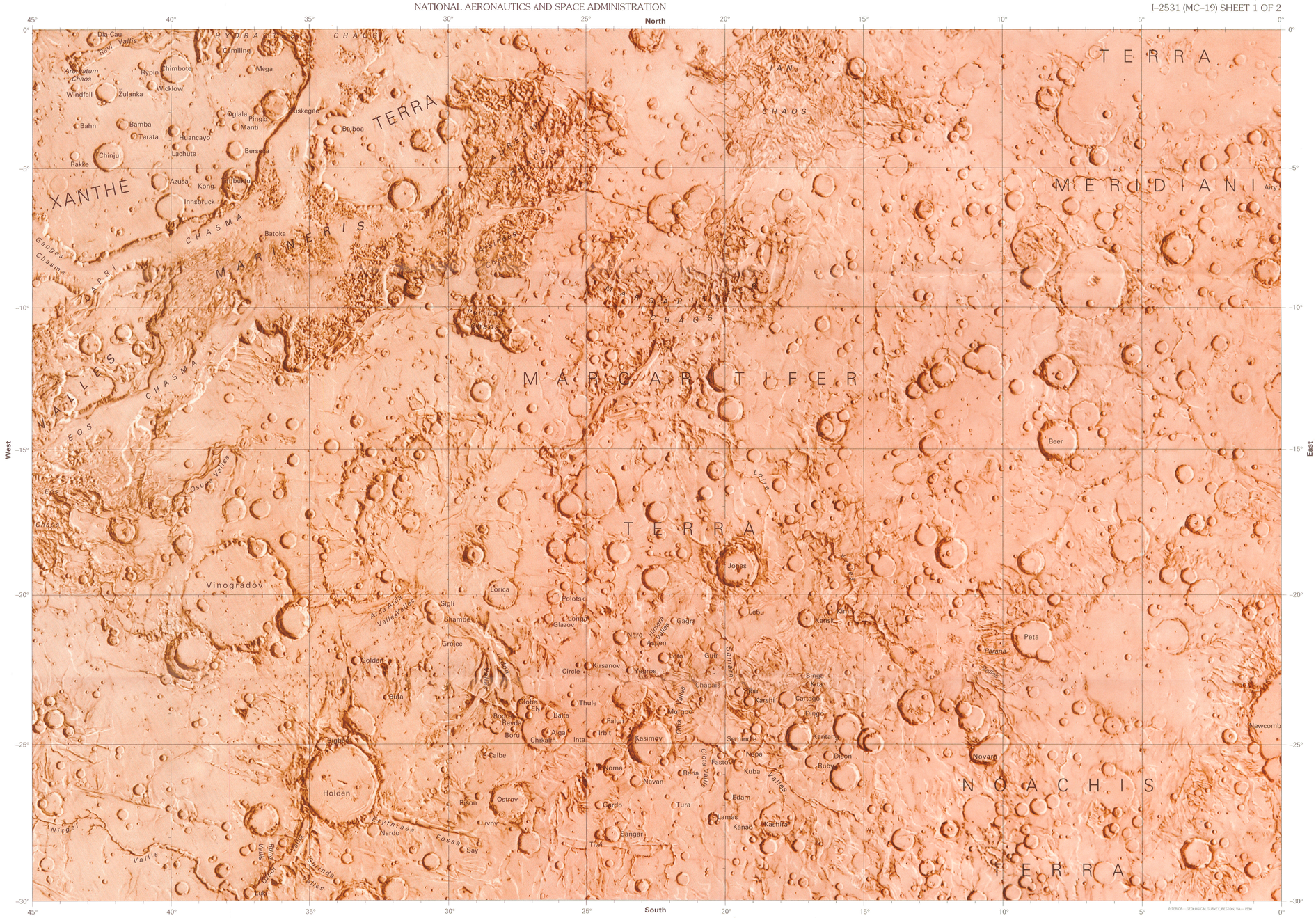

Shaded relief revised in January 1987 on behalf of the Planetary Geology Program, Solar System Exploration Division, Office of Space Science, National Aeronautics and Space Administration

This map supersedes map I–1293

Edited by Doris Weir and Derrick D. Hirsch; cartography by Darlene A. Casebier

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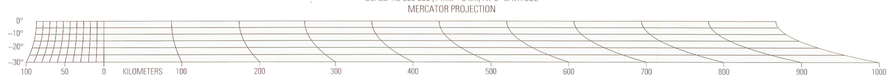
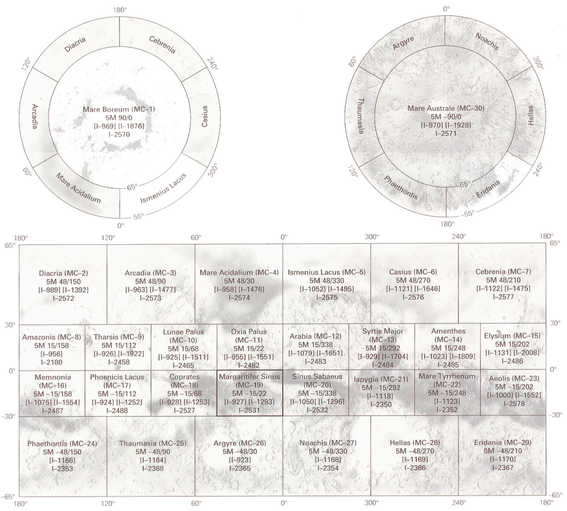
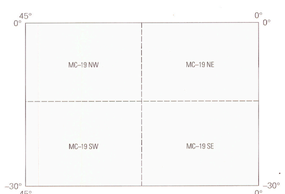
SCALE 1:5 000 000 (1 mm = 5 km) AT 0° LATITUDE
MERCATOR PROJECTION





QUADRANGLE LOCATION
Number preceded by I refers to published shaded relief map.
(Number in brackets refers to earlier map superseded by revised version.)



1:2,000,000-SCALE CONTROLLED PHOTOMOSAICS

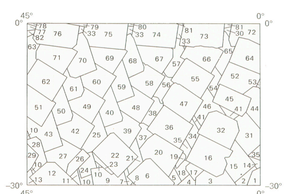
I-Series	Quadrangle
I–1381	MC–19 NW
I–1382	MC–19 NE
I–1209	MC–19 SW
I–1210	MC–19 SE

VIKING 1

Index No.	Picture No.	Index No.	Picture No.
1	41A12	15	620A17
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	658A58
11	615A63	25	689A01
12	615A67	26	889A03
13	620A84	27	729A38
14	620A85		

INDEX OF VIKING SOURCES

This shaded relief map has been revised by utilizing 1:2,000,000-scale 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, Goddard Space Flight Center, Greenbelt, MD 20771.



A-camera pictures

Index No.	DAS No.	Index No.	DAS No.	Index No.	DAS No.	Index No.	DAS No.
1	8117303	22	6426803	43	9160809	64	6571003
2	5239393	23	7829883	44	8045623	65	7973803
3	8045413	24	9233689	45	6570863	66	7802053
4	5167433	25	9232759	46	7973663	67	7830163
5	7973453	26	6354913	47	7901913	68	9232969
6	6498623	27	7757993	48	7830023	69	9232969
7	5740803	28	9160799	49	7758133	70	9161079
8	6498553	29	6283023	50	9160939	71	7686383
9	9304509	30	5884783	51	7686243	72	6571353
10	5668773	31	8045553	52	6570933	73	7907403
11	9232619	32	6570793	53	8045693	74	7830513
12	6354843	33	5817763	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	7758893
18	7973523	39	7829953	60	7758203	81	7830583
19	6498603	40	9233829	61	9161099	82	10495089
20	7901773	41	5956753	62	7686313		
21	9304579	42	7758863	63	9089189		

INDEX OF 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. Useful coverage is not available in the crosshatched areas. The DAS number may vary slightly (usually by 5) among different versions of the same picture.

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 450, 2255 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.

REVISED SHADED RELIEF MAP OF THE MARGARITIFER SINUS QUADRANGLE (MC–19) OF MARS

1998

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