

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

Prepared for the
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NOTES ON BASE

A series of topographic maps covering the entire surface of Mars at a nominal scale of 1:5,000,000 was originally compiled from Mariner 9 data. Details of the Mariner 9 mission that are related to the mapping are described by Batson and others (1979). This revised version was based on Viking Orbiter images. A series of papers describing the Viking mission was published in the Journal of Geophysical Research (American Geophysical Union, 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, 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 130° and 1:4,290,000 at lat 165°. Standard parallels for the Lambert conformal conic projection are at lat 135.8° and 159.2°. Longitudes increase to the west in accordance with astronomical convention for Mars.

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 Mariner 9 spacecraft. The first meridian passes through the center of a small crater, Airy-O (lat 5°19' S., long 0°), located within the crater Airy.

MAPPING TECHNIQUE
A series of mosaics of Mariner 9 pictures was assembled at 1:5,000,000 using projections described above.

Shaded relief was portrayed using airbrush techniques detailed by Inge (1972) and photoreproductive methods described by Inge and Bridges (1976). Uniform sun illumination from the west was used throughout. Sizes, shapes, and positions of features were taken from the base mosaic. In the first edition of the map, 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. In this revised edition, this was accomplished by incorporating information derived from various enhancements of higher resolution Viking images of the map area.

Original shaded relief analysis and representation were made by Susan L. Davis. Revisions were made by Barbara J. Hall.

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

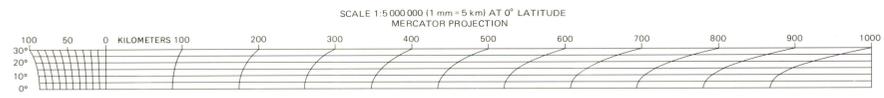
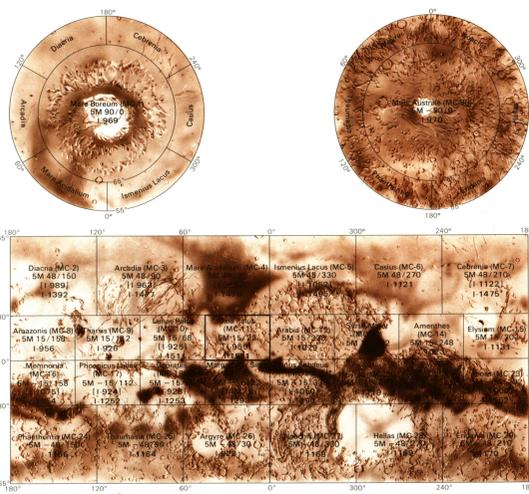
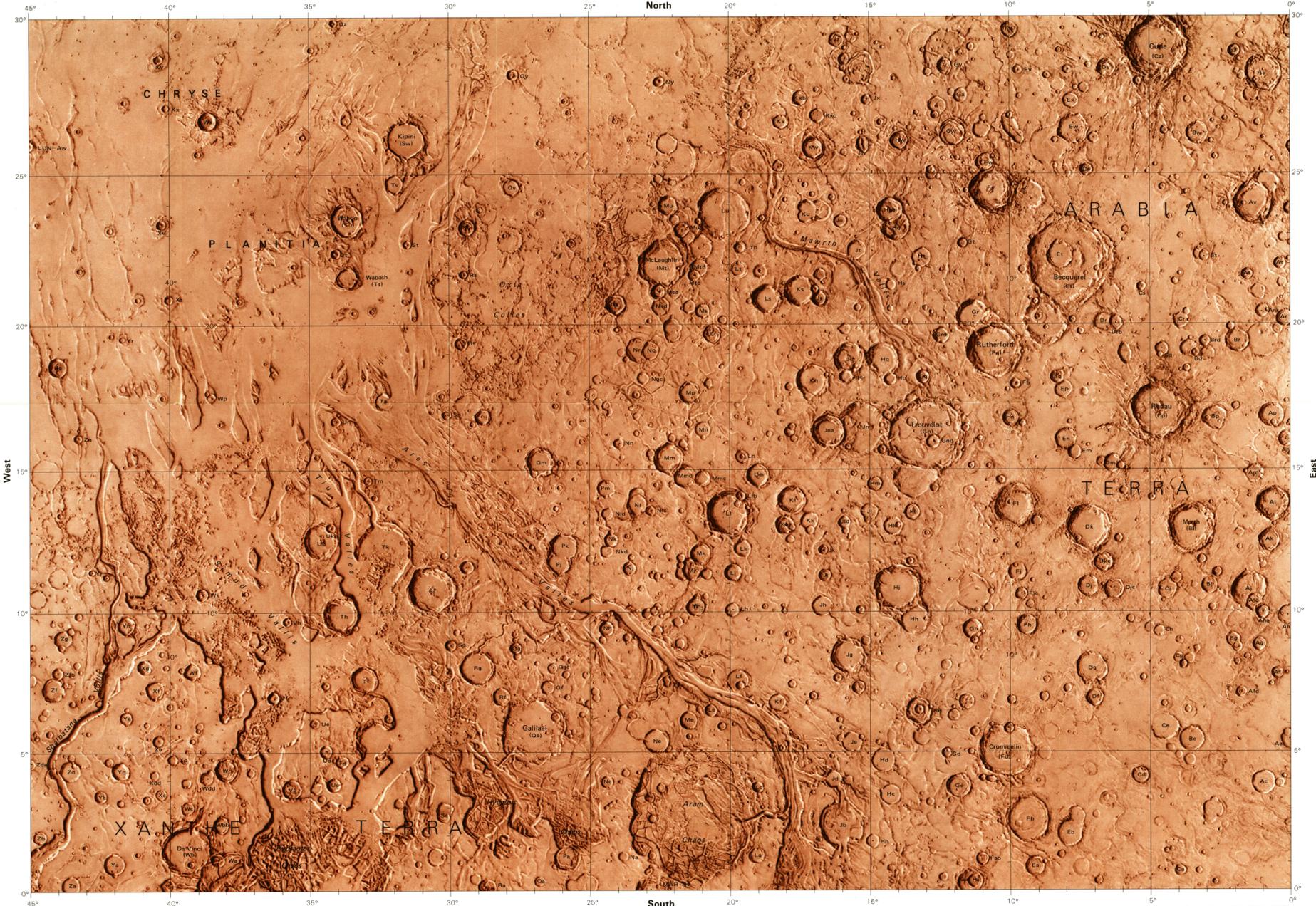
Names on this sheet are approved by the International Astronomical Union (IAU, 1977 and 1980) except for a provisional name, which is listed below. Double- and triple-letter designations for craters refer to position on the map and are derived from a grid based on equidistant meridians and parallels; 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 OXIA (identifying the Oxia Palus 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 name: Oxia Colles.

MC-11: Abbreviation for Mars Chart 11 M 5M 15/22 RN: Abbreviation for Mars, 1:5,000,000 series; center of sheet, lat 15° N., long 22° W.; shaded relief map, (R), with nomenclature, (N).

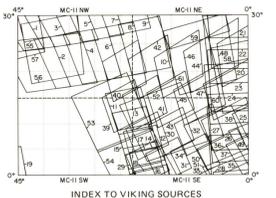
REFERENCES

American Geophysical Union, 1977. Journal of Geophysical Research, v. 82, no. 28, p. 3959-4081.
Batson, R. M., Bridges, P. M., and Inge, J. L., 1979. Atlas of Mars. The 1:5,000,000 map series. National Aeronautics and Space Administration, NASA SM 438, 146 p.
Davies, M. E., 1973. Mariner 9: Primary control net. Photogrammetric Engineering, v. 39, no. 12, p. 1297-1302.
Davies, M. E., and Arthur, D. W. G., 1973. Martian surface coordinates. Journal of Geophysical Research, v. 78, no. 20, p. 4355-4394.
Inge, J. L., 1972. Principles of lunar illustration. Reference Publication RP-72-1, 60 p.
Inge, J. L., and Bridges, P. M., 1976. Applied photointerpretation for airbrush cartography. Photogrammetric Engineering and Remote Sensing, v. 42, no. 6, p. 749-760.
International Astronomical Union, 1974. Commission 16. Physical study of planets and satellites, and lunar and martian nomenclature, in 15th General Assembly, Sydney, 1973. Proceedings: International Astronomical Union Transactions, v. 15B, p. 105-108, 217-221.
International Astronomical Union, 1977. Working Group for Planetary System Nomenclature, in 16th General Assembly, Grenoble, 1976. Proceedings: International Astronomical Union Transactions, v. 16B, p. 321-325, 331-336, 355-362.
International Astronomical Union, 1980. Working Group for Planetary System Nomenclature, in 17th General Assembly, Montreal, 1979. Proceedings: International Astronomical Union Transactions, v. 17B, p. 293-297.



**1:2,000,000
Controlled photomosaics**

I No.	Quadrangle No.
1342	MC-11 SE
1343	MC-11 SW
1344	MC-11 NE
1345	MC-11 NW



INDEX TO VIKING SOURCES
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, Goddard Space Flight Center, Greenbelt, MD 20771.

Viking 1

Index No.	Picture No.	Index No.	Picture No.
1	450A01	32	689A04
2	450A02	33	689A05
3	450A03	34	689A06
4	450A04	35	689A07
5	450A05	36	689A08
6	450A06	37	689A09
7	450A07	38	689A10
8	450A08	39	689A11
9	450A09	40	689A12
10	450A10	41	689A13
11	450A11	42	689A14
12	450A12	43	689A15
13	450A13	44	689A16
14	450A14	45	689A17
15	450A15	46	689A18
16	450A16	47	689A19
17	450A17	48	689A20
18	450A18	49	720A21
19	450A19	50	720A22
20	450A20	51	720A23
21	450A21	52	720A24
22	450A22	53	720A25
23	450A23	54	720A26
24	450A24	55	720A27
25	450A25	56	720A28
26	450A26	57	720A29
27	450A27	58	720A30
28	450A28	59	720A31
29	450A29	60	720A32
30	450A30	61	720A33

A camera pictures

Index No.	DAS No.	Index No.	DAS No.
1	8946674	24	7758628
2	7614416	25	8162444
3	7651272	26	7831168
4	7614893	27	7530708
5	7614913	28	7830728
6	7614913	29	7530708
7	8018564	30	7758118
8	7614913	31	7758118
9	10493114	32	7830728
10	7614913	33	8234324
11	7687018	34	7902518
12	7687018	35	7902518
13	7688876	36	7902518
14	7615328	37	7902518
15	7615328	38	7902518
16	8090449	39	7831008
17	7709259	40	7902408
18	7709259	41	8090449
19	7709259	42	7902408
20	7709259	43	7902408
21	7709259	44	6071423
22	7692228	45	6071423
23	7758698		

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. Useful coverage is not available in the cross-hatched areas. The DAS number may differ slightly (usually by 5) among various versions of the same picture.

QUADRANGLE LOCATION
Number preceded by 1 refers to published shaded relief map. (Number in brackets refers to earlier map superseded by revised version)

NOTE TO USERS
Users noting errors or omission are urged to indicate them on the map and to forward it to U.S. Geological Survey, Building 4, Room 454, 2255 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.

SHADED RELIEF MAP OF THE OXIA PALUS QUADRANGLE OF MARS

MC-11
M 5M 15/22 RN
1984

For sale by Branch of Distribution, U.S. Geological Survey, 1200 South Eads Street, Arlington, VA 22202, and Branch of Distribution, U.S. Geological Survey, Box 25286, Federal Center, Denver, CO 80225.



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