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
MARE TYRRHENUM QUADRANGLE
M 5M –15/248 R, 1978
I-1123 (MC-22)

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; 1976). 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 (lat 5.19° S) within the crater Airy. No simple statement is possible for the precision, but local consistency is about 10 km.

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, using airbrush techniques described by Inge (1972) and Inge and Bridges (1976). To improve portrayal, various computer enhancements of many pictures besides those in the base mosaic were used. (Computer enhancement of Mariner 9 pictures is described by Levinthal and others, 1973, and Green and others, 1975.) Viking orbiter pictures were also examined and used where they significantly clarified Mariner 9 image data. No attempt, however, was made to portray all information in the Viking pictures.

Shaded relief analysis and representation were made by Susan L. Davis.

COLOR

No attempt was made on the map to duplicate precisely 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 Terra Tyrrhena which is proposed. 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 TYR (identifying the Mare Tyrrhenum 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.

MC-22: Abbreviation for Mars Chart 22.

M 5M –15/248 R: Abbreviation for Mars 1:5,000,000 series; center of sheet, lat 15°S, long 248°; shaded relief map, R.

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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. L., Shipley, E. N., Sagan, Carl, Pollack, J. B., Lederberg, Joshua, Levinthal, E. C., Hartmann, W. K., McCord, T. B., Smith, B. A., Davies, M. E., de Vaucouleurs, G. D., and Leovy, C. B., 1970, Television experiment for Mariner Mars 1971: Icarus, v. 12, no. 1, p. 10–45.

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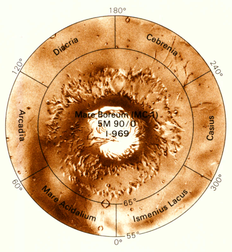
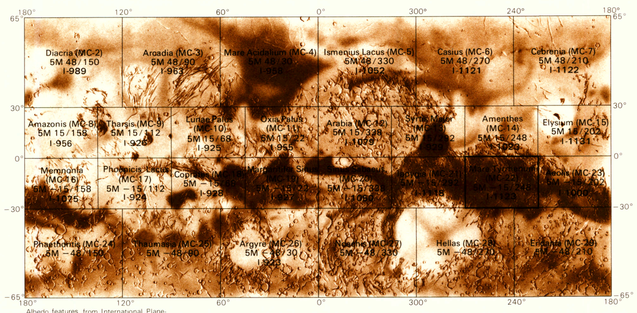


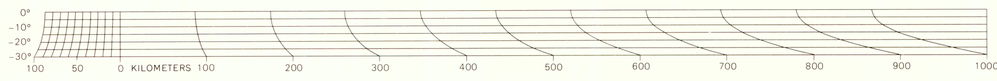


Albedo features from International Planetary Patrol photographs, Lowell Observatory, Flagstaff, Ariz.

QUADRANGLE LOCATION

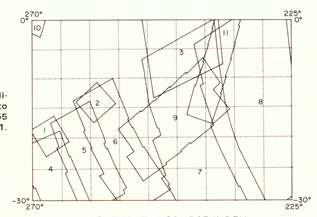
Number preceded by I refers to published shaded relief map

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



NOTE TO USERS

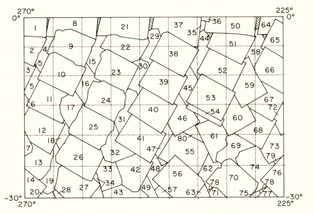
Users noting errors or omissions are urged to indicate them on the map and to forward the map to Astrogeologic Studies, Geologic Division, 2255 North Gemini Drive Flagstaff, Arizona 86001. A replacement copy will be returned.



SUPPLEMENTAL SOURCE INDEX

Viking pictures were used where available to clarify Mariner 9 data. The outline for each sequence of pictures is shown.

Viking 1 Index No.	Viking 1 Picture No.	Viking 2 Index No.	Viking 2 Picture No.
1	97A26	10	67B67
2	97A32	11	66B88
3	101A09		66B90
4	109A20		66B92
	109A22		66B94
5	109A48		66B96
	109A50		66B98
	109A51		
	109A52		
6	109A76		
	109A78		
	109A79		
	109A80		
	109A81		
	109A82		
7	101A14		
	101A16		
	101A17		
	101A18		
8	101A47		
	101A49		
	101A51		
	101A53		
9	87A15		
	87A16		
	87A17		
	87A18		
	87A19		
	87A20		
	87A21		
	87A22		
	87A23		
	87A24		



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 vary 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.
1	7291163	28	6031233	55	7578303
2	7290813	29	8909429	56	6175153
3	7290743	30	8909359	57	6175083
4	8765579	31	8909289	58	9053279
5	8765509	32	8909219	59	9053209
6	8765439	33	8909149	60	9053139
7	8765369	34	8909079	61	9053069
8	7363123	35	7507463	62	9052999
9	7362773	36	7507043	63	9052929
10	7362703	37	7506973	64	7650823
11	7362633	38	7506623	65	7650473
12	7362563	39	7506553	66	7650403
13	7362493	40	7506483	67	7650333
14	5959343	41	7506413	68	7650263
15	8837539	42	7506343	69	7650193
16	8837469	43	6103198	70	6247043
17	8837399	44	8981389	71	6246973
18	8837329	45	8981319	72	9125029
19	8837259	46	8981249	73	9124959
20	8837189	47	8981179	74	9124889
21	7435083	48	8981109	75	9124819
22	7434733	49	8981039	76	6318933
23	7434663	50	7578933	77	6318863
24	7434593	51	7578583	78	5488663
25	7434523	52	7578513	79	5704753
26	7434453	53	7578443	80	5416703
27	6031303	54	7578373		

SHADED RELIEF MAP OF THE MARE TYRRHENUM QUADRANGLE OF MARS

MC-22

M 5M –15/248 R
1978

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