

U.S. DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY

Prepared for the  
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

**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 (Bateson 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-O (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 Lovell and others, 1972; Klare 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 Patricia M. Bridges; 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, 1983, 1986, 1992).

MC-17: Abbreviation for Mars Chart 17.

M 5M -15/112 RN: Abbreviation for Mars: 1:5,000,000 series; center of sheet, lat 15° S, long 112°; shaded relief map (R) with nomenclature (N).

**REFERENCES**

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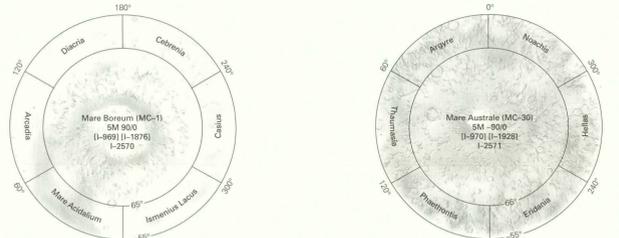
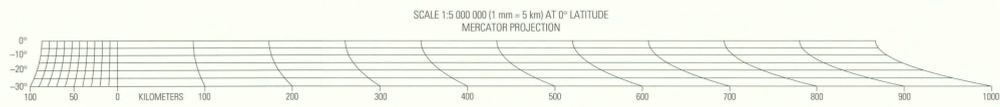
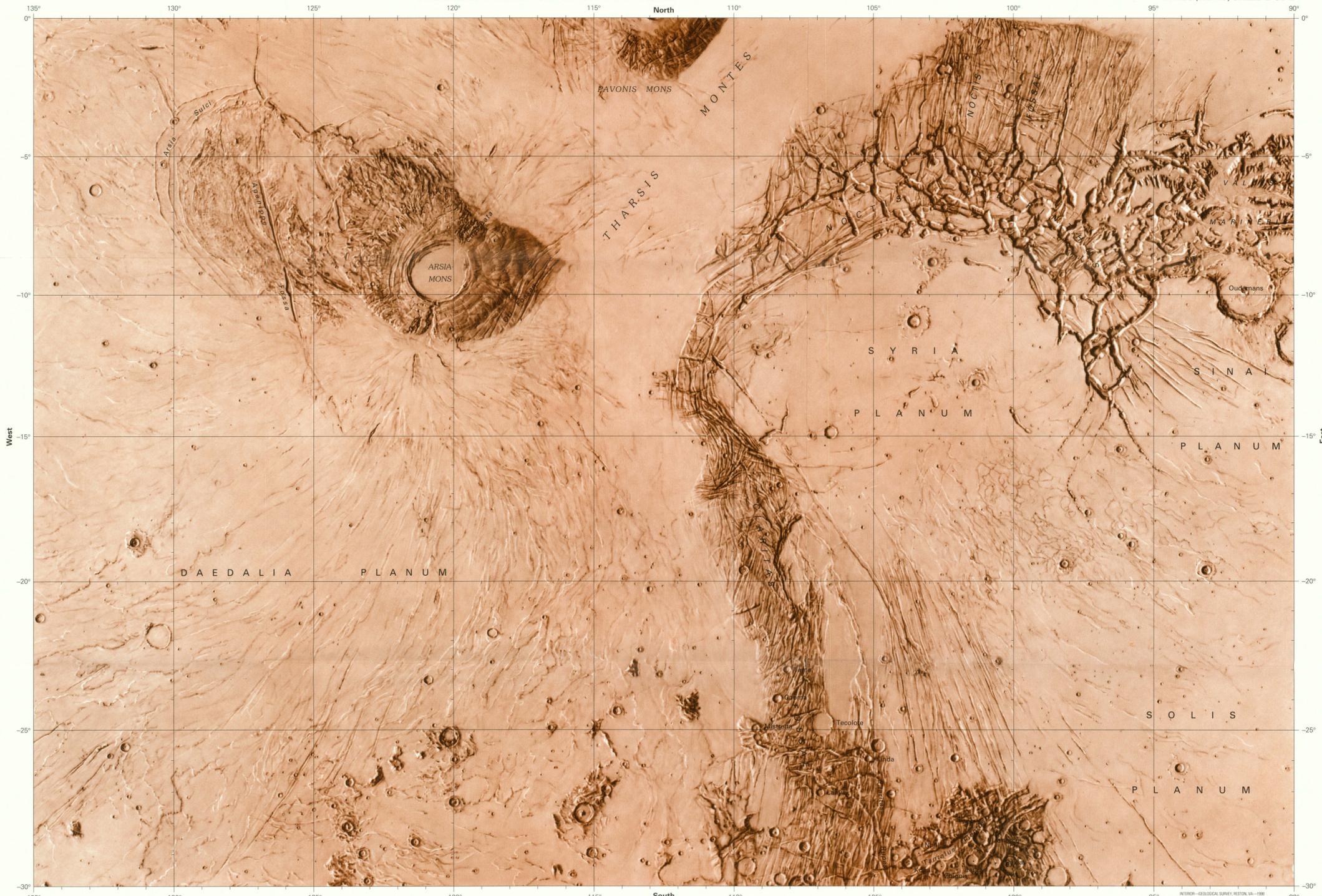
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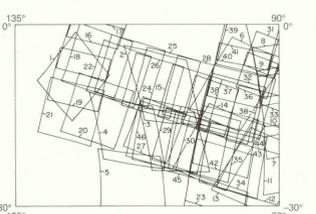
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Quadrangle	Center (lat, long)	Scale
Diacria (MC-2)	SM 16198 (I-899) (I-1921) I-2572	1:2,500,000
Arcadia (MC-3)	SM 48270 (I-963) (I-1477) I-2573	1:2,500,000
Mare Acidulum (MC-4)	SM 15338 (I-968) (I-1476) I-2574	1:2,500,000
Ismenius Lacus (MC-5)	SM 15228 (I-1023) (I-1495) I-2575	1:2,500,000
Casius (MC-6)	SM 15248 (I-1121) (I-1646) I-2576	1:2,500,000
Cerberia (MC-7)	SM 15202 (I-1131) (I-1475) I-2577	1:2,500,000
Amazonis (MC-8)	SM 16198 (I-920) (I-1921) I-2578	1:2,500,000
Tharsis (MC-9)	SM 15112 (I-925) (I-1511) I-2579	1:2,500,000
Lunae Palus (MC-10)	SM 15338 (I-968) (I-1476) I-2580	1:2,500,000
Oxia Palus (MC-11)	SM 15228 (I-1023) (I-1495) I-2581	1:2,500,000
Arabia (MC-12)	SM 15248 (I-1121) (I-1646) I-2582	1:2,500,000
Syrtis Major (MC-13)	SM 15202 (I-1131) (I-1475) I-2583	1:2,500,000
Amenethes (MC-14)	SM 15228 (I-1023) (I-1495) I-2584	1:2,500,000
Elydium (MC-15)	SM 15248 (I-1121) (I-1646) I-2585	1:2,500,000
Memnonia (MC-16)	SM 15112 (I-925) (I-1511) I-2586	1:2,500,000
Phoebicis Lacus (MC-17)	SM 15338 (I-968) (I-1476) I-2572	1:2,500,000
Coprosia (MC-18)	SM 15228 (I-1023) (I-1495) I-2587	1:2,500,000
Margarither Sinus (MC-19)	SM 15248 (I-1121) (I-1646) I-2588	1:2,500,000
Situs Sabbaeus (MC-20)	SM 15202 (I-1131) (I-1475) I-2589	1:2,500,000
Irrigia (MC-21)	SM 15228 (I-1023) (I-1495) I-2590	1:2,500,000
Mare Tyrrhenum (MC-22)	SM 15248 (I-1121) (I-1646) I-2591	1:2,500,000
Acolia (MC-23)	SM 15202 (I-1131) (I-1475) I-2592	1:2,500,000
Phaenotis (MC-24)	SM 16198 (I-920) (I-1921) I-2593	1:2,500,000
Thaumasia (MC-25)	SM 48270 (I-963) (I-1477) I-2594	1:2,500,000
Argyre (MC-26)	SM 15338 (I-968) (I-1476) I-2595	1:2,500,000
Neapolis (MC-27)	SM 15228 (I-1023) (I-1495) I-2596	1:2,500,000
Helias (MC-28)	SM 15248 (I-1121) (I-1646) I-2597	1:2,500,000
Eridania (MC-29)	SM 15202 (I-1131) (I-1475) I-2598	1:2,500,000

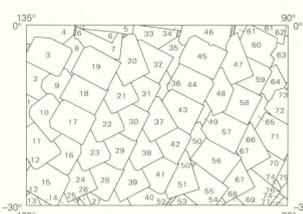
**1:2,000,000 SCALE CONTROLLED PHOTOMOSAICS**

Series	Quadrangle
1-1478	MC-17 NW
1-1208	MC-17 NE
1-1189	MC-17 SW
1-1191	MC-17 SE



**VIKING 1**

Index No.	Picture No.	Index No.	Picture No.
1	416A83	15	344880
2	294A69	16	355832
3	294A68	17	355834
4	294A69	18	344888
5	294A68	19	355836
6	416A81	20	344889
7	444A18	21	355838
8	444A14	22	344876
9	444A12	23	357822
10	444A16	24	344890
11	444A20	25	344892
12	416A94	26	344878
13	416A88	27	344893
14	416A92	28	344894
15	344871	29	344881
30	344879	46	344893



**A-camera pictures**

Index No.	DAS No.	Index No.	DAS No.
1	6966773	21	8513509
2	6966713	22	8513439
3	6966793	23	8513369
4	6967153	24	8513299
5	7039163	25	5707203
6	8513959	26	5707273
7	7039063	27	8562299
8	8441619	28	7110493
9	8441549	29	7110563
10	8441479	30	7110633
11	8441409	31	7110703
12	8441339	32	7110773
13	8562343	33	7111123
14	8513229	34	7111193
15	7038463	35	8956009
16	7038533	36	8956079
17	7038603	37	8956149
18	7038673	38	8956219
19	7038743	39	8956289
20	8513579	40	5739373

**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.

**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 cross-hatched areas. The DAS number may vary slightly (usually by 5) among different versions of the same picture.

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

**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 PHOENICIS LACUS QUADRANGLE (MC-17) OF MARS**

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