

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 (Barton 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 60°. 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, Atiy-O (lat 5.19° S, long 0°), within the crater Atiy. Primary controls used in the network include the Viking Orbiter Secondary Experiment Data Record, radio-occultation measurements from both Mariner 9 and Viking Mission land and others, 1972; Klore 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 and subsequent revisions were made by Patricia M. Bridges.

COLOR

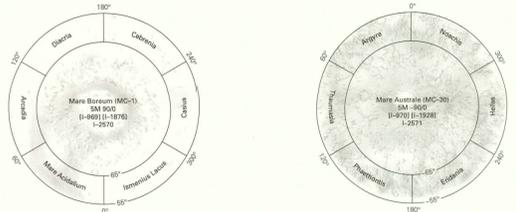
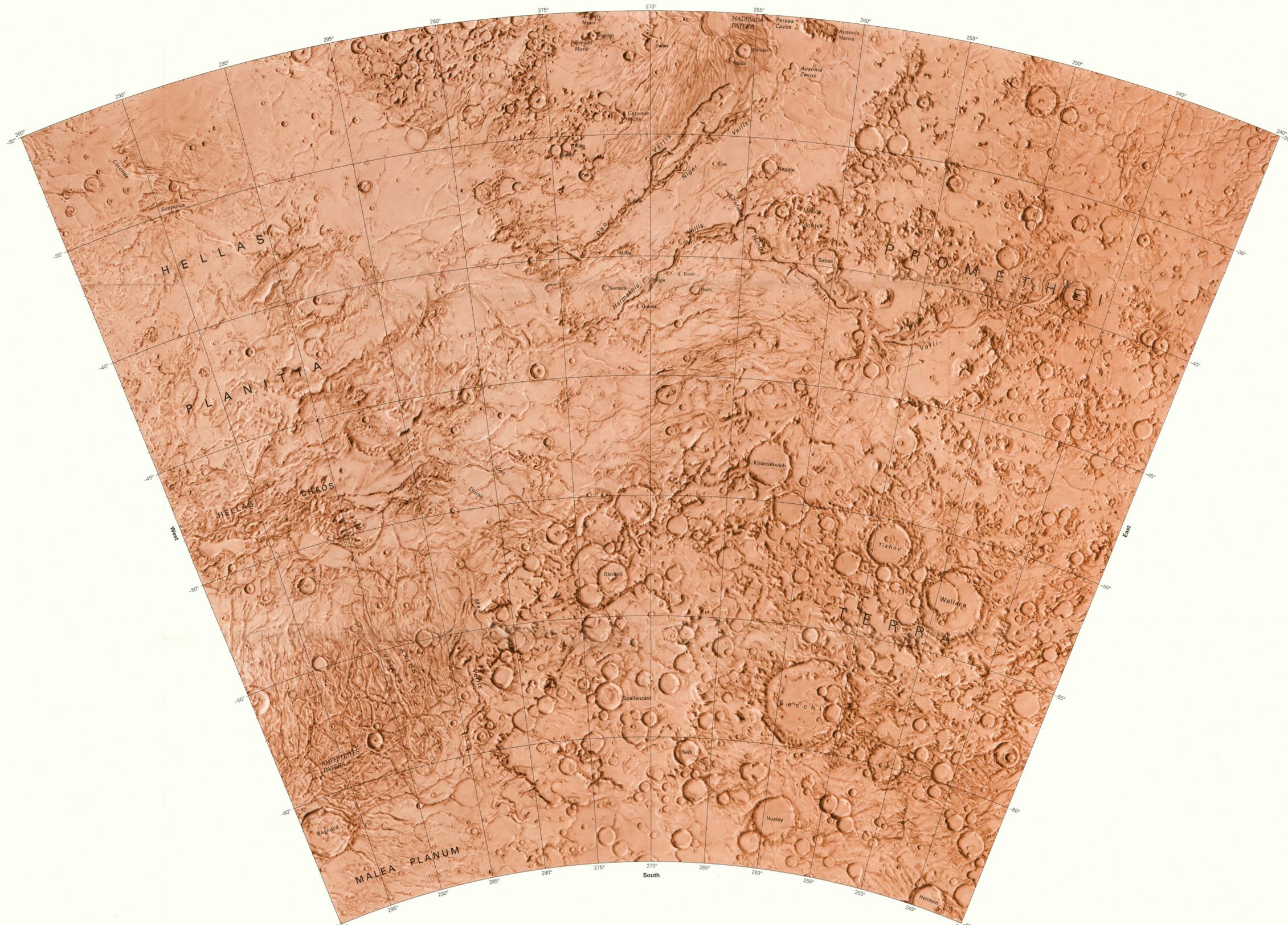
No attempt was made on the map to duplicate precisely the color of the martian surface, although the color used may approximate it.

NOMENCLATURE

Names on this sheet are approved by the International Astronomical Union (IAU, 1974, 1980, 1983, 1986, 1992, 1996). MC-28: Abbreviation for Mars Chart 28. M 5M -48/270 RN: Abbreviation for Mars 1:5,000,000 series; center of sheet, lat 48° S, long 270°; shaded relief map (R) with nomenclature (N).

REFERENCES

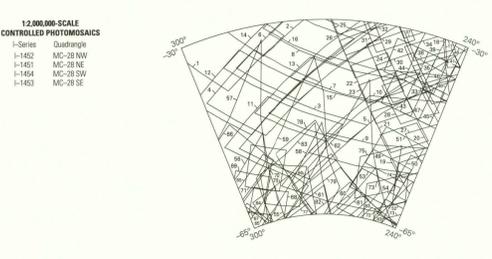
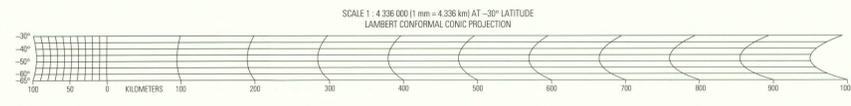
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Downs, G.S., Reichley, P.E., and Green, R.R., 1975, Radar measurements of martian topography and surface properties. Icarus, v. 26, no. 3, p. 273-312.
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Pettengill, G.H., Rogers, A.E.E., and Shapiro, I.I., 1971, Martian craters and a scarp as seen by radar. Science, v. 174, no. 4016, p. 1321-1324.



Quadrangle	Center (lat, long)	Scale
Dacia (MC-2)	SM 8009 [1-988] [1-1922] I-2572	1:2500
Arada (MC-3)	SM 8010 [1-923] [1-1477] I-2573	1:2500
Mare Acciduum (MC-4)	SM 8020 [1-1023] [1-1476] I-2574	1:2500
Immentus Lacus (MC-5)	SM 8021 [1-1121] [1-1465] I-2575	1:2500
Cassus (MC-6)	SM 8022 [1-1121] [1-1465] I-2577	1:2500
Celrenia (MC-7)	SM 8023 [1-1121] [1-1475] I-2577	1:2500
Amazonia (MC-8)	SM 8110 [1-956] [1-1922] I-2580	1:2500
Tharsis (MC-9)	SM 8111 [1-923] [1-1922] I-2581	1:2500
Lunae Palus (MC-10)	SM 8120 [1-951] [1-1911] I-2485	1:2485
Idaea Palus (MC-11)	SM 1222 [1-1073] [1-1951] I-2485	1:2485
Arada (MC-12)	SM 1508 [1-923] [1-1951] I-2485	1:2485
Syllis Major (MC-13)	SM 1509 [1-923] [1-1951] I-2485	1:2485
Aeneas (MC-14)	SM 1510 [1-923] [1-1951] I-2485	1:2485
Elyrium (MC-15)	SM 1511 [1-923] [1-1951] I-2485	1:2485
Mareotis (MC-16)	SM 1512 [1-923] [1-1951] I-2485	1:2485
Phoenicia (MC-17)	SM 1513 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-18)	SM 1514 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-19)	SM 1515 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-20)	SM 1516 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-21)	SM 1517 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-22)	SM 1518 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-23)	SM 1519 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-24)	SM 1520 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-25)	SM 1521 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-26)	SM 1522 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-27)	SM 1523 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-28)	SM 1524 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-29)	SM 1525 [1-923] [1-1951] I-2485	1:2485
Phoenicia Lacus (MC-30)	SM 1526 [1-923] [1-1951] I-2485	1:2485

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

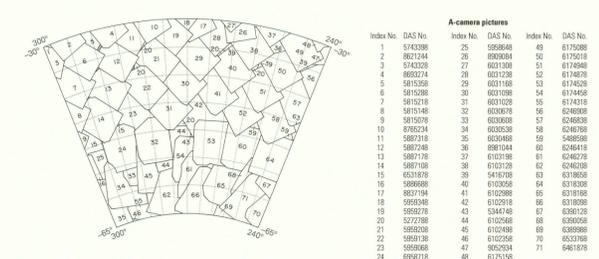
NOTE TO USERS
Users noting errors or omissions are urged to indicate them on the map and to forward it to U.S. Geological Survey, Building 4, Room 454, 2255 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.



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 No.	Picture No.	Index No.	Picture No.	Index No.	Picture No.
1	85A21	22	109A14	43	350A32
2	85A23	23	109A15	44	350A33
3	85A24	24	109A16	45	350A34
4	85A25	25	109A17	46	350A35
5	85A26	26	109A18	47	350A36
6	85A27	27	109A19	48	350A37
7	85A28	28	109A20	49	350A38
8	85A29	29	109A21	50	350A39
9	85A30	30	109A22	51	350A40
10	85A31	31	109A23	52	350A41
11	85A32	32	109A24	53	350A42
12	85A33	33	109A25	54	350A43
13	85A34	34	109A26	55	350A44
14	85A35	35	109A27	56	350A45
15	85A36	36	109A28	57	350A46
16	85A37	37	109A29	58	350A47
17	101A17	38	350A2	59	350A48
18	101A18	39	350A4	60	7987
19	109A46	40	350A5	61	7988
20	109A48	41	350A6	62	7989
21	109A10	42	350A31	63	79810

Shaded relief revised in April 1991 on behalf of the Planetary Geology Program, Solar System Exploration Division, Office of Space Science, National Aeronautics and Space Administration.
This map supersedes I-1189.
Edited by Dennis D. Hirsch, cartography by Roger D. Carroll, Darlene A. Casabian, Sandra K. Castro, and Hugh F. Thomas.
Manuscript approved for publication May 12, 1992.



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.

Index No.	DAS No.	Index No.	DAS No.	Index No.	DAS No.
1	5743386	25	5998469	49	6175088
2	5743387	26	5998470	50	6175089
3	5743388	27	5998471	51	6175090
4	8692774	28	6031230	52	6174878
5	9815366	29	6031189	53	6174829
6	9815368	30	6031188	54	6174848
7	9815370	31	6031188	55	6174818
8	9815372	32	6031188	56	6246938
9	9815374	33	6031188	57	6246938
10	9815376	34	6031188	58	6246938
11	9815378	35	6031188	59	5489589
12	9815380	36	6031188	60	6246938
13	9815382	37	6031188	61	6246938
14	9815384	38	6031188	62	6246938
15	6531878	39	5416108	63	6318058
16	9898688	40	6102918	64	6318058
17	9827194	41	6102918	65	6318058
18	9959348	42	6102918	66	6318058
19	9959378	43	6102918	67	6318058
20	5372788	44	6102918	68	6318058
21	9959378	45	6102918	69	6318058
22	9959378	46	6102918	70	6318058
23	9959378	47	9022934	71	6618178
24	6998716	48	6175088		