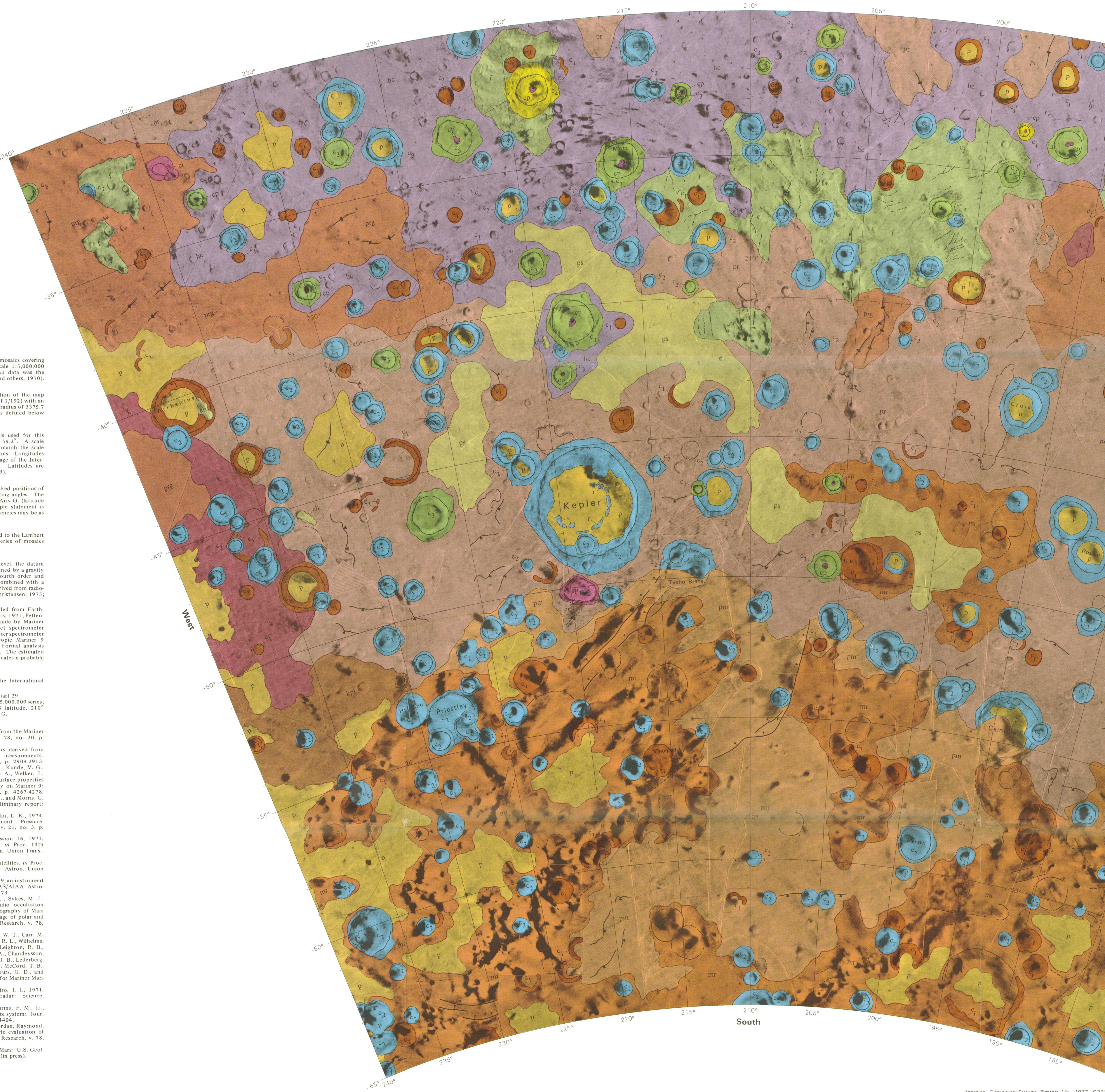
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

Prepared for the
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ATLAS OF MARS
1:5,000,000 GEOLOGIC SERIES
ERIDANIA QUADRANGLE
M 5M –48/210 G, 1977
I-1008 (MC-29)



Interior—Geological Survey, Reston, Va.—1977—G76272

Prepared on behalf of the Planetology Programs Office, National Aeronautics and Space Administration under contract W-13,709 in cooperation with University of Arkansas at Monticello (NASA grant NGR-04-008-001)

NOTES ON BASE

This is one map in a series of preliminary mosaics covering the entire surface of Mars at a nominal scale 1:5,000,000 (Batson, 1973). 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. This is not the height datum which is defined below under the heading "contours."

PROJECTION

The Lambert conformal conic projection is used for this sheet with standard parallels at 35.8° and 59.2°. A scale of 1:4,336,000 at lat 30° was chosen to match the scale at lat 30° of the adjacent Mercator projections. Longitudes increase to the west in accordance with usage of the International Astronomical Union (IAU, 1970). Latitudes are areographic (de Vaucouleurs and others, 1973).

CONTROL

Planimetric control is provided by radio-tracked positions of the spacecraft and telemetered camera pointing angles. The first meridian passes through the crater Airy-O (latitude 5.19° S) within the crater Airy. No simple statement is possible for the precision, but local inconsistencies may be as large as 50 km.

MAPPING TECHNIQUE

Selected Mariner 9 pictures were transformed to the Lambert conformal projection and assembled in a series of mosaics at 1:5,000,000.

CONTOURS

Since Mars has no seas and hence no sea level, the datum (The 0 km contour line) for altitudes is defined by a gravity field described by spherical harmonics of fourth order and fourth degree (Jordan and Lorell, 1973) combined with a 6.1 millibar atmospheric pressure surface derived from radio-occultation data (Kliore and others, 1973; Christensen, 1975; Wu, 1975).

The contour lines (Wu, 1975) were compiled from Earth-based radar determinations (Downs and others, 1971; Pettengill and others, 1971) and measurements made by Mariner 9 instrumentation, including the ultraviolet spectrometer (Hord and others, 1974), infrared interferometer spectrometer (Conrath and others, 1973), and stereoscopic Mariner 9 television pictures (Wu and others 1973). Formal analysis of contour-line accuracy has not been made. The estimated vertical accuracy of each source of data indicates a probable error of 1-2 km.

NOMENCLATURE

All names on this sheet are approved by the International Astronomical Union (IAU, 1974).

MC-29: Abbreviation for Mars Chart 29.
M 5M –48/210 G: Abbreviation for Mars 1:5,000,000 series; center of sheet, 48° S latitude, 210° longitude; geologic map, G.

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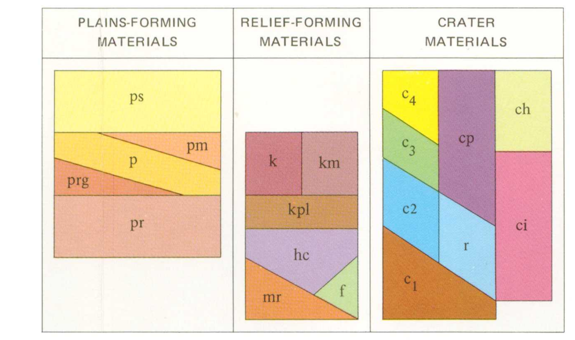
CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

PLAINS-FORMING MATERIALS

ps — SMOOTH PLAINS MATERIAL
pm — MOTTLED PLAINS MATERIAL
p — PLAINS MATERIAL
prg — RIDGED PLAINS MATERIAL
pr — ROLLING PLAINS MATERIAL

RELIEF-FORMING MATERIALS

k — KNOBBY MATERIAL
km — KNOB AND MASSIF MATERIAL
kpl — KNOB AND PLATEAU MATERIAL
hc — HILLY AND CRATERED MATERIAL
f — FURROWED MATERIAL
mr — MOTTLED ROUGH TERRAIN MATERIAL

CRATER MATERIALS

c_4 — CRATER MATERIAL
c_3 — CRATER MATERIAL
c_2 — CRATER MATERIAL
c_1 — CRATER MATERIAL
cp — CENTRAL PEAK MATERIAL
r — RING MATERIAL
ch — CHAIN CRATER MATERIAL
ci — MATERIAL OF IRREGULARLY SHAPED CRATERS

INTRODUCTION

GEOLOGIC UNITS

Plains-forming Materials

Relief-forming Materials

Crater Materials

STRUCTURE

WIND REGIME

GEOLOGIC HISTORY

FIGURE 1—*Azimuth frequency of faults and lineaments in the Eridania quadrangle based on approximately 55 structural trends.*

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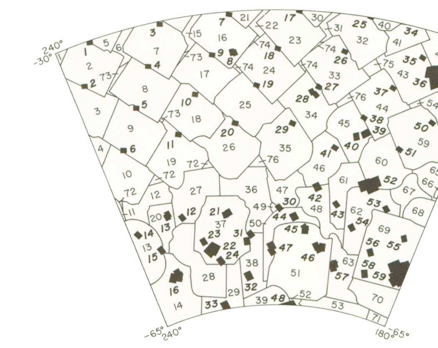

A-camera pictures

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2	6246973	40	6534603
3	6246903	41	8009433
4	6246833	42	5203413
5	6247043	43	5203343
6	9124819	44	5203273
7	6318863	45	5203203
8	6318793	46	5203133
9	6318723	47	5202923
10	6318653	48	5274813
11	6318303	49	5202853
12	6390193	50	5274743
13	6390123	51	5346633
14	6533763	52	5418523
15	9196709	53	5490483
16	6390753	54	6064413
17	6390683	55	8081323
18	6390613	56	5275373
19	6390543	57	5275303
20	6462013	58	5275233
21	6390823	59	5275163
22	9268599	60	5275093
23	6462643	61	5274883
24	6462573	62	5346773
25	6462503	63	5418593
26	6462433	64	5347123
27	6462083	65	5347053
28	6533833	66	5418943
29	5202713	67	5346843
30	6462713	68	5418733
31	9340489	69	5418663
32	6534533	70	5490553
33	6534463	71	5562513
34	6534393	72	5632653
35	6534323	73	5632723
36	6533973	74	5776713
37	6533903	75	5920703
38	5274673	76	5848673

High-resolution B-camera pictures

Index No.	DAS No.
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	5418558
58	*5490518*
59	*5490588*
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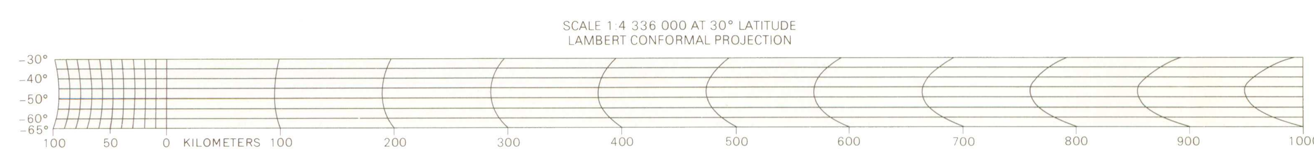
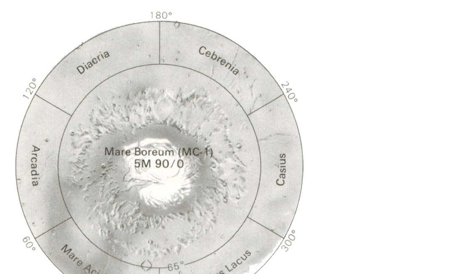
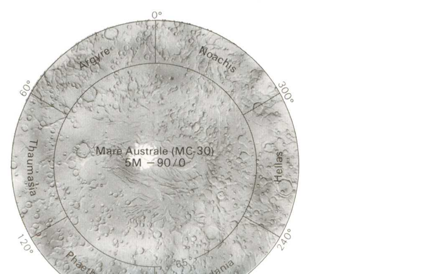
	5777938
	7108708
	7108778
	7108848
	7180738
	7180808
	7180878
	8512144
	8512214
	8583894
	9771094
	9843054
	9843124
	9843194

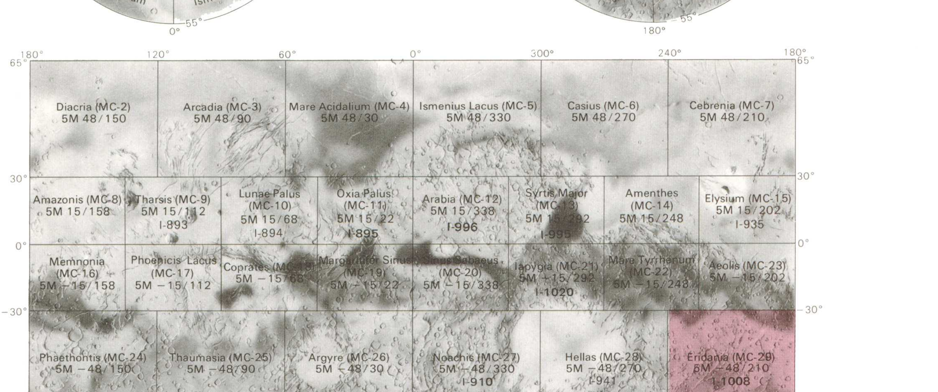
INDEX TO MARINER 9 PICTURES

The mosaic used to control the positioning of features on this map was made with the Mariner 9 A-camera pictures outlined above, identified by vertical numbers. Also shown (by solid black rectangles) are the high-resolution B-camera pictures, identified by italic numbers. The DAS numbers may differ slightly (usually by 5) among various versions of the same picture.









QUADRANGLE LOCATION
Number preceded by I refers to published geologic map

GEOLOGIC MAP OF THE ERIDANIA QUADRANGLE OF MARS

By

René A. De Hon

1977

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