

NOTES ON BASE
This sheet is one in a series of maps that cover the surfaces of the Galilean satellites of Jupiter at a nominal scale of 1:15,000,000 (Bates and others, 1980). Sources for the series were Voyager 1 and 2 images and 1:5,000,000-scale airbrush maps. Essential features of the mapping are noted below.

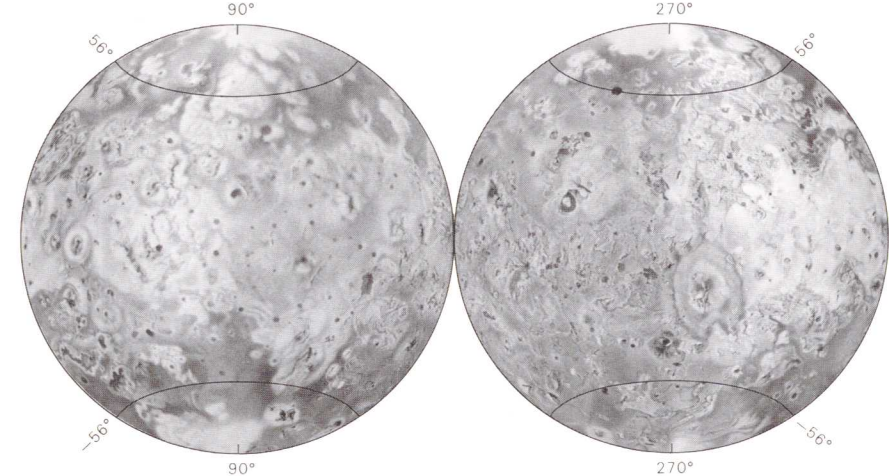
CARTOGRAPHIC CONTROL
Mercator and Polar Stereographic projections used for the maps of Io are based on a sphere with a radius of 1615 km and a common scale of 1:8,388,000 at lat 15°N. Longitude increases to the west in accordance with astronomical convention. Planimetric control was derived by photogrammetric triangulation using Voyager 1 and 2 pictures (Davies and Katayama, 1981). The meridians are numbered according to the ephemeris position of the prime meridian of Io (Davies and Katayama, 1981; IAU, 1980a).

MAPPING TECHNIQUE
A mosaic consisting of reduced photographic copies of 1:5,000,000-scale airbrush drawings was assembled at a scale of 1:15,000,000 by using projections described above. The mosaic was retouched for uniform tonal balance. Between lat -45° and -50°, image details taken from the south polar map were transferred manually, grid cell by grid cell, to corresponding grid cells of the Mercator map.

A scaled grid showing a perspective view of meridians and parallels was superimposed over selected Voyager pictures of Io. Sizes, shapes, and grid cell locations of features were located manually on corresponding grid locations on the north polar map and on the Mercator map between lat 45° and 56°. Details of the features were taken from Voyager pictures by portrayal and interpretation techniques described by Inge (1972) and Inge and Bridges (1976). Computer enhancements of many Voyager pictures were examined in order to portray the surface as accurately as possible. Surface relief is shown as if illuminated from the west. Albedo markings are shown as they appear on the Voyager pictures. Extreme variations in picture resolution precluded consistent interpretation and portrayal of the pictures used for map compilation. Further limitations were imposed by dark albedo markings, which tend to obscure distinctive surface details. (See also the notes on interpretation on sheet 2.)

The colors chosen for this map are intended to provide optimum discrimination of detail and do not necessarily represent the color of Io.

Image analysis and airbrush representations of the original 1:5,000,000-scale maps were made by Patricia M. Bridges (Mercator maps) and Patricia G. Hagerby (south polar map). The airbrush renditions of the 1:15,000,000-scale map were made by Patricia M. Bridges.



QUADRANGLE LOCATION
Index showing boundaries of 1:15,000,000-scale Polar Stereographic and Mercator projections

NOMENCLATURE
Names on this sheet are approved by the International Astronomical Union (IAU), 1977, 1980b, 1983 and 1986.

Ji 15M 1AN: Abbreviation for Jupiter, Io (satellite); 1:15,000,000 series; first edition, shaded relief and albedo markings (A), nomenclature (N).

Bates, R. M., Bridges, P. M., Inge, J. L., Isbell, Christopher, Masursky, Harold, Strobel, M. E., and Tyler, R. L., 1980, Mapping the Galilean satellites of Jupiter with Voyager data. Photogrammetric Engineering and Remote Sensing, v. 46, no. 10, p. 1303-1312.

Davies, M. E., and Katayama, F. Y., 1981, Coordinates of features on the Galilean satellites. Journal of Geophysical Research, v. 86, no. A10, p. 8635-8657.

Inge, J. L., 1972, Principles of lunar illustration. Astronomical Chart and Information Center 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.

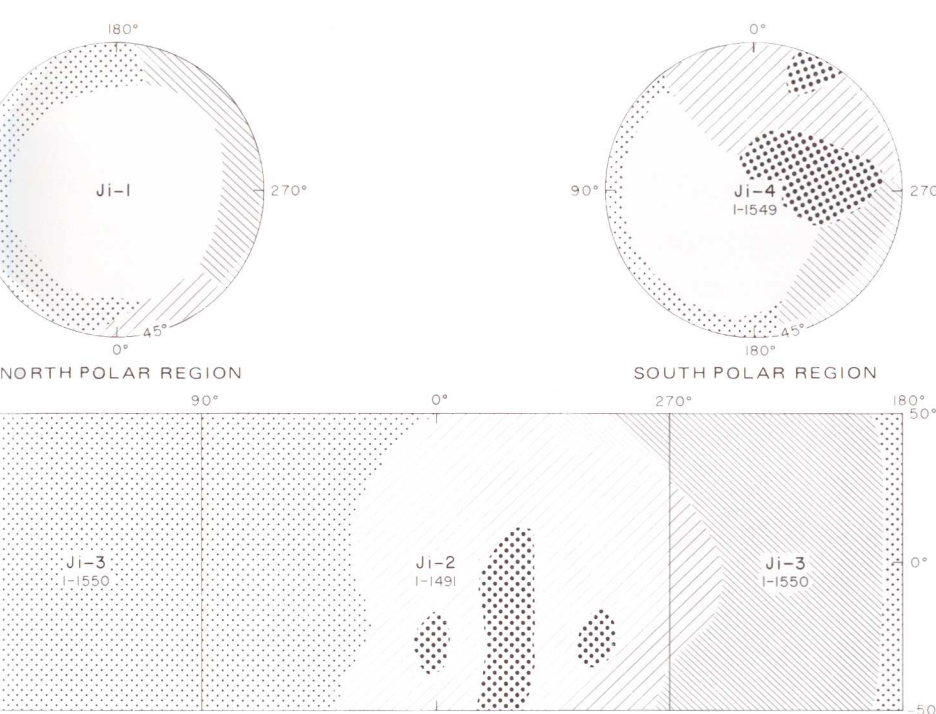
International Astronomical Union, 1977, Working Group for Planetary System Nomenclature, in 16th General Assembly, Grenoble, 1976. Proceedings: International Astronomical Union Transactions, v. 18B, p. 322-323.

1980a, Commission 4, Ephemerides, in 17th General Assembly, Montreal, 1979. Proceedings: International Astronomical Union Transactions, v. 17B, p. 63-83.

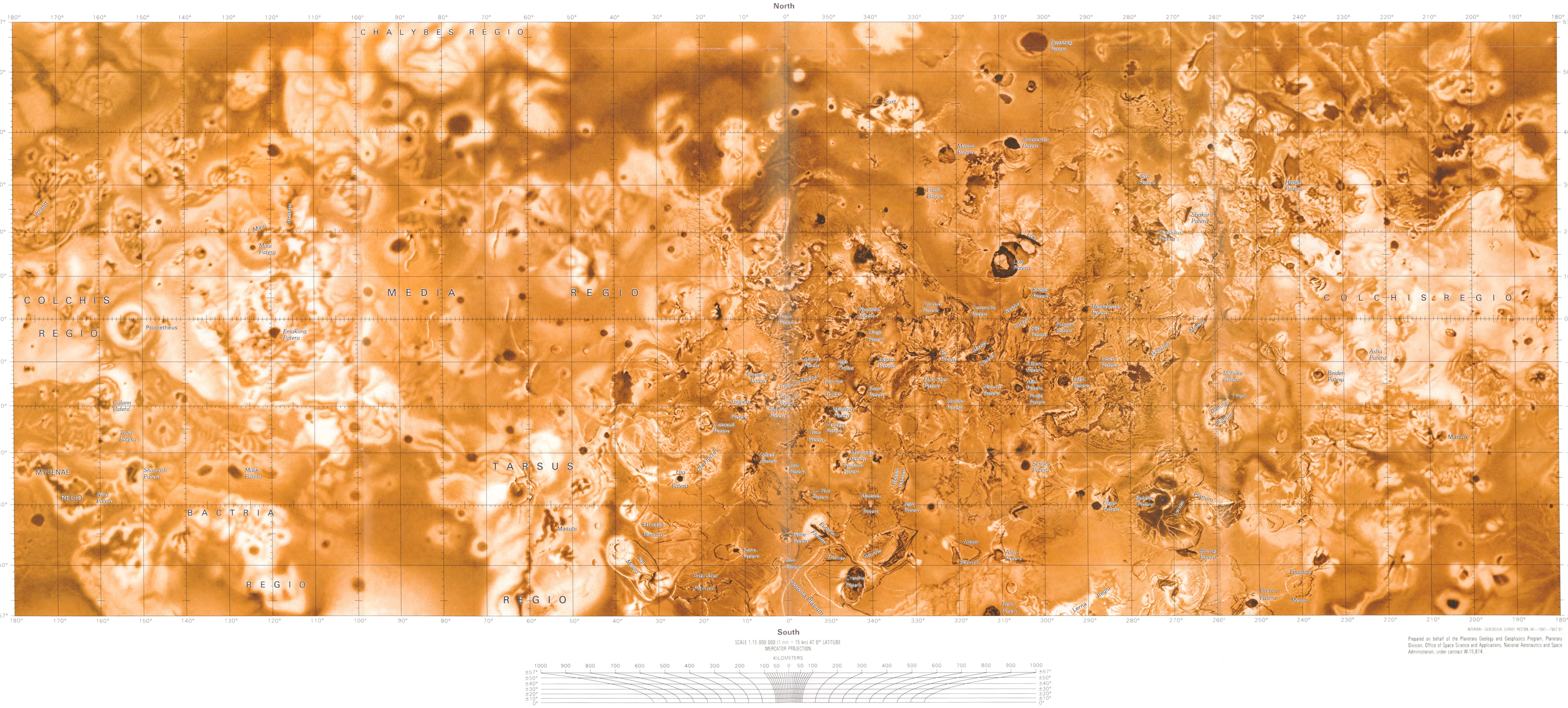
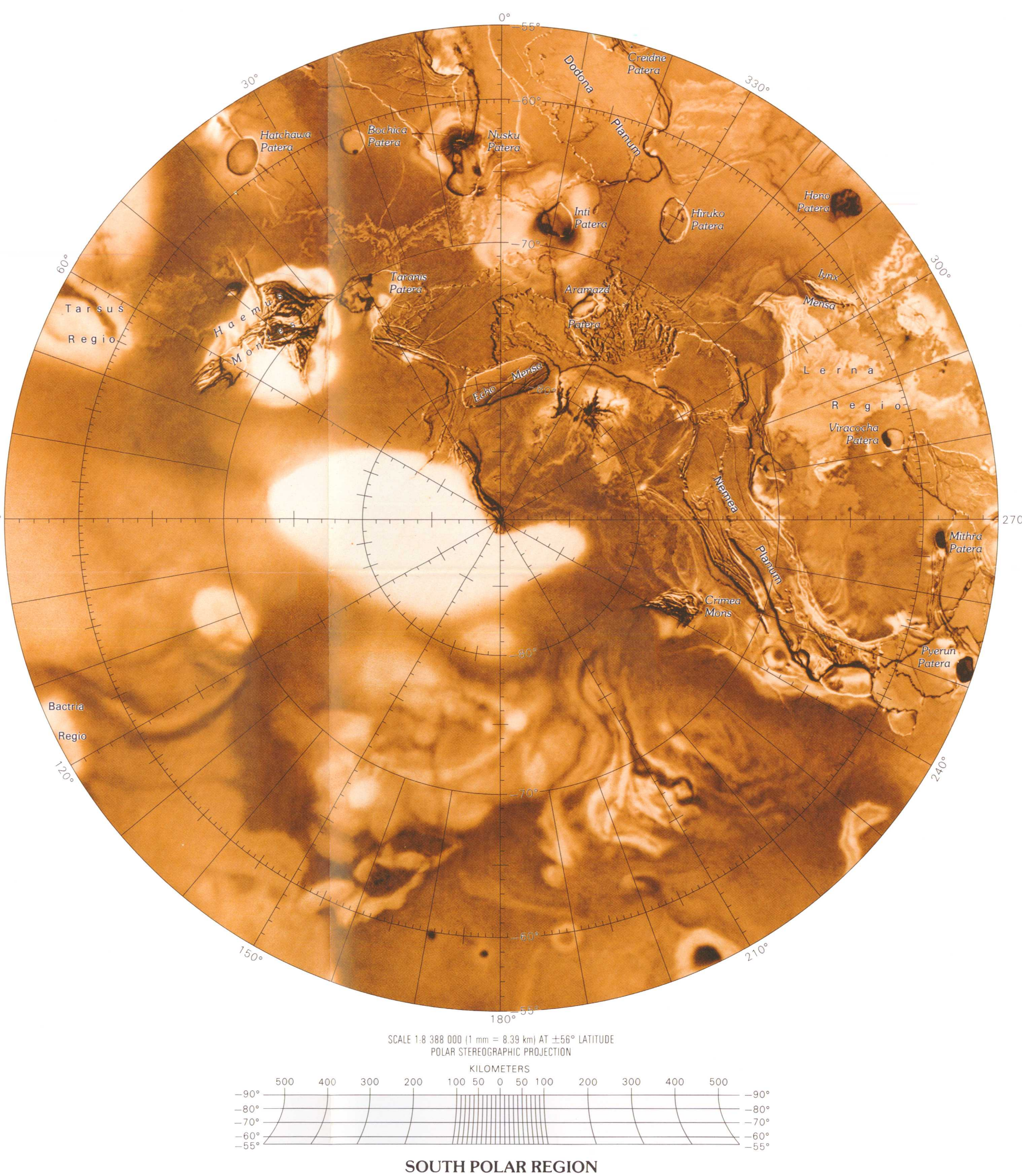
1980b, Working Group for Planetary System Nomenclature, in 17th General Assembly, Montreal, 1979. Proceedings: International Astronomical Union Transactions, v. 17B, p. 297-304.

1983, Working Group for Planetary System Nomenclature, in 18th General Assembly, Patras, 1982. Proceedings: International Astronomical Union Transactions, v. 18B, p. 337.

1986, Working Group for Planetary System Nomenclature, in 19th General Assembly, New Delhi, 1985. Proceedings: International Astronomical Union Transactions, v. 19B, p. 330-353.



Index showing approximate resolution of available Voyager images expressed as kilometers per picture element (pixel) and location of 1:15,000,000-scale quadrangles. Number preceded by 1 refers to published topographic map.



SHADED RELIEF AND SURFACE MARKINGS MAP OF IO

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, AZ 86001. A replacement copy will be returned.

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