



**INTRODUCTION**

The Philus Sulcus quadrangle is located in the anti-Jovian hemisphere of Ganymede, the third and largest of Galilean satellites. The 180° meridian defining the quadrangle's east boundary passes through the anti-Jovian point at the equator, and the 210° meridian forming the quadrangle's west boundary crosses the trailing pole in the satellite's orbit.

Ganymede consists of a mixture of rock and ice having an average density of 1.93 g/cm<sup>3</sup> (Smith and others, 1979a, b). The high albedo of the satellite's surface (60 to 65 percent) and absorption features in its spectrum suggest that water ice is the dominant surface material and that it is intermixed with at least several percent of silicates and minerals containing oxidized iron (Clark and others, 1986). The surface is about equally divided between light and dark materials whose albedo may differ on an order of slightly different silicate contents. Both materials contain craters ranging in morphology from fresh (sharp rims and bright rays) to degraded. Two types of tectonic structures are pervasive, furrows and grooves. Furrows are linear to arcuate troughs, commonly having raised rims, that occur solely in dark material. Large areas of dark material, most of which appear furrowed where seen at high resolution, are named sulci. Bands of light grooved material are named sulci. Within the sulci, grooves occur most commonly in parallel to subparallel sets or domains having laterally continuous groove orientation and morphology, and they form large areas of grooved terrain. Two principal types of domains are represented in the Philus Sulcus area: blocky to polygonal in plan and of either light or dark material; their grooves trend at oblique angles to the domains' long axes.

**GENERAL GEOLOGY**

The mapped units are material units subdivided on the basis of geomorphology and pervasive structure. The main units are dark and light materials. Dark materials are subdivided into dark grooved material (unit dq), dark tented material (unit dl), and dark furrowed material (unit df). Light materials are subdivided into light smooth material (unit ls), light grooved material (unit lg), and intermediate-albedo, mottled grooved material (unit img). Crater materials are classified as material of bright, fresh craters (unit c3), material of partly degraded craters (unit c2), material of degraded craters (unit c1), and palimpsest materials. The latter are high-albedo patches with subdued concentric ridges unit p3) or material that lacks well-preserved structure (unit p2). No highly degraded palimpsests (unit p1) have been recognized in the Philus Sulcus area, although the quadrangle was imaged only at low resolution by Voyagers 1 and 2, and is thus not geologically mappable using existing data. It contains largely light materials, a few small areas of dark materials, and some bright-eyed craters.

Of the mappable part of the quadrangle, containing about equal areas of light and dark materials, the southern half consists mostly of two large polygons of dark material (units c1, and palimpsest materials). The latter are high-albedo patches with subdued concentric ridges unit p3) or material that lacks well-preserved structure (unit p2). No highly degraded palimpsests (unit p1) have been recognized in the Philus Sulcus area, although the quadrangle was imaged only at low resolution by Voyagers 1 and 2, and is thus not geologically mappable using existing data. It contains largely light materials, a few small areas of dark materials, and some bright-eyed craters.

**INDEX OF MAPPING SOURCES**

The rendition of features on this map was controlled by reference to the primary source pictures outlined above. Supplemental source images used during the compilation are listed separately. Copies of various enhancements of these pictures are available from National Space Science Data Center, Code 607, Goddard Space Flight Center, Greenbelt, MD 20771.