DESCRIPTION OF THE DIGITAL DATABASE FOR GEOLOGIC MAP OF GANYMEDE

USGS SCIENTIFIC INVESTIGATIONS MAP 3237

INTRODUCTION

This digital database for the Geologic Map of Ganymede (USGS SIM 3237) includes several GIS features that collectively present the entire content of the geologic map, along with supporting files and metadata. Data is in ArcGIS geodatabase format, including attribute domains, and is collated within a single feature dataset that preserves the relevant geographic information. Together with the geologic pamphlet, the GIS database provides georeferenced information on the geologic units, structure, and morphology of Ganymede.

All vector GIS data are in geographic coordinate system (GCS_Ganymede_2000, radius of 2632345m) using decimal degrees for the horizontal units. Images are in a meter Cartesian plane using the various map projections as listed below.

GEOLOGIC CONTENT

This database contains one ArcGIS feature dataset with the following geologic content:

GeologicContacts -- Final geologic contact polyline feature class. Contains a "TYPE" field denoting the type of geologic contact.

GeologyUnits -- Final geologic unit polygon feature class. Contains a "AreaKm2" field containing the area of each polygon, as calculated using the spheroid. Contains a "UnitName" field denoting the unit name. Contains a "Unit" field denoting the unit symbol.

GroovesRepresentative -- Known representative grooves as points

Furrows -- Known furrows as polylines

CraterRims -- Dititized crater rims as polylines

SecondaryCraters -- Known secondary craters as a point file

Domes -- Known domes as a point file.

Depressions -- Known depressions as a point file.

Geologic production: In summary, to produce the new map, the relative age relationships of mapped units were determined based on crosscutting relationships and differences in crater density. For full explaination see Ganymede SIM3227 map text.

BASE MAP CONTENT

This map is based on a global image mosaic of Voyager and Galileo data assembled by the USGS at a nominal resolution of 1 km/pixel (Becker and others, 2001). Voyager 1 partially imaged the subjovian hemisphere of Ganymede, while Voyager 2 partially imaged the antijovian hemisphere. Galileo imaging filled in most of the "gaps" in moderate resolution coverage of the leading and trailing hemispheres. For more see:
* Becker, T., et al., 2001. Final Digital Global Maps of Ganymede, Europa, and Callisto, In Lunar and Planetary Science XXXII, Abstract #2009, Lunar and Planetary Institute, Houston (CD-ROM).
URL: http://www.lpi.usra.edu/meetings/lpsc2001/pdf/2009.pdf

DIGITAL DATABASE AND METADATA PACKAGE
(Ganymede_SIM3237_Database.zip)

The geologic map files, basemap, and supportive files are included in the database package, as described below:

File	Description
sim3237_readme.txt	This readme file.
sim3237_Ganymede_metadata.txt	Text-format FGDC-style metadata for the database package
Sim3237_Ganymede_metadata.xml	XML-format FGDC-style metadata for the database package
Ganymede_Geology_SIM3237_ArcMap10.mxd	ArcGIS version 10 project for the database package
Ganymede_Geology_SIM3237_ArcMap10.2.pmf	ArcReader (free viewer) project for the database package

Directories

Ganymede_Geology_SIM3237.gdb	ArcGIS geodatabase containing all digital geologic map information
Ganymede_Geology_SIM3237_Shapefiles	directory ESRI shapefile format for the geologic files above
layerSymbology	directory ArcGIS layer files containing symbol look-up tables for ArcMap

Raster_Basemap directory Please see SIM 3237 text for description of base map used in mapping. Image was saved in a GeoTiff format using a Simple Cylindrical projection image filename: Gamymede_glo_G29.tif (combined mosaic)

Users of the database package may wish to download the SIM 3237 pamphlet for the contained Description of Map Units.

The material described above is available on the World Wide Web at http:/pubs.usgs.gov/sim/3237/

ZIP FILES

The files described above are packaged within a ZIP file. Utilities to uncompress ZIP files are available for most operating systems and may be found readily with a simple web search.

DIGITAL DATABASE FORMAT

The digital information compiled in this report used ArcGIS v 10, a commercial Geographic Information System produced by Environmental Systems Research Institute (Esri), Redlands, California. Data layers are also made available in Esri shapefile format which is usable in nearly all GIS applications.

OBTAINING HARD-COPY OF SIM-3237

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