FOLDABLE BOUNDARY-BASED WORLD MAPS OF GEOLOGIES OF ENCELADUS AND GANYMEDE

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Introduction: All science educators are familiar with the difficulties of associating a flat world map with its actual three-dimensional object. Foldable world maps demonstrate the relationship between a flat map and a planetary body, but conventional foldable world maps are difficult to read because they interrupt a body's natural features. Constant-scale natural boundary world maps (CSNB) have the advantage, when viewed as maps, of displaying regions and features without arbitrary interruptions, and may be folded into a reasonable facsimile of the originating object, even if the originating object is an irregular object such as an asteroid [1, 2].

Previous work with CSNB has produced foldable maps of the asteroids Eros [3], Ida [4], and Itokawa [5], and the Martian moons Phobos and Deimos [6]; as well as the spherical worlds of Mars [6] and Venus [7].

I present several CSNB maps of geologies of the icy moons Enceladus [8] and Ganymede [9].

Methodology: Both moons are icy and tidally locked to their parent planets, both exhibit cryotectonics. For consistency and orientation, I use similar choices of natural boundaries to prepare two sets of maps for each moon -- one bounded by centerlines of old terrain, another bounded centerlines or other linear features of young terrain. Extensive boundary networks produce highly interrupted maps, and fold to good facsimiles of spheres; truncated networks produce compact maps and fold to condensations of spheres.

Final maps will be filled in with digital content per [8] and [9].

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