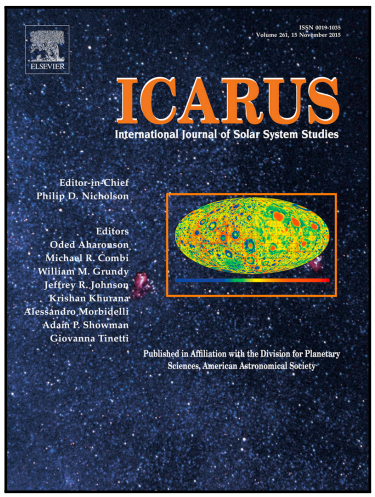

Viscous relaxation as a prerequisite for tectonic resurfacing on Ganymede: Insights from numerical models of lithospheric extension

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Highlights

- We simulate grooved terrain formation with large-amplitude pre-existing topography
- When initial topographic relief is ¿50 m, groove-like structures fail to form.
- Forming grooves directly from dark terrain by tectonic resurfacing is difficult.
- Viscous relaxation of pre-existing topography enables tectonic resurfacing.
- Resurfacing occurred by viscous relaxation, tectonics, and cryovolcanism combined.