

Isostatic Compensation of Ishtar Terra

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The quasi-circularization of the **Magellan** orbit has led to the acquisition of quality, high resolution Venus gravity data even at high latitudes, in particular over previously unresolved **Ishtar Terra** (now covered to $\sim 60^\circ\text{E}$ in longitude). We have used the 75×75 degree and order spherical harmonic model for the Venus **geopotential** most recently produced from this high resolution cycle 5 data as well as the 360×360 harmonic model for the Venus topography, truncated at degree and order 75 to study **isostatic** compensation in the highlands of **Ishtar Terra**. Correlations of local gravity anomalies with topography variations tell us to what extent there is isostasy in a given region, whereas if a region's topography is fully compensated the relationship between its geoid and topography anomalies can be used to learn about the mechanism of compensation and its depth. Using the spherical harmonic models, mean values of gravity, geoid, and topography anomalies were obtained for several areas in **Ishtar**. Assuming simple density distributions, regional correlations of geoid and topography data were compared to theoretical correlations for Pratt, Airy, and thermal isostasy models. We find that topography in **Ishtar** is compensated to a large extent, and that the observable can be explained by Airy compensated **crustal** thickening. However, there may be compositional differences between different topographic provinces within **Ishtar Terra**. Implications of the modeling results for the evolution of the **Ishtar** highlands will be discussed.

The research described in this article was carried out at the Jet Propulsion Laboratory, California Institute of Technology, Pasadena, Ca under contract to the National Aeronautics and Space Administration.

1. 1994 Fall Meeting
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4. P
5. (a) 03 Requiem for.
Magellan
(b) 5420 Grav. Fields
5430 Interiors
5470 Surfaces
6. Oral
7. 0%
8. \$30 check enclosed
9. C
10. None
11. Yes