Institut für Geophysik

Geophysikalisches Kolloquium

Sommersemester 2024

Montag, 13.05.2024

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Surprisingly Stable Mantle Plumes and Coronae Clustering on Venus

Coronae are crown-like, tectono-volcanic features found on Venus that range in diameter from 100-700 km. One popular model for coronae formation invokes a diapir of warm upwelling mantle material impinging on the base of the lithosphere beneath individual corona. With as many as 500 coronae it is difficult to imagine that each corona is linked to a unique whole mantle plume. I explore the connection between coronae, diapers, and mantle plumes. My hypothesis is that a plume anchored in the lower mantle will give rise to clusters of upper mantle diapers. So, I ask, are coronae clustered? Using Density-Based Spatial Clustering of Applications with Noise (DBSCAN), I search for clusters of coronae—first demonstrating that DBSCAN confirms familiar associations when applied to terrestrial hotspots. Then, turning to Venus and coronae, I find coronae cluster in a way that differs from a random distribution of points on a sphere. Further, the distribution of clusters resembles a pattern of stable plumes (surprisingly stable plumes) that are found in series of geodynamic models. I will discuss the implications of stable plumes and coronae clusters for the evolution of Venus.

Das Kolloquium findet um 16:00 Uhr im Seminarraum GEO 315, Corrensstr. 24, 48149 Münster statt. Alle an dem Thema Interessierten sind hierzu herzlich eingeladen.

Die Dozenten des Instituts für Geophysik