EGU21-13874
https://doi.org/10.5194/egusphere-egu21-13874
EGU General Assembly 2021

Oceanic plateau of the Hawaiian mantle plume head subducted to the uppermost lower mantle

Songqiao Shawn Wei[1], Peter Shearer[2], Carolina Lithgow-Bertelloni[3], Lars Stixrude[3], and Dongdong Tian[1]

[1]Department of Earth and Environmental Sciences, Michigan State University, MI 48824, USA (swei@msu.edu)
[2]Cecil H. and Ida M. Green Institute of Geophysics and Planetary Physics, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, CA 92093, USA
[3]Department of Earth, Planetary, and Space Sciences, University of California, Los Angeles, CA 90095, USA

The Hawaiian-Emperor seamount chain that includes the Hawaiian volcanoes is created by the Hawaiian mantle plume. Although the mantle plume hypothesis predicts an oceanic plateau produced by massive decompression melting during the initiation stage of the Hawaiian hotspot, the fate of this plateau is unclear. We discovered a megameter-scale portion of thickened oceanic crust in the uppermost lower mantle west of the Sea of Okhotsk by stacking seismic waveforms of *SS* precursors. We propose that this thick crust represents a major part of the oceanic plateau that was created by the Hawaiian plume head about 100 Ma ago and subducted 20–30 Ma ago. Our discovery provides temporal and spatial clues of the early history of the Hawaiian plume for future plate reconstructions.