

SVC007-02

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Preliminary Results from IODP Expedition 330: Louisville Seamount Trail and its Relation to the Ontong Java Plateau Preliminary Results from IODP Expedition 330: Louisville Seamount Trail and its Relation to the Ontong Java Plateau

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Integrated Ocean Drilling Program (IODP) Expedition 330 drilled five different guyots in the Louisville Seamount Trail ranging in age between 80 and 50 Ma. The primary goals of this expedition were to drill a sufficiently large number of in situ lava flows at each seamount for high-quality estimates of their paleolatitudes using paleomagnetic measurements, for improving the overall age progression using high-precision ⁴⁰Ar/³⁹Ar geochronology, and for detailed geochemical studies of the volcanic evolution of these seamounts. With these data we can provide the unique record of the paleolatitude shift (or lack thereof) of the Louisville mantle plume and compare it with the ~15 degrees paleolatitude shift observed for seamounts in the Hawaiian-Emperor Seamount Trail over the same time period. It also allows us to directly compare the geochemical evolution of a typical Louisville seamount with seamounts in Hawaii and to test the apparent long-lived homogeneous geochemical character of the Louisville mantle source. These comparisons are of fundamental importance to determine whether these two primary hotspots have moved coherently or not, and to understand the nature of hotspots and convection in the Earth's mantle. Finally, the paleolatitude, age and geochemical data together will provide the ultimate test of whether the oldest Louisville seamounts were formed close to the 18-28 degrees south (with an average of 24 degrees) paleolatitude determined from basalt drilled on the Ontong Java Plateau during ODP Leg 192 and whether this Large Igneous Province (LIP) was genetically linked to the Louisville hotspot. If so, this would allow for the possibility that indeed the preceding plume head of the Louisville mantle upwelling caused the massive LIP volcanism forming the Ontong Java Plateau around 120 Ma.

キーワード: Mantle Plume Motion, Primary Hotspots, Seamounts, Guyots, Mantle Geodynamics, Pacific Plate
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