



## **Comparison of the Hawaiian and Louisville volcanic chains: Implications for hotspot motion**

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Of the many volcanic chains on the Pacific plate, only two have a demonstrable long-lived (>70 million-year) age progression: the Hawaiian-Emperor chain of the northwestern Pacific and the Louisville chain of the southwestern Pacific. Paleomagnetic data, plate circuits, sediment facies and geodynamic modeling indicate rapid southward motion of the Hawaiian hotspot during creation of the Emperor Seamounts, with a dramatic change in the rate of motion near the time of the great bend in the chain (ca. 47 Ma). Several mantle motion processes can explain these characteristics, including mid-mantle tilt toward a paleo-spreading center (Tarduno et al., *Science*, 2009). The Louisville chain has a gentle curvature, and estimates of its past motion have been hindered by uncertainty in the present hotspot location. Notwithstanding this uncertainty, we use revised plate circuit reconstructions, geometric considerations, and paleomagnetic bounds to better understand processes responsible for creation of the Louisville track. We use these analyses to predict intrabasin hotspot motion versus relative motion between the Pacific and Indo-Atlantic hotspot groups.