

**Geochemistry of basalts from deep sea drilling sites in the North and South Atlantic and the Indian Ocean correlates with initial elevation at ridge crests**

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Klein and Langmuir have shown that major element geochemistry of modern axial basalts from mid-ocean ridges correlates with present water depth. Examples are: FeO and Na<sub>2</sub>O after correction for low-pressure fractionation, and CaO/Al<sub>2</sub>O<sub>3</sub>. Studies I am doing with Emily Klein of Duke and Bill Melson of the Smithsonian show that the geochemistry of numerous older basalts from mid-ocean ridges in the North and South Atlantic and the Indian Ocean ranging in age from 2.5 to 140 Ma behaves in a similar way when plots are made against the initial elevation at the time of crustal formation. Klein and Langmuir also suggested that ocean crustal thickness correlates with Na<sub>2</sub>O corrected for low-pressure fractionation, and I will try to show how well crustal thickness correlates with initial elevation.

These results may have interesting implications for establishing the secular variation of ocean crustal chemistry, and for the stability of ocean topographic features.

