The platinum group element and Re-Os isotopic composition of the Emperor Seamount Chain

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The Emperor Seamount Chain (ESC) preserves a record of Hawaiian hotspot volcanism from 85 to 42 Ma. Many studies have documented large variations in composition over this period, yet the platinum group element (PGE) and Re/Os isotopic characteristics of the ESC are largely unknown. Studies on picritic basalts from the Hawaiian Islands have shown variable PGE compositions and suprachondritic Re-Os isotopic compositions. How does the PGE and Re-Os characteristics of the ESC compare to the modern Hawaiian Islands? Do the PGE and Re-Os isotopic compositions vary over the length of the ESC?

Picritic and high-MgO basalts from the ESC were recovered during Ocean Drilling Program Leg 197 from Detroit and Nintoku Seamounts. These samples are well suited to study the PGE and Re-Os isotopic characterisics of the ESC. Major, trace, PGE, and Re-Os isotopic analyses will be conducted on each sample.

Preliminary data suggest that the PGE abundances of the ESC are variable, with approximately an order of magnitude greater concentrations than similar samples from Hawaii. Re-Os isotope data collection is in progress at the writing of this abstract, however, preliminary data suggests that the values are highly variable as well, with some samples having MORB-like initial $^{187}Os/^{188}Os$ while others have suprachondritic initial $^{187}Os/^{188}Os$, similar to Hawaiian samples.

The Hawaiian hotspot has been active for >86 Ma but we know little about the evolution of the PGEs and associated isotopic systems throughout its history. Such information is necessary to fully evaluate models of the origin and evolution of the Hawaiian plume as recorded by the Hawaiian-Emperor Seamount Chain.

Geochemistry of late Cretaceous lava flows from a Neo-Tethyan fossil oceanic island arc: The Raskoh arc, Balochistan, Pakistan

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The Raskoh arc, which was previously known as Rasko Range, occurs in the western part of Pakistan, is about 250 km long, 40 km wide and trends in an ENE direction. The oldest rock unit in the Raskoh arc is Raskoh accretionary complex (Early to Late Jurassic), which is followed in age by Kuchakki Volcanic Group: the most wide spread unite of the Raskoh arc.

Geochemical studies based on major, trace and rare earth elements suggest that these are oceanic island arc tholeiites. The trace element patterns show enrichment in LILE and depletion in HFSE relative to N-MORB. Their primordial mantle-normalized trace element patterns show marked negative Nb anomalies with positive spikes on K, Ba and Sr which strongly confirm their island arc signatures, which are also supported by slightly depleted (in LREE) to flate chondrite normalized REE patterns. The trace elements ratios including Zr/Y (1.73-3.10), Ti/Zr (81.59-101.83), Ti/V (12.39-30.34), La/Yb_N (0.74-2.69), Ta/Yb (0.02-0.05) and Th/Yb (0.11-0.75) of basaltic flows are more consistent with oceanic island arcs rather than analogues rocks of the continental margin arcs. On the basis of these studies it is concluded that Raskoh arc is an ancient oceanic island arc which was formed due to the intra-oceanic convergence in the Neo-Tethys during the Late Cretaceous rather than constructed on the southern continental margin of Afghan block, as previously claimed by several workers.