# OIB's from South Eastern Pacific: Notes from key geochemical features

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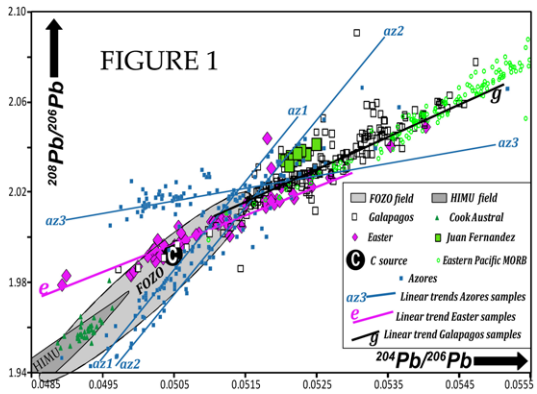
We summarize some geochemical features of basalts from Easter, Juan Fernandez and Galapagos. Data were obtained from GEOROC on March 2011. Elemental concentration were normalized to primitive mantle displaying strong enrichment for Juan Fernandez ($[U]_N$~98, $[Pb]_N$~49, $[Th]_N$~40, $[Nb]_N$~70, $[Ta]_N$~78) similar to EM2 source [1]. Easter and Galapagos exhibit a moderately enrichment for Nb and Ta ($[Nb]_N$~35,$[Ta]_N$~50), and small enrichment for U, Pb, Th ($[U]_N$~22,$[Pb]_N$~9,$[Th]_N$~17). These enrichment factors are less than those for samples from EM and HIMU sources, and the $[U/Pb]_N$ and $[Th/Pb]_N$ ratios of Easter and Galapagos are different from EM and HIMU sources, suggesting that the sources of the two islands contain Pb whose origins were not explained by subduction-related process invoked for EM2 [1] and HIMU [2].

That statement is supported by Pb isotopes plotted on a $^{206}$Pb-normalized space (Fig. 1). In this plot a linear trend composed by ~90% of Easter (**Line e**) is noticeable. Principal component analysis calculation shows that Line e is an eigenvector explaining a 94% of variability of Easter. Some Easter samples are outside FOZO field [3] suggesting influence from DM source and possibly other extreme component located at left beyond FOZO. Azores samples composing Az3 line (Fig.1) seems to confirm such extreme component. Az1-Az2 lines go beyond Fozo field suggesting another possible component different to HIMU and FOZO.

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[1] Jackson *et al*. (2008) *Gcubed* **9**. [2] Hanyu *et al*. (2011) *Gcubed* **12** . [3] Stracke *et al*. (2005) *Gcubed* **6**.

# Style and chronology of growth by oblique accretion and oroclinal bending: The Panama Isthmus

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The Panama Isthums displays, in approximatley 500 km (or ~15 Ma), the transition from: 1) ongoing subduction and magmatism in a normal intra-oceanic arc setting; 2) a deformed, exhumed and extinct magmatic arc, still in an intraoceanic setting, and 3) an extinct arc accreted to a continental margin. This west to east geographic progression from active arc to accreted is also a proxy for the chronology of this arc-continent collisions. The oblique accretion of the Panama arc to northwestern South America is documented with geologic mapping and multidisciplinary analytical studies. A new geologic map with >2000 field stations, 40 petrographic analyses, 24 paleomagnetic sites, and over 30 new geochronological and thermochronological analyses, supports the middle Miocene accretion of the Panama arc to northwestern South America and a late Eocene initiation of tectonic interaction. The extinct arc segment in central Panama arc is composed of a folded-faulted, ~ 3 km-thick basaltic sequence, intruded by granitoid bodies and onlapped by mostly undeformed shallow marine and continental strata. Existing geochronological data, and new whole-rock Ar/Ar (2), and U/Pb zircon ages (6), reveal intense late Paleocene to middle Eocene magmatism, a temporary cessation of magmatic activity between 38 and 28 Ma, and renewed magmatism after 28 Ma in a position approximately 75 km south of the former magmatic axis in central Panama. The geographic patterns of these magmatic pulses is interpreted as a collison that left-laterally offset, and oroclinally bent the axis of the arc, and terminated magmatic activity in the 28 to 38 Ma interval. Magmatic activity restarted after 28 Ma but lasted only until ~15 Ma east of the Canal Basin and west of the Uramita suture, defining an arc segment approximately 400 km in length that shows no sign of magmatic activity younger than 15 Ma, probably the result of this part of the arc getting detached and overthrusted the Caribbean Plate to the north. The sigmoidal part of the Panama arc is therefore the result of an extinct arc that has been obliquely accreting to the northwestern margin of South America for the last 15 Ma.