

THE FOUNDATION HOTSPOT (SOUTH PACIFIC): PAST AND PRESENT RIDGE HOTSPOT INTERACTIONS?

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The Foundation line shows interaction processes of MOR and hotspot. The hotspot is located near the Pacific-Antarctic Ridge (PAR) and results in a geoid positive anomaly. The age regression (O'Connor et al. 1998) leaves no doubt about its hotspot origin. The westernmost section is made of elongated seamounts suggesting that magmatic expression was controlled by lithospheric preexisting structures. The easternmost section shows a morphology switch to two lines of seamounts organised in elongated ridges obliquely to the main direction. 140km away from the PAR, those breaks into small ridges of subdued topography. Trace element geochemistry distinguishes the westernmost part made of transitional lavas from the easternmost part with highly variable (La/Sm)_N but always 2. Radiogenic isotopes are consistent with these. The westernmost part has unradiogenic Sr (0.7027) and ²⁰⁶Pb/²⁰⁴Pb (18.5) and radiogenic Nd (0.51305). This is compatible with fertilization of the overlying asthenosphere by plume derived melts prior melting. The heat and the fluids from the plume induced the melting of the contaminated mantle. The eastern area shows a drop of Pb isotopes and a scatter until the PAR. The axis do not exhibit the most depleted values. Modelling a mixing of two melts with the most extreme compositions reveals a contribution of the plume of about 50%.