Helium and Neon isotopic constraints to the lower mantle contribution for Terceira Island magmatism (Azores Archipelago)

P. Madureira, Manuel Moreira and João Mata (2003).

We present the first neon data, as well as new helium isotopic analysis, for Terceira Island volcanic (Azores Archipelago, Portugal). Noble gases isotopic ratios show values more primitive than MORB, confirming that the Azores hotspot should be considered as sampling a relatively undegassed mantle reservoir. Our study also illustrates that the Ne systematic is more capable than He to constrain the ultimate origin of hotspots in geodynamic settings dominated by plume-ridge interaction. This is illustrated by the hyperbolic mixing inferred from the He-Ne isotopic diagram, where neon isotopic signatures show more efficiently than helium the influence of primitive undegassed material.