

Atmosphere-mantle Interactions Using Noble Gases

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The noble gas composition of the depleted mantle is a mixture of three components: a radiogenic component, produced by the decay of noble gas parent nuclides, a primordial component, introduced during Earth's accretion, and an atmospheric component, associated with the subduction of hydrothermally altered slab materials. This talk seeks to understand 1) the contribution of recycled oceanic crust to the atmospheric component of mantle noble gases and 2) the relative proportions of atmospheric and primordial components in the mantle noble gas budget. I will specifically examine the behavior of Ne during subduction. This examination allows further insight into how the thermal state of the slab affects the composition of noble gases recycled into the mantle and the ultimate source for primordial volatiles in our planet.