ε_{Nd}(0) values of different grain sizes of eolian sand and dust, China

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Nd isotope is a powerful indicator tracing the provenances of eolian materials [1]. However, Nd isotopic characteristics of different particle sizes of eolian materials are unknown in detail yet. We report here ε_{Nd}(0) values in different grain sizes of eolian dust in the Duanjiapo section of Chinese Loess Plateau and eolian sand in the Mu Us Desert (Table 1 and Fig.1).

Sample	>45	45-28	<28	<2
Loess	-8.8	-8.5	-9.2	-8.7
Paleosol	-8.5	-8.9	-9	-9.2
Red-clay	-9.1	-8.9	-8.7	-8.6

Table 1 ε_{Nd}(0) in different grain sizes (μm) of eolian dust

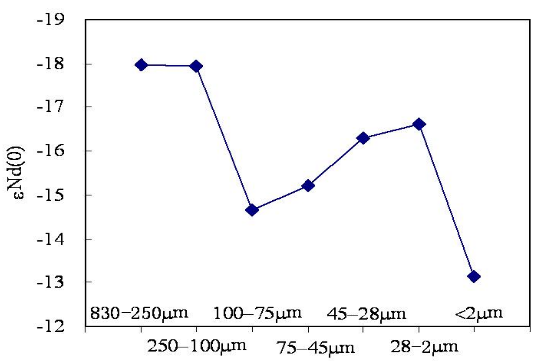

Fig.1 ε_{Nd}(0) in different grain sizes of eolian sand

Eolian dust in the Duanjiapo section is fine, mostly <75μm, whereas the Mu Us desert sand is coarse, mainly >75μm in diameter. ε_{Nd}(0) values change little with grain sizes of eolian dust, moreover, are similar among loess, paleosol and red-clay (Table 1), suggesting a uniform source region. But, different grain size fractions of desert sand have obviously different ε_{Nd}(0) values (Fig.1), implying they have different provenances. In addition, ε_{Nd}(0) values of different grain-size fractions of desert sand are all more negative than those of eolian dust in the Duanjiapo section, showing the Mu Us desert is not its main source region.

As a result, the Mu Us desert sand is distinct in Nd isotope from eolian dust in the Duanjiapo section, both are probably little related in provenance.

References

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A new and comprehensive set of bulk distribution coefficients (D's) governing partial melting of hydrous metabasalt

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Recycling of hydrous metabasaltic crust into the mantle can occur by a number of different mechanisms, including "normal" subduction, subduction erosion, and delamination of tectonically or magmatically overthickened continental crust. Low-moderate degree partial melting associated with dehydration of this material can produce "adakitic" or "TTG" like magmas with a geochemical fingerprint reflecting a garnet-amphibolite or eclogite "restite". The melt component may coalesce to form granitoid intrusions or may be assimilated in metasomatic reactions with inflowing mantle, while the dense, garnet-rich restite is subsumed by the mantle. However, a reliable and comprehensive set of bulk trace element distribution coefficients (D's) governing this process are lacking. Here we present a new set of bulk D's for Pb, Sr, Y, Ba, Rb, Nb, Ta, Zr, Hf, Ti, Zr, Th, U, Cr, Ni, V, and the REEs, measured at natural abundance levels by laser ablation ICP-MS, for "pristine" adakitic melts in equilibrium with garnet-amphibolite and eclogite restite from the experiments of Rapp and Watson (1995), and for "mantle-hybridized" adakitic melts in equilibrium with pyroxenite reaction residues from new experiments at 1.6-3.0 GPa. Noteworthy observations include D's for Pb which are an order of magnitude lower than previously published experimental values (e.. Klemme *et al*., 2002), and Nb and Ta D's that reinforce the conclusions of Rapp *et al*. (2003) that Nb/Ta ratios of adakite/TTG melts reflect the bulk composition of the source, rather than its mineralogy.

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