Goldschmidt2007

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

WENBO RAO[1], JUN CHEN[2], JUNFENG JI[2]

[1] Research Academy, Hohai University, China (raowenbo@163.com)

[2]Department of Earth Sciences, Nanjing University, China (Chenjun@nju.edu.cn, Jijunfeng@nju.edu.cn)

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 $\varepsilon_{Nd}(0)$ 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).

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

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

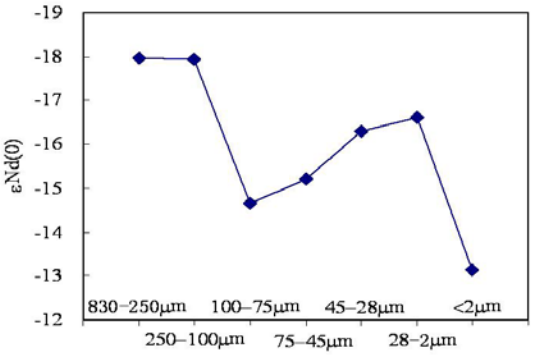

Fig.1 $\varepsilon_{Nd}(0)$ in different grain sizes of eolian sand

Eolian dust in the Duanjiapo section is fine, mostly <75μm, whereas the Mu Us desert sand is coarse, mainly >75μm in diameter. $\varepsilon_{Nd}(0)$ 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 $\varepsilon_{Nd}(0)$ values (Fig.1), implying they have different provenances. In addition, $\varepsilon_{Nd}(0)$ 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

[1] Banner, J.L., (2004), Earth-Science Reviews, 65, 141-194.