

Origin of eolian quartz of different size fractions in the Chinese Loess

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Eolian dust deposited in the Chinese Loess plateau is considered as coming from the Western Desert area including Gobi and Taklimakan deserts. The sediments are called loess paleosol sequence and is composed of loess deposited under cold-dry climate and the paleosol accumulated under relatively warm-wet climate. Deposition of the loess - paleosol sequence started from about 2.5Ma.

The extend of the desert area that becomes the source of eolian dust and the wind that transports the dust influence the accumulation of the loess. In other words, analysis of loess enables us to reconstruct the transport wind and specify the source of eolian dust. In recent years, the loess – paleosol sequence attracts attention as the proxy of the East Asian summer monsoon.

According to former researches, it was suggested that transportation of eolian dust to the Chinese Loess plateau was the westerly wind and the monsoon wind. Sun (2004) analyzed the grain size distribution of loess in Chinese Loess Plateau and demonstrated that it has two components which vary spatially and temporally. He suggests that the coarse component is transported by winter monsoonal wind, and most the fine component is transported by westerly wind, and the variation linked glacial - interglacial cycles. However, he did not examine the origin of coarse and fine components. Therefore, the change in the grain size can be also attributable to the change of the wind velocity.

We examined the origin of loess in Lingtai section of the Chinese Loess Plateau. to test the hypothesis of Sun, we separated loess samples into four size fractions 0 - 4 micrometer, 4 - 10 micrometer, 10 - 30 micrometer, 30 - micrometer, respectively, and measured the ESR(Electron Spin Resonance) signal intensity signal of the quartz in each sample. From this result, we try to specify eolian dust origin of each grain size fraction of loess in Lingtai section of the Chinese Loess Plateau.