

**Spatial and temporal provenance  
variability of eolian deposits in PLC  
suggested by ESR signal intensity and  
Crystallinity of quartz**

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The ESR signal intensity and Crystallinity Index of the coarse-grained (16 ~ 63 $\mu$ m) and fine-grained (<16 $\mu$ m) quartz from two loess-palosal sections are spatially and temporally. spatially, the provenance of eolian quartz from the central CLP was different from the quartz in the western CLP. The coarse-grained quartz in the central CLP originates primarily the nearby sources (e.g., the Mu Us desert and Tengger desert), whereas the fine-grained quartz were derived from proximal sources (e.g., the Mu Us desert and Tengger desert) and distanced sources (e.g., the Badain Juran desert and Southern Mongolia Gobi). In contrast, the coarse- and fine-grained quartz in the western CLP originated primarily the Badain Juran desert, Tengger desert, southern Mongolia Gobi and the nearby Yellow River as well. At the glacial-interglacial timescale, the dominant source of fine-grained quartz varied significantly, from the the sandy desert in the northern China during the warm periods to the southern Mongolia Gobi during the cold periods. However, the ESR-CI results of the coarse-grained quartz don't indicate obvious fluctuation over the glacial-interglacial cycle.