

MONSOON IN PALEOCLIMATE INDICATED BY ESR SIGNALS IN LOESS

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Electron spin resonance (ESR) dating is a method to obtain ages in Quaternary era using stalactite, corals, shells, tooth enamels, bones, and quartz. Recently, the authors showed that the intensity of an ESR signal related with oxygen vacancies in quartz correlates with ages of its host granite in an age range up to 1 Ga. In the Far East where the ages of basement rocks in China are much older than those of Japan Islands, the ESR signal intensities of the loess formed by weathering of basement rocks tell their origins, i.e., the loess originated in China shows ESR intensities much larger than those in Japan. Using this characteristics, we propose that the origin of loess accumulated in this region can be estimated using the intensity of this ESR signal related with oxygen vacancies in quartz because the contribution from the loess originated from young volcanic quartz is negligible. In Holocene sediments, the ESR intensities in the middle part of Japan Islands are lower than those in Hokkaido and in southern part of Ryukyu Islands, with being consistent with the values of loess in the middle part of China. The higher values would probably be given by the contribution from Pre-Cambrian basement rocks in north and south China. On the other hand, that boundary in the Ryukyu Island is found to have been at the middle of Japan Island in MIS 2, indicating that the polar front moved between MIS 2 and Holocene.