

## The characteristics and the origin of the ESR signals in quartz of atmospheric deposition in Japanese Islands

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The change of atmospheric circulation system in the past is an important issue for studies of paleoclimate. Past Eolian dust has been studied to examine it. Eolian dust is fine particle which situated suspension, and is carried by wind. It is known that it is carried by prevailing easterlies in the Atlantic from the Sahara Desert, and it is carried by westerlies and easterlies in the Pacific Ocean and Indian Ocean from Australia, and it is carried by westerlies in the Pacific Ocean from Chinese inland empires. It was found that its origin is different between in the last glacial maximum and in Holocene by measuring the number of oxygen vacancies, indicated by the intensity of the E<sub>1</sub>' center, in quartz in loess. Later, the crystallinity index was found to be another proxy for such studies.

A correlation between the origin of dust component in Japan sea sediment and climate change was found by looking at crystallinity index and the E<sub>1</sub>' center in quartz. (Nagashima et al., 2007) Each Chinese desert was characterized with these proxies (Sun et al., 2008). The origin of recent eolian dust was implied by a study with radioisotopes (<sup>137</sup>Cs, <sup>90</sup>Sr) to the Japanese Islands, possibly caused by acidification of the Chinese desert region.

In the present study, we examined if the impurity centers, detected by ESR (electron spin resonance), are useful proxies as well and if change of origin are reflected atmospheric deposition collected in Japan.

As a result, Al center signal would be another proxy to be used together with oxygen vacancies in quartz. Ti center and the Ge center signals were not observed even in irradiated Chinese samples. These signals would be useful to see the contribution of dust of Japanese origin.

Finer fractions contain more amount of eolian dust of Taklamakan origin. The fraction of Taklamakan origin changes month to month, year to year. Fluxes of eolian dust of Taklamakan origin were estimated. The temporal change of the fluxes can be obtained in future