Relation and distribution of DKP and SAN1 tephras inferred from distribution of acoustic reflectors in the Japan Sea

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Daisen Kurayoshi pumice (DKP) is one of the widespread tephras in Japan distributed in San'in to southern Tohoku District. DKP is an important index tephra between AT and Aso-4, but its precise age has not been determined yet. On the other hand, San'in 1 tephra (SAN1) was reported from the northeastern Yamato Basin and west of Noto Peninsula in the Japan Sea. The age of SAN1 was estimated to be about 53-55 kyr BP, and identification of SAN 1 and DKP was presumed (Ikehara et al., 2004). But some researchers doubt the identification as the composition of SAN1 is slightly different from that of DKP. In this research, relation and distributions of the two tephras were examined by distributions of acoustic reflectors in the Japan Sea.

Marginal terraces that have flat surface like shelf are developed in the area about 200-400 m water depth off Tottori to west of Noto Peninsula in the Japan Sea. Mud is widely distributed on the marginal terraces, and acoustic reflectors are stratified on the 3.5 kHz SBP records. Reflectors that continue beyond topographic heights are thought to be correspond to tephras. The shallowest clear reflector MT1 is thought to correspond to AT, and the second clear reflector MT2 to SAN1 by comparisons with the depths of cored samples. The reflection of MT2 that is widely traced on the marginal terraces weakens to the south, and it can hardly recognized at the southern margin of the marginal terrace. On the other hand, another reflector named MT3 can be recognized in the southern part just below MT2. The reflection of MT3 is very strong in the southern part of the marginal terrace, weakens to the north. Not reflector MT2 but reflector MT3 is likely to correspond to DKP judging from the comparison of distributions of these reflectors with the reported distribution of DKP. According to these correlations of reflectors and tephras, SAN1 and DKP are different tephras. The distributions of the two reflectors show that the area of distribution of SAN1 is more northerly than DKP. The age of DKP was estimated to be about 60-63 kyr BP, using the age of SAN1 (53-55 kyr BP) and the average ratio of depths of MT2 and MT3. This age of DKP is almost same with the age estimated by Kumon et al. (2005) and Nagahashi et al. (2007).

Ikehara, K. et al. (2004) Quat. Res., 43, 201-212.
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