

# High-resolution archives of paleo- climatic and environmental changes from the Sogwipo Maar of the Cheju Island, Korea

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Terrestrial sediments represent archives that record important information about local, regional and global climate conditions in the past and confirm accurate dating by  $^{14}\text{C}$  data. Maar sediments consists of autochthonous particles such as plant opal and authigenic minerals formed by biochemical processes within maar lake and allochthonous particles such as pollen and eolian dusts brought into the maar from the catchment area.

Maar sediments of the Seogwipo since 30,000 cal. years BP were composed mainly of silt y to clay sized clastics and organic debris such as peat. These compositional changes in sediments reflected color sequentially. Dark to light color changes were corresponding to decreasing of organic carbon contents and suggesting weakening of East Asian summer monsoon, because summer monsoon was bringing moisture to Korean peninsula and promoting extension of vegetation cover. Also we recognized plant opal concentrations sequentially from the Seogwipo Maar. This evidence suggests that this maar continued to keep as dried maar , not lake since Late Pleistocene.

Sequential changes of color and pollen assemblage in the Seogwipo maar sediments seems to show climatic shift due to migration of active summer monsoon area. We confirmed 6 pollen zones, and also changes of vegetation and annual mean temperature (AMT) by using biomiozation method (Gotanda e al., 2002; Nakagawa et al., 2003a). Detail climatic changes show in Fig.1. Vegetation changes from cool mixed to temperate deciduous forests estimating to 9 degree C warming of AMT, occurred since 17,000 cal. years BP without abrupt warming spike since 22,000 cal. years BP. This warming records clearly indicate the AMT since Late Pleistocene in the Cheju Island lead on deglaciation and support that SST rising within Indo-Pacific Warm Pool propagated from the tropic to drive ice-sheet melting in the northern Hemisphere 2,000 to 3,000 years later. Lake Suigetsu varve sediments of central Japan recorded same evidence of warming since 18,000 cal. years BP.

Fig.: Pollen diagram showing deglacial warming in Sogwipo maar sediment of the Cheju Island, Korea.

