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Late Quaternary paleo-environment of Japan Islands deduced from the ¹⁴C dating for the major active fault survey

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Carbon isotope dating is the most common dating method for the paleoseismological study. After the 1995 Hyogoken-nambu earthquake, the Headquarter of Earthquake Research Promotion (HERP) conducted the active fault survey project. One of the purposes of the project is the gathering the information on the timing of the last faulting and the recurrence intervals for 110 of the major active faults, in order to identify the cautious faults and establish the probabilistic seismic hazard map of Japan. Most of the timing of fault events are estimated from ages of geological strata, that deposited before and after the faulting. For the estimation of the date of those strata, we use the carbon isotope dating as well as the date of tephra.

Results of the carbon isotope dating give us much information on paleo-environment, such as start of the development of black soil and the periods of charcoal production, although they were used for the estimation of timing of the faulting events in the active fault survey. In this presentation, I firstly divided the material of dating into the black soil, peat and charcoal. Then after compiling the data from various places of Japan Islands, the age-distribution map could be drawn for each material. Preliminary analysis, using the data in the report of the long-term evaluation for major active faults by HERP, shows the concentration of ages between 1,000 and 2,000 cal.yBP for Kanto region, and between 9,000-10,000 cal.yBP for Tohoku region. These statistical analysis may depend on the number of the samples from each site. This study is still under processing, and I'll try to solve the problems on analysis and to provide the data, helping for the understanding transition of the paleo-environmental change in the late Quaternary period in Japan.

Keywords: active fault survey, carbon isotope dating, paleo-environment