AMS $^{14}$C CHRONOLOGICAL STUDY ON HOLOCENE ACTIVITIES OF ACTIVE FAULTS IN JAPAN

T. NAKAMURA,1 M. OKAMURA,2 K. SHIMAZAKI,3 T. NAKATA,4 N. CHIDA,5 Y. SUZUKI,6 M. OKUNO7 and A. IKEDA1

Slipping of active faults generates earthquakes. If we can detect traces of ancient slips of active faults, we can correlate them with earthquakes that occurred in the past. The scale of a slip correlates with the time interval between the slip and the previous one during which strain accumulated in the fault system. Thus it is very important to examine the history of fault activities in the late Quaternary, to provide a risk estimation of the next slip time for prevention of disasters. To establish chronology of past slips of active faults, AMS $^{14}$C dating of macro fossil, charcoal and soil organic material samples collected around the fault is very promising, because the method requires carbon samples of very small size.

Some active faults were discovered in a shallow sea area. They provided us an ideal field to study behavior of a fault during the Holocene, because sea sediments deposited continuously, by recording seismic events of the faults in them. The following procedures are applied to two submarine active fault systems located in the northwestern part of Beppu Bay, eastern Kyushu and off the coast of the town of Futami in the northwestern Shikoku, Japan: 1) surveying an exact line of a submarine fault and continuation of sediment layers on both sides of it by using a high-resolution single-channel seismic profiler; 2) collecting sediment samples on both sides of the fault by using a piston core sampler; 3) analyzing core samples for magnetic susceptibility, micropaleontology and lithology; 4) correlating exactly each sediment layer of the cores on both sides of the fault to recognize several seismic events by relative vertical displacements of relevant layers between the two core sediments; 5) establishing chronology of the events by AMS $^{14}$C dating of mainly shell fossil samples selected from the sediments.

We also applied AMS $^{14}$C dating to establish the chronology of the Nojima fault, located in Awajishima, Hyogo Prefecture, which is one of the faults that generated the 1995 Hyogoken Nanbu Earthquake that occurred on 17 January 1995 and destroyed the city of Kobe. Preliminary chronological results are: 1) the Nojima fault has repeated the displacements a few times in the last 2000 yr; 2) a slip definitely occurred along the Nojima fault ca. 2000 yr ago; 3) several types of deformation, including an open crack, were likely to be formed close to the fault, associated with an earthquake that occurred 400 yr ago, that is probably assigned as the 1596 Keicho Earthquake.

1Dating and Materials Research Center, Nagoya University, Japan
2Faculty of Science, Kochi University, Japan
3Earthquake Research Institute, University of Tokyo, Japan
4Department of Geography, Hiroshima University, Japan
5Faculty of Education, Oita University, Japan
6Faculty of Literature, Aichi Prefectural University, Japan
7Graduate School of Human Informatics, Nagoya University, Japan

ENVIRONMENTAL $^{90}$Sr MEASUREMENTS

M. PAUL,1 D. BERKOVITS,1 H. FELDSTEIN,2 L. DEWAYNE CECIL3 and S. VOGT4

$^{90}$Sr (T=28.5 yr) is a long-lived anthropogenic radionuclide produced in fission. The current and historical distribution of $^{90}$Sr in the environment is useful for the prediction of the behavior of this nuclide released into the environment. The rapid radiochemical detection of $^{90}$Sr in environmental