

## Offshore active faults of the Mikata and Nosaka fault zones in Fukui Prefecture, revealed by high-resolution seismic pro

INOUE, Takahiko<sup>1\*</sup> ; SUGIYAMA, Yuichi<sup>1</sup> ; SAKAMOTO, Izumi<sup>2</sup> ; TAKINO, Yoshiyuki<sup>2</sup> ; MURAKAMI, Fumitoshi<sup>1</sup> ; HOSOYA, Takashi<sup>3</sup> ; USAMI, Takuya<sup>4</sup>

<sup>1</sup>AIST, <sup>2</sup>Tokai University, <sup>3</sup>Corporation of Chuokaihatu, <sup>4</sup>Sogo Geophysical Exploration Co,Ltd

The Mikata and Nosaka fault zones are located in coastal and shallow sea area off Mihama, Fukui Prefecture. National Institute of Advanced Industrial Science and Technology (AIST) and Tokai University conducted, as part of MEXT 2013 nearshore active fault survey project, a high-resolution multi-channel seismic survey using Boomer and a 12-channel streamer cable, acoustic profiling survey using parametric sub-bottom profiler and shallow-sea drilling survey, in order to clarify distribution and activity of the Mikata and Nosaka fault zones. We present mainly about the results of the high-resolution multi-channel seismic survey.

The most remarkable reflection surface in the seismic profiles is the ravinement surface that truncated evenly the lower sediment. Holocene sediments cover this surface and the sediments become thinner toward offshore.

In seismic profiles across the fault zones, flexure-like deformation in the Holocene sediments continue in the N-S direction in the Mikata fault zone and in the NW-SE direction in the Nosaka fault zone along faults shown by Komatsubara et al. (2000). The deformation in the Holocene sediments has been growing by displacements of an underlying active fault. The vertical offset of the flexure on the ravinement surface is larger than those on other reflectors in the sediments covering the ravinement surface and these offsets decrease upward. This growing deformation indicates that faults are reactivated several times in the last 10000 years. At the Mikata fault zone, vertical displacement of ravinement surface is about 11 meters. Based on the formation age of the ravinement surface presumed by sea level change in the world, we estimate the mean vertical slip rate at about 0.9 m/ky. On the other hand, at the Nosaka fault zone, vertical displacement of the erosional surface is about 8 meters. We obtained core samples reaching to the erosional surface at the Nosaka fault zone. We will compare in detail the seismic profiles with sedimentation ages obtained from the cores, in order to estimate vertical slip rate of the Nosaka fault zone. Event history, latest event and slip rate of the Mikata and Nosaka fault zones are further examined, incorporated with advanced analysis of seismic survey data and core samples.

Keywords: Offshore active fault, the Mikata fault zone, the Nosaka fault zone, high-resolution seismic survey, Event history