

HDS024-P01

Room: Convention Hall

Time: May 25 17:15-18:45

## Offshore active fault survey "Unzen Fault Group" (1) -Results of the deep Multi-Channel Seismic Reflection Survey

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The Multi-Channel Seismic Survey "Unzen2009" was conducted in the Shimabara Bay east of the Shimabara Peninsula. The purpose of the survey is to reveal the Unzen basement structure, and the geometry of the eastern extension of the Unzen Fault Group in the bay. As the fault group trends generally in E-W direction, three main N-S trending seismic lines, UM1, UM2, UM3 were set up. Then two subordinate lines were provided; E-W trending UM101 crossing the three main lines, and NW-SE trending UM102 connecting the west two main lines with the former NEDO line in the Ariake-Sea. The total length of the lines reaches 97.4km. Thus the survey makes it possible to reconstruct the quasi-3-dimensional subsurface structure within the nearly rectangular area of 30-km N-S and 15-km E-W sides. As the survey was successfully performed, lots of clear and significant reflections are found down to about 2.5 sec. in the profiles. The predominant reflector (UB) corresponding to the top of the Unzen basement can be traced in the overall profile, indicating a half-graben structure. The structures of the graben-fill sediments are clearly imaged, suggesting the existence of an ENE-WSW trending and north-dipping listric normal fault responsible to the formation of the half-graben. Its listric normal fault has displaced the UB, the top of the basement ( $\pm 500$ ka) at about 1000 m vertically. It is highly probable that the western extension of the fault connects with the active Futsu fault in the Shimabara peninsula. These results surely contribute to the evaluation of surface active faults.

Keywords: Unzen fault group, active fault, Shimabara Bay