

Relocation of hypocenters in and around Kikai-jima and Amami-ooshima, Japan

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Observation using ocean bottom seismometers (OBSs) performed in 2001 had revealed the precise hypocenter distribution in and around Amami-ooshima (Moriwaki et al., 2007). East off Amami-ooshima and around Kikai-jima, however, number of events detected during two months in the OBSs observation had limited. We then relocated events occurred there in 1999-2004 in considering station corrections which were referred to the result of Moriwaki et al. (2007). 3 JMA's seismic stations (Kikai-jima, Amami-ooshima, Tokuno-shima) and 5 temporary stations installed in Amami-ooshima by Kagoshima Univ. were used in hypocenter determination. Among them, Kikai-jima station was essential, because it located just above source area. 441 events were relocated, which were chosen among about 9000 events with the initial phase recorded at Kikai-jima being clear. Station correction at Kikai-jima was determined to be 1.20seconds for P-wave and 2.91seconds for S-wave, which is much larger than those of other stations (-0.02 to -0.51seconds for P-wave and -0.11 to -0.81seconds for S-wave).

Relocated hypocenters revealed the shape of plate boundary between the Philippine Sea plate and the Eurasian plate. Depth of the boundary was about 20km beneath Kikai-jima and 40km beneath the southeastern coast of Amami-ooshima. The estimated dip angle of subducting plate was about 25degrees between Kikai-jima and Amami-ooshima, which became steeper below 50km depth. We also found that the intraplate earthquakes occurred at the depth of about 35km beneath Kikai-jima and distributed continuously to the Amami-ooshima region.