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Hearing survey of the tsunami generated by the 1911 great earthquake(M8.0) occurred around Kikai-jima, Japan

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The great earthquake(M8.0) occurred around Kikai-jima, Japan in 1911 and the weak tsunami was known to attack Amami-oshima (Imamura, 1913). However, it is recently revealed that there are some traditions of tsunami height more than 5m in Kikai-jima and Amami-oshima. Then, we conducted hearing survey at Kikai-jima, Amami-oshima, Kakeroma-jima, Uke-shima, Yoro-shima and Takara-jima in 2011-2012 for understanding the actual conditions of tsunami.

Number of collected information on tsunami is 34 at Kikai-jima, 19 at Amami-oshima and 2 at Kakeroma-jima, many of which are oral traditions from parents or grandparents. Characteristics of tsunami are summarized as follows :

1. Height of tsunami was more than 5m at the west coast of Kikai-jima. On the other hand, it was low at the east coast.
2. Height of tsunami was more than 5m at Amami-oshima, which was larger at the east coast generally in comparison with that at the west coast.
3. There was no severe tsunami damage at Kakeroma-jima, Uke-shima and Yoro-shima.
4. Ebbing tide was observed at Kikai-jima, the middle and the northern part of Amami-oshima. (There is no information on the first motion of tsunami at the southern part of Amami-oshima.)

The present hearing survey reveals that the 1911 tsunami is reasonable size for earthquake magnitude of 8.0. The tsunami simulation shows the collected information on tsunami is explained well by the model that the tsunami is generated by the thrust fault located at the north-northeast off Kikai-jima.

Keywords: great earthquake, tsunami, plate boundary, Nansei-shoto, Kikai-jima