

## Mechanical Process of 1933 Sanriku Earthquake at outer-rise of Japan

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The 1933 Sanriku earthquake occurred March 3, 1933 ( $M_j=8.1$ ). It was followed by a large tsunami, which caused devastating damages on the Sanriku coastal areas. This earthquake was located beneath the Japan trench and was characterized by normal faulting (Kanamori, [1971]:  $L=185[\text{km}], W=100[\text{km}], \text{strike}=180[\text{degrees}], \text{dip}=45[\text{degrees}]$ ). The earthquake has been recognized as the tensional outer-rise event that ruptured the Pacific plate. We decided to investigate details of the source rupture process of this earthquake, based on inversion analyses of seismic-wave and tsunami-wave data.

We used the seismic-wave data at Mito and Hongou, and the tsunami-wave data at 7 tidal stations. We obtained the fault dimension of about  $140 \text{ km} \times 100 \text{ km}$ , which was smaller than that by Kanamori [1971]. From the inversion analysis of the seismic-wave data, we got the following results: the seismic moment of  $0.97 \times 10^{21} \text{ Nm}$  ( $M_w=7.9$ ) and the maximum dislocation of 5.44 m. The following results were obtained from the tsunami-wave analysis: the seismic moment of  $0.59 \times 10^{21} \text{ Nm}$  ( $M_w=7.8$ ) and the maximum dislocation of 3.19 m. When the dip angle was assumed to be 45 degrees, there were disagreements between the observed and calculated initial motions of tsunami-waves at Hachinohe, Kesenuma, Ishinomaki, and Shioyama. Therefore, we assumed the dip angle of 30 degrees [Abe,K. 1978] to explain these initial motions.