

Origin of a tsunami-drifted rock in Raga, Tanohata, Iwate Prefecture, transported by the Meiji Sanriku Tsunami in 1896.

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There are two large boulders on the hill of Raga, Tanohata, Iwate Prefecture. They are located at 24 m above sea level, and approximately 350 m from the coastline. Local villagers have told that these two boulders were derived as tsunami-drifted rocks at the time of Meiji Sanriku Tsunami in 1896. The eastside boulder is approximately 2-3 m in length, 2 m in width and at least 1.5 m in height, and it is estimated to weigh approximately 20 t. This boulder consists of calcarenite, containing numerous individuals of *Orbitolina* sp. that is a common large benthic foraminifera of the Lower Cretaceous. *Orbitolina* is found in 'Orbitolina Facies' of the Miyako Group, and it is particularly abundant in the upper and uppermost part of the Hiraiga Formation. This *Orbitolina*-abundant horizon is exposed near the mouth of Raga inlet, just southwest of Hiraname coast. Therefore, this boulder is estimated to be located originally near the mouth of Raga inlet, and it should be transported as long as approximately 500 m by (a) tsunami(s). It is not certain whether this boulder was moved by one tsunami, or stepwisely by multiple tunamis. On the other hand, another boulder on the west side of the calcarenite boulder consists of conglomerate with rounded and subrounded pebbles of siliceous shale and chert, and this is considered as derived from the lower part of the Tanohata Formation, which is also exposed just on the southeastern slope of the boulder. This boulder is possibly derived from the southeastern hill, and thus it is not considered as a tsunami-derived rock. In Haibe inlet located about 1.2 km south of Raga, many new tsunami-drifted rocks have arrived onshore particularly on the northwestern side of the bay. The concentrated distribution of these rocks are in concordant with the direction of Tsunami current that came from the southeastern direction toward the earthquake epicenter located off Miyagi Prefecture. On the other hand, the tsunami-drifted rock in Raga is located in the west southwest of Raga inlet. Considering that the epicenter of Meiji Sanriku Earthquake was located off Kamaishi, this location reflects that the Tsunami current came from the east.

Keywords: Miyako Group, Orbitolina, tsunami-drifted rock