

Examination of the damage description in Kyushu by the large earthquake on June 30th, 1498 on a war chronicle

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On June 30th, 1498, ground shaking was widely recorded in western Japan. Court nobles in Kyoto (the then capital city of Japan) described on diaries strong shaking there in *Saru-no-koku* (3:00-5:00 p.m.) although they did not mention any damage by this earthquake. According to the historical books and chronicles compiled in Edo Period, felt area of this earthquake extends from Osumi region (Kagoshima Pref. at present) in Kyushu Island to Koshu region in Honshu (Yamanashi Pref. at present). Large earthquake in *Mi-no-koku* (10:00-12:00 a.m.) on the same day and serious damage in Kyushu are described on the war chronicle *Kyushu-gunki* which was written in the early 1600s. Although this war chronicle is one of the popular literatures which was written more than 100 years after the 1498 event, the damage descriptions have been accepted by many seismologists without evaluating the reliability, and considered to be important information on the location of this earthquake.

Usami (1987) regarded the earthquake in *Mi-no-koku* as an M~7 event in the Hyuga-Nada Sea on the east side of Kyushu Island along Nankai Trough, while he commented that credibility of *Kyushu-gunki* is low. Tsuji and Ueda (1997) and Tsuji (1999) interpreted a part of the damage descriptions in Kyushu as a tsunami and claimed that the 1498 event was an unknown great Nankai earthquake based on the tsunami around Kyushu and extensive felt area in western Japan. Ishibashi (1998, 2002, 2014), however, pointed out that the 1498 event could not be a great Nankai earthquake because the damage descriptions in Kyushu were doubtful and the interpretation by Tsuji and Ueda (1997) and Tsuji (1999) was unreasonable. Incidentally, Ishibashi (2002, 2014) suggested that the 1498 event was possibly an M~7 intra-slab earthquake beneath Kyushu Island like the 1909 earthquake of M7.6. As mentioned above, the location of the 1498 earthquake has been controversial and it is important to reveal whether serious damage in Kyushu was real or not.

In this study, in order to assess whether the descriptions were credible or not, we carefully examined the damage descriptions in Kyushu on the *Kyushu-gunki*. As a result, they are very suspicious because of following reasons: (1) Damage descriptions in Kyushu were generic without location information. (2) Some major earthquakes in the 1200s and 1400s are listed following the damage description, which clearly indicates that the writers had knowledge of the past major earthquakes. Thus, the descriptions of the 1498 earthquake could also have been taken from historical documents and not original. (3) Origin time (*Mi-no-koku*) of the 1498 event is close to that of the great Tokai earthquake on Sep. 11th, 1498. Therefore, the writers possibly confuse the damage of these two earthquakes. (4) Serious famine in Kyushu in 1503 and pains of people by many disasters are also written in the chapter of the earthquake damage, making this chapter a stage setting for later stories. Therefore, the earthquake damage could be a fictitious story. (5) Since *Kyushu-gunki* was completed in 1607, writers should have experienced the 1596 large destructive earthquake in Kyushu when writing the war chronicle. Thus, this experience might have influenced the description of earthquake damage.

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