

## Distribution of the heights of the tsunamis of the 1707 Hoei and the 1854 Ansei-Nankai Earthquakes on the coast between Tanabe City and Kushimoto Town, Wakayama Prefecture

\*Takashi Yanuma<sup>1</sup>, Yoshinobu Tsuji<sup>2</sup>, Shintaro Ishizuka<sup>1</sup>, Misako Ueno<sup>1</sup>, Yuya Matsuoka<sup>3</sup>,  
Mutsumi Odagiri(Shiraishi)<sup>4</sup>, Masami Sato<sup>5</sup>, Yayoi Haga<sup>5</sup>, Fumihiko Imamura<sup>5</sup>

1. PASCO Co.Ltd., 2. Fukada Geological Institute, 3. Tohoku, 4. Hanamaki City Museum, 5. IRiDeS, Tohoku Univ.

The coast between Tanabe and Kushimoto, on the west part of the Kii peninsula, was hit by huge tsunamis accompanied with an earthquake belonging to the gigantic Nankai earthquake. Many stone monuments are arranged on this coast for the victims of the 1946 Showa Nankai earthquake-Tsunami. In the Edo period (1602 to 1868 AD) two huge earthquakes were generated; one is the Hoei earthquake of 1707, and the other is the Ansei Nankai earthquake of 1854. Hatori(1980) made a field survey for estimating tsunami heights of those earthquake but his result was a rough estimation of the heights of historical earthquakes. In this study we made database of tsunami damage records on the basis of old documents which were introduced on the material books of the historical earthquakes published by Musha(1941, and 1951), and by Earthquake Research Institute (1983,1987,1989, and 1994). We conducted a field survey in the period from 17<sup>th</sup> to 20<sup>th</sup> January, 2017. The left figure shows the tsunami height distribution of the Hoei earthquake of 1707. The maximum tsunami height is recorded at a pass in front of Tokoji Temple in Shinjo area, Tanabe city, where two streams of run-up tsunami waves were jointed at the summit of the pass, where the ground height is 12.8 meters above the mean sea level. The residential area of Takai in Tonda area in Shirahama Town is located on a plateau of the height of 6.9 meters and an old document says that all houses were swept away there, which shows that the water thickness were 3.0 meters or more, so the tsunami inundation height was 9.9 meters or more. A stone monument in the cemetery of Manpukuji Temple in Susami town was made as a monument for the victims of the Hoei Tsunami in 1723 AD. On this stone monument it is recorded that the total number of the victims of the Hoei tsunami was 134 in this town.

Acknowledgement: This study was achieved as a part of the commissioned research named “Study on the historical tsunamis in the Pacific coast of Japan (2016)” on disaster prevention for nuclear facilities proposed by the Nuclear Regulation Authority, Japan.

Keywords: Hoei Earthquake-Tsunami, Ansei Nankai Earthquake-Tsunami, Historical earthquakes, Tsunami disaster

