

## Control of submarine landslide as the trigger of tsunami

\*Shigenori Maruyama<sup>1</sup>, Toshikazu Ebisuzaki<sup>2</sup>

1. Earth-Life Science Institute, Tokyo Institute of Technology, 2. RIKEN

A tsunami generally results from a big earthquake. More specifically, 82% of tsunamis is estimated to be caused by tectonic deformation on the ocean floor, while 6% by submarine landslide. However, evidenced by the 1972 Unzen earthquake and tsunami disaster, called “Shimabara erupted, Higo affected” , an on-land landslide triggered a tsunami. In the case of the Unzen earthquake, an “on-land” landslide was routed along a stream to the sea causing a tsunami; this approximates the same mechanism that generates a tsunami by submarine landslide. Based on an analysis of seismic and geodetic data, together with recorded tsunami waveforms of the Tohoku tsunami of March 11, 2011, Tappin et al. (2014) proposed that, while the primary source of the tsunami was the vertical displacement of the seafloor due to the earthquake, an additional tsunami source is required. They further proposed that the most likely additional tsunami source was a submarine mass failure (i.e., a submarine landslide). The best method to prevent a huge tsunami is to remove its cause, which is typically submarine sediments that otherwise can become mobile in the form of a submarine landslide following an earthquake; such is our plan to mitigate tsunami disasters. The highest priority of this operation is given to the area off the Kumano-nada Sea. The Nankai Trough is considered extremely dangerous with elevated potential to cause a huge submarine landslide and resulting devastating tsunami, especially when a big earthquake occurs in this region.

Keywords: control of tsunami disaster, submarine landslide