

## **The next generation tsunami hazard map**

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**Abstract** The situation surrounding the Great East Japan Earthquake on 11 March 2011 shed light on many problems that should be improved to protect against future tsunamis. Based on the lessons that we learned from this major tsunami, we proposed a new kind of hazard map called the next generation tsunami hazard map. This new map visualizes the results of tsunami analysis based on various factors and the results of an evacuation analysis within 3D virtual reality space. By applying this model to the port that suffered from the tsunami, we visualized the whole scene in 3D. This included the visualization of the land being inundated by the tsunami and the analysis of what actually happened during this time, including the behaviour of the people evacuating the disaster. Through the use of this new hazard map it is possible to review various types of tsunami risks and develop self-help strategies.

**Key words** tsunami analysis; shallow water equation; evacuation analysis; multi-agent; hazard map; virtual reality; 3D; risk awareness; risk communication; 3D simulation