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Editorial

Interdisciplinary Geosciences Perspectives of Tsunami Volume 2

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Abstract: Disaster related research has its own interdisciplinary perspectives connected to the disaster cycle (response, recovery, prevention, and preparedness). This special issue focuses on interdisciplinary geosciences perspectives of tsunami that cover the whole process of tsunami disasters (generation, propagation, impact assessment, psychological perspectives, and planning). This special issue collects tsunami research papers not only as lessons from the 2011 Great East Japan tsunami, but also from other areas in Japan (coastal defense structures, tsunami fires, economic loss assessment, and emergency planning) as well as other countries (morphological changes in Indonesia and building risk assessment in New Zealand. The order of the paper follows the tsunami disaster process and the connections between each paper show the interdisciplinary perspectives of tsunami research, which can also be used as a framework for other types of disaster research.

Keywords: tsunami; disasters; interdisciplinary perspectives

This Special Issue "Interdisciplinary Geosciences Perspectives of Tsunami Volume 2" provides a collection of recent studies on tsunami related problems from the current understanding of tsunami generation, tsunami propagation/inundation, tsunami warning/monitoring systems, damage/risk assessment, and evacuation/reconstruction plans. Khakimzyanov et al. (2019) [1] presents a new numerical simulation technique applied to tsunami wave modeling. Inoue et al. (2019) [2] utilized the benefit of the new ocean bottom pressure sensor network (S-Net) for near-real time estimation of tsunami sources that can be used for early warning purposes. Satellite-based emergency mapping is another approach compiled with tsunami modeling that will be a useful information source for emergency response (Ajmar et al., 2019) [3]. Once a tsunami hits the shoreline, it causes morphological changes and Rasyif et al. (2019) [4] demonstrated this process using a tsunami simulation that was applied to the 2004 Indian Ocean tsunami affected area in Banda Aceh, Indonesia. Muhammad and Tanaka (2019) [5] showed how a hybrid defense system comprising a sea embankment followed by a coastal forest could reduce the tsunami energy. Fishery port facilities in Japan were selected as a target for tsunami vulnerability research as Imai et al. (2019) [6] developed criteria that could be used for future risk assessment. Paulik et al. (2019) [7] applied the loss model to assess changes in tsunami risk to residential buildings using an example in Omaha Beach, New Zealand, which is another example of tsunami vulnerability research. Pakoksung et al. (2019) [8] newly applied an economic model with a tsunami simulation to estimate both the direct and indirect economic losses in the case of tsunami in a well-known tourism area, Okinawa Island, Japan. Tsunami wave forces and debris impact forces are not only the two main causes of damage, but also fires. The detailed fire generation mechanism that occurred at Aonae Harbor on Okushiri Island in the 1993 Hokkaido Nansei-Oki earthquake and tsunami was revealed by Enomoto et al. (2019) [9]. For future reconstruction and preparation, psychological approaches were applied to the 2011 Japan tsunami related research to understand the psychological processes and personality factors for an appropriate tsunami evacuation

(Sugiura et al., 2019 [10]) as well as a concise psychometric tool to measure personal characteristics for surviving natural disasters (Ishibashi et al., 2019 [11]). Last but not least, the framework for preparing for a mega-tsunami in the case of Kochi Prefecture, Japan was developed by applying the "all-of-society engagement" concept promoted in the Sendai Framework for Disaster Risk Reduction (SFDRR), which was used to analyze the readiness of disaster risk preparation (Kitagawa, 2019 [12]). The editor wishes that the readers will gain benefits from the various interdisciplinary papers collected in this special issue.

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