

Aiming at zero earthquake and tsunami victims

In 1991, the world's first leading-edge research institution on earthquake and tsunami disaster prevention, the "Tohoku University Graduate School of Engineering Disaster Control Research Center (DCRC)" was founded. It pursues research and education aimed at estimating damage caused by huge earthquakes and tsunamis in urban and rural areas, and preventing or mitigating the disasters. The pillars of the DCRC's research are comprehensive disaster measures and technological development in the Pacific Rim. Their representative work is a real-time tsunami monitoring system. They are also conducting studies to make real-time forecasting techniques

more precise and speedier by linking the tsunami observation networks now being developed, and uniting them with a numeric model for simulation. Moreover, DCRC conducts various activities in support of natural disaster prevention and mitigation. It promotes international research and educational activities, such as positive exchanges with researchers around the world and recruitment of international students. Prof. Fumihiko Imamura, the Director of DCRC says, "The Great East Japan Earthquake occurred right at the central location of our activities. Although it will take more time to summarize the disaster, and we need more detailed research, we



The Jogan Earthquake occurred in 869. Its epicenter was off the Sanriku and Sendai coasts (presumed M8.3). This is a simulation model (CG) of the subsequent tsunami that hit the Sendai plain. It shows that sea water entered from the coastline up to about 4 km inland.



DCRC helps local residents to take measures to mitigate tsunami disasters. Its epicenter was Challenge Disaster Prevention Seminar, they created a hazard map with the residents, designating buildings for tsunami emergency evacuation.

have two points." First: "For more than 10 years we have continually researched and investigated the millennial tsunami, which occurs on a cycle of about 1,000 years, like the Great East Japan Earthquake tsunami that occurred in 2011 and the Jogan Earthquake tsunami that occurred in 869. Last year we started to assess and investigate the research results related to disaster prevention. Then the great earthquake occurred. Therefore, the results of our research could not be utilized fully."

Second: "We created a simulation model of a tsunami occurring in the Sendai plain based on the data obtained from research on the Jogan tsunami, and held a lecture meeting for the residents of Wakabayashi Ward, which was stricken by the recent tsunami, in October last year. The meeting was crowded with about 300 people at the city. Almost all the people who attended the lecture meeting took refuge in safe areas during the tsunami. I felt this clearly indicates that if prepared and provided with the right information on a disaster, more human lives will be saved."

Prof. Imamura says, "Although last year I strived to inform people about tsunami through the lecture at the APEC Japan 2010 Senior Officials' Meeting that was

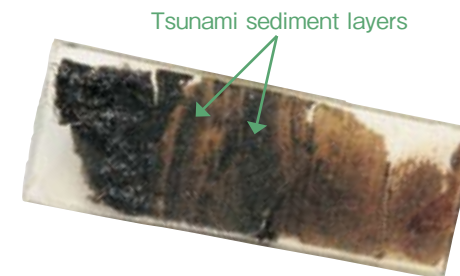


The massive earthquake and tsunami hit many cities in the Tohoku region, and was an incomparable world event. The research results obtained from this unprecedented disaster will become the common property of all human beings.

held in Sendai, and through the mass media, we had many tsunami victims."

In the 2004 earthquake off Sumatra (M9.1), there were as many as 220,000 victims, while in the Great East Japan Earthquake (M9.0) there were about 20,000 victims.

Prof. Imamura pointed out that Japan has robust alarm systems, and has developed hardened infrastructure, such as sea wall embankments, breakwaters, and evacuation buildings. Furthermore in Japan people prepare for disasters in everyday life by making hazard maps and conducting fire drills. This led to fewer victims. Prof. Imamura has renewed his resolve to further enhance the function of DCRC in order to achieve zero victims.



\* When U.S. geologist Dr. Brian Atwater (Prof. at the University of Washington) visited Sendai, he presented Prof. Imamura a tsunami sediment layer specimen from near the Seattle coast as a souvenir. It triggered tsunami sediment layer investigations in the Sendai plain.



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**Fumihiko Imamura**

Born in Yamanashi Prefecture in 1961. Graduated from the doctoral course of the Department of Civil Engineering, School of Engineering, Tohoku University. In 1989 awarded a Dr. Engineering. Worked as Research Associate at the Faculty of Engineering and then Associate Professor (former Assistant Professor) at the School of Engineering, Tohoku University. Has been in his current position since 2000.

<http://www.tsunami.civil.tohoku.ac.jp/hokusai3/J/index.html>