

## Change of giant tsunami study and the risk evaluation of the NPP before and after the 2011 Tohoku earthquake

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When the 2011 Tohoku earthquake occurred, the study of the 869 Jogan earthquake by AIST has finished the first stage and the evaluation of the Jogan earthquake was almost concluded in the Headquarters for Earthquake Research Promotion, and also the back check of nuclear power plants seem to have been slowing down.

The study of Jogan earthquake by AIST started 2004 and was included in the project supported by MEXT from 2005 to 2009. The final report of the project submitted to MEXT in 2010, which concluded that a giant tsunami was generated during the AD869 Jogan earthquake which was larger than M 8.4 based on tsunami deposits survey in the Sendai and Ishinomaki plains, and that the recurrence interval of the giant tsunamis was 450 to 800 years. The AIST study team understands that the source area could extend to the north and south because the survey area of tsunami deposits was insufficient, and tsunami inundation was wider than the distribution of tsunami deposits. The survey of tsunami deposits of wider area had been started from 2010, but it was difficult to find coastal plains which preserve tsunami deposits.

The re-evaluation of all of the nuclear power plans started in 2007 based on new criteria of the safety assessment. The plants were evaluated by three sub-committees and the result was reported to the joint committee. Evaluation against strong motion by earthquake was preceded putting tsunami evaluation off later. In 2009, the middle reports of the Fukushima No.1 NPP was submitted to the joint committee which did not mentioned to the Jogan earthquake, and then only the minimum model of the Jogan earthquake was evaluated. The further discussion of its magnitude and tsunami has not been conducted before March 11, 2011.

The study of Jogan earthquake have been presented in meetings of earth science societies by AIST and medias reported several times since 2005, but the possibility of giant earthquake along the Japan trench was not discussed in the community of earthquake science. In addition, it is not easy to change the society that was not ready to giant earthquake. In these circumstances, nuclear power plants were working during the re-evaluatio, while many problems have been pointed out.

The situation has changed dramatically after the 2011 Tohoku earthquake. Society shares sense of crises against giant tsunami. The tsunami assessment has been made not based on known maximum earthquakes but unknown possible maximum. The safety of nuclear power plant were in doubt and the operation can be started after the safety of the plant was confirmed. Government dose not hesitated to assume maximum earthquake and tsunami, then possibility to point put unknown giant tsunami has been declined. But there is still unknown in earthquake, so it is necessary to continue study and to tell the society truce what we know and do not.

Keywords: tsunami deposits, giant tsunami, Jogan earthquake, Tsunami evaluation