

Advanced researches of Earthquakes and Tsunamis -Towards disaster mitigation on Earthquakes and Tsunamis-

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Based on lessons learned from the 2011 East Japan Earthquake/Tsunami, we recognized the importance of real time monitoring of these natural hazards. As a real time monitoring system, DONET1 was already deployed and DONET2 is being developed constructing the dense ocean floor networks around the Nankai trough Southwestern Japan. DONET observatories detected offshore tsunamis 15 minutes earlier than onshore stations at the 2011 East Japan Earthquake, and provided the significant information of the tsunami amplification process between off shore and on shore. Using these systems, we can detect not only early earthquakes and tsunamis but also low frequency tremors, slow earthquakes and micro earthquakes in the inter-seismic or pre-seismic stage, which provide useful information for the estimation of seismic stage. As the conclusion, the integration of the real time monitoring data and advanced simulations such as the recurrence cycle of mega thrust earthquakes, tsunami inundation, seismic response on buildings/cities and evacuation, is the very important methodology towards future disaster mitigation programs and related measures. We will explain disaster mitigation researches on earthquakes and tsunamis around the Nankai trough.