



## **Enhancing Earth Observation and Modeling for Tsunami Disaster Response and Management**

Shunichi Koshimura (1) and Joachim Post (2)

(1) Tohku University, International Research Institute of Disaster Science, Sendai, Japan (koshimura@irides.tohoku.ac.jp), (2) United Nations Office for Outer Space Affairs

In the aftermath of catastrophic natural disasters, such as earthquakes and tsunamis, our society has experienced significant difficulties in assessing disaster impact in the limited amount of time. In recent years, the quality of satellite sensors and access to and use of satellite imagery and services has greatly improved. More and more space agencies have embraced data-sharing policies that facilitate access to archived and up-to-date imagery. Tremendous progress has been achieved through the continuous development of powerful algorithms and software packages to manage and process geospatial data and to disseminate imagery and geospatial datasets in near-real time via geo-web-services, which can be used in disaster-risk management and emergency response efforts. Satellite Earth observations now offer consistent coverage and scope to provide a synoptic overview of large areas, repeated regularly. These can be used to compare risk across different countries, day and night, in all weather conditions, and in trans-boundary areas.

On the other hand, with use of modern computing power and advanced sensor networks, the great advances of real-time simulation have been achieved. The data and information derived from satellite Earth observations, integrated with in situ information and simulation modeling provides unique value and the necessary complement to socio-economic data. Emphasis also needs to be placed on ensuring space-based data and information are used in existing and planned national and local disaster risk management systems, together with other data and information sources as a way to strengthen the resilience of communities.

Through the case studies of the 2011 Great East Japan earthquake and tsunami disaster, we aim to discuss how earth observations and modeling, in combination with local, in situ data and information sources, can support the decision-making process before, during and after a disaster strikes.