

Preface

The 2011 off the Pacific coast of Tohoku Earthquake ($M_w = 9$) was one of the most devastating earthquakes in Japanese history and is the fourth largest earthquake to have occurred in the era of instrumental seismology. Mainly because of the extremely large and widespread tsunami, it accounted for more than 20,000 people, missing or dead. The world seismological community was shocked by the extremely grave consequences of this event, but, at the same time, recognized the importance of carrying out rapid and thorough investigations so that we can better prepare for such situations in the immediate, as well as the long-term, future.

As a result of extensive international efforts, global observational networks have been improved significantly in the last decades. In particular, Japan has deployed extremely dense nation-wide seismograph and GPS networks as well as many other instruments including state-of-the-art ocean-bottom instrumentation. Also, extensive geophysical, geological and oceanographic studies have been conducted in Japan for many years. The 2011 Tohoku Earthquake occurred in the middle of an area having instrumental networks of unprecedented quality and quantity. Most of the data, both regional and global, were immediately made available to the world scientific community through real-time or semi real-time data transfer. The rapid availability of data triggered immediate extensive researches on this earthquake: within hours after the origin time some results became widely available through websites and e-mail communications among investigators. Subsequently, many preliminary results on the magnitude, aftershocks, slip distribution, tsunami source, and so on, became available which promoted interaction, collaboration, and, in some cases, healthy competition among investigators. Although this website-mode communication was helpful, one downside is that it is often difficult to understand the details and underlying assumptions and to assess the quality of each result.

In view of the obvious merit of rapid communication of quality-controlled results, *Earth, Planets and Space* decided to publish a special issue "First Results of the 2011 Off the Pacific Coast of Tohoku Earthquake". The objective of this special issue is twofold: (1) Rapid peer-reviewed publication of the results and ideas on this earthquake to promote further collaboration and interaction which will eventually lead to more comprehensive investigations; (2) provide reliable interpretation and models which can be used by government agencies for decision-making on immediate post-earthquake measures.

Thanks to the great interest and attention of many researchers all over the world, we received many more submissions than we had expected. This has delayed the final publication of the present special issue despite one of our objectives mentioned above. Since TERRAPUB kindly arranged for all the accepted preprint manuscripts to be made available to every reader on the EPS web page, the effect of some delay was minimized. The editors sincerely thank all the contributors, referees and TERRAPUB for the final publication of this special issue. Another special issue on this earthquake is planned for the publication of more-thorough investigations in a full-paper format.

Finally, the editors express their deep condolences to all those who have suffered as a result of this earthquake.

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