

## 1. Preface

A 9.0-magnitude earthquake — the strongest ever to strike Japan — occurred in the Pacific Ocean near the Tohoku region of the country at 14:46 JST on March 11, 2011.<sup>1</sup> The epicenter was off the Tohoku coast (38.32°N, 142.37°E)<sup>2</sup>, and the hypocenter was 32 km below the earth's surface. The quake was considered to have a long-angle reverse fault mechanism with a pressure axis extending from west-northwest to east-southeast, and occurred between the Pacific plate and the North American plate. After the tremor, a massive tsunami struck coastal areas from Tohoku to Kanto, with an 11.8-meter-high wave<sup>3</sup> causing widespread damage to the coastal district of Ofunato in Iwate Prefecture. The earthquake was the fourth largest on record in the world, and caused massive destruction along the Tohoku-Kanto Pacific coast. The disaster was named the Tohoku Region Pacific Ocean Coastal Earthquake, and later became known as the Great East Japan Earthquake — a collective term whose meaning also includes the subsequent tsunami and the accident at the Fukushima Dai-ichi Nuclear Power Station.

A total of 15,783 people were killed, 4,086 were left missing and 5,932 were injured.<sup>4</sup> In terms of major material effects, many houses were washed away or flooded, and there was widespread damage to roads in affected areas. More than 115,000 houses were completely destroyed and over 795,000 sustained significant damage.<sup>4</sup> Frequent aftershocks were felt since March 12, as of September 12, more than 550 of which were magnitude 5 or over, and five were magnitude 7 or over (three on the day of the main quake).

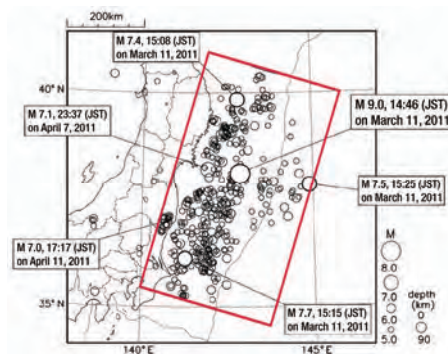


Figure 1-1: The Tohoku Region Pacific Ocean Coastal Earthquake and aftershocks  
(Japan Meteorological Agency/the Great East Japan Earthquake — the Tohoku Region Pacific Ocean Coastal Earthquake — related portal site: [http://www.jma.go.jp/jma/en/2011\\_Earthquake.html](http://www.jma.go.jp/jma/en/2011_Earthquake.html))

This report details various activities conducted by the Japan Aerospace Exploration Agency (JAXA) involving earth observation satellites and communication satellites in collaboration with domestic and overseas institutions in the wake of the Great East Japan Earthquake.

The names of the organizations and departments included here are those applicable at the time the activities were carried out. This report is also provided on the website of JAXA's Satellite Applications and Promotion Center at <http://www.sapc.jaxa.jp/antidisaster/index.html>.

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<sup>1</sup> The magnitude of the quake was originally announced as 7.9, but this was revised to 9.0 on March 13.

<sup>2</sup> Intensity and epicenter information based on data from the United States Geological Survey (USGS)

<sup>3</sup> Based on data from the Japan Meteorological Agency

<sup>4</sup> Based on data from the Metropolitan Police Department as of Sept. 12, 2011