

Megathrust Earthquakes in Oblique Subduction Zones Part 1: The Sagami Trough

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Since the 2011 Tohoku-oki megathrust earthquake, Japan, it has been recognized that there is a variety of megathrust earthquakes occurring in the world not just only the Chilean type megathrust earthquake. In the variation, one end member is the 1960 Chile earthquake and the other is the 2004 Sumatra-Andaman earthquake, while the former is characterized by subduction zone of a young plate forming the Cordilleran orogeny, the latter is by an obliquely subducting plate along a continental margin with active back-arc activity. We study in detail megathrust earthquakes along such oblique subduction zones, considering characteristics of earthquake activities, focal mechanisms, rupture patterns, geometry of subduction zones, types of overriding plates and back-arc activities. Discussions are further made on one of the oblique subduction zones near Japan Islands, the Sagami Trough, in order to derive some information and the possibility of future large earthquakes there from the seismological data at hand. We found that there is a variety of large earthquakes in the oblique subduction zones in the world. Since we have no hand to suspect the future activity of a particular subduction zone, comparative studies on seismic activities in different oblique subduction zones are inevitable.

Keywords: Megathrust earthquakes, Oblique subduction zones, The Sagami Trough, 2004 Sumatra earthquake, 1965 Rat Island earthquake