M6.4 and 6.3 Indonesian Earthquakes of 6 March 2007

Tectonic Setting

The Sunda trench, at the edge of the Australian plate, is the most active convergent plate margin in the world. In the most recent major earthquake, the 2004 Christmas Island earthquake (M 9.0), a thrust earthquake produced major damage along the entire length of the trench. The 2007 earthquakes were similar in size and magnitude to the 2004 event, and occurred on the same fault, but closer to the island of Sumatra.

Epicentral Region

The region of the earthquake is marked by a strong seismicity in the depth range of 50-200 km. The fault plane solution suggests a strike-slip mechanism, with the largest component of motion being perpendicular to the trend of the trench. The earthquake produced significant ground motion and caused significant damage in the affected areas.

Seismic Hazard

The seismic hazard in the region is high, with the potential for future earthquakes in the same magnitude range as the recent events. The hazard is influenced by the proximity to the Sunda trench and the history of large earthquakes in the area.

Seismicity

The seismicity in the region is characterized by a high frequency of small to moderate earthquakes, with occasional larger events. The seismicity is concentrated along the trench and the faults associated with it. The recent earthquakes are part of a long history of seismic activity in the region.