THREE-COMPONENTS WAVEFORM INVERSION ANALYSIS TO DETERMINE THE FAULT PLANE PATTERN OF JAVA EARTHQUAKES IN 2010

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ABSTRACT

Java Island is located in the earthquake-prone areas. In the last five years, IRIS recorded about 300 large earthquakes in Indonesia, 30 of them occurred on the island of Java. For example on September 2, 2009, at 14:55:01 pm, occurred in Tasikmalaya with magnitude Mw = 7.0. This is because the islands of Java and Sumatra is located between the three subduction zones which can cause an earthquake in Indonesia, i.e the Sunda Trench, Sumatra Fault (Semangko Fault), and faults are stretched between them, i.e Mentawai Fault, Batee Fault and Andaman Fault.

Waveform analysis using three-component seismograms were conducted to obtain the moment tensor and determine the pattern of subduction fault fields in Java. This study begins with the request a few earthquakes of 2010 events from the IA and/or Geofon. Then by using a software Isola conversion and data preprocessing performed; data input include: crustal model, event info, select a station, the preparation of raw data, and defining seismic source; calculate the Green function; perform the inversion and plot the results of inversion. Further describe the fault-plane causes of earthquakes using software hcplot. The results of the analysis of seismograms is known that the pattern of a growing field of fault on the island of Java is the pattern of normal faults and reverse fault parallel to the island arc.

Key words: three-component waveform inversion, moment tensor, earthquakes