The hypocentral parameters of the earthquake given by the Japan Meteorological Agency (JMA) are: origin time = 23:57JST (14:57UT), epicenter = (33.14°N, 137.14°E), depth of the centroid= 21km, JMA magnitude M=7.4 and moment magnitude Mw=7.5. A foreshock of M6.9 occurred about five hours before this earthquake. The foreshock and the main shock generated Tsunamis; the maximum heights of the Tsunamis due to the foreshock and the main shock are about 0.5m and 0.9m, respectively. Maximum seismic intensity of the both earthquakes is "5 lower" in the JMA scale. The numbers of the injured in the foreshock and the main shock are 6 and 36, respectively, and two houses were partly damaged by the main shock.

The activity region is composed of three sub-regions. The first sub-region extends about 80km long from southwest to northeast, along the Nankai trough. The foreshock, the main shock and the largest aftershock M6.5 on Sep.8 took place in this sub-region. The second sub-region extends about 50km from southeast to northwest, crossing obliquely the first sub-region. The third sub-region is located about 10-20 km away from the second sub-region in the northeastern direction.

The activity was localized in the first sub-region until the occurrence of the main shock. Immediately after the main shock, the seismicity in the second sub-region was activated. The activity in the third sub-region became conspicuous about two days after the main shock. The overall aftershock activity decays following the modified Omori formula well. The aftershock activity in the second sub-region stretching northwest decays faster than that in the first sub-region.

The focal mechanisms represented by the CMT solutions of the foreshock, the main shock, and the largest aftershock are of reverse fault type with north-south compression. This and the locations of their hypocenters suggest that these earthquakes occurred in the Philippine sea plate. The earthquakes in the second sub-region show different focal mechanisms; most of them are strike slip type with approximately northeast-southwest compression. The compression field may rotate clockwise in the third sub-region; for example, the aftershock M4.8 recorded at 05:17 of Sep.8 (JST) is of strike slip type with east-west compression.

There seems to be an apparent inconsistency between the dip of the faults anticipated from the CMT solutions and the one from the hypocentral distribution re-determined by the double difference method.

Clear depths phases appear about 7 -9 sec. after the P phases in waveforms of some aftershocks. The depth phases are likely to be the SP phase; accordingly the running spectrum indicates its origin is SP phase. The depth phases have similar evident frequencies to SP phase and higher energy than P phase. If the depth phase is SP, depth of the hypocenter is estimated to 20km. It is compatible with the depth of the centroid of the main shock. Some earthquakes in the third sub-region have shorter depth phases of about 5-6 sec. These phases are considered to be SP-P, suggesting that their focal depths are shallower (15 km).

Earthquakes of magnitude of about 2.0 have occurred usually in the focal region of the present M7.4 earthquake. Although the present focal region is contiguous to the ones of the 1944 Tonankai earthquake M7.9 and of the 1946 Nankai earthquake M8.0, earthquakes larger than M6.0 have never occurred since 1923.

The stress field generated by the present earthquakes generally suppresses the next Tonankai earthquake. It slightly accelerates the occurrence of the anticipated Tokai earthquake; the order of magnitude is of about that of the tidal change when measured in terms of OFRF.

An experiment of the "Early Warning System" was conducted on a real-time basis. It was found that a warning could be issued about 10 seconds or a little earlier than the arrival of a major quake in some parts of the region where the maximum seismic intensity "5 lower" was recorded.