Earthquakes are the expression of the continuing evolution of the Earth planet and of the deformation of its crust and occur worldwide. Armenia lies in the central part of the Armenian Highland and is situated on the north of the collision boundary between the Arabian plate and the Eurasian plate. This region is one of typical collision boundaries in the world. The Arabian plate is moving northward at the rate of 20-30 mm/year and collides with the Eurasian plate. The Anatolian and the Iranian blocks are squeezed westward and eastward respectively. Seismic events in the territory of Armenia are determined by its position in the collision zone Of the Arabian and Eurasian plates. In the present work the relationship between well known active faults and local seismicity is considered. The national catalogue of Earthquake and catalogue of focal mechanisms are used. More than 400 earthquake focal mechanisms have been analyzed and some peculiarities of faults behavior are revealed.

Fig 1  Tectonics of the territory of Armenia and Eurasian plates (fig by Nafi Toksoz of MIT/ERL). The Arabian plate moves northward at the rate of 20 mm/year and collides with the Eurasian plate. Consequently the Caucasus including Armenia is compressed and reverse and strike-slip faults are developed.
Caucasus including Armenia is compressed and due to N-S compression, the reverse strike-slip faults with WNW-ESE direction are developed, and the extensional axes with N-S direction are formed. 1: major strike-slip fault, 2: major thrust, 3: the relative movement of the Arabian plate against the Eurasian plate.
Fig.3 The active faults and epicenters of historic earthquakes in and around Armenia.

The major active faults in Armenia are the Pambak-Sevan-Sunik Fault (PSSF), the Mrav Fault, the Akhourian Fault, Garni Fault (GF), Yerevan Fault (YF), Zheltorechensk-Sarigamish Fault (ZSF) etc.

The PSSF which is longest active fault in Armenia (~410 km) is a right-lateral fault with reverse component, and exhibits clear geomorphic features for a right-lateral fault. The recurrence period of the PSSF is inferred to be 3000-4000 years. However, the PSSF did not generate the large earthquake with magnitude more than Mw 7.0 in the last 2000 years or more. The PSSF is one of the active faults with high risk of future earthquake occurrence in Armenia. The Mrav Fault is a reverse fault inclined to the north. The 1139 year was generated M 7.5 earthquake by this fault. The Akhourian Fault is a left-lateral fault. The historic earthquakes with magnitude of M 6.5 to 7.0 occurred along this fault. The length of Garni fault is ~200 km. The according to Karakhanian et all (2004) and Georisk report on the Garni Fault, the GF is divided into 5 segments. Four large to moderate historic earthquakes have occurred along the GF, viz the 906 earthquake (7.0), the 1679 Garni earthquake (M 7.0), the 1828 earthquake (M 7.0) and the 1988 Spitak earthquake (Ms 6.9). The 893 Dvin earthquake is well-known as Dvin of ancient capital in Armenia has suffered severe damages. Dvin is located near the YF. However, the detailed epicenter of the 893 earthquake is not clarified. There is another opinion that the GF generated this earthquake (Georisk report on the Yerevan Fault). According to another opinion, Dvin earthquake occurred twice for AD 863 and AD 893 (Guidoboni, 1997). The historic earthquakes seem to be shifted from south to north.
Fig. 4 Distribution of historical earthquake epicenters.

Fig. 5 The special distribution of earthquake epicenters with magnitude M≥3.0 since 1932 based on
the earthquake catalogue of NSSP. This figure shows that the 1988 Spitak Earthquake is the only one larger than magnitude 6.0 event in Armenia during last 75 years. The seismicity is active in northern part of Armenia – southern Javakhet upland. The earthquakes larger than magnitude 5.0 are located in northern Armenia, in Sevan basin and one epicenter is located in southern Armenia.