AVERAGE REGIONAL SEISMIC STRAIN RELEASE RATES IN THE PATRAIKOS – SARONIKOS GULFS (CENTRAL GREECE) BASED ON HISTORICAL AND INSTRUMENTAL DATA

B. Papazachos, A. Kiratzi, Ch. Papaioannou, D. Panagiotopoulos

Aristotle Universtity of Thessaloniki, Department of Geophysics,
54006 Thessaloniki, Greece

The seismic moment release rate in the area bounded between the meridians 21.5°E-23.7°E and the parallels 37.7°N-38.5°N, covered by the Patraikos, Corinthiakos and Saronikos Gulfs, is determined. The main objective is the determination of the relation between the frequency of occurrence of earthquekes and the rete of deformation of a region with many faults. The last eerthquake in the Patraikos Gulf occurred in 1858 (M_S = 6.8) end the probability for the occurrence of a strong event in the next 20 years is very high.

The data used for the detarmination of the rate of deformation span a period of 240 years (1748-1985) and hava magnitudes with $M_S \geq 6.2$. This time period is considerably longer than the average return period of large earthquakes in this region (~ 35 years). The seismic moment release rate for the area was found equal to $0.48 * 10^{25}$ dyn cm yr^{-1}. Then, the strain rate was calculated which was found equal to $6.1 * 10^{-8}$ 45^{-1}. Wishing to examine the pattern of tha deformation in the area, we calculated the cartesian components of the moment tensor of seven earthquakes with reliable fault plane solutions. Thus, we found that the strain accumulation in the area is mainly taken up by north-south extension and vartical movements. These results are in agreement with the regional stress field.

EVIDENCE FOR A STOCHASTIC MODEL OF GLOBAL SEISMICITY

B. Papazachos*, T. Teapanos*, E. Scordilis*, C. Bagiatis, Ch. Koukouvinos****

*Dept. of Geophysics, University of Thessaloniki, Thessaloniki 54006, Greece
**Dept. of Mathematics, University of Thessaloniki, Thessaloniki 54006, Greece

The most reliable and complete data of earthquakes, with magnitudes $M \geq 7.0$, which occurred in the whole Earth, during a time span covering 90 years (1897-1986), have been used to test the hypothesis that the time difference of successive earthquakes follows a negative exponential distribution (Poisson process). The answer to the question whether or not the occurrence of earthquakes follows Poisson process, is very important for seismic hazard and earthquake prediction problems.

For this purpose the data set was separated in several samples by using a magnitude step equal to 0.1. Statistical techniques, like x^2-test and Kolmogorov-Smirnov test heve