

Abstract

The subject of this thesis is the completeness of the seismic catalogs in eastern and central parts of the USA. In the last couple of years, there were some new seismic events that raised questions about their origin. Ellsworth (2013) believes that this trend is due to induced phenomena. In this work I have tried to elucidate their origin by calculating the magnitude of completeness of the seismic catalog. For the calculation, I used two seismic catalogs, ANSS catalog and Combined catalog provided by Dr. Ellsworth. The calculation was performed using three statistical methods: MAXC, GFT and BSTAB. To complement the results, continual calculation of the magnitude of completeness by GFT has been employed for both catalogs. Calculations have proved that the magnitude of completeness of both catalogs hasn't reached the value $M_c = 3$ or greater since 1970, but the drop came in later years. Seismic networks were not sensitive enough to capture seismic magnitude of $M = 3$ or larger in all cases. Continual calculation has demonstrated that the magnitude of completeness falls below $M_c = 3$ in such data selection, which includes the seismic events observed after introducing a denser network of portable stations USArray. The results make it evident that the increased number of seismic events in the eastern and central parts of the US may also have been caused by thickening of the monitoring seismic stations network.