A session on the use of Zmap software

22/07/2020

Note - Do the geo-tectonics and seismo-tectonics of the Himalayan and Andaman Region and detailed study on the concept of the Guttenberg-Richter relation and the importance of b-values.

1 Zmap Software

- Zmap software is used to analyse the data from seismology catalogue.
- Arrange the catalogue in Zmap compatibility
- Analyse the catalogue in magnitude and time-span.
- Follow instructions on the zmap documentation and input `zmap` in the command window.
- Choose 'Get/Load Catalogue from the Catalogue drop down menu'
- Choose import ASCII columns basically csv file.
- Save the csv format in year, month, date, time, latitude, longitude, depth, magnitude.
- Decluster the catalogue. Decluster the XKfactor from 1.5 to 0.5. This is to separate the mainshock from foreshocks and aftershocks.
- Plot the FMD, Magnitude Histogram, and Cumulative events
- Study about Maximum Likelihood and Least Curvature method and write in the report and also study about Maximum curvature method.
- Cut the b-value at Mc and plot the graphs.
- Choose the min. no. of events > Mc to be 30 rather than 50.
- Go the Sampling drop down and define grid from 0.05 to 0.02 degree.
- Study oceanic ridge, interplate and intraplate region i.e. b-value as tectonic parameters
- Also do spatial variation of p-value. Divide the catalogue into two zones depending on the seismicity i.e into two seisic zones, or we can also divide it on the basis of tectonics i.e. on the basis of seismo-tectonics or geo-tectonics.
- To divide the zones, go to Sampling -> Polygon, Regular Polygon to divide using two points