

Investigation of earthquakes model and real space distribution

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Abstract. Earthquake sequences exhibit a random character as their dominant statistical feature. The distance r between any pairs of subsequent events is employed to describe the investigated sequences in this paper. The whole information for events space distribution could be taken if all possible values of distances are used. That is the model distribution was developed. The model distribution has been compared to the real distance distribution.

Keywords: earthquakes, space distribution, statistical modeling.

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INTRODUCTION

The purpose of this investigation is to describe the seismic process in space at some active regions in the world. We consider the statistical distributions of the distances between each two consecutive earthquakes. Model distance distributions are developed for sequences of independent events taking into consideration only their surface distribution. They are compared with actual distance distributions between events with aftershock removed.

RESULTS AND CONCLUSIONS

To develop a model the surface distribution is of basic importance. Earthquake space distribution is not homogeneous and isotropic and that constraints on obtaining an analytical solutions. The whole information for events space distribution could be taken if all possible distances are used. That is the model distribution was developed in this work. [1] Real distributions are obtained simply by calculation the distances between subsequent events and using these values to plot the corresponding frequency histogram.

The frequencies received for the seismic zone Lower St. Lawrence, Canada, are shown in the fig. 1. The results show that the distributions for the actual sequences differ from the model one mainly in the small distance range in some active regions. That may be due to: existence of clustering properties of earthquakes in the investigated zones; earthquakes

migration in the zones; the algorithm of aftershock removing. Further investigations are necessary to find out correct interpretation of observed difference in the distance distributions.

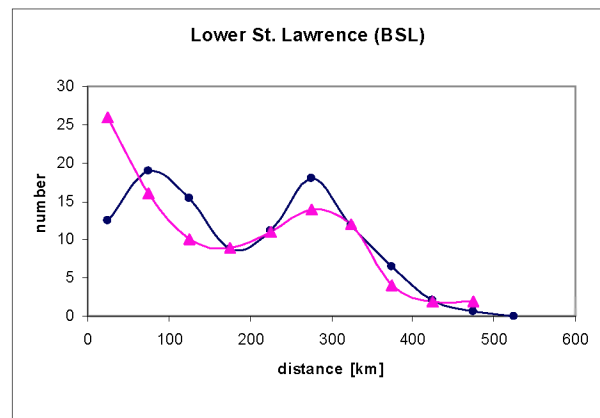


FIGURE 1. Real (triangles) and model (dots) distance distribution.

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REFERENCES

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