

Some Geological-Geophysical Features of Spatial Distribution of Seismic Activity in North-Eastern Russia

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The spatial regional prediction of seismically dangerous zones is made by distinguishing of regions with developed and absent (or vividly reduced) «granite» layer. The maximum seismic activity is characteristic for regions with developed «granite» layer.

To study the spatial relation of seismogenic knots with the knots of fault intersection we used our measure of discordance of D faults that is a number characteristic of the degree of lithosphere crushing by faults, fractures, lineaments with different directions. Not rated D and rated in area $||D||$ of the of the measure of discordance quantity is described by the formula (1) and (2), relatively as the sums of modules of pairwise vector intersections of right-angled fault sections:

$$D = \sum_{i=1}^m \sum_{k=1}^{m-i} |l_i \cdot l_{i+k}| = \sum_{i=1}^m \sum_{k=1}^{m-i} |l_i \cdot l_{i+k} \cdot \sin(\alpha_{i+k} - \alpha_i)|, \quad (1)$$

$$||D|| = (1/S) \sum_{i=1}^m \sum_{k=1}^{m-i} |l_i \cdot l_{i+k}| = (1/S) \sum_{i=1}^m \sum_{k=1}^{m-i} |l_i \cdot l_{i+k} \cdot \sin(\alpha_{i+k} - \alpha_i)|, \quad (2)$$

where l_i - straight segment- vector of fault; m - total number of straight segment of faults in the square of surveyor's plane; $(\alpha_{i+k} - \alpha_i)$ - angle between the strike directions of straight segment of faults with indexes i and $i+k$; S - standard area for which D and $||D||$ is calculated.

The complexes of maps of D and $||D||$ values of faults that were distinguished after the gravimetric, geologic, and neotectonic data were compiled. These maps show the coincidence of knots of increased seismic activity and maximum values of discordance measure.