

## **European Seismological Commission XXVII General Assembly, September 10-15, Lisbon, Portugal.**

### **What parameters make up, what we call site effects**

In the last years, the seismology undergoes a qualitative leap in understanding numerous physical processes in the medium and their influence the propagation and spreading of seismic radiation and seismic effects over a very long distance. For example, finding effects of induced seismicity has allowed us to better understand the nature of errors in evaluation of parameters of seismic proof construction which are often discovered after strong earthquakes.

One of a bigger achievements between others is a discovery of the site effects. The study of such effects was one of the main goal of our research, which had been conducted since 1976 in tens of active and non-active regions, have lead us to a conclusion that one of the most important parameters of the medium, which influences the site effects, is the state of the medium, but not just it's structure. That allow to introduce necessary corrections to the mentioned above expected reaction of the medium and, furthermore, to other issues related to creation of seismic and geophysical networks, monitoring of natural events, finding out possible earthquakes precursors and so. Moreover these two most important parameters react in differently to strong and weak influences, which must be taken into account in order to solve various seismic related problems using the earthquakes, explosions or microseisms registrations.

For instance, investigations of influences of sedimentary layer thickness on seismic noise intensity distribution led us to the following results. For aseismic zones has shown that when thickness changes from 1 to 15 km the noises' level changes from several hundred to several thousand of conventional units of measurements. The analysis of the same dependence for seismic zones has shown that the noises' level much more lower and changes from 15-20 to 85-90 units. The opposite situation is observed during registration of strong signals: earthquakes and explosions. The analysis of the percentage of distribution of the number of registered seismic events to unregistered depending on sedimentary layer thickness, showed first that an increase in sediment thickness leads to a decrease in the number of registered events and secondly that the quantity of registered events in a seismic zone exceeded greatly the quantity of events registered in an aseismic zone.

The next results we have got analyzing influences of stress state of the medium to registered information. As the level of stress state of the medium increases level of microseisms permanently decreases. Comparison of levels of microseisms for 17 seismic and 23 aseismic regions reflected in appropriate tables and graphs showed that surprisingly in quiet areas it is considerably higher than in active zones, approximately in 4-12 times. From that point of view becomes understandable a physical meaning of so called seismic gap appearing during the period of earthquakes' sources activation. Thus, the specificity of seismic noise intensity change revealed by us allows in connection with sedimentary layer thickness to judge the level of stress state of the medium.