

3.7. DIAGNOSTICS OF EARTHQUAKES

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Earthquake prediction was always one of the central problems worrying the human-kind. First seismic stations were opened more than 100 years ago. They were equipped low-sensitive mechanical instruments for recording of large earthquakes. In 1902, the academician B.B. Colitsyn has created electrodynamic seismographs with galvanometric recording with sensitivity of instruments increased almost in 1000 times providing possibility to study rather small earthquakes and weak microseisms.

For the last 40 years, problem of the earthquake diagnostic or prediction in Russia and other countries (USA, Japan, and China) was treated variably: from the periods of hopes and intensive development of researches changing by recession periods. In many aspects, it was defined by successes and failures of forecasts of several destructive earthquakes. Currently, seismic-risk zoning and antiseismic construction is the main direction of seismology in USA, In Russia, China and Japan many teams of seismologists and geophysics are paid special attention to the earthquake prediction researches,

Some complex geophysical networks and polygons were created in the most seismically dangerous regions of the Russian Federation (Kamchatka, South Siberia and North Caucasus). Kamchatka geophysical polygon is located in the Far East of Russia and is characterized by frequent and strong seismic activity (with magnitudes of earthquakes up to 8.6). Kamchatka polygon includes different monitoring systems, based on modern observational, analytical and telecommunications technologies and carried out continuous and in real-time observations on the earth's surface, in boreholes and in the atmosphere. More then 20 parameters (precursors) of seismic, geophysical, geodetic, geodeformational and hydrogeochemical fields are under the control of scientists. Some types of correlations were discovered between seismic activity and different monitoring parameters which could be useful in earthquake forecasts.

The special information systems realize the collecting and processing of all geophysical information and issue of warning for local authorities about seismic and volcanic hazards.