The question of how tectonics, volcanism and seismicity are interrelated is the subject of numerous debates. In the earth’s outer shell these processes develop not irregularly, but comply with the certain rules. In some cases, interrelation is obvious and in other ones, no interrelation can be revealed. The best approach to studying dynamics of these processes is to examine areas where they are exceptionally active and their effects well-exposed. Such areas are island arcs and active continental margins. For this purpose, we chose the central part of the Eastern volcanic area (EVA) of Kamchatka.

Tectonically, the area under research is a volcanic-tectonic depression (VTD) formed in the end of Upper Quaternary period ($Q_3$). This VTD takes the form of the Karymskaya Circular Structure (KCS) in 36x28 km with displacement amplitudes along circular fractures from 40 to 100+ meters. The KCS has a series of particular tectonic features. It is a telescoping structure that manifests the sequential development of single-type structures of higher and higher order: VTD – circular structure – calderas – volcanoes. Further, we note the dominant presence of radial fractures forming a system of narrow step-like grabens up to 5-10 km wide with displacement amplitudes from 40 to 200 m. Seismic and non-seismic fractures are usually distinguished within the structure boundary. Seismic ones are usually magma-conducting.

A line of fractures with northeastern strike is the basic structural element of the Eastern volcanic belt. All active and extinct volcanoes of this area relate to this fracture system. This tectonic line is considered a series of sub-parallel, trans-crustal (mantle) fractures through which magma migrates to the surface. Fractures having sub-meridional, northwestern and sub-latitudinal directions relate to those confined to the crust only.

The so-called «structural knots» occur in the areas where crustal fractures intersect abyssal mantle ones. They suggest possibility of formation of the peripheral and abyssal crustal magmatic chambers connected with the upper mantle.

A high degree of volcanic activity characterizes this zone. There are two active volcanoes Karymsky and Maly Semyachik, 18 extinct volcanoes, and numerous monogenetic formations in the area covering about 1000 km$^2$.

The eruption of Karymsky volcano as well as the phreatic-magmatic eruption at the bottom of Lake Karymskoe in 1996 in the Akademii Nauk volcano caldera is connected with the regional northeastern zone of fractures and reactivation of crustal fractures. It was manifested by the series of volcanic-tectonic earthquakes located at 0-30 km depth, anticipating the Karymsky volcano eruption.

In different stages of development, regional volcanic activity has been characterized by eruptive products spanning compositions from basalt to rhyolite. Andesite volcanism dominated whereas basic volcanism from mantle recharge and acid volcanism associated with crustal magmatic chambers were coexistent.

The KCS abyssal structure is a system of magmatic chambers of different depths, active volcanoes (Karymsky) as well as extinct ones exhibiting various degree of magma differentiation (the Akademii Nauk volcano), and also near-surface granitoid intrusions that are intrusive analogues of effusive rocks. This system is expected to have the common recharging chamber in the transition layer between the crust and mantle (~25-30 km).

We consider that the so-named «tectonic shock» (the earthquake occurred on 01.01.1996) caused the rise of basalt magma to disturb the magmatic system within the KCS.

Two main episodes of seismic and volcanic activity are noted from detailed seismological observations in the Karymsky volcanic center that began in 1962. On the 1st and 2nd of January 1996, a crustal earthquake with M=7 occurred in the continental part of Kamchatka. It was the most violent earthquake of the last 100 years and prompted a tsunamigenic eruption in Lake
Karymskoe. Subsequently, a central eruption of Karymsky volcano began after a 15-year period of dormancy. The second significant event was the Kronotskoe earthquake with $M=7,8$ and rupture length about 220 km long occurred on the 5th of December 1997. It was the strongest one in Kamchatka within the last 30 years.

In order to investigate these events, for the period 1988-2002 we evaluated (1) annual values of the seismic-tectonic movement speed $V$ calculated according to the data from Kamchatka and the Sea of Okhotsk for earthquakes with $H=150-600$ km; (2) variations of the speed $U$ of the Earth rotation around its axis; and (3) moments of generation of the strongest earthquakes with $M\geq 7,6$ in the area of Hokkaido, the Kuril-Kamchatka zone, in Sakhalin and the Aleutian Islands. It is shown that within the period 1993-1999, stable linear growth of the values $V$ and $U$ was observed, and 7 violent earthquakes with $M\geq 7,6$ (the catalogue NEIC GS USA) occurred in the above-stated segment of the Pacific seismic belt. It is characteristic that during the previous and subsequent 5 years (1988-1992 and 1998-2002), no earthquake of such power occurred. It is concluded that generation of violent earthquakes in the northwestern part of the Pacific mobile belt in 1993-1997, as well as the events occurred in 1996-1997 in the Karymsky volcanic center, are connected with processes of general planetary scale. Global forces affect the interaction between tectonic platforms and result in reconstruction of stress fields on the regional and sub-regional levels.

All the above confirms the thesis that general planetary tectonic processes are interrelated with seismic and volcanic ones.

Based on the concept planetary-scale affects on seismic-tectonic processes, V.A. Shirokov made short-term and long-term forecasts for the earthquakes occurred on the 1st of January 1996 ($M=7$) and on the 5th of 1997($M=7,8$) correspondingly. The time, location and magnitude of the expected events turned out to be true.

The data given suggest the following conclusions: Tectonic processes determine geodynamic conditions, and they are closely connected with seismic and volcanic activity. Thus, tectonics is the primary control. Seismicity should be considered a manifestation of changes in tectonic stress. Volcanism is a process compensating tectonic stresses. Petrologic-tectonic research allows us to conclude that tectonics in many ways determines the diversity of magma petrochemical types.