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Mega-city and great earthquake distributions: the search of basic links.

Boris Levin (1), Elena Sasorova (2), and Andrej Domanski (1)

(1) Institute of Marine Geology and Geophysics, RAS, FEB of Russian Academy of, Yuzhno-Sakhalinsk, Russian Federation (levinbw@mail.ru), (2) Shirshov Institute of Oceanology RAS, Moscow, Russia

The ever-increasing population density in large metropolitan cities near major active faults (e.g. Tokyo, Lisbon, San-Francisco, et al.) and recent catastrophic earthquakes in Japan, Indonesia and Haiti (loss of life more 500000), highlight the need for searching of causal relationships between distributions of earthquake epicenters and mega-cities at the Earth [1].

The latitudinal distribution of mega-cities calculated with using Internet data base, discovers a curious peculiarity: the density of large city numbers, related to 10-degree latitude interval, demonstrates two maximums in middle latitudes ($\pm$30-40°) on both sides of the equator. These maximums are separated by clean local minimum near equator, and such objects (mega-cities) are practically absent in the high latitudes. In the last two decades, it was shown [2, 3, 4] that a seismic activity of the Earth is described by the similar bimodal latitudinal distribution.

The similarity between bimodal distributions for geophysical phenomena and mega-city locations attracts common attention.

The peak values in the both distributions (near $\pm$35°) correspond to location of well-known "critical latitudes" at the planet. These latitudes were determined [5], as the lines of intersection of a sphere and a spheroid of equal volume ($\pm 35^\circ 15' 52''$). Increasing of the angular velocity of a celestial body rotation leads to growth of oblateness of planet, and vice versa, the oblateness is decreasing with reducing of velocity of rotation. So, well-known effect of the Earth rotation instability leads to small pulsations of the geoid. In the critical latitudes, the geoid radius-vector is equal to the radius of sphere.

The zones of near critical latitudes are characterized by high density of faults in the Earth crust and manifestation of some geological peculiarities (hot spot distribution, large ore deposit distribution, et al.). The active faults existence has led to an emanation of depth fluids, which created the good conditions for agriculture. Areas of ancient civilizations (Babylonia, Mesopotamia, Greece) always are concentrated near zones of high seismic activity. Catastrophic earthquakes occurred with interval about 200-500 years, and memory of population was limited usually by duration of 2-3 generations, i.e. by interval 50-80 years.

The proposed hypothesis of exposed latitudinal zones at the Earth as pulsating geoid may present nowadays basic interest.

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