

## Some effects of the seismic impacts on environment

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We studied the impact of major industrial activity on the geological environment over a period 2000 -2015 through the changes in the average daily number of high energy earthquakes on the planet. Abrupt disturbances in global seismicity are seen to have occurred during the periods of such activity, or at times of rapid changes in their intensities, accompanied by natural and technogenic disasters. In technogenic disasters also we included aircraft crashes , as results of our research in the 90s indicated their clear correlation with seismicity: data collected over 30 years were analyzed. An observed change in the pattern of the behavior of microseisms pointed to the possible mechanism for these correlations. Our research concluded that abnormal oscillations of the Earth's surface are partially converted into electromagnetic fields (Villari- effect) and transmitted into the ionosphere and atmosphere, resulting in changes of their components. This also explains the occurrence of some ionospheric and atmospheric earthquake precursors. Such oscillations of the Earth's surface may be both the natural and induced genesis, and these are transmitted into the atmosphere resulting in a danger to aviation. Their energy level may be sufficient to disrupt the on board electronic systems of aircrafts. These factors identified by us that possibly cause some aircraft crashes have motivated us to explore other statistically convincing evidences of these phenomena. Among the external induced factors that may lead to aircraft crashes, we studied the effects of nuclear explosions, which have had the most negative consequences for the ecology of the planet in the XX-th century. Available statistics for both covers five decades. The data show an increase in the number of air crashes with each decade. In these periods, "crew error" was given as the cause at an average about 40% of the time: this fact seemed to us statistically unreliable. How likely is it that Commissions from different countries, having specialists with different levels of experience would all have come up with the same significant number of "crew errors "over a period of 50 years (!) ? We emphasize that the aircraft crash analysis presented include large aircraft belonging to major airlines with the most trained professional pilots. What should then be the statistics for smaller aircraft, helicopters, and small private planes? And not to mention many other so-called "emergency situations" which fortunately didn't finish tragically. Relating so many air crashes to errors by highly professional crew suggests to us that, in fact, in many cases, their causes were simply unexplained. Whereas, in periods with reduced induced events, these figures are much smaller! Of concern is that significant amount of data clearly indicate that even small induced impacts can pose considerable danger. Clearly, this issue is not completely explored and, consequently, appropriate protection systems (that continuously monitors wave fields of different nature influencing aircraft in flight) have not been created to avoid the undesirable failure of on board equipment. Thus our research has determined the physics behind these links and shown that any industrial activity must be monitored to prevent related negative effects.