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Lithosphere-Atmosphere Interface as a background for physical explanation of short-term precursors

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We consider the final stage of the earthquake cycle as an open complex system approaching to the critical state, and anomalies arising in atmosphere and ionosphere as the part of this system. It means that seismic flow, crust deformations and atmospheric anomalies are not the separate phenomena but are the parts of the common system of geospheres interaction. We propose the interface between the lithosphere and atmosphere using as formal indicators of interaction the FMR b-value variations and atmospheric chemical potential correction (ACP) indicating high ionization level within the atmospheric boundary layer which is the reason of the thermal and ionospheric anomalies initiation. One of the proofs of this concept is the synchronism of b-value drop and physical precursor's period observed for the cases where both sets of parameter were available (L'Aquila, Tohoku).

The Dobrovolsky estimation of earthquake preparation zone we consider not only as fundamental property of the final stage of seismic cycle but also as a parameter derivable from space observations. It alone gives possibility to determine all three parameters necessary for earthquake forecast: epicenter position, magnitude and the main shock time. The satellite technology allows to asses this area as increased IR ground surface brightness or large-scale ionospheric anomaly.

b-value and Dobrovolsky zone provide the time and space framework where the Multi-Sensor-Networking Analysis (MSNA) should be applied for the short-term earthquake forecast using the physical precursors.