AWAKENING OF A SMALL FRACTURE

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A small, barely visible fracture was waken up in the course of an in-situ experiment. It showed what heterogeneities one can bump into in near-surface formations.

The in-situ experiment objective was the study of heterophase mass-transfer through natural porous water-filled media. The experiment was performed on the Zafarabad uranium deposit (Uzbekistan) which has been exploited by the method of in-situ sulfur acid leaching (below ISSAL). **The underground laboratory** (U-lab) was a low- carbonaceous sand aquifer, situated at the depths 100-110 m within the stratum of unlithified terrigenous sediments of Mesozoic and Cenozoic age.

Before the experiment started, the fracture considered could not be seen on the structural surface topography. It had been believed that U-lab was isolated enough, though there had been detected some anomalies of both subsoil air composition and rock sound absorption. Afterwards, those were interpreted as fracture's signs.

Once ISSAL started, and CO_2 free gas phase was generated within U-lab, the fracture manifested itself. **Gas forced its way up along the fracture zone** through the three water-filled aquifer/ aquifuge cycles into the subsoil air. Simultaneously, a quantity of leachate was transported into the upper seams (by a gas-lift mechanism).

The above followed from **the monitoring system** that, in particular, included varied wells (monitors, tests, shallow pipes), and varied observation techniques: well-logs; cross-borehole scanning; sampling of porous liquid, sorbate gas, subsoil air, etc. Such techniques should probably be used to recognize and to study small fractures.