Geophysical Research Abstracts, Vol. 7, 07656, 2005
SRef-ID: 1607-7962/gra/EGU05-A-07656

Geomechanical risk management during mining operations in high-stressed Khibiny massif

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Rockbursts and mining-induced earthquakes are the main hazards during the mining operations in high-stressed hard rock masses. Mining-induced seismicity has become critical for major mining regions, Russia inclusive. The risk value is determined by magnifying the probability of dynamic events occurrence by its expected damage. Probable dynamic events occurrence is identified according to indicators of the geological environment critical setting. These indicators are calculated based on the results of the geological environment geodynamic monitoring within the area of mining operations. The methodology of integrated hazardous dynamic events occurrence prediction has been developed on the basis of analytical and in-situ investigations in geological environment geomechanical processes. The elimination of the mining-induced catastrophe risk being impossible, the algorithm of possible risk escaping has been developed. Solving the above mentioned problems is shown on the example of the Khibiny apatite mines.