

Satellite-bound monitoring of mine sites

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ABSTRACT

The ending of mining activities leads to worldwide challenges often similar to those encountered during the phase-out process. Germany remains a mining country with an extensive sector of old mining. In a region with such a high population density like the Ruhr area, the old mining sector creates special risks for the safety of the ground surface, the population and the environment. Unstable abandoned mine openings and sub-surface mine workings, uncontrolled methane emissions and acid mine drainage must be considered.

At this point monitoring measures come into focus. In cooperation with other partners the Research Institute of Post-Mining is working on the application of satellite data from the European project "Copernicus" for remote sensing and monitoring of current post-mining processes. Particular emphasis is placed on the hydrochemistry of water bodies, the soil water content, the land use and the land coverage. With respect to the potentials of the Copernicus-program and the reliability of the data provision, the connection between information provided by the satellites and terrestrial expertise will lead to an innovation of monitoring. As a consequence, it will be able to reduce post-mining risks and increase post-mining chances like the valorisation of mining infrastructures for the recovery of renewable energy. This paper will discuss the various satellite monitoring components being used for post-mining risk assessment.