

**Erosion rate study at the  
Allchar deposit (Macedonia)  
based on radioactive and stable  
cosmogenic nuclides ( $^{26}\text{Al}$ ,  $^{36}\text{Cl}$ ,  
 $^3\text{He}$ , and  $^{21}\text{Ne}$ ).**

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This paper focuses on constraining the erosion rate in the area of the Allchar Sb-As-Tl-Au deposit (Macedonia). It contains the largest known reserves of lorandite (TlAs<sub>2</sub>), which is essential for the LORanditeEXperiment (LOREX), aimed at determining the long-term solar neutrino flux. Because the erosion history of the Allchar area is crucial for the success of LOREX, we applied terrestrial in situ cosmogenic nuclides including both radioactive ( $^{26}\text{Al}$  and  $^{36}\text{Cl}$ ) and stable ( $^3\text{He}$  and  $^{21}\text{Ne}$ ) nuclides in quartz, dolomite/calcite, sanidine and diopside. The obtained results suggest that there is accordance in the values obtained by applying  $^{26}\text{Al}$ ,  $^{36}\text{Cl}$  and  $^{21}\text{Ne}$  for around 85% of the entire sample collection, with resulting erosion rates varying from several tens of m/Ma to ~165 m/Ma.