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Studying bedrock fracture and weathering patterns with cosmic-ray induced muon particles

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Interactions between tectonics, climate and surface processes from mountain belts to basins

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Muography: a density imaging technique based on atmospheric muons

Applications: archaeology, volcanology, hydrology, speleology, geology, mining, civil engineering, oceanography, etc.

- 2D density images (muon radiography)
- 3D density images (muon tomography)
- Time-sequential 2D or 3D

Muography applied to studying bedrock fracturing and weathering:

- Imaging of soil layering and permeability structures
- Stability of tunnels (rock mechanics)
- Monitoring of rock and soil slopes
- Imaging weathered profiles and fracture patterns

Our plans:

- Field measurements in N Finland (tor formations)

± imaging of thick kaolinitic saprolites of pre-Pleistocene age

For those interested in scientific cooperation with VMI, contact M. Holma for guidance:

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