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Muography, outreaching and transdisciplinarity

Marko Holma[1,2,3,4], Pasi Kuusiniemi[1,3,4] & Jari Joutsenvaara[1,2,3,4]

[1]Muon Solutions Oy, Finland; [2]Kerttu Saalasti Institute University of Oulu, Finland; [3]Arctic Planetary Science Institute, Finland; [4]Virtual Muography Institute (global, Tokyo, Japan)

Basics

1

Muography: Muography: A group of density imaging techniques based on the detection of cosmic-ray induced muons

Applications: Archaeology, architecture, border control, tunnels, caves, containers, nuclear waste imaging, volcanology, hydrology, geology, mineral exploration, mining, oceanography, etc.

Muography & geosciences: an example of multidisciplinarity

2

The conventional curriculums of geologists and geophysicists do not yet prepare the graduating students for the requirements of muography

Muographers need geoscientists to develop geoscience applications, BUT also **geoscientists need muographers** to apply muography in their own research and application fields

Getting muography widely accepted as geophysical discipline requires

3

1. Many types of papers:
   - Instrumentation
   - Visualisation & software
   - Theoretical & simulation studies
   - Pilot & case studies
   - Comparisons: pros and cons of muography vs conventional methods
   - Calibrations & benchmarking
   - New approaches (e.g., AI, machine learning)
   - Reviews
   - Etc.
2. Data interpretation and visualisation improvements
3. Multidisciplinary outreaching and networking (e.g., participation in a wide range of conferences and workshops; popularisation of muography in the media and science parks, etc.)

4

Multidisciplinary cross-pollination leads to transdisciplinary research

A transdisciplinary science approach is one that integrates or requires various disciplines, concepts, and methods in order to make research possible