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Global networks of underground research – Geoinformatics in exploring the interaction between laboratories and research units by geocoded publication metadata

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Globally there are more than 75 identified scientific underground facilities or laboratories. Underground laboratories or underground research mines are related to 400.000 scientific publications in the Web of Science since 1975. Underground laboratories are commonly located in operational or closed mines, tunnel systems, or built for this specific purpose. It is clear that a wide variety of disciplines and research units apply these facilities. However, it is unclear what is the thematic distribution in research by laboratories at a global scale, or what is the geographic distribution of the scientific communities applying the facilities? In practice, do, e.g. political borders or distance play a role in this?

Understanding prevailing and potential market areas of underground laboratories and research mines for research communities applying these facilities are key elements in developing the use and utilisation of such facilities. Again, it is important to get a better knowledge of the structures, networks, and thematic emphasis of these research communities to understand their requirements and expectations for the underground research infrastructures. This study aims to deepen the knowledge in this field by geocoding teams and units published research, which applied underground facilities. Geographic information systems (GIS) and geocoding functions are applied to build a network between underground laboratories and research teams using all recognised underground research from the web of knowledge. Preliminary analysis indicates that underground laboratories may have a large global scientific user network, but the relatively active network of a few key partner institutes.

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