



## **Comparison of experts' and non-experts' mental models of the subsurface and geological processes**

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Scientists often struggle in communicating geoscience content to non-specialists, especially when it relates to complex or contentious issues. A greater understanding of people's mental models of the subsurface and of geological processes can help develop successful communication strategies between geoscientists and public audiences. Using a mixed-methods approach, we compared mental models of the subsurface, mining/quarrying, drilling, and flooding between experts (geoscientists;  $n=24$ ) and non-experts (lay people;  $n=38$ ). Experts' mental models displayed evidence for scientific, technical knowledge, as opposed to the traditional, lay expertise in the mental models of non-experts. Both groups included a combination of knowledge and subjective elements in their mental models, but geoscientists included more human elements (e.g. presence of humans in the sketches), indicating a departure from the detached, factual objectivity usually associated with the rhetoric of science. These differences can be used to inform two-way dialogue between geoscientists and non-geoscientists, which is imperative in dealing with the energy and climatic challenges we currently face.