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# HYDROGEN ENERGY RESERVOIR (HENRI)

## WP1.1 Screening of potential sites for storage of H<sub>2</sub> in Slovakia

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## *Slovak Academy of Sciences*

The Slovak Academy of Sciences is the main scientific and research institution in Slovakia fostering basic and strategic research.

It was founded in 1942, closed after World War II, and then re-established in 1953.

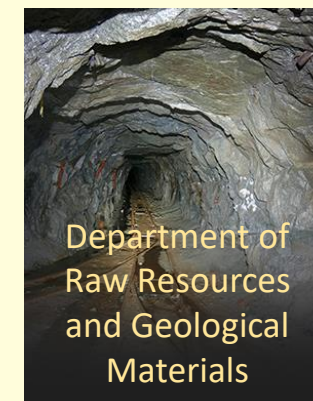
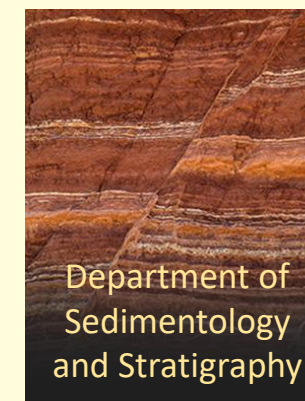
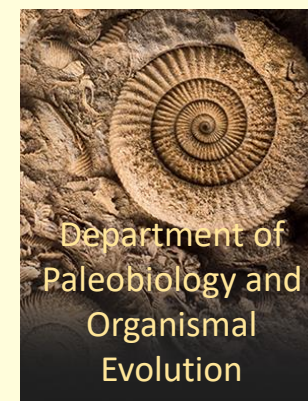
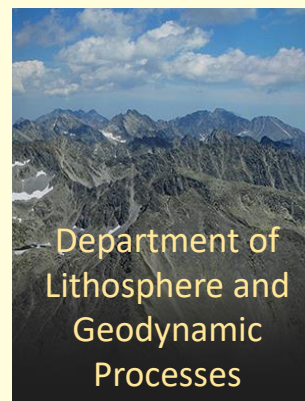
It consists of 69 organisations.



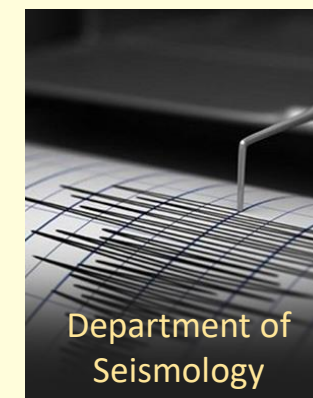
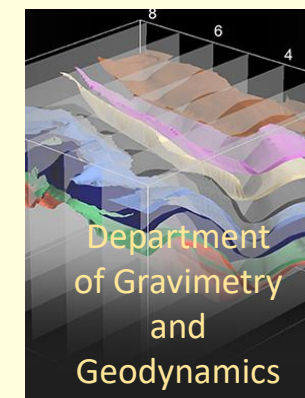


The Earth Science Institute of the Slovak Academy of Sciences conceptually develops the Earth sciences by exploring and modelling the geological structure and geodynamic evolution of the Earth, its rock composition, the evolution of life, climate and carbon cycle, as well as the interpretation of geophysical fields and seismicity, using the advanced methods and instrumentation.

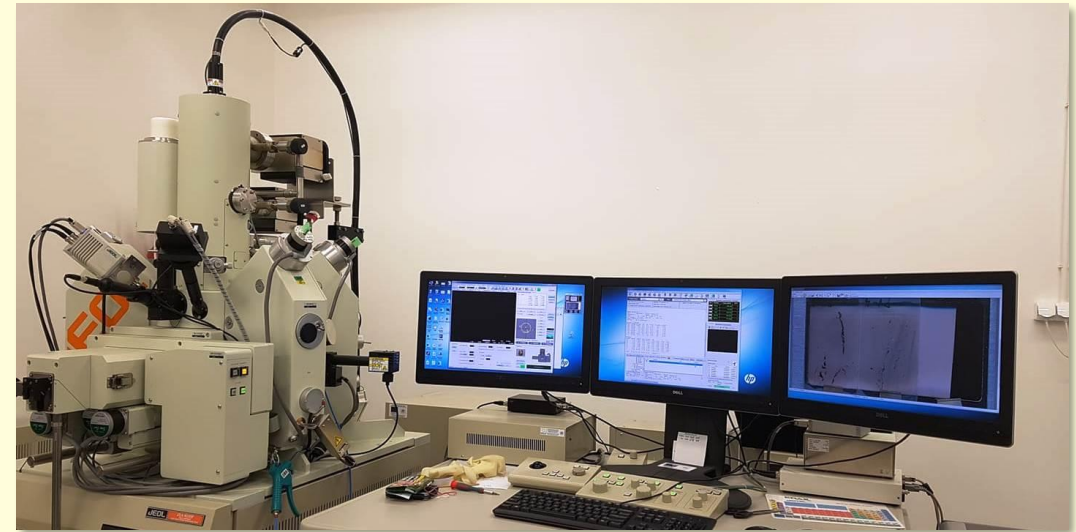
## Geological Division



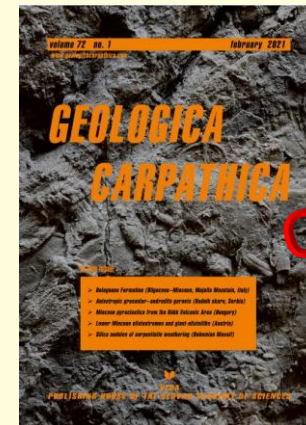
## Geophysical Division



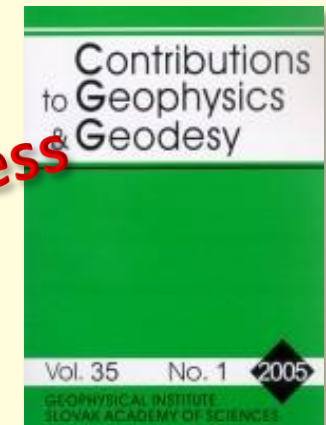
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- [Laboratory of geofluids and microthermometry](#)
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## Publishing and editing activity



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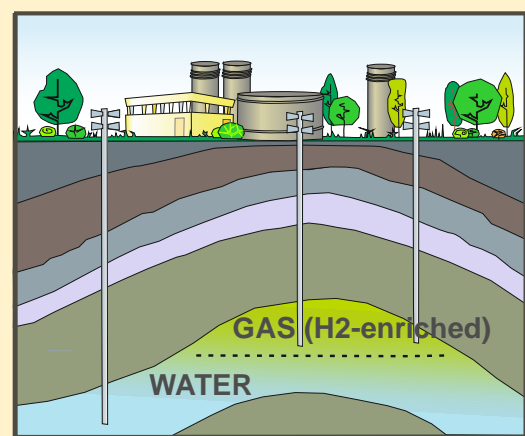


*Suitable geological formations for underground hydrogen storage*



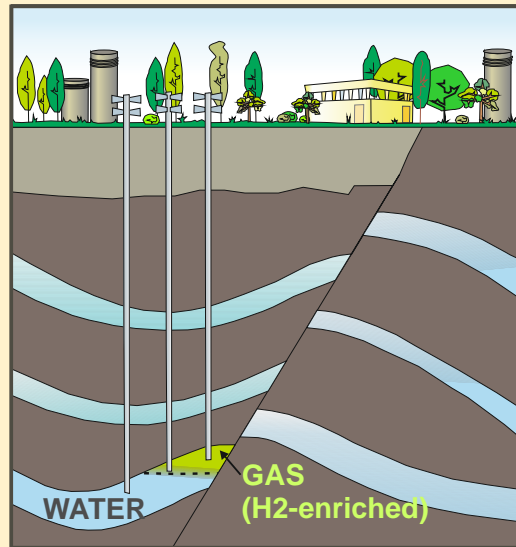
# Geological structures and underground facilities suitable for the storage of H<sub>2</sub>-enriched gas

## Depleted Gas (Oil) Reservoirs



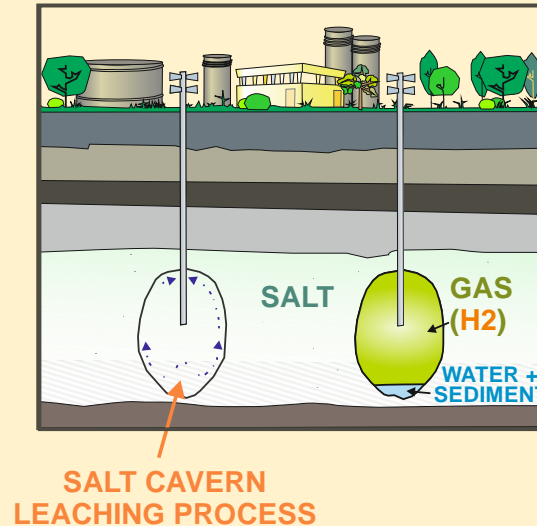
Depleted gas (oil) reservoirs are porous rock formations that have trapped crude oil or gas over geological time periods. They are proven gas reservoirs that are easy to develop and operate due to existing infrastructure.

## Aquifers



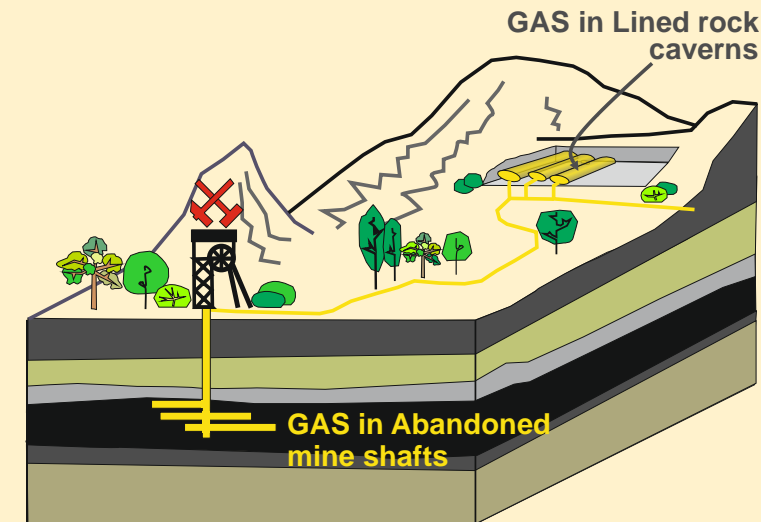
Aquifers are permeable rock formations that contain natural, underground sources of (salt) water. They can be converted for gas storage by injecting gas at high pressures. An aquifer is suitable for gas storage if the water-bearing sedimentary rock formation is overlaid with an impermeable cap rock.

## Salt Caverns



Salt caverns are solution-mined cavities within either salt domes or bedded salts that do not match reservoir volume capacity.

## Mines & Hard Rock Caverns



Mined underground cavities in solid rock deep underground, using conventional mining techniques. They consist of a system of shafts or ramps and drifts, forming cavities, e.g., in granite, metamorphic rocks, etc.

# WP1.1 Screening of potential sites for storage of H<sub>2</sub> in Slovakia

**A methodology for assessing geological structures in terms of their suitability for conversion to UHS will be developed**  
(will include evaluation criteria on the basis of which the structures will be scored, and finally, on the basis of the achieved score, they will be recommended or excluded as potentially suitable/unsuitable for UHS)

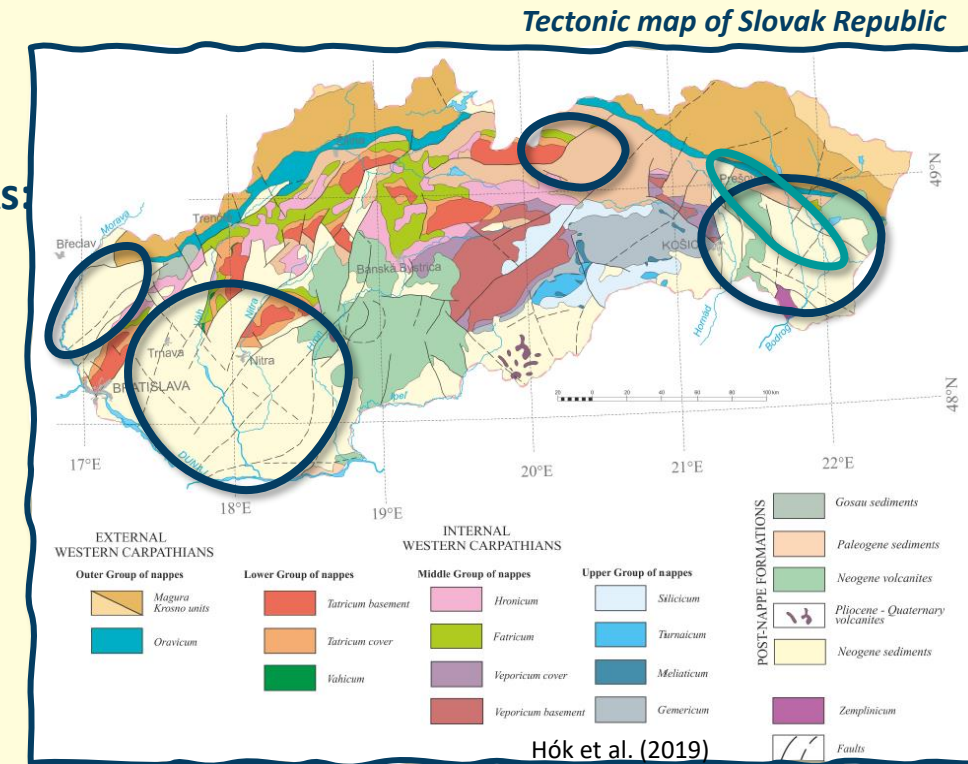
**Comprehensive geological screening of suitable reservoirs in porous rocks:**

- depleted gas/oil deposits
- aquifers

**Evaluating potential salt formations**

**Data gathering:**  
...depth, temperature, pressure, porosity, permeability, cap rock presence/ thickness/ integrity, mineralization of formation water, salinity, CO<sub>2</sub> and carbonate content, etc.; assessment of environmental and societal impacts

**Data source:** Geofond – National Archive of original geological reports, NAFTA Archive, maps, articles





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