



CTU WP4



CTU, Centre of Experimental Geotechnics

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BEACON GA Milos 31.05.2018

What is CTU doing in WP4.1?

Homogenisation...

- **Constant volume cells (permeameter)**
- **Oedometric tests**
- **Water retention curves (CU support)**
- **Small scale laboratory experiment**

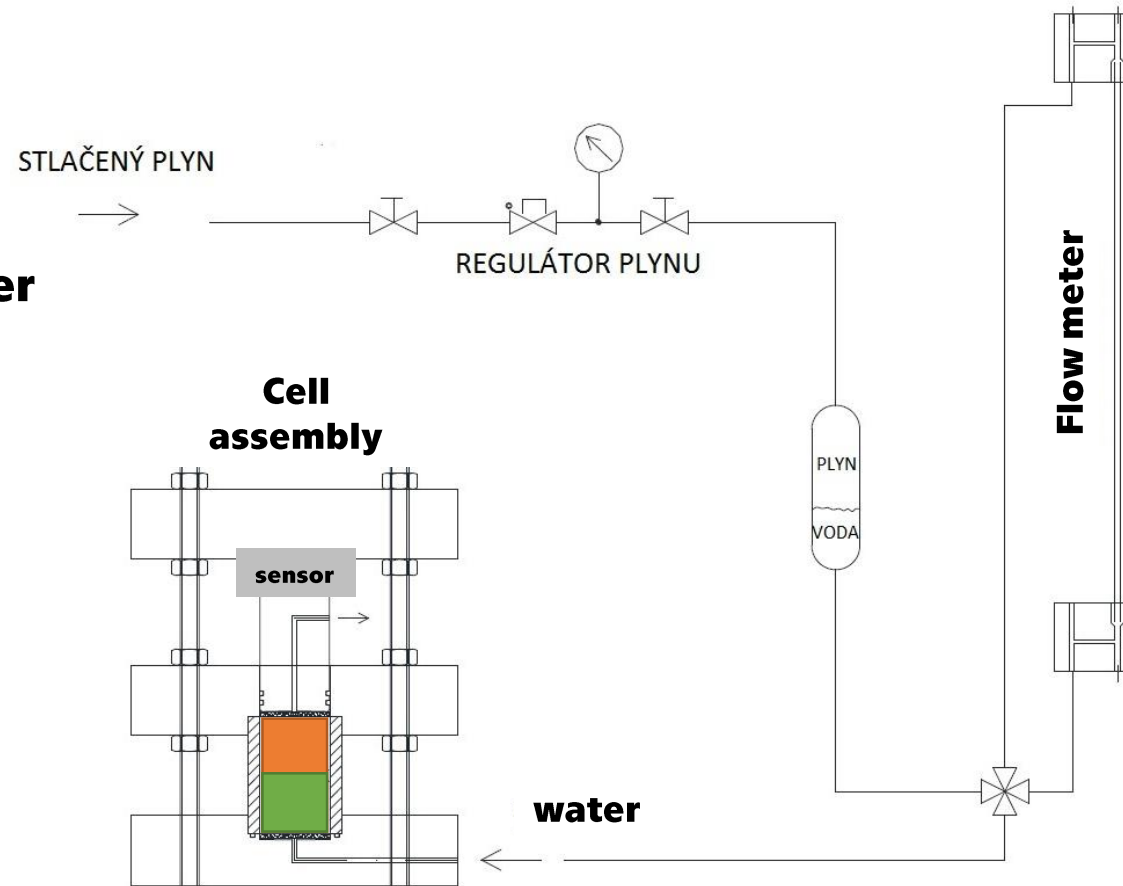
- **Tests at elevated temperature (60 °C)**

Works are coordinated and complimentary with CU.

Constant volume cells

Constant volume permeameter

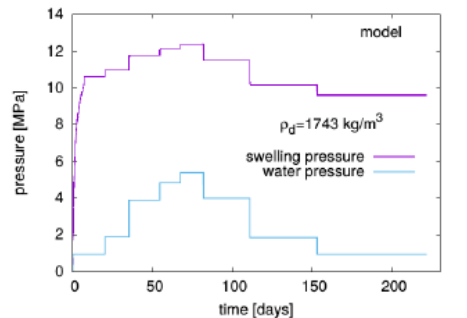
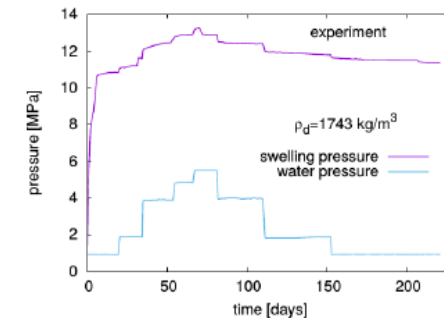
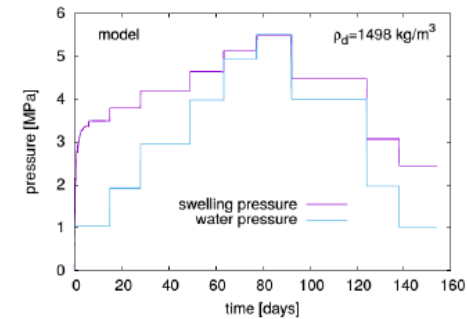
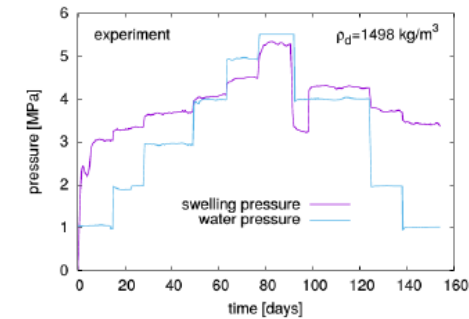
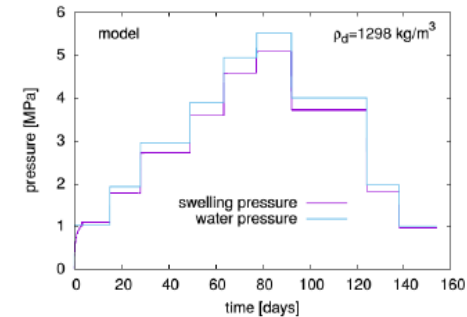
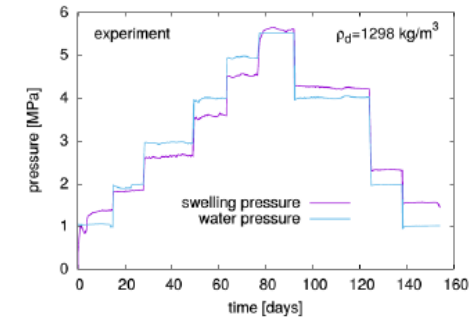
- **Total pressure**
- **Water flow rate**
- **Water pressure up to 7MPa**
- **Diameter 30 or 120 mm**
- **Height 20 to 60 mm**



Constant volume cells

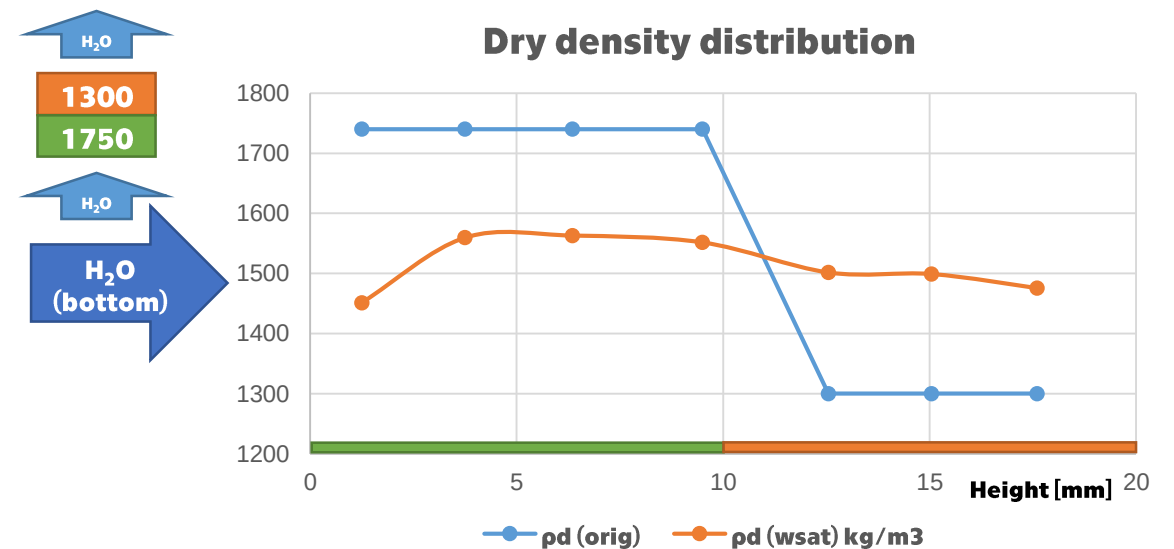
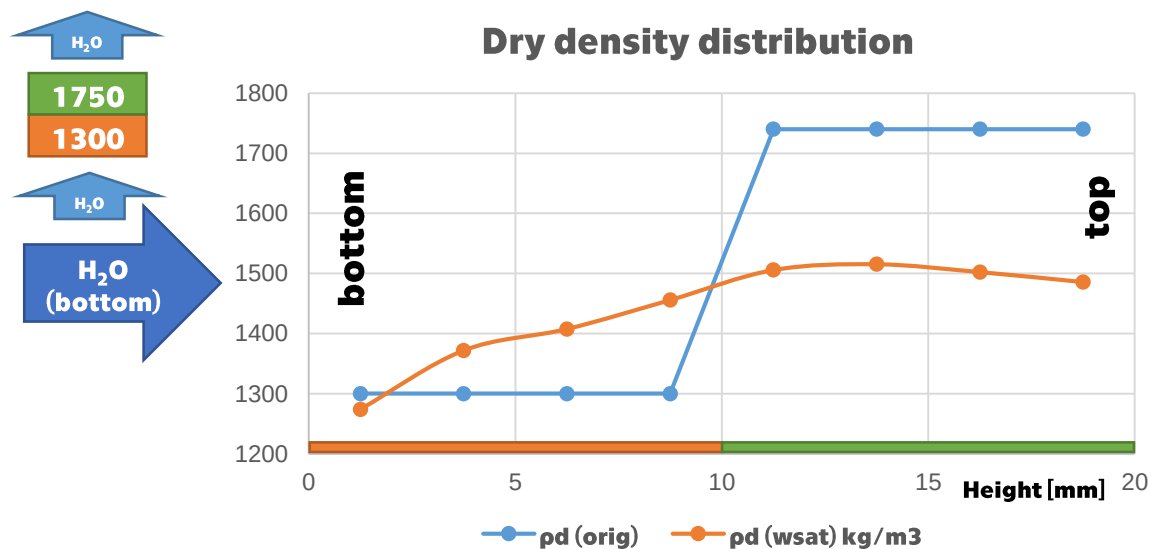
Main instrument for model calibration and validation

- **Data for various densities and several materials**
- **Tests at constant pressure head**
- **Data from tests with stepwise increase of pressure head**
- **Homogenous and inhomogeneous samples (pellets, dual density)**



Constant volume cells – current status

- **Homogenous samples (to fill missing points in database; new material)**
- **Dual density samples (top and bottom with different density)**



Constant volume cells – work plan

- **Homogenous samples (to fill missing points in database; new material B75→BCV)**
- **Homogenisation**
 - **Dual density sample (top and bottom with different density)**
 - **Pellets (at later stage)**
- **Tests at 60 °C**

Under consideration - measurement of total pressure on both ends (cell redesign needed)

WP4 Oedometric tests

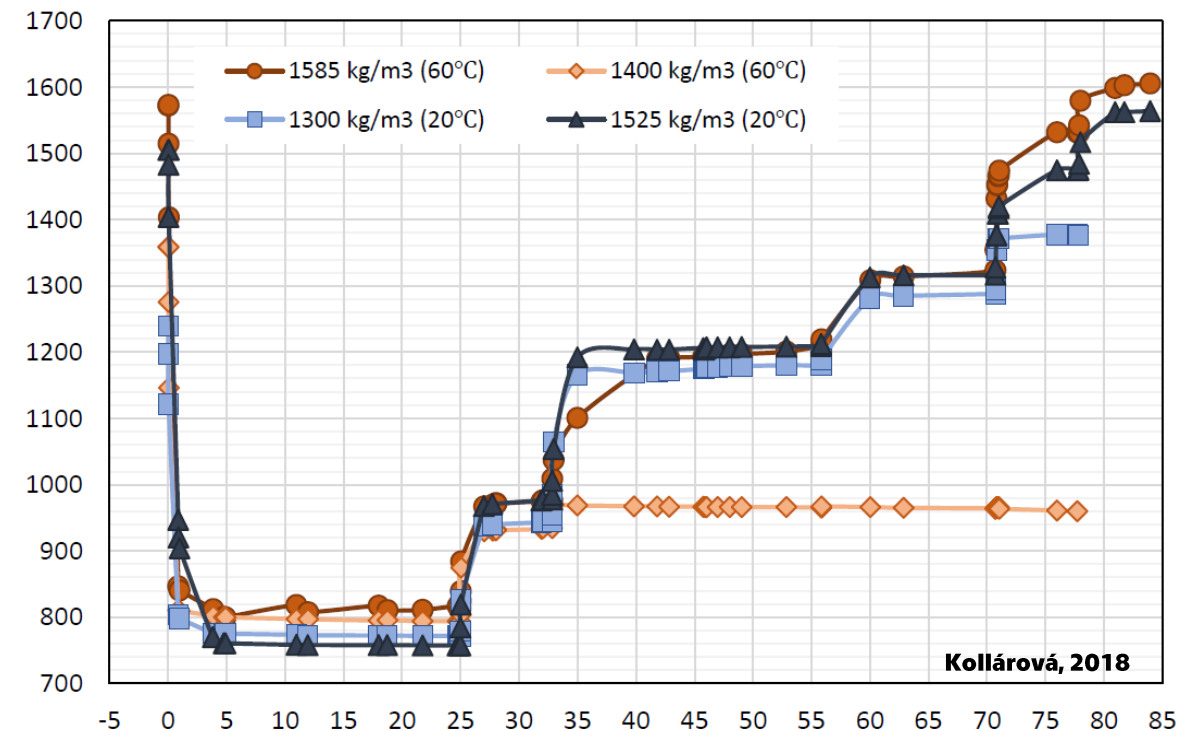
Homogenous samples

- **Free swelling**
→
- **Compaction (stepwise loading)**
→
- **Swelling (stepwise unloading)**
- **Optionally several (un)loading cycles will be done**

WP4 Oedometric tests

Homogenous samples

- **Bentonite at various (initial) densities**
- **Tests at laboratory temperature**
- **Tests at 60 °C**
- **Loading phase in progress now**

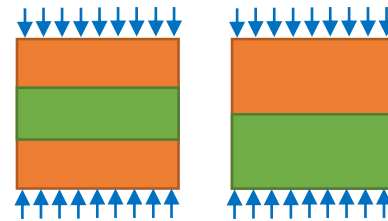


WP4 Planned works – Small scale laboratory experiment(s)

Design under development (based on past experiments)

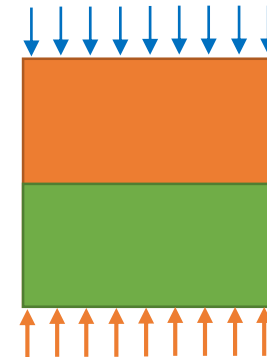
- **Option 1**

- **Set of small experiments**
- **Dual density or pellets+blocks**
- **2 or 3 layer system**
- **Uniform temperature**

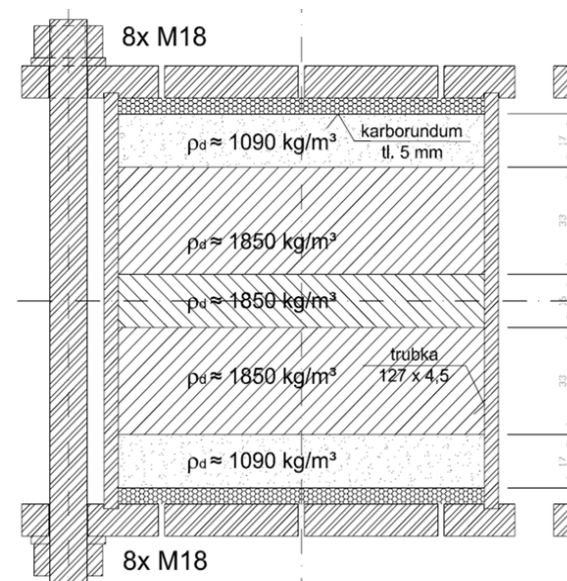
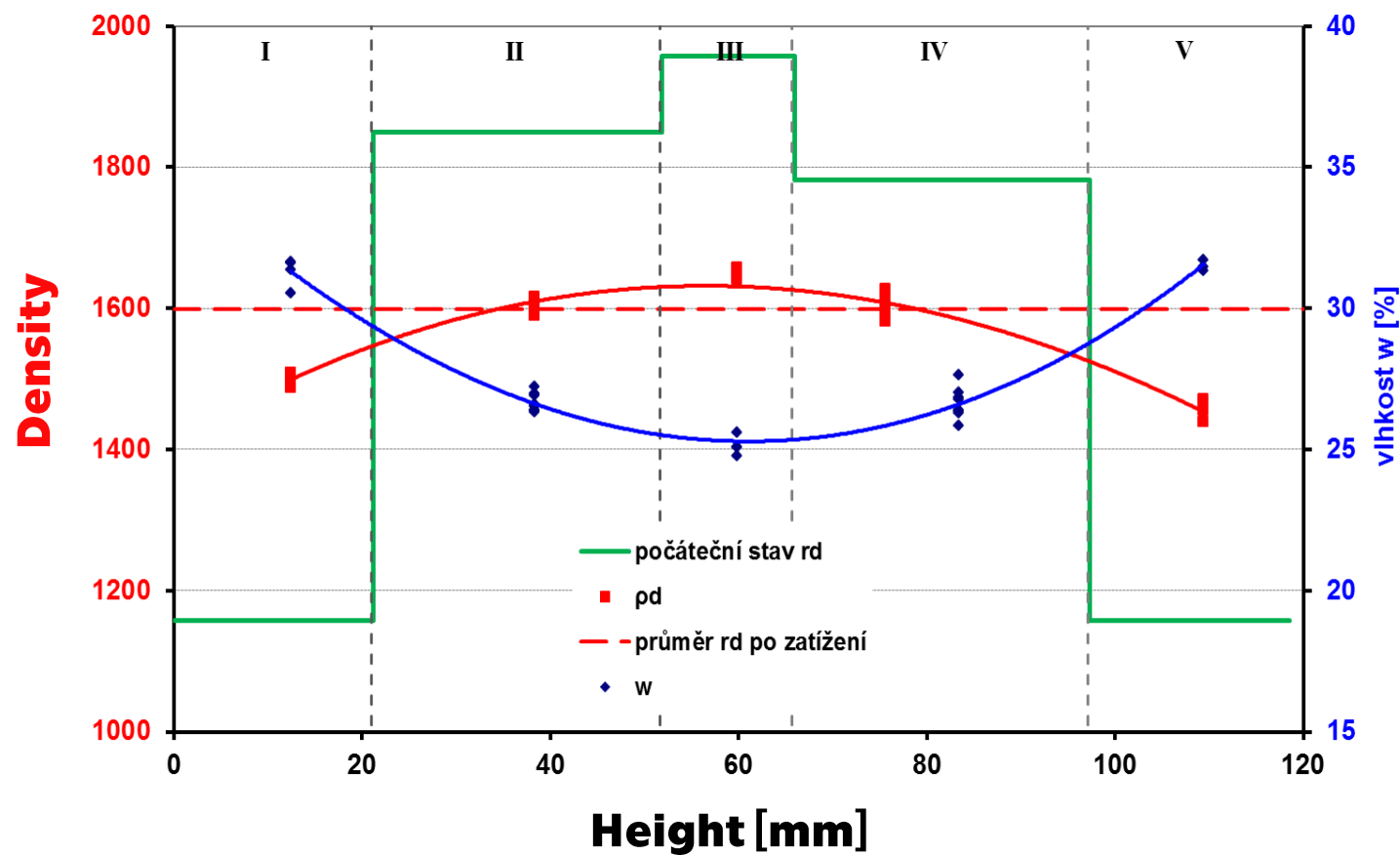


- **Option 2**

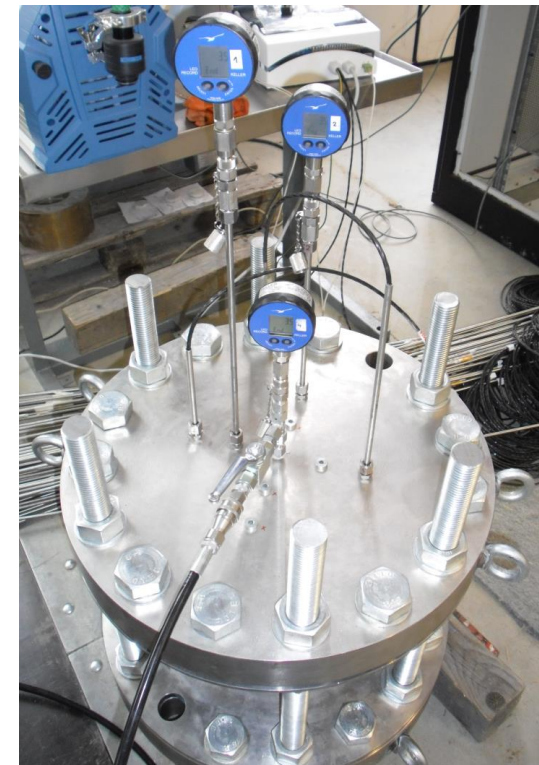
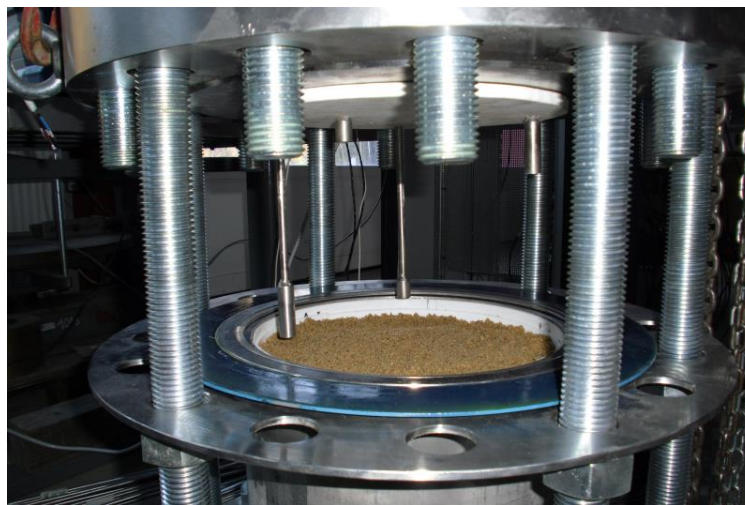
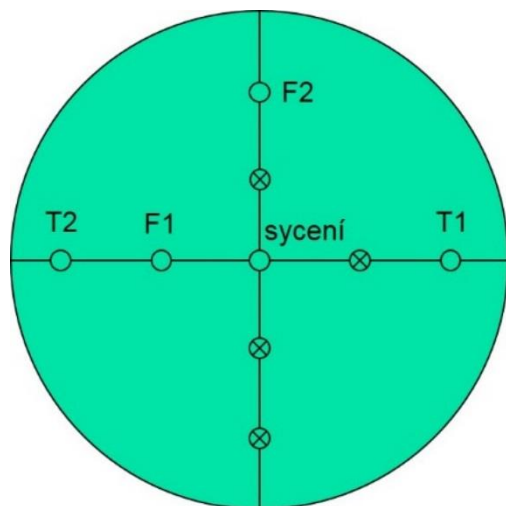
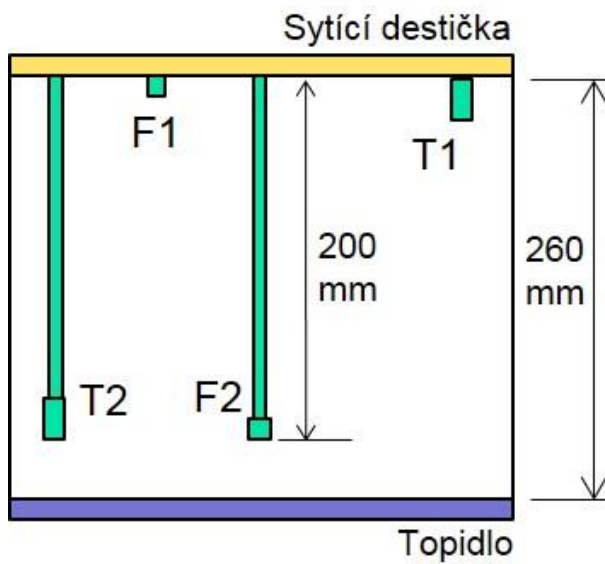
- **Middle scale experiment**
- **Heated experiment (with temperature gradient)**



Option 1



Option 2





BEACON
Bentonite Mechanical Evolution



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