



CarbonNet and its connection with the EGER-ICDP project

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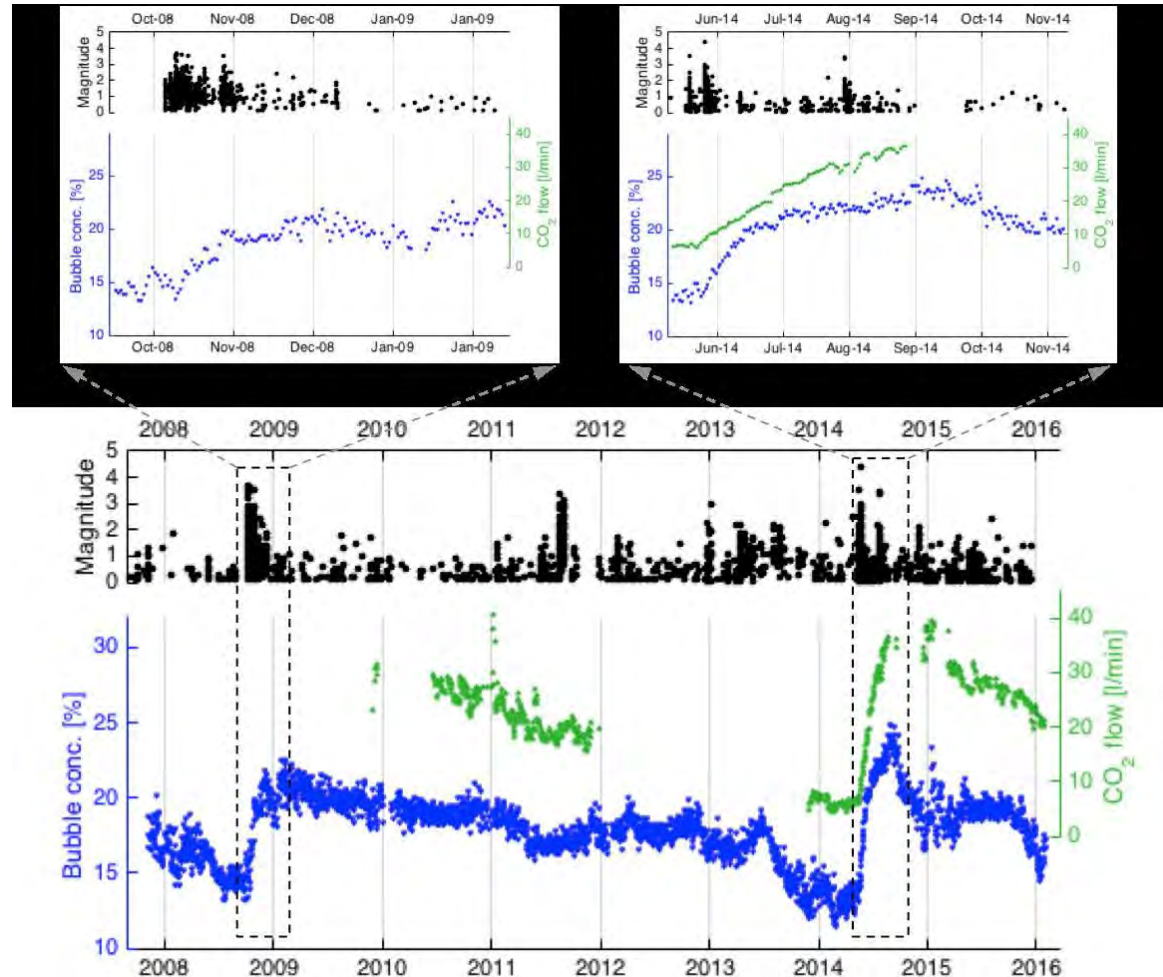


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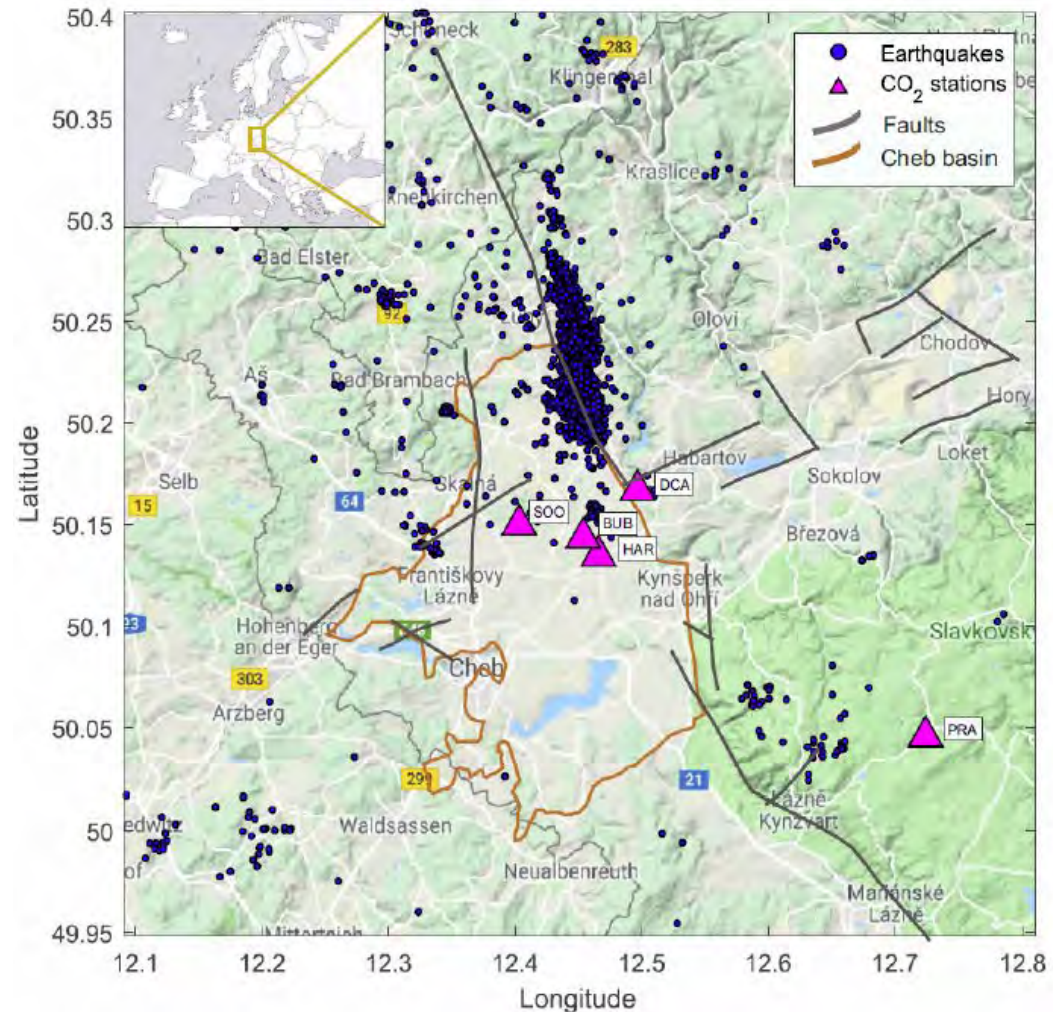
CarbonNet – why do we measure?

- 2008 and 2014 anomalies of CO₂ flow
- Shortly after strong events of the swarms CO₂ flow showed long term increase
- Anomaly documented only at Hartoušov station
- Motivation to build more stations = better spatial coverage
- Now waiting for next anomaly



CarbonNet – where do we measure?

- Actually 6 stations
 - Wells – Hartoušov F1 (30m) and F2 (108m), Dolní Částkov (10m) and Prameny (30m)
 - Natural moffettes – SOOS, Bublák
- Planned to build: Bublák-north (moffette), Kyselecký Hamr (well, 70m)





CarbonNet – what do we measure?

- Different stations = different conditions = different measurements, we measure CO₂ flow:
 - Directly (gas flow meters) – Hartoušov, SOOS, D. Částkov
 - Indirectly (bubble concentration = difference of water levels, gas pressure) – Hartoušov, Bublák, Prameny



CarbonNet

- Station details, data download available at website:

<https://web.natur.cuni.cz/uhigug/carbonnet/index.html>

CO₂ Monitoring
CarbonNet
DATOVÝ PORTÁL
**CZECH
GEO**

Hartoušov Hartoušov 2 Bublák Soos Prameny Data

Úvod
Pracoviště
Monitorovací síť
Data
Kontakt

CarbonNet

Skalná Habartov Medard Sokolov Staré Sedlo Loket
Milíkov Dolní Rychnov
Třebeň Šabina Březová
Kynšperk nad Ohří
Odrava Rovná
Cheb Tuřany
Okrouhlá Milíkov
Lipová
Dolní Žandov
Lázně Kynžvart


Google My Maps
Data map ©2019 GeoBasis-DE/BKG (©2009) Podmínky 2 km





ICDP EGER rift drilling project - introduction

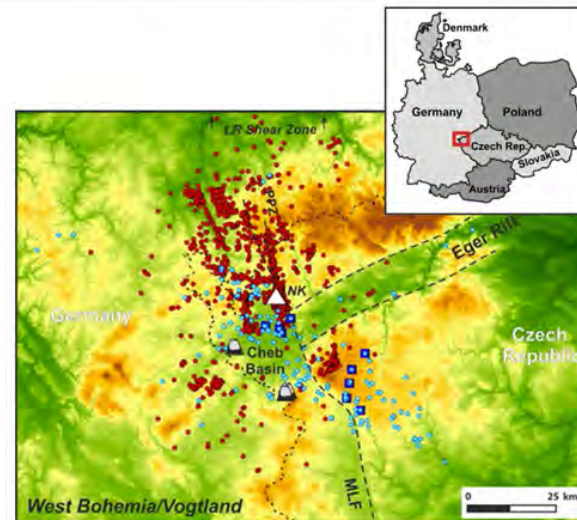
- Numerous shallow wells for detail observation of West Bohemia
- Aimed to study earthquakes, fluids and deep biosphere
- Cooperation with many partners from Czech Republic and Germany
- More details can be found at: <https://web.natur.cuni.cz/uhiug/icdp/> or <https://www.icdp-online.org/projects/world/europe/eger-czechia-germany/details/>



DRILLING THE EGER RIFT:
Magmatic fluids driving the earthquake swarms and the deep biosphere

About Project Geodynamic Activity In Situ Laboratory News and Results Articles

The westernmost part of the Czech Republic and adjacent area in Germany is known for the **geodynamic activity represented by earthquake swarms and large-scale degassing of CO₂ fluids**. The region is also characterized by numerous mineral springs, Tertiary/Quaternary volcanism and neotectonic crustal movements, located at the intersection of two major intraplate fault zones, the Eger Rift and the Mariánské Lázně Fault. It is likely that all these phenomena are related to a common origin. Geodynamic activity, fluids and earthquake swarms represent a unique phenomenon worldwide. Currently, it is well accepted that many earthquake swarms are driven by fluids in the crust. However, **it is still unknown how fluids are driving the persistent earthquake activity**. Long-term monitoring is essential to understand these phenomena and their interactions and answer these questions.



ICDP EGER rift drilling project – where?

S1 Rohrbach - Landwust
(400m in crystalline):
drilled in 2019

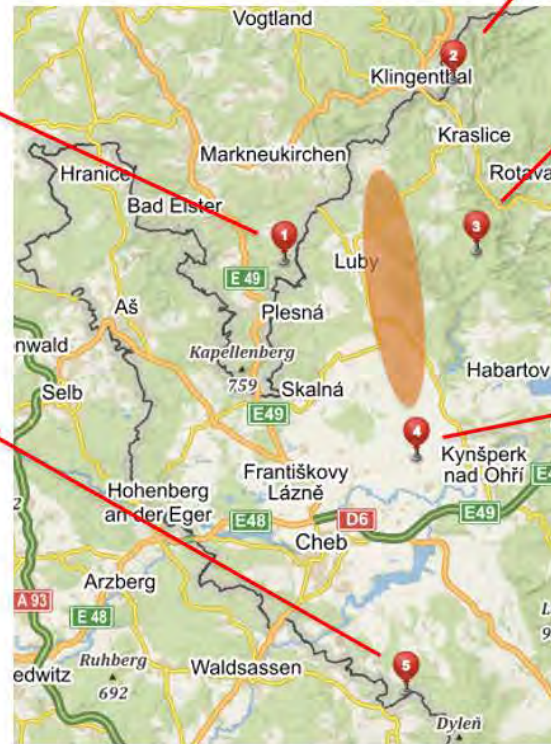


S2 Kraslice - Tisová
(490 m in phyllites): finished in 2017
– donated by ore-prospection company

S3 Studenec
(400 m in phyllites): finished in 2018
site of STC
station



S4 Mýtina
(300-400m in maar):
preparation, drilling
planned for 2020



Hartoušov (basin, CO₂)
F1 (30m), F2 (108m):
finished in 2016
(in-kind contrib.)

**F3 (239 m sediments &
mica shist): drilled in
2019**





ICDP EGER rift drilling project – why?

Seismic wells:

- Depth about 300-500m
- Installation of borehole seismometer
- Some of the wells – also borehole chain of geophones and surface array of seismometers around the well
- S4 as special case planned in the maar structure – also for studying paleoclimate, stratigraphy and probably also deep biosphere

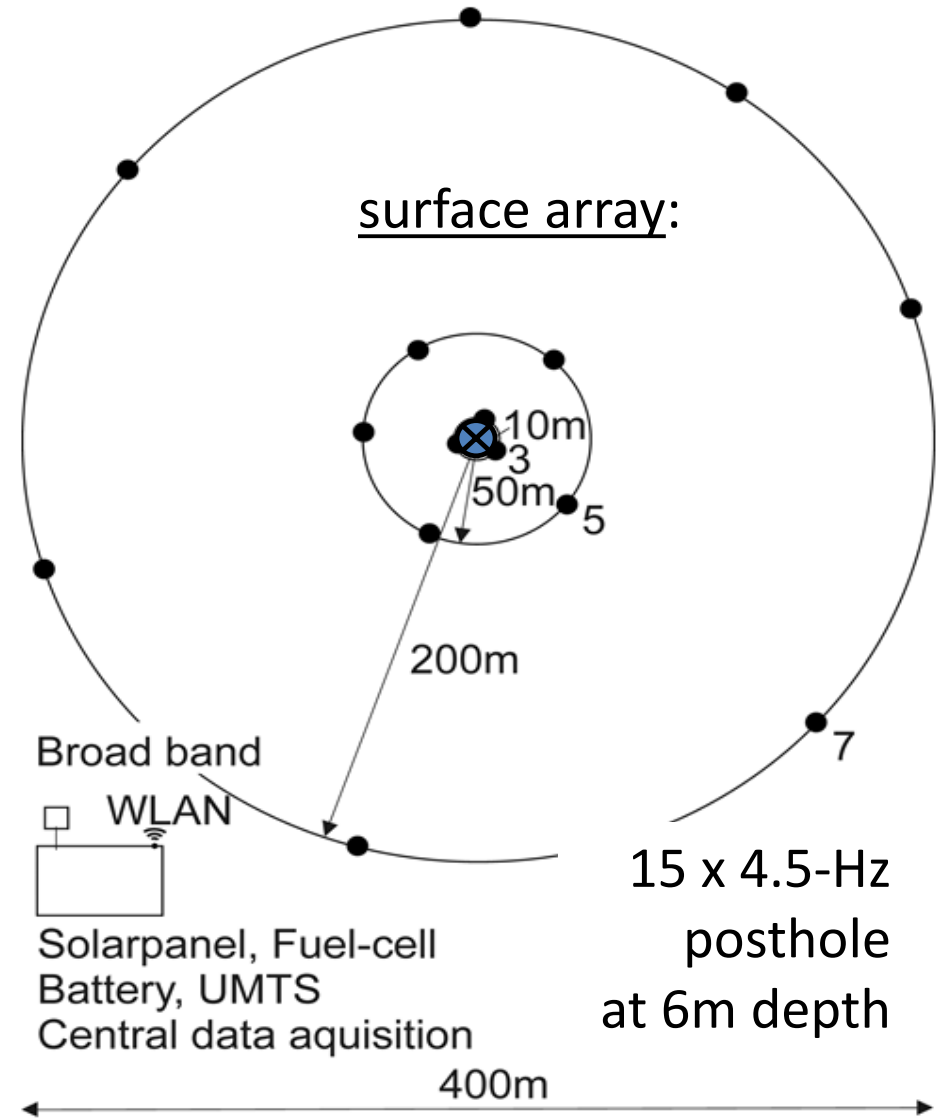
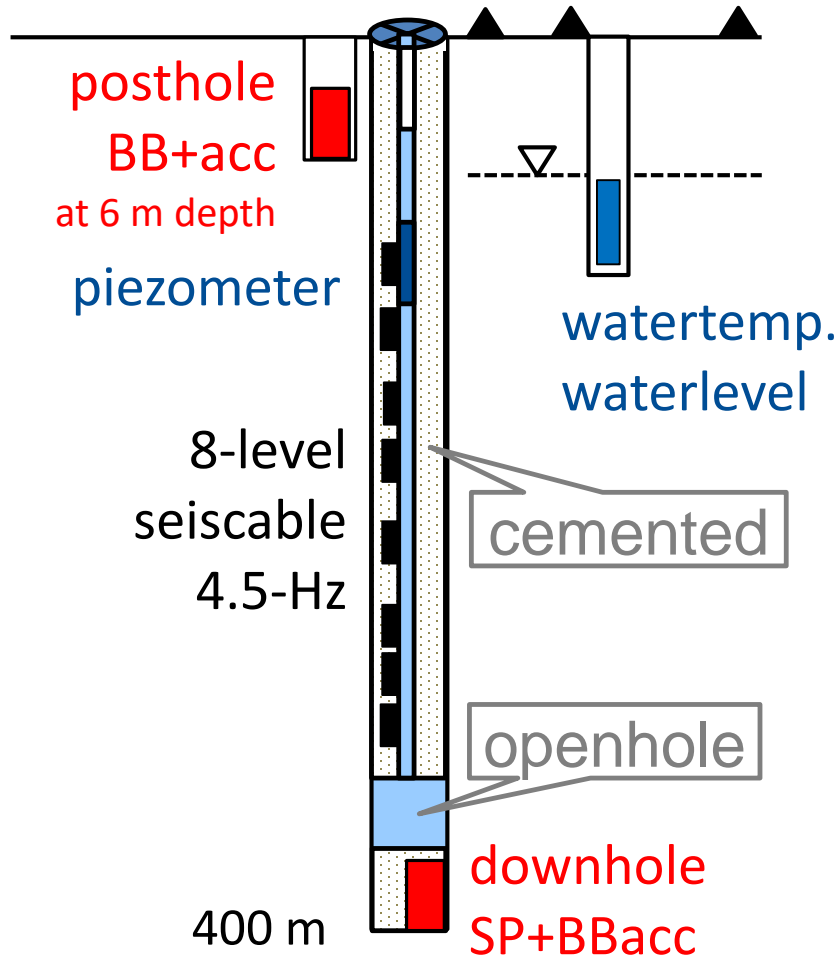
Fluid wells:

- Depths from 30 to 300m
- Monitoring of gas pressure/flow from different depths
- Chemical composition of gas
- Samples and composition of water
- Samples of drill core for biological analysis
- In-situ biosphere sampling
- Also placing borehole seismometer to the bottom



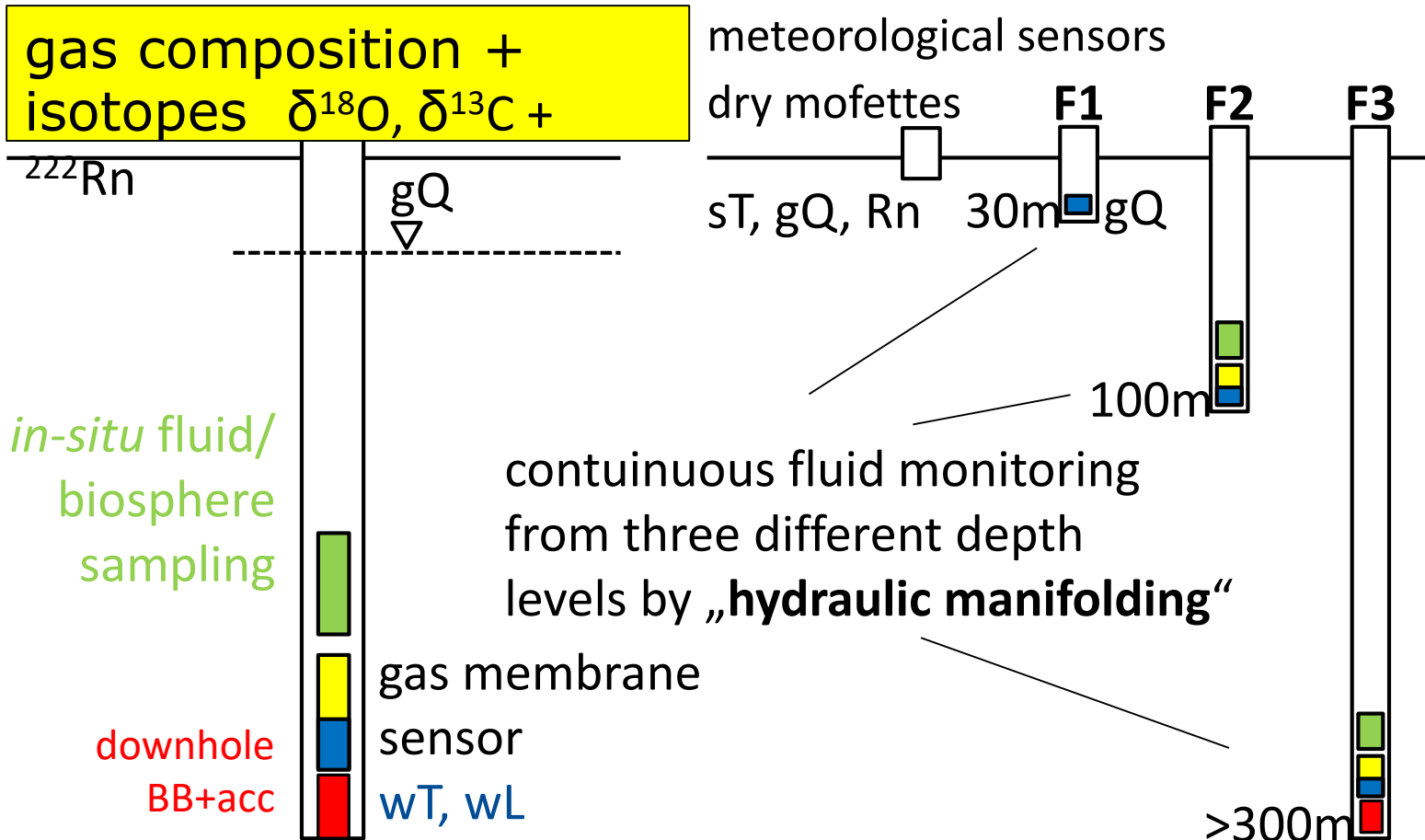


S1 – S3 planned:
borehole array:





F1-F3
planned:

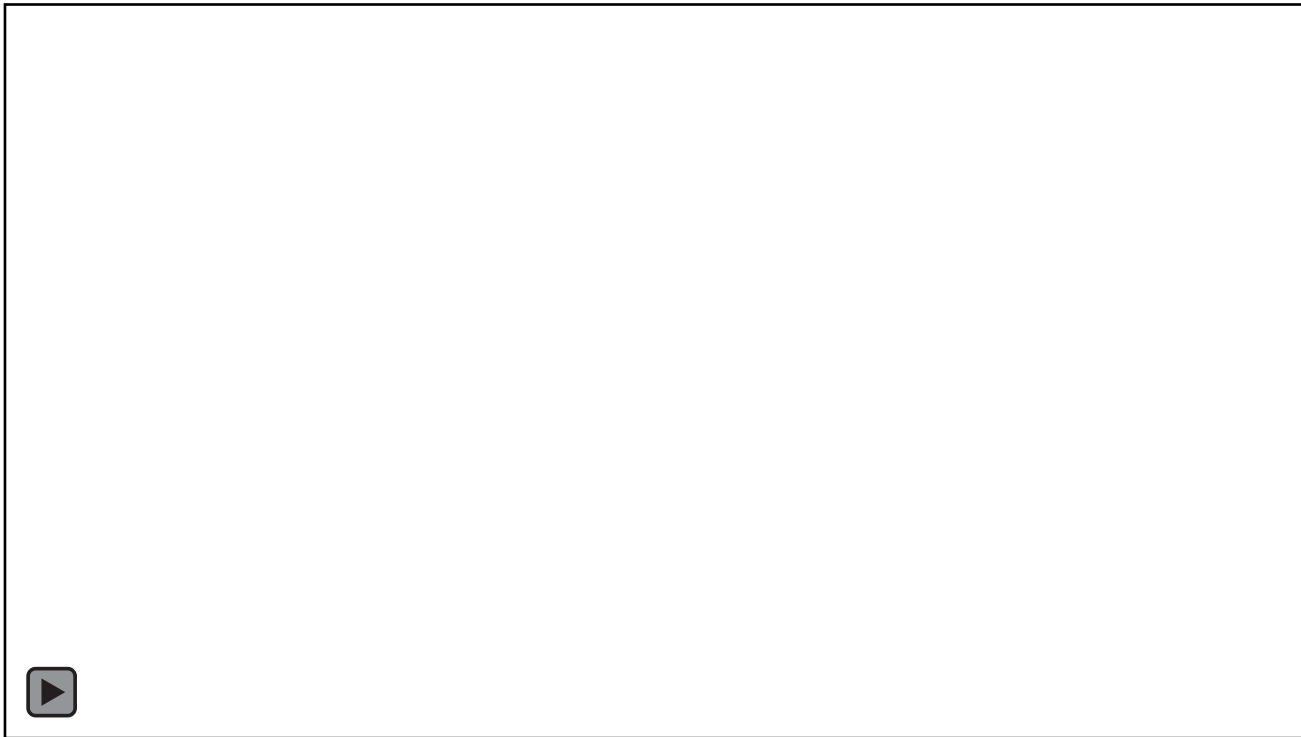


Legend:
 wT, wL – water temperature, water level
 sT – soil temperature, gQ – gas quantity, Rn - radon



F1-F3 reality:

- F2 (drilled 4-5/2016) – 108m deep, but only 75m able to reach (9/2019)
 - One pressure probe in 92m depth since 10/2016, now buried in mud
 - 9/2019 - Installed borehole seismometer to 75m
 - Gas pipe (gas + water mixture) for samples from 72 - 67m depth interval
 - Another pressure probe at 66m depth
 - No biosphere in-situ sampling





F1-F3 reality:

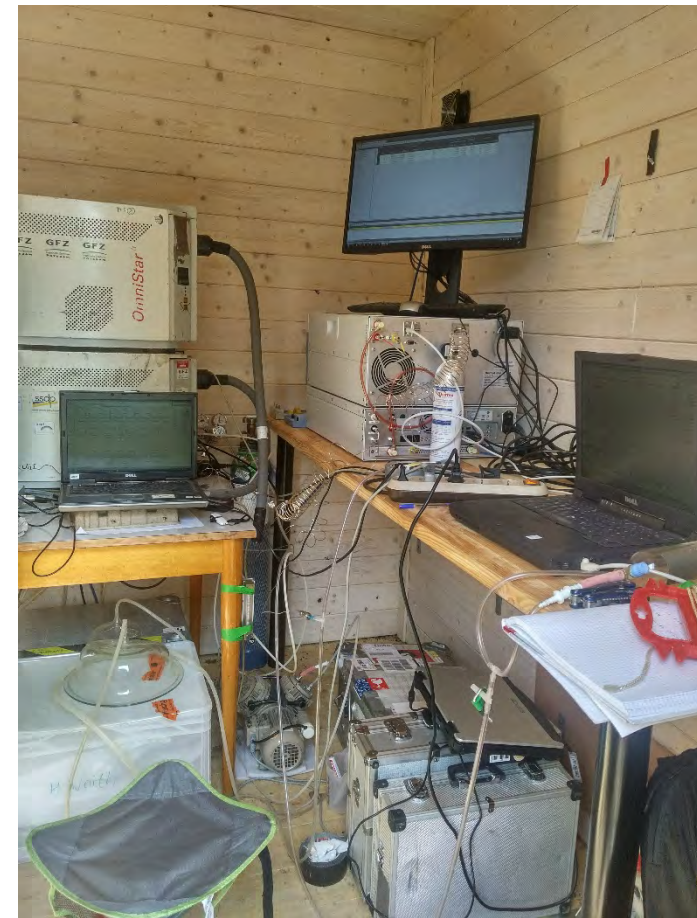
- F3 (drilled 8/2019)
 - Target depth > 300m
 - According to many technical problems drilled „only“ to 239m
 - Casing and cementation, perforation planned soon in defined depth intervals





Future plans

- Planned to build 2 more CO₂ monitoring stations (Bublák-north, Kyselecký Hamr)
- Long-term monitoring of F1, F2 and F3 gas composition
- Drill S4 well (2020, location not yet fully decided)
- Install borehole instrumentation into the S1-S3 wells



Thank you for your attention pay attention to your stations!

iDNES.cz / Karlovy Vary a Karlovarský kraj

Úterý 14. listopadu 2017 Sáva |

iDNES.cz > Zprávy **Kraje** Sport | Kultura | Ekonomika | Bydlení | Technet | Ona | Revue | Auto | ☰ Další

Karlovarský kraj ▼ Zprávy **Sport** Jízdní řády MHD | Práce | Reality | Týdny slev s 5plus2

Úklid hřbitova se zvrtnul, stal se tématem předvolebního boje

24. srpna 2015 8:56

Jen několik týdnů před mimořádnými volbami zmítají zadluženými Prameny na Mariánskolázeňsku emoce. Důvodem je nedávný úklid zpuštěného hřbitova, po němž na místě zůstaly poházené ostatky.



Na rozvodnou skříň pramenského hřbitova kdosi křídou napsal podivnou nabídku. | foto: Archiv Ericha Kříže



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