

# Determining cave air CO<sub>2</sub> sources in Pisani rov using carbon isotopes

Bor Krajnc

Jožef Stefan Institute O-2

Poster number: 18

## WHY?!

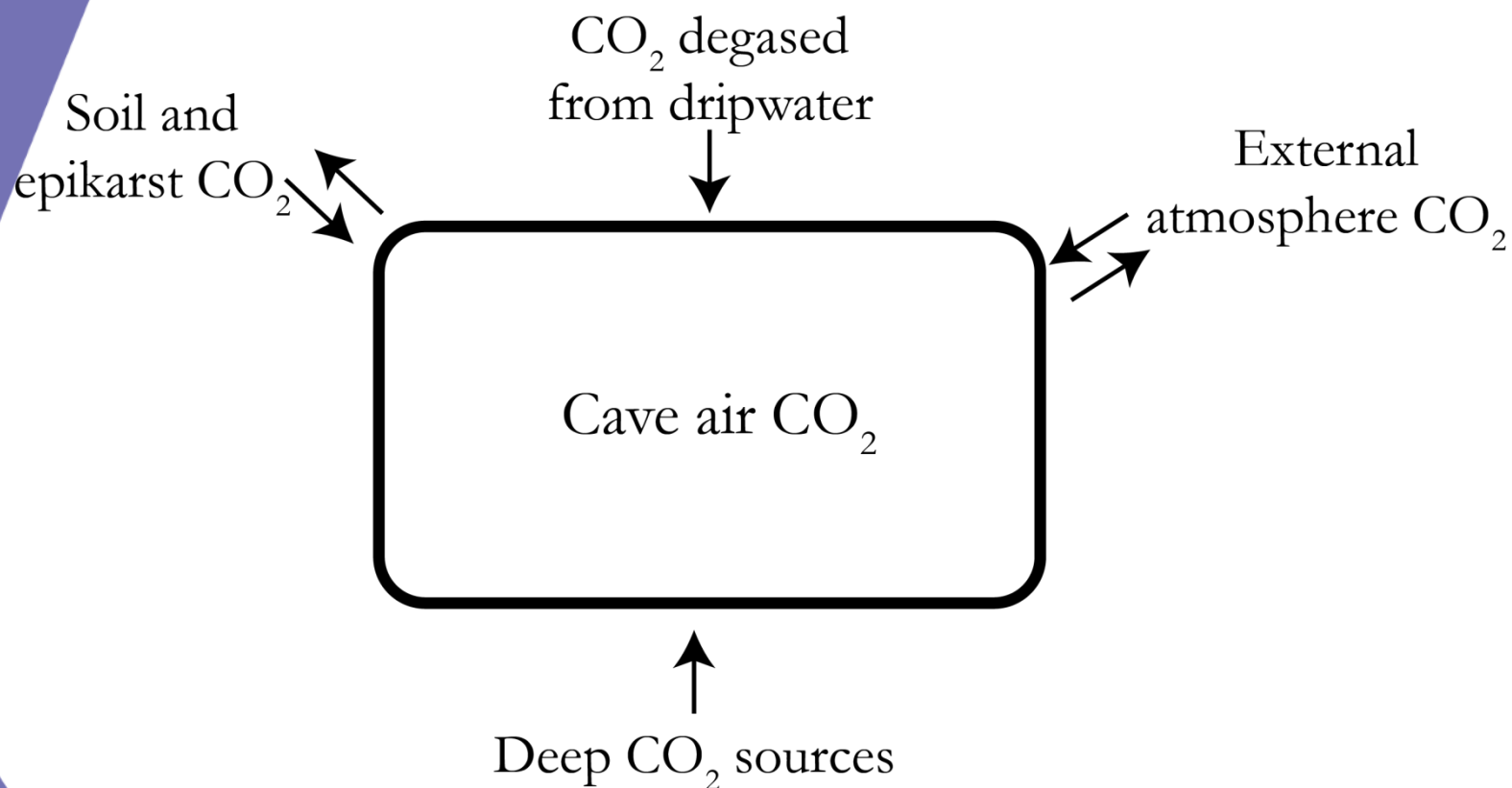
- Lot of „unknowns“ regarding karst and caves in spite of its local and global prevalence
- Environmental concern (atmospheric CO<sub>2</sub> concentrations, carbon fluxes)
- Caves can affect soil CO<sub>2</sub> flux
- DIC leaching
- Paleoclimate studies

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**CO<sub>2</sub> soil (similar to SOC)**  
**C from parent rock  $\delta^{13}\text{C}_{\text{rock}} = 1.6\text{‰}$**   
**Open or closed system**  
**Rayleigh distillation & calcite precipitation**

CO<sub>2</sub> degased  
from dripwater

Soil and  
epikarst CO<sub>2</sub>

**Similar to SOC**  
 **$\delta^{13}\text{C}_{\text{SOC}} = -25.2\text{‰}$**

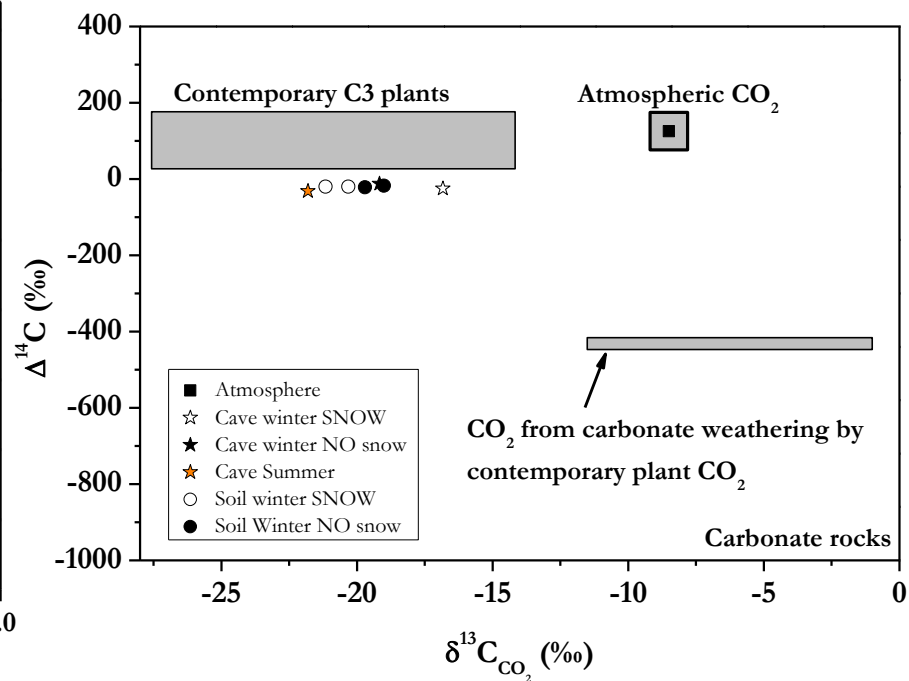
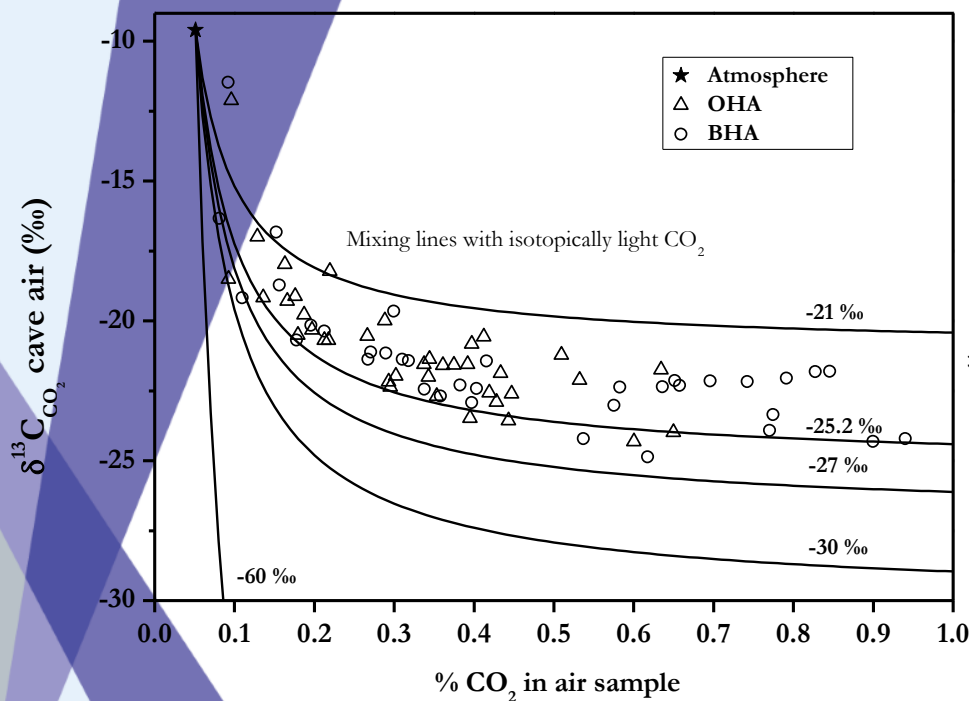
External  
atmosphere CO<sub>2</sub>

**Above cave**  
 **$\delta^{13}\text{C}_{\text{atm}} -9\text{‰}$**   
**510  $\mu\text{mol/mol}$**

Cave air CO<sub>2</sub>

↑  
Deep CO<sub>2</sub> sources

**Degassing from the upper mantle**  
**Thermomethamorphism of carbonate rock**  
 **$\delta^{13}\text{C}$  in the range from -6 to 0‰**  
**Organic carbon from sedimentary rocks:**  
 **$\delta^{13}\text{C}$  typically lower than -20‰**  
**RADIOCARBON  $\Delta^{14}\text{C}$  around -1000 ‰**

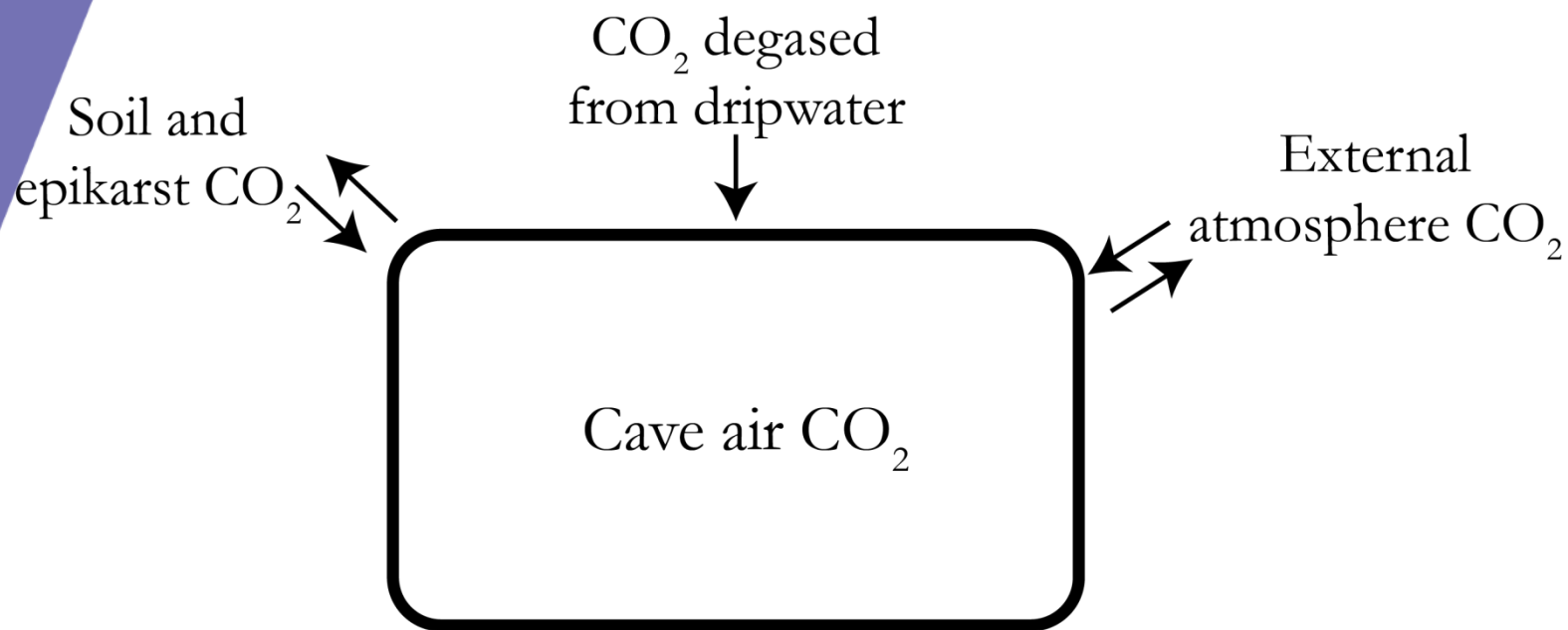


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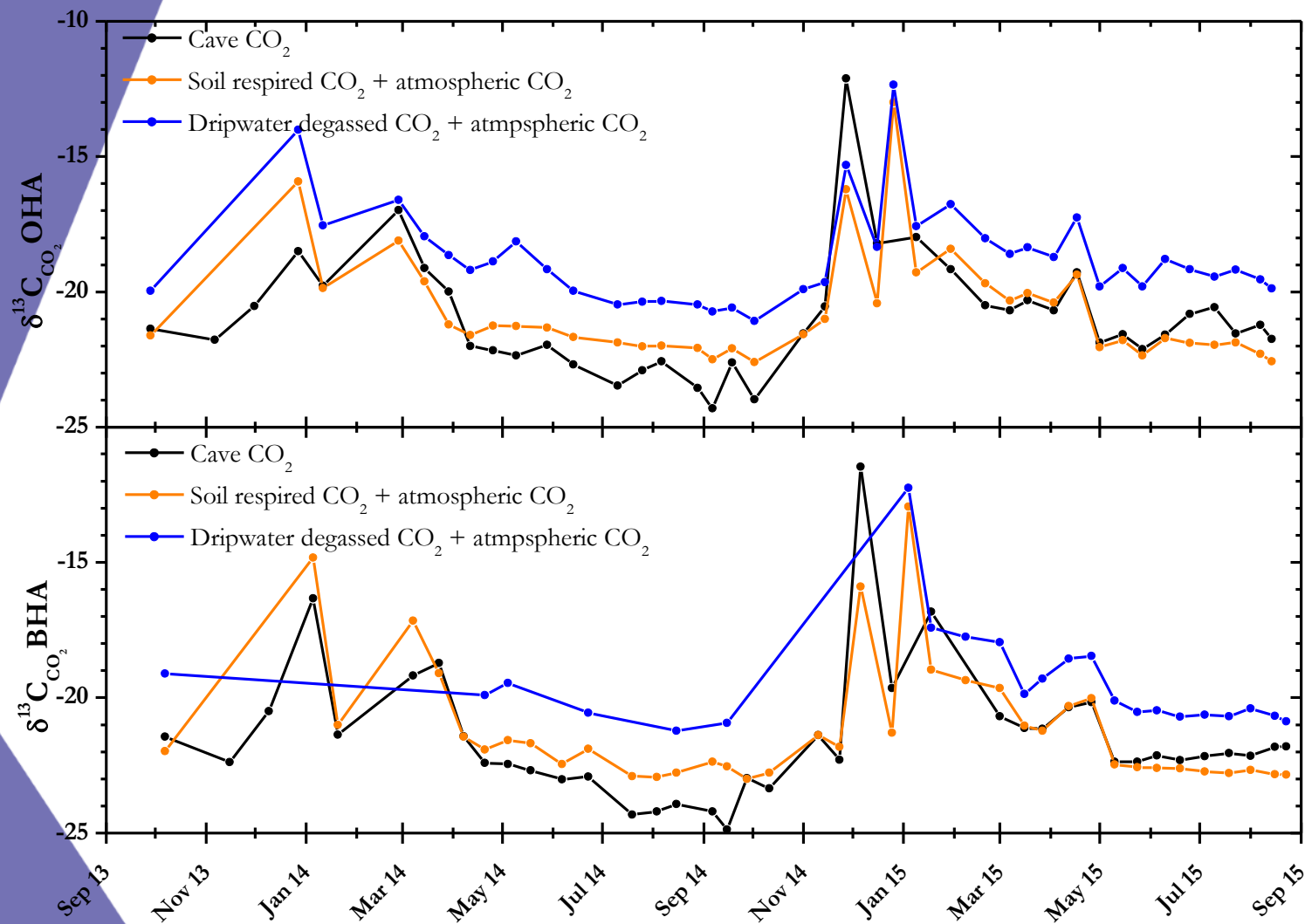
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