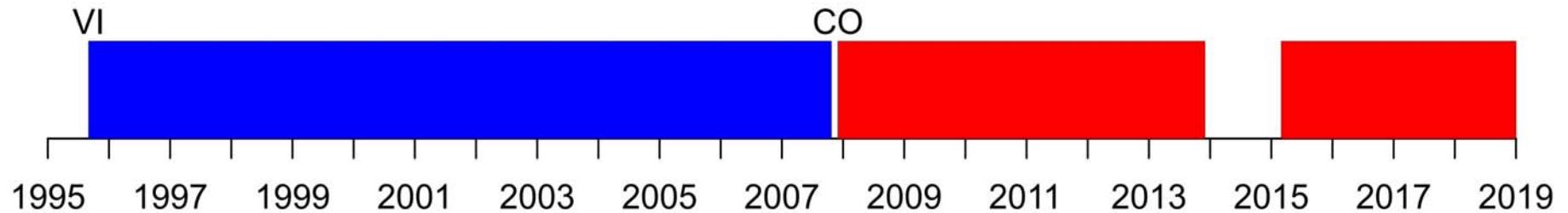


# **10 years SG gravity time series at Conrad Observatory (Austria)**

## **Station report**

Meurers, B., University of Vienna

## Data availability (GWR C025)/Standard processing scheme



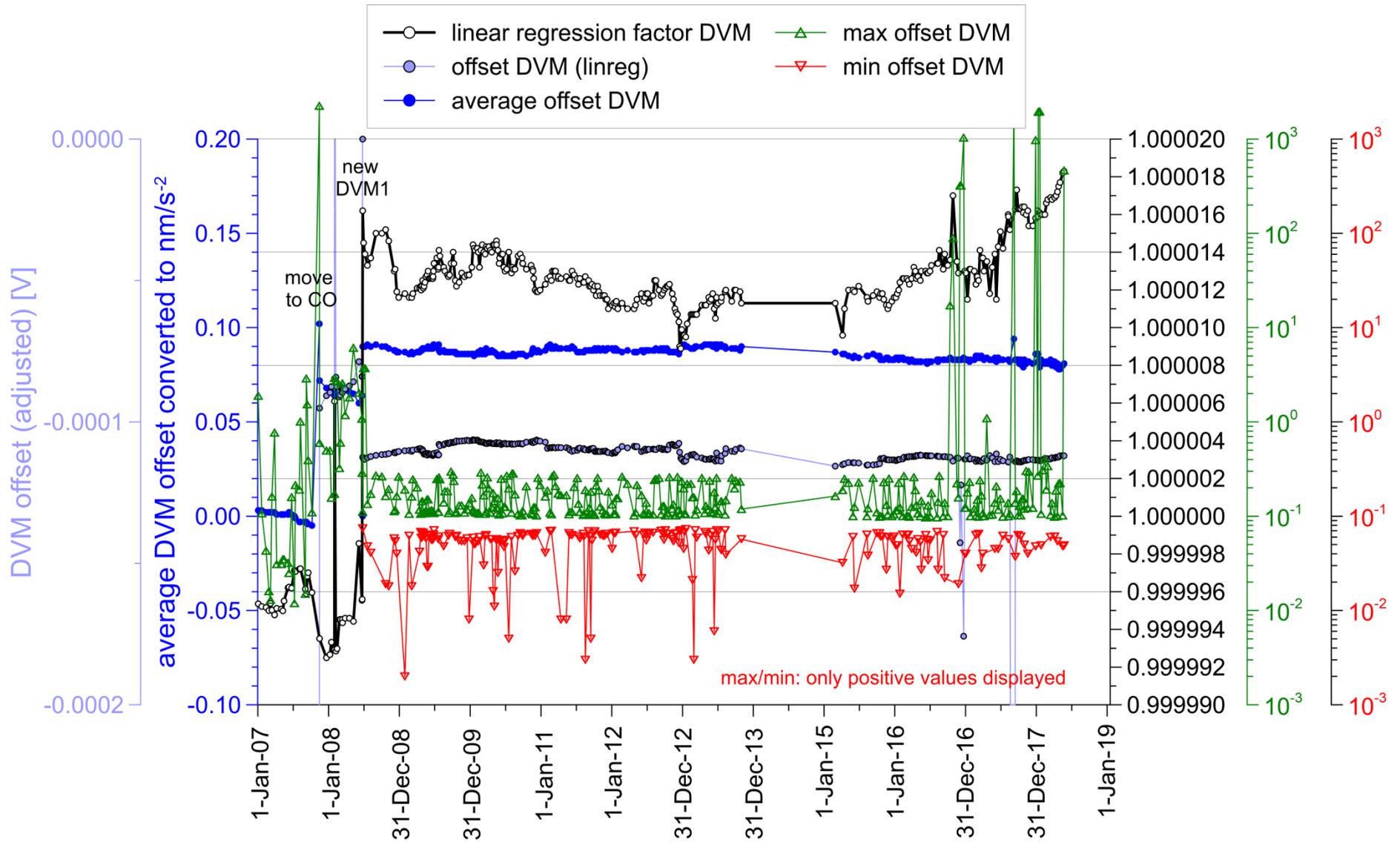
Data acquisition: sampling rate 1 Hz, two redundant DVMs since installation at CO

Standard processing scheme:

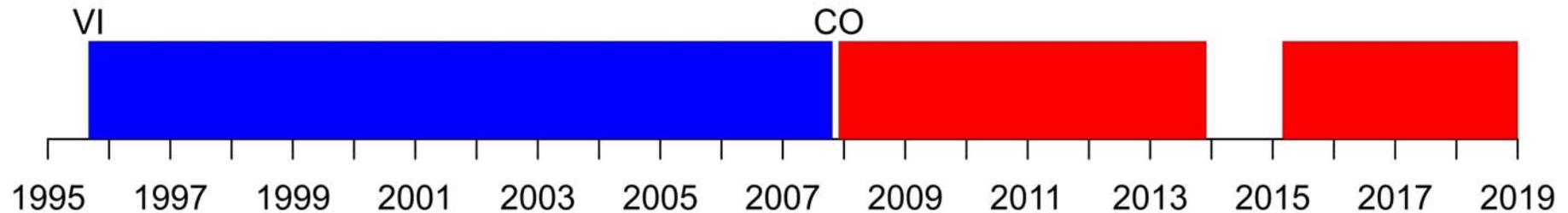
- CO: Check DVMs by monitoring relative DVM SF
- CO: Fill gaps (if present) in DVM1 by using samples from DVM2



# Standard processing scheme



## Data availability (GWR C025)/Standard processing scheme



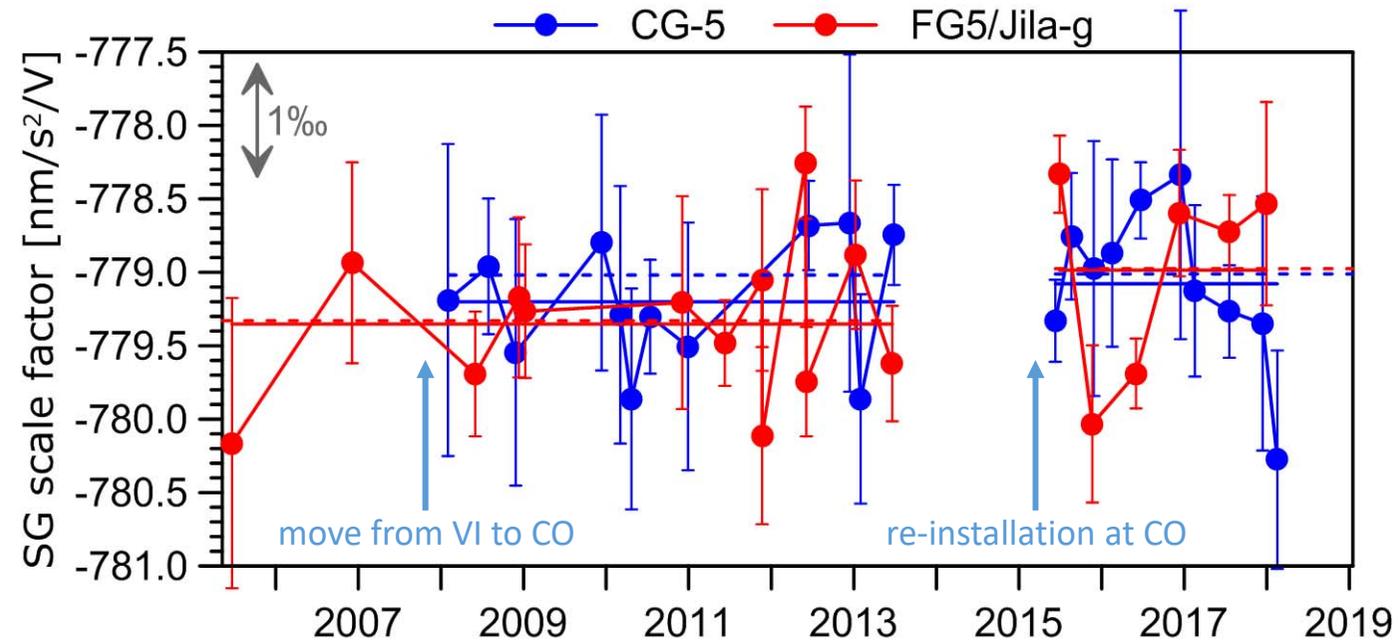
Data acquisition: sampling rate 1 Hz, two redundant DVMs since installation at CO

- CO: Check DVMs by monitoring relative DVM SF
- CO: Fill gaps (if present) in DVM1 by using samples from DVM2
- Apply g1s1m FIR filter and decimate to 1 min samples
- Correct for known steps (maintenance, IHe refill)
- Remove disturbances (EQ), fill small gaps, despiking (PRETERNA)
- Apply g1m1h FIR filter and decimate to 1 h samples
- Tidal analysis → tidal model (D, SD, TD and higher freq)
- Remove tides and air pressure effect
  - Single admittance derived from tidal analysis (tidal frequency band)
  - Atmacs model + additional correction considering the limited temporal/spatial resolution of 3D weather models
- Remove pole motion effect



## Maintenance

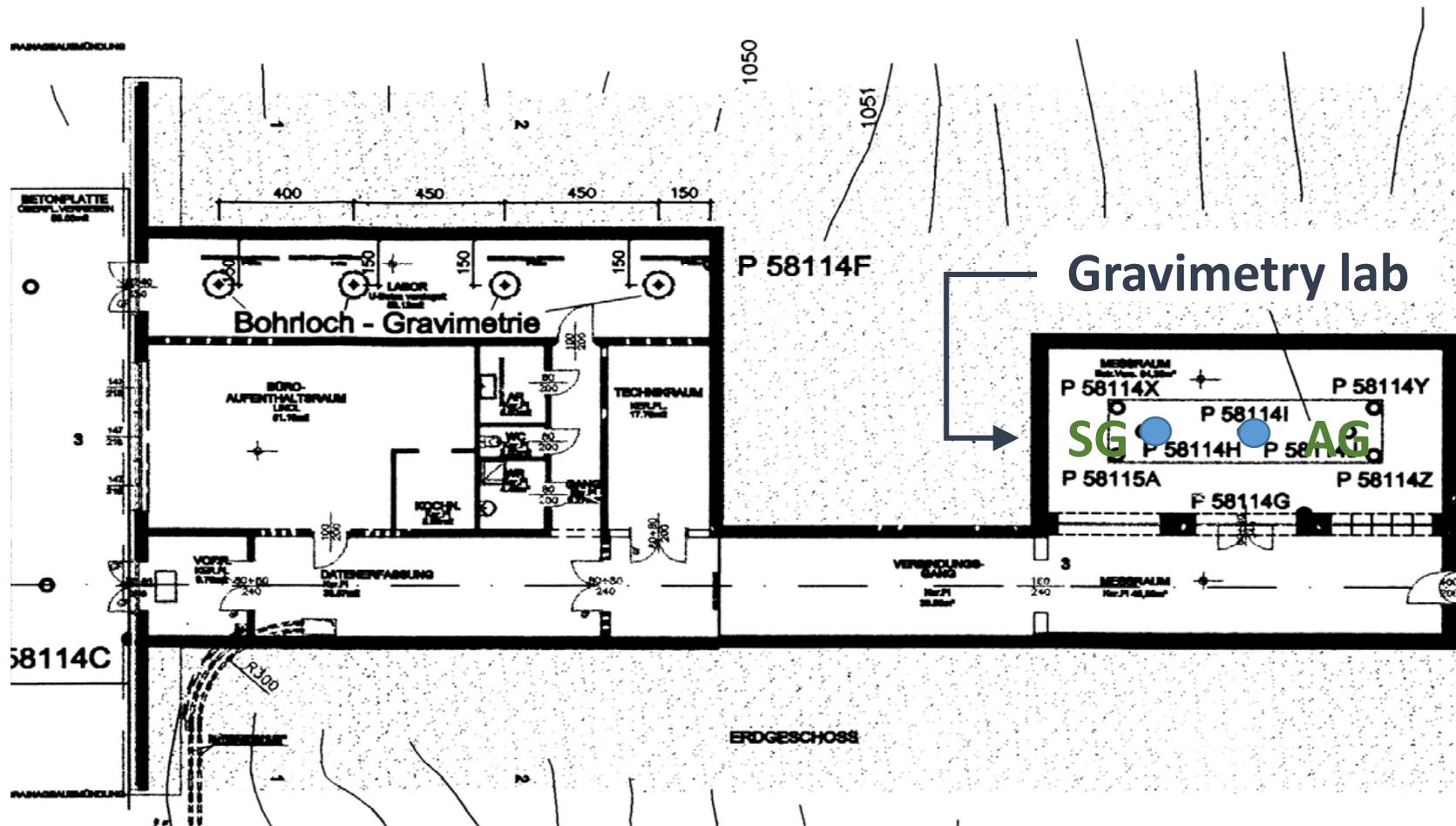
- IHe refill once per year
- Calibration SG/FG5, Jila-g, CG-5



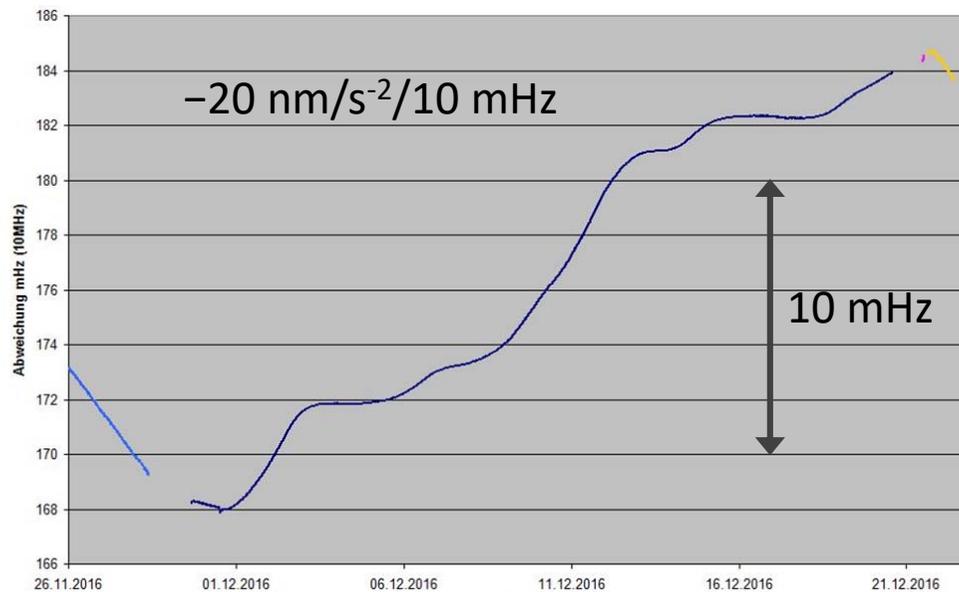
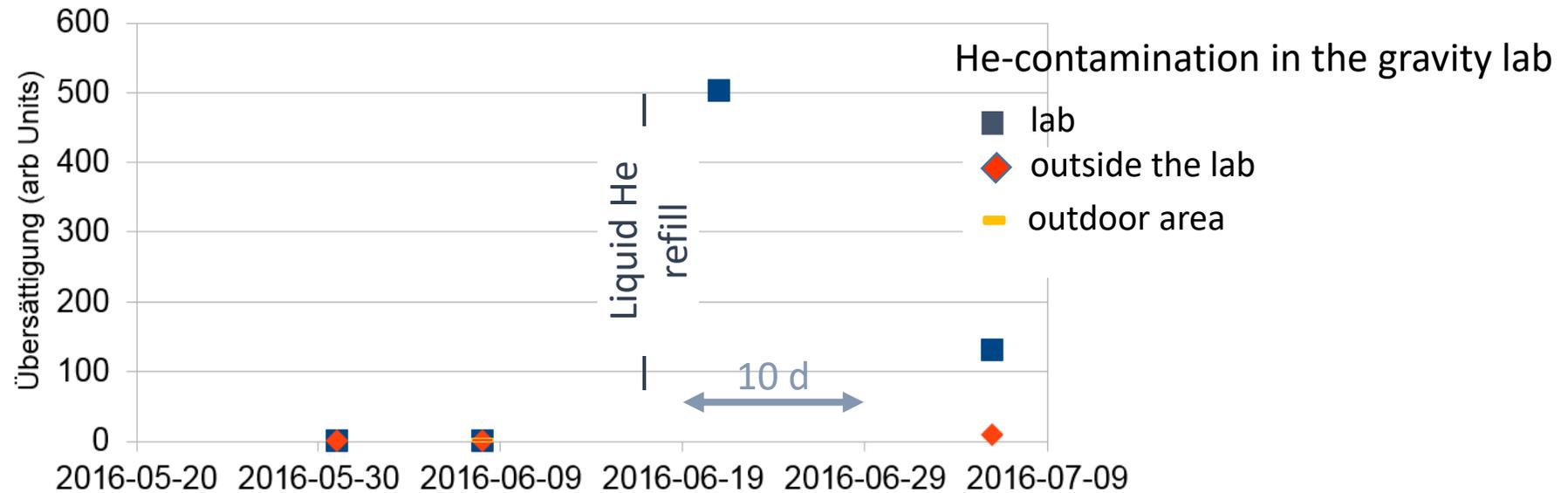
- SG drift determination
- AG: problem He contamination
- SG Drift?



# Effect of He-contamination on the Rb-oscillator frequency



## Effect of He-contamination



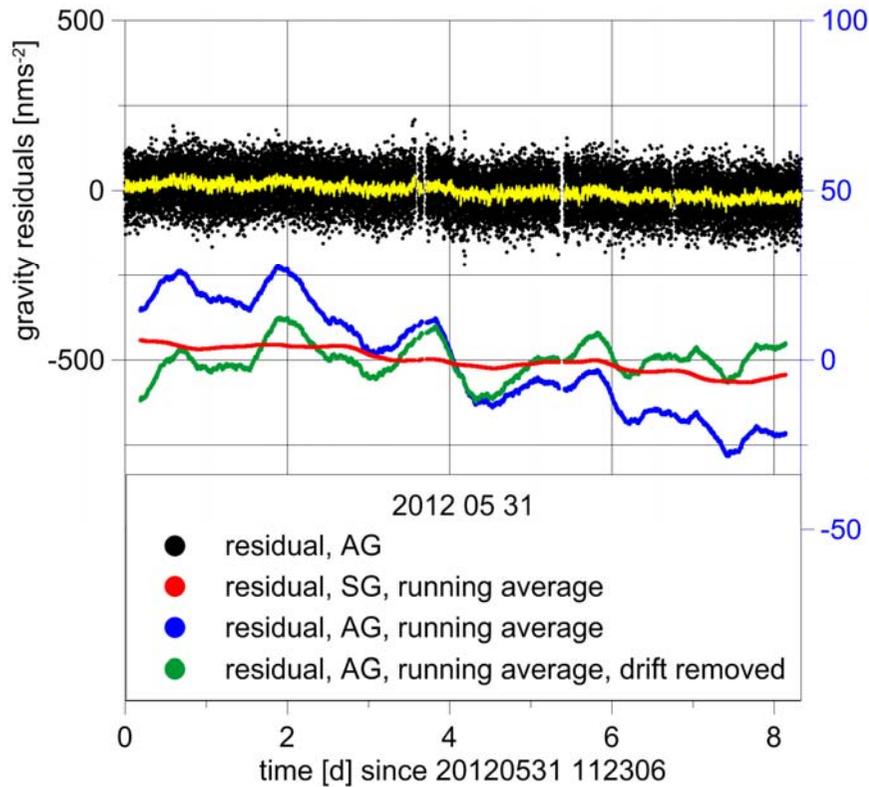
Effect of He-contamination on the Rb-oscillator frequency:

normal-air condition (light blue and yellow)

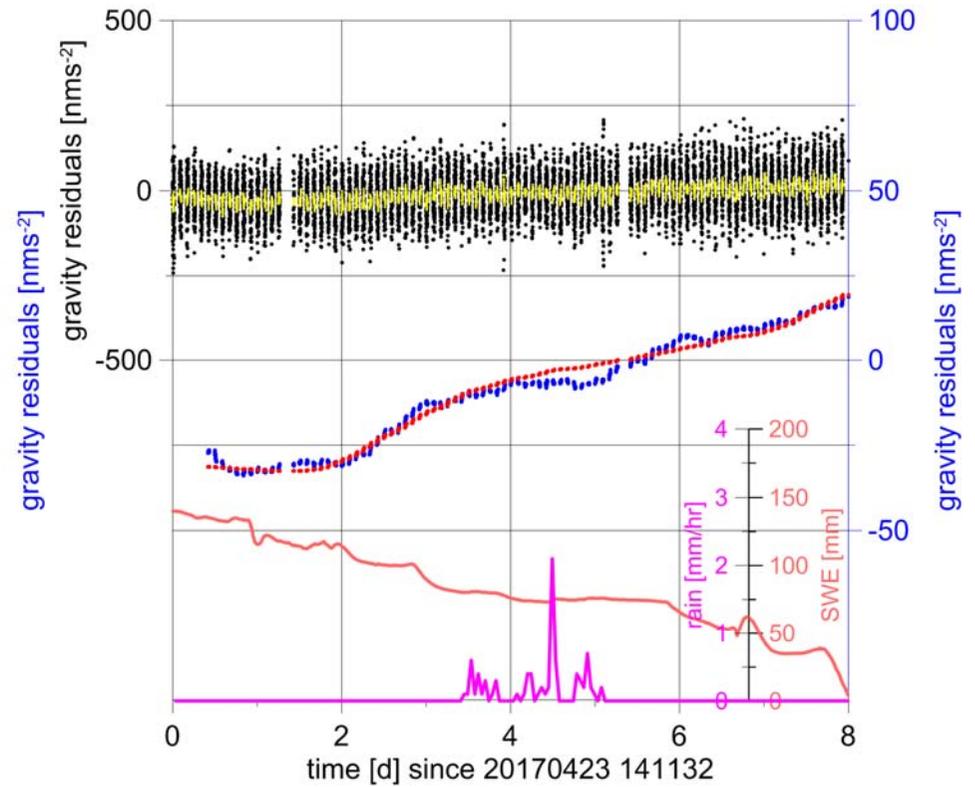
He contaminated environment (gravity lab, dark blue)



# Effect of He-contamination



abnormal

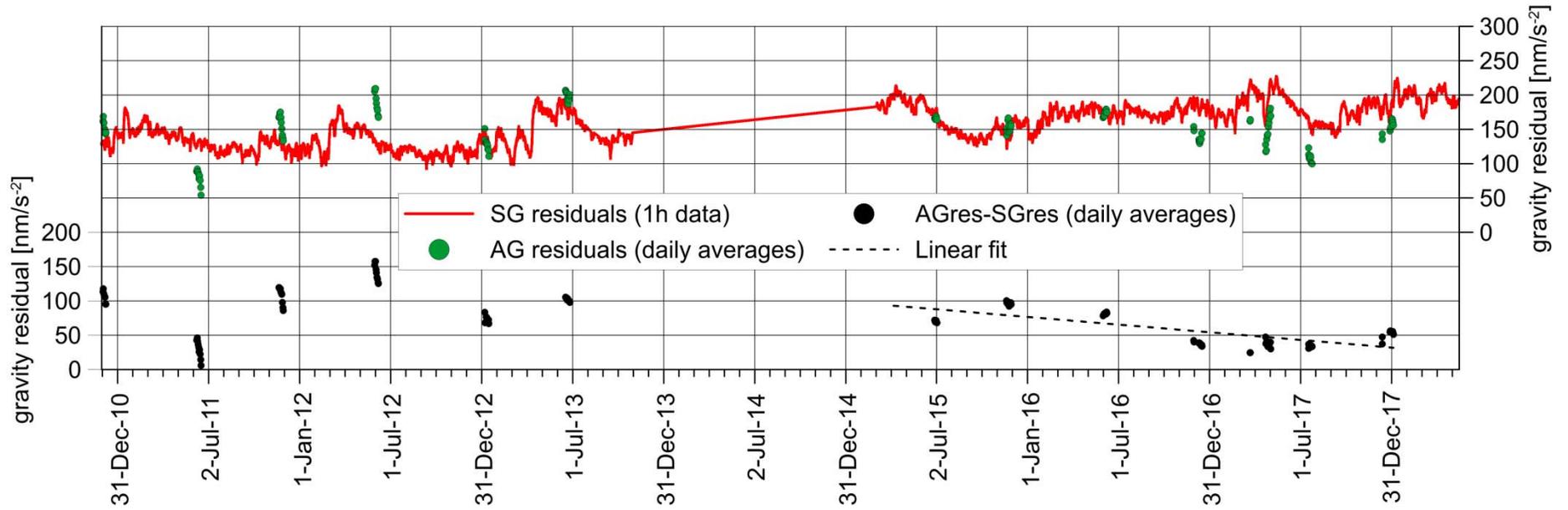


normal

Rb-oscillator exposed to  
He concentration



# SG Drift determination



## Some Results

- Tidal analysis

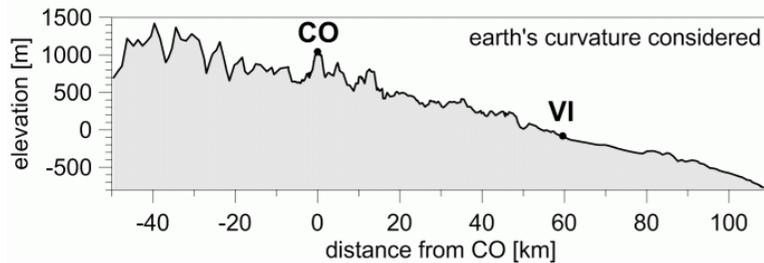
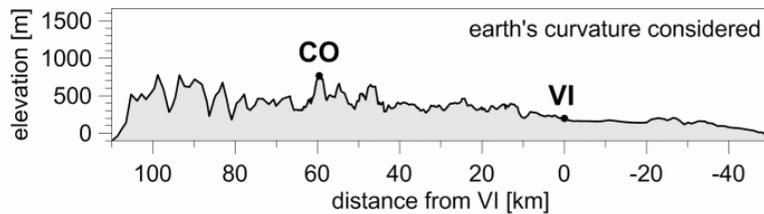
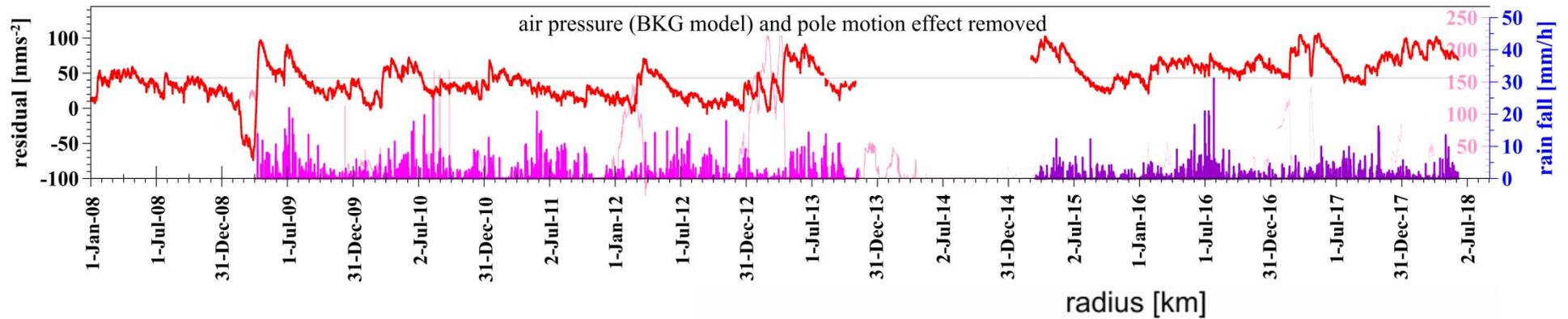
Wave	Model	Tidal parameters					
		ampl. Fac.	ampl. fac.	phase lead [°]	ampl. fac.	phase lead [°]	M2/O1
			observed		corrected		
O1	DDW-H	1.1528					
	DDW-Nhi	1.1543	1.1497	0.071	<b>1.1533</b>	-0.048	
	WDZ-Hi	<b>1.1533</b>	±0.0004	±0.021			
M2	DDW-H	1.1605					
M2	DDW-Nhi	<b>1.1620</b>	1.1832	1.097	<b>1.1615</b>	-0.005	1.0071
	WDZ-Hi	1.1575	±0.0001	±0.003			



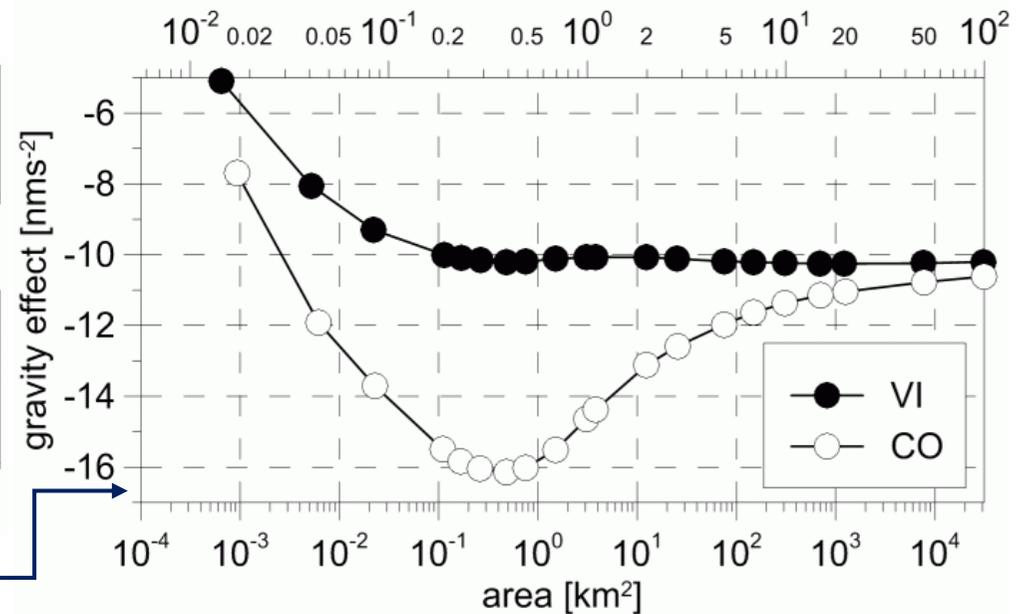
## Some Results

- Hydrological signatures, rain admittance

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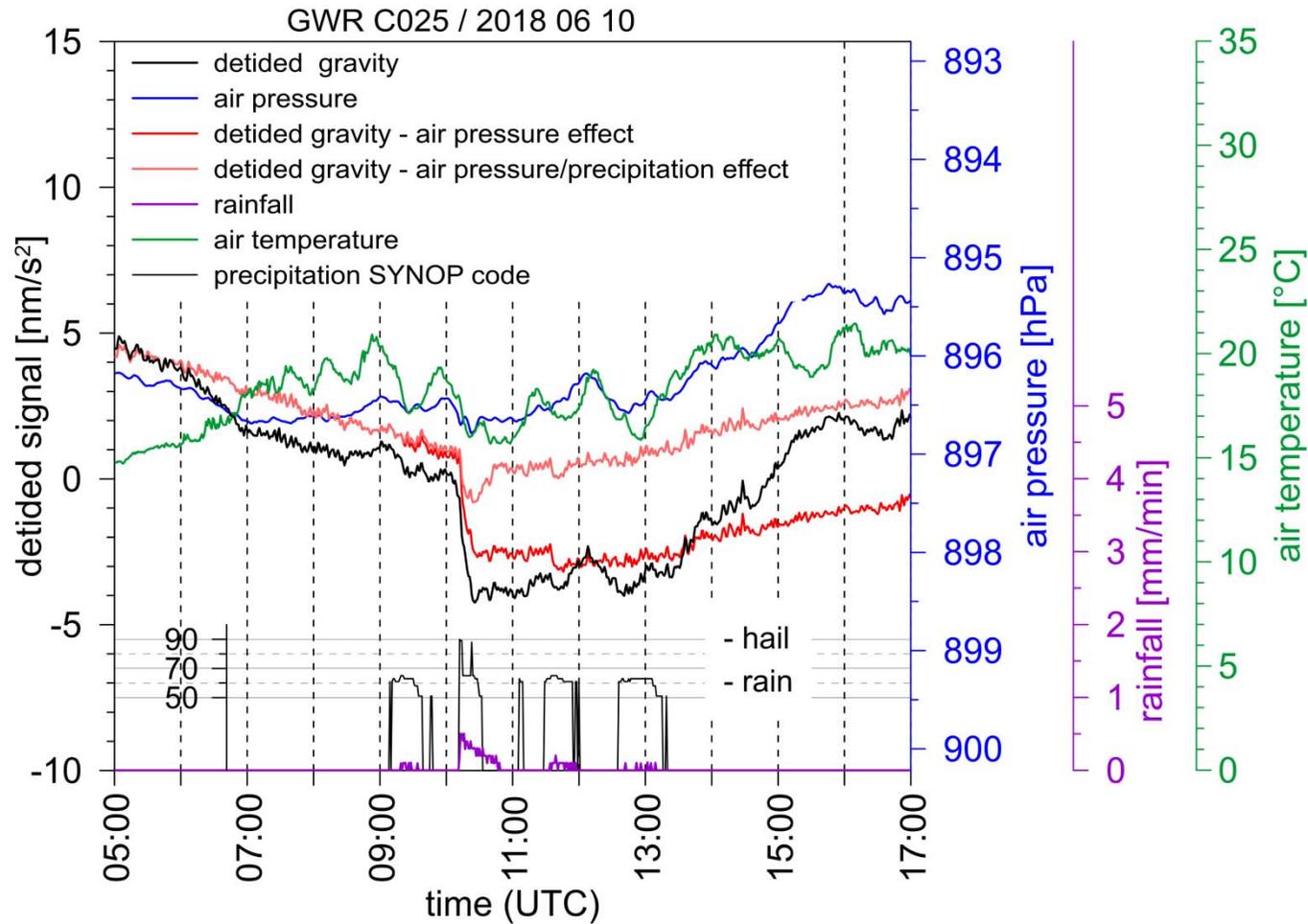


flat BPL effect



## Some Results

- Hydrological signatures, rain admittance



## Some Results

- Air pressure admittance

