



HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
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INAR
INSTITUTE FOR ATMOSPHERIC AND
EARTH SYSTEM RESEARCH

CiGAS QA meeting

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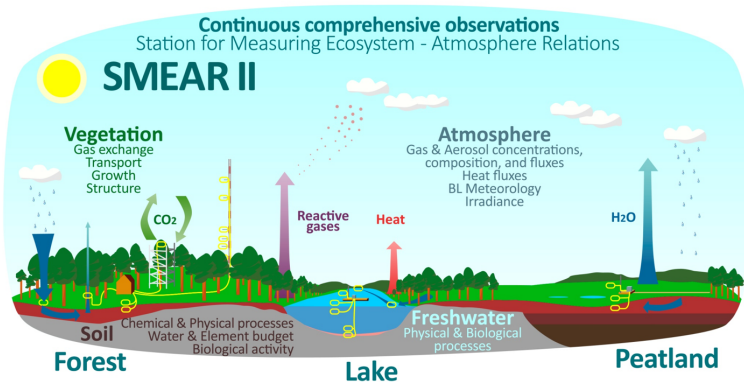
April 17, 2023

University of Helsinki, INAR / Physics





SMEAR II in Hyytiälä, Finland (61°51'N, 24°17'E, 181 m a.s.l.)

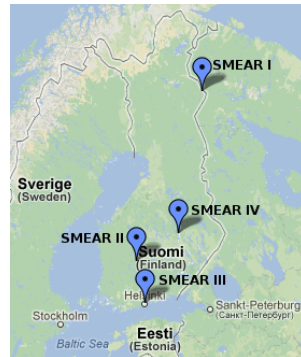


Over **1200** different variables

Flagship site for integration: combines all IPCC components. **Contributes to :**



ICOS



Set up

- Homogeneous Scots pine dominated forest
- PTR-QMS
- Since 2010
- Measurement height 16.8 m
- Submitted signals:
 - m/z 33 methanol
 - m/z 45 ethanal
 - m/z 59 sum of propanone and propanal
 - m/z 69 isoprene
 - m/z 79 benzene
 - m/z 93 toluene



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Data every 3 hours



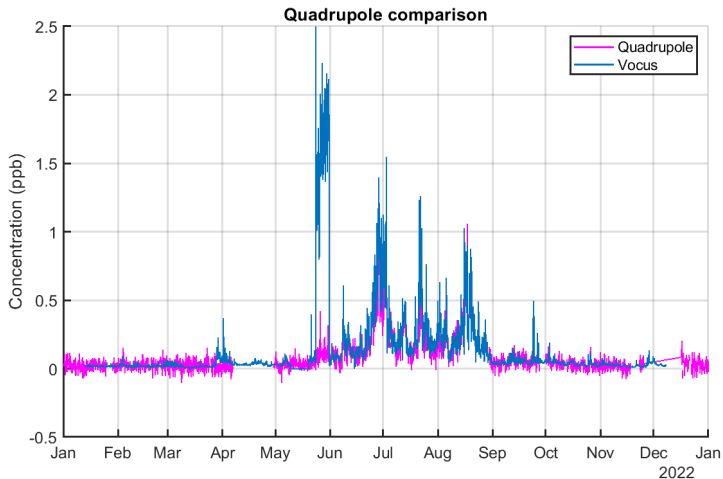
Pictures by Juho Aalto





- October 2021 →
- 35 m high tower
- Measures fluxes with EC method
→ Producing data in 10 Hz resolution

Vocus–Quadrupole comparison



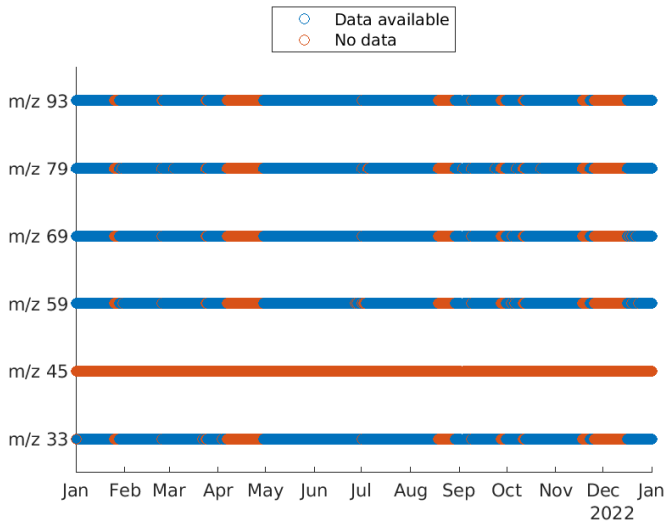
- Which compounds to submit?



Issues and instrumental failures in 2022

- In spring, especially in April problems with mast measurement cycle + simultaneous problems with ion source
→ Data removed.
- 18.8. water reservoir empty.
- In November–December DualGauge power failure → replaced.
- Issues with m/z 45 ethanal started last year continued (negative concentrations) → Data removed.

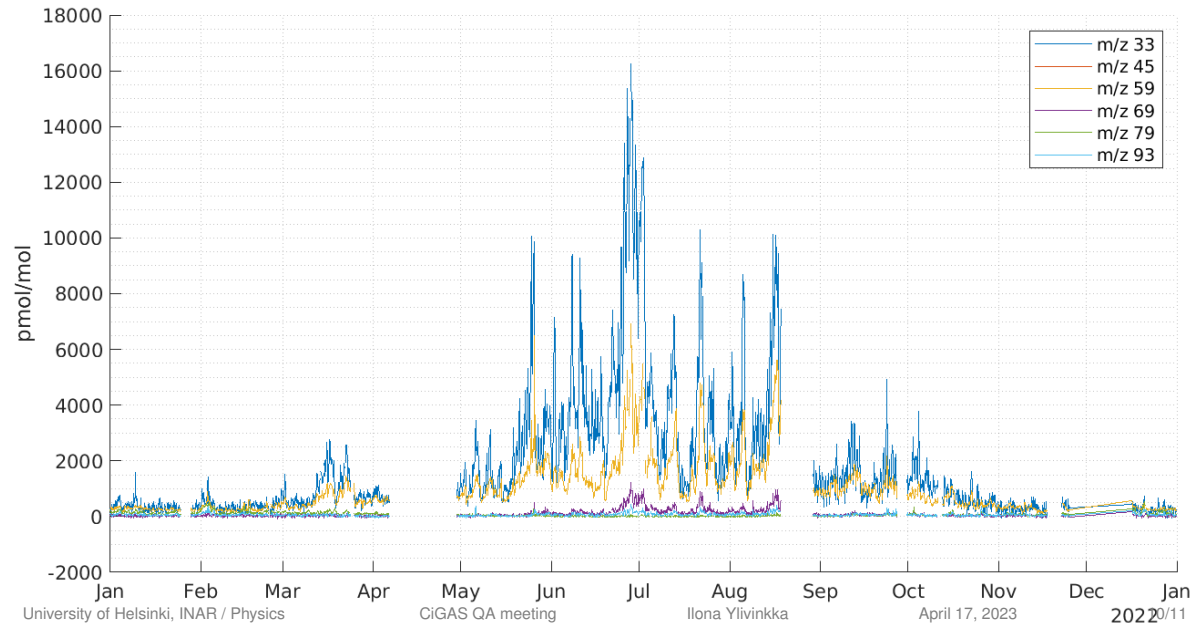
Data availability



≈ 47 – 48 %

Maintenance

- 9 regular calibrations
 - Primary ion (H_3O^+) signal $2.8 \times 10^6 - 4.8 \times 10^6$ cps
(average: 3.9×10^6 cps)
 - Oxygen signal 0.8–2.7 % of that (average: 1.6 %)



Isobaric compounds and isomers

- m/z 59 sum of propanone and propanal:
Propanal conc. < 5 % of propanone conc. (Kajos et al. 2015).
- m/z 93 toluene: p-cymene conc. « toluene conc. (Hakola et al. 2012).