

VOC Canister Measurements during the 2022 EMEP ozone campaign



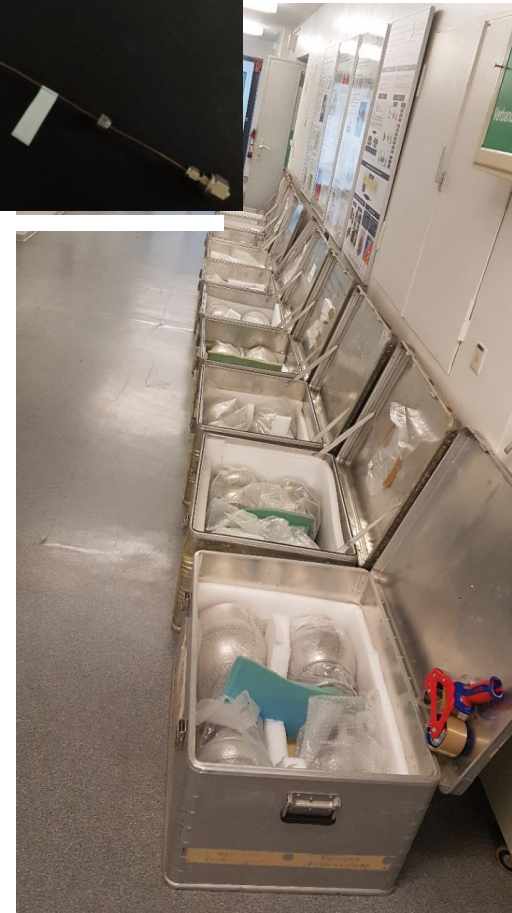
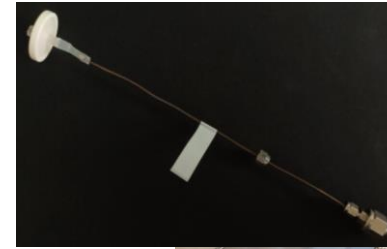
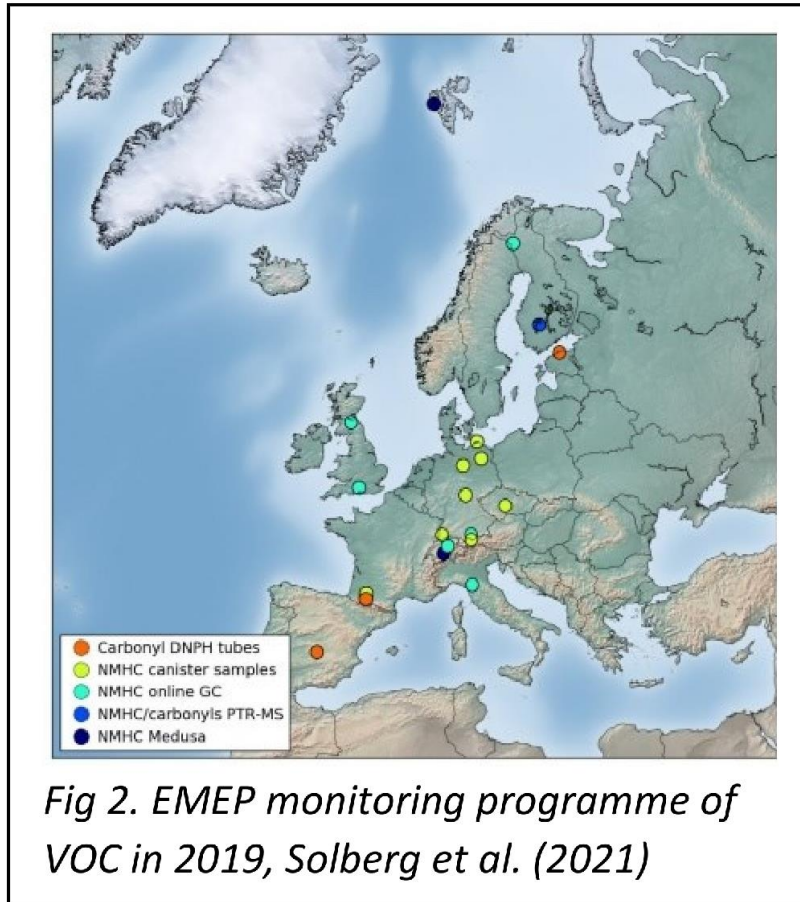
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¹FZ Jülich, Germany



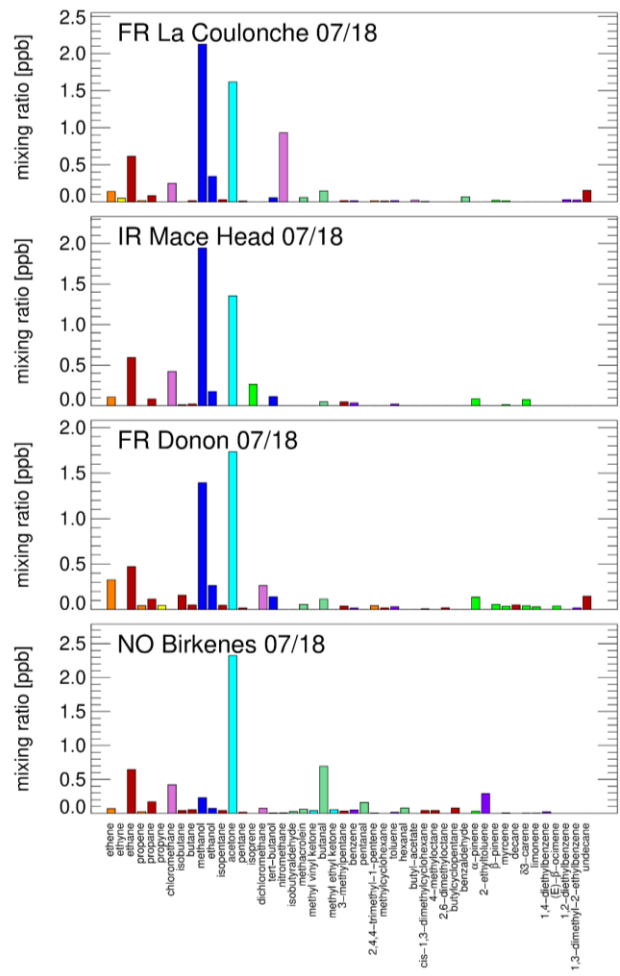
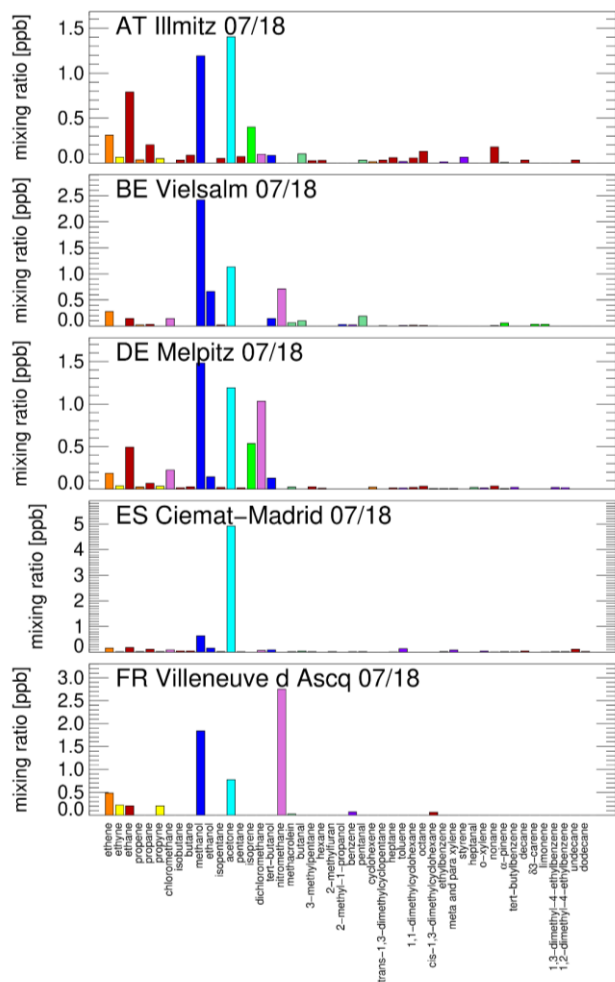
ACTRIS and the of TOAR-2 Data

2022 EMEP ozone campaign



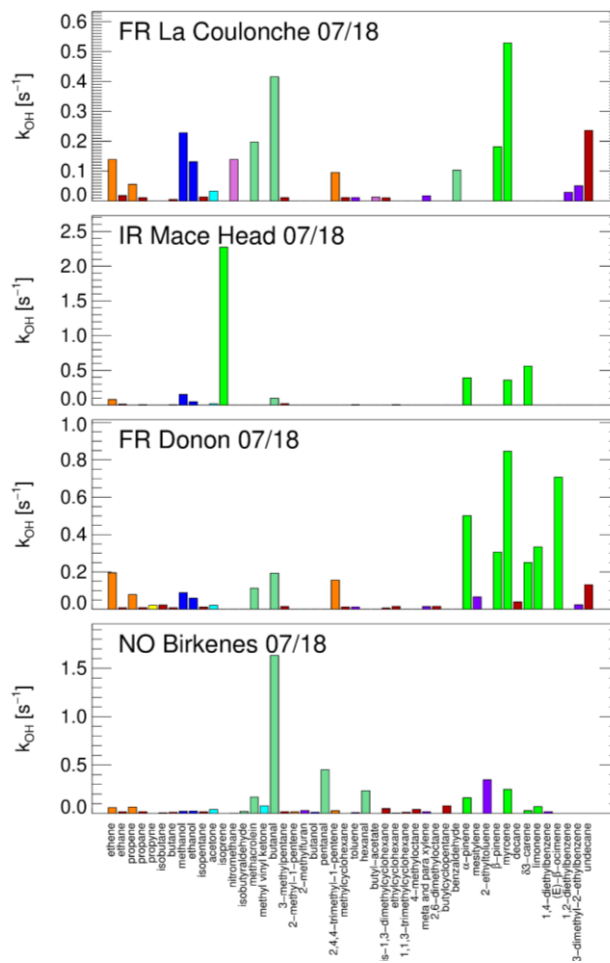
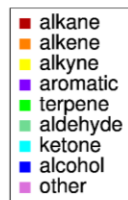
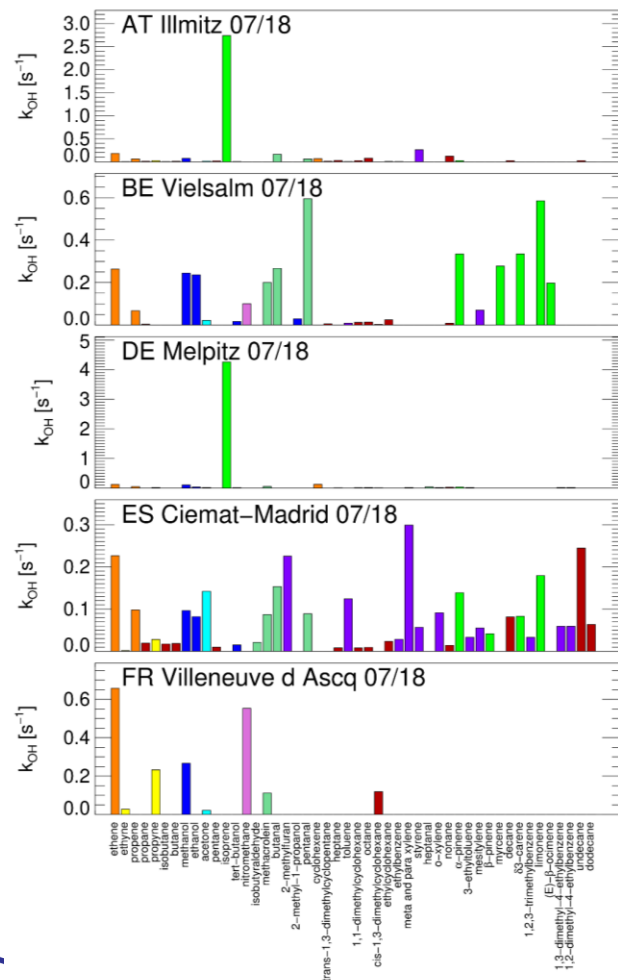
VOC Canister Measurements

VOC reactivity at different European Sites



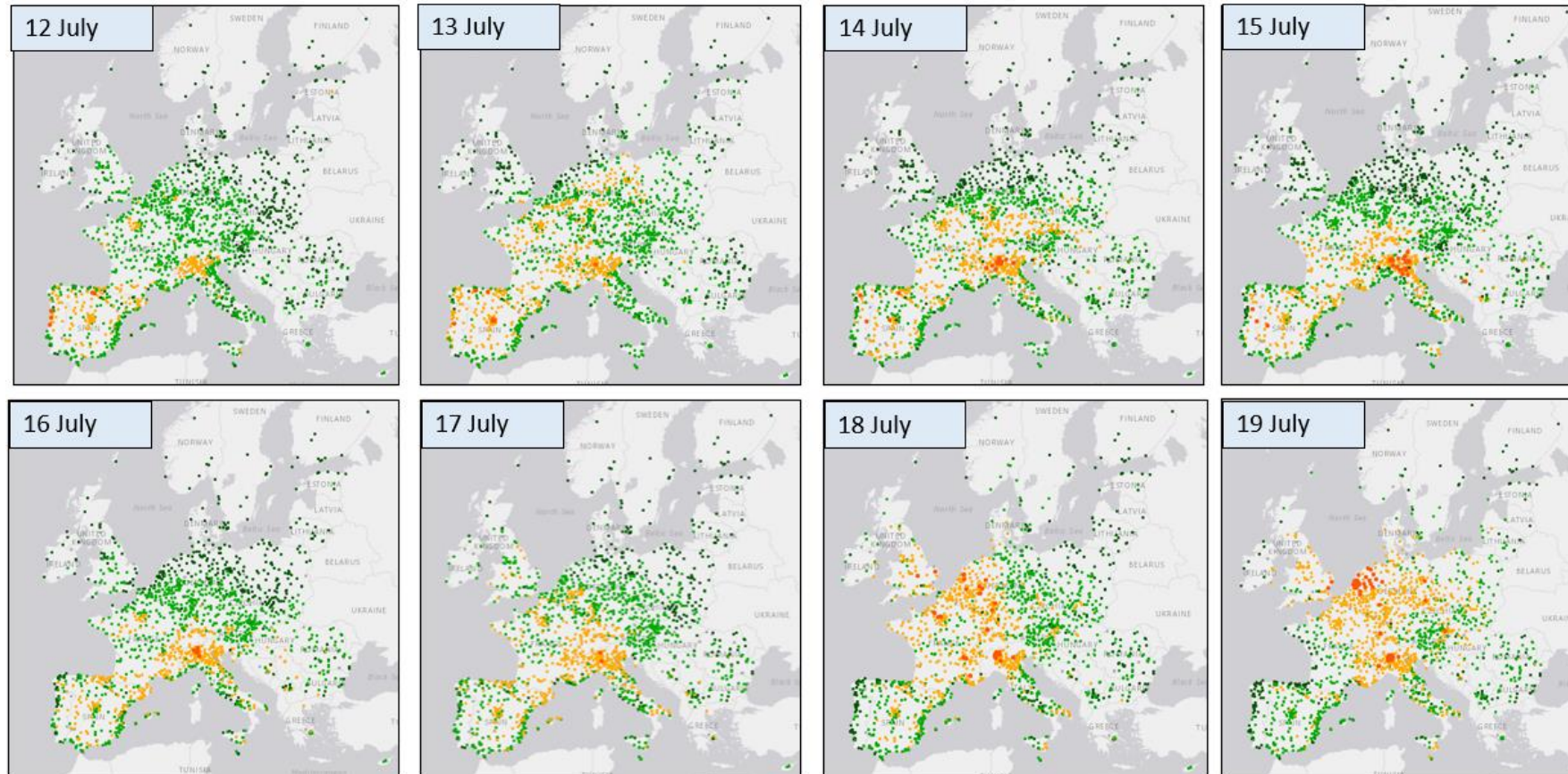
VOC Canister Measurements

VOC reactivity at different European Sites



VOC Canister Measurements

Ozone concentration (8hrs Maximum)





Canister

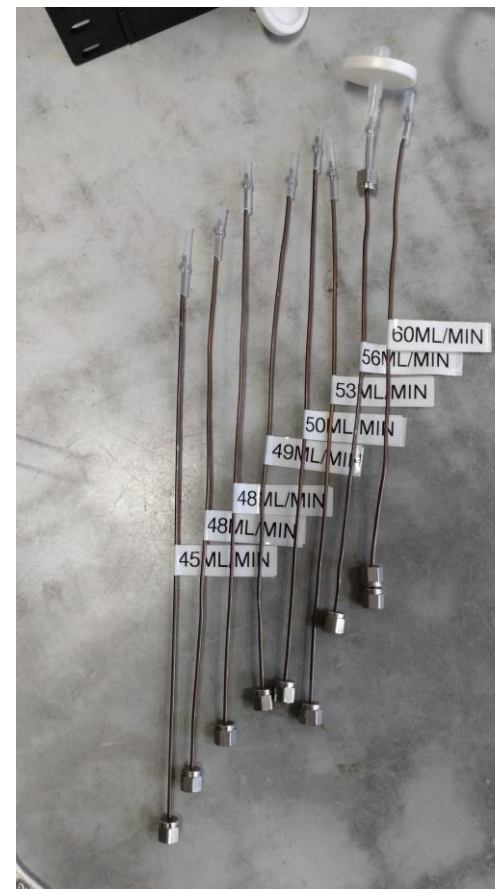
- Sampling will be done into 6l Restek ® Canisters
- The canister are inert and silcosteel treated
- NMHCs change less then 10% within 4 days
- We can equip 8 stations with 8 canisters each
- Canisters will be shipped together with the sampling equipment in two Zarges boxes.



Sampling

Flow reduction

- Eight capillaries have been prepared to reduce the flow to 45-60ml.
- A sample is taken over a period of one hour.
- No extra equipment is necessary



Ozone destruction

- Ozone can react with alkenes on the cylinder.
- Ozone is destroyed with a glass fiber membrane impregnated with Sodium thiosulfate. M
- The ozone scrubber is placed at the top of the capillary

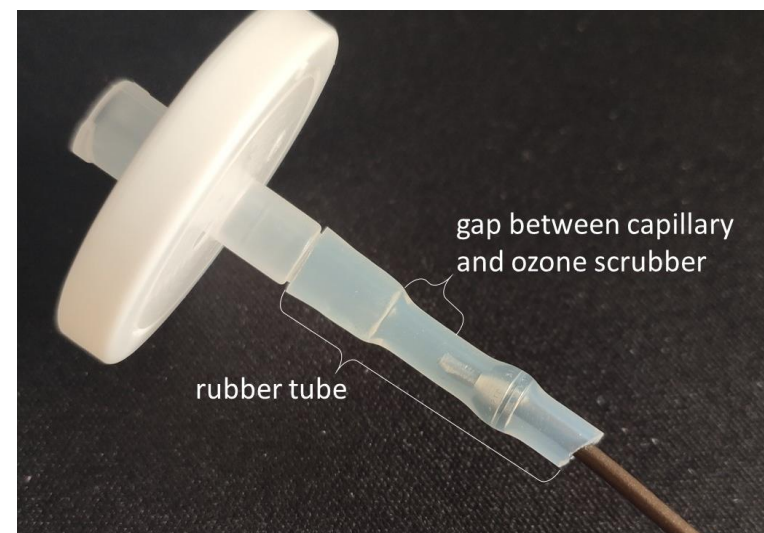


Fig. 1

Sampling

- The whole setup is mounted on top of the cylinder.
- Sampling will be done just by opening and closing the valve
- After the first four canisters are filled they will be shipped to Jülich to keep the residence time of the samples in the cylinders short.

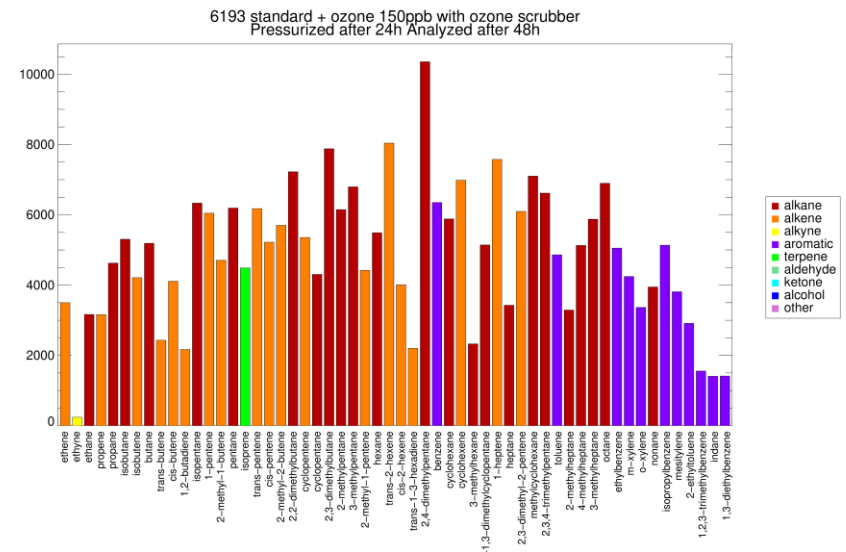
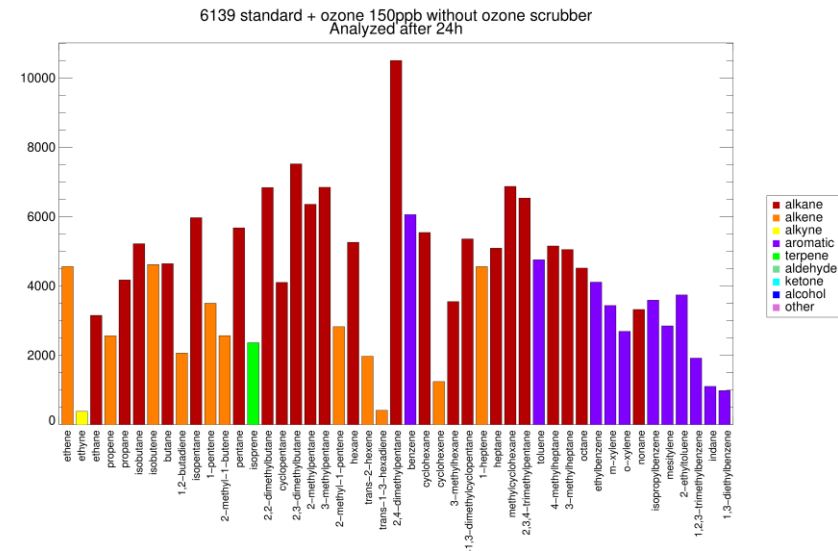


Fig. 3



Efficiency of ozone reduction

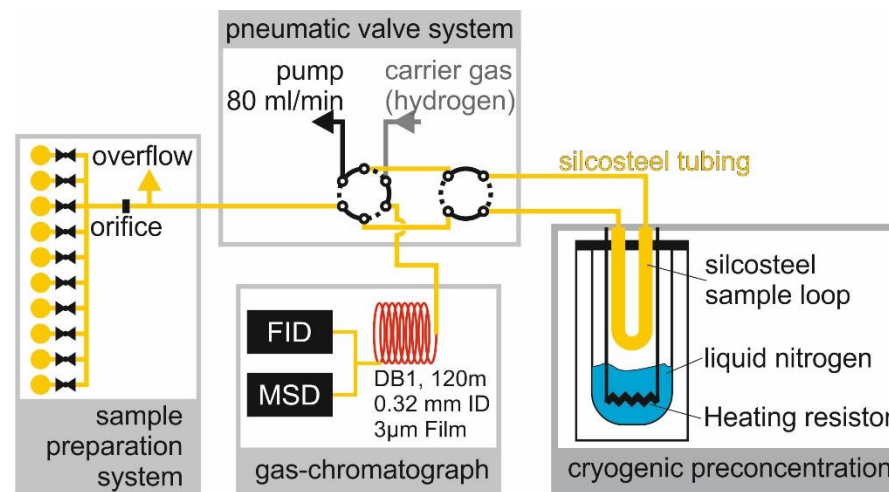
- VOC Standard measurement with ozone (150ppb)
- After 24hrs concentration of most of the alkenes (orange) is reduced
- No reduction of the alkenes with ozone scrubber



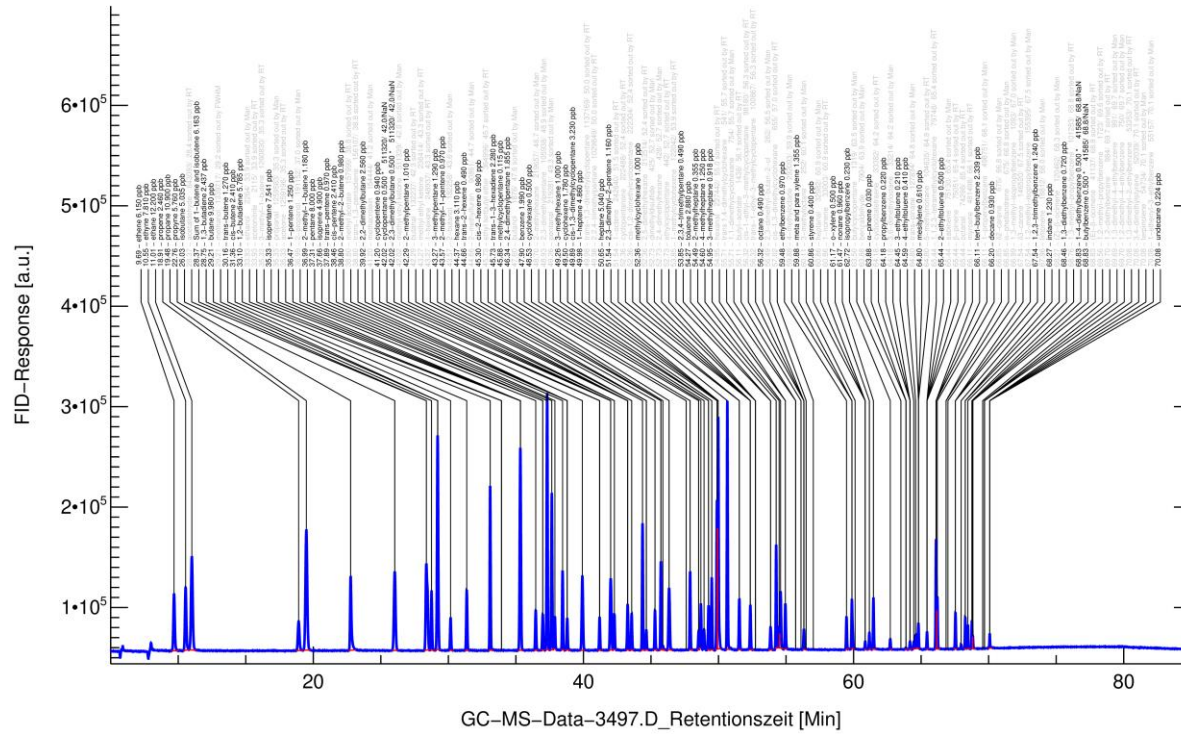
Analysis

Canisters will be pressurized and analysed with GC/MS/FID according to ACTRIS-SOP

- Quantification is done by FID
- Separation is done with a 120 m DB1 column
- Calibration: 74-component standard nmkw gas standard
- OVOC gas standard NPL

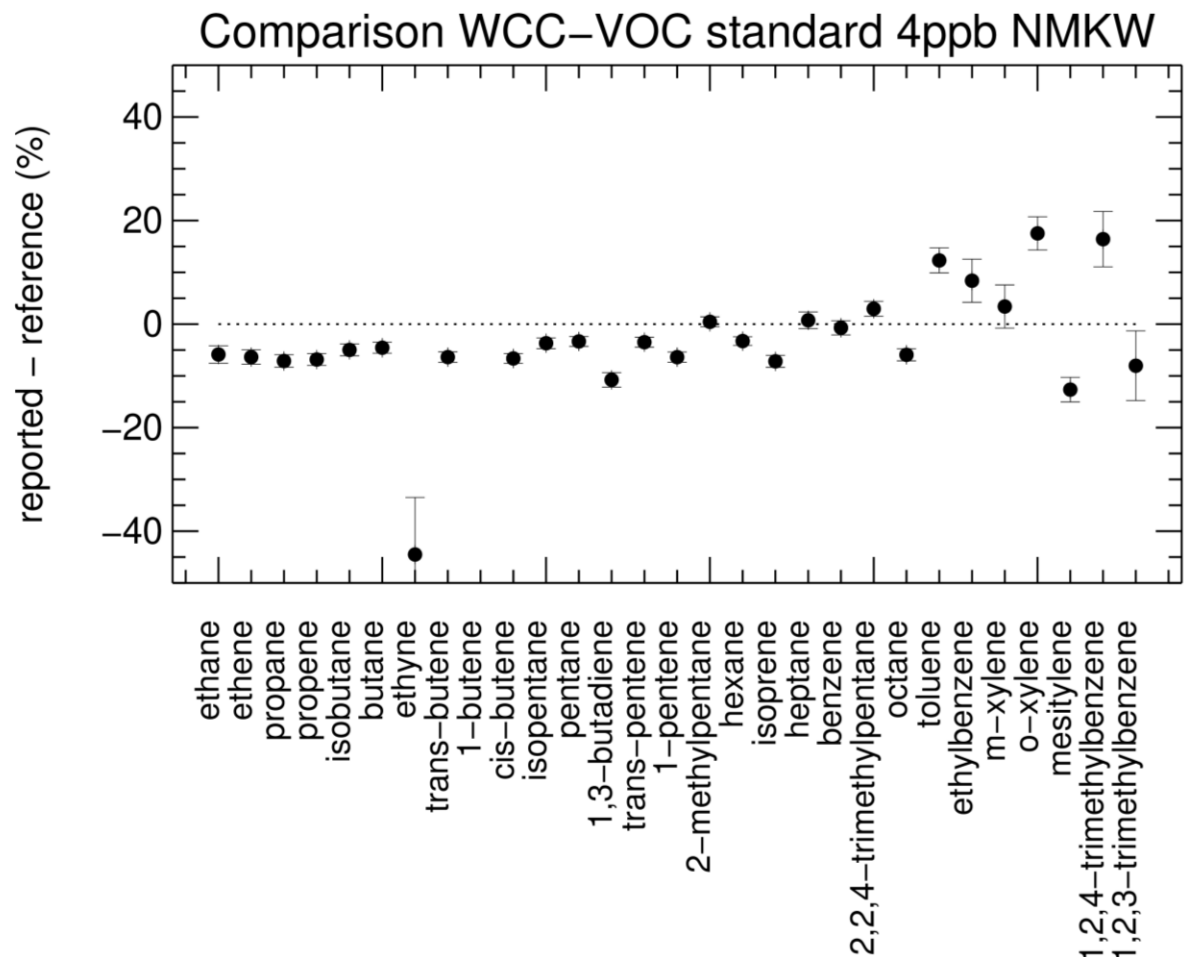


Chromatogram



- VOCs from C2 to C12 are separated

Standard comparison with WCC-VOC



- In 2021 VOC standard have been compared to the WCC-VOC standard.
- Differences were small for most of the VOC