

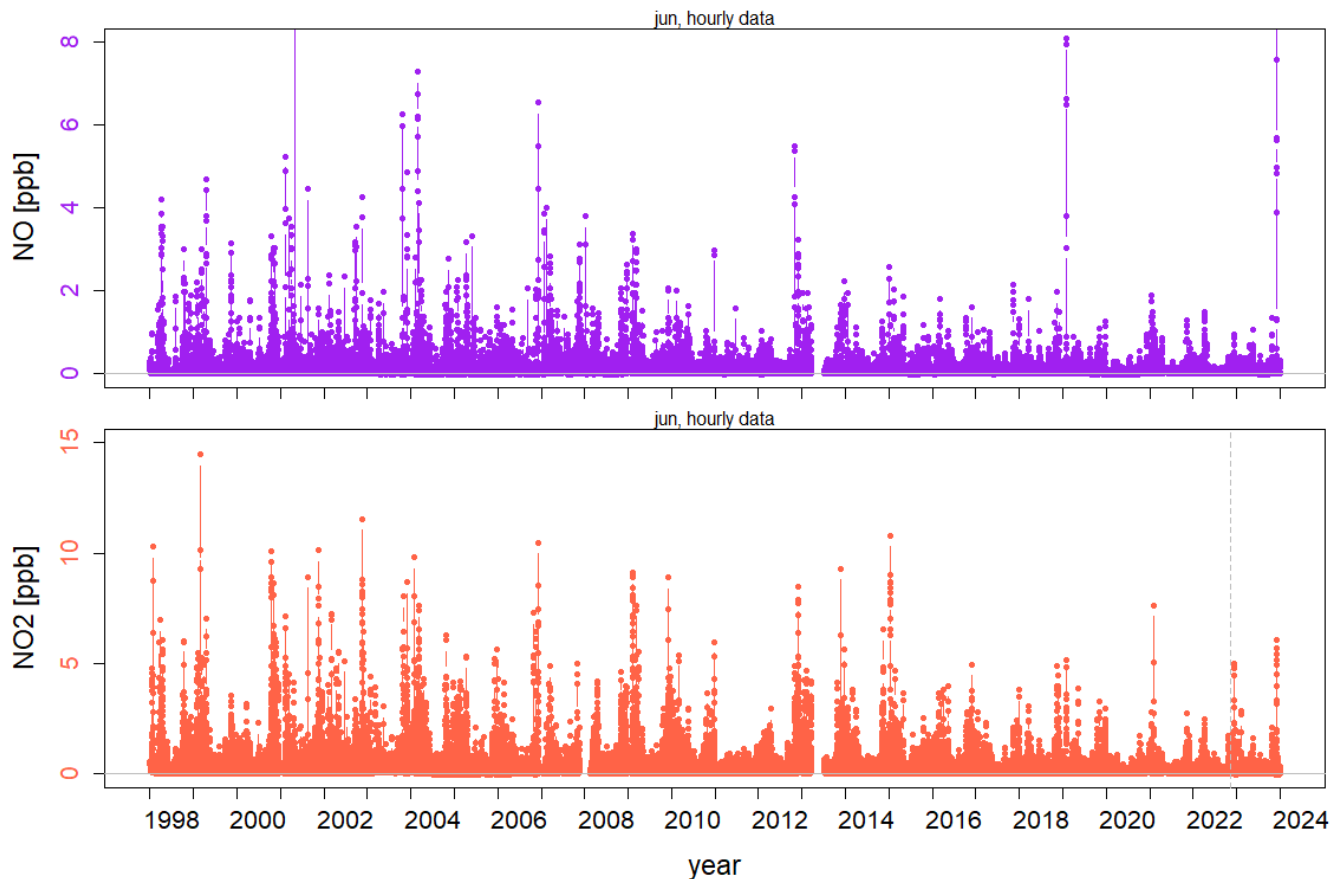


NO and NO₂ measurements at Jungfraujo

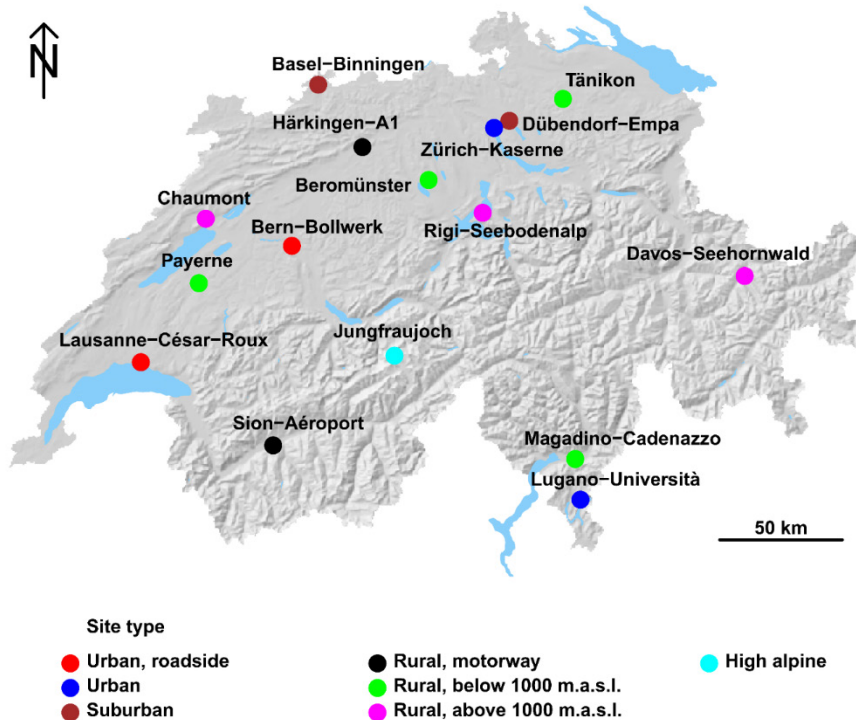
09 - 11 April 2024, Martin Steinbacher

ACTRIS NO_x/VOC QA workshop 2024

The long-term perspective



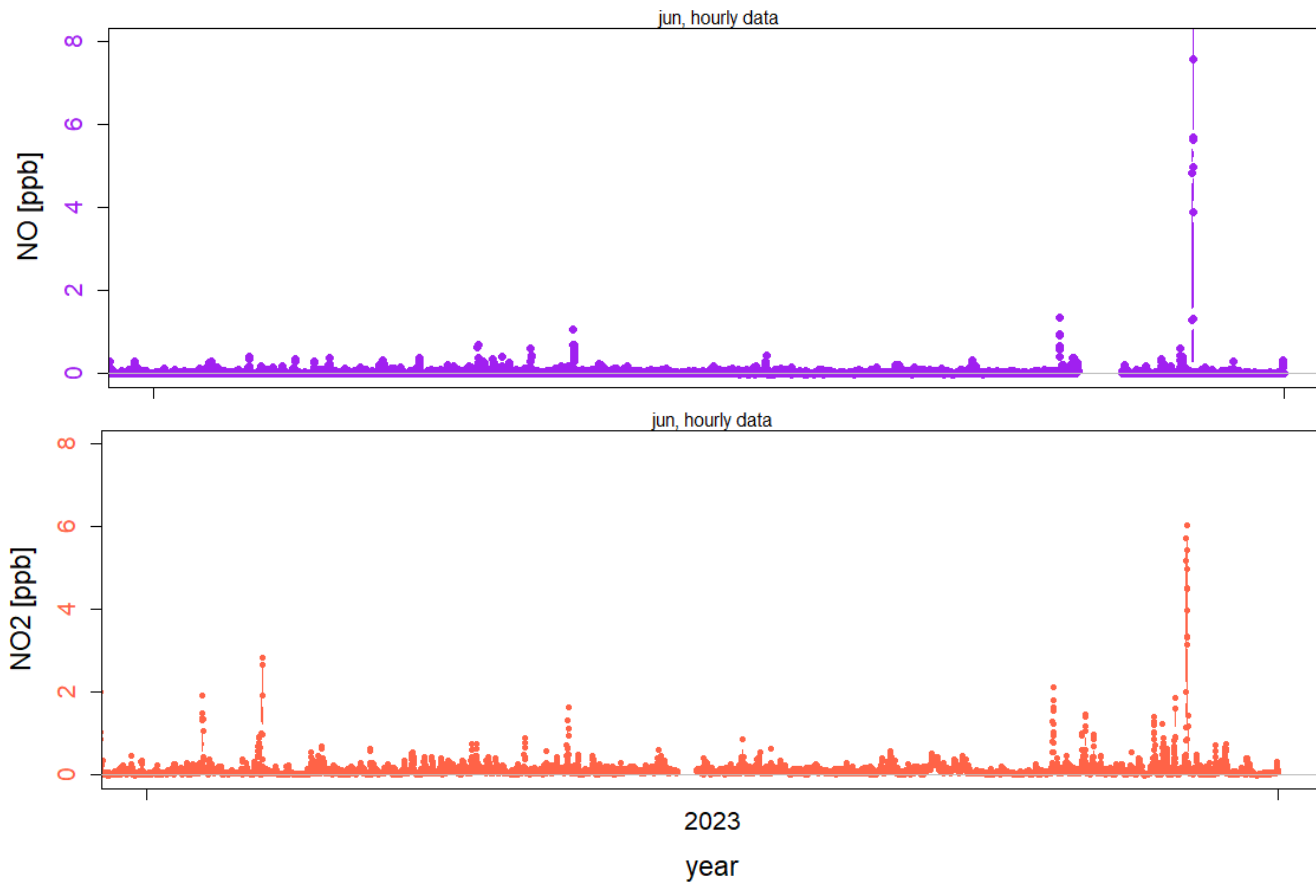
The international setting



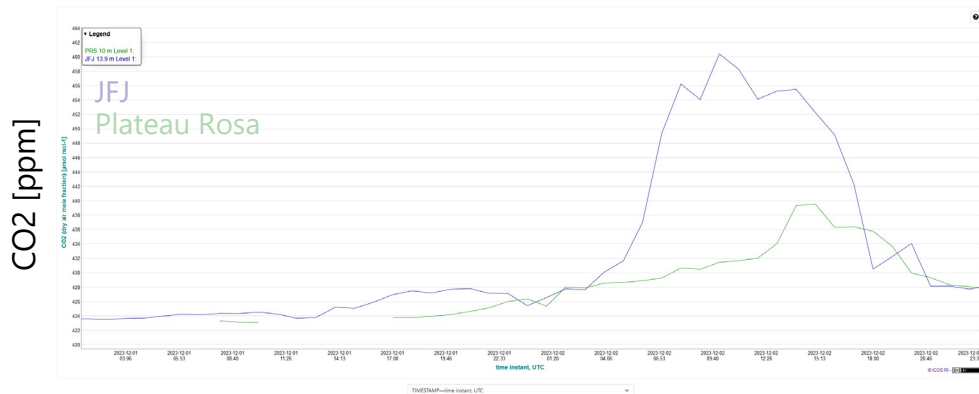
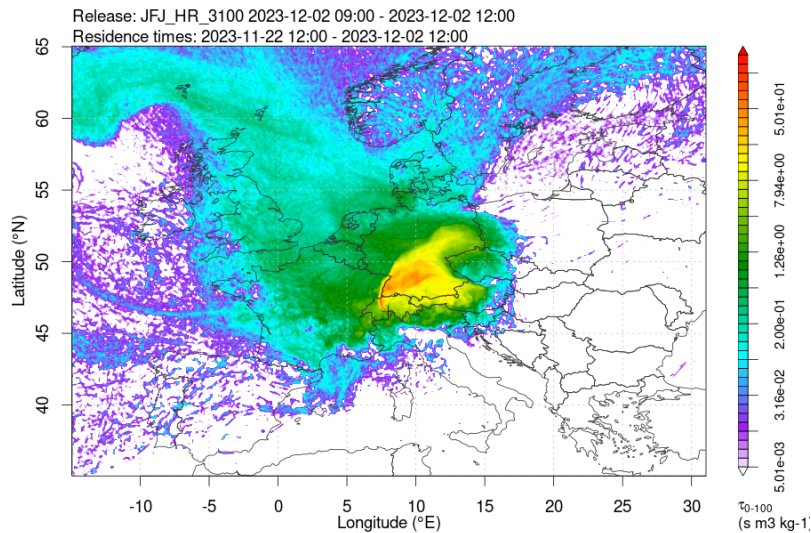
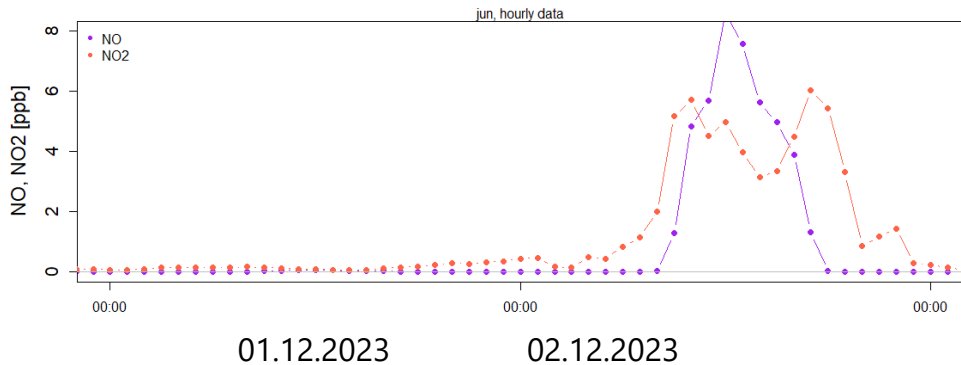
NABEL also contributes to

- European Monitoring and Evaluation Programme (EMEP) (focus: monitoring and evaluating the long-range transport of air pollutants)
- European air quality monitoring network (Euroairnet / Eionet) of the European Environment Agency
- World Meteorological Organization (WMO)'s Global Atmosphere Watch (GAW) programme
- Research infrastructures, such as ACTRIS (Aerosol, Clouds und Trace Gases Research Infrastructure), AGAGE (Advanced Global Atmospheric Gases Experiment), ICOS (Integrated Carbon Observation System)

The year 2023



Example of pollution transport



➤ advection of pretty fresh boundary layer air to JFJ

Instrumentation (situation since 15 November 2022)



NO with chemiluminescence (Ecophysics)
NO₂ with laser spectroscopy (Miro Analytical)

Quality control:

Miro laser spectrometer:

Zeroing every 12 min for 70 sec (last 30 secs are used)

Calibration via gas-phase titration

Every 61 hours, zero and cal @ 35 ppb

Three steps

NO + O₃ (40 ppb NO + 35 ppb O₃)

NO (40 ppb NO)

Zero

Instrumentation (situation since 15 November 2022)



NO with chemiluminescence (Ecophysics)
NO₂ with laser spectroscopy (Miro Analytical)

Data are recorded as 1-min averages
Data treatment happens on 10-min aggregates

(also other data (e.g. O₃) are only stored as 10-min averages in the database)

Laser spectrometer implementation phase



Miro laser spectrometer:

Instrument was installed at JFJ in July 2020

Several tests were performed to find an optimum calibration strategy, now via GPT

Decision on calibration strategy (see previous slide) was made in summer 2022

About 4 months of parallel measurements (chemiluminescence – laser spectrometry) were performed

20.07.2022 till 15.11.2022

