



# NO<sub>x</sub> observations at Mt. Cimone and Capo Granitola

CNR–ISAC, Bologna and Turin

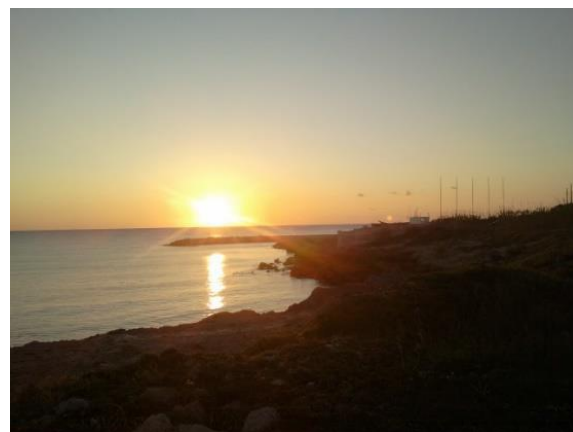




## Monte Cimone (CMN)

44.0 N, 10.7 E, 2165 m a.s.l.

- Highest peak of the Northern Apennines
- Completely free horizon 360°
- Usually above PBL, except summer
- WMO/GAW Global Station
- CNR Observatory hosted by Italian Air Force



## Capo Granitola (CGR)

37.66 N, 12.65 E

- South-western coast of Sicily
- Affected by sea-land breeze
- Remotely-controlled
- WMO/GAW Regional Station
- Hosted by CNR-IAS institute

# Experimental set-up @ CMN



➤ Unmanned observatory (visits every 2/3 weeks)

*Sampling head:* composed by Teflon and Pyrex (glass) with residence time of about 3s from the tube entrance to instrument inlet

*Analyzer:*

- **Before August 2023:** Thermo 42i-TL equipped with a Photolytic Converter (Air Quality Design Inc.) to convert NO<sub>2</sub> to NO
- **From August 2023:** Teledyne T200UP equipped with a Blue light Converter to convert NO<sub>2</sub> to NO

Inlet particle filter (Teflon); no dryer.

*Calibration unit:* Thermo 146i (dilution and GPT).

NO standard (5 ppm) from NPL (since June 2017): this had some issues since September 2023. Now we use a Messer standard (5 ppm).

*Zero air source:* Thermo 1160 dry air generator (activated charcoal and Purafill)

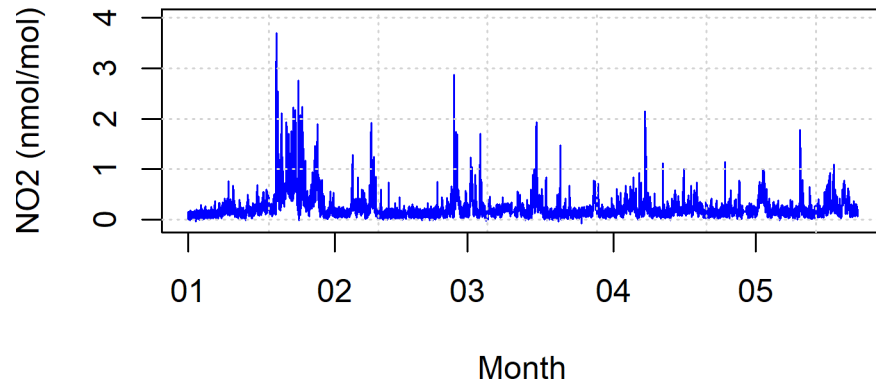
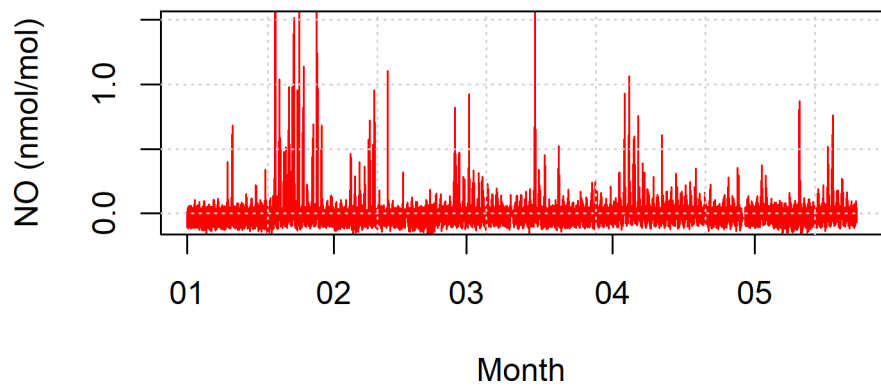
# Data description @ CMN, CGR

- NRT data delivery capacity
- Automatic procedures (previously in R, now also available in Python) run for calibrations and flags attribution, following the GAW guidelines
- Automatic procedures for file creation, following the EBAS/ACTRIS CDM:
  - Creation of lev0 and lev1 data, to be submitted to EBAS
  - Creation of lev2 data and plots for internal use

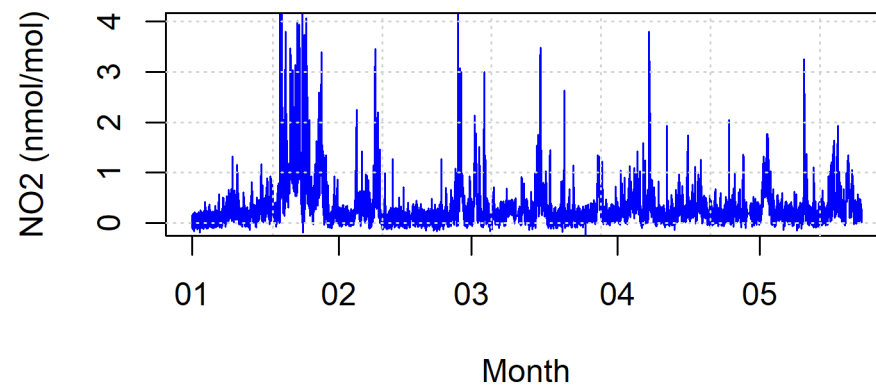
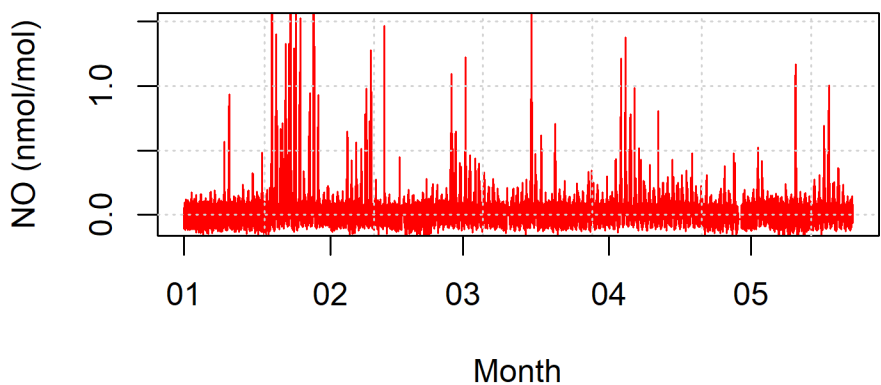
**Mt. Cimone/Po Valley RI participated to the first NO/NO<sub>2</sub> ACTRIS intercomparison campaign in Jülich, 19–30 June 2023**

# CMN, NO and NO<sub>2</sub> in 2023 – Thermo 42i-TL

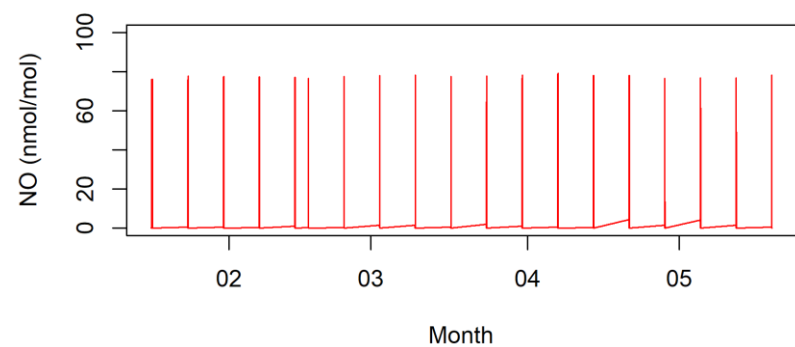
level 0



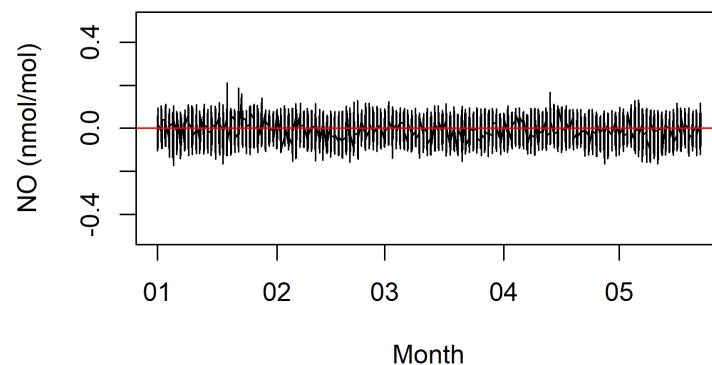
level 1



NO, 2023 - CMN

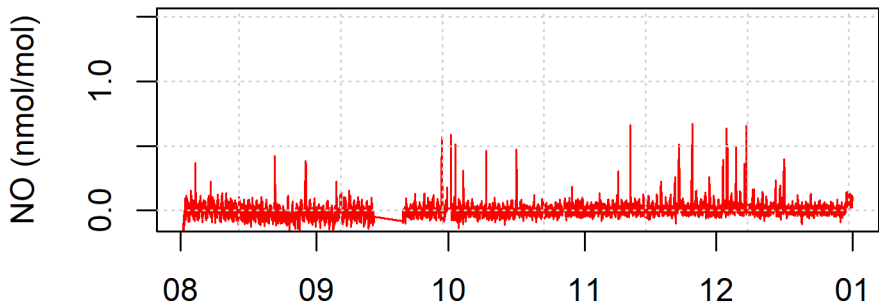


NO, Thermo 2023 - CMN, 22:00-02:00 only

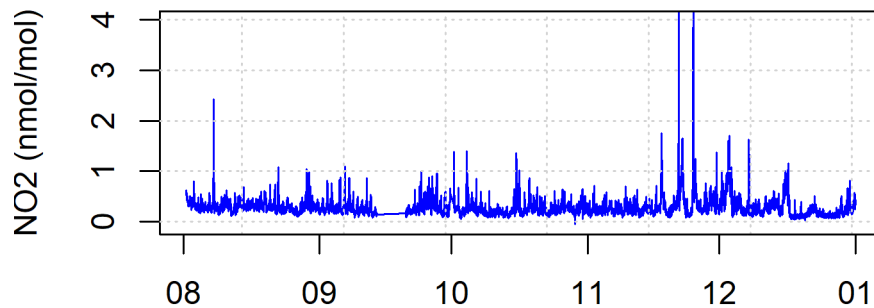


# CMN, NO and NO<sub>2</sub> in 2023 – Teledyne T200UP

**level 0**

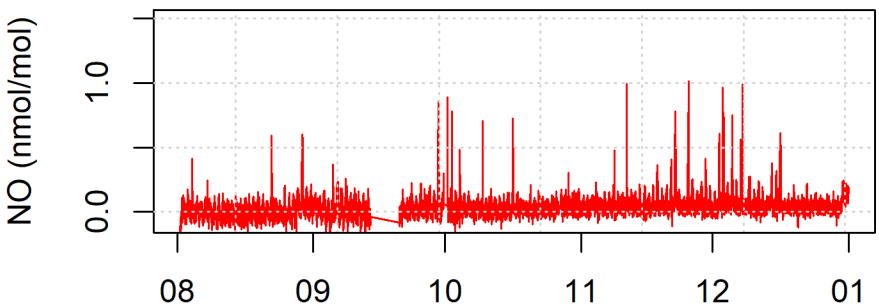


Month

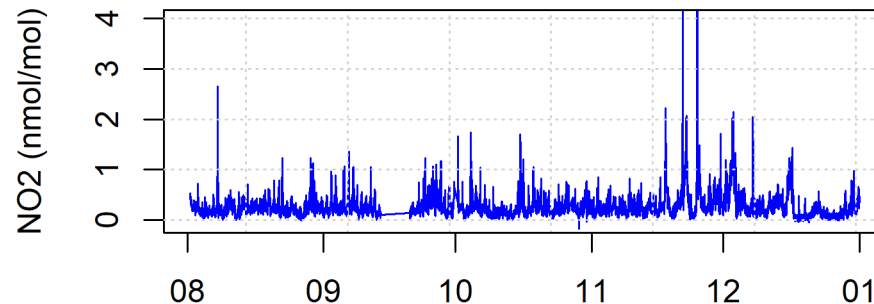


Month

**level 1**

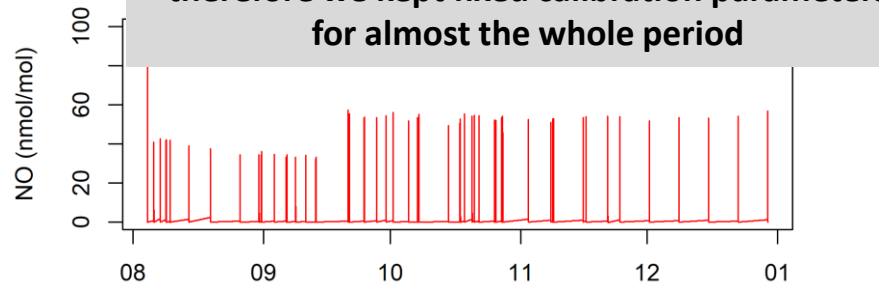


Month



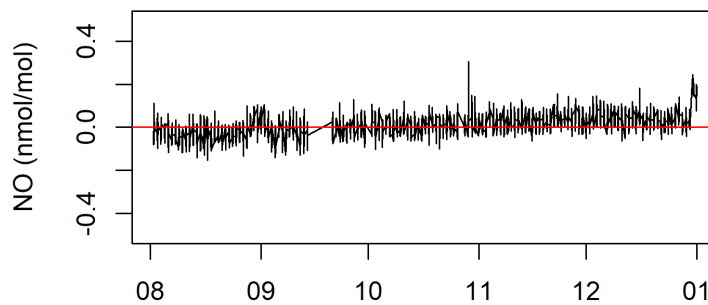
Month

**We faced problems with the calibration standard, therefore we kept fixed calibration parameters for almost the whole period**

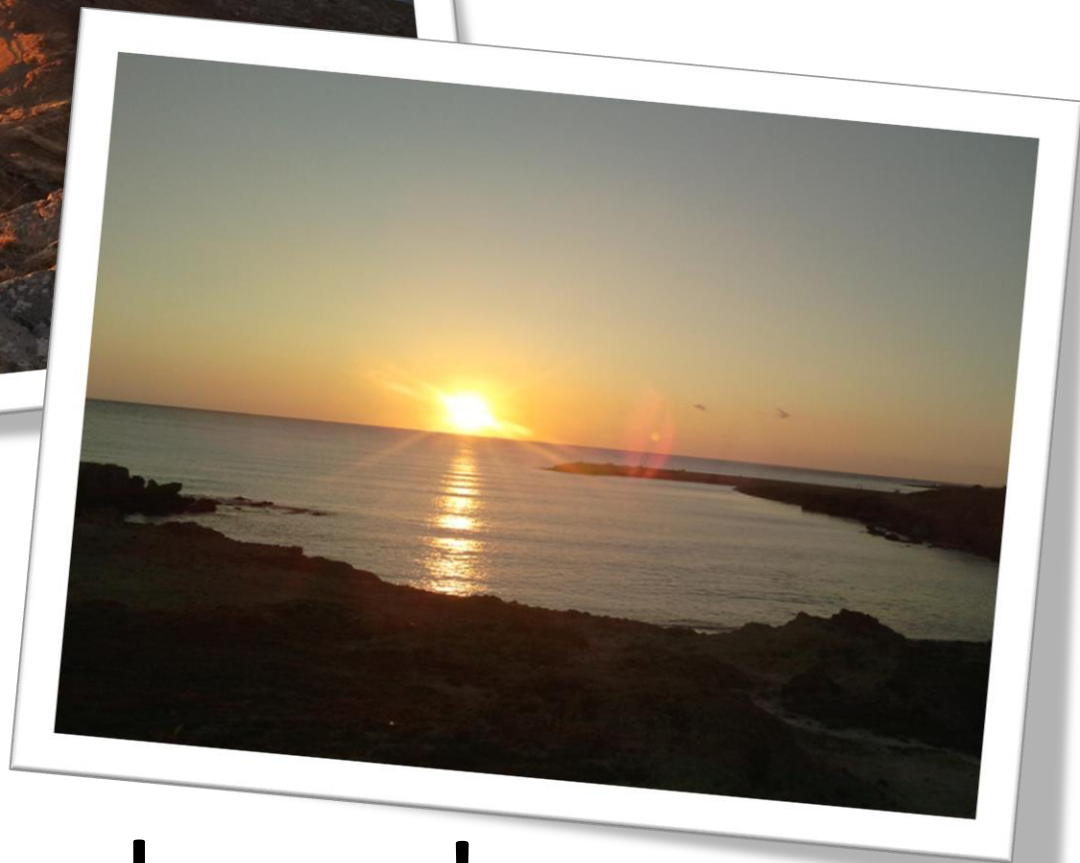
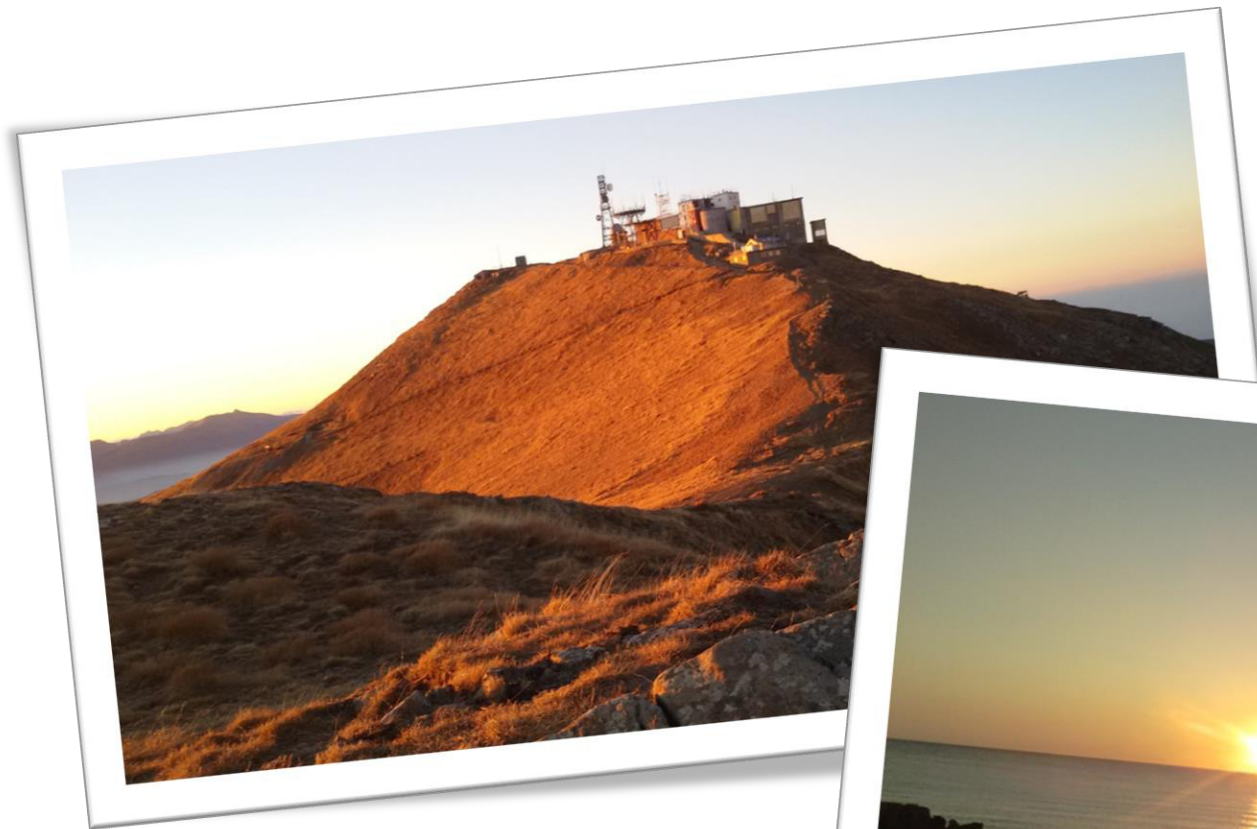


Month

**NO, Teledyne 2023 - CMN, 22:00-02:00 only**



Month



Thank you!