



Trzecie spotkanie Krajowego Programu Współpracy CAMS
Warszawa 23.10.2024



Pomiary i modelowanie pionowego
rozkładu zanieczyszczeń w warstwie
granicznej na terenie
zurbanizowanym.

Mirosław Zimnoch

Zespół:

Michał Galkowski, Piotr Sekula, Alina Jasek-Kaminska, Lukasz Chmura, Jakub Bartyzel, Jarosław Necki, Mikita Maslouski, Paweł Jagoda Alicja Skiba, Zbigniew Gorczyca, Michał Marzec

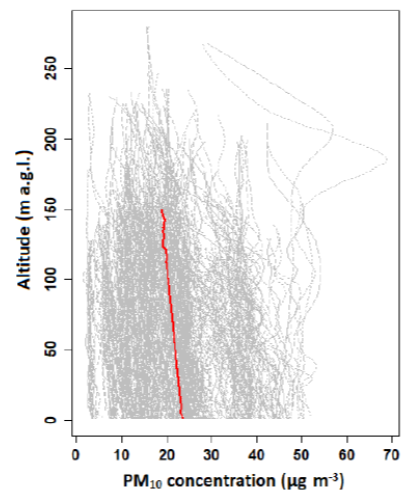
Kooperacja:

Krakowski Balon Widokowy, Jean Baptiste Renard (CNRS Orléans, France)

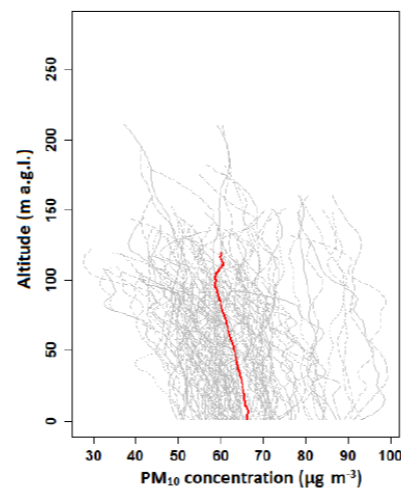
POMIARY



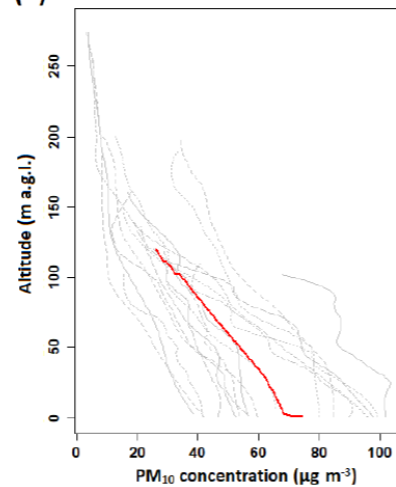
(a) Maximum PM₁₀ concentration <50 μg m⁻³,
number of cases: 374



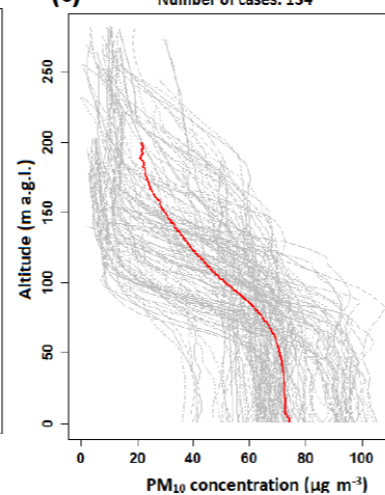
Maximum PM₁₀ concentration ≥50 μg m⁻³,
number of cases: 109



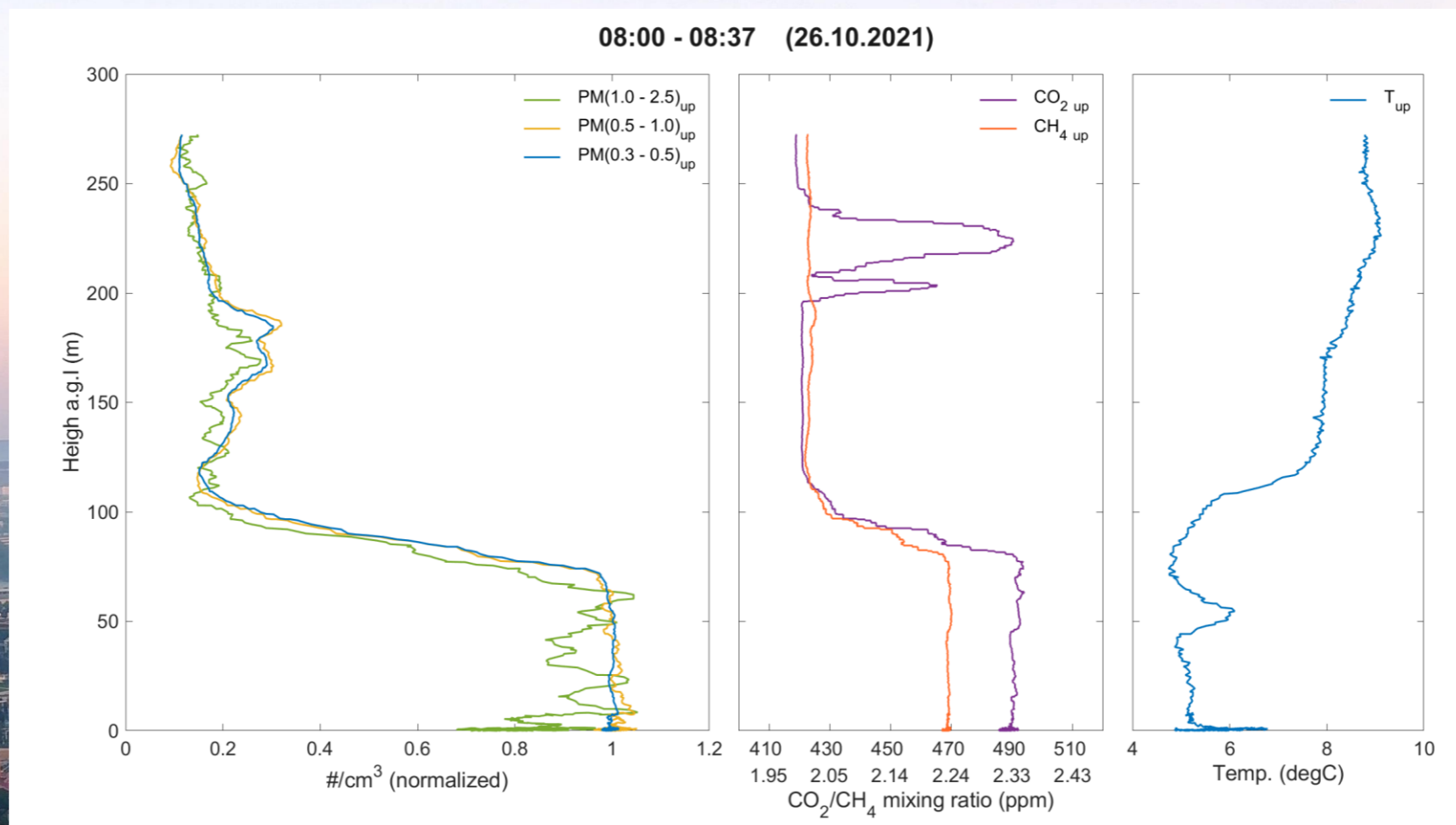
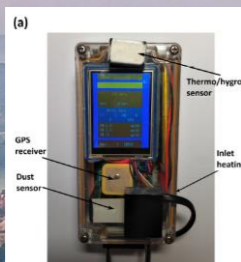
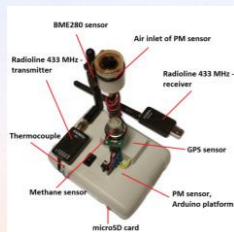
(b) Number of cases: 17



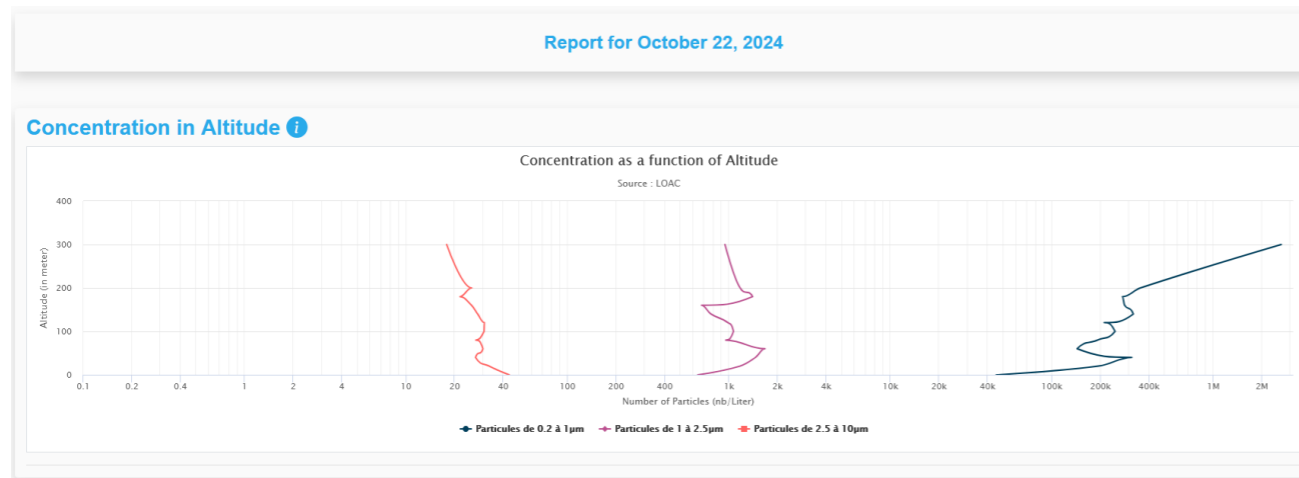
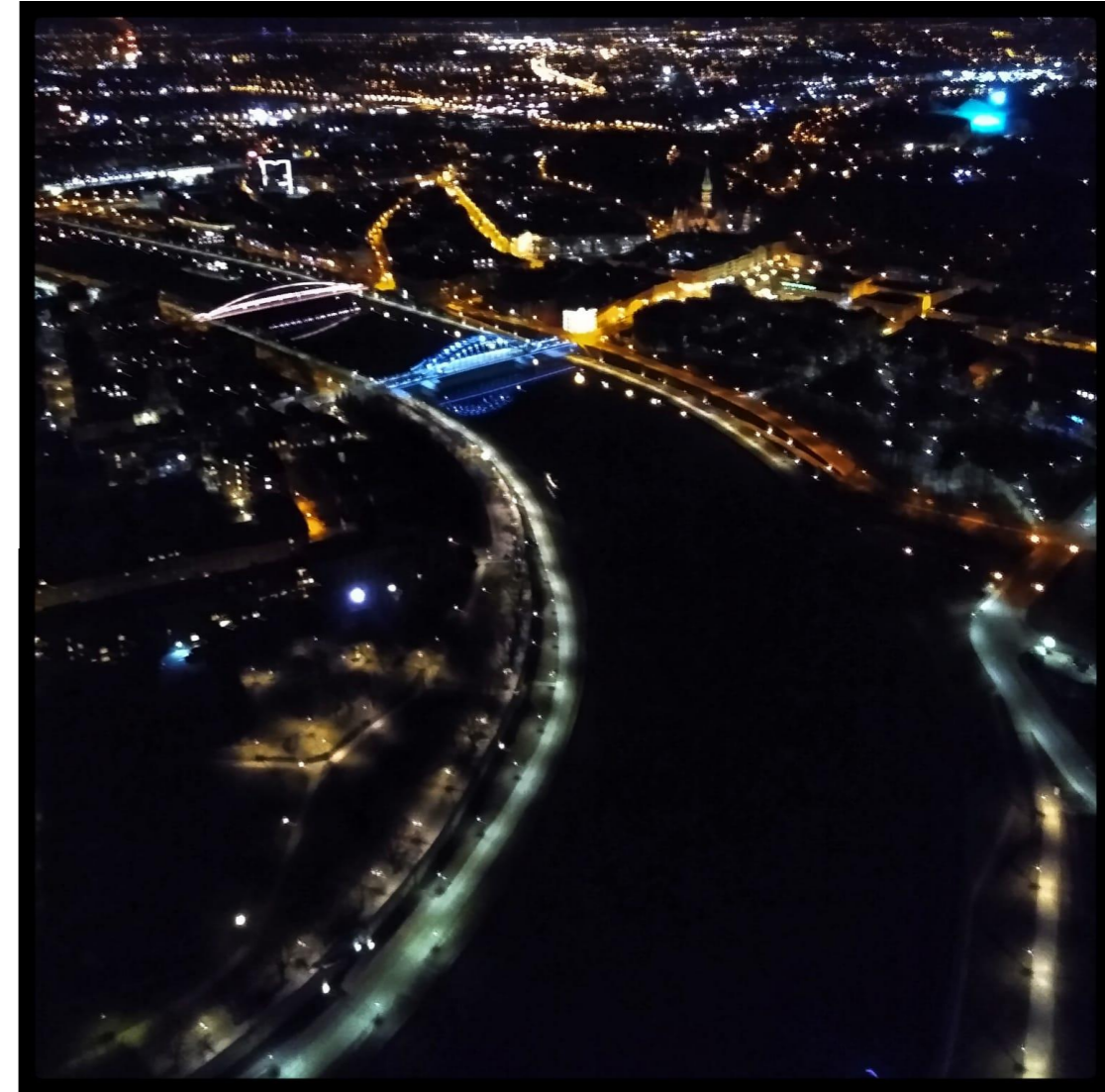
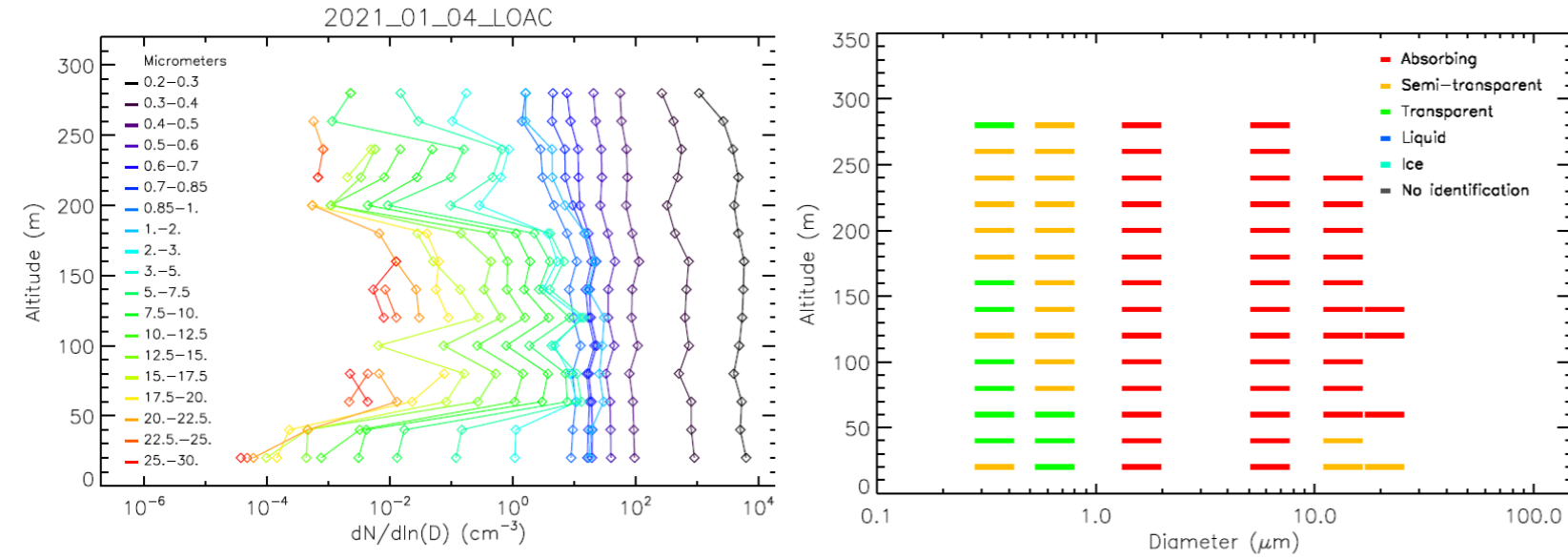
(c) Number of cases: 134



POMIARY



POMIARY



MODELOWANIE

Superkomputery w AGH

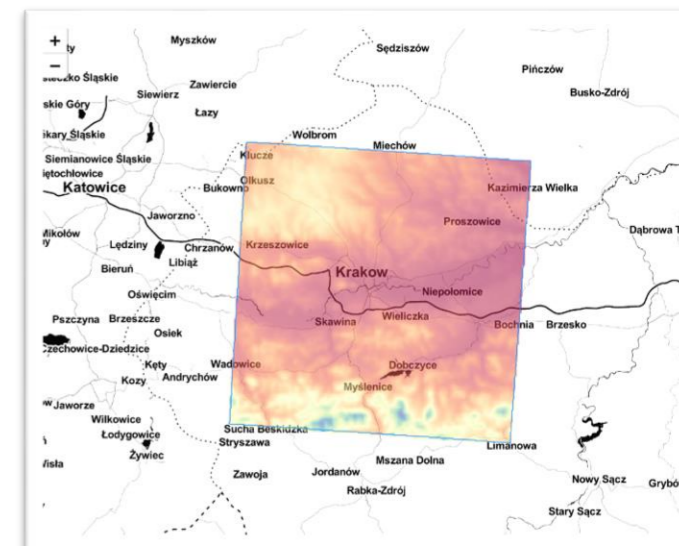
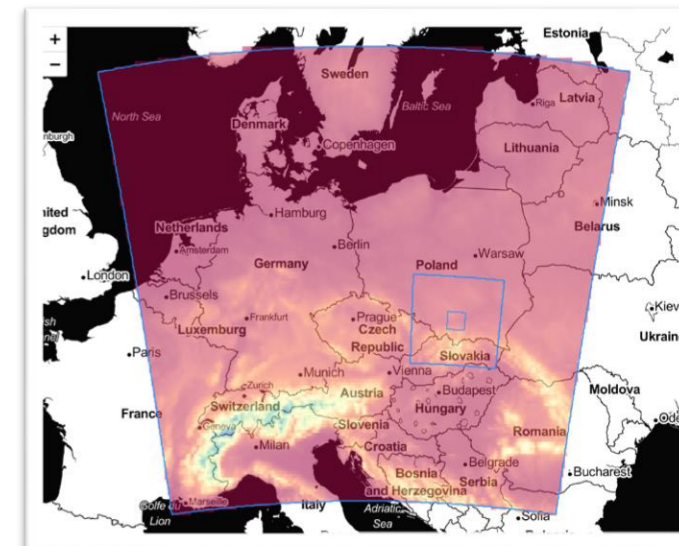
- **Helios** (35 Pflops/75 264 rdzeni/17,5 PB HDD)
- **Athena** (7.7 Pflops/6144 rdzeni/384 karty GPGPU)
- **Ares** (4 Pflops/37 824 rdzeni/11 PB HDD)



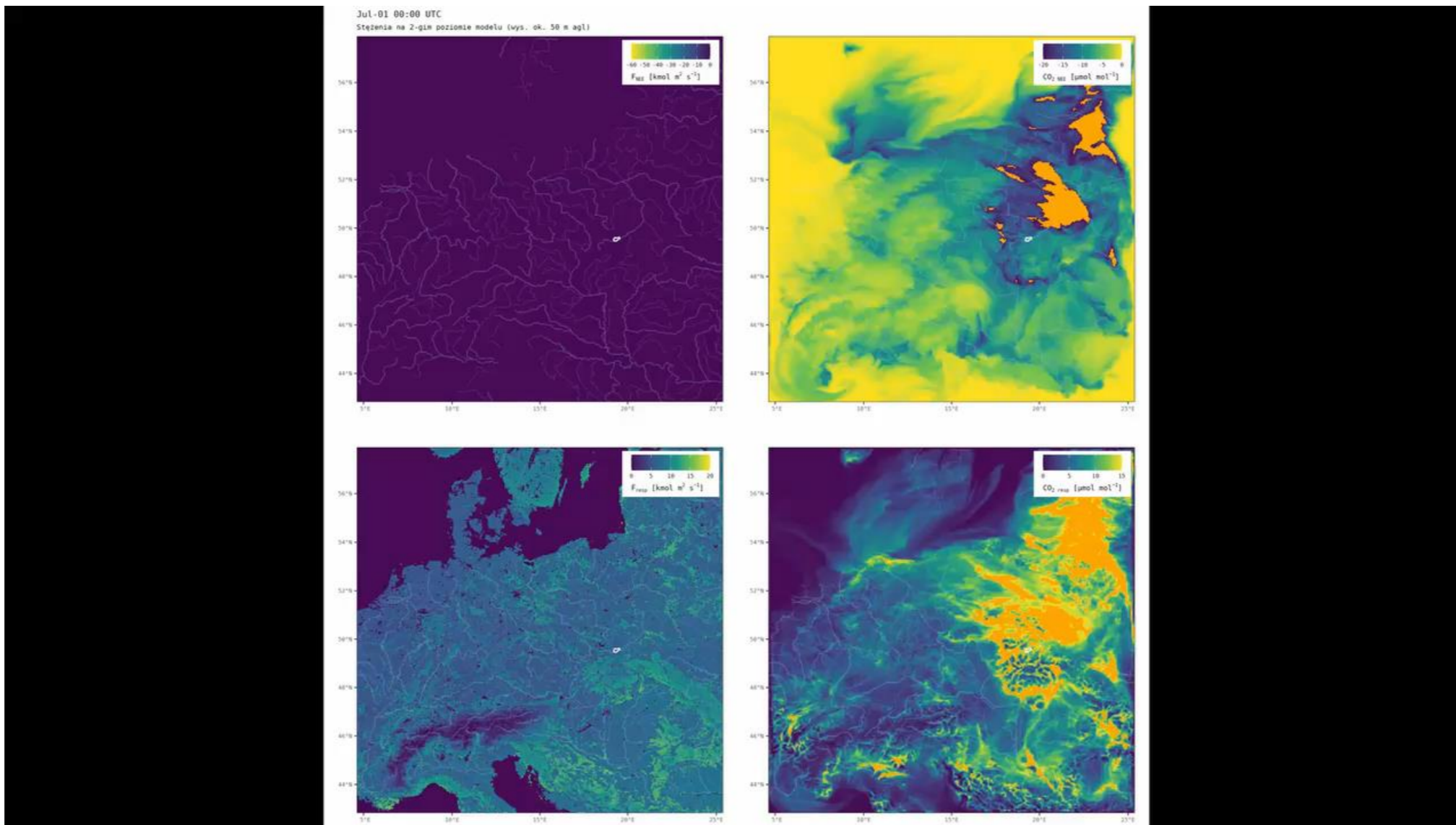
MODELOWANIE

Symulacje miejskie

- **Główny cel:**
- Symulacje strumieni antropogenicznych/biogenicznych w oparciu o pomiary stężenia CO₂ i znacznikó izotopowych (radiowęgiel).
- **Model:**
- WRF-Chem v4.4.1.
- Rozdzielczość pozioma 5 km
- + 1 km (trans) + 200m (local)
- 80 warstw do ~21 km.
- ~30 warstw poniżej 3 km (PBL)
- **Okresy symulacji:**
- Jednodniowe kampanie robione co miesiąc
- 9 kampanii profilowania - balon / UAV
- + ciągły pomiar na kampusie AGH
- **Wartość dodana:**
- Detekcja smugi CO₂ elektrowni w Skawine

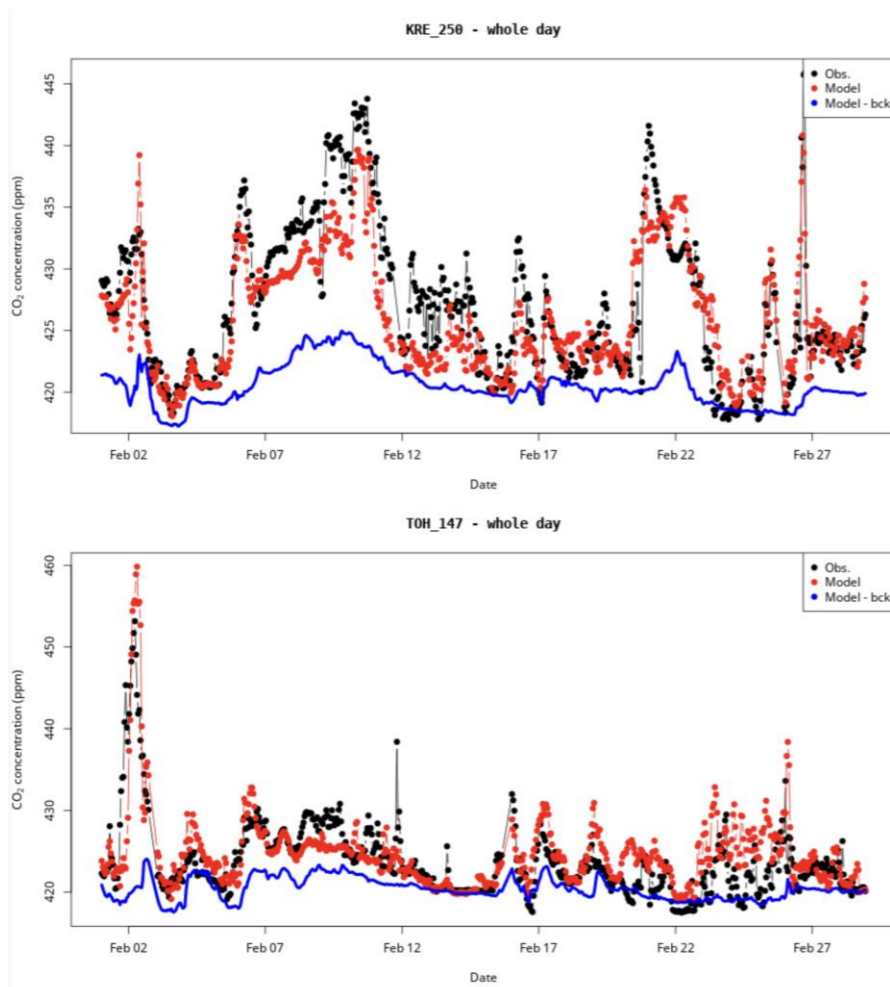


MODELOWANIE

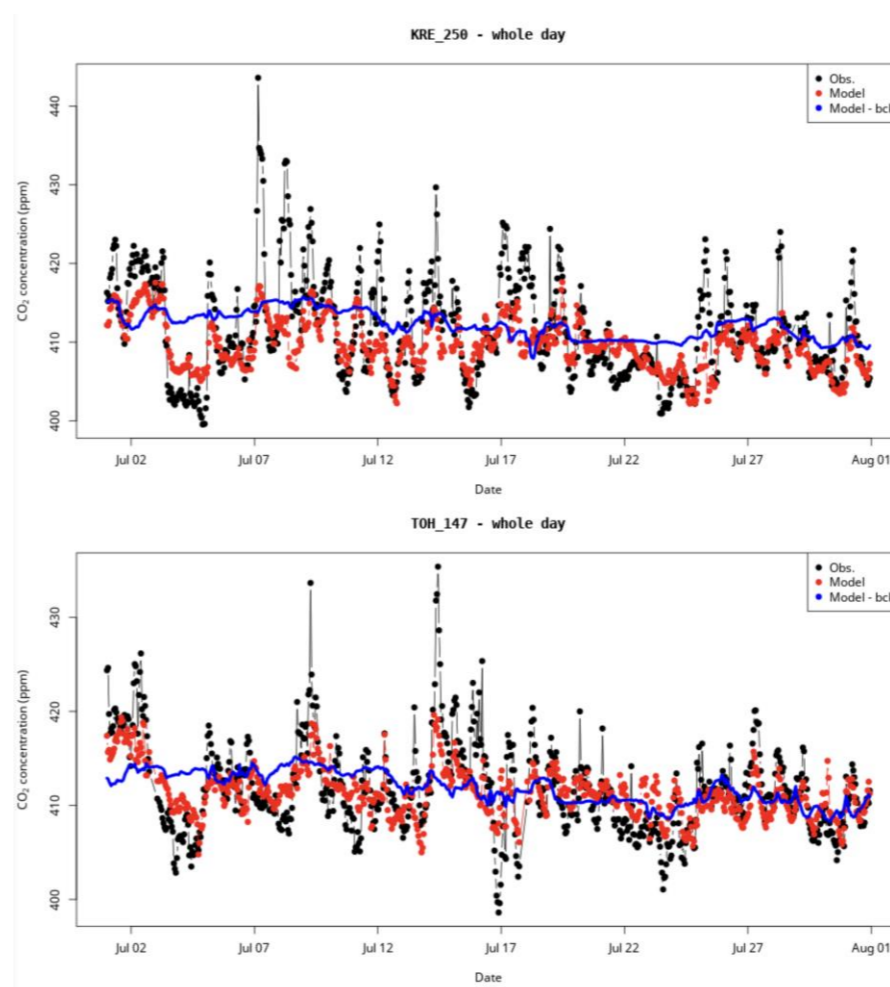


MODELOWANIE

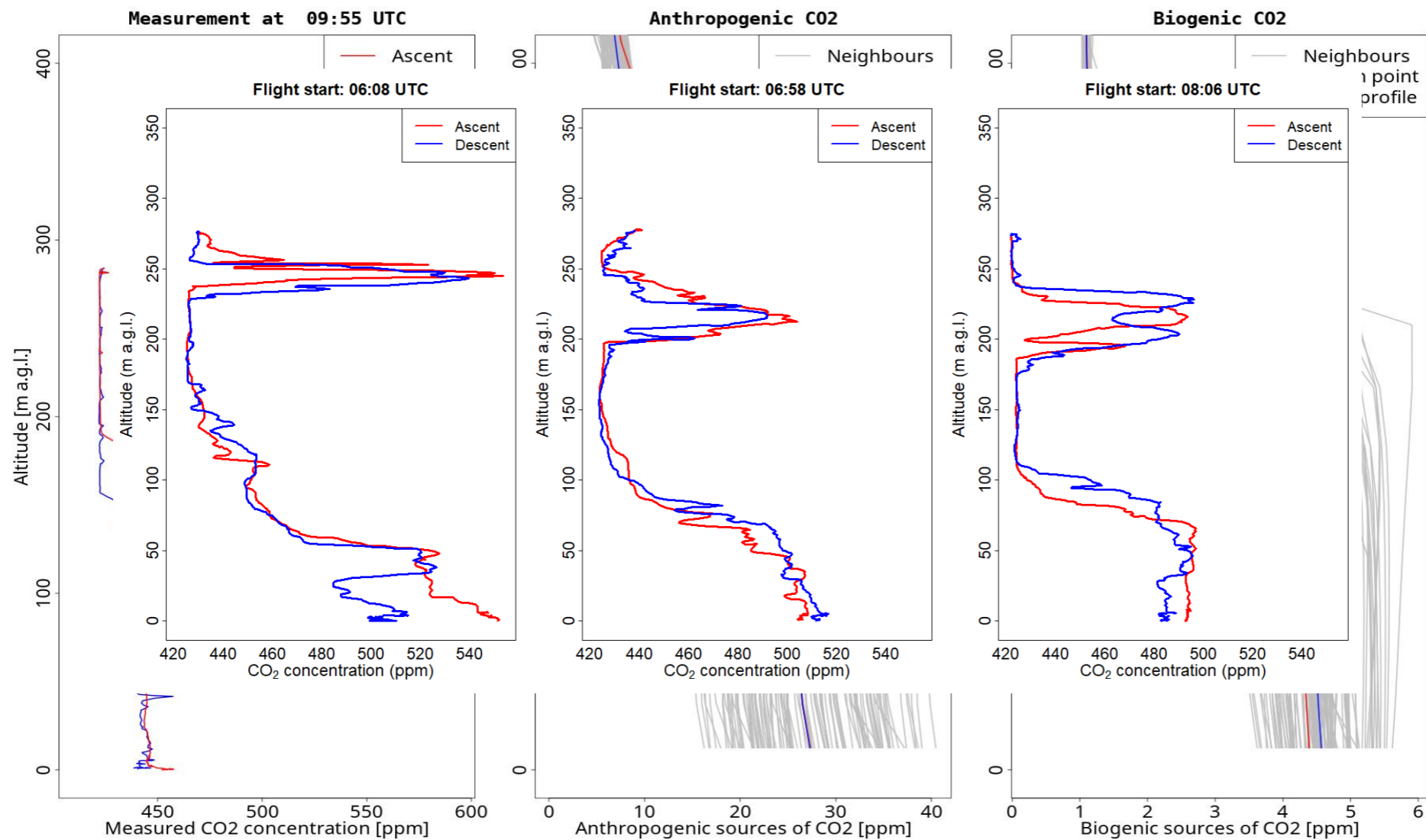
Winter '21



Summer '21



MODELOWANIE



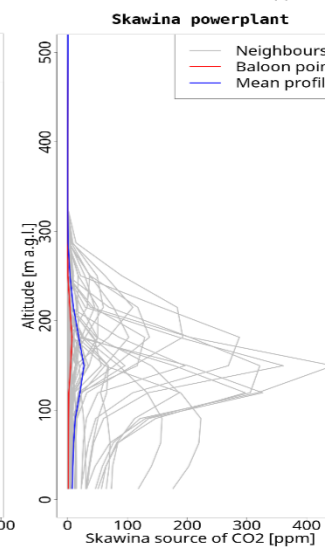
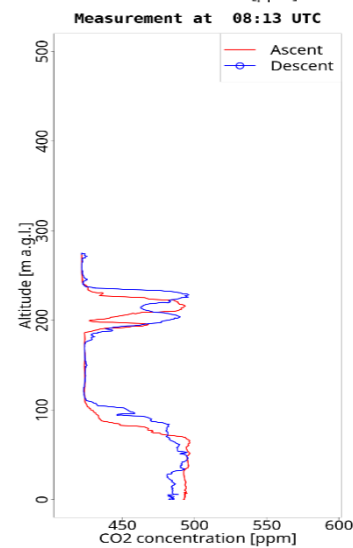
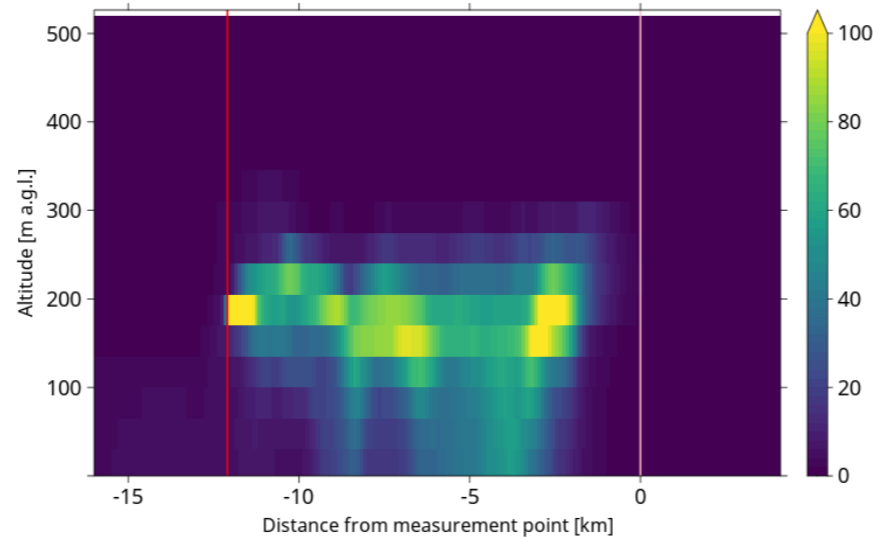
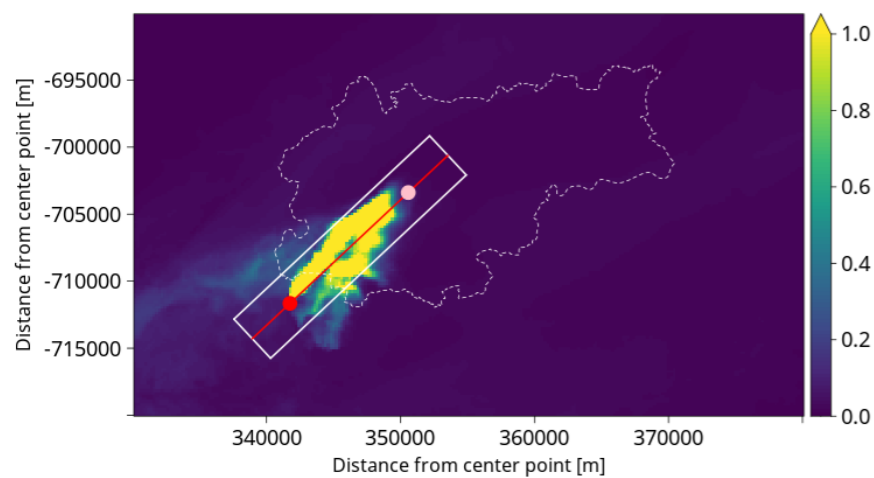
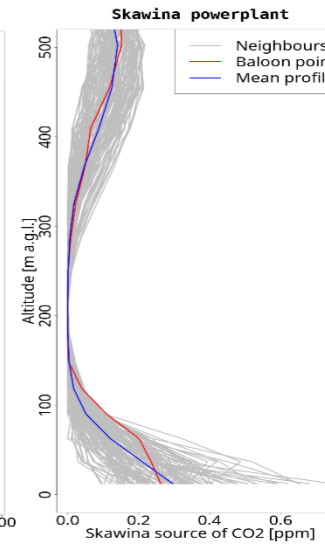
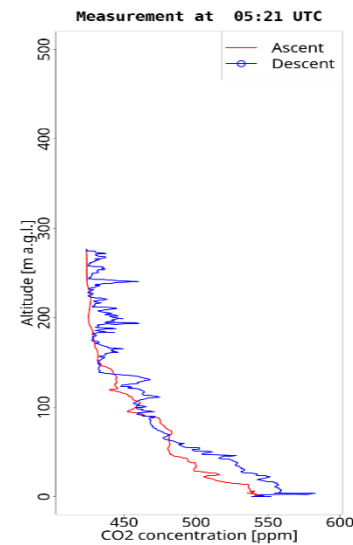
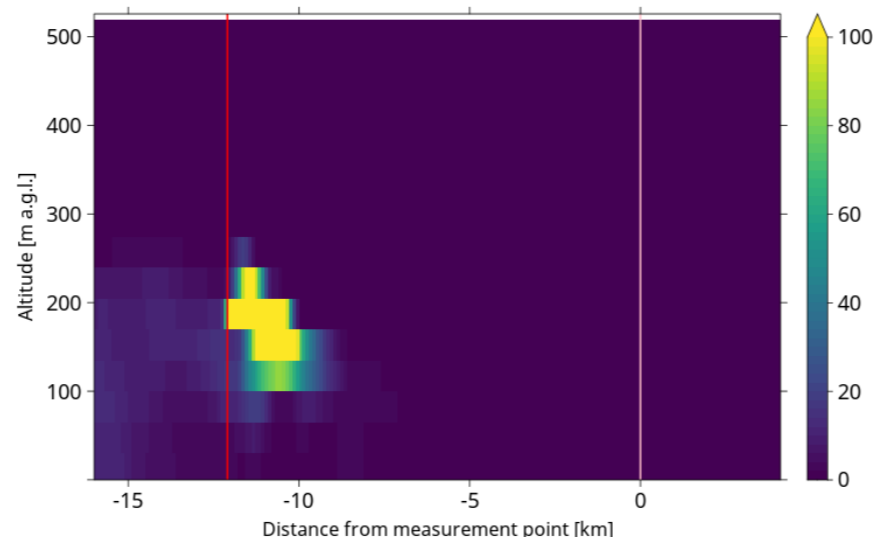
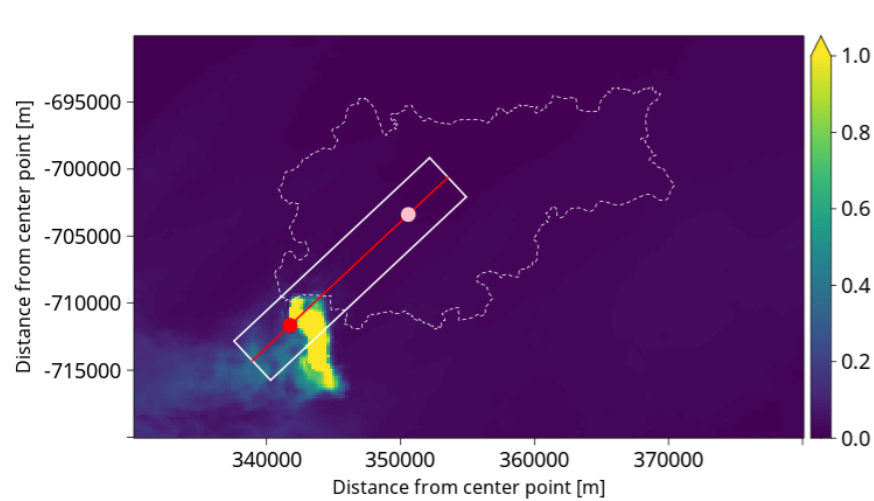
MC



wrfout_d03_2021-10-25_00_00_00.nc



wrfout_d03_2021-10-25_00_00_00.nc



Dziękuję za uwagę 😊

Badanie współfinansowane przez:



Polish high-performance
computing
infrastructure PLGrid