
# What were the most striking features/success of CINDI-2?



- Excellent **logistics** and **local support**
- **Warm and sunny weather** persisting during several days → high VOC production, ideal conditions for MAX-DOAS and DS measurements
- Double-layer **containers infrastructure** → all DOAS systems (1D and 2D) operated side-by-side, with common viewing directions
- **Long-path DOAS** system + remote-sensing aerosol package → sunphotometer, Raman Lidar & ceilometer
- Extensive **calibration of elevation scans** → lamps, white stripe on black target, horizon scans
- Constrained **acquisition protocol** → tight temporal synchronicity of the observations (< 1 minute) allowing for excellent airmass coincidences
- **Common** retrieval settings adopted for **8 dSCD data products**

# Problems identified, possible improvements



- **Warm and sunny weather** during several measurements days → some instruments suffered from **overheating**, air conditioning insufficient
- Acquisition protocol **not well adapted** to vertical profiling algorithms → better compromise to be found between elevation scans and azimuth scans
- Except for elevation angles, **instrumental calibration** not well controlled → need for calibration of key instrumental parameters (ISRF, stray-light, polarisation response, detector linearity, telescope FOV,…). Can some of these tests be performed **on-site**?
- Setup for **ancillary measurements** could be improved, e.g.
  - ✓ Add surface aerosol optical properties (aethalometer, nephelometer)
  - ✓ Scanning aerosol lidar (ceilometer) in main azimuth direction?
  - ✓ More regular launches of $NO_2$ sondes?
  - ✓ Fly airborne imaging DOAS?
  - ✓ … (more)


# Concepts for a follow-up campaign



- Why another **intercalibration** campaign?
  - ✓ Offer opportunity for new groups to get **certified within NDACC/ ACTRIS**
  - ✓ Testing/assessment of **new instruments** or new instrumental concepts (e.g. imaging DOAS)
  - ✓ Continuous **knowledge improvement** on relevant scientific topics through community exchange and joint studies
  - ✓ **Training** for young scientists in the DOAS field
  - ✓ Snap-shot on the **current state-of-the-**art within the DOAS/MAXDOAS community
  - ✓ Feedback on **procedure improvements** for long-term monitoring, satellite validation networks, etc
  - ✓ Optimise measurement systems for **satellite cal/val programmes** (e.g. Sentinel 4, 5, TEMPO, GEMS, etc)

# Concepts for a follow-up campaign



- Possible **concepts/ideas** for a CINDI-3 campaign?
  - ✓ Use similar deployment and organisation as in CINDI-2
  - ✓ Keep CESAR as reference site (ACTRIS infrastructure)
  - ✓ Extend semi-blind exercise to more species (e.g. glyoxal, HONO, $H_2O$)?
  - ✓ Extend semi-blind exercise to profiles and vertical columns?
  - ✓ Use centralised processing system? E.g. as a tool to build 'median reference' data sets
  - ✓ Plan for on-site calibration phase?
  - ✓ Plan for additional ancillary data (possibly including airborne imaging DOAS)?
  - ✓ Extend duration of campaign? (to mitigate risks of bad weather conditions)
  - ✓ Timing in the year? (September?)
  - ✓ When? (e.g. 2022, before and in preparation of S4 & S5 launches)