

CIAO (CNR-IMAA Atmospheric Observatory)

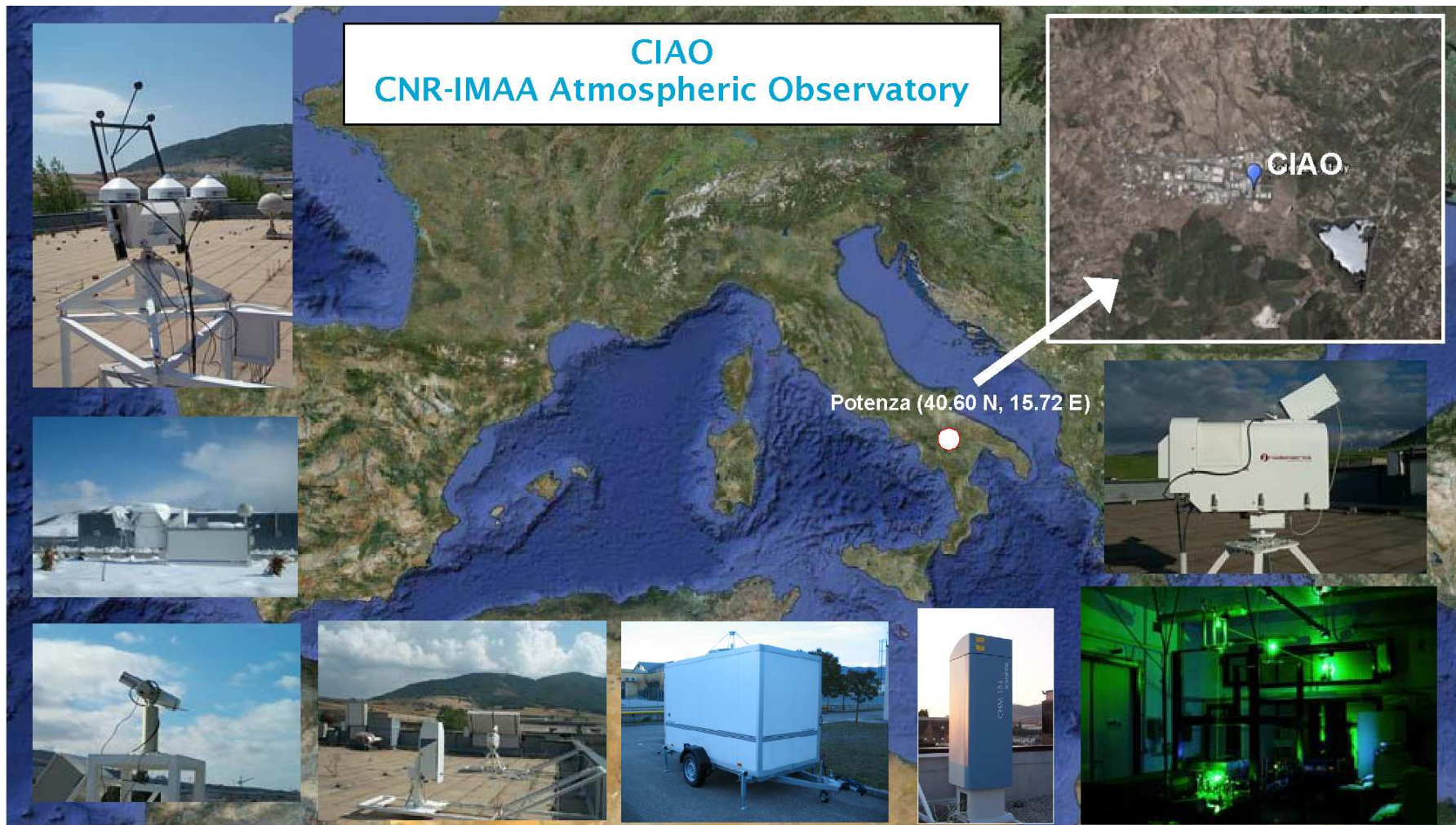
Potenza GRUAN site

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Potenza GRUAN site



CIAO ground based facility for Earth Observation

- PEARL multiwavelength Raman lidar (EARLINET)
- Microwave profiler 12 channels (Radiometrics MP3014) + IR thermometer
- PP15 and MW21 manual radiosounding systems (P, T, RH, O₃ and wind) RS92-Vaisala
- Autosonde AS13 (P, T, RH and wind) RS92-Vaisala
- CIMEL sunphotometer (AERONET)
- Cloud-radar (METEK MIRA-36)
- Ceilometer (Jenoptik CHM15k)
- Ceilometer (VAISALA CT25K)
- Automatic surface radiation station (2Pyranometers, 1pyrgeometer, 1perielometer - Kipp&Zonen)
- GPS receiver (Trimble)
- MUSA (Multiwavelength System for aerosol) lidar - Intercomparison reference system for EARLINET/CEOS/NASA/ESA

Madonna et al. "CIAO: the CNR-IMAA advanced observatory for atmospheric research", *Atmos. Meas. Tech. Discuss.*, 3, 5253-5293, (2010).

www.atmos-meas-tech-discuss.net/3/5253/2010/doi:10.5194/amtd-3-5253-2010

Perspectives from ICM-3

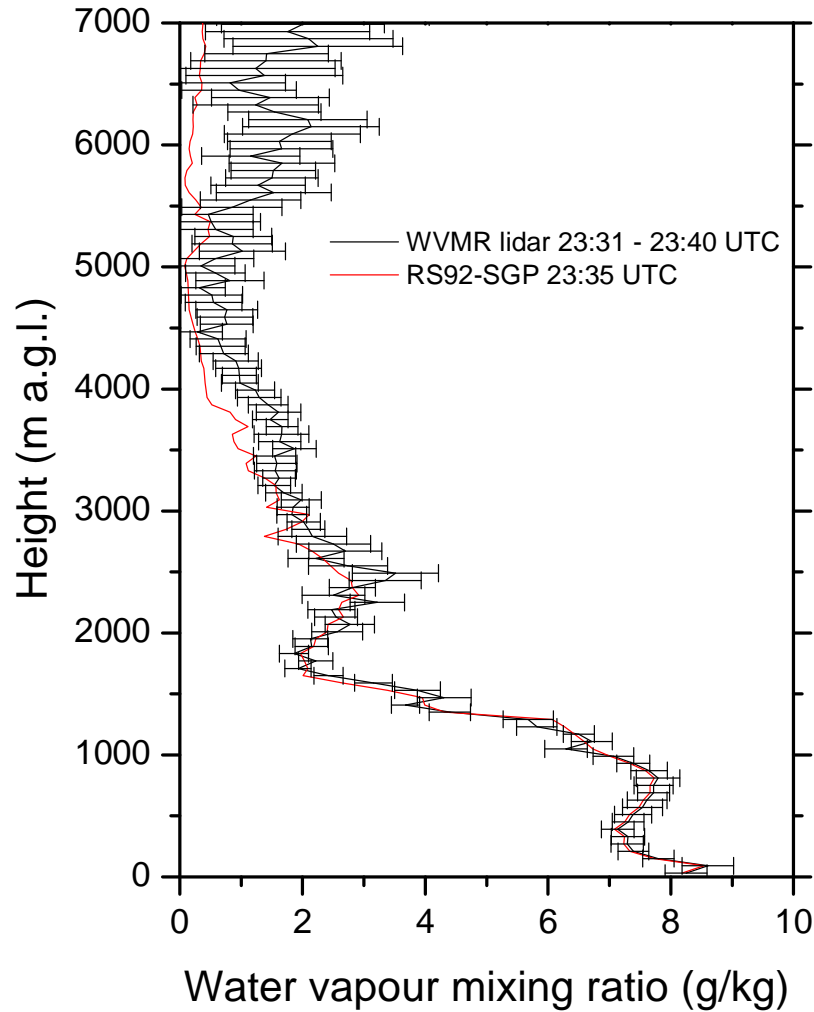
CIAO operation in the frame of GRUAN

- Ready for the phase 1 using both manual and automatic launcher
- Preparation of reference intercomparison experiment (CFH)
- GPS receiver already operational: request for scientific support
- Surface data ok
- Development of integration approaches for the priority phase 2: water vapour and clouds

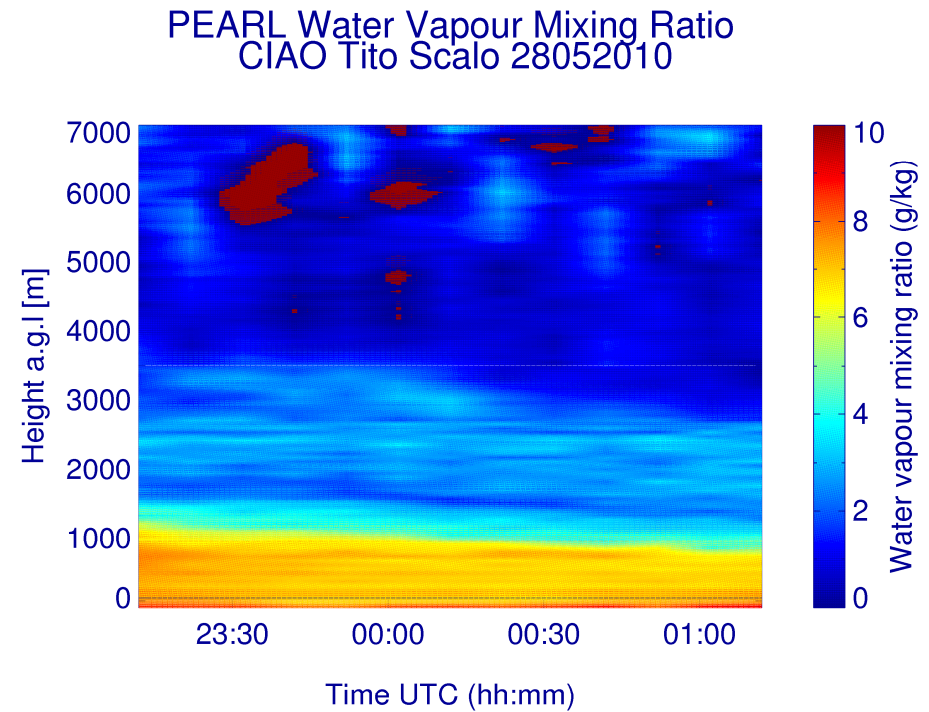
Highlights 2010-2011

- 1 once weekly best production quality radiosonde (RS92-SGP) launch per week has been established in 2010 and routinely performed since the mid of 2010.
- Dual launches using both the automatic and manual system have been performed (routinely since the very beginning of 2011 one time per month)
- Dedicated water vapour lidar measurement during RS launches are performed
- A request has been submitted to VAISALA for the purchase of a set of RR01 prototype sondes for testing and future operational implementation.
- Potenza GPS data (+ PTU station) are waiting for being processed by NOAA Data already routinely uploaded (hourly) in the NOAA ftp processing site (Seth Gutman). Moreover, we are going to buy a new Trimble GPS system (L1, L2, L5).
- Routine operations are continuing
- RS and microwave radiometer measurement protocols are under evaluation and local operation manuals will be soon on line on CIAO website
- Handbook of instruments will be available on line by end of 2011

Water vapour Raman lidar



- Routine water vapour measurements during routine RS92-SGP launches
- Routine calibration/comparisons



GRUAN ICM-3, Queenstown, New Zealand, 2 March 2011

3. Do you have any limitations regarding the development of GRUAN launch protocols for routine and reference sonde launches (e.g. the use of autosonde launchers)?

- No limitation for the development at the site of the GRUAN launch protocols. These three systems allow to perform multiple radiosoundings.
- In the past, several tests with multiple balloon launches using different radiosonde types, like RS-80, RS-90 and RS-92 (SGP, K, KL) have been performed to assess and diagnose instrument failure and characterize instrument biases.
- The autosonde system has been recently upgraded and recalibrated by the manufacturer.
- CIAO proposal for developing the GRUAN protocols is to perform routine launches using the autosonde launcher and to perform stratospheric water vapour or other additional launches using the manual system.

4. *Do you have any limitations regarding the development of uniform GRUAN data processing schemes for remote sensing observations?*

- There are no limitation for the development of GRUAN data processing schemes for remote sensing. Actually we could build on the expertise already gained in other networks (EARLINET, Cloudnet, etc.)

ACTRIS

5. *What local analysis can you provide to assure that measurements uncertainties will be consistent across the network (analysis of redundant observations either dual sonde launches or sonde + remote sensing observations)?*

- CIAO archive contains several example of dual sonde launches (manual-automatic) as well as co-located and contemporaneous radiosoundings and remote sensing measurements
- This redundant dataset allow us redundant analysis for ensuring the consistency of the measurements uncertainties with the rest of the network
- Preliminary radiosounding representativeness study
- Within GRUAN: monthly stratospheric water vapour (manually) performed contemporaneously to the weekly autosonde launch to increase the dataset redundancy and to assess possible limitations in the routine use of the autosonde launchers

COMBINATION OF TWO SYSTEMS

8. What help do you need from the Lead Centre/WGARO/ GCOS Secretariat in moving forwards?

- "Fast response" support in case of questions about the network operation and about news on actions to gain support from the scientific community, sponsors, funding agencies, call for applications.
- Support for the GPS data processing. possible links with GPS experts for starting the data processing and gain the preliminary information for running and critically using the routine for the data processing.
- Lead Centre/working groups support regarding the methodologies to apply for the instrument calibration/intercomparison/validation and for the protocols for data dissemination.

STILL VALID!

Thank you