

Benefits of Low-Cost Air Quality Stations

- New opportunities to conduct monitoring in locations and situations where traditional systems are not feasible solutions.
- Higher spatial resolution of measurements.
- Better understanding of local air quality concerns.
- Enriched engagement for air quality communities and stakeholders.

Place and Measure



Decentlab's air quality station provides ppb detection levels and comes ready to deploy outside at a fraction of the cost of traditional approaches.

Collect high quality, continuous data in real-time.

Customizable, add other sensors in order to measure different pollutants, nanoparticles, or meteorological parameters.

Reliable online data access at any time and from anywhere using a laptop or other mobile device.

Collaborate, share data with multiple users and automatically publish data to websites.

Process data, directly and in real-time using R programming platform.

Who We Are

Our Mission

Decentlab provides wireless monitoring solutions, easy to deploy over multiple locations. We ensure data quality and support scientific collaboration.

About Us

- Swiss based company, spin off from Swiss Federal Laboratories for Materials Science and Technology (Empa) in 2008.
- Our integration of sensor expertise ensures the highest quality data acquisition especially in outdoor environments.
- Customer focused team specialised in reliable remote monitoring solutions based on wireless communication technology.
- World-wide deployments in 12 countries including Australia, Austria, Belgium, Brazil, Italy, Japan, New Zealand, Sweden and Switzerland.

Contact Us

mail@decentlab.com
Or call : +41 44 809 35 90
www.decentlab.com



Überlandstrasse 129
8600 Dübendorf, Switzerland

LOW-COST AIR QUALITY STATION



Tackling Challenges

Drift

One of the common challenges for low-cost sensors is that they drift over time, meaning that they lose accuracy and stray from the correct measurement readings. We identify this by adding multiple redundant sensors to each station and have developed a remote maintenance procedure.

Calibration

In addition to factory calibration, a reference site is used to calibrate the sensors over a period of several weeks. The reference site is selected with similar pollution environment as the ultimate location to maximise the accuracy of the calibration.

Interference

Low-cost air quality sensors are quite sensitive to interference, which can dramatically distort the sensor reading. Over several iterations of prototypes, we have reduced interference occurrences by improving the electrical design and implementing sophisticated post processing.

Reproducibility

Another challenge of low-cost sensors is their reproducibility, each sensor is individual and performs differently. This raises concerns of their dependability and reliability. It is important to test sensors in the real environments and select and use only the best ones.

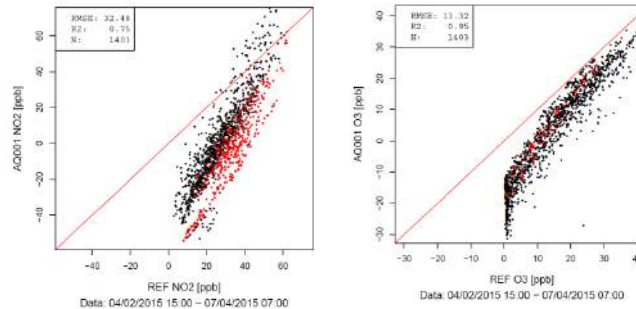


Exchangeable Teflon air flow sensor cartridge enables easy replacement of sensors. The cartridge is designed to minimize dead volume and is ventilated by a fan to provide the best possible measurement environment.

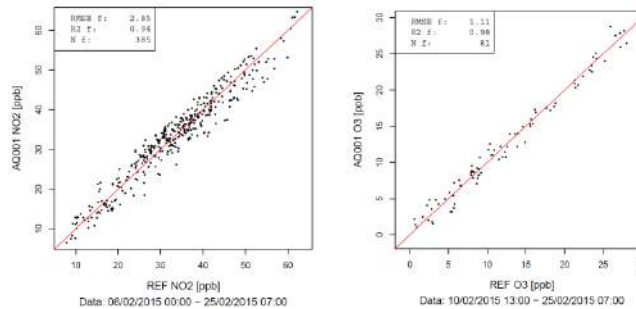
Preliminary Results

Empa's Laboratory for Air Pollution and Environmental Technology have co-located eight low-cost air quality stations (45 sensors) with traditional road-side instruments in Zurich, Switzerland. The initial results look promising. Below are example datasets:

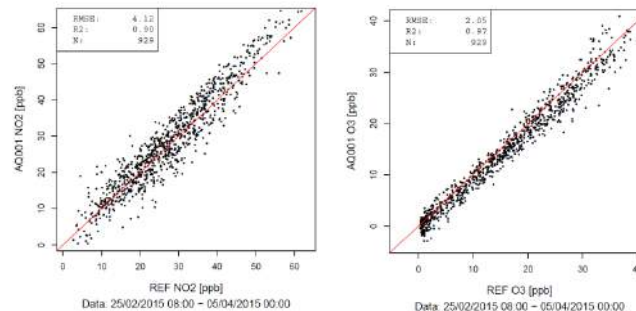
Low-cost raw sensor data compared to reference site



Data adjusted for O3, temperature and humidity

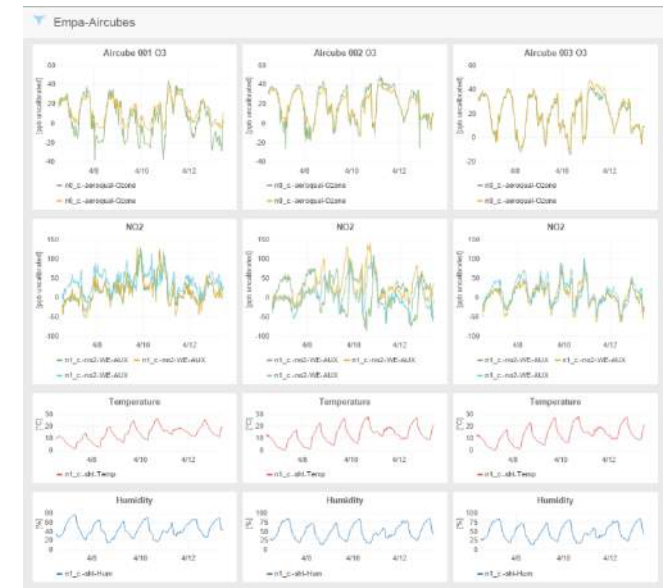


Dataset based on determined correction function



Online Data Access

Anytime from anywhere using any device



Features

- ✓ Direct readings
- ✓ High time resolution
- ✓ Low-cost
- ✓ Minimal maintenance
- ✓ Wireless data transmission
- ✓ Turnkey solution
- ✓ Attach other sensors
- ✓ Customizable for different pollutants
- ✓ Scalable
- ✓ Public or private data display