

MICROSENSOR TECHNOLOGY

Community-based sensors can be used for real-time air quality data at the neighbourhood level

Microsensors are a popular air quality monitoring solution that provide real-time and localized air quality data. They are known for their affordability, ease of use, and crowd-sourced data collection approach. These microsensors are small, portable devices that use laser particle counters to measure the concentration of fine particulate matter (PM_{2.5}) in the air. These particles (less than 2.5 micrometers in diameter – a fraction of the width of a strand of human hair), can be trapped in the airways and lungs and cause adverse health effects. PM_{2.5} is also the primary component of wildfire smoke.

Advantages of Microsensors:

- Provide local air quality information.
- Easily deployed in various locations, including homes, schools, offices, and public spaces due to small size and wireless connectivity.
- Provide some weather data, including barometric pressure, temperature, and relative humidity.
- Real-time data is available on the West Central Airshed Society Live Air Data Map.
- Very affordable compared to traditional air quality monitoring equipment, leading to the widespread adoption of microsensors by individuals, communities, and research institutions.

Limitations of Microsensors:

- Data is not as accurate as data from traditional continuous monitoring networks.
- Readings may not always align perfectly with continuous monitoring data.
- May overestimate or underestimate actual PM_{2.5} concentrations, but follow the general trend of the PM_{2.5} concentrations.
- Need continuous Wi-Fi signal and electricity.



Interested in hosting a microsensor at your home or community building?

A microsensor host needs to:

- Provide a suitable outdoor location for the sensor:
 - maximum airflow
 - away from existing sources of PM_{2.5} (building exhaust, idling vehicles, firepits, etc.)
 - west or north exposure is preferred
- Provide power ideally within 15 feet of the microsensor location.
- Provide Wi-Fi for the microsensor to communicate monitoring data.
- Coordinate with the Airshed staff to arrange for an installation date.
- Perform simple troubleshooting such as power tests if the microsensor is not functioning.
- Acknowledge West Central Airshed Society's role in any media or social media.

How much power does the microsensor use?

- Power usage is low, and costs less than operating an LED lightbulb.
- A standard 120 V outlet is required.

What are the Wi-Fi and data requirements?

- Wi-Fi signal must be a 2.4Ghz signal, with good signal strength at microsensor location.
- Wi-Fi should be password protected (not an open network).

Contact us if you are interested in hosting a microsensor!

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