

# From cloud to ground

The most important atmospheric and ground-based measurements for monitoring air quality

# 1

Importance of atmospheric boundary layer measurement:

- Understanding the atmospheric boundary layer dynamics is crucial for managing urban heat islands and air pollution.
- The interplay between this layer, cloud formation, and city infrastructure impacts harmful weather events.
- Monitoring provides valuable insights into pollutant levels, movement, ventilation and associated health risks.

# 2

Technologies for atmospheric boundary layer monitoring:

- Vaisala Ceilometer CL61 is a cutting edge instrument for monitoring cloud height, mixing layer height, and composition at low altitudes.
- WindCube® Scan *Explore Edition* Doppler lidar is excellent for 3D wind profiling and aerosol mapping across the atmospheric boundary layer.

# 3

Importance and technologies for wind measurement:

- Wind plays a critical role in the transportation and dispersion of pollutants.
- It also influences weather patterns, controlling climate by moving heat and moisture from the sea to land.
- WindCube Scan *Explore Edition* is a key technology for wind measurement.

# 4

Ground-level weather & air quality monitoring:

- In-situ measurements, especially of particulates like  $PM_{2.5}$  and  $PM_{10}$ , are essential for monitoring current ground-level conditions.
- Air pollution has a direct impact on health, making ground-level monitoring crucial.
- Vaisala Beam Weather Station is a powerful, flexible, compact station for air quality and weather monitoring.