

Sensors and air quality: an assessment of what can we expect today from low-cost sensors?

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Keywords: sensor, low-cost, air quality, performance evaluation, ozone, nitrogen dioxide, benzene, gaseous pollutants

1. SUMMARY:

In recent years, low-costs sensors have become one of the most widely reported topics in the field of air quality measurement. In fact, in comparison to other indicative methods such as diffusive samplers, sensors are able to supply near to real time air pollution measurements by electronic means. This would enable an air quality assessment based on a higher spatial resolution monitoring [1] even though using measurement methods with lower data quality (the so-called indicative measurements in the European Air Quality Directive [2]). It would also, for example, make it possible to assess the effect of short term action plans (AQD, art. 24) and simplify reporting of air quality to the Internet (AQD, art. 26 and article 23 of the INSPIRE Directive [3]). Commercial low-cost sensors represent a big opportunity for developing networks of measurements able to monitor large areas with higher spatial resolution at a lower cost than the reference measurements method [4].

However, even if the need for mobile applications and better spatial coverage can only be satisfied by reducing size and costs of monitoring devices, only few performance evaluation studies exist to demonstrate that the DQO of the AQD can be reached. At the European level, the European Committee for Standardization (CEN) TC264 WG42 started the discussion about the "Performance evaluation of air quality sensors".

This talk will give an overview of the existing technology used in air quality monitoring. Bibliographic results will be used to draw a picture of what technologies can be used for which pollutant as well as some of the existing sensor-based project. Finally, a review of the current discussion on performance evaluation at the European level but also at the national scale, with the work carried out within the Laboratoire Central de Surveillance de la Qualité de l'Air (LCSQA).

References:

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