METHOD AND DEVICE FOR MEASURING ATMOSPHERIC PARAMETERS TO ESTIMATE THE QUALITY OF THE AIR AND THE CLIMATE VARIABLES

Technological advantages

Efficient system :

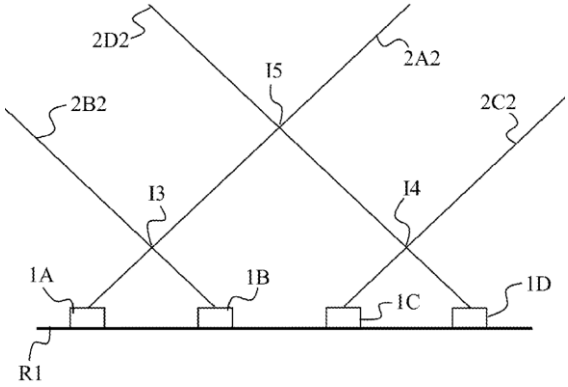
- Reduced infrastructure costs.
- Improvements in the air quality analysis.
- Improvements in the air quality forecasts.
- Covers a wide range of molecules.
- Covers a wide range of particle sizes.
- Suited to many sites (urban areas, fields, forests, industries…).

Invention synthesis

The invention deals with atmospheric measurements to monitor, forecast and manage the air quality.
Regular methods for air quality monitoring rely on a set of measurement stations using digital chemistry transport models. Such stations can be expansive and the stations density may not fully resolve the area under study.
The invention presents a method using a series of atmospheric spectral images simultaneously acquired using optical systems (imagers, radiometers, spectro-imagers, spectro-radiometers) from UV to IR. The systems can be ground based (water towers, pylons, …) or mounted on stationary drones, tethered balloons. The optical systems are mounted such that there is at least one intersection between two lines of sight during a simultaneous measurement. The optical systems orientations are varied to obtain a set of mutual measurement data. The distance between optical systems is between 10m to 20km (preferably 3km).

Potential applications

- Air quality regulations. Health care. Meteorological fields. Global warming. Agricultural pollutants. Detection of forest fires. Industrial site monitoring.



Example of network optical systems :

(I) Intersection points
(1A,B,C,D) Optical systems
(2A,B,C,D) Lines of sight

Commercial benefits

- Air quality analysis and forecast at reduced costs and covering a wide range of molecules and particles : O_3, NO_2, SO_2, CO, CH_4, N_2O, NH_3, CO, H_2O as well as PM1, PM2.5, PM10.
- Applications for this invention are very wide.

Patented invention - under license.

For more information :

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