

Measurements of air pollutants in the troposphere with light aircraft – capabilities and selected examples of application

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Light aircraft offer a large variety of applications for measurements of air pollutants in the troposphere. Meanwhile high-performance light aircraft are available with a high endurance for allowing cost-effective research flights at distances of several hundred and even more than thousand kilometers. They use advanced navigation systems with autopilot and computer assisted tracking systems. On the other hand especially adopted lightweight instruments can be used offering a large variety for measurements of aerosols and different gaseous pollutants. Moreover UMT utilises a method which enables the on-line transmission of the measured data to the ground during the flights by Iridium-broadcasting.

Meanwhile there are light aircraft available, which operate with durable piston engines and are sturdy enough to fly in volcanic and Sahara dust plumes even at elevated concentrations, where it becomes difficult to fly with jet engine driven research aircraft.

In this talk selected examples for research flights are given comprising: Investigation of volcanic plumes, Sahara dust clouds, transboundary flux of air pollution, investigation of the UFP-plume emitted by an airport, measurements of vertical aerosol profiles in comparison to ceilometer remote sensing methods, aerosol measurements at industrial sites and power plants, validation flights for dispersion models.