

## A new development of drop-sondes for the measurement of CO<sub>2</sub>-concentrations at extended volcanic areas

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One of the main compounds emitted by volcanoes or volcanic fields is CO<sub>2</sub>. This is not only emitted from localized craters, but can emerge as distributed and fugitive emissions on extended volcanic areas. In this situation it is of interest to explore the distribution and horizontal concentration profiles of the CO<sub>2</sub>-emissions. For this purpose new drop-sondes for sensor measurements of CO<sub>2</sub> emissions are under development at the Duesseldorf University of Applied Sciences. These drop-sondes are designed to be dropped from aircraft or drones over volcanic areas in order to map the distributed CO<sub>2</sub> concentrations over longer times in an unattended way. They are very lightweight and cheap, so that a large number of drop-sondes might be deployed even over remote areas or regions with difficult access. The data are transmitted with GSM broadcasting and can be visualized on a geographical map.

The drop-sondes use an NDIR CO<sub>2</sub> sensor as a base for the measurement unit. Additionally to CO<sub>2</sub> the atmospheric pressure, temperature and humidity are measured. The sensor unit is mounted in a special shock absorbing housing, which is designed to absorb impacts from the touch down after dropping of the sensor and is able to resist even adverse weather conditions.

First measurement results and more details of the design of the sensor unit will be presented in this contribution.

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