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The use of RPAS in monitoring volume changes, subsidence and gas emissions from a landfill in Veneto Region, North east of Italy.

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Public opinion consider landfills as a problematic waste disposal system. They are perceived as groundwater and air source of pollution, and unfortunately it is true. For this reason, Regional Environmental Agencies (ARPA) need data in order to figure out the potential pollution near landfills.

Remotely Piloted Aircraft Systems (RPAS) with specific sensors, could be a better solution than traditional terrestrial sensors. They provide a better sampling at different altitudes. Therefore, a 3D diffusion gas model could be improved.

This study case is about a solid urban waste landfill, located on the Venetian Po Plain in the south of the Veneto Region. The “electronic nose” on the RPAS, needs to be stand still at least 15 seconds while sampling. For this reason, in this study case a multicopter RPAS was used.

The result was a 3D concentration map of pollutant gases. The map was related with meteorological data from a Regional meteorological station located near the landfill to identify the gas source. In the end, the study about the olfactory impact was made using the OdiGauss model, developed by the Agricultural and Environmental Sciences Department of Udine University. It was also compared with a simulation carried out with CALWin software.