Development of an innovative uav-mounted screening tool for landfill gas emissions

Identification of landfill gas emission hot spots are potentially a very time consuming process, and the use of an Unmanned Aerial Vehicle (UAV) based screening tool could be an effective investigation strategy. In this study, the potential use of a long-wave thermal infrared camera was investigated. The correlation between surface soil temperatures and landfill gas emissions was examined in a field study conducted at Hedeland Landfill near Roskilde, Denmark. The surface temperatures were both measured with a soil thermometer and a long-wave infrared camera and compared to detected methane surface concentrations and fluxes. The results showed no clear tendency of correlation between measured surface temperatures and methane surface concentrations. The differences in the surface temperature ranges were limited, hence making it difficult to detect clear anomaly temperatures. A smaller correlation between the representative emission hot spots and the temperature detected at the thermal images taken with the long-wave infrared camera, seems to be present.