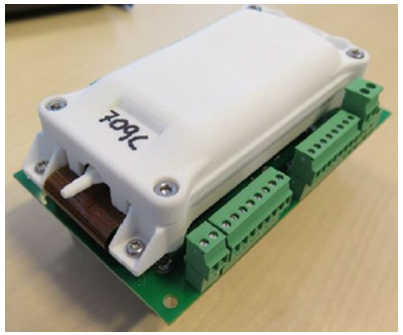
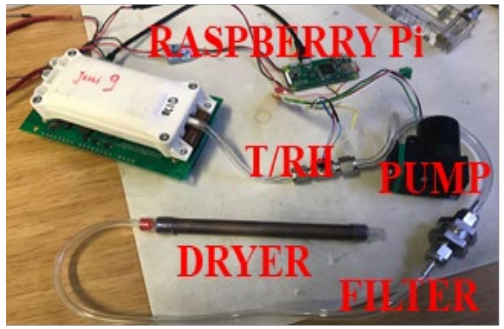
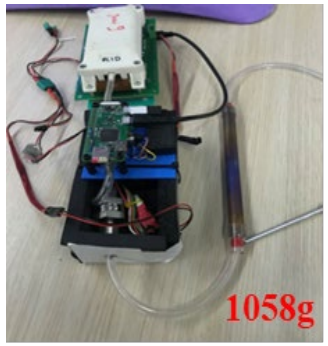
A low-cost CO_2 commercial NDIR sensor for UAV atmospheric applications







CO_2 sensor from SenseAir AB based on their High-Performance Platform (HPP) dispersive infrared (NDIR) sensors

Lab Tests

Calibration
Allan Deviation
T/P sensitivity tests
Simulated Flights

Purpose

Accuracy and linearity
White noise
Impacts of T/P
Assess the impact of T/P changes

Field Development

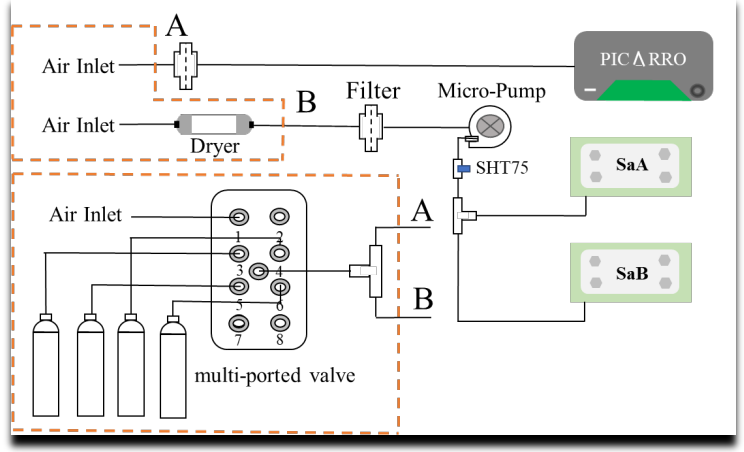
Manned aircraft platform
Unmanned aerial vehicle (UAV) platform

Purpose

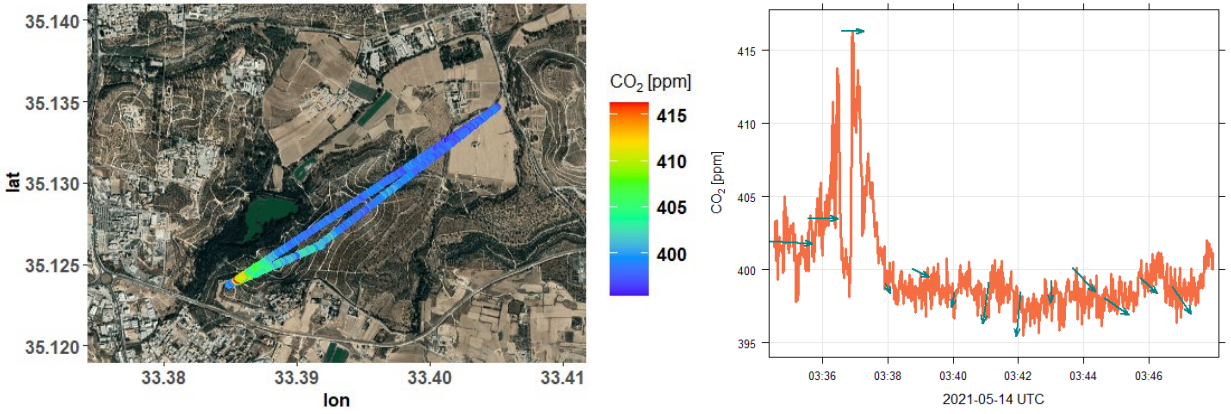
Accuracy onboard
Validate and evaluate the UAV system

Quality Control

The establishment of the data quality control based on lab tests and field developments



The schematic of the system for lab tests



On the left is the combined flight path and CO_2 mapping; on the right is the same CO_2 concentrations as a function of time and wind directions and speeds.

The UAV-CO_2 sensor system provided the potential to catch CO_2 point emissions and map dispersion plume accurately