

# Testing a new low-cost sensor and measuring air quality in Mindelo

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## Introduction

- Mindelo is a developing city in São Vicente, an island in Cabo Verde.
- Little research into the urban air quality of the city.
- The Cape Verde Atmospheric Observatory (CVAO) built in 2006 to observe North Atlantic Ocean region.

## Aims:

- Framework for local students to use sensors.
- Analysis for creating an air quality dataset in the city.

## Project summary:

- The SENSIT low-cost sensor measures different pollutants (CO, CO<sub>2</sub>, NO, SO<sub>2</sub>, O<sub>3</sub>, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>2.5</sub>).
- The methodology: placing the sensor in a backpack and combined it with GPS readings.
- Generating pollution plots and city maps.
- A comparative study: SENSIT sensor and CVAO data (CO, CO<sub>2</sub> and O<sub>3</sub>). SENSIT sensor was mounted next to the main CVAO air inlet.
- A presentation was delivered at Universidade Técnica do Atlântico to raise awareness and involve academics and students in the project.



## Air quality and low-cost sensors

Why do we care?

4.2 million premature deaths due to urban air pollution (WHO, 2016)

Having a network of air quality monitoring stations is essential.

Instruments that measure quality can be costly and hard to maintain.

**SOLUTION: LOW-COST SENSORS**

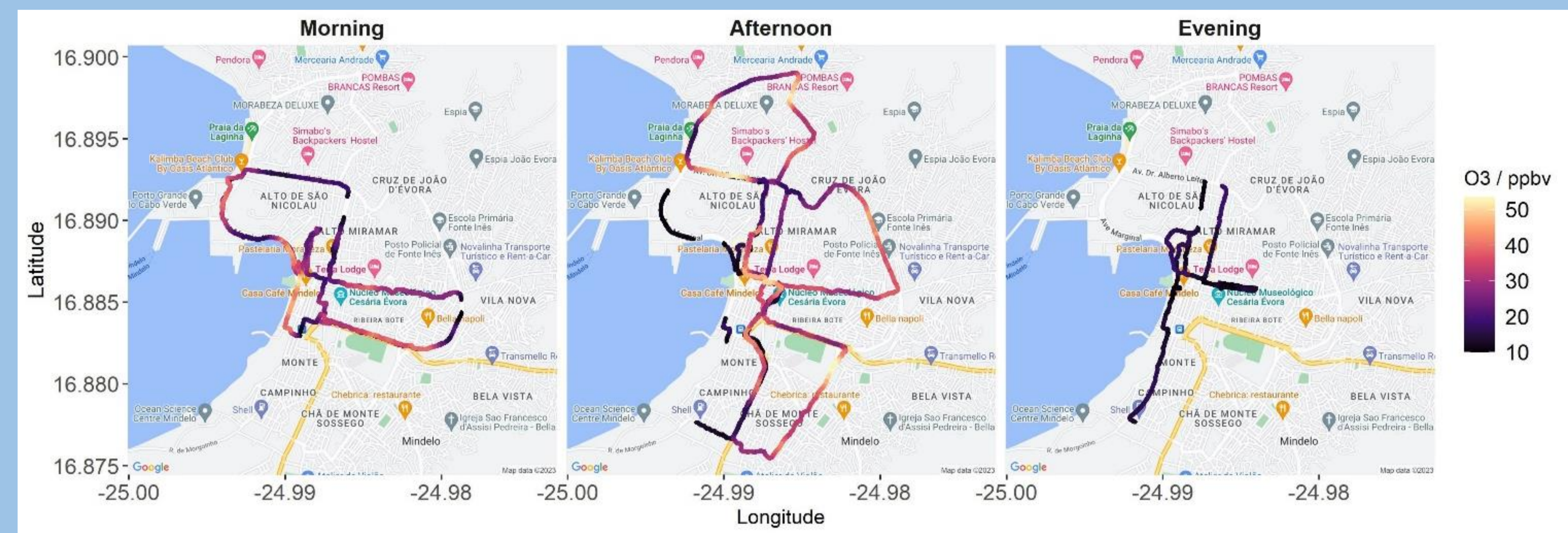


Figure1. Map of Mindelo showing the different ozone concentrations measured around the routes taken divided in morning, afternoon and evening periods.



From left to right:

- Doing backpack measurements in Mindelo.
- A closer look of the sensor inlets in the backpack.
- Mounting the SENSIT sensor at the 7.5m CVAO tower.

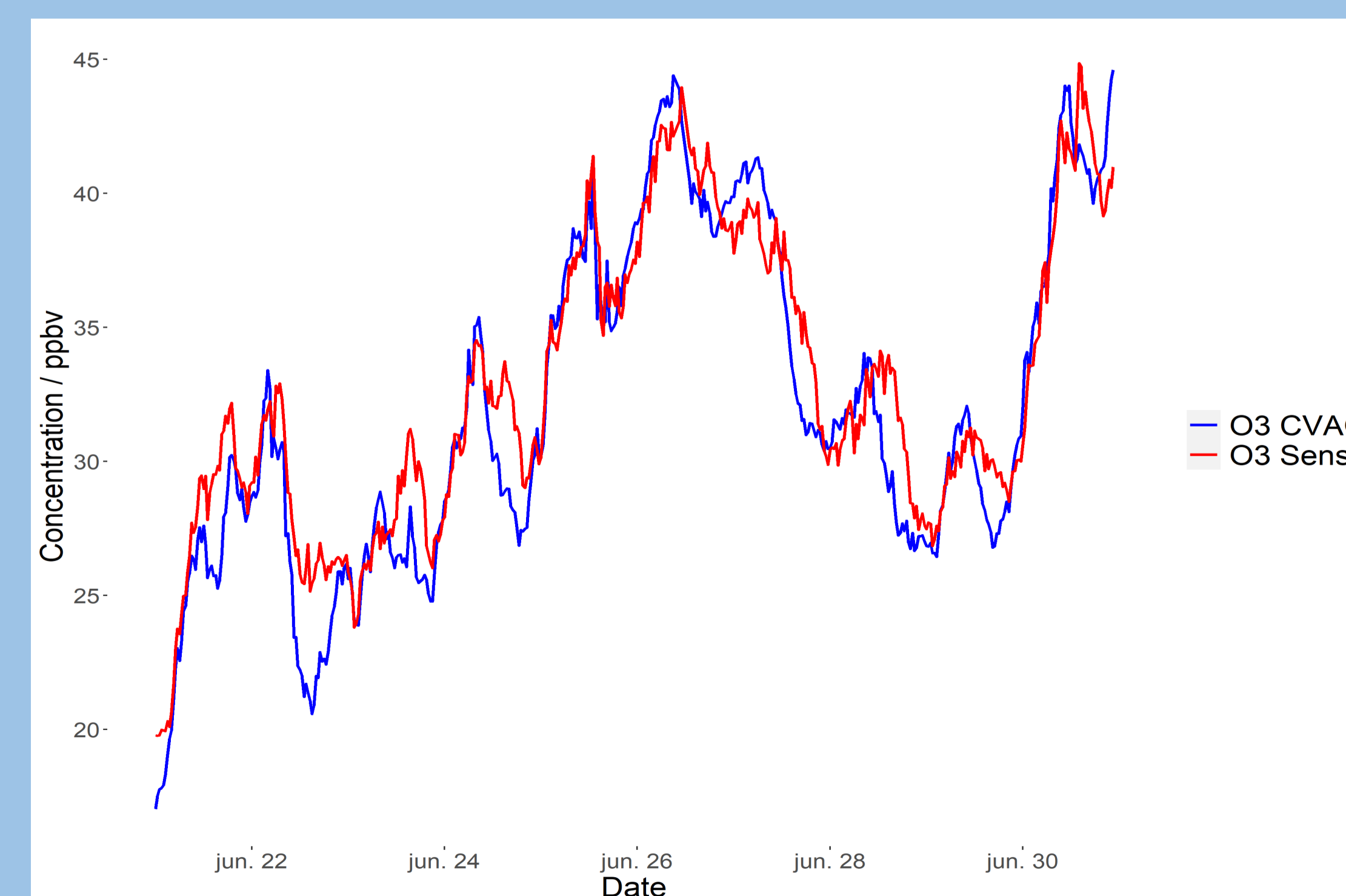


Figure2. Comparison of ozone measurements between the SENSIT sensor and the CVAO data.

## Conclusions:

- After a first campaign of tests and analysis, there has been a qualitative assessment of air quality in Mindelo.
- Further work needs to be done to calibrate the sensors in higher pollution regimes.
- With the collaboration of local students, we aim for this project to build an air quality dataset in Mindelo.