

CLIMATE DETECTIVES 2021 - 2022

MindLab EDU GR Thess Detectives MindLab Education Greece

RESEARCH QUESTION

What are the main environmental and climate problems of Thessaloniki? How can we investigate the urban air pollution and the pollution of Thermaikos gulf? Is there any connection between

SUMMARY OF PROJECT

Thessaloniki is the second biggest city of Greece, which lies in a transitional climatic zone. Initially we researched what are the main environmental problems of our city according to the citizens and official bodies (Municipalities, University, etc.). Both agree that urban air pollution and the pollution problems of Thermaikos Gulf are the most serious.

To study the air pollution of Thessaloniki, we built a CO measuring station with Arduino Uno and recorded its values per hour for a week. We then calculated the daily mean CO concentration.

Then we found the average annual concentration of three main air pollutants for the city of Thessaloniki through official sources.

We want to research and compare the temperature of Thermaikos Gulf's water in the past years, as well as to look for data on significant sea water quantities such as dissolved oxygen, conductivity and salinity. Unfortunately we find this data only for the past year.



Figure 1: Thessaloniki Photo

MAIN RESULTS

To study the air pollution of Thessaloniki, we built a CO measuring station with Arduino Uno and recorded its values per hour for a week. We then calculated the daily mean CO concentration. Our measurements had differences greater than + -3% from the corresponding official measurements. We believe that for corresponding measurements we should have a sensor of higher accuracy and increase the frequency of measurements.

Then we found the average annual concentration of three main air pollutants (CO, SO2, NO2) for the city of Thessaloniki through official sources.

The first negative element was that there is no easily accessible data for processing, there is no data for every year and for those that exist the data have shortcomings even for long periods of time. Comparing the average annual concentration of the three gaseous pollutants from 2001 to 2021 we notice that we have a significant reduction which is a very pleasant event.

We want to research and compare the temperature of Thermaikos Gulf's water in the past years, as well as to look for data on significant sea water quantities such as dissolved oxygen, conductivity and salinity. Unfortunately we find this data only for the past year. The only result we could found was that water temperature and conductivity are inverse proportional to salinity.

ACTIONS TO HELP LESSEN TO THE PROBLEM



Figure 3: Arduino Circuit for measuring CO concentration







Figure 2: A. average annual concentration of three main air pollutants CO, SO2, NO2 (2001-2021) B. Thermaikos Gulf last year data

Urban Pollution problems is a very complex issue that we all need to take into account. The first and most important thing is to raise awareness and gain knowledge about pollution problems of our city. As we did for this project we could all be able to try to take measurements in

our home town and see the impact of this phenomenon. We also believe that pollution data must be available to all citizens. We also aim to continue our project next year to deepen our knowledge.