



# CLIMATE DETECTIVES 2021 – 2022



Phoenix Team  
Istituto Comprensivo "Leone Caetani"

## RESEARCH QUESTION

**What are climate changes and their consequences on the environment and quality of life in Cisterna di Latina (LT)?**

## SUMMARY OF PROJECT

We live in Cisterna di Latina, a little city in the Agro Pontino, a largely flat area in the center of Italy bordered the Lepini Mountains and the Alban Hills; its climate is warm and temperate.

We started this project to find out climate changes consequences in the territory of Cisterna di Latina and in its immediate vicinity: climate change can impact on agriculture, natural vegetation and on quality of life.

We decided:

- to analyze the data about temperature and rainfall from Cisterna di Latina weather station integrated by those of the near weather stations in Cori, Velletri and Latina, overmore than 100 years. Weather data has been accessible thanks to the “Hydrological Yearbooks” (Latium) and PLUTER Project published by Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA).

- to analyze satellite data about changes in the vegetation, soil moisture and temperature.

We logged in EO Browser: it allows us to visualize data from numerous satellites and data collections instantly.

- to realize two Arduino based mini-weather station with Wi-Fi connection. The weather stations collect temperature, humidity and atmospheric pressure data while the rainfall data were collected using a rain gauge. The weather stations have been positioned in “Aleramo” and “Don Caselli” complexes of the IC “Leone Caetani”.

Learning objectives: identify the weather elements), learn how to take weather measurements; observe and record weather conditions, identify local weather processes, learn that satellites, computers and scientific instruments are used to make weather

Figure 1:

## MAIN RESULTS

Hydrological Yearbooks and PLUTER data evidence that:

- the mean temperature in Cisterna di Latina has risen about 1° C in the 1916-2000 period, about 0,5 ° C in the 2000 – 2022 period;
- total annual precipitation did not change much but drought conditions have have become more frequent and so extreme weather events.

The weather data recorded by our team are consistent with those of nearby meteorological stations: there are no small-scale climatic variations.

Satellite data (Sentinel-2, Sentinel-3) show:

- an increase in average ground temperatures;
- an increase in dry periods;
- an increase in the frequency of fires.

Figure 2:

## ACTIONS TO HELP LESSEN TO THE PROBLEM

The analysis shows that average temperatures have risen since in the last decades; total annual precipitation did not vary much but drought conditions have have become more frequent and so extreme weather events.

What can be done locally to fight climate change?

Actions can be performed at school:

- develop environmental education to all areas of the curriculum (geography, science, english, mathematics, art, music, history);

- students should be encouraged walking and cycling to school;

- students should be encouraged to explore local landscapes and get involved in social or environmental projects. Local farmers can get help from local environmental groups, local authorities and agricol advice centre; we propose the following activities:

- we can buy local food;

- we can change the way children value their food and how they look at the farming industry: they can plant their own fruit in the school garden, so they can develop their understanding in farming and where their food comes from.

- we can propose an information campaign that leads farmers to vary the type of crops, favoring those that are more suitable for the new climatic conditions

Can be created fire-fighting stations in wooded areas

Quality of life, damaged by climate change, can be improved: we can increase the number and surface of green areas and we can plant more trees

Figure 3: