CARBON AROUND US

THE GLOBE PROGRAM

ABSTRACT

The present study concerns carbon in our lives, in particular one of its most discussed compounds: carbon dioxide. Highlights: rising temperatures in our city; solutions to mitigate and combat global warming; study of the indoor effects of CO2.

DESCRIPTION

The Earth's temperature increases by 0.2°C every decade. The analysis of the average T from 1980 to 2023 in Pomigliano d'Arco indicates an increase of 0.4 °C per decade. With the Tree protocol, we estimated the C stored by birch trees by studying its chemical aspects. Data analysis points to tree planting to reduce the carbon footprint to both absorb CO2 and produce zero-carbon fuel. CO2 monitoring in school classrooms identifies a useful protocol for controlling indoor levels.

METODS

Barycenter method to determine the regression line representing the average temperature trend 1980-2023

DATA AND RESULTS

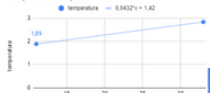Analysis of the average temperature trend 1980 - 2023 in Pomigliano d'Arco

Mathematical model:

$$y = 0.0432*x + 1.42$$

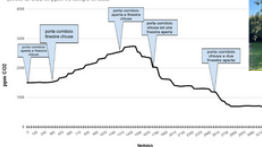where x represents the years and y the increase in the average local temperature in Pomigliano D'Arco.

temperatura rispetto a anno

Carbon dioxide monitoring in classrooms

Livelli di CO2 in aula vs tempo in aula

Calculation of the quantity of CO_2 in the trees in the park school

Specie	Tipo di legno	Densità kg/m^3	Forma	Raggio m	Volume m^3	Massa kg	Circonferenza m	Altezza m
Albero 1	Betulla	640	Cilindro	0,23	3,770 = Q0	2,412 = Q0	1,4444	22,67
Albero 2	Pioppo	445	Cono	0,14	2,02E-01	8,99E+01	0,8792	9,89

Calculation of moles of C and CO_2

Specie	biomassa fresca kg	biomassa secca kg	Carbonio kg	Carbonio g	n°C mol	albero nCO2 assorbito	nCO
1	Betulla	2410	1590,5 763,25	783200		65271	65271
2	Pioppo	899	594,30 282,175	282175		24349	24349

CONCLUSIN

The mathematical models created revealed that:
global temperature has increased by 0.2°C every decade;
+1.5 °C will be reached (point of no return) in mid-2048;
in the city of Pomigliano, it will even reach +4 °C, according to our study.
Using biomass as fuel is a carbon-neutral process. It involves using the energy that trees have taken from the sun through photosynthesis to:
home heating; Transport; and power plants. It would therefore reduce our carbon footprint by 60%. Planting trees, using vertical green walls, and using agricultural processing residues to produce biofuels are all solutions to combat global warming.

We also think that:
it is possible to create a protocol, to be applied in our school, to keep carbon dioxide levels under control, when we do not have a measuring instrument available that signals when the limit has been exceeded; even at home or at school, plants, especially broad-leaved ones, are very useful for reducing CO2; he outdoor level of carbon dioxide of 700 ppm that we measured, very different from those between 300 and 400 ppm reported in the literature, is an alarming figure as it signals the pollution of traffic and industries present in our territory. Based on the analysis of the data collected in each part of this work, we can only launch an invitation: LET'S PLANT MORE TREES AND LESS DRUGS!

References
www.ilmeteo.it
 Temperatura a Pomigliano dal 1980 al 2023
calcolo delle Moli.
 monitoraggio CO2 nell'aula
PM 10 Pomigliano d'Arco
https://www.globe.gov/web/trees-around-the-globe/overview/getting-started-student-research/visualize-tree-campaign-protocol-data

Coordinate geografiche	
Latitudine	40°54'40" N
Longitudine	14°23'00" E