

Data Literacy – How to work with GLOBE (and others) open data

Secondary School level

19th october 2022

GLOBE Europe and Eurasia Regional Meeting and Training, Omiš, Croatia

Maria Pia Coceano and Lorella Rigonat GLOBE ITALY
GLOBE ITALY



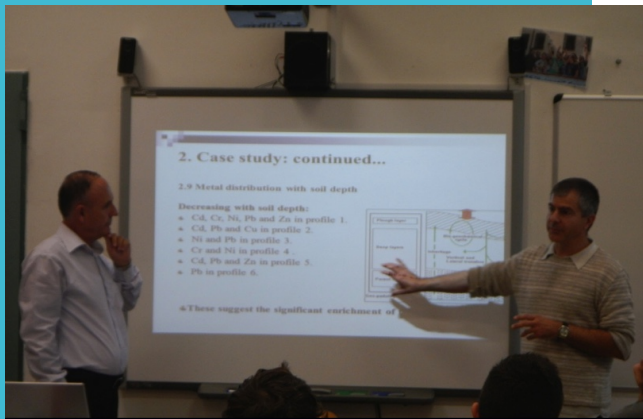
GLOBE data and interaction between students and Scientists

- Students, by sharing the data they have gathered, can cooperate with scientists and public agencies. Data will be integrated in their databases and used to improve their models



GLOBE ITALY





- Often Globe Scientist or experts of public agencies are invited in schools to examine the data gathered by students and to help in processing them
- Sometimes scientists can also help to validate students' data by means of interlaboratory comparison

GLOBE data and Territory Monitoring



- Students can use data stored over time by their own school (or found in GLOBE database) to analyze parameters variations, identify possible trends and recognize climatic change. They can also become active part of their community.



Aussa river water monitoring

Ausa

- lowland spring river flowing near the school
- crosses the urban center
- Flows into Marano lagoon (SIC=Site of Community Importance) after a few kilometers
- **Criticality due to the presence of urban sewage discharges**



SCHOOL MONITORING



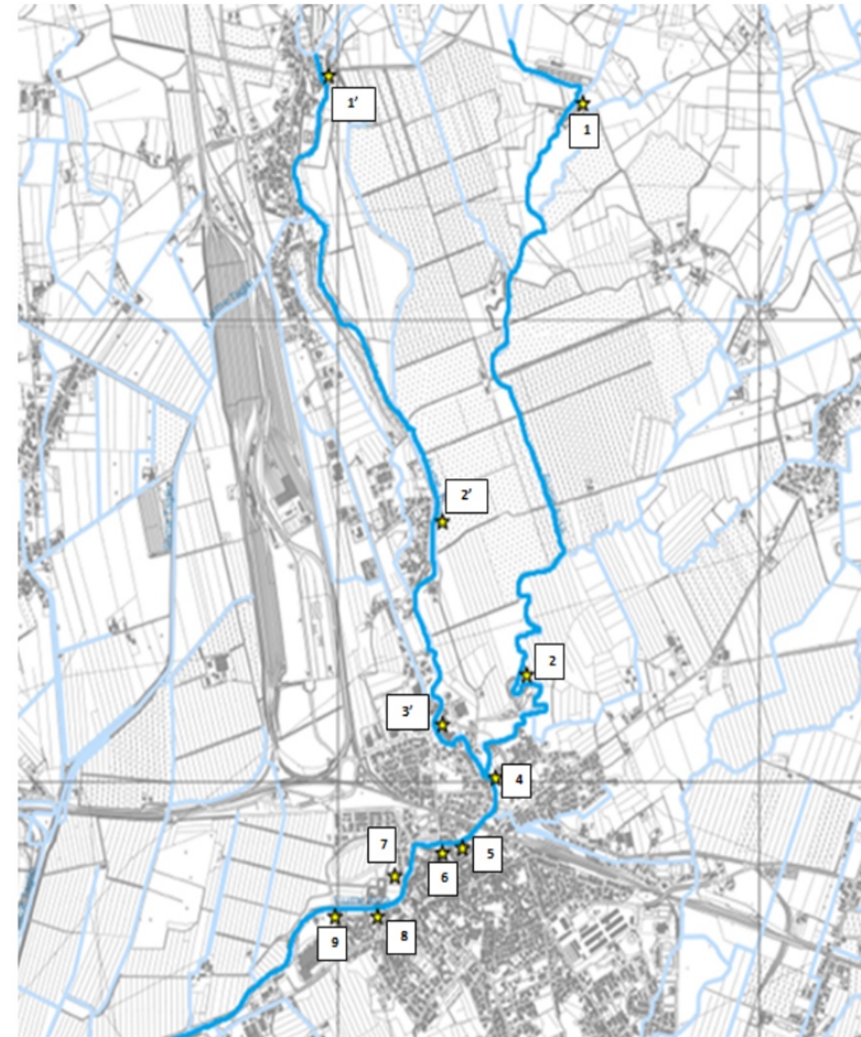
Choice of some georeferenced **sampling stations, before and after the town**

Stations monitored with **monthly sampling for 1 school year**

Inter-lab with accredited laboratory for data validation (**PCTO = paths for transversal skills and orientation**)

Summer school with the local University and experts

GLOBE ITALY



Temperature,
pH, Electrical
conductivity,
Nitrates,
Fecal coliforms
(*E. coli*)

(EU directive 2006/7/CE,
D.Lgs. Italy n. 116/2008)

(Class III for water for irrigation,
D.Lgs. 152/2006)

High presence of nitrates in every station and season
(Directive 2000/60/CE, D.Lgs 152/2006 e DM 260/2010)
pollution from groundwater, not due to subsequent input



It was discovered that municipality underwent infringement decision by EU for failure to adapt the sewer system

Ambiente, monitoraggio affidato agli studenti di tre istituti superiori

Cervignano: coinvolti Malignani, liceo e Brignoli di Gradisa
L'idea è quella di creare una struttura permanente

di **Erika Micheli**
e **Lorenzo**

Una struttura permanente e indipendente per il monitoraggio dell'ambiente, in particolare la qualità delle acque, pensata dai ragazzi degli Istituti superiori Malignani, Brignoli e Cervignano Sposito, ed aveva dato in mente alle condizioni ambientali della cittadina friulana. Il Comune di Cervignano, che ha lanciato la proposta, sta pensando anche a una convenzione con le scuole. L'assessore comunale all'ambiente, Ivan Snodero, è intenzionato a procedere in questa direzione. «Qualche giorno fa», ha spiegato, «è stata organizzata, proprio a Cervignano, una giornata di approfondimento sulle tecniche di monitoraggio ambientale e l'iniziativa, che ha interessato 23 studenti, era rivolta ai ragazzi più meritevoli del triennio delle scuole superiori. Sono stati coinvolti gli alunni dei tre Istituti di Gradisa, Cervignano e dei Brignoli di Gradienza». I docenti hanno spiegato le modalità di rilevamento dei dati sul campo. I professori si sono soffermati soprattutto sull'aspetto tecnologico dei vari habitat che caratterizzano il nostro territorio e sui corsi d'acqua superficiali.

E' stata un'iniziativa veramente interessante».
Da qui l'idea di creare una struttura permanente per il monitoraggio della qualità delle acque, «vedere dal punto di vista il particolarmente diligenti a disposizione: chiaramente l'assessore Snodero - sa per il nostro territorio e per il nostro ambiente. Il Comune, l'Inps, i gestori delle acque, possono verificare, attraverso una commissione, la salute dell'ambiente. Il Comune potrebbe mettere nelle condizioni di intervenire in modo ancora più puntuale. Varrebbe la pena di organizzare un incontro con il dirigente scolastico, Aldo Dotti, per definire i dettagli e valutare assieme eventuali forme di collaborazione tra mondo della scuola e istituzioni. Staremmo pensando a una convenzione che ci consentirebbe, grazie al contributo degli studenti, di assumere alcuni parametri. L'assessore Snodero vorrebbe monitorare la situazione delle nostre acque, in particolare il fiume Ansa, prima e dopo la conclusione dei lavori per

fognaria (i lavori saranno eseguiti dal Cals e parteciperanno i primi giorni del 2017) valuta i benefici che potrebbe avere il progetto in questione».

Grazie ai dati forniti dai ragazzi - conclude - si potrebbero monitorare le situazioni delle nostre acque, in presenza del fiume Ansa, prima e dopo la conclusione dei lavori per

rendere conto delle effettive migliorazioni. Questa iniziativa rientra in un'ottica di miglioramento dei dati raccolti a partire dal 2005, nell'ambito del progetto Legato 21, che aveva coinvolto i Comuni di Cervignano, Torviscosa e San Giorgio al Brenta di creare una rete di monitoraggio ambientale».


REPORTAGE AMBIENTALE

Una lezione all'aria aperta

Difesa la causa per la verifica della qualità dell'acqua

Foto: M. Basso / Contrasto, A. Rossi / A3

GLOBE INTERNATIONAL VIRTUAL SYMPOSIUM

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Ausa river: a case study towards the comprehension of natural processes and anthropic impacts

Organization(s): Istituto Tecnico Industriale Statale Malignani, Istituto Tecnico Industriale Statale Malignani, Istituto Tecnico Industriale Statale Malignani, Istituto Tecnico Industriale Statale Malignani

Student(s): Sara ANGELICO, Greta FOGAR, Leonardo IACOVINO, Federico ROSSI, Asia BURINI

Grade Level: Secondary School (grades 9-12, ages 14-18)

GLOBE Teacher(s): Graziella Mocellin, Paola Zanon, Maria Pia Coceano, Lorella Rigonat

Contributors:

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Presentation Poster: [View Document](#)

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Language(s):

Date Submitted: 04/03/2017



A Report was presented at GLOBE International Virtual Science Symposium
Section "make an impact", 2017

<https://www.globe.gov/news-events/globe-events/virtual-conferences>

GLOBE data and inter- school collaboration

- The common goal to know the territory they share and to protect it, can unite many schools even if they differ in the age of students and in the field of study.
- GLOBE can supply the means to reach this goal.

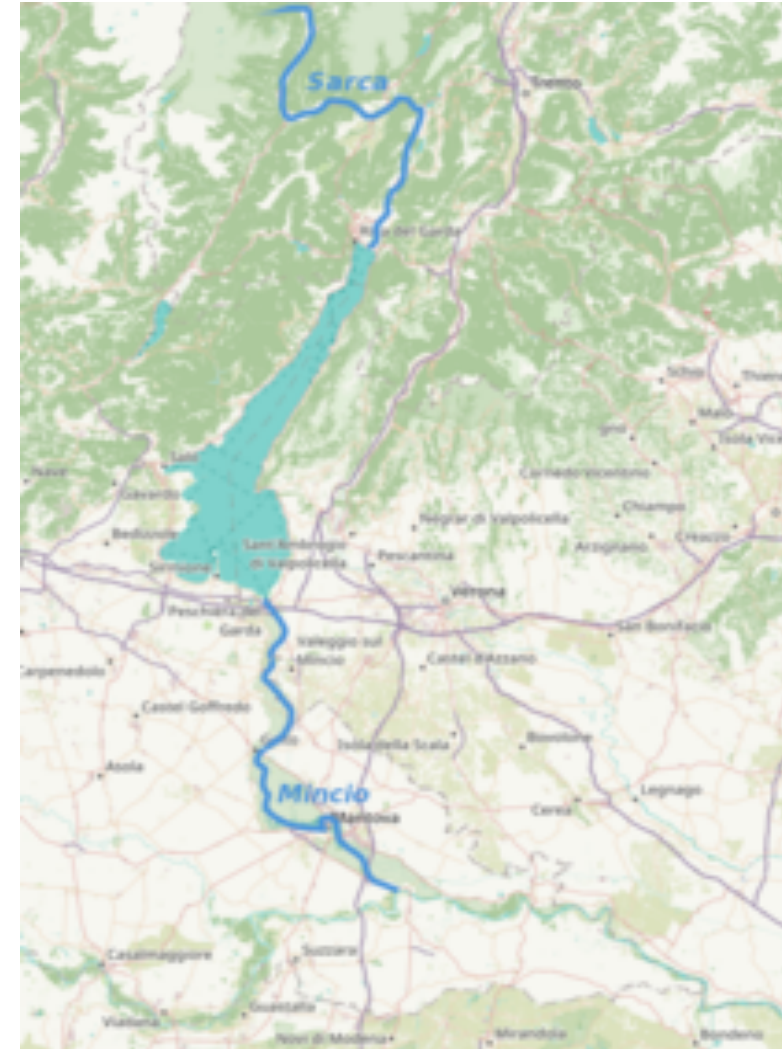
Mincio Goldone Osone Rivers Project



Since **1991**, once a year, many classes of the schools in the province of Mantua participate in monitoring the Mincio River and its tributaries

Historically, **12 sampling stations** have been chosen along the axis of about 200 km

The Mincio leaves Lake Garda and is one of the main tributaries of the Po, the most important Italian river



GLOBE ITALY



The project is strongly supported by the territory:
Labter-CREA MN, Province of MN, Municipality of MN, Parco del Mincio, ARPA-Lombardia

The project is included in the Mincio River Contract since 2016

<http://www.parcodelemincio.it/pagina.php?id=64>



Albo Online Amministrazione trasparente Fatturazione elettronica Contatti

IT EN

NEWS ENTE AZIONI TERRITORIO VISITMINCIO MULTIMEDIA

Azioni

I progetti, le attività di pianificazione e di vigilanza

Home » Azioni

Contratto di Fiume Mincio
La sottoscrizione del contratto di fiume Mincio

Partner
Sedute di Comitati e Tavoli

Condividi: f t in e

Versione per la stampa



GLOBE ITALY

PARAMETERS:

pH, temperature,
electrical
conductivity,
transparency,
dissolved oxygen,
BOD₅, nitrates,
phosphates,
suspended solids,
E. coli, *gliphosate*

This project uses a **higher number of parameters** than those provided by GLOBE hydrology protocols

For that, a **technical school for Chemistry supports the teams**. An **external lab** provides to some data control/ validation and offers the monitoring for an important herbicide

Age of the students: 12-14, tutored peer-to peer by the students of 17-18 of the technical school.





The control of nutrients and chemical pollutants is important:

Aim of the project is the **assessment of the ENVIRONMENTAL QUALITY STATUS** of the river, which in EU and IT legislation ask for wide-ranging evaluation and **comparison with the law limits.**

Other peculiarities of the study: analysis of **rainfall data** in the previous days, **control of flow rates and fluxes** to ensure a good quality for the surrounding environment. These information are **provided by experts in the days before and after the sampling date**

GLOBE ITALY



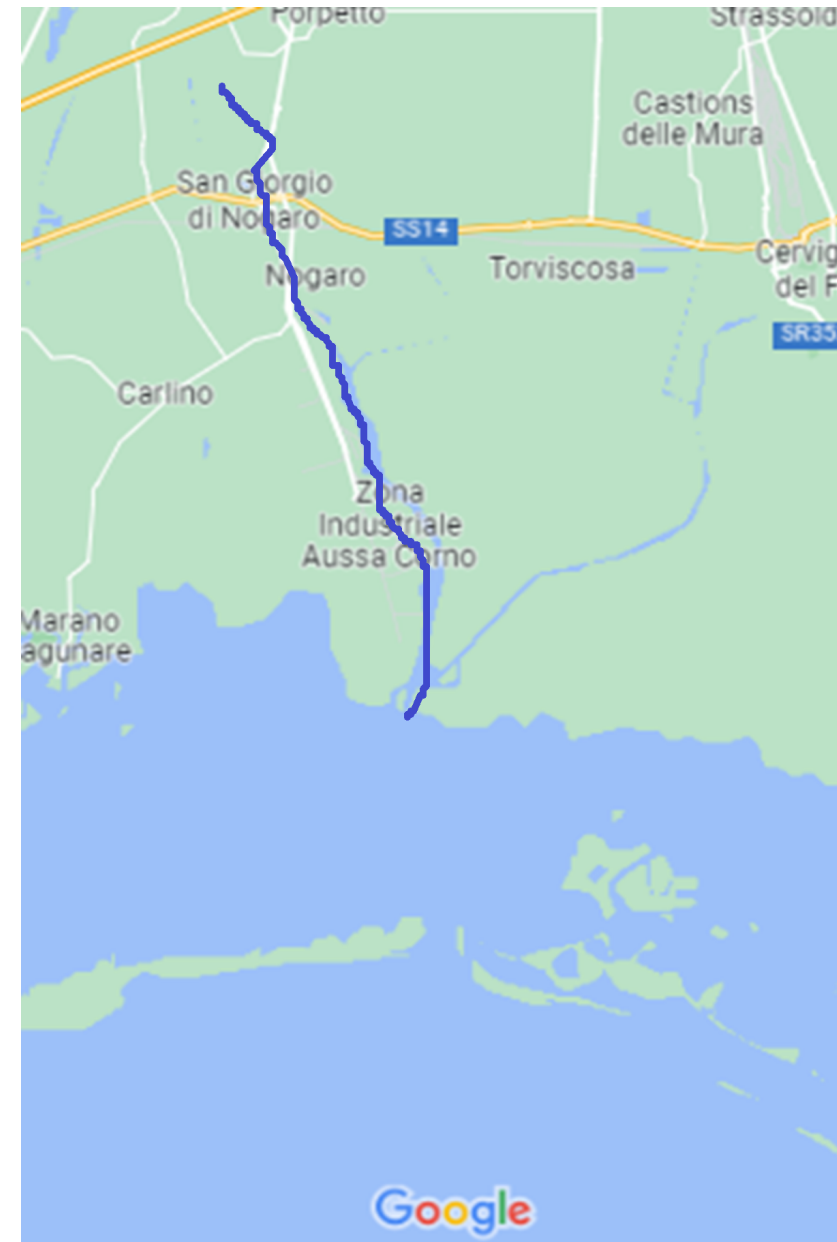
GLOBE data for immediate checking

- At times an analysis allows you to identify (or detect) a sudden change in parameters or to visualize a predictable trend but yet unexpected

Corno river: monitoring an environmental emergency with GLOBE

Corno River: a lowland
spring river, 25 km long,
fed by the rains
upstream of the Region

Usually not subject to
annual flood variations
or changes in physical-
chemical characteristics



2022: Drought

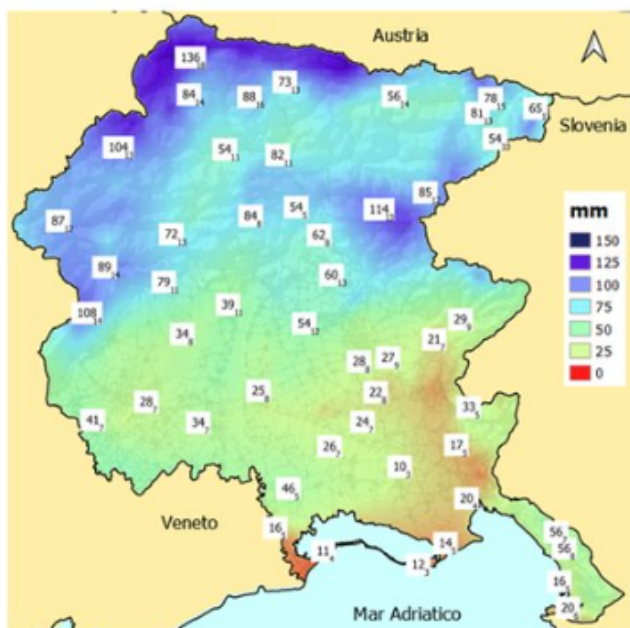
No visible evidence of changes.

Parameters detected:

Temperature, pH, electrical conductivity, E.coli

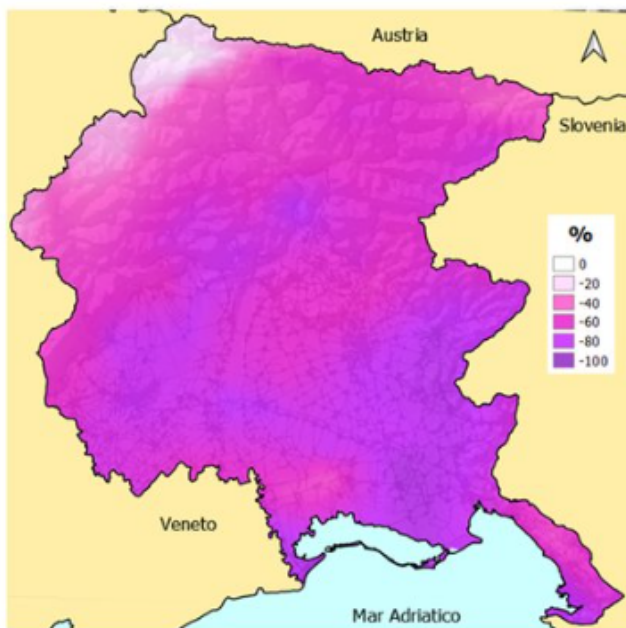
MAGGIO 2022 - Precipitazioni

Cumulato mensile di pioggia (mm) [1]



[1] Su fondo bianco il cumulato di pioggia (mm) e il numero di giorni di pioggia nel mese

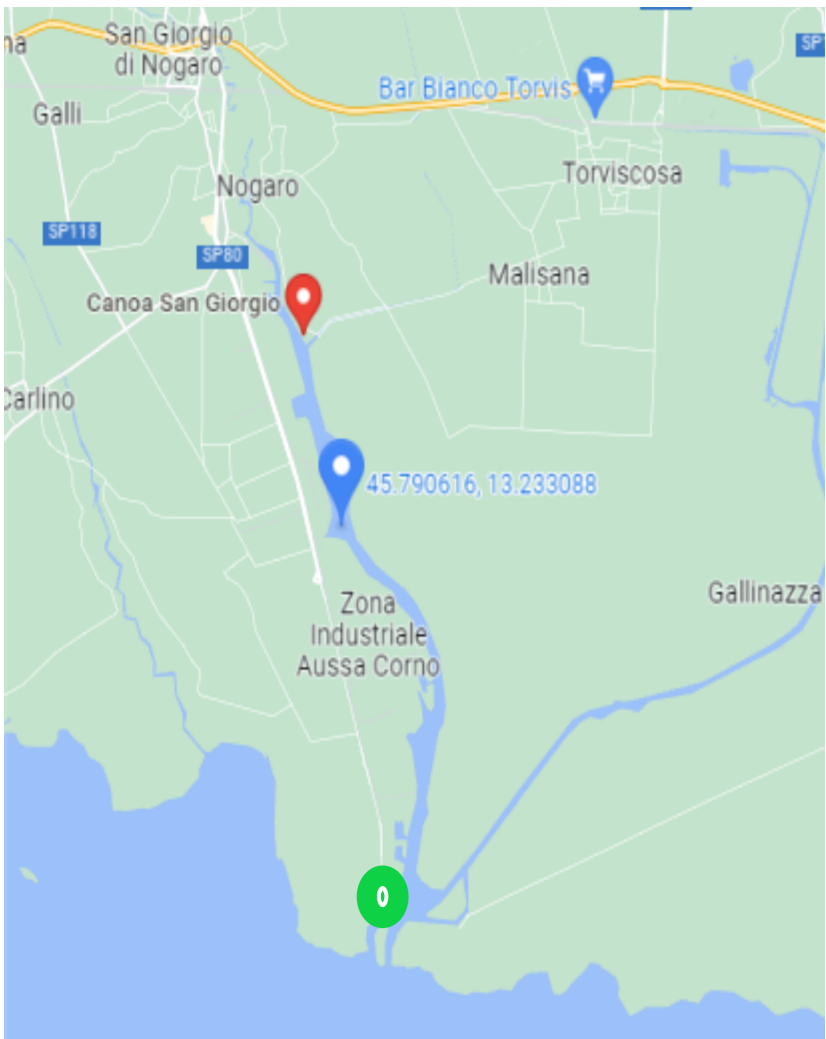
Variazione percentuale rispetto alla media 1991-2020 [2]



[2] Confronto effettuato con dati storici della rete pluviometrica regionale



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GLOBE ITALY

	Temperature (°C)		
depth	station 1	station 2	station 3
0,3 m	19,8	22,3	25,0
1,3 m	25,9	26,0	26,8
3,3 m	25,0	27,1	

	Electrical conductivity (µS/cm)		
depth	station 1	station 2	station 3
0,3 m	7996	10710	19350
1,3 m	30190	27850	28820
3,3 m	45560	46220	

The data show a strong rise in sea water along the most part of the river shaft and the anomalous values of temperature.

Water was not usable for irrigating crops.

Damage to the tourist / recreational area, too: the boat storage stations have detected greater formation of encrustations and corrosion on the submerged parts of the boats

GLOBE data for Innovative Teaching Methodology: HACKATHON

- a Hackathon is a collective challenge in which obstacles must be overcome to arrive at something new, but closely linked to collaborative dynamics
- It is defined as a 24 or 48 hour **marathon** during which, starting from a challenge,
- heterogeneous working groups (which are formed on site) work on a common project by putting their skills on the line.
- The structure of Hackathon is divided in several phases:
- **OBSERVATION AND EXPLORATION**
- **COGENERATION**
- **ACTION**





- **Sharing:** sharing ideas, works, projects within an event based on mutual collaboration
- **Creativity:** the development of innovative ideas through digital tools
- **Speed:** realization times are those of the web. That is: quick, lean, almost immediate.
- **Visibility:** on the web, on social networks, but also in real life thanks to meetings with experts, conferences
- **healthy competition** a form of competition useful for bringing out the best ideas, without forgetting the collaborative aspect

An example of SCIENCE HACKATHON



WitS
#WhereistheScience?

The GLOBE Program
ASSOCIAZIONE GLOBE ITALIA
wayouth
ISIS DELLA BASSA FRIULANA

GAIA
“Geodata Analysis
and Acquisition”
Science
Hackathon

3-4-5 ottobre 2022
Polveriera Garzoni
Palmanova

Measurements
2022-06-13

Capture YOUR LAND
Tip #6: Compare your measurements to
satellite measurements in your area.

Il Progetto WitS è sostenuto dalla Regione Friuli Venezia Giulia nell'ambito delle manifestazioni per la divulgazione scientifica.



con il patrocinio



partner scientifici



con il supporto di



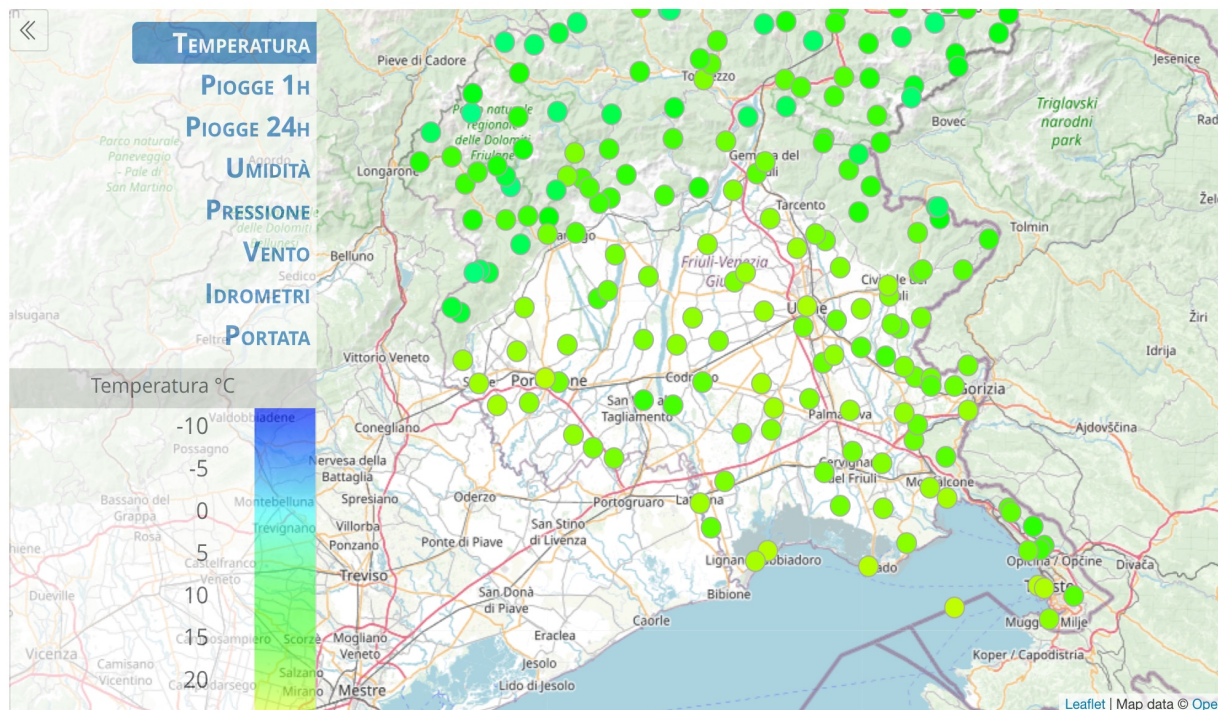
The WitS Project is supported by the Region Friuli Venezia Giulia as part of the events for scientific dissemination.

GLOBE ITALY



Reti monitoraggio della PCR

[Home](#) / Mappa sensori



osmer.fvg.it/monitor.php?ln=

arpa fvg meteo



REGIONE AUTONOMA
FRIULI VENEZIA GIULIA

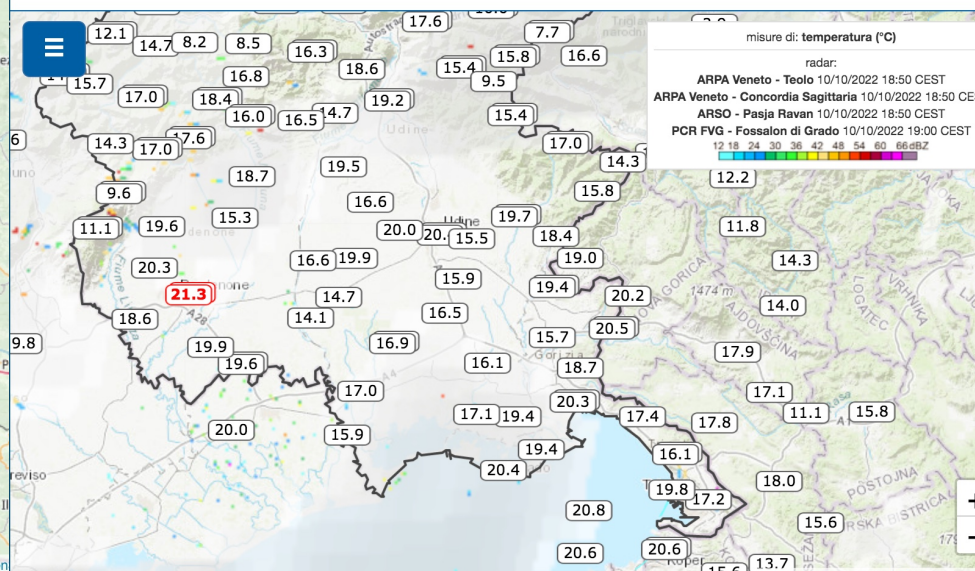
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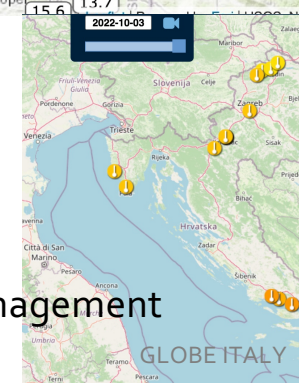
mymeteo.fvg



FOCUS

ENVIRONMENT and TERRITORY

Use of various scientific open data-base, public, importance of relationship with local authorities for their management





Meeting with local authorities during GAIA – Science Hackathon – 3 october 2022

GLOBE ITALY





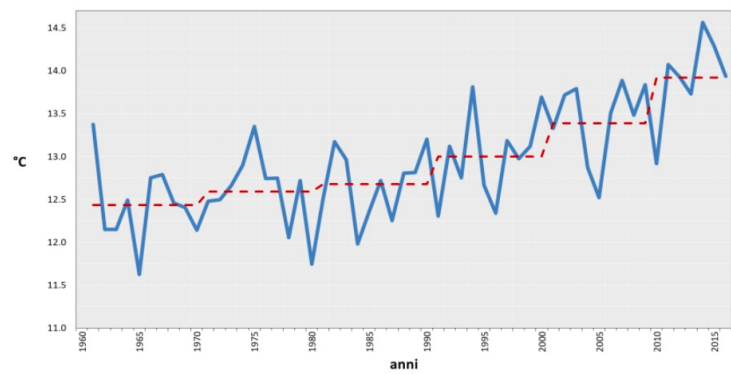
Open Data FVG

Open Data FVG è lo strumento per rendere accessibili e liberamente fruibili i dati della Regione Friuli Venezia Giulia

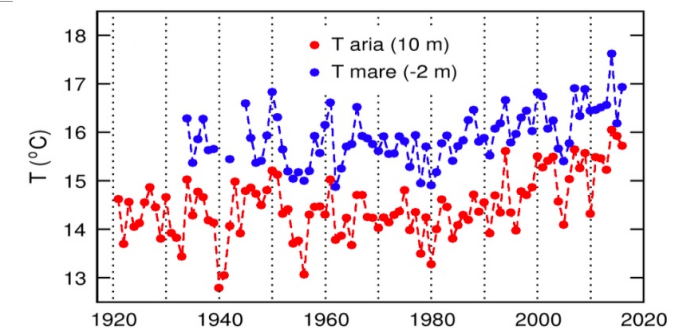


GLOBE ITALY

DATI SULL'INCREMENTO DELLA TEMPERATURA



Andamento delle temperature medie annuali nel periodo 1961-2016 per la pianura del Friuli Venezia Giulia.



Temperatura media annuale dell'aria a 10 m e del mare a 2 m di profondità a Trieste.

To have many data in order to visualize trends was very important for this Hack

WHAT ARE
THE
SCENARIOS
WE EXPECT
TO SEE IN THE
NEXT 20
YEARS?

01

Futuri Possibili

02

Futuri Probabili

03

Futuri Preferibili

The challenge proposed to the 7 Teams of students during GAIA - Science Hackathon

GLOBE ITALY

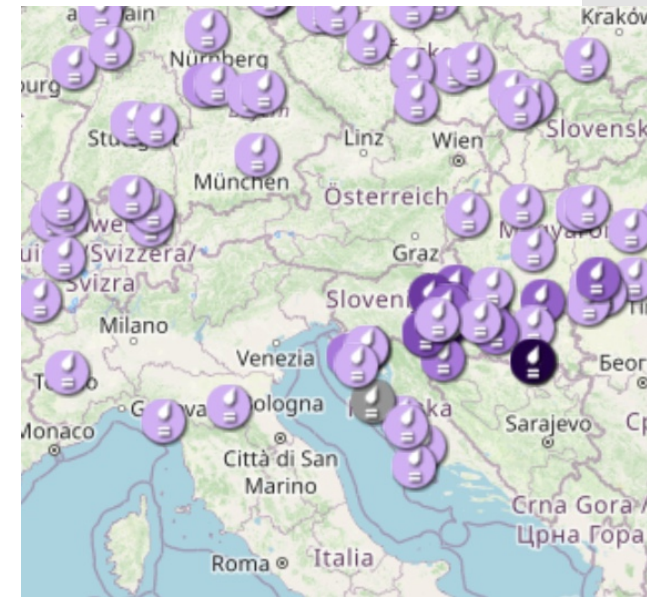
Futures Thinking

HOW TO THINK ABOUT THE FUTURE?

We can think of the future only in terms of probability, not certainty

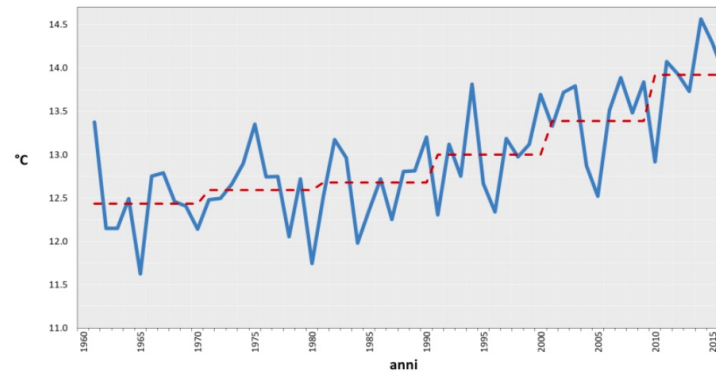
To think about the future, you need to be aware of what is happening in the present and what happened in the past

The playing field is the territory you live in, imagined in 2040

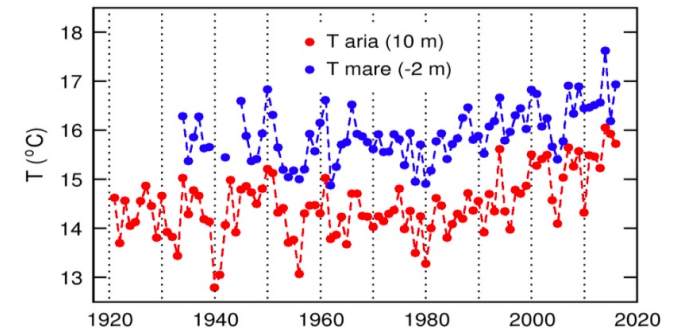


WHAT THE ENVIRONMENTAL DATA SAY ABOUT OUR TERRITORY

DATI SULL'INCREMENTO DELLA TEMPERATURA



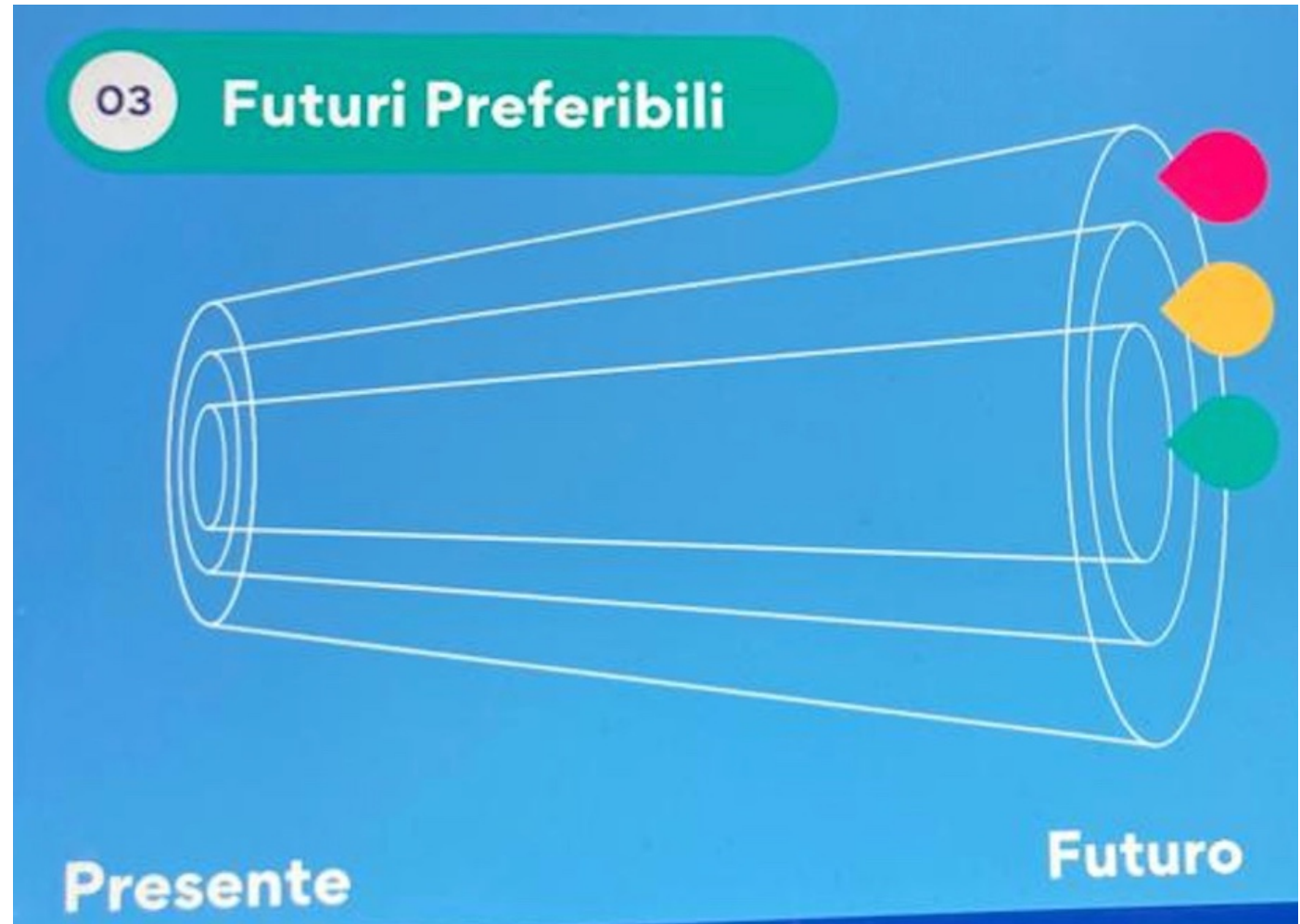
Andamento delle temperature medie annuali nel periodo 1961-2016 per la pianura del Friuli Venezia Giulia.



Temperatura media annuale dell'aria a 10 m e del mare a 2 m di profondità a Trieste.

WHAT ACTIONS FOR THESE SCENARIOS

- personal approach
- community approach



THREE DAYS FULL- IMMERSION

REQUEST:

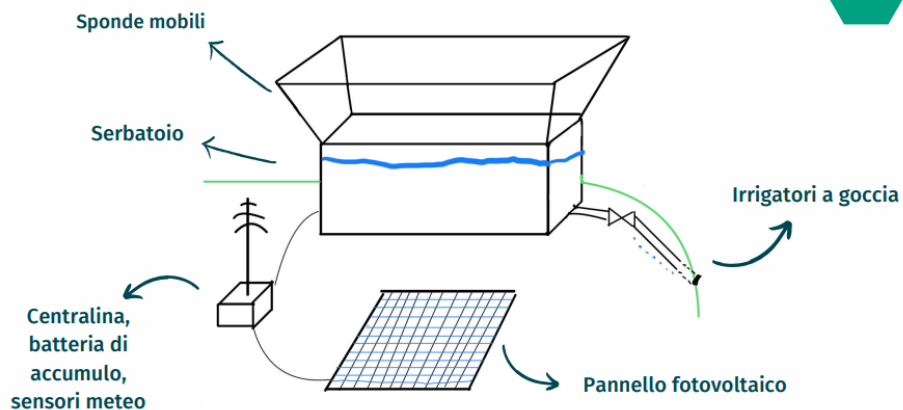
To produce a 5 minutes speech to illustrate and argue the proposal

“Your playground will be the territory you live in, imagined in 2040”



THE WINNER: WILL THE ATMOSPHERIC PHENOMENA INFLUENCE FVG AGRICULTURE?

...E UN'IDEA PER L'IRRIGAZIONE



GLOBE ITALY

CONCLUSION

In our experience the relationships with the territory are crucial for:

- Validate and confirm the collected data, through interlaboratory comparisons, with public structures or private certified labs
- Especially when you have few data, a correct interpretation of the environmental quality can be suggested by experts who can help students to make the right interrelation between data
- The data should be compared with law limit values, to establish the water quality, according with national or regional directives for the protection of water and public health, i.e. the EU Directive for surface waters
- Give the students the opportunity to participate in the environmental survey and to provide a support in the control of an environmental emergency at a local level
- Communicate the state of quality to public opinion - awareness raising and active citizenship actions



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