Hydrological measurements in the GLOBE program

Erasmus + 2024-1-IT02-KA121-SCH-000213417

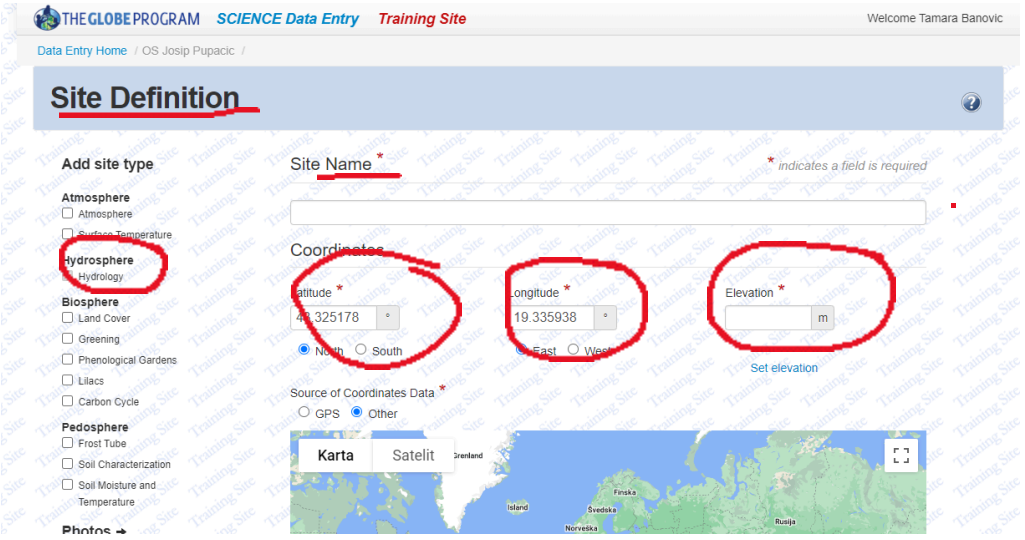
INSTITUTIO COMPRENSIVO 1 POGGIBONSI, ITALY

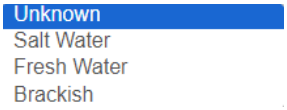
Tamara Banović, prof.

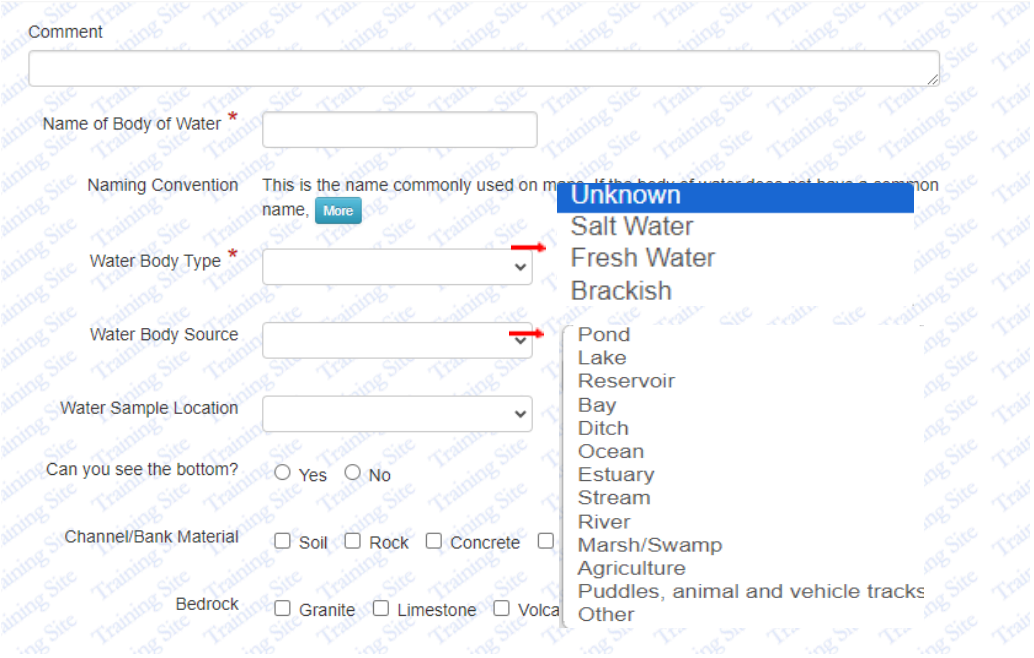
Elementary School Josip Pupačić Omiš, Croatia

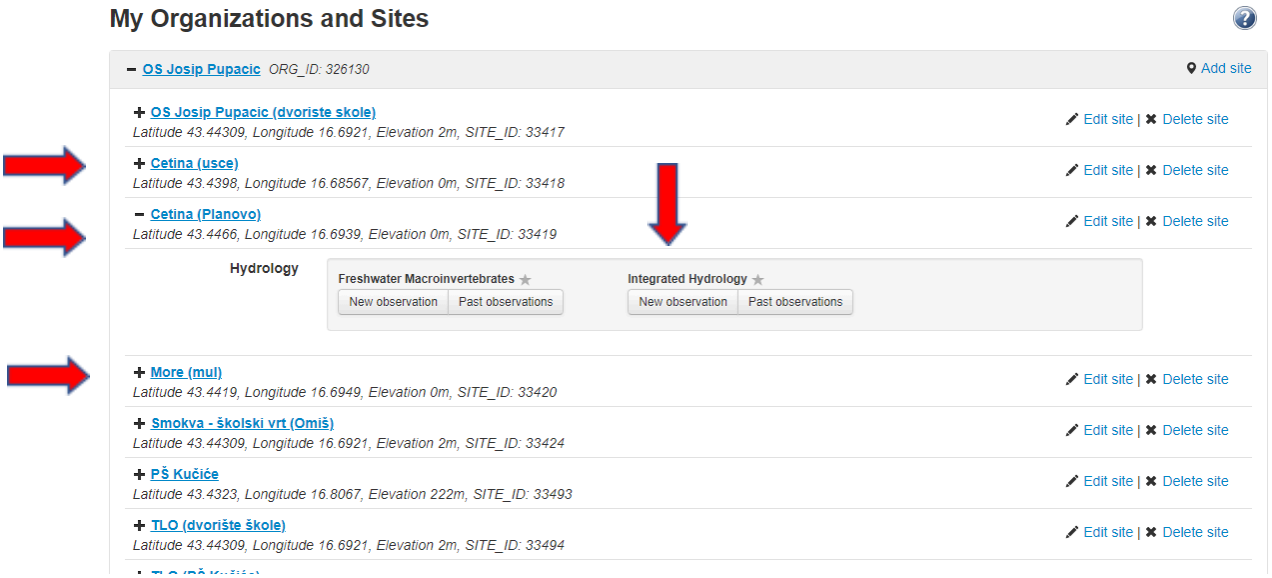
In Omiš, October 13-19, 2024.

1. DEFINE STATION (globe.gov)

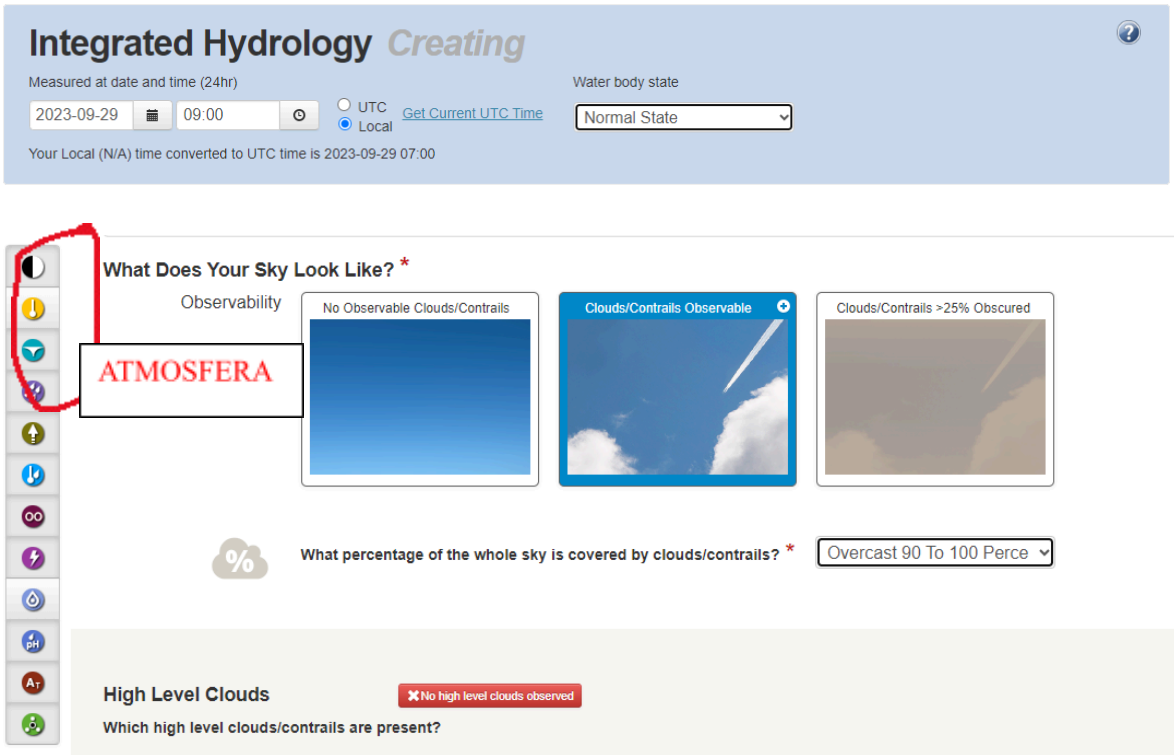




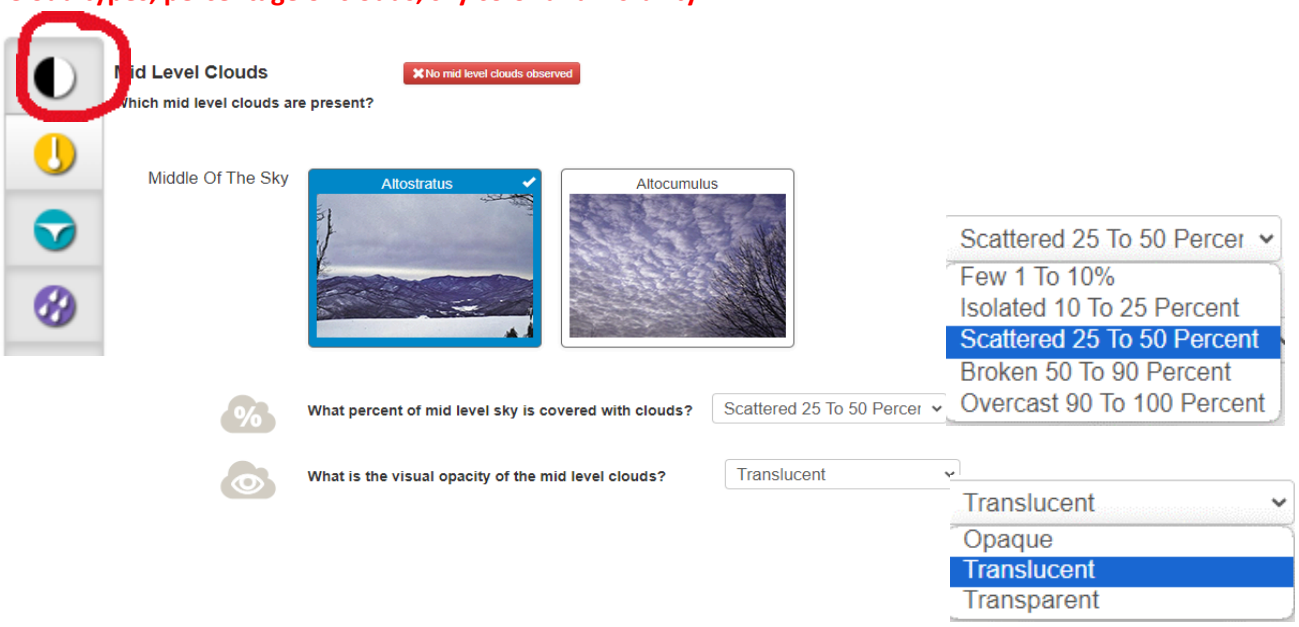




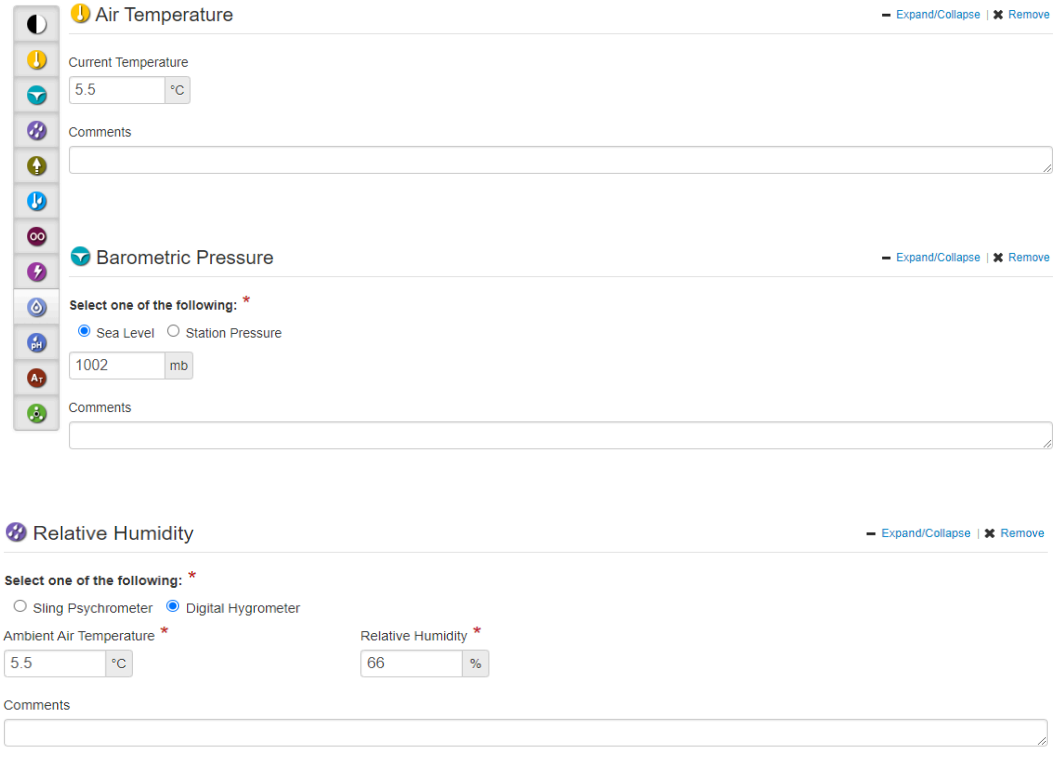
2. DATA ENTRY AND FINE MEASUREMENT



Cloud types, percentage of clouds, sky color and visibility



Air temperature, pressure and air humidity



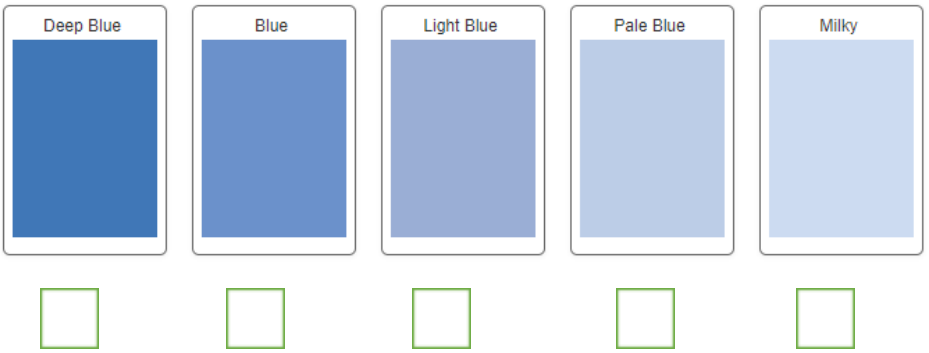
Task 1: Clouds and cloud cover

1. What does the sky look like? Write an X in the corresponding box.



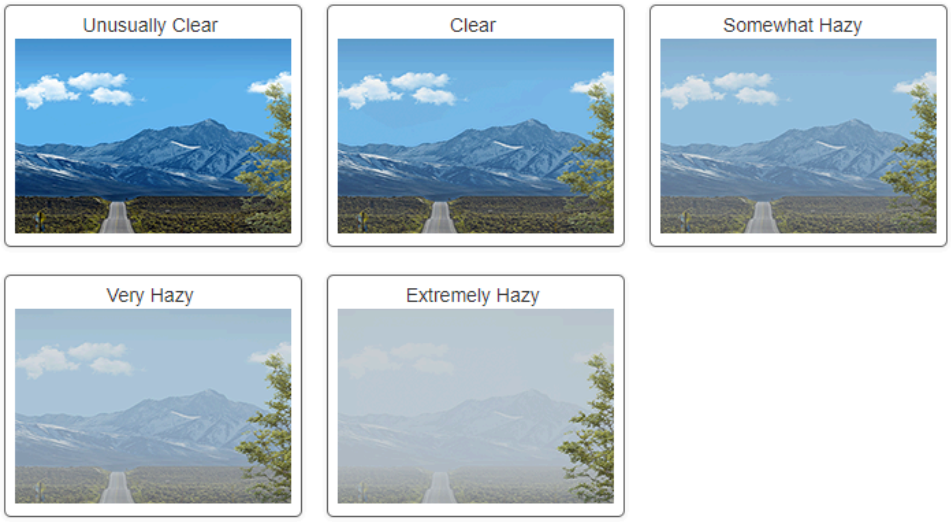
2. How much of the sky is covered by clouds? Circle the correct answer.
   a) **Few** 1 To 10 %
   b) **Isolated** 10 to 25 %
   c) **Scattered** 25 To 50 %
   d) Broken 50 To 90 %
   e) Overcast 90 To 100 %

3. Estimate the color of the sky. Write an X in the corresponding box.



4. Estimate the visibility of the sky. Write the answer on the line.

   _____



5. Use the cloud map to determine the types of clouds and their percentage in the total cloud cover.

a) Types of **high clouds:**

_____ _____ _____

Can you spot **the contrails** (CONTRAILS)?

Enter the number of observed contrails with an appropriate description.



_____ _____ _____

Estimate the opacity of high clouds and contrails.

a) OPAQUE
b) TRANSLUCENT (partially transparent)
c) TRANSPARENT

b) Types of **middle clouds:**

_____

Estimate the opacity of the middle clouds:

a) OPAQUE
b) TRANSLUCENT (partially transparent)

c) TRANSPARENT

c) Types of **low clouds:**

Estimate the opacity of low clouds:

a) OPAQUE
b) TRANSLUCENT (partially transparent)
c) TRANSPARENT

Task 2: Temperature, pressure and air humidity

Measure the air temperature using a thermometer.

The air temperature is _____°C

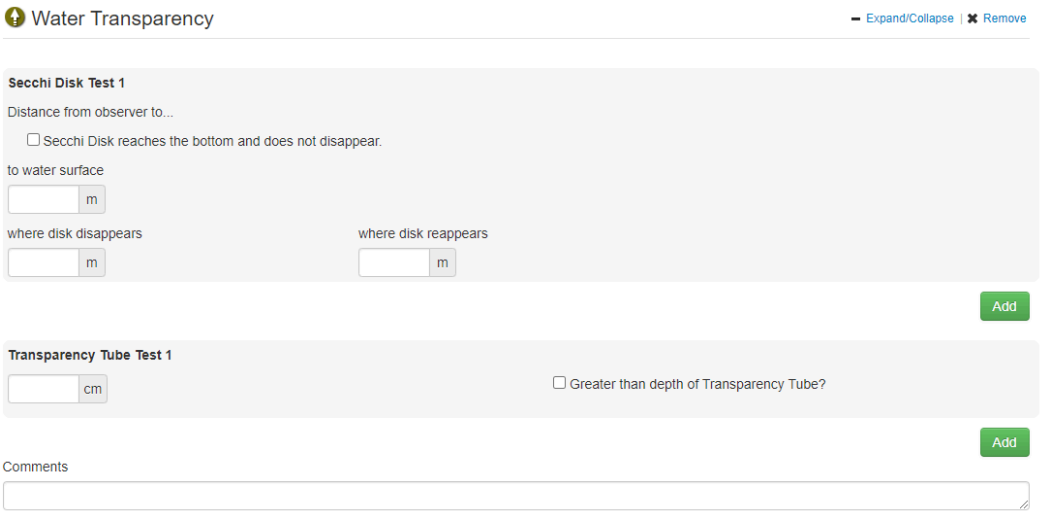
Read the air pressure using a barometer, and the air humidity using a digital hygrometer.

You can access the data of the digital weather station by scanning the QR code.

Air pressure is _____ hPa.

Air humidity is _____ %.

TRANSPARENCY OF WATER



Transparency Tube (turbidity tube)

Measuring water transparency using a turbidity tube - video

WATER TEMPERATURE



Measurement procedure

1. Immerse the thermometer in water to a depth of 10 cm.

2. Hold it under water for 3-5 min.

3. QUICKLY READ the temperature (if possible while the thermometer is in the water) so that the liquid level in the thermometer is at eye level!

4. Immerse the thermometer in water again and read the temperature after

5. Determine the mean value of at least three measurements!

6. The read temperatures should not differ by more than 0.5 °C.



Task 4: Water temperature

Measurement	Temperature °C
1.	
2.	
3.	

Average temperature value: _____ °C. Water thermometer

Measuring water temperature - video

pH- VALUE OF WATER

pH — Expand/Collapse | Remove

Measured with *

pH Paper	pH Meter

Comments

a) pH paper

1. Rinse the container with the water sample at least 2 times.

2. Fill the container halfway with the water sample.

3. Immerse the indicator paper in water and keep it in the water according to the manufacturer's instructions.

4. Remove the paper from the water and compare it with the test strip on the box or roll.

5. Find the area where the colors match best and read the pH value.

6. Make several measurements and calculate the mean value (max. difference 1 pH-unit).

b) Determination of the pH value with a pH meter or pH pen

1. Remove the cover from the electrode, rinse it with distilled water and wipe it dry.

2. Immerse the electrode in the glass with the water sample, mix and wait for the value to stabilize.

3. Read the pH value.

4. Repeat the process and calculate the mean value.

5. Values must not differ by more than 0.2 units.



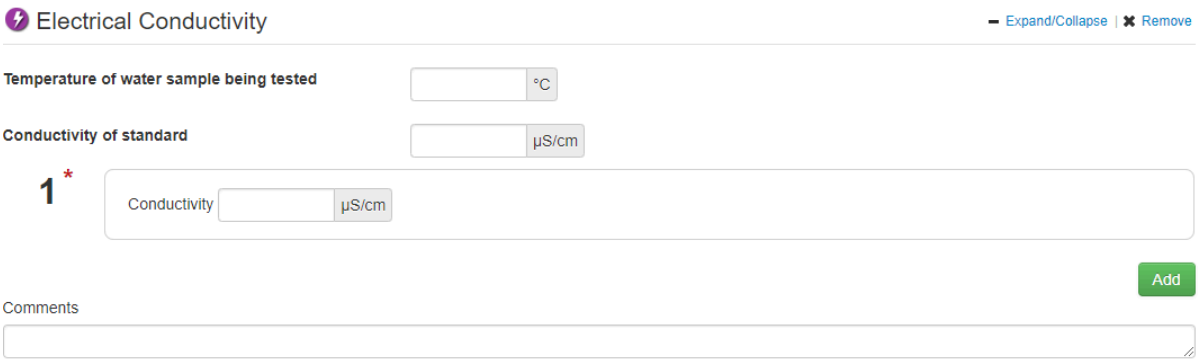
Measurement of pH value

Task 5: pH-value of water

Measurement	pH
1.	
2.	
3.	

Average pH value: _____

ELECTRICAL CONDUCTIVITY



Procedure

1. Remove the cover from the conductivity meter.
2. Rinse the electrode with distilled water from the syringe bottle.
3. Fill the beaker with the water sample.
4. Immerse the electrode in the water sample.
5. Stir gently for a few seconds to stabilize the value on the display.
6. Read and record the measured value: _____
7. The measurements need to be repeated 2 more times. The values should be within +/- 40 µS/cm.
8. Rinse the electrode with distilled water and wipe it with soft paper.
9. Turn off the conductivity meter and put the cap back on the electrode.

Presence of nitrates and nitrites



Set za određivanje nitrata i nitrita u vodama