



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)

THEGLOBEPROMGRAM SCIENCE Data Entry Training Site

Welcome Tamara Banovic

Data Entry Home / OS Josip Pupacic /

Site Definition

Site Name *****

Coordinates *****
Latitude *****
Longitude *****
Elevation *****

Source of Coordinates Data *****
 GPS Other

Add site type
 Atmosphere
 Surface Temperature
 Hydrology
 Hydrography
 Biosphere
 Land Cover
 Greening
 Phenological Gardens
 Lilacs
 Carbon Cycle
 Pedosphere
 Frost Tube
 Soil Characterization
 Soil Moisture and Temperature

Photos

Unknown

Salt Water
Fresh Water
Brackish

Comment

Name of Body of Water *****

Naming Convention

This is the name commonly used on maps. If the body of water does not have a common name, [More](#)

Water Body Type *****

Unknown

Salt Water
Fresh Water
Brackish

Water Body Source

Pond

Lake

Reservoir

Bay

Ditch

Ocean

Estuary

Stream

River

Marsh/ Swamp

Agriculture

Puddles, animal and vehicle tracks

Other

Water Sample Location

Can you see the bottom?

Yes No

Channel/Bank Material

Soil Rock Concrete

Bedrock

Granite Limestone Volca

My Organizations and Sites

- OS Josip Pupacic ORG_ID: 326130		Add site
+ OS Josip Pupacic (dvorište škole)	Latitude 43.44309, Longitude 16.6921, Elevation 2m, SITE_ID: 33417	 Edit site  Delete site
+ Cetina (usce)	Latitude 43.4398, Longitude 16.68567, Elevation 0m, SITE_ID: 33418	 Edit site  Delete site
- Cetina (Planovo)	Latitude 43.4466, Longitude 16.6939, Elevation 0m, SITE_ID: 33419	 Edit site  Delete site
Hydrology		
Freshwater Macroinvertebrates ★		
New observation Past observations		
Integrated Hydrology ★		
New observation Past observations		
+ More (muli)	Latitude 43.4419, Longitude 16.6949, Elevation 0m, SITE_ID: 33420	 Edit site  Delete site
+ Smokva - školski vrt (Omiš)	Latitude 43.44309, Longitude 16.6921, Elevation 2m, SITE_ID: 33424	 Edit site  Delete site
+ PŠ Kučiće	Latitude 43.4323, Longitude 16.8067, Elevation 222m, SITE_ID: 33493	 Edit site  Delete site
+ TLO (dvorište škole)	Latitude 43.44309, Longitude 16.6921, Elevation 2m, SITE_ID: 33494	 Edit site  Delete site
-   		

2. DATA ENTRY AND FINE MEASUREMENT

Integrated Hydrology *Creating*

Measured at date and time (24hr)

2023-09-29  09:00  UTC [Get Current UTC Time](#) Local Normal State

Your Local (N/A) time converted to UTC time is 2023-09-29 07:00

What Does Your Sky Look Like? *

Observability

ATMOSFERA

No Observable Clouds/Contrails



Clouds/Contrails Observable



Clouds/Contrails >25% Obscured



Water body state

Normal State

What percentage of the whole sky is covered by clouds/contrails? *

Overcast 90 To 100 Perce

High Level Clouds

 No high level clouds observed

Which high level clouds/contrails are present?

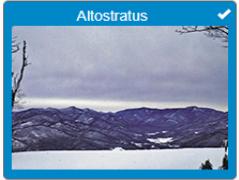
Cloud types, percentage of clouds, sky color and visibility

Mid Level Clouds ✖ No mid level clouds observed

Which mid level clouds are present?

Middle Of The Sky

What percent of mid level sky is covered with clouds? Scattered 25 To 50 Percent

What is the visual opacity of the mid level clouds? Translucent

Scattered 25 To 50 Percent Few 1 To 10% Isolated 10 To 25 Percent Scattered 25 To 50 Percent Broken 50 To 90 Percent Overcast 90 To 100 Percent

Translucent Opaque Translucent Transparent

Air temperature, pressure and air humidity

 Air Temperature - Expand/Collapse | ✖ Remove

Current Temperature °C

Comments

 Barometric Pressure - Expand/Collapse | ✖ Remove

Select one of the following: *

Sea Level Station Pressure

mb

Comments

 Relative Humidity - Expand/Collapse | ✖ Remove

Select one of the following: *

Sling Psychrometer Digital Hygrometer

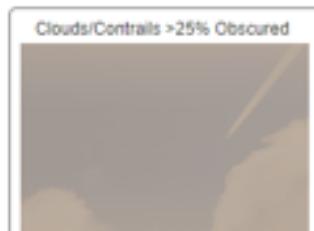
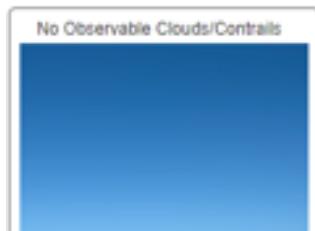
Ambient Air Temperature * °C

Relative Humidity * %

Comments

Task 1: Clouds and cloud cover

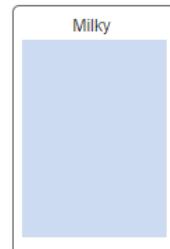
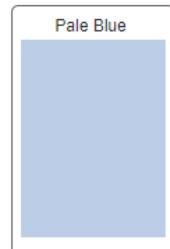
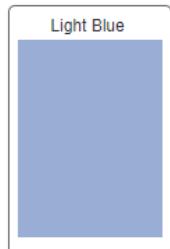
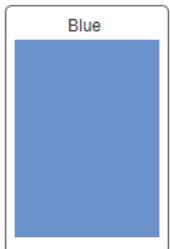
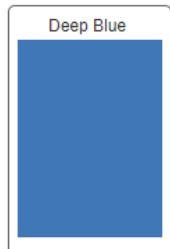
1. What does the sky look like? Write an X in the corresponding box.



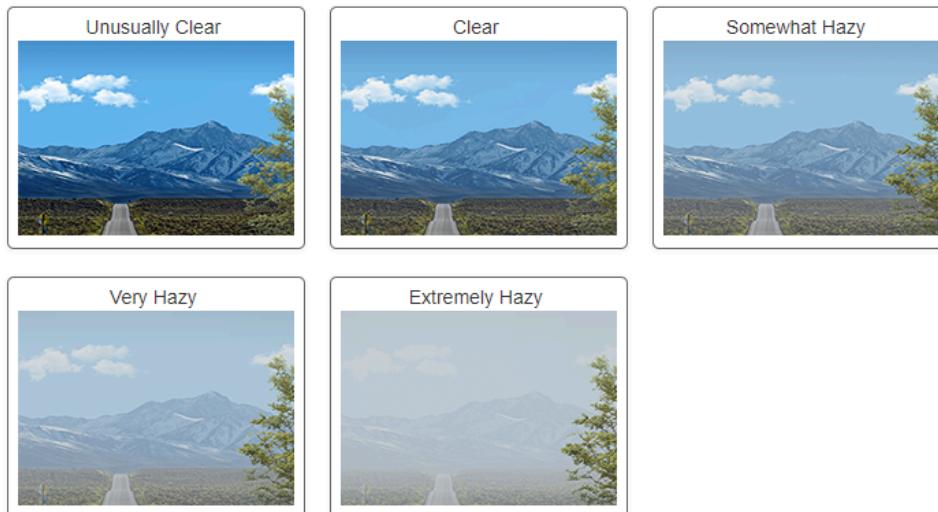
2. How much of the sky is covered by clouds? Circle the correct answer.

- 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

 Water Transparency

[Expand/Collapse](#) | [Remove](#)

Secchi Disk Test 1

Distance from observer to...

Secchi Disk reaches the bottom and does not disappear.

to water surface

m

where disk disappears

m

where disk reappears

m

[Add](#)

Transparency Tube Test 1

cm

Greater than depth of Transparency Tube?

[Add](#)

Comments

Transparency Tube (turbidity tube)



Measuring water transparency using a turbidity tube - video

WATER TEMPERATURE

Water Temperature

Measured with *

Alcohol-filled Thermometer	Probe
----------------------------	-------

Comments

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

Measureme nt	Temperatu re °C
1.	
2.	
3.	



Average temperature value: _____ °C. Water thermometer



Measuring water temperature - video

pH- VALUE OF WATER

 pH

Measured with *

pH Paper pH Meter

Comments

— Expand/Collapse |  Remove

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

Electrical Conductivity - Expand/Collapse | Remove

Temperature of water sample being tested °C

Conductivity of standard µS/cm

1 * µS/cm

Comments Add

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