

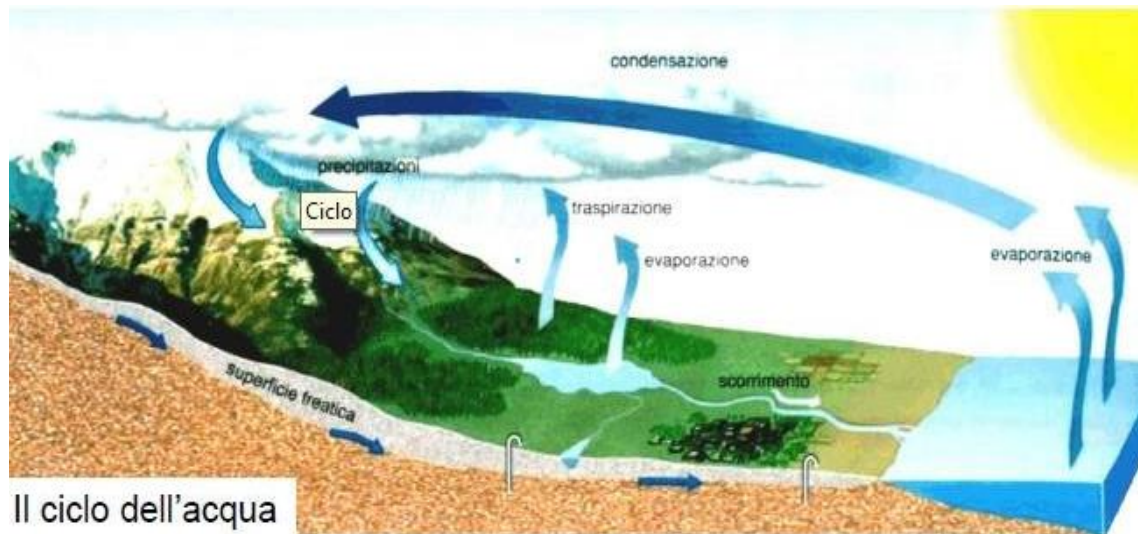
## Influence of soil texture and structure on overland flows WORKSHEET 1

**Time available:** 5 minutes

**Taking into consideration these pictures and the PowerPoint** "Flood stage events, flooding and overflowing risks"

[https://drive.google.com/file/d/1o2yNpHVwcfxy9I5QbrU0uE\\_sZd1kz/view?usp=sharing](https://drive.google.com/file/d/1o2yNpHVwcfxy9I5QbrU0uE_sZd1kz/view?usp=sharing),

**Answer the following questions (on google form)**



Water cycle (above); Gravel, coarse sand and thin sand (below)

1) In your opinion, does the particle size composition of the soil affect its ability to retain water?

YES, because

No, because

2) Does anthropic activity affect the characteristics of a land?

A little, because

Rather, because

A lot, because

3) Based on the indications of the thematic maps consulted through QGIS, complete the following scheme:

Distance from the river (meter)	N sampling points	Type of test	Survey GPS (Yes/No)

(\*you can add more lines)

4) What other activities would you suggest carrying out to make the survey more complete and reliable?

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## Influence of soil texture and structure on overland flows WORKSHEET 2

**Time available:** 2 hours

**Location:** by the river, in the field

**Work-group:** 4 groups of students

**You have to perform measurements on the ground at the sampling points previously identified through the processing performed by the QGIS software.**

### EQUIPMENT FOR MEASUREMENT:

- Auger
- Meter
- Metric roll
- Plastic bags with labels
- Sieve with two mm meshes
- Plastic sheet in PE
- Shovel to collect soil
- Mobile device with GPS

### Fill in table n.1 with the following information:

- Consider 5 points along the river, previously located by QGIS, distant 10 metres from each other.
- At each sampling point, collect soil samples at a regular distance of 20-40-60 metres on both right and left bank of the river.
- The soil samples must be collected at a maximum depth of 30 cm
- On a plastic sheet, gather the samples taken along the same line at the same distance (6 samples) and mix them.
- During the field trip, soil samples are taken on undisturbed land (no tillage), getting information on site by asking questions to farmers who know their working place well.
- Write down the information in the Worksheet.

**TABLE N.1**

SAMPLES	TEXTURE		U.S.D.A. TEXTURE CLASS	CULTIVATED Yes/No	INFORMATION ABOUT SOIL STRUCTURE	OTHER INFORMATION
	% sand					
Sample N.1 (20m R)	% sand					
	% loam					
	% clay					
Sample N.2 (40m R)	% sand					
	% loam					
	% clay					
Sample N.3 (60m R)	% sand					
	% loam					
	% clay					
Sample N.1 (20m L)	% sand					
	% loam					
	% clay					
Sample N.2 (40m L)	% sand					
	% loam					
	% clay					
Sample N.3 (60m L)	% sand					
	% loam					
	% clay					

Fill in the table n.2 with the following information:

- On a plastic sheet gather 6 samples from no-tilled soil according to the information got from local farmers.
- Write down the information in the Worksheet.

**TABLE N.2**

<b>SAMPLES</b>	<b>TEXTURE</b>		<b>U.S.D.A. TEXTURE CLASS</b>	<b>INFORMATION ABOUT SOIL STRUCTURE</b>	<b>OTHER INFORMATION</b>
<b>Sample N.1</b>	% sand				
	% loam				
	% clay				
<b>Sample N.2</b>	% sand				
	% loam				
	% clay				
<b>Sample N.3</b>	% sand				
	% loam				
	% clay				
<b>Sample N.4</b>	% sand				
	% loam				
	% clay				
<b>Sample N.5</b>	% sand				
	% loam				
	% clay				
<b>Sample N.6</b>	% sand				
	% loam				
	% clay				

N.B.: The sampling points are labelled by the students on planimetric map on site and then they are uploaded on QGIS thematic map in the ITC lab.

## Influence of soil texture and structure on overland flows WORKSHEET 2

**Time available:** 2 hours

**Location:** science laboratory

**Work-group:** 4 groups of students

### EQUIPMENT FOR MEASUREMENTS:

- Scales
- Becker
- Sieve with 2 mm holes
- Spatulas
- Reagents for chemical determination

### Fill in table 3 according the following indications:

- Carry out the following chemical analyses: oxygen availability, total limestone, Reaction
- Observe the physical characteristics of the samples: colour, texture and structure.
- Sieve the samples through a sieve with 2 mm holes in order to eliminate the skeleton (fraction > 2 mm).
- Use the worksheet for defining the particle size by hands and therefore the texture class of the soil.

**TABLE 3**

<b>SAMPLES</b>	<b>O2 AVAILABILITY</b>	<b>TOTAL LIMESTONE</b>	<b>REACTION COLOUR</b>	<b>TEXTURE</b>	<b>STRUCTURE</b>	<b>MAX. WATER CAPACITY</b>	<b>FIELD CAPACITY</b>	<b>WILTING POINT</b>	<b>AVAILABLE WATER</b>
Sample N.1 (20m R)									
Sample N.2 (40m R)									
Sample N.3 (60m R)									
Sample N.1 (20m L)									
Sample N.2 (40m L)									
Sample N.3 (60m L)									

The table concerns the samples in table n.1

**TABLE 4**

<b>SAMPLES</b>	<b>O2 AVAILABILITY</b>	<b>TOTAL LIMESTONE</b>	<b>REACTION COLOUR</b>	<b>TEXTURE</b>	<b>STRUCTURE</b>	<b>MAX. WATER CAPACITY</b>	<b>FIELD CAPACITY</b>	<b>WILTING POINT</b>	<b>AVAILABLE WATER</b>
Sample N.1									
Sample N.2									
Sample N.3									
Sample N.4									
Sample N.5									
Sample N.6									

The table concerns the samples in table n.2



**Describe what you have noticed.**

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