

Worksheet – soil and drought

The climate has changed, is changing and will change. But what is happening now? For the first time in the history of the planet, humans are changing the climate on a global scale and, in the long term, endangering their own lives as well as the lives of other species on the planet. And unlike previous changes, this change is unprecedentedly rapid.

Soil, life support and carbon storage

Soil supports life for countless organisms, including humans. It provides many "ecosystem services" to human societies: it supports agricultural production, regulates the composition of the atmosphere, stores and purifies fresh water. It can stabilize and eliminate pollutants or even control pathogens. Soil is one of the largest reservoirs of biodiversity on Earth. It is home to about 25% of known species of organisms. Soil is also the largest terrestrial carbon reservoir: there is an estimated 1.5 trillion tonnes (Gt) of carbon in the first metre of depth.

Let's look at this in more detail:

Task 1: What do you think? (the part before the exploration begins)

Before exploration			After exploration	
True	False		True	False
		Soil that is trampled/hardened absorbs water faster.		
		Soil that is not trampled prevents flooding.		
		Mosses trap the most water and keep it in the environment the longest.		
		Drought situation in Europe is worse than 10 years ago.		

Task 2: Where does more water soak in?

Find two different sites (one with trampled soil and one with untrampled soil), dig a 10 x 10 x 10 cm hole. Pour 150 ml of water into the hole and measure the soaking time.

site	soaking time
trampled/hardened soil	
untrampled soil	

Discuss how this task relates to drought. Write down your conclusions:

Task 3: Who will take in more water?

Do short experiments and compare the results of how different natural materials retain water. You have 3 natural materials: soil, moss, sawdust.

- put an equal amount (3-5 spoons) of the natural material in bowls
- pour off the water and weigh the wet material
- wring the water out of the natural material into a cup, pour the water into the measuring cylinder and measure the amount of water (ml)
- weigh the wrung-out natural material
- calculate the measured volume of water per 1g of wrung-out natural material

	soil	moss	sawdust
weight of the wet natural material (before wringing) in grams			
volume of water wrung out of the natural material in ml			
weight of the wrung-out natural material in grams			
calculation of the volume of water per 1g of wrung out natural material			

Summarise your observations

The most water is absorbed/retained _____

The least water is absorbed/retained _____









Discuss how this task relates to drought. Write down your conclusions:

Task 4: Drought evolution in Europe

Welcome to the European Drought Observatory!

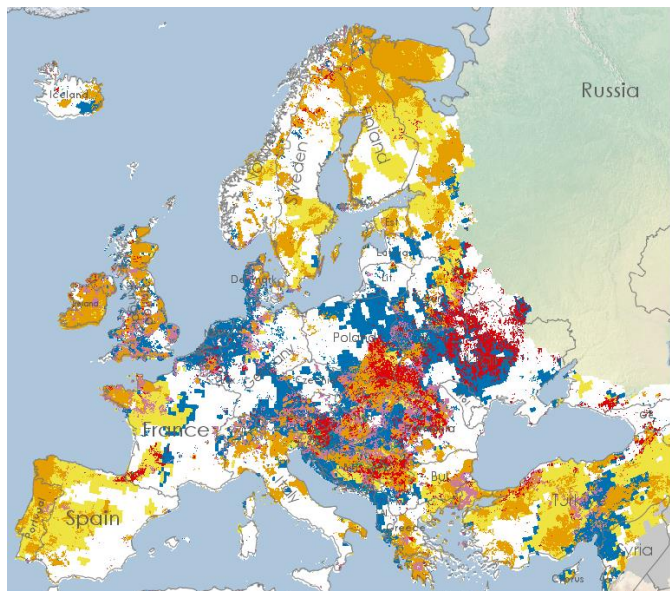
The European drought observatory (EDO) is a service run by the European Commission's Joint Research Centre. The EDO portal contains drought information, graphs and time-series at European level.

Due to the different types of drought, drought monitoring is based on the analysis of a series of drought indicators. The maps below show situation in Europe in September in the last ten years based on **Combined Drought Indicator CDI** (<https://edo.jrc.ec.europa.eu/edov2/php/index.php?id=1000>). The CDI classification scheme defines three primary drought classes (Watch, Warning and Alert) and three recovery classes (Temporary Soil Moisture Recovery, Temporary Vegetation Recovery and Recovery).

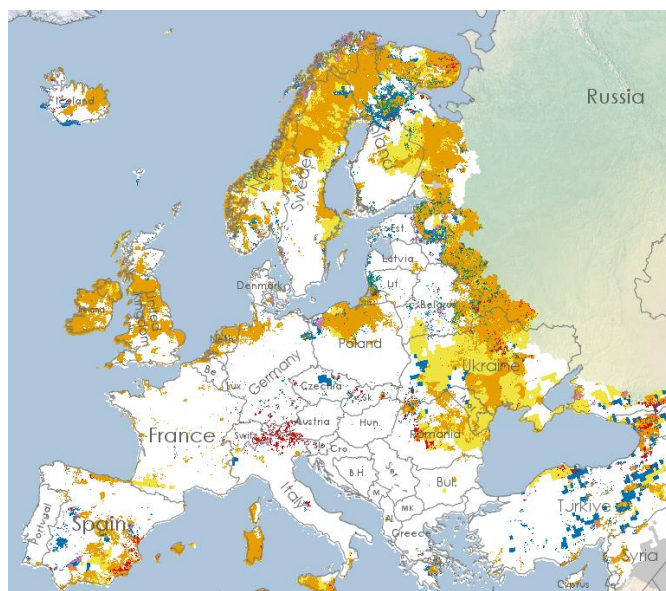
	No Drought
	Watch
	Warning
	Alert
	Recovery
	Temporary Soil Moisture Recovery
	Temporary Vegetation Recovery
	No data

Study the maps and fill in information about your country:

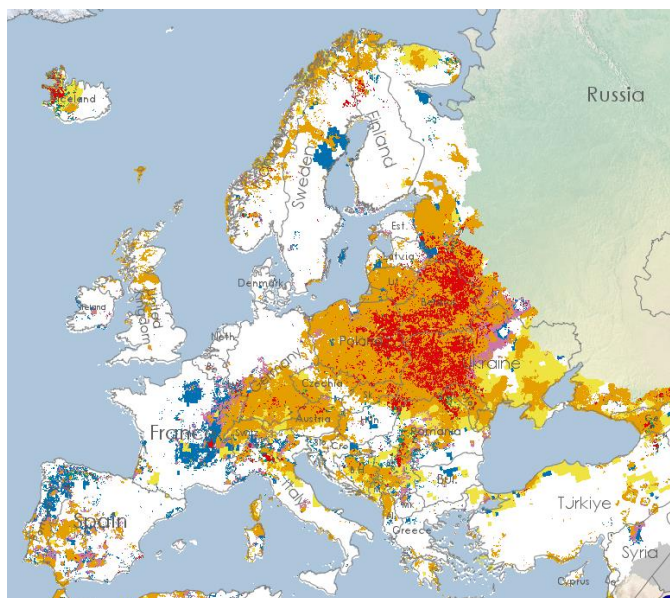
Name of the country			
The year when there was the biggest area of the country with warning/alert class			
Estimated % of the country affected			
The most affected part of the country (north, east...)			
The year when there was the smallest area of the country with warning/alert class			



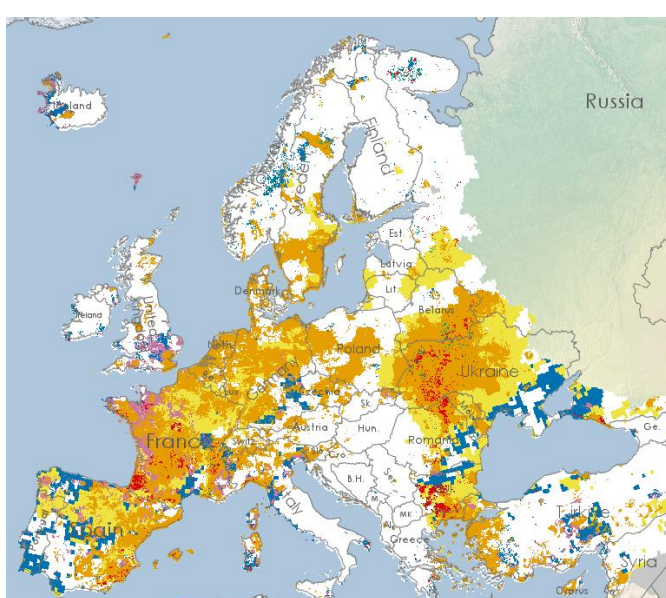
2013



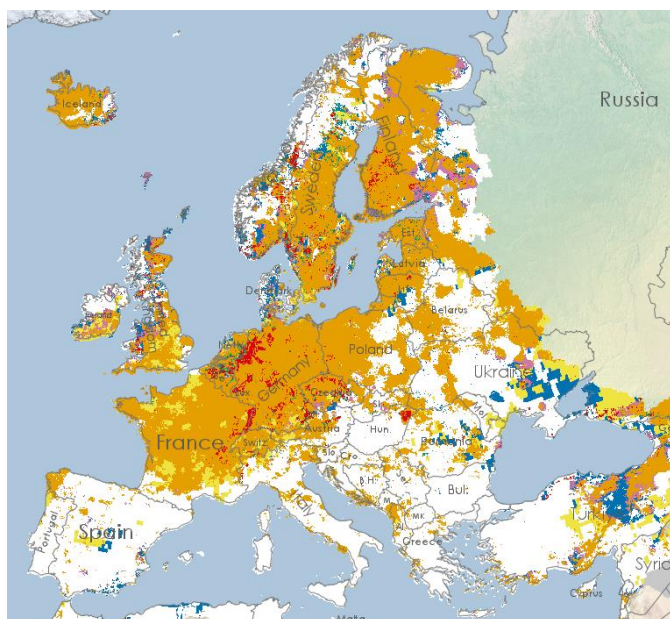
2014



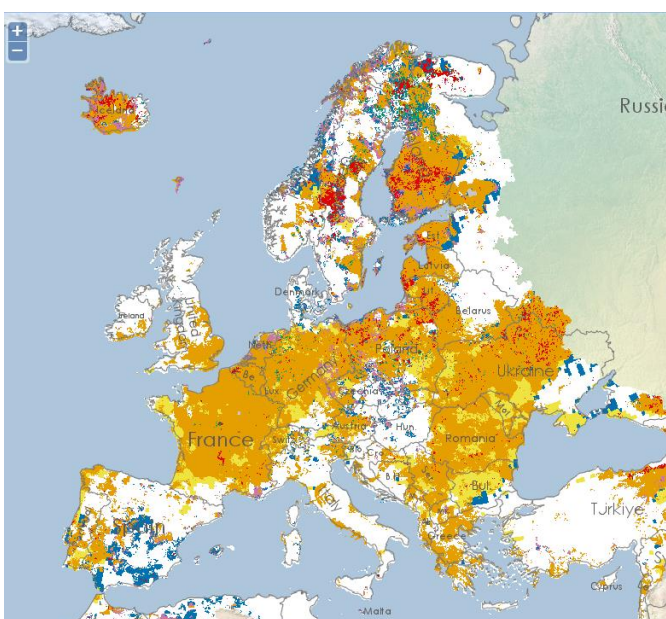
2015



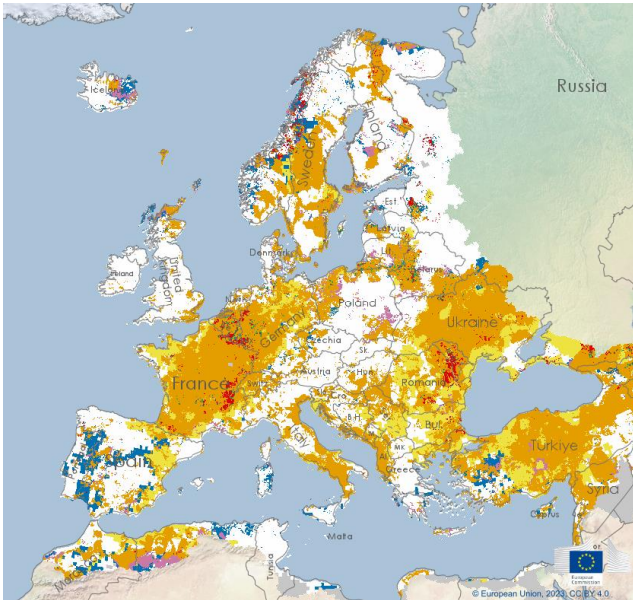
2016



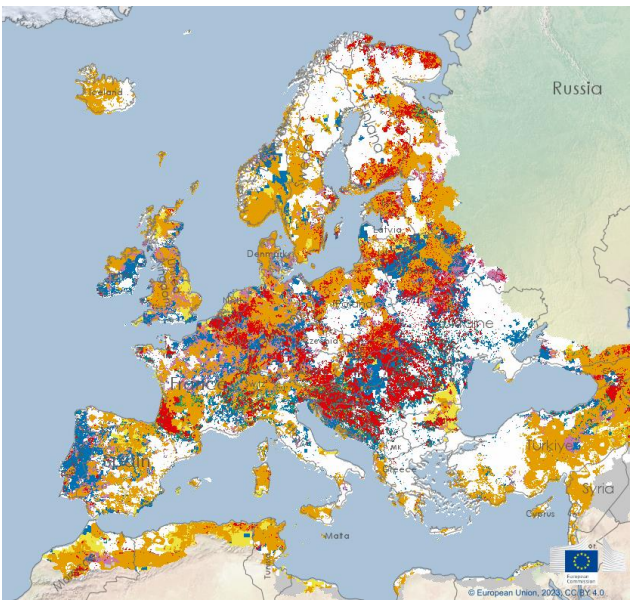
2018



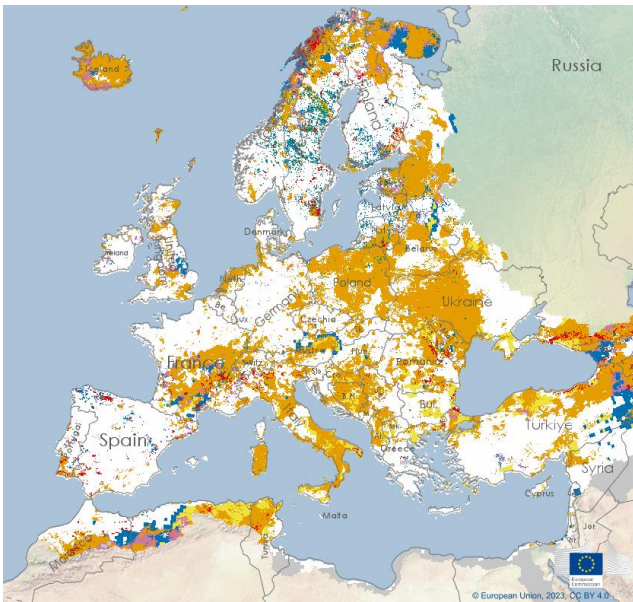
2019



2020



2022



2023

Task 5: Were you right? Complete your card from task 1 after the exploration.