

## EPI-GW2D: Consequences of climate change on the resource

### 1. Using the maps (figures 1 and 2) and your knowledges on aquifers, explain the distribution of water resources in the Var department.

#### Part 1: Water resources in the school area

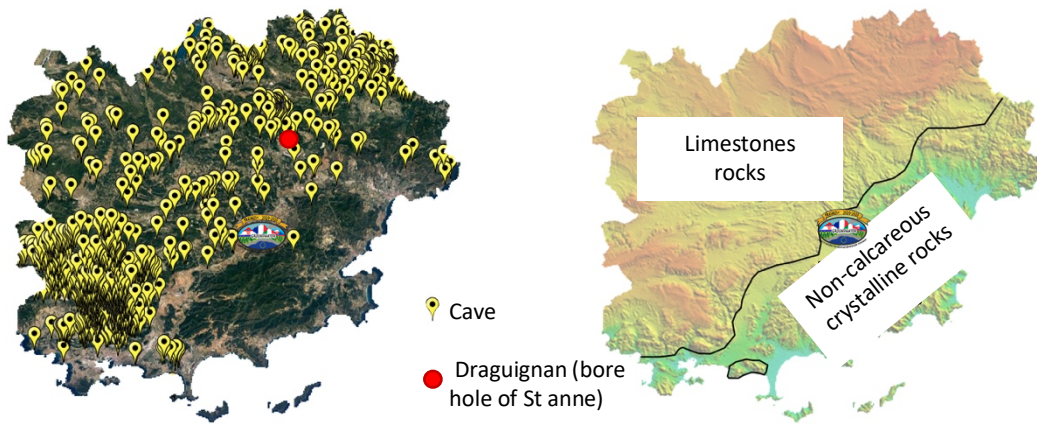


Figure 1 : Location of cavities and simplified geological map of the Var  
From : Fichier de cavités du Var (Lucot et al.)



Figure 2 : Resources used for drinking water supply

From : from : Observatoire départemental des ressources pour l'alimentation en eau potable du Var, 2019

## Part 2 : Evolution of water resources

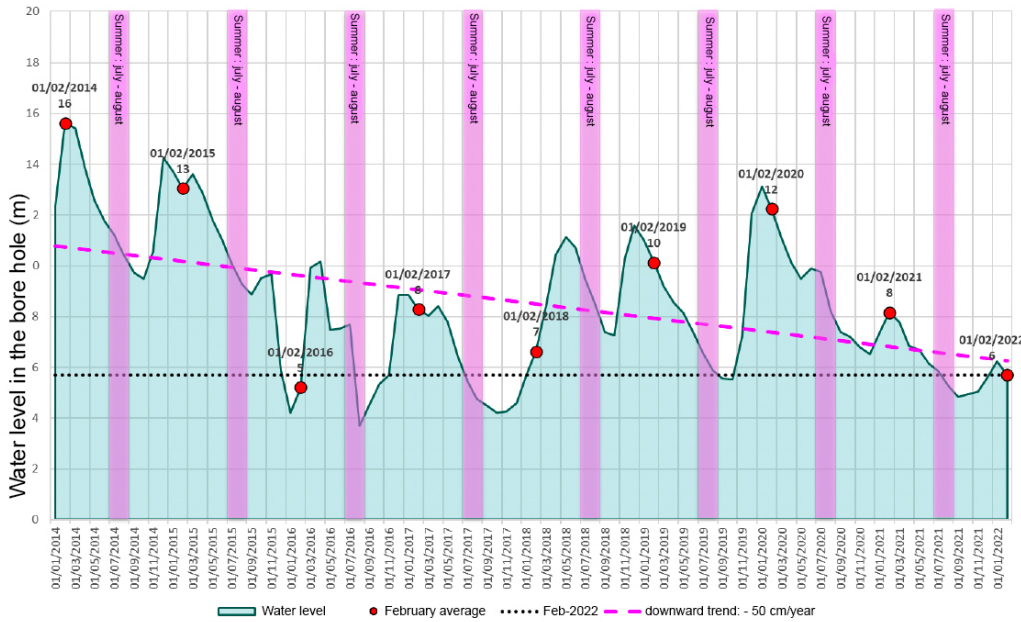


Figure 3 : Evolution of the water level in the Sainte-Anne borehole in Druguignan (see : Ressource en eau du territoire, CEFEG 2022)

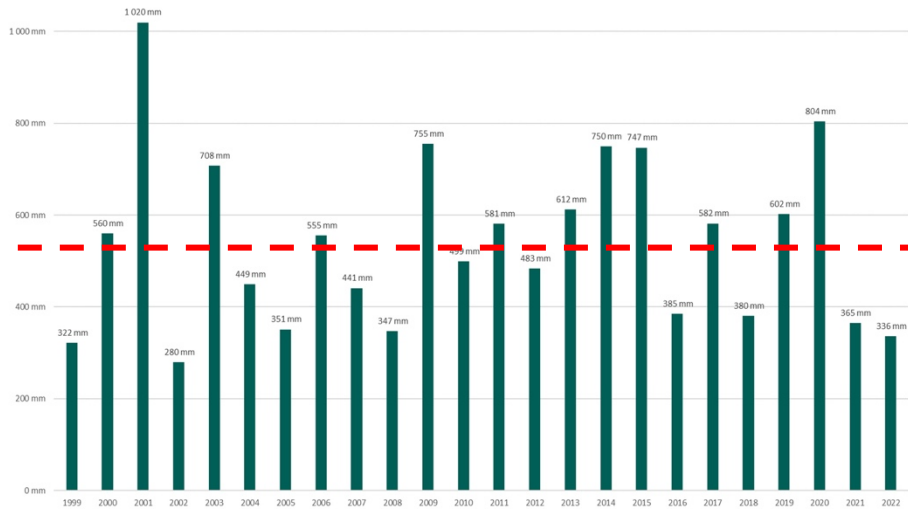


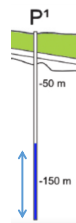
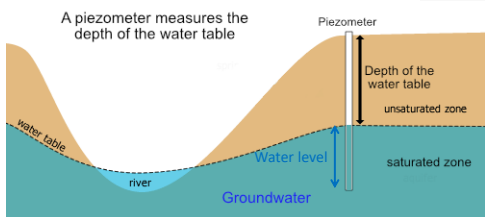
Figure 4: Rainfall totals from September to February in Druguignan area. Average value over 23 years: approx. 550 mm

(see : Ressource en eau du territoire, CEFEG 2022)

### Piezometer

A piezometer is a pressure sensor that measures the depth of the water table. It is inserted into a drill pipe.

Here the instrument indicates the water level from the bottom of the bore hole to the water table.



The piezometer of « La roquebrussane »  
Picture : F. Mourau, 2021

2. Using documents 3 to 5, explain the evolution of the groundwater resource over the last 23 years.

Figure 5: The piezometer is an instrument that measures the depth of the water table

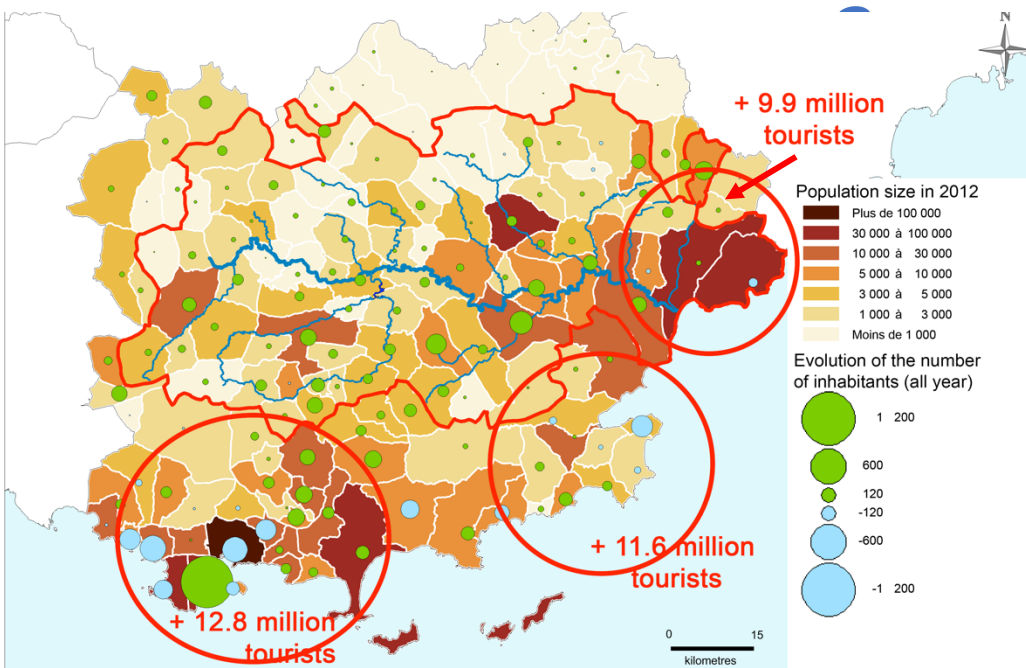


Figure 6: Number of inhabitants per municipality and evolution of the number of inhabitants.

Only year-round residents are counted here: tourists and second homes are not taken into account

Scé : INSEE/PAPI Argens

The Var is the leading tourist department in France in terms of overnight stays: 55.8 million tourists stayed in the department in 2020. The 3 major destinations are: Toulon Provence Méditerranée (1), the Gulf of Saint-Tropez (2) and Var Estérel Méditerranée (3). These tourist areas are mainly supplied with drinking water by the water channels that transport water from the karstic aquifers to the coast.

### 3. Using your previous analyses and figure 6, explain why climate change is weakening the drinking water supply of the whole department.

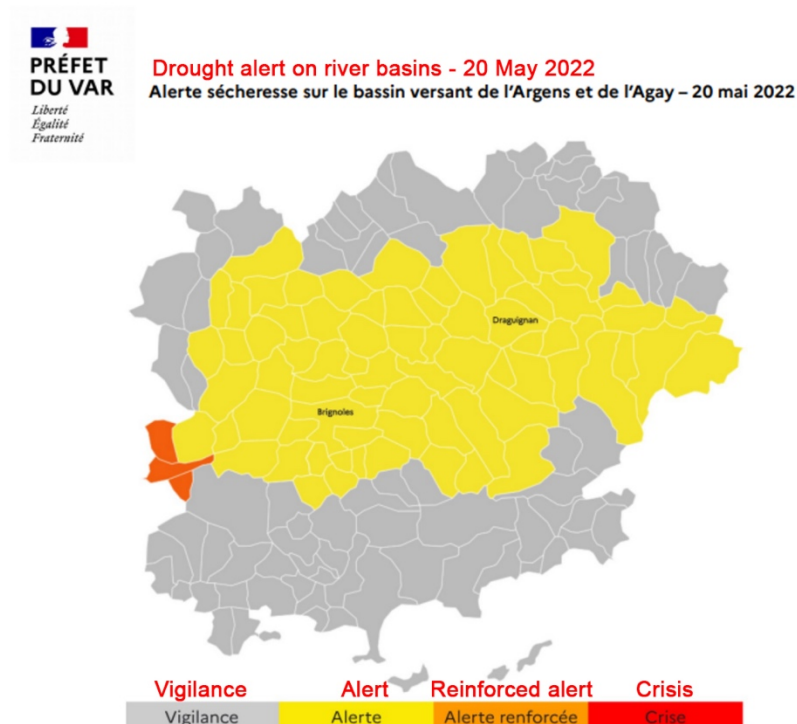


Figure 7: Drought alert level map produced by the Var prefecture (From : Var.gouv.fr)

Figure 8: List of state-imposed rules in the reinforced alert zone (From : Var.gouv.fr, 2022)

Water uses		Limitation measure in reinforced alert
watering	Lawns and green spaces	No watering at any time
	Flowers and flowerbeds, trees and shrubs, vegetable gardens, pleasure gardens	Total ban on watering at all times with the exception of vegetable gardens where watering is prohibited from 9am to 7pm
	Stadiums and sports areas of all kinds	Watering ban from 9 a.m. to 7 p.m. and reduction of water withdrawals by 40
	Golfs(*)	
washing	Motor vehicles	Washing of vehicles is prohibited, with the exception of professional water-saving stations and motor vehicles or watercraft with a regulatory or technical obligation as well as safety-related organisations.
	Boats and watercraft, motorised or not	
	Roads, terraces and facades	Total ban on watering except for sanitary reasons and excluding pressure washing
Swimming pools and spas		Filling of private swimming pools and spas is forbidden Filling of swimming pools open to the public is subject to written authorisation from the mayor
Water games		With the exception of those with recycled water, water games are prohibited except for reasons related to public health
Recreational water bodies, ponds		Filling and levelling of water bodies and ponds prohibited Levelling authorised for artificial baths declared to the Regional Health Agency Levelling authorised for professional aquaculture and aquaculture and seaweed farming
Fountains		Fountains operating without water recycling should be closed. As an exception, fountains supplied by gravity from a spring may be only partially closed when the use of the water is not detrimental to the aquatic environment. This measure may be adapted for reasons of public health.

**How does the French state react to a drought situation? How do you explain these decisions?**