Clepsydra | Interreg Euro-MED | Co-funded by the European Union

CLEPSYDRA NEWSLETTER #1

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15/09/2024

CLEPSYDRA KICK-OFF MEETING MARCH 15TH 2024

The CLEPSYDRA project partners met on 15 March 2024. This was an opportunity for each partner to introduce themselves and remind the others of the actions to be taken. The French Région Sud, national authority for the Interreg Med programme, was present to remind us of the project rules. The start of our beautiful Clepsydra story.

KICK-OFF MEETING IN MURCIA, SPAIN

The kick-off meeting was held on 21 and 22 May 2024 in Murcia, where the IGME the Clepsydra project leader, is based. It was a key event marking the launch of the project. It was an opportunity to hold a face-to-face meeting with all the partners. It was a time marked by presentations by each partner and visits to sites in the Murcia region, including the area around the Mar Menor.

Each partner presented its involvement in work package programme:

- Work Package 1: Tools development for groundwater data monitoring and interpretation of key gaps.
- Work Package 2: Monitoring network creation.
- Work Package 3: Piloting.
- Work Package 4: Capacity building.

This kick-off meeting was an opportunity to present the next major firts initiatives as:

- the creation of “local living labs” oriented by Aqua-Valley.
- the programme tool to measure the carbon footprint by CUADLL
- Next events as Groundwater Open Days which aims the arising of awareness about the importance of aquifers.
- Desing of a data collection and screening protocol for the monitoring networks, action presented by IGME-CSIC.

- Design of the Decision Support System (DSS) for data interpretation to enable decision making, presented by the University of Cassino

SPOTLIGHT ON THE CAMPO DE CARTAGENA CASE STUDY

During the CLEPSYDRA project, 4 demo site will test the new aquifer monitoring solutions developed during the project. Campo de Cartegena in Spain will be one of the CLEPSYDRA demo sites. Let's see what the specificity of this aquifer is !
Located in the south-east of Spain, Campo de Cartagena is based in Murcia region which is a semi-arid area around the Mediterranean Sea. This region is an example of how agriculture, by an intensive use of groundwater, can change aquifer hydrological behavior.

Murcia region is composed of several desertic zones. Since Roman era, irrigation management was a big force in this area which have an important deficit of rainfall. In the end of the 1970s, a canal was created to transfer water from the Tagus to the Segura basin. Agriculture in Murcia become more and more important, so much that the region is named the "European vegetable garden" with its 2.5 million tons of fruits and vegetables produced with three quarters dedicated to export.
The Campo de Cartagena aquifer is formed with different levels one above the other. These layers were formed in successive geological periods. We call it a multi-layered aquifer.

The lower layers have been overexploiting for irrigation use, which implies a problem of water quantity. At the opposite, the intensive irrigation contributes to recharge the upper part of campo de Cartagena aquifer. In this surface aquifer, the main issue is the water quality. Indeed, the fertilizer used during the irrigation comes into the aquifer and produce pollution. Moreover, the connection between this upper aquifer and the Menor Mar has big repercutions such as algae proliferation in the Menor Mar in 2016.

Moreover, boreholes provide an artificial link between the different aquifers, and it is likely that contaminants of agricultural origin (nitrates) may be transferred from the upper aquifer to the deeper one.

In this case, the challenge is to find the most suitable processes for monitoring to meet needs and optimize water quality as far as possible.

Campo de cartegena upper aquifer connected to the Menor Mar | Spain

FOCUS PARTNER – IGME

During Clepsydra Kick-off meeting that took place on May 21-22 in Murcia, Spain, a series of interviews of the different partners of the Clepsydra project were conducted. This interview features Jose Luis Garcia Arostegui, Senior Reasercher in the Instituto Geológico y Minero de España (IGME) in Spain.

In this video, Jose Luis Garcia Arostegui is talking about the Clepsydra project and the role and work of the IGME in it.

https://clepsydra.interreg-euro-med.eu/2024/06/02/focus-partner-igme/

THE FRENCH GROUNDWATER OPEN DAYS

Agropol'Eat Festival

Agropol'Eat Festival is an event dedicated to civil society which welcome every year around 2000 visitors. The Agropol'Eat project was born in 2017 as part of a science and society conference with this idea: to create a third place for the agroecological and environmental transitions. The festival aims to promote sustainable agriculture and food and to raise public awareness of the challenges of the ***agroecological and environmental transition****, by encouraging consultation between stakeholders, the link with the territory and its inhabitants and science-society debates, through the emergence of innovative events and projects. As a very well establish event, IRD and Aqua-Valley have chosen Agropol'Eat to organize their Groundwater Open day and get involved in the 2024 edition to propose to visitors a travel into groundwater.*

AQUA-VALLEY and IRD workshop during Agropol'Eat 2024

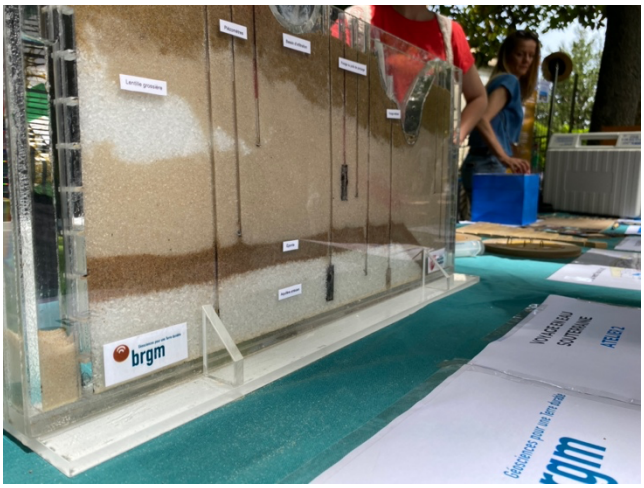
The 30th of June, french CLEPSYDRA partners, AQUA-VALLEY and IRD, have participated to the Agropol'Eat Festival 2024.

To highlight the groundwater topic, we have organized a stand to explain when and how groundwater is formed and recharged, what are the interactions with our anthropogenic uses and how we manage to monitor the groundwater to obtain useful information for our societies. The educational stand was organized around 4 workshops:

1. Groundwater is not underground rivers
2. Recharging groundwater where, when, how?
3. Groundwater is impacted by anthropogenic uses
4. Monitoring is important to better understand and manage this resource

Groundwater is not underground rivers

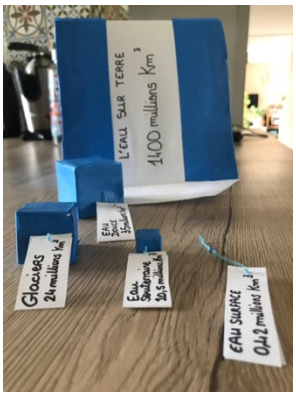
To explain this concept, we first asked people to explain their vision of groundwaters. Then we explained to them the difference between permeability and porosity by using bottles with different contents and to show them also how a pumice reacts to water. With these experiences, people understood that the water is contained in the soil and that it's not like an underground river.



Recharging groundwater where, when, how?

To make the groundwater circulation be visible, the BRGM (French geological survey) which are an associated partner of CLEPSYDRA, lent us a pedagogic maquette that show a cup of the ground. For educational purposes, this maquette allows us to understand the circulation of water in geological formations and to illustrate the impact of pollution of anthropogenic origin, for example. The model consists of 2 aquifers separated by a low-permeability formation. The first aquifer with a so-called free water table circulates in the sandy formations. The second aquifer, at the base of the model, is said to be captive under low-permeability formations. Different tubes represent drillings. The purpose of the simulation is to show that water generally circulates in the subsoil not in the form of a river but in the interstices of the rocks

Groundwater is impacted by anthropogenic uses



We first explain the impact regarding water quality: with the maquette, we show also the circulation of a plume of pollution which contaminates a water table. We explain also how a part of the aquifer can be polluted without polluting this other because the second one is protected by an impermeable level. We explained also how pollution that comes into the ground can appear in a river connected to the aquifer.

Secondly, we explain how our anthropogenic uses can have an impact on water quantity by questioning the visitors through french water samplings and french water consumptions.

Monitoring is important to better understand and manage groundwater

A sensor was brought and tested with participants to explain to them how the groundwater measurement is done. It was the opportunity to present the CLEPSYDRA project and the importance of groundwater monitoring to improve water management.

CLEPSYDRA OPEN DAYS IN MALTA

On the 14 and 15th September 2024, the Energy & Water Agency (EWA) hosted its annual Open Weekend at the *Ghajn* – National Water Conservation Awareness Centre in Rabat. This engaging two-day event offered family-friendly activities, featuring children's games, interactive shows, and educational animations centered around the topic of water sustainability, conservation, and reuse in the Maltese islands.

During the event, an outdoor exhibition showcased and promoted various projects that EWA is currently undertaking, including the ***Clepsydra*** project funded by the Interreg Euro-MED Programme. This initiative was highlighted to engage the public and raise awareness about the project objectives.

The Groundwater Open Day in Malta is scheduled for Sunday, the 20th of October 2024. Visitors will have the opportunity to explore an underground water spring *Misraħ Suffara* in Ħad-Dingli, which forms part of the groundwater monitoring network. Throughout the day guided tours will be held every hour, providing participants with insights into the development of groundwater in perched aquifers systems.