



) ict4water.eu

Open Workshop ICT tools for innovating Groundwater Management in a changing world

September 22nd 2017

IDAEA. CID - CSIC

16 Jordi Girona. 08034 Barcelona

The H2020 FREEWAT project results and future





MAR Solutions - Managed Aquifer Recharge Strategies and Actions (AG128) Rudy Rossetto (Scuola Superiore Sant'Anna) r.rossetto@santannapisa.it



Taken from: http://travessa-pirineus.blogspot.com.es/2014/08/dia-15-de-lospitalet-al-refugi-de-juclar.html

water resource management and planning

Although a lot of science is produced on water resource management (especially in the ICT sector)

WRM is still today poorly addressed via scientific means

REASONS

- underrated importance given at political and decision maker level
- low-capacity of the research environment to transfer the results to the real world
- missing digital capacity at agencies and governing authorities









data water data water data water data water

Many countries are now producing water related data:

- in EU countries :

>>>>> large amount

- in other countries

>>>> maybe less data are available

Actions		idsgw_1	date	time	level	temperature	ph	ces
Edit	Delete	4968	2015-04-22	09:26:24	8.01714	9.68442	1	489.071
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Edit	Delete	4981	2015-04-22	12:41:33	7.99031	9.69059	1	483.874

Information CONTENT of this data not fully exploited as today





www.freewat.eu



FREEWAT is a EU H2020 ICT project for *improving* Water Resource Management by *simplifying* and *strengthening* the application of EU water related Directives and non-EU water related regulations

MAIN RESULT

Open source and **public domain GIS-integrated** modelling platform allowing **data storage** and **analysis** and **simulation** of several processes for WRM

FREEWAT expected main impact \rightarrow

help producing scientifically and technically sounding decision and policy making based on:

- data and innovative data analysis tools
- participatory approach





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FREEWAT Consortium











WHAT IS FREEWAT TODAY?



A QGIS integrated modelling environment in its v0.5 age along with User Manuals and tutorials





[▼] P11 CAG0110-005 ■ P4 CPR1011 ★ P7 CUP0609

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FREEWAT CAPACITY BUILDING

Large stakeholders involvement (>>>500 stakes involved)

Growing web social and professional networks (linkedin group >675 followers – twitter: >750 followers @h2020freewat)

About 1000 downloads so far (from 15th april 2017)



The state of the play/1











The state of the play/2











The state of the play/3













FREEWAT Synergies





UNESCO's Hydro free and/or Open-source software Platform of Experts (HOPE)





.......







CAPACITY BUILDING











TUTORIALS AVAILABLE so far...

- Groundwater modelling exercises (3 tutorials)
- AkvaGIS tutorial (Hydrogeological and Hydrochemical Analysis Tools)
- Calibration and parameter estimation
- Unsaturated zone solute transport (2 tutorials)
- Seawater intrusion
- Water Resource Management in Rural Environment
- Lake package
- **Observation Analysis Tools (OAT)**





FREEWAT CASE STUDIES















Analysing water supply issues















Analysis of contaminant transport



GOZO mean sea level aquifer



Addressing rural water management









Stampriet Transboundary Aquifer System Land Use

Legend

- Villages and settlements STAS Boundary National Boundaries Rivers Farms with irrigation areas Farms delineation Land use Agricultural Land National Park
 - Wildlife Management Area

EP Water Online Market P MAR Solutions - Ma **Recharge Strategies and Actions** (AG128)







USING FREEWAT FOR WATER GOVERNANCE PURPOSES ON TRANSBOUNDARY WATER RESOURCE

The STAS is a large farming area with approximately 1200 farms (mostly in Namibia)

Groundwater use: 52% irrigation, 32% stock watering, 16% domestic use

No mining and industrial activities

Annual groundwater abstraction: 20Mm³ (around 70% in the Stampriet area)



EU LIFE REWAT 2015 - 2019 sustainable WATer management in the lower Cornia valley through demand REduction, aquifer REcharge and river REstoration

Coordinatore: Lumiere Consorzio di Bonifica 5 Toscana Costa

Partners:

Baratti egione TOSCANA Aeropoli di Populonia Necropoli di San Cerbone

Colmata







Scuola Superiore Sant'Anna – Istituto di Scienze della Vita

INSTITUTE OF LIFE SCIENCES

ASA spa

Parchi Val di Cor in Salba Servizi Ambientali Spa Google

Area Naturale Protetta di Interesse Locale Sterpaia

Pratoranieri

Immagini ©2015 Google Data SIO



PARTICIPATORY APPROACH

Relevant part of the FREEWAT approach

At each case study a FOCUS GROUP is set

These aim at including the society in the technical part of the game.

Aim also at demonstrating at a general level that water resource management and planning may be performed with open source and public domain sw

A common space for the participants to bring their experience and values to generate <u>a shared knowledge on the value of water.</u>









MODELLING GUIDELINES

Guidance on model-supported application of EU waterrelated Directives for water management

The guidelines cover all stages of model development: planning, conceptualization, design and construction, model calibration, predictive scenarios, uncertainty evaluation, model review and reporting.

They are divided into two main sections:

1) general section with guidelines for water quantity and quality modelling in general;

2) a more detailed section strongly connected to guidelines useful for the application of the European Directives.













No-profit

association

DIRECTORATE

FOUNDARS + SELECTED

Main aims:

- 1. coordinating FREEWAT maintenance and development
- 2. supporting FREEWAT development and application by means of dissemination activities
- 3. supporting capacity building for breaking digital barriers
- 4. stimulating smart and "sustainable water management"
- 5. helping in achieving Sustainable Development Goals









FREEWAT CONCLUSIONS FREEWAT

- Unite the power of GIS geo-processing and post-processing tools in spatial data analysis to that of simulation software
- Public authorities have the chance to build high informative and dynamically growing SHARED representation of hydrologic systems where perfoming planning analysis
- No cost for licences (money can be moved to development of client tailored applications>>> <u>new companies and jobs</u>>>>SDG8)









Thanks!







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