





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

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IDAEA. CID - CSIC

16 Jordi Girona. 08034 Barcelona

The INTCATCH tools and their demonstration



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



Does current water quality monitoring fit for the future?

The first cycle of the Water Framework Directive implementation (2009 - 2012) had a total cost of at least €120 Billion. Many water bodies are still not meeting their environmental objectives. This acts as a barrier to sustainable growth and improving quality of surface water.

Main problems with the current approaches to water quality monitoring:

- Large numbers of samples are needed to provide 'certainty' and precision for reporting,
- Costly sampling and over-sensitive laboratory chemical analysis,
- Data is always historic so doesn't inform real time action,
- There is too much reliance on statutory bodies to do the work and their budgets are being reduced.

As a result of the current approaches to monitoring, the costs are too high, knowledge of diffuse water quality pressures is too low, and community and business engagement is patchy at best.













INTCATCH 2020 will...

- Deliver water quality outcomes in a more flexible way and increase efficiency.
- Support more targeted, intensive investigation 'monitoring' that identifies sources & enables managing polluting sources.
- Demonstrate and assess low cost and effective treatment of diffuse pollution.
- Manage and communicate data and outcomes.
- Reduce barriers to new stakeholders to take up local monitoring, treatment, and data analysis.
- Harness citizen science capability.





















Activity leaded by CT BETA t is INTCATCH about? **monstration and Market Uptake MARKET UPTAKE** DEMONSTRATION Lake Garda (Italy) Dissemination • Urban rivers in London **Exploitation** Rural river in Norfolk (UK) Training • **Business model** River Ter system in Spain Lake Yliki in Greece **INTCATCH Expert Network INTCATCH Business Franchises** Full product demonstration (2019)















Demonstrating the INTCATCH tools in River Ter

River Ter watershed in Western Mediterranean and in Catalonia







Diversity of present biomes















Upper River Ter basin





River Ter basin at Osona and Ripollès regions (NE Catalonia, Iberian Peninsula)

Natural values:

- ✓ Geomorphology: meanders and river islands.
- Habitats: alders, willow and ash trees, temporary ponds and calcareous water spring communities.
- Native species (i. e. Mediterranean barbel (*Barbus meridionalis*) and Catalan chub (*Squalius laietanus*)).

Problems and pitfalls:

- ✓ A lot of weirs (one each 0.8 km of river), leaving stretches with low flows and without natural substrate.
- ✓ Intensive agriculture and livestock.
- ✓ Urbanization.







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Upper River Ter – Actual Monitoring made by ACA



Sampling points:

22 along upper River Ter basin
+ 3 at the reservoirs

Analytics:

- Hydro morphological elements
- Physicochemical elements
- Biological elements
- Priority substances

Periodicity:

 Depends on the sampling point and the analysed parameter (monthly to annual basis)













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Demonstration of INTCATCH tools in the River Ter August 2018 – December 2019

INTCATCH SMART Boats

March 2017 – preliminary tests:



Sensors included in the boat: Temp., Conductivity, DO, pH, ISA, Chloro A

In progress: Metals (Zn/Cu), E.Coli, Pesticides.



INTCATCH boat oxygen dissolved results at Sau Reservoir (Vic, 17.03.30)



INTCATCH boat electric conductivity results at the Sorral Island (Vic, 17.03.30)

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Demonstration of INTCATCH tools in the River Ter

Fixed monitoring stations

November 2017:

- Aigües de Vic S.A.
- Aigües d'Osona S.A.



Blueboxes with sensors of:

- pH
- Electrical conductivity
- Temperature
- Oxygen
- In Situ Spectral Analyser













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Sant Jean da

Outras de Besc

anta Eugen

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Campda

1. Collection point of

Sant Bui

2. Collection point of

ETAP Aigües de Vic

ETAP Osona nord

Ripo



Demonstration of INTCATCH tools in the River Ter

Decision Support System

The data provided by the boats and fixed monitoring stations will feed a **DSS system**, with the final goal to identify and give assistance in prioritisation of pressures within catchments.

For the DSS it has been compiled historical data of:

1. **Geographical data** to describe the catchments and river network

2. **Morphological data** to describe the morphological characteristic of the catchment

3. Data on the pressures present in the area, namely a list of pollution sources

4. **Data on the monitoring stations**, with a description of the environmental data measured



Land uses of the upper Ter River basin in 2009.











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Thank you very much for your attention





