Monitoring inland waters and reservoirs

ecohydros

DORII — Deployment of Remote Instrumentation Infrastructure

WHAT: Monitoring water quality in a large reservoir

WHERE: "Cuerda del Pozo", 800 ha., water supply for Soria city (40K inh.)
REAL Remote site: 25 km to Soria, mountain area, sensor platform near dam

HOW (OBJECTIVES): Use DORII e-Infrastructure for continuous monitoring using a multi-sensor platform and coupling data to model simulations

Integration of remote instrumentation (using IE & VCR)

Meteorological and underwater sensor integration

Labview DAQ system connected through Web Services to DORII Instrument Element

Operation of the profiling system from the VCR interface

CUERDA DEL POZO RESERVOIR (SORIA)

DORII
Deployment of Remote Instrumentation Infrastructure

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advanced water ecology
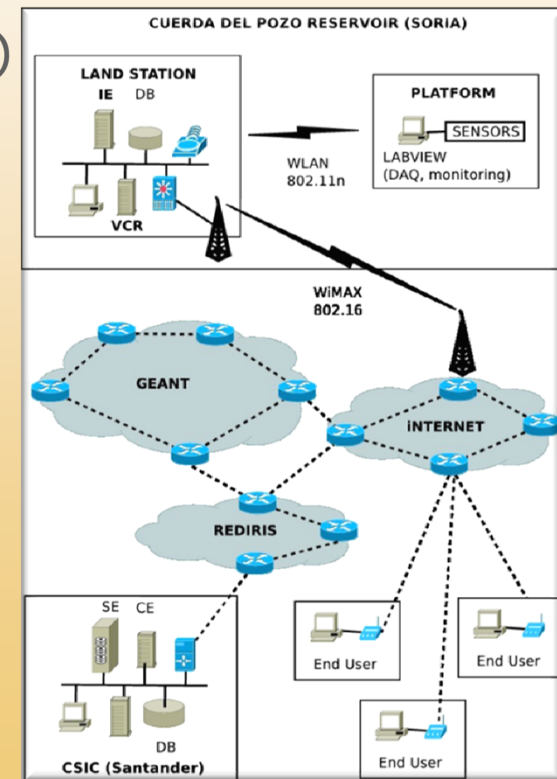
Monitoring inland waters and reservoirs

Private company located in Santander (Spain), since 2003.

Multidisciplinary team: 10-15 technicians (biologists, engineers, geographers, environmentalists), some of them with more than 20 years of experience.

National (water authorities) and international activity in the field of consulting & research focused on aquatic ecosystem assessment: eco-technological approach to management and restoration.

Strong investment in new assessment methods (hydro acoustics, remote sensing, modeling,...) for biological indicators and whole ecosystem behavior in surfaces waters (rivers, lakes, reservoirs, estuaries and coastal waters).

R&D as a KEY activity: 10 relevant projects in 5 years, in partnership (and also leading) with 6 different European universities, research institutions and companies.

www.ecohydros.com
(SPAIN)

DETAIL OF ACHIEVEMENTS IN COLLABORATION WITH CSIC TEAM:

Integration and "homogenization" of instrumentation

Integration of a complete multi-sensor platform based on Labview connected to the Instrument Element through Web Services.
Data acquisition and management system controlled using the VCR that allows us to work remotely from any Web platform.

Deployment of infrastructure

Full exploitation phase achieved.
Field work reduced up to a 75% (estimated) due to remote capabilities. Huge costs reduction, as well as huge data acquisition scale-up (real time), which allows us to provide answers to an unsolved problem.
Important community benefit expected.

COUPLING TO WATER RESERVOIR MODEL (DYRESM)

Data access, storage, management and processing, with no need of human presence in-site.
Distributed computing capabilities, due to remote access to data, which allows us to model and predict reservoir behavior
(OUR MAIN OBJECTIVE)

DORII
Deployment of Remote Instrumentation Infrastructure

myWSIM - on

IE Id: http://phedex2:8080/testIE/services/IEService
Context: root
IM Id: myWSIM

Commands history:

CONTROL

Status:
on

Transitions List:
Choose Trans...

Arguments:
No Transition Selected

COMMANDS

Commands List:
RunVI
Switch
SetVaisalaSamplingRate
SetTriboxSamplingRate
SetCNR2SamplingRate
StopVI
MoveWincher
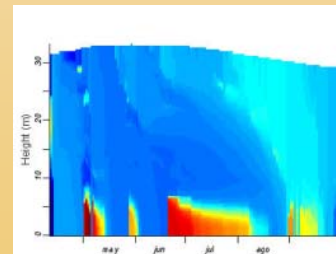WincherEmergencyStop

Arguments:
No Command Selected

MONITORING

Name	Min	Max	Value	Unit	Op.	JMS
VaisalaStatus	--	--	Current_Status: WXT520 1	--	Set...	Subscribe
CNR2Status	--	--	Current_Status: EasyLog (	--	Set...	Subscribe
WincherStatus	--	--	Current_Status: 258,0645]	--	Set...	Subscribe
TriboxStatus	--	--	Current_Status: 9188 Tribo:	--	Set...	Subscribe

Add Time chart, Add Bar chart, Add Scatter plot Add Time chart (with JMS),

Computing Element

CE: https://wms03.egee-see.org:7443/glite_wms_wmproxy_server

Listing successful: 3 job(s)

Create New Job, Update Jobs List

JOBS LIST

| Job ID	Status	Submission Date
https://wms04.egee-see.org:9000/YjXKc64QcRbWSeqJgB_0Ww	UNKNOWN	2010-03-04 05:45:12
https://wms01.grid.elettra.trieste.it:9000/5oPiXZucezXlrVaoy8lFGg	DONE	2010-03-04 05:41:29
https://wms01.grid.elettra.trieste.it:9000/iHW5ZW-CeEioN3cEG9EQ_Q	DONE	2010-03-04 05:44:08

Total P

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DEMO SCHEME:

1- Video introducing the experimental system
Filmed last week in-situ, shows the real system

2- User connection to VCR
Showing the Instrument controlling
the experimental system

3- Remote execution of a vertical profile
Order to wincher system to descend cage 20m
Video showing what happens in the platform
(cage descending and local panel)
Monitoring the change of Pressure and
Temperature through the instrument
connected to the database.
Monitoring Web page for general public.

4- Simulation of evolution in the DORII e-infrastructure
Submission of a DYRESM/CAEDYM job for
execution

5- Results of the simulation and comparison to real data
Plots obtained after job execution

Cuerda del Pozo Reservoir (SORIA)
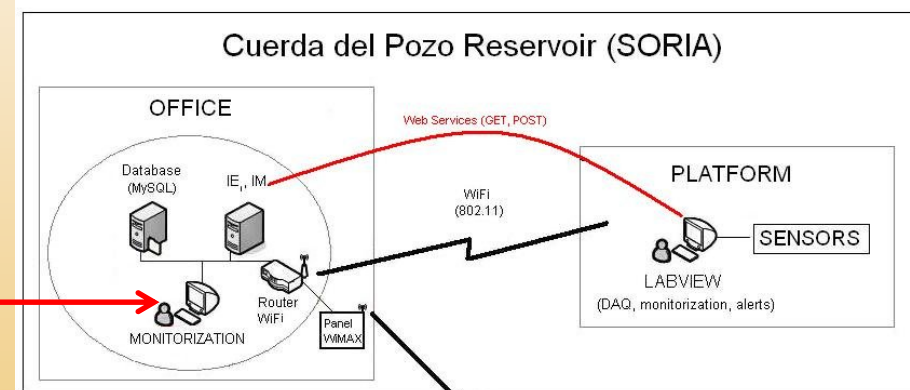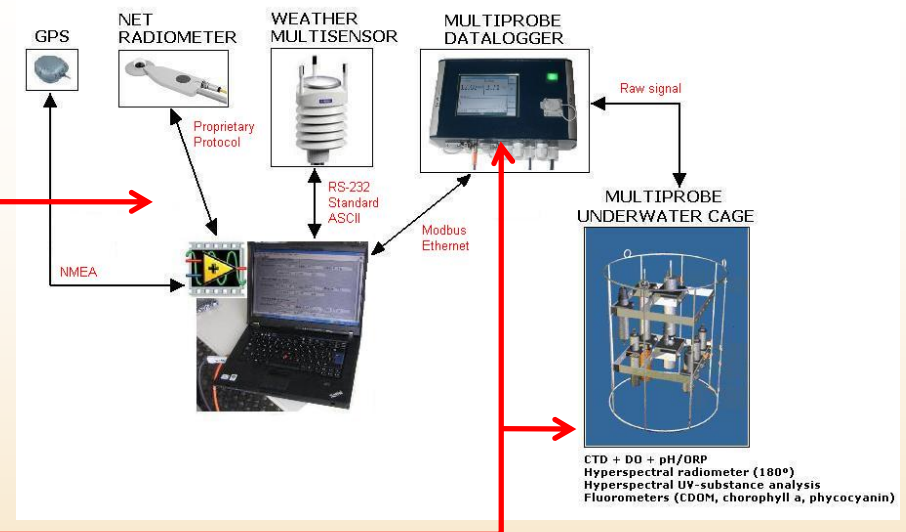
Initial results:
Physical Data evolution and shape "qualitatively" reproduced by model
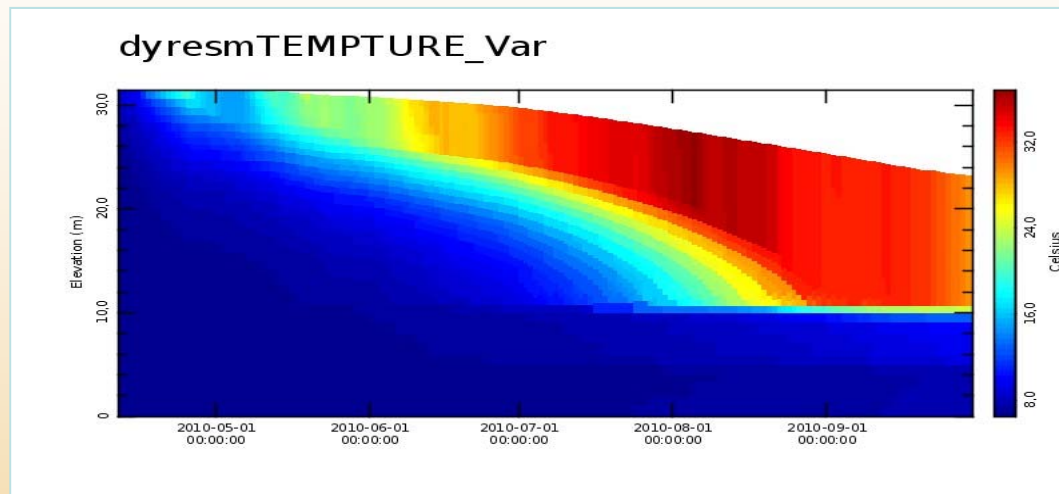
Ongoing work on calibration of biological parameters to confirm Cyanophyceae evolution...

PROMISING R&D ACTIVITIES AND EXPLOITATION OF THE PLATFORM INTEGRATED IN THE e-INFRASTRUCTURE in close collaboration ECOHYDROS-CSIC