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THE BASHYT DSS: A WEB BASED DECISION SUPPORT SYSTEM FOR WATER RESOURCES MANAGEMENT

B. Cau[1], G. Meloni[1], S. Manca[2] and P. Cau[2]

1) ERA progetti (http://era.hoptp.org), albedo.ambro@tiscali.it

2) CRS4 (www.crs4.it), POLARIS, 09010 Pula, Italy. pierluigi.cau@gmail.com

To try it, go to: http://era.hopto.org/bashyt/
ID: swat2007 PW: guest

Objectives

Our primary objective is to develop a user-friendly Web-based decision support system accessible from **the internet** that relies on the SWAT model and GIS-DB technologies for the wise management of the environment.

The idea is to build a development platform on the web - a **collaborative working environment** – to exploit computational and data storage resources to grant web services to the community though a standardized interface.

INTERNET constitutes the ideal terrain for promoting joint initiatives which share computing resources, data, models, applications and knowledge by means **of new tools.**

BASHYT

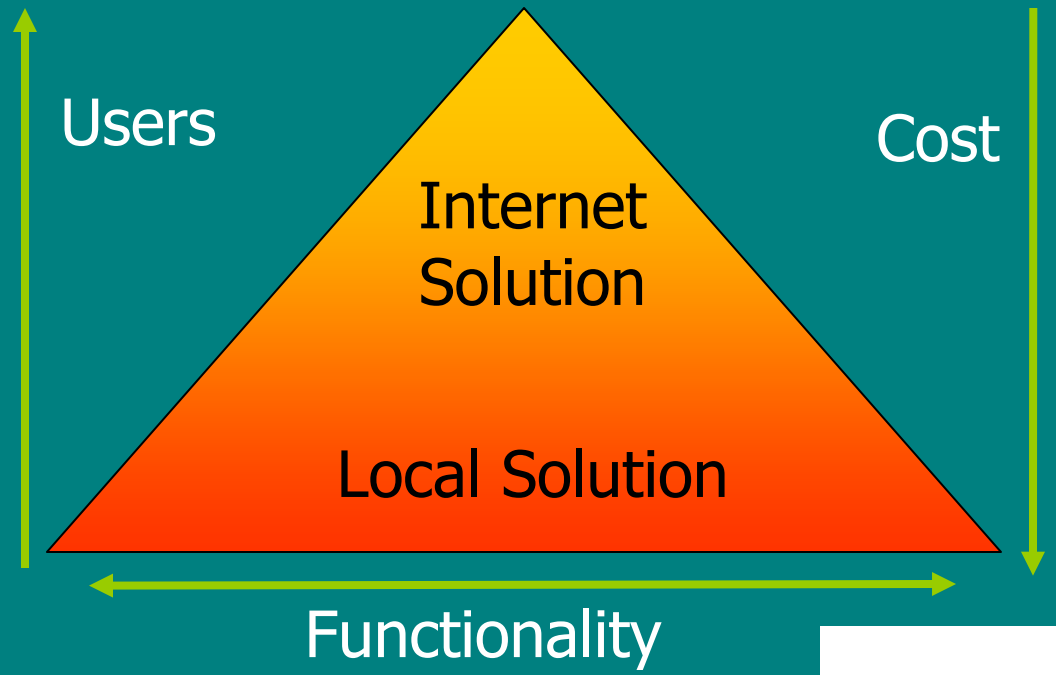
The BASHYT DSS (http://era.hopto.org/bashyt/) is a **integrated software on the web**, **that exposes hydrological application, based a watershed scale model**, to support decision makers, through a user-friendly Web interface.

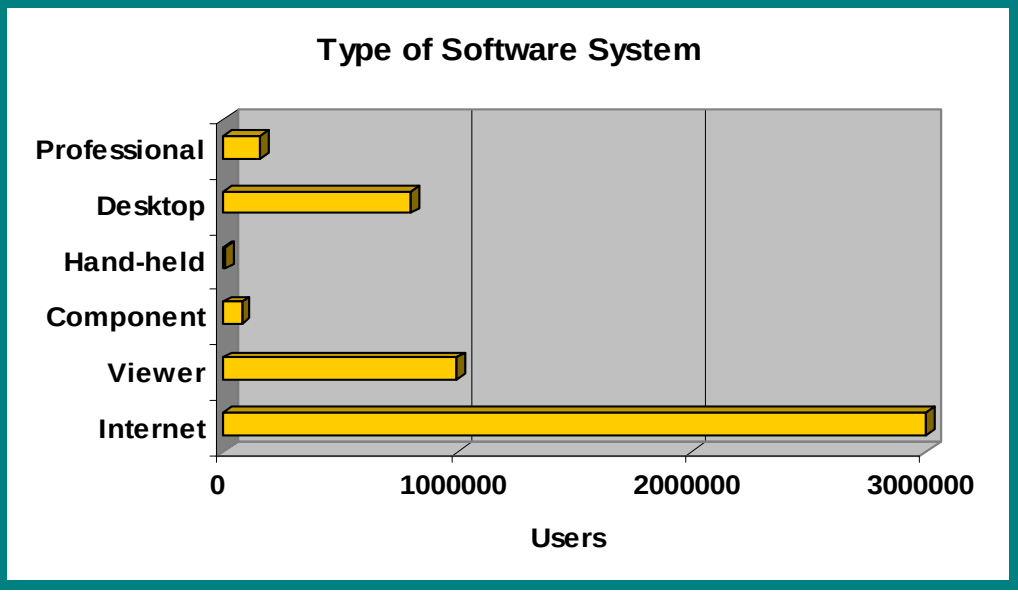
Free software and in-house technologies are combined to transparently and automatically deploy the applications on the web portal.

The DSS is based on the Driving forces-Pressures-State-Impact-Responses (DPSIR) model. Such approach is useful to demonstrate the interconnectedness and estimate the effectiveness of the actions aimed (responses) at solving the problem.

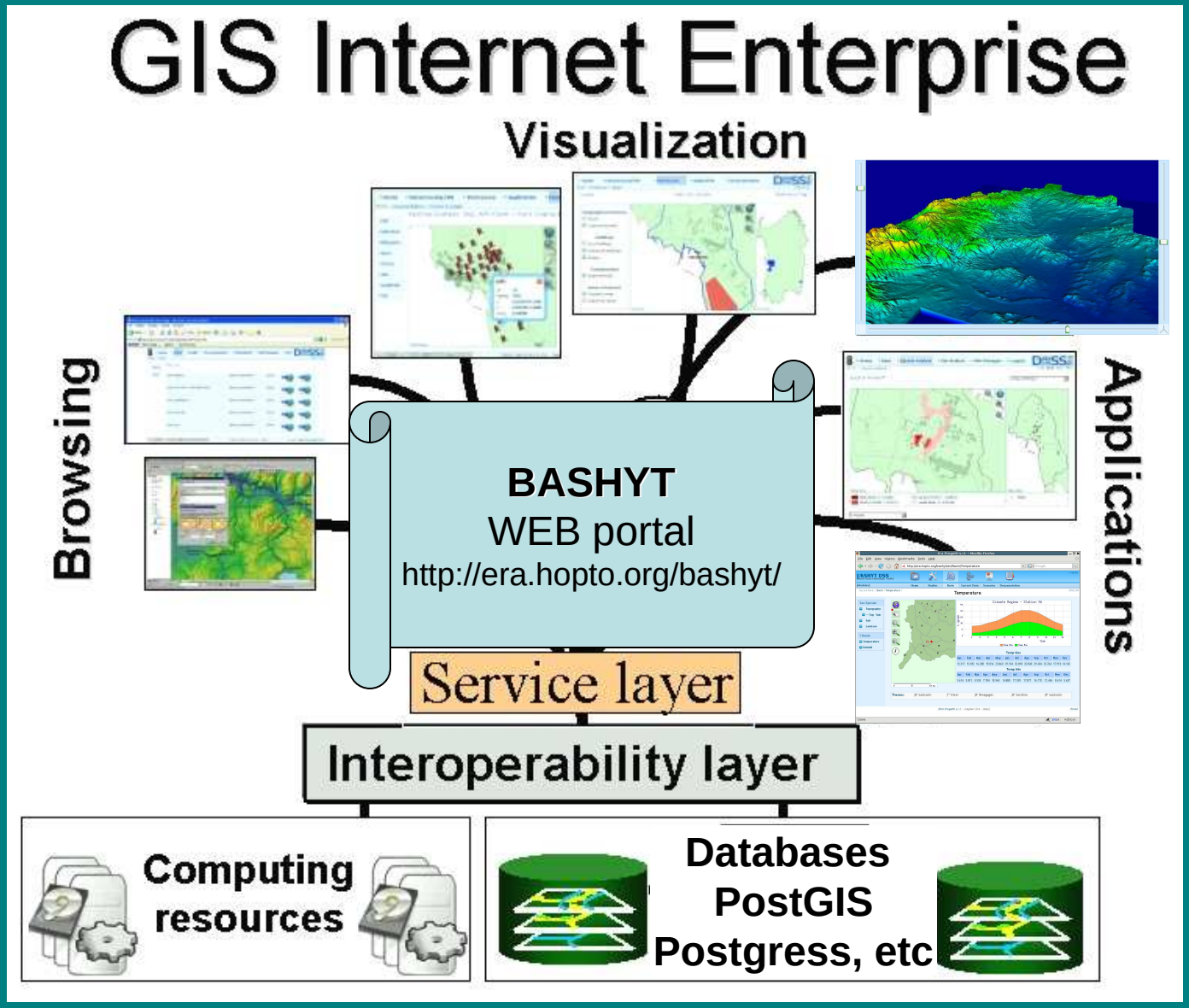
The current version works in **tandem with the AVSWAT** interface for the input management.

Direction of research





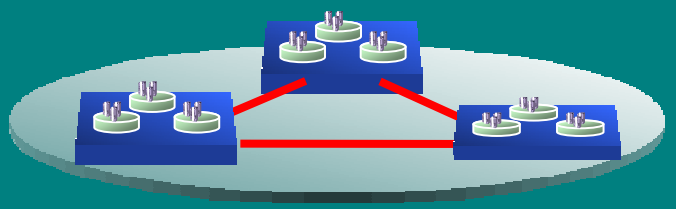
The vision



BASHYT has a layered structure (**interoperability layer, service layer, application layer, etc.**), and is built with open source technologies (**no limitation of commercial products**)

Web-based vs desktop

Features:



1. **Accessibility:** assessable directly on the Internet/Intranet through a normal browser (Internet Explorer, Mozilla Firefox)

2. **A collaborative working environment**: chance to plan and develop group work.

3. **Better exploitation of hardware and software:** possibility to design and better exploit computing and data storage resources

5. **Quality:** use of one certified dataset for the simulation (DB are shared) – **unique parameterization –**

6. **Diversify how services are accessed** (different groups can access different part of the DSS – e.g. pubblic section – office sections, etc.)

BASHYT DSS
Basin Scale Hydrologic Toolkit

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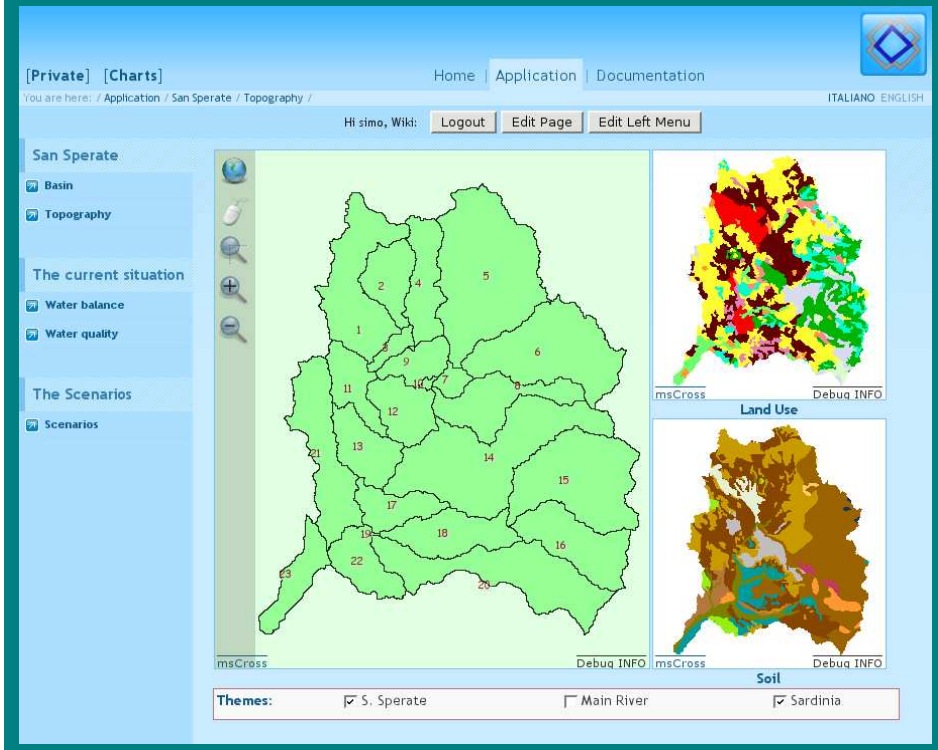
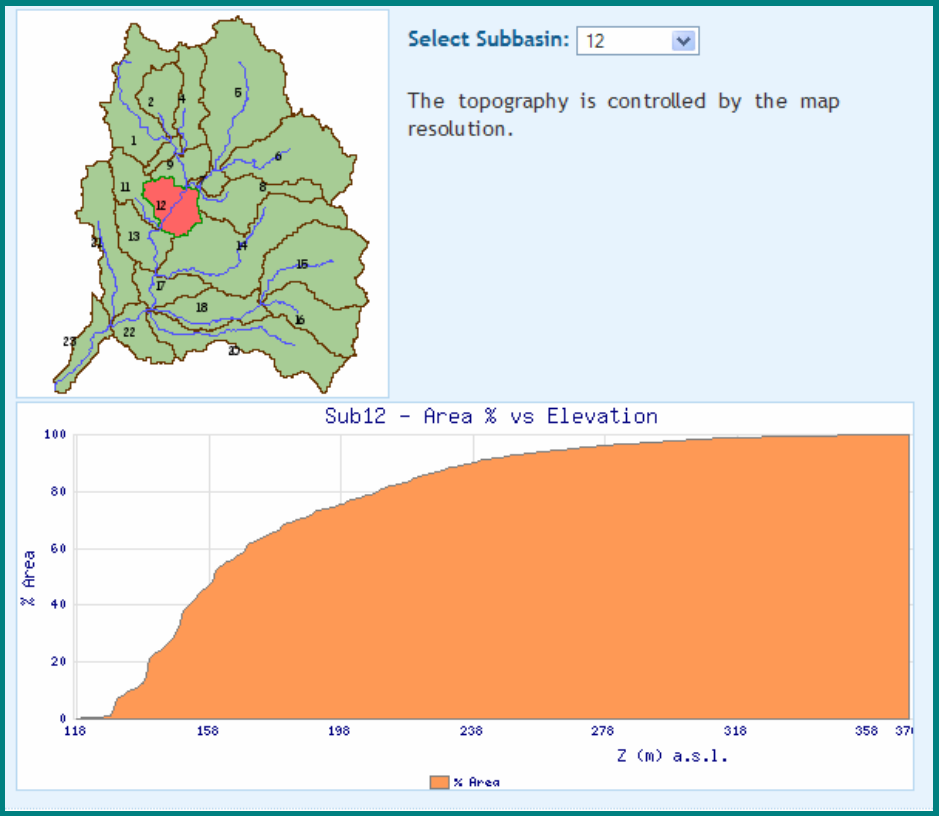
BASHYT enables:

- store, manage, query the data collections;
- visualize data through the web GIS;
- **to be used in tandem with other GIS interfaces** (e.g. AV SWATX, ARCGIS SWAT in the future);
- run real time applications based on the SWAT;
- **create reports** (graphs, maps, etc.) through automatic standardized procedures;
- design remediation strategies and evaluate their effectiveness using a standardized framework (**DPSIR model**).

Reporting on the environment

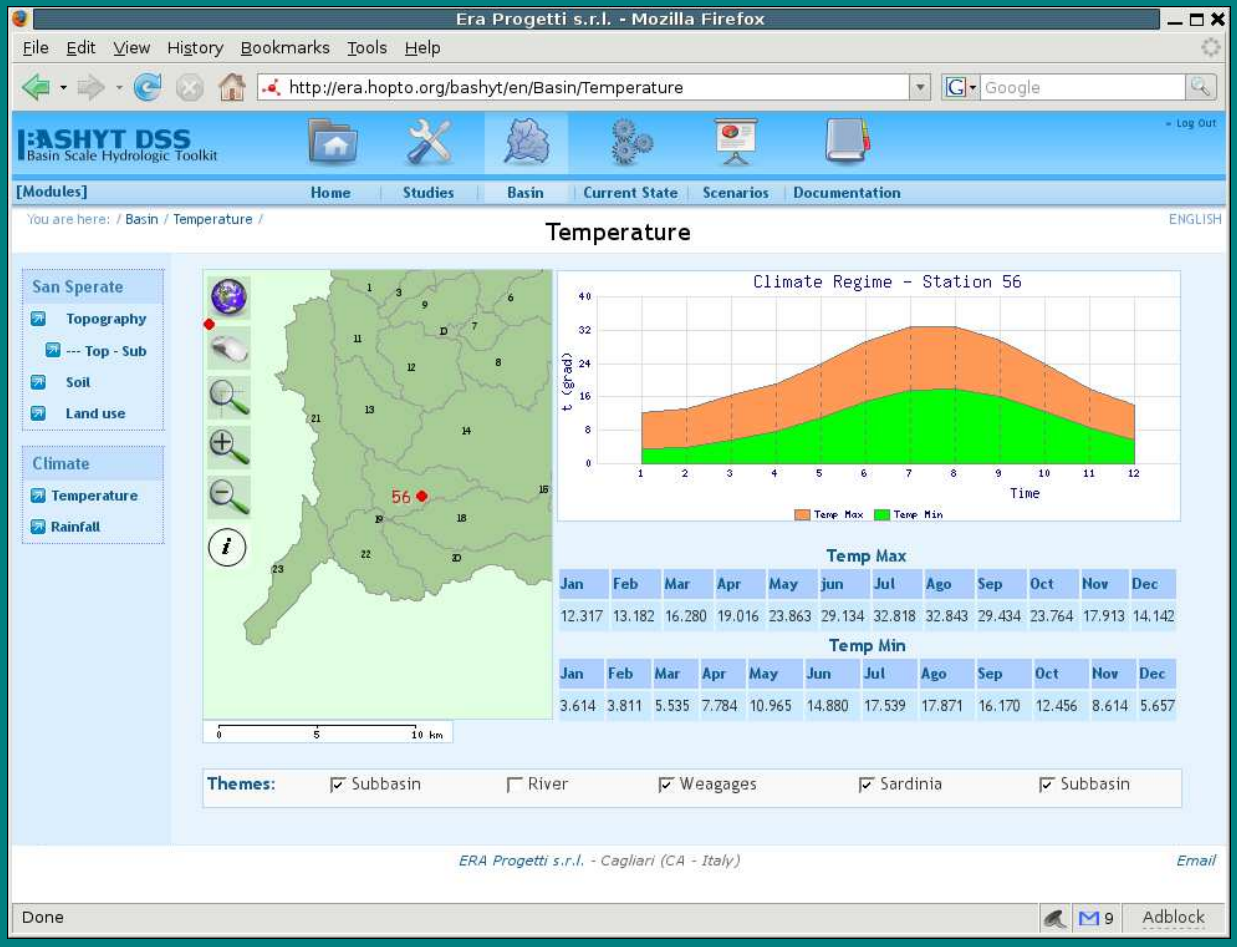


The DSS enebles to: **manage, query and visualize** in a easy way information about the environment and SWAT results. It supports many formats (vector and raster).



Reports on the environment are produced using standardized procedures.

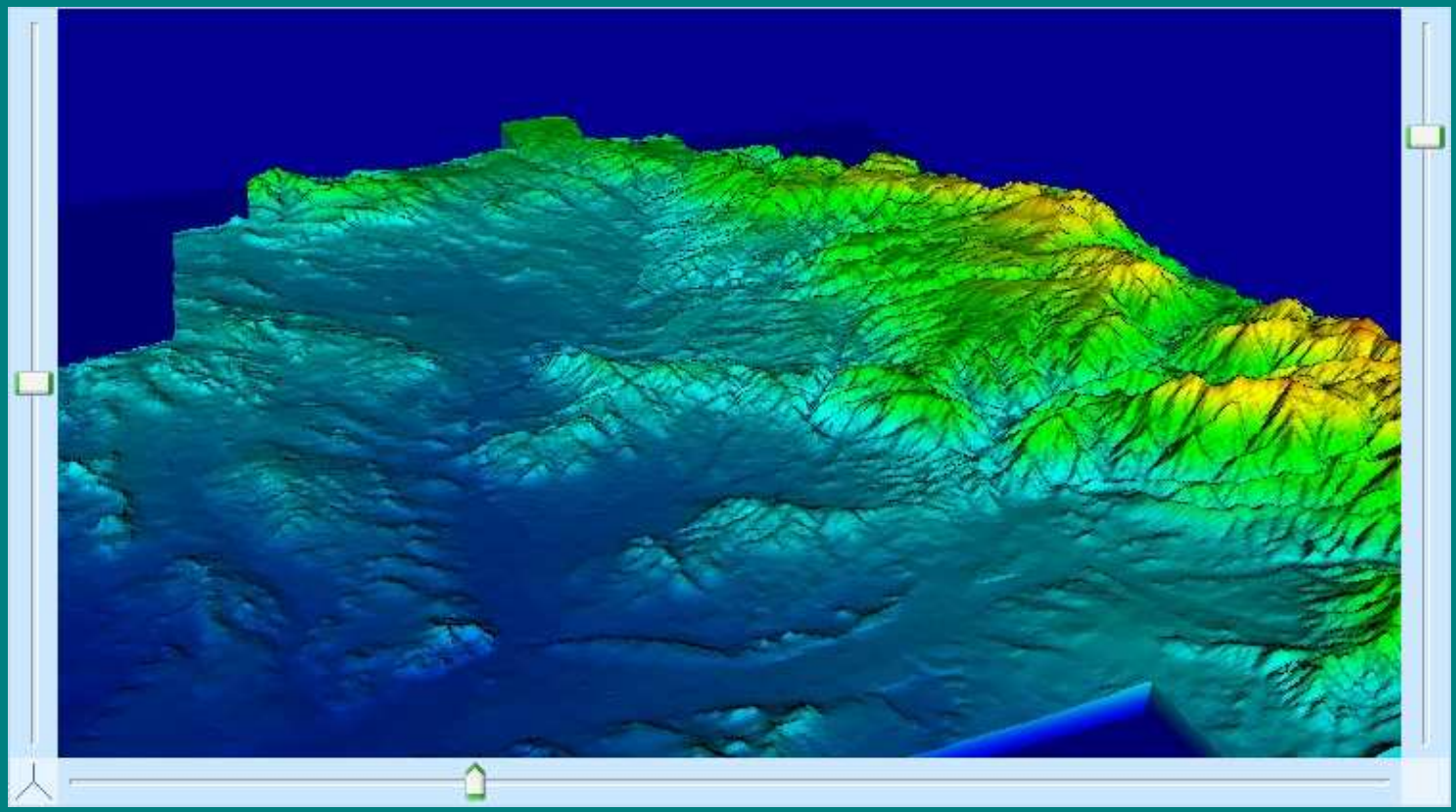
Reporting on the environment



Reports are given in the form of tables, charts and maps

The 3D Viewer

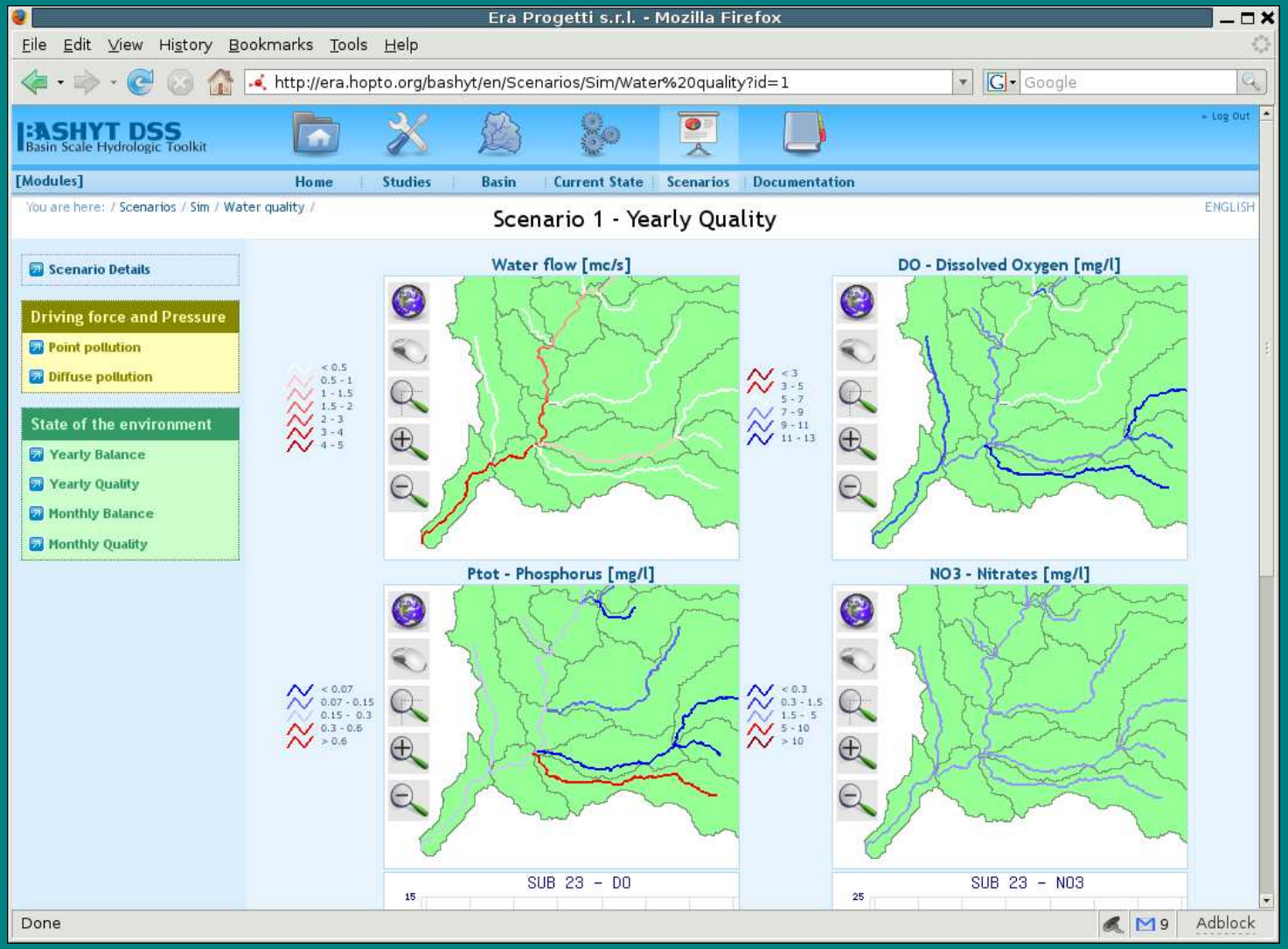
It has been developed a 3D viewer on the web. To work, it does not need external programs or any plug in.



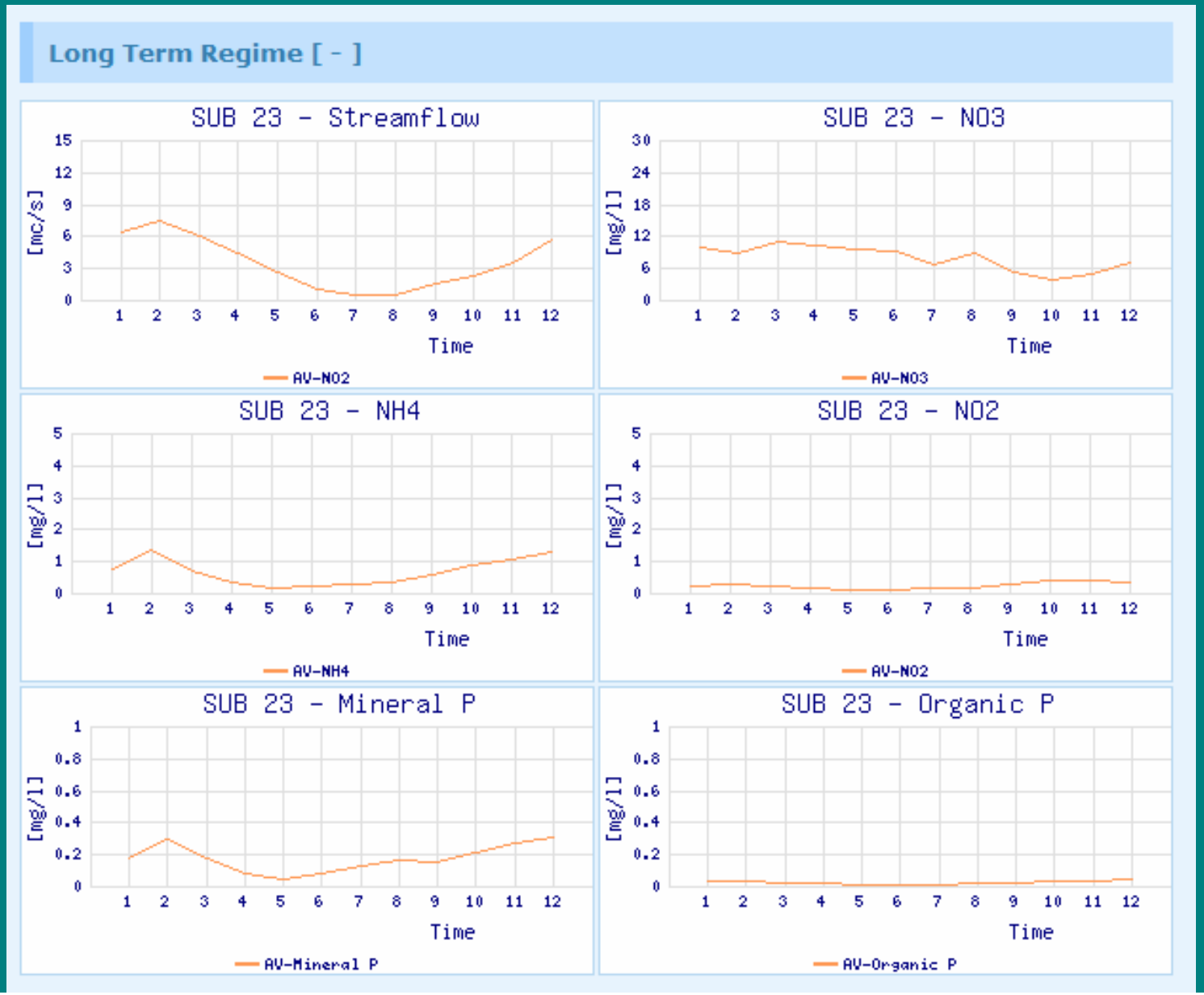
Users can control the 3D viewer by zooming in and out and browsing the map. GIS capabilities will be developed in the future versions.

The DPSIR framework

Reporting on the environment



Reporting on the environment



Conclusions

The advances in **computer simulation and high performance computing** in recent years have highly extended the possibilities in this field, and **have changed the ways in which land management systems can operate** (local solution are to be avoided)**.**

The BASHYT project aims at **shortening** the distance between end users (e.g. water agencies) and research by building an interdisciplinary **collaborative working environment** on web (**where we can confront, exchange ideas, develop new tools**).

We would like to further develop the BASHYT DSS by being involved in projects (research and operational) to make it more robust.

Pierluigi Cau
Email: pierluigi.cau@gmail.com – tel. +39 070 - 9250281

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