

## What is HYDROSYS?

HYDROSYS is a research project funded by the European Commission. The research aim of the project is to provide a system infrastructure to support teams of users in the on-site monitoring and management of environmental processes. While using small computers or cell phones, users are able to access and visualize up to date information on a variety of aspects that can be used to understand the processes at hand. Information can take any form, from simple text up to the visualization of complex 3D models, all depending on the need of the user. As such, the project consortium hopes it can help analysing and predicting environmental changes on-site, supporting the process of taking appropriate countermeasures to avoid environmental degradation.

## How does it work?

To create the information accessed by the user, we need to capture as much data as possible. That is, we need to acquire data from as many points and at a high rate to be able to create "dense information" on the small sites under observation. Doing so, the consortium has installed a large number of sensors and sensorstations at different sites in the Alps and Finland. These sensors, which can be around 150 for a small site, generate data on many environmental aspects, and is sent to a storage and processing server over network. Next to the environmental data, we also require detailed geographic information, being terrain models and highly detailed textures. These data is used to create detailed 3D models, and are required for running simulations on the data captured by the sensors. To generate the model and textures, we are deploying a 7 meter blimp holding several cameras. The cameras capture both normal and thermal images, and are used to refine available low-resolution terrain models.

Once all data is stored, it is checked and processed, among others by running continuous and complex simulations. The results of the simulations provide users with highly useful information to make apt predictions on processes.

The final stage is where the actual action happens: in the field. Equipped with wearable devices such as ultraportable computers or cell phones, users can select and view various kinds of information and observe it in the actual context, namely there where things happen. The "information in its actual context" is one of the key factors of the system. To define the context around the user, we need to define the accurate position - supported by a user localization system construction on the back of a vehicle, we are able to do so in a highly detailed manner. After selecting the information, it is sent to the user over cellphone or even specially set up network connections. Once the information is received, the actual observation and interpretation of environmental processes starts...

## For whom is it?

We are developing the HYDROSYS system with a wide range of potential users in mind. Environmental researchers, sensor companies, municipalities, and even the general public should be able to benefit from the system. Due to the technical restrictions of the system, it depends on the level of resources and support. Whereas we aim to offer simple cell phone applications that can be operated basically by everyone, the more advanced systems require preparation and a number of devices. The consortium is highly interested to see the system getting deployed, so feel free to contact us via the website to see what is possible!

[www.hydrosonline.eu](http://www.hydrosonline.eu)

HYDROSYS is a EC funded Seventh Framework programme STREP project (grant 224416, DG INFSO) on spatial analysis tools for on-site environmental monitoring and management.