



localised environmental and health information services

# direct newsletter

March 2011

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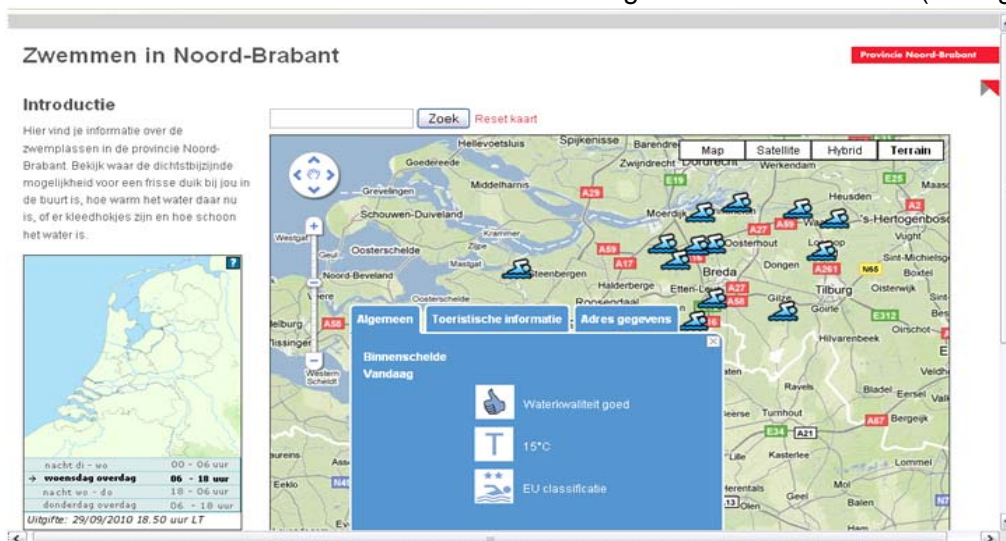
Calendar for the coming month

## Lenvis developments: examples from the Noord-Brabant province, The Netherlands

by Schalk Jan van An del (UNESCO-IHE)

By the end of the second year of the lenvis project, a number of lenvis application products have been developed for the case studies in Italy, Portugal, and the Netherlands. In this newsletter a number of these applications are presented. In this article you will find some of the water quality and air quality information services for the case study in the Netherlands.

For communicating bathing water quality of freshwater lakes in the province of Noord-Brabant a dedicated website has been developed. The website has been designed with a simple overview with a clear lay-out for users to intuitively understand the purpose of the website and find the lakes in their neighbourhood through a map with clear icons. When clicking on a particular lake, a tabulated pop-up shows up-to-date information on health risk warning or closure of the lake (see figure).

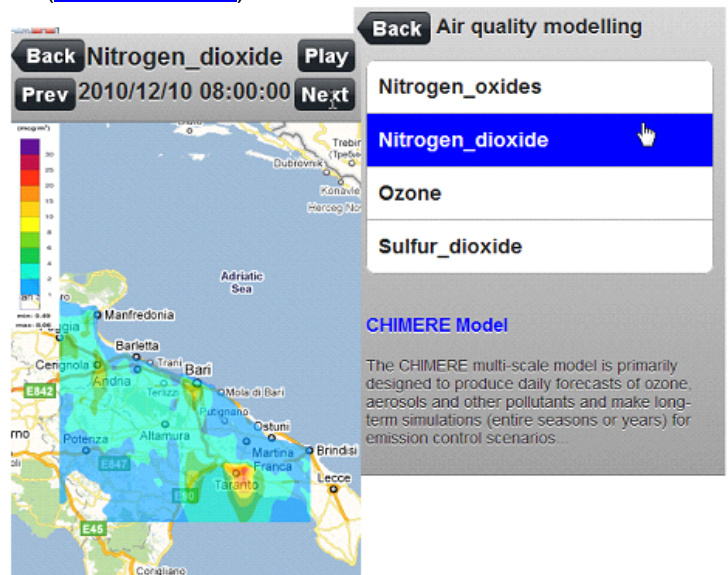




A special application has been developed using Layer technology on Google Android phone. Using the GPS and compass localisation functionalities, users can point their phone and see on a radar the nearby recreational lakes and their present condition (open or closed, good or bad water quality). Through the integrated Google maps

directions, it is easy to select a particular lake and use the phone as navigation device driving or walking towards the lake.

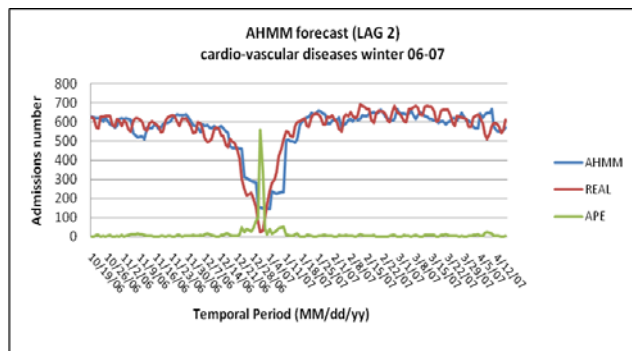
For air quality, prediction models have been set-up for Dutch and Italian cases. The air quality models run daily and produce 48-hour forecasts. The results are presented in maps, and the user can localise by zooming and scrolling the map, and the user can customise forecast horizon, variables to display, and type of animation. 3-D visualisation with topography in Google maps, allows for showing intuitive animations that allows professional and public users to see an upcoming episode of SMOG developing. The air quality model prediction results can also be accessed for viewing by mobile phone. Dedicated menus for easy access have been developed for Google Android and I-phone platforms, as illustrated for the Municipality of Bari in Italy (see figure). For further information on the lenvis applications or request for testing applications, please feel free to contact us ([www.lenvis.eu](http://www.lenvis.eu)).



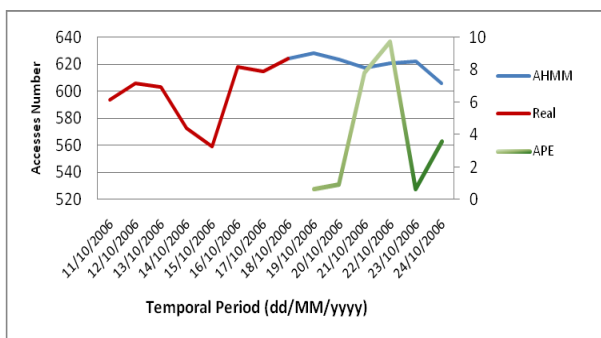
## Lenvis at Milan Bicocca: health impact assessment modelling case study

By F. Archetti, L. Cattelani, I. Giordani (University of Milano Bicocca)

At the University of Milano - Bicocca the methodological studies and the software implementation of the framework for health modelling (prediction of the health effect on the basis of the current situation of air pollution) has been completed. The developed algorithm is based on Autoregressive Hidden Markov Models. Graphs below show some results obtained by the analysis done using the model and the prediction errors. In the figures the red line represents real data (that is, the number of people that goes to hospital in a day with symptoms related to cardio-vascular diseases,



that can be linked to air pollution); the blue line represents the number of people for the next days, as forecasted by the model developed in lenvis; the green line represents the mean absolute percentage error: 0% means perfect



To show the results so far obtained and to gather opinions and feedbacks, a preliminary end users meeting was held at the University of Milano - Bicocca the 28th of January 2011 (see the picture below).

The participants, 13 professionals carefully selected, are representatives of a wide range of expected Lenvis professional end users: public agencies, municipalities, health services, environment related software companies and research centres.

A general presentation of the project goals and some virtual images on how the system, ready to be released for real tests by users, will work, was done together with a more detailed explanation of the Lenvis architecture.

prediction, 100% or more represent very high error. The forecast activity is a very complex task, then an error lower than 10% is a very good result.

The model and a whole set of other software components has been integrated into the lenvis portal as a gadget. This gadget shows a module that permits the user to set online all the parameters for querying and analysis through dialog boxes and provides a data analysis tool based on the use of simple queries.

Moreover, an experimental air monitoring station built near the University was described. The station is equipped with a tethered balloon to measure the vertical concentration of the polluting particles. The chemical ionic composition of the particles is analysed with special instruments. The knowledge of the particles chemical composition, characterized by a seasonal trend, is of paramount importance for the construction of a molecular model describing the effects of the pollutants on the epithelial tissues of the human airways.

At the end of the discussion all the participants stated they will be ready to test the Lenvis portal as soon as available.



## University of Milano-Bicocca on the magazine Sette (Corriere della Sera)

A leading article on air pollution in Milan has appeared 21 February 2011 on the weekly magazine "Sette", of the Italian newspaper "Corriere della Sera", and on its electronic counterpart "Corriere della Sera.it".

The header of the piece sounds like:

**POLLUTION IN MILAN**

Smog, more and more over the limits

Black carbon and particulate in abnormal quantities.

Peaks in traffic.

Too much pm10 in metro

The piece cites findings of Polaris Research Centre (on particulate in environment and health hazard) of the Environmental and Territorial Science Department, University of Milano-Bicocca. The findings are about effects on health of human cells due to the particulate in Lombardy.

The link to the electronic version (shorter than the paper one) is [http://www.corriere.it/cronache/11\\_febbraio\\_21/smog\\_fbd5179c-3e00-11e0-8c41-24e78bec137b.shtml](http://www.corriere.it/cronache/11_febbraio_21/smog_fbd5179c-3e00-11e0-8c41-24e78bec137b.shtml)



## Portuguese Users meeting

By *Cláudia Viegas, (IST)*

On 18th January 2011 an open session was carried in Costa do Estoril in the Sanest quarters for 30 professionals and public lenvis users representing:

- Oeiras and Cascais municipalities;
- Water and waste water management institutions: SANEST, SA; SMAS-Oeiras-Amadora; Águas de Cascais; ARH-Tejo;
- Governmental health institutions- INSA ;
- Surfer schools;
- Non Governmental Agencies: ABAE (BlueFlag Programme Agency); Cascais Atlântico Agency;
- and public users (surfers and the general public).

A summary of the lenvis project and Portuguese case study was presented by, the Portuguese partners - IST, HIDROMOD and GMV - followed by a "hands on" session on the following lenvis products:

- Lenvis portal: gadgets selection and use;
- Time series bathing water gadget giving access forecasts of water quality, wave characteristics (height, and period), weather (temperature), tide level, and water temperature.
- Wave forecast gadget, providing animations of 3 day forecasts of wave horizontal fields (propagation celerity and height).

- Interactive particle tracking model, enabling the user to simulate particle tracking on request to visualize pollution displacement.
  - Time series client, simplifying the access and visualization of data published on the web by different providers.
- Endusers participated actively on the hands-on session asking questions and giving opinions. After individual tests at home participants filled a questionnaire about the portal and the gadgets.

The feedback obtained during the session and from the questionnaires shows that users consider lenvis portal, gadgets and services as an advantage to manage, and spread the information about bathing waters for professional and public users. SANEST and the Regional Water Agency are willing to contribute to the lenvis early water quality warning system. Lenvis users see these public sessions and the lenvis innovation as an opportunity for discussing bathing water quality concerns and for finding optimal management solutions. The increasing number of participations from the previous 18th January meeting shows the good acceptance of the lenvis platform. The team was also invited to present the lenvis system in the municipality of Cascais in a public session devoted to bathing water to be held in June. This invitation shows the importance that municipality gives to lenvis for stimulating the communication with the public.



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