



In this inaugural newsletter WL | Delft Hydraulics is pleased to introduce you to the FEWS system and inform you about the latest developments, projects, innovation and upcoming events.

Introduction

Since its early phases in the beginning of 2001 Delft-FEWS has grown both in its applications and capabilities. The main component of the system is a flexible and powerful user interface which can be used for monitoring and prediction through the whole hydrological cycle.

Through a unique interface system FEWS incorporates a number of contemporary hydrologic and hydrodynamic modelling systems such as SOBEK, ISIS, Mike11 and many others. FEWS then controls, imports, exports and processes data and allows the user to view model results.

These data exchange interfaces extend to the import and manipulation of live monitored and forecast data received from leading meteorological institutions which are the real-time driving forces behind the prediction of hydrological events.

The immense flexibility of the system means that it can be used for the prediction of a number of hydrological events. Prediction of flooding and drought as well as opportunities for water quality management and real time operation of control structures based on hydrological events which are amongst the key applications of FEWS.

Innovation continues and WL | Delft Hydraulics is committed to the continual development of knowledge in this important field of research.



News

Delft Fews 2007/01 Release

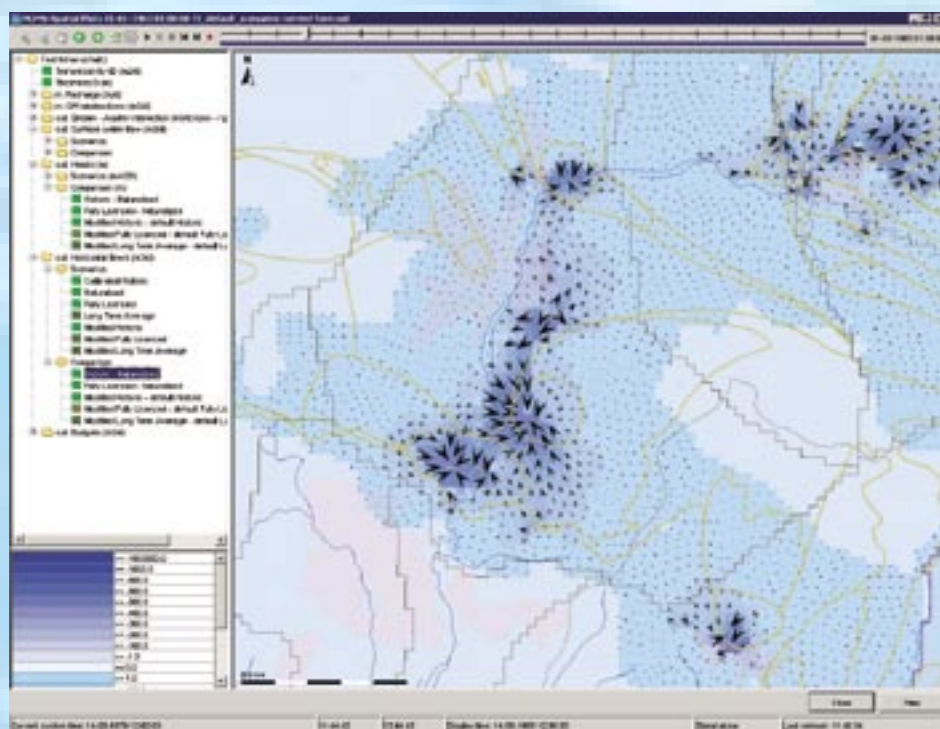
FEWS v2007/01 released in April 2007 offers a powerful archiving capability that makes hindcasting and post-flood analysis much easier. The management of FEWS configurations has been much improved. New display functionality includes quality labels in the time series graphs and attractive presentation tools for ensemble forecasts.

Delft Fews Webserver

In 2006 a comprehensive FEWS webserver was developed in co-operation with the Environment Agency and very successfully introduced countrywide to flood forecasters and warners. Besides hosting and archiving of forecast reports produced by FEWS, the webserver offers access to external reports like weather forecasts and storm surge warnings. As such the FEWS webserver provides cross agency access to all information required for decision making via a single portal. The FEWS webserver is available to all FEWS users.

New Release in October 2007

In October 2007, FEWS v2007/02 will be released. The functionality of what-if scenario editor and the longitudinal display will be much improved and extended. Access to FEWS from external systems will become possible via a JDBC driver and a web services interface.



Delft Fews Documentation Online Available

The FEWS user and system documentation is currently being moved to Wiki pages hosted at Delft Hydraulics. This will make it easier to keep up-to-date information available to users. The Wiki pages can be accessed via fewswiki.wldelft.nl/.

Projects

Singapore, OMS

Hydrologists and Water Quality experts from WL | Delft Hydraulics are working together with the government of Singapore and local academic partners to develop a landmark operational management system for the Marina Bay catchment.

The system will use real-time data and a hydrodynamic SOBEK model to predict water quality in various locations in the Marina Bay catchment. This will act as a decision support for operational management of the Marina Bay Barrage, water recirculation scheme and upstream reservoirs. The project is currently in its first phase with delivery of an operational system expected in 2008.

Germany, Ensemble Forecasting for the Rhine

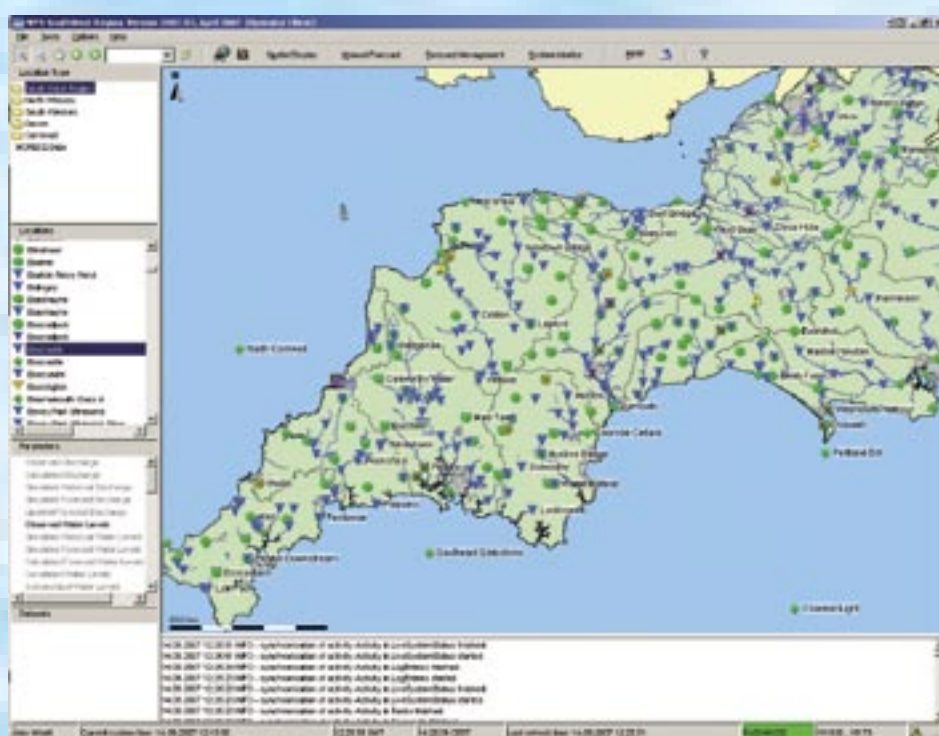
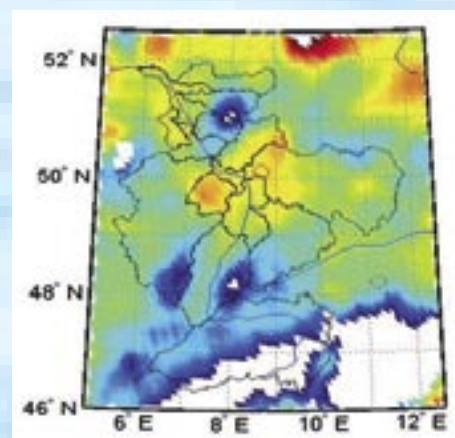
Researchers from WL | Delft Hydraulics working in partnership with the University of Dresden are working on ground breaking research in the use ensembles in the Rhine basin. Verification studies have shown significant benefits in forecasting event prediction. Micha Werner head researcher in this project says the project will deliver "Better understanding of the utility of ensemble forecasting in an operational systems which is especially important in large highly populated basins such as the Rhine."

Italy, Integrated Water Management for the Po Basin

FEWS technology is also currently being developed for the river Po, Italy's largest basin. The water of the Po river is regulated by a complex system of artificial reservoirs and natural lakes and is an important resource for both industry and the people of the region.

Researchers at WL are using the latest deterministic and probabilistic meteorological forecasting products coupled with a variety of hydrological and hydraulic modelling systems operated in parallel to capture uncertainty in the Po system. The system will be run as a

server-client application allowing local water management authorities access to selected data with control of the forecasts from a centralised site. This water management system will then be extended to serve as a drought warning system based on the water allocation model RIBASIM, a surface water salt intrusion model for the Po river delta using SOBEK, and an aquifer model for simulating salt intrusions into the subsurface water system from the sea.



UK, NGMS

The development of the National Groundwater Modelling System (NGMS) is a very challenging project for the Environment Agency (EA) for England and Wales. NGMS is fully based on FEWS, and facilitates remote running and management of the groundwater models (e.g. MODFLOW) of the EA. The system is accessible throughout the organisation and provides a very user friendly platform for groundwater assessment studies for example for the Water Framework Directive. NGMS is planned to be operational in 2008.

USA, Pilot for VS National Weather Service

Since 2006, Delft Hydraulics is co-operating with the Office of Hydrologic Development of the US National Weather Service to investigate if and how FEWS could be introduced as the national platform for river flow forecasting. By the end of 2007, FEWS will be operational for individual river basins in 4 of the 13 river forecast centers of the NWS. New in these pilots is the focus on interactive forecasting and the use of the powerful reservoir simulation system ResSim developed by the Hydrologic Engineering Center (HEC) in Davis.



Innovation

Italy, NASA AQUA Satellite Images

Improvements in the quality of flow predictions especially at low flows are currently being trialled in the Po river basin using real-time images from NASA AQUA satellite's AMSR-E sensor. These images are manipulated and processed with the aid of specialized algorithms which remove the effects of vegetation cover and provide information about soil properties and vegetation canopy temperature.

This technique has the advantage of working in all weathers and also at night - as the scans are based in the microwave range of the electromagnetic spectrum. However recent results have shown, that some interference from ground-based radio frequencies can be expected and the results are restricted to areas not covered with snow.

This research provides qualitative analysis on the spatial distribution of soil moisture in the catchment which aids decision makers for water management and irrigation purposes.

UK, Conventive Scale Rainfall and Ensemble Forecasting

Our long standing relationship with our partners in the UK continues to strengthen through our latest research project on the use of conventive scale rainfall in operational systems and ensemble forecasting. Partnering with CEH Wallingford, the UK leader in hydrological research, and the Met Office to provide operational research on exciting new opportunities in flood prediction.

Through the use of case studies we will identify the benefits of both real-time ensemble forecasting and use of high resolution

numerical weather forecasts. Enabling forecasters on the ground to better understand the role of uncertainty in weather prediction and make forecasts based on probability of occurrence. Our international reputation in the field of flood forecasting allows us to bring together the best in contemporary flood forecasting research and implementation.

Netherlands, Algae Bloom Prediction

Algae bloom forms a serious health threat in Dutch lakes and water courses in summer. Water quality specialists at Delft Hydraulics are working on a real-time algae bloom prediction system. The system is based on FEWS and Delft3D, Delft Hydraulic's 3D hydraulic modelling system and makes use of remote sensing images, weather predictions and telemetry. The research concentrates on how to effectively integrate the data feeds into the models in real-time to adequately predict the development of algae bloom. Operational use of the system is foreseen in the near future.

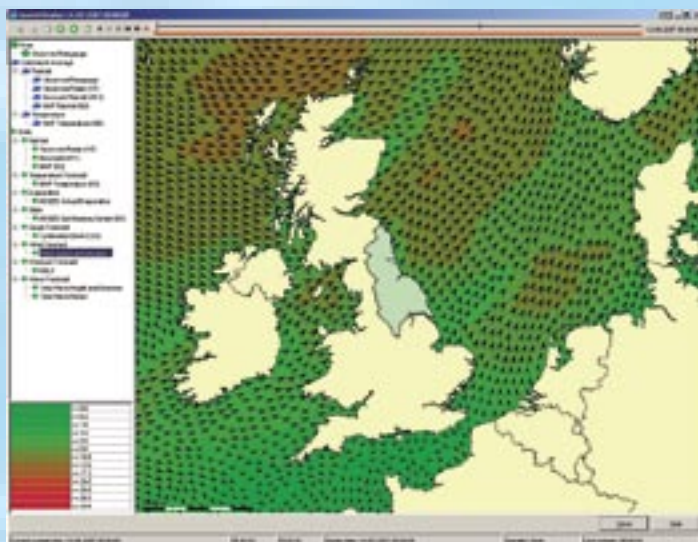
Events

Delft Fews User Days

The Delft FEWS User Days 2007 takes place in Delft on 18 and 19 October 2007. During the event, new features in FEWS will be demonstrated and users will be able to provide feedback on plans for future developments. R&D work with future benefits to FEWS users – like ensemble forecasting and quantification of forecasts uncertainty - will be presented and discussed. There will be ample room for users to present new applications.

For more information

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Decisive advice: from multidisciplinary policy studies to design and technical assistance on all water-related issues.

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