

Provision of near real time river discharge and water level data from 35 countries for the European Flood Alert System (EFAS) research project – the European Terrestrial Network for River Discharge (ETN-R)

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A reliable flood forecast in a river basin depends on the one hand on quality forecasts of meteorological variables such as precipitation, temperature and radiation, and, on the other hand, on the best possible definition of the antecedent hydrological conditions at the beginning of each forecast. These initial conditions include river discharges and water levels, soil moisture contents, groundwater levels, snow cover extent and water equivalent, and water levels in lakes and reservoirs. Of the latter, river discharge and water levels rank first with regard to reducing uncertainty in a flood forecasting scheme.

This paper describes the approach to the organisational and technical challenges of a three year project (2006-2008) aiming at the development of the European Terrestrial Network for River Discharge (ETN-R). ETN-R will be an information infrastructure for the automated collection, quality control and redistribution of near real-time river discharge and water level data from 30 European national and trans-boundary river basins, meant to improve the forecasts of the European Flood Alert System (EFAS) at the Joint Research Centre (JRC) of the European Commission (EC).

The project is funded by resources of the EC Programme Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens (IDABC) managed by the EC Enterprise and Industry Directorate General (DG Enterprise). It will require the cooperation of water authorities from 35 European countries and thus a considerable part of the project will consist of networking, including negotiations with country representatives and invitations to provider workshops. All of the countries concerned dispose of networks of river discharge gauging stations. Many of them operate their network already in automated real-time mode, i.e. their National Hydrological Services (NHS) continuously receive current water level or river discharge data for purposes of e.g. flood forecasting. Increasingly, some of the countries publish this data online, typically by way of web sites of their NHS. Though this is a major step forward, from a European perspective the diversity of data sources is considerable and still quite heterogeneous. There is currently no operational system providing the service of prompt one-stop-shopping of near real-time river gauging data at an European scale. Consequently, to date it remains a tedious task to manually draw together the information needed for Europe-wide assessments and models, in particular much too time-consuming to feed a large scale forecasting model like EFAS, which relies on quick and continuous updating of its initial conditions.

The underlying core product of the project thus will be a software system, that allows (i) to draw together near real-time (NRT) river water level and discharge data (with time steps of at least 1 hour) provided by individual NHS via Internet protocols (HTTP or FTP), (ii) to transform water level data into discharge data where required, (iii) to process and store the data in a database, (iv) to classify the data on the background of historical data, (v) to check the plausibility of the data, and (vi) to redistribute/upload all required European data in a harmonised way via the Internet, i.e. provision of the data in GRDC standard format at a FTP-site.