Watch your Danube

Joint Danube Survey

icpdr iksd

Fact Sheet 7

`Watching the Danube´ beyond the JDS

About the Joint Danube Survey 3: The Joint Danube Survey 3, also known as 'JDS3', is the world's biggest river research expedition in 2013. Its main goal is to produce highly comparable and reliable information on water quality and pollution for the entire Danube River and many of its tributaries and to raise awareness about the importance of the Danube and sustainable water management. The International Commission for the Protection of the Danube River (ICPDR) coordinates the implementation of JDS3. Launched on August 14, 2013 from Regensburg, Germany, the boats of the JDS3 will travel 2,375 km downstream the Danube River, through 10 countries, to the Danube Delta in Romania and Ukraine until late September.

While a JDS is conducted every six years, the ICPDR and Danube countries have a number of other activities through which they `watch´ the Danube on a regular basis. Some of them relate to accident situations, while others are inventories, monitoring measures or models of pollution flows. Here we give an overview of the wide framework of assessment activities which, along with the JDS3, help improve our understanding of the Danube.

TransNational Monitoring Network (TNMN)

The TNMN was established to support the implementation of the Danube River Protection Convention (DRPC) in the field of monitoring and assessment. Its main objective is to provide a structured and well-balanced overall view of pollution and long-term trends in water quality and pollution loads in the major rivers in the Danube River Basin (DRB). In view of the link between the nutrient loads of the Danube and the eutrophication of the Black Sea, the monitoring of sources and pathways of nutrients in the DRB, and the effects of measures taken to reduce the nutrient loads into the Black Sea, are another important component of the TNMN.

The network was formally launched by the ICPDR in 1996. In 2006, the TNMN was revised to ensure full compliance with the EU Water Framework Directive (WFD). Accordingly, it now consists of four elements: surveillance monitoring I (monitoring of surface water status); surveillance monitoring II (monitoring of specific pressures); operational monitoring; and investigative monitoring. Surveillance monitoring I and operational monitoring are based on collecting data on the status of surface water and groundwater bodies in the DRBD, to be published in the DRBM Plan. Surveillance monitoring II is a joint monitoring activity among all ICPDR Contracting Parties, which produces data on concentrations and loads of selected parameters in the Danube and major tributaries. Investigative monitoring is primarily a national task - however, on the basin-wide level, the Joint Danube Surveys provide investigative monitoring as required (e.g. to fill information gaps or test new methods).

The TNMN now includes 116 monitoring locations with up to three sampling points each across the Danube and its main tributaries. The minimum sampling frequency is 12 times per year for chemical determinands in water and twice a year for biological parameters. The results of the monitoring through the TNMN are published annually in the TNMN Yearbooks.
Download from: http://www.icpdr.org/main/publications/tnmn-yearbooks

Accident Emergency Warning System (AEWS)

The international Danube AEWS, coordinated by the ICPDR, provides early information about river pollution accidents to all countries that could be potentially affected. It is activated when there is a risk of transboundary water pollution, or when threshold danger levels of hazardous substances are exceeded. Principal International Alert Centres (PIACs) in each country form the central points of basin-wide cooperation in early warning.

Upon activation, a PIAC submits information which is automatically and instantly sent as a text message (SMS), e-mail and web message to all relevant PIACs. Automatic translations enable all users to create or view messages in their own national language. The warnings help national authorities to promptly place environmental protection and public safety measures into action.

A new version of AEWS was launched in March 2013, allowing users to comment on reports and upload attachments (such as photos, maps or spreadsheets). The new system further integrates a database of dangerous substances and interactive maps to display incident locations and increase understanding of the potential impact of an incident.

Accident Risk Spot Inventory

The ICPDR is working to prevent accidental pollution and to improve response capability to accidents by maintaining an *Accident Risk Spots Inventory*. The Inventory encompasses operational industrial sites associated with a major risk of potential accidental pollution, due to the nature of the chemicals being produced, stored or used at the plants, as well as contaminated sites including landfills and dumps in areas liable to flooding.

The ICPDR also provides guidelines for its member countries to improve the standard of safety measures at risk sites, and harmonized checklists to help control technical safety levels at Accident Risk Spots. Checklists and thorough site analysis help assess the actual risk to the environment by assessing the effectiveness of existing safety measures.

MONERIS

The MONERIS (MOdelling Nutrient Emissions in RIver Systems) model calculates the emissions of nutrient loads (nitrogen N and phosphorus P) to surface waters from point and diffuse sources in the Danube River Basin, as well as in-stream retention in the surface water network. Conceptually, MONERIS calculates emissions via several independent pathways for separate catchments and harmonizes input data taken from various sources (e.g. statistical yearbooks, emission inventories) across the basin.

The model is extremely useful. Point source emissions from wastewater treatment plants and industrial sources are discharged directly into the rivers. But diffuse source emissions have many different pathways such as overland flow, groundwater flow and atmospheric deposition, thereby making monitoring more complicated. The MONERIS model can also be adapted to calculate levels of heavy

metals and some priority hazardous substances.

For the reference years from 2000 to 2008, the total nutrient input into the Danube River Basin amounted to 55,000 tP/a and 733,000 tN/a. About half of the inputs were from agricultural sources, with the rest roughly split between industrial sources and settlements. In addition to industrial and municipal wastewater, the main pollution sources are: chemical fertilisers and manure from intensive farming operations, petrochemical processing plants, iron and metal processing plants, timber, paper and pulp plants, and municipal solid waste disposal sites.

EnviroGRIDS

The EnviroGRIDS project aims to improve the information management systems for the Danube and Black Sea. The resulting Black Sea Catchment Observation System will store, analyze, visualize and disseminate large amounts of water resource-related data and information on past, present and future states of the region, to assess and predict its vulnerability and sustainability. With inputs from 30 partners in 15 countries, and supervised by the ICPDR and Black Sea Commission, the data will be integrated into the planet-wide *Global Earth Observation System of Systems (GEOSS)* through an EnviroGRIDS geoportal.

Datasets will be compatible with the *EU INSPIRE Directive* on spatial data sharing across Europe. The web-based system, relying on state-of-the-art technology, will include attractive visualisation tools that warn about environmental risks and help regional and governmental agencies to prepare adequate responses. Visit: www.envirogrids.net