



## 技术类成果

# 河流湖库水污染事件应急预警 预报关键技术研究

### 【创新性】

针对我国日益频发、且对水资源利用与河湖生态危害极大的突发水污染事件的预警预报中存在的重大技术问题，突破了多泥沙水体水质自动采样及监测技术、水污染突发事件应急水力调度耦合模拟技术、湖库富营养化分区预警预测技术、基于三维动态纹理映射技术的污染水团三维可视化动态仿真技术等关键技术，研发了由有毒有害化学品数据库 - 水质自动监测与信息传输 - 预警预报模型 - 数据集成管理系统 - 三维可视化展示 - 信息发布等组成的水污染突发事件决策支持平台，并研发了松花江、辽河太子河、黄河小浪底以下干流、海河于桥水库等河湖的水污染突发事件预警预报系统，为这些流域水污染突发事件应急处置管理能力的提升提供了重大技术支撑。

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### 【影响力】

该技术为水污染应急处理工作的开展提供了坚实的技术支撑，建立的应急处理系统具有广阔的推广应用前景，将为国内开展相应研究和推广工作起到引领作用。目前，本研究成果已在国家水体污染控制与治理重大科技专项的多个课题中予以应用，同时，在水利部水文局、黄河流域水资源保护局、松辽流域水资源保护局、辽宁省水利厅信息中心、辽宁省水文局等单位的水资源保护管理工作中得到了进一步的实际应用和检验。

## RESEARCH ON KEY TECHNOLOGIES OF EMERGENCY WARNING AND FORECAST FOR WATER POLLUTION EVENTS IN RIVERS AND LAKES

### 【 Innovation 】

The Department of Water Environment has made great breakthroughs in such key technologies as automatic sampling and monitoring technology for the water quality of sediment-laden water bodies, coupled simulation technology for hydraulic emergency dispatch during water pollution emergencies, partitioned warning and forecasting technology for lake and reservoir eutrophication, and 3D visualized dynamic simulation technology for polluted water masses based on 3D dynamic texture mapping technology, in order to solve growing technical problems in China for the early warning and forecast of water pollution emergencies, which may significantly endanger the utilization of water resources and the river and lake ecology. It has also developed a decision support platform

### 【 Influence 】

This technology has provided solid technical support for the handling of water pollution emergencies, and the emergency handling system based on the technology enjoys the broad popularization and application prospects and will guide the work of relevant research and popularization in China. At present, the achievements of this research have been applied in multiple subjects under the country's major scientific and technological program for water pollution control and management, and

for water pollution emergencies that is consisted of the poisonous and hazardous chemical database, automatic monitoring of water quality and information transmission, early warning and forecast models, the data integrated management system, 3D visualized demonstration, information release, etc., and established an early warning and forecast system for water pollution emergencies of rivers and lakes, such as Songhua River, Tianzi River in Liaohe River basin, main streams below Yellow River Xiaolangdi, the Yuqiao Reservoir of Haihe River, thus providing significant technical support for the improvement of handling and management capacity of water pollution emergencies occurring in these river basins.

have been further applied and verified in the management work of water resources protection by units such as the China Hydrology, the Yellow River Basin Water Resources Protection Bureau, the Songliao River Basin Water Resources Protection Bureau, the Information Center for Liaoning Provincial Department of Water Resources and the Liaoning Provincial Hydrology and Water Resources Survey Bureau.

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Award-winning Unit : Department of Water Environment