技术类成果

水旱灾害遥感监测评估关键技术

【创新性】

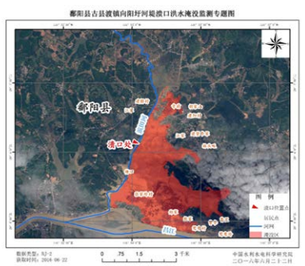
针对水旱灾害监测评估业务需求，探讨了天空地一体化洪涝灾害监测理论体系和水文－气象－遥感等多元信息耦合的干旱监测等理论方法，开展了水旱灾害信息快速获取、多模型整合的水旱灾害时空动态解析以及水旱灾害损失快速评估等技术研究，建立了实时航空遥感系统，首次实现了机－星－地洪涝影像实时传输、实时存储、实时打印、实时注记地名；解决了水体快速识别、土壤含水量反演、孕灾环境及承灾体智能提取等关键技术，构建了水旱灾害遥感综合监测模型；提出了社会经济数据空间展布方法，建立了水旱灾害评估模型；研发了水旱灾害遥感监测评估业务系统平台，具备了长期、持续、及时提供水旱灾害应急服务的能力，为防汛抗旱部门提供水旱灾害遥感监测产品和信息服务。

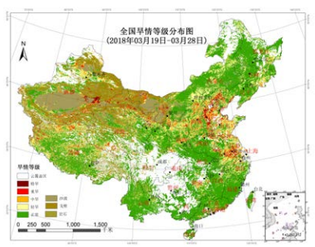
【影响力】

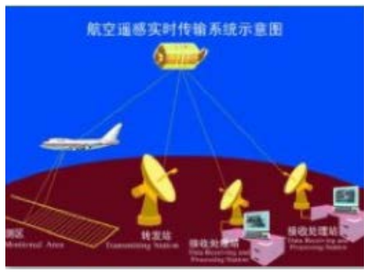
项目成果应用于1998年以来特大洪涝灾害和2005年以后严重干旱的监测评估中，特别是在1998年长江洪水、2003年淮河洪水、2006年川渝大旱、2008年汶川地震堰塞湖、2010年玉树地震和西南五省干旱、2013年黑龙江大洪水、2014年北方14省旱情、2016年长江中下游洪水等监测中发挥了重要作用。三十多年开展遥感应急监测服务，得到了国办、水利部、国家防总、科技部等部委的高度认可，同时获得了国内外同行的高度评价，为防汛抗旱提供了有力技术支撑，社会经济效益显著。成果获得国家科技进步奖一、二、三等奖各一次，省部级科技进步奖10余项，已颁布行业标准1部，发表论文150余篇，出版专著12部，获得发明专利7项，实用新型专利6项，软件著作权16项。

主要完成人：曹述互、姜景山、阎守邕、李纪人、李茂堂、
黄诗峰、陈子丹、路京选、李　琳、辛景峰

受奖单位：减灾中心（遥感）







KEY TECHNOLOGIES FOR REMOTE SENSING MONITORING AND EVALUATION OF FLOOD AND DROUGHT DISASTERS

【Innovation】

Targeting the business demand for flood and drought disaster monitoring and evaluation, it discussed the integrated space-air-ground theoretical system for flood disaster monitoring and the theoretical method for drought monitoring with multi-information coupling such as hydrology meteorology-remote sensing, carried out technical research of the temporal and spatial dynamic analysis of flood and drought disasters through which the information about flood and drought disasters can be acquired quickly and multiple model scan beinte grated, and of the rapid evaluation for flood and drought disaster losses, established the real-time aerial remote sensing system, and achieved the real-time aircraft satellite-earth transmission, storage, printing and labeling of geographic names of flood images for the first time. It also solved key technologies, such as the rapid recognition of water body, the inversion of soil moisture, the intelligent extraction of the hazard inducing environment and hazard bearing body, etc., and built the remote sensing comprehensive monitoring model for flood and drought disasters; proposed a spatial distribution method for socio economic data, and established the evaluation model of flood and drought disasters; developed an operational system platform for the remote sensing monitoring and evaluation of flood and drought disasters, which is able to offer emergency services for flood and drought disasters in the long run and in a long-lasting and timely way, and provide flood control and drought relief departments with remote sensing monitoring products and information services relating to flood and drought.

【Influence】

The outcomes of the project were applied in the monitoring evaluation of devastating floods since 1998 and severe droughts since 2005, and particularly played an important role in the monitoring of the 1998 Yangtze River flood, the 2003 Huaihe River flood, the 2006 Sichuan and Chongqing drought, quake lakes during the 2008 Wenchuan Earthquake, the 2010 Yushu Earthquake and drought in five provinces of southwest China, the 2013 Heilongjiang flood, the 2014 drought in 14 provinces of north China, the 2016 flood along the middle and lower reaches of the Yangtze River. Its remote sensing emergency monitoring services over 30 years have been highly recognized by national ministries and commissions, including the General Office of the State Council, the inistry of Water Resources, the Office of State Flood Control and Drought Relief Headquarters and the Ministry of Science and Technology, and highly praised by its peers at home and abroad, providing strong technical support for flood control and drought relief and generating remarkable social and economic benefits. With the achievements, the Academy has respectively won1 first, second and third prizes of the National Science and Technology Progress Award and nearly 10 scientific and technological progress awards at provincial and ministerial levels, issued 1 industry standard and nearly 150 papers, published 12 monographs, and achieved 7 invention patents , 6 new utility patents and 16 software copyrights.

Main Contributor : Cao Shuhu, Jiang Jingshan, Yan Shouyong, Li Jiren, Li Maotang, Huang Shifeng, Chen Zidan, Lu Jingxuan, Li Lin, Xin Jingfeng

Award-winning Unit : Research Center on Flood and Drought Disaster Reduction (remote sensing)