Review of Drought Monitoring by Remote Sensing

LIU Huan[1,2], LIU Ronggao[1] and LIU Shiyang[1]

(1. *Institute of Geographic Sciences and Natural Resources Research, CAS, Beijing* 100101, *China*;
2. *College of Geoscience and Surveying Engineering, CUMTB, Beijing* 100083, *China*)

Abstract: Drought is one of the most extensive natural disasters in the world which could cause serious economic losses. It is important to monitor large area drought events. Remote sensing technology has a great advantage in large-area monitoring of drought. In this paper, methods for drought monitoring by remote sensing are reviewed, including their advantages and disadvantages and their applications. These methods includes thermal inertia and microwave methods for bare surface, Normalized Difference Vegetation Index, Anomaly Vegetation Index, Vegetation Condition Index, Normalized Difference Water Index, Normalized Difference Drought Index and Vegetation Supplication Water Index based on visible, near infrared, shortwave reflectance data for partly and fully covered surface. Temperature Vegetation Dryness Index, Temperature Condition Index, Crop Water Stress Index, and Water Deficit Index based on thermal infrared remote sensing data for partly and fully covered surface are introduced too. Finally, the trend of remote sensing for drought monitoring is discussed.

Key words: drought monitoring; remote sensing; vegetation index; visible light; microwave

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由国际欧亚科学院(IEAS)和联合国教科文组织(UNESCO)共同主办,并得到联合国环境署、联合国人居署、国际城市与区域规划师学会、国际数字地球学会、中国节能环保集团公司和美国能源基金会中国可持续能源项目支持与承办的“21 世纪科技促进绿色经济和可持续发展”的高层论坛于 2012 年 4 月 6-7 日在北京国际会议中心召开。全国人大副委员长、原中国科学院院长、国际欧亚科学院中国科学中心名誉主席路甬祥院士出席会议并致贺辞;北京市副市长苟仲文代表北京市致辞,祝贺会议成功;国际欧亚科学院院长邦达尔院士与国际欧亚科学院执行院长、国际欧亚科学院中国科学中心主席蒋正华院士共同主持论坛,并分别做了主旨发言。国际欧亚科学院院士,来自欧亚区域以及相关国际科技组织的科学家、工程技术专家、经济学家、社会学家、管理学家、企业家以及社会各界人士 200 多人参加了论坛。宋健、邦杜尔、徐冠华、基库诺夫、汪光焘、盛馥来等 12 位中外科学家在会上做了大会发言。与会的专家学者还分别围绕应对全球气候变化、促进城市良性发展、加强数字地球应用 3 个主题开展了热烈的学术研讨与交流。论坛期间,中共中央政治局委员、北京市市委刘淇书记亲切会见了国际欧亚科学院的中外领导成员,表达了对这个非政府性质的、跨国性科学技术组织的关切和支持。

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