Lake monitoring system based on satellite remote sensing technology

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Lake is the important carrier of water resource, it plays an important role in flood regulation and water resources provision. Hubei province is the province with thousands of lakes in China. In recent years, the changes in the ecological environment and artificial factors have led to the lake area shrinking and functional degradation. Dynamic change monitoring of the lake water surface is an important part of the lake protection and management, to which remote sensing and geographical information technology have brought great convenience. Based on the foundation geographic data, the satellite remote sensing data, and the ground survey data, we build a lake monitoring system using GIS (Geographic Information System), GNSS (Global Navigation Satellite System), RS (Remote Sensing) and wireless network transmission. The system adopts the 6 m and 2.5 m panchromatic image and multi-spectral image. On the basis of the remote sensing image data processing, it can do change detection and image recognition for the objects in the shoreline, protected area and controlled area of 755 lakes and 22 key lakes in whole province through automatic detection or artificial recognition. At the same time, we can analyze, judge and storage the abnormal situations, display alarm on the platform and handheld terminal equipment simultaneously, and track the illegal occupation through the feedback results and release the result on the system. This work has great significance to ensure that the lake shoreline is not occupied and the lake area is not reduced, to improve the ability of law enforcement and the level of the lake protection, and to protect the ecological health of the lake. This is the first attempt that the water conservancy department has carried out dynamic monitoring of lake and the surrounding area using remote sensing technology in China.