

论文

基于RS和GIS的西藏察雅县土壤侵蚀动态监测与分析

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摘要:

西藏土壤侵蚀类型多样,且以水力侵蚀和冻融侵蚀为主,其动态监测属于难点问题。研究基于水力侵蚀和冻融侵蚀各自的基本特点,综合运用TM影像、土地利用图、地形图(DEM)和植被覆盖度图,构建了基于RS和GIS的藏东横断山区土壤侵蚀分类分级动态监测方法,并借助ENVI和ArcGIS软件,分析了察雅县1995年到2000年的土壤侵蚀动态变化情况。结果表明:察雅县土壤侵蚀以微度、轻度和中度侵蚀为主,其中冻融侵蚀主要分布在西部的高山峡谷区,所占比重为2.06%;在人类的土地开发活动和温度、降水变化等自然因素的综合作用下,察雅县土壤侵蚀加剧,东部大面积的轻度侵蚀区转化为中度侵蚀区。

关键词: 土壤侵蚀 RS和GIS 藏东横断山区

Dynamic Monitoring and Analysis of Soil Erosion in Chaya County of Tibet

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Abstract:

Soil erosion in Tibet mainly includes water erosion and freeze-thaw erosion, the dynamics of which are difficult to monitor. In the study, the method of RS and GIS was applied to analyze the dynamic change of the soil erosion type and level in Chaya County based on respective characteristic of water erosion and freeze-thaw erosion in order to get an effective and quick soil erosion monitoring method in Hengduan Mountain Region in East Tibet. The software of ENVI (Environment for Visualizing Images) and ArcGIS were used to synthetically analyze the TM images, the land-use map, the digital elevation maps (DEM) and the vegetation coverage maps of 1995 and 2000 in Chaya County to get the intensity distribution of the soil erosion and the change of it. In the analysis the soil erosion intensity was divided into six categories: the micro-degree level, the mild level, the moderate level, the strong level, the strongest level and the violent level. The results showed that the soil erosion in Chaya was composed mainly of the mild level, moderate level and strong level. Moreover, the freeze-thaw erosion was mainly distributed in the western part of the mountains and canyons, and the proportion of it was small, only 2.06%, but mainly of the strongest level and big hazard. The areas of the micro-degree erosion level zone, the moderate level zone, the strong level zone, the strongest level zone all have increased from 1995 to 2000, from 797.50km², 1210.90 km², 66.52 km², 84.65 km² to 985.96 km², 2709.30 km², 129.88 km² and 107.82 km², respectively, and there has large amount of mild level zone that has been converted to moderate level zone in the east of the study area. It was concluded that the soil erosion has been worsened in Chaya County. Furthermore, it was both the human factors such as the increase of the arable land and decrease of forest and the natural factors such as the raise of the precipitation that speeded up the soil erosion rate in the study area.

Keywords: soil erosion RS and GIS Hengduan Mountain Region in East Tibet

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