

## 基于3S技术的可收集雨水资源潜力的计算与分析

### Calculation and analysis of the collectable rainwater resource potential based on GIS, GPS and RS

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英文关键词: rainwater resource potential; runoff harvesting capability; GIS; RS; GPS

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中文摘要:

目前已有的雨水收集利用工程中, 出现了部分蓄水设施无水可蓄和部分蓄水设施经常溢流的情况, 主要原因是区域集雨能力不了解, 集雨工程建设不科学之故。该文提出了区域可收集雨水资源潜力和局地径流汇集能力两个指数, 采用地理信息系统(GIS)、遥感(RS)和全球定位系统(GPS)技术对区域的地形地貌及下垫面状况进行了较为精确的刻画与描述, 在此基础上计算了区域内少雨、平水、多雨3种年型下的可收集雨水资源潜力; 模拟了区域内的降水径流状况, 计算了区域内的局地径流汇集能力, 结果可用于指导雨水收集利用工程的设计与建设。

英文摘要:

Water resource scarcity is a big problem in North China, especially in the northern part of the loess plateau. In the hilly areas, rainwater is the sole water resources and its harvesting is the only way to abatedrought. The common problems are that some rainwater storing reservoirs have little water to store while the others are often overflowed. These are led by unclearing the rain water potential of the area. And the reservoirs built are failed to restore the proper amount of collecting water. In this paper, two new indices relative to rainwater harvesting are suggested. One is collectable rainwater resource potential of a region and another is runoff harvesting capability of a local area. Based on GIS, RS and GPS techniques, the terrain and land surface of the study area are depicted. The collectable rainwater resource potentials of the region under 3 kinds of hydrological frequency year (drier, normal and wetter) are then calculated. And the runoff harvesting capability of local areas are computed with models complied with Visual Basic programming language. The results can be used for designing the rainwater harvesting projects of the region.

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