Method of Soil Erosion Intensity Spatial Variation Research	
Journal	Advanced Materials Research (Volumes 204 - 210)
Volume	Advanced Research on Industry, Information System and Material Engineering
Edited by	Helen Zhang, Gang Shen and David Jin
Pages	1494-1498
DOI	10.4028/www.scientific.net/AMR.204-210.1494
Citation	Lian Qi Zhu, 2011, Advanced Materials Research, 204-210, 1494
Online since	February, 2011
Authors	Lian Qi Zhu
Keywords	Gas Insulation Switchgear (GIS), Luoning County, RS, Soil Erosion Intensity
Abstract	This paper collected attribute data of impacting soil erosion factors by RS and GIS, combined soil erosion model, got load and density of soil erosion in Luoning county, Henan province, and analyzed relationship between soil erosion and its main impacting factors. The results indicated soil erosion modulus was 2799.29t/km^2.a and load was 6495744t, 61% of the county was tiny or light degree erosion, while the serious eroded area which mainly concentrated in western only occupied 20% of the area, but contributed 57.64% of sediment of whole area. There is a basically positive correlation between soil erosion and slope.
Full Paper	Get the full paper by clicking here

First page example

Advanced Materials Research Vols. 204-210 (2011) pp 1494-1498
Online available since 2011/Feb/21 at www.scientific.net

doi:10.4028/www.scientific.net/AMR.204-210.1494

Method of Soil Erosion Intensity Spatial Variation Research

Lianqi Zhu
Institute of Natural Resources and Environment, Henan University, Kaifeng, 475004, China
E-mail：geographer2004@sina.com

Keywords: soil erosion intensity, RS, GIS, Luoning County

Abstract. This paper collected attribute data of impacting soil erosion factors by RS and GIS, combined soil erosion model, got load and density of soil erosion in Luoning county, Henan province, and analyzed relationship between soil erosion and its main impacting factors. The results indicated soil erosion modulus was 2799.29t/km^2.a and load was 6495744t, 61% of the county was tiny or light degree erosion, while the serious eroded area which mainly concentrated in western only occupied 20% of the area, but contributed 57.64% of sediment of whole area. There is a basically positive correlation between soil erosion and slope.

Introduction

Soil erosion is one of the important factors leading to deterioration of land and terrestrial ecosystem [1-2]. Studies of soil erosion mechanism, dynamic, spatial-temporal distribution, tendency of future change, have become most important issues in soil, agriculture and environmental science in 21st century [3]. Traditional soil erosion research needs a large number of field investigation and work, which takes too much time and can't calculate accurately in specific region, in addition, it is also difficult to obtain the dynamic change information of soil erosion. With continuous advancement of geo-information science, remote sensing (RS) and geographic information systems (GIS) have gradually become most important means of regional erosion study [4-5].

Description of Study Area and Data Pre-Processing

Description of Study Area

Luoning county is located in western Henan province, between N34°5′-34°38′, E111°8′-111°49′. The total area is 2323.9km^2, south, north, west are surrounded by mountains, south and north high and intermediate low. The mountain and hilly area (≥400m) account for more than 90%, river valley (<400m) only about for 9.5% [6]. Annual average precipitation is 588.1mm and annual average temperature is 13.7℃. The soil types are brown soil, cinnamon soil and fluvo-aquic soil. Vegetation belongs to warm temperate deciduous broad-leaved forest, and the high mountain areas mainly natural secondary forest, hilly mountain areas belong to meadow and shrub. The rivers, hills, plateaus are mostly used for farmland. The terrain, high mountains and steep gullies, especially irrational land use, widespread destruction of forest in recent years have been aggravating soil erosion in this county.

Data Pre-processing

This study used May 17, 2007 Landsat-TM data (dpi 30m), 1:50000 topographic map of Luoning county, 1:50000 digital elevation map (DEM), 1:1500000 map of Henan province soil type, rainfall data from 1961 to 2007 monthly. Establish Gaussian Coordinate System and warp and weft control network for landsat. With TM image and 1:50000 topographic maps, generate vector polygon boundaries (arc), and then convert to raster image border(img), and extract data of land use/cover[7]. According to "Technical Specification for Land Use Survey", all landscape types in case area are divided into farmland, woodland, grassland, water area, construction land and unused land, 6 types in level one, and fifteen types in level two, respectively[8]. Obtain Luoning soil type maps (dpi 30m) by digitizing, correcting and cutting soil type maps of Henan province.