Spatial Distribution of Soil Erosion in Liangshan, Sichuan Based on a New Equationto Estimate the Rainfall Erosivity

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Abstract: To improve the applicability of Revised Universal Soil Loss Equation (RUSLE) in areas short of rainfall data, such as precipitation, continuous rainfall intensity and raindrops kinetic energy, a new procedure is proposed to estimate the rainfall erosivity factor (R) in mountainous area, southwest China. Soil erosion in Liangshan Yi Autonomous Prefecture in Sichuan of China was selected as an example to be studied using the proposed model. The spatial distribution of soil erosivity across Liangshan Prefecture was analyzed considering land usage and slope of the land employing Geographic information system techniques. The results showed that, soil erosion was less severe in northwest part of Liangshan than in southern and eastern parts, especially in the dry valley sections of such rivers as the Yalong, Heishui and Meigu. Serious soil erosion occurred in farmland with a slope of more than 10.5% (or 6°). The vegetation coverage may affect the soil erosivity in woodland and grassland. The finding will provide support to the soil and land management in Liangshan in regarding to soil erosion.

Key words: RUSLE; soil erosion; rainfall erosivity factor; GIS; Liangshan Yi Autonomous Prefecture

封面照片说明: 三江源区

三江源区是长江、黄河、澜沧江的发源地,位于青海省南部,涉及果洛藏族自治州、玉树藏族自治州、海南藏族自治州、黄南藏族自治州的 16 个县和格尔木市的唐古拉乡。其西部、南部与西藏自治区相邻,东部与四川省接壤。

三江源区地处青藏高原腹地,平均海拔约 4 000 m,雪山冰川众多,冰雪融水汇集成哺育中华民族的长江、黄河和澜沧江等大江大河,因此被誉为"中华水塔",是我国淡水资源的重要补给地。此外,该区还是世界高海拔地区生物多样性最集中的地区,也是生态系统最敏感的地区。特殊的地理位置、区域性涵养水源的重要功能以及对整个流域生态环境的直接影响,使该区成为青藏高原生态安全屏障的重要组成部分,其生态环境的保护对流域涉及的中国广大区域的经济社会可持续发展都有重要影响,在建设美丽中国和全国生态文明建设中具有特殊重要地位。2000 年 5 月青海省成立"三江源自然保护区",2003 年 1 月国务院批准为国家级自然保护区;2011 年 11 月 16 日,国务院常务会议决定建立青海三江源国家生态保护综合试验区。

照片为三江源区西北部的可可西里山脉及冰川和草甸。

(嘉 益)