

Research on Optimal Allocation Model of Land Use Structure Based on LP—MCDM—CA Model: the Case of Tianshui

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Abstract: Number of land-use type optimal allocation of geographic space is an important way to achieve sustainable land use, improving land agglomeration effect and maintain a balance of land ecosystems. The land use optimal allocation model based on multi-object linear planning, multi-criterion decision-making (MCDM) and cellular automata (CA) was proposed. On the basis of land suitability evaluation and definition for neighborhood rules and transformation rule, land use in space allocation was carried out to maximize economic efficiency and ecological benefits. This model achieved a integration optimization both land resources number structural and spatial pattern. Empirical studies was carried out by using this model for land use structure optimization, taking Tianshui as a case. The results show that this integrated model can both simulate the land use demand at macro level and land suitability at micro level, thus realizes the unification of the quantitative structure and the spatial configuration optimal. The study supported a new way to solve the key technical problem in land use programming in China.

Key Words: land use structure optimal, multi-criterion decision-making, linear planning, cellular automata, GIS, Tianshui

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雁门沟位于四川省阿坝藏族羌族自治州汶川县雁门乡,处于汶川县东北部,发育于龙门山西坡,为岷江上游左侧支流,流向由东南向西北;沟口与岷江交汇处海拔约 1 352 m,流域最高点光光山海拔 4 632 m,相对高度达 3 280 m,流域中游出露着较大面积的震旦系上统灯影组 (Zhdn) 地层,岩性主要为块状~厚层状白云岩、薄~中层硅质岩,岩石坚硬,经流水下切和崩塌作用后,形成两岸壁立的深切峡谷地貌。有关该沟的其他相关情况,请见本刊 454~458 页。

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