

张丁轩,付梅臣,陶金,胡利哲,杨晓丽.基于CLUE-S模型的矿业城市土地利用变化情景模拟[J].农业工程学报,2013,29(12):246-256

基于CLUE-S模型的矿业城市土地利用变化情景模拟

Scenario simulation of land use change in mining city based on CLUE-S model

投稿时间: 2012-10-07 最后修改时间: 2013-04-18

中文关键词: [土地利用](#), [矿业](#), [模型](#), [CLUE-S模型](#), [情景模拟](#), [武安市](#)

英文关键词: [land use](#) [mining](#) [models](#) [CLUE-S model](#) [scenario simulation](#) [Wu' an city](#)

基金项目:国家自然科学基金青年基金: 基于土地利用的矿区生态储存过程模拟与协同控制研究(41101531)

作者	单位
张丁轩	1. 中国地质大学<北京>土地科学技术学院, 北京 1000832. 中国科学院大学, 北京 100049
付梅臣	1. 中国地质大学<北京>土地科学技术学院, 北京 100083
陶金	1. 中国地质大学<北京>土地科学技术学院, 北京 100083
胡利哲	1. 中国地质大学<北京>土地科学技术学院, 北京 100083
杨晓丽	1. 中国地质大学<北京>土地科学技术学院, 北京 100083

摘要点击次数: **213**

全文下载次数: **135**

中文摘要:

为了对矿业城市的土地利用情景进行预测, 该文以典型矿业城市武安市为例, 将GIS技术和CLUE-S (conversion of land use and its effects at small regional extent) 模型应用到武安市土地利用变化情景模拟研究中, 通过土地利用结构变化、矿业城市土地利用空间分布和驱动因子的定量关系对武安市土地利用变化进行相应约束, 设计了趋势发展情景、耕地保护情景、生态安全情景3种模式, 生成2020年不同情景方案下土地利用预测图, 并对预测结果进行比较分析。研究表明: 在趋势发展情景下, 林地、建筑用地呈现上升趋势, 体现了经济发展和环境保护双管齐下的成效, 这也与实际情况相吻合; 耕地保护情景下, 耕地分布制约了建设用地的适度扩张; 生态安全情景下, 受生态环境政策影响, 林地增长趋势明显, 工矿用地急剧减少。综合考虑到武安市社会、经济、生态以及耕地保护等多方面的协调发展, 研究认为趋势发展情景更为合理, 其他2种情景可为趋势发展情景进行适度的修正和补充。该研究为区域土地资源的优化配置提供决策依据, 同时研究结果也进一步验证了CLUE-S模型能够较好地模拟预测不同约束条件下矿业城市土地利用空间变化。

英文摘要:

Abstract: The LUCC model is an important way to understand the process of land-use change, driving mechanisms, dynamic changes, ecological effects, and environmental impact assessment. Studies of land use models on land use prediction in mining cities are relatively rare. The CLUE-S model, as the representative of experience-based statistical models, has high simulation accuracy and application value in land use change prediction from spatial and temporal aspects. In this paper, the CLUE-S model was applied to land use change simulation in Wu'an, a typical mining city relying on GIS technology. First, selecting the correct driving factors is necessary to the accuracy of prediction map. 15 driving factors of land use were selected from 28 driving factors according to RDA(redundancy analysis) and factor analysis. Using 15 driving factors not only reduces the complexity of the problem, but also preserves simulation accuracy. In consideration of sustainable development, the free market scenario is more suitable compared with the alternatives. The expansion trend of the free-market mode is towards east and southeast, which conforms to the development planning of Wu'an city. Second, we set the corresponding land use quantity change in 2020 under three development modes by a Markov model and GM (1, 1) grey model, and then predicted the land use distribution map under a free market scenario, a cultivated land protection scenario, and an ecological protection scenario. The result showed that forest land and construction land increased under a free market scenario, reflecting the effects of economic development and environmental protection. In the cultivated land protection scenario, cultivated land distribution restricted the free expansion of construction land. In the ecological security scenario, forestland grows obviously, and mining land reduces sharply influenced by environmental policy. Comprehensive consideration of sustainable development in Wu'an from the perspective of social, economic, ecological development and cultivated land protection, the free market scenario is relatively reasonable, and the other two scenarios can be a supplement for regional land optimal allocation. The results further verify that the CLUE-S model can simulate the future land use change of mining cities under different scenarios. Meanwhile, a new method to predict future land use under different scenario using the CLUE-S model can be applied in the implementation and management of land use planning, which can guide the land use change in the implementation process with reference to different simulation results by adjusting the land use objective and ultimately achieve the purpose of land use optimization.

[查看全文](#) [下载PDF阅读器](#)

关闭

您是第**6525231**位访问者

主办单位: 中国农业工程学会 单位地址: 北京朝阳区麦子店街41号

服务热线: 010-65929451 传真: 010-65929451 邮编: 100125 Email: tcsae@tcsae.org

