遥感专家分类系统在滇西北植被信息提取中的应用试验研究

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An application of vegetation classification in Northwest Yunnan with remote sensing expert classifier

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摘要 选取滇西北香格里拉县的大中甸乡作为试验区,基于GPS定位调查对试验区典型覆盖地物的遥感多光谱信息进行测定与分析理解,集成GIS功能进行地形模型的变量处理,利用ERDASIMAGINE遥感专家分类系统模块,探索对试验区主要植被类型进行智能提取的知识库设计与分类组织实施.初步探索结果表明.相对于仅仅基于遥感光谱信息的传统分类方法,由于专家系统技术可以组织多变量参与分类信息提取,并通过专家综合分析进行灵活多变的规则知识库设计,还可根据区域特征与环境资源管理需要对专家分类过程实行反复调试的功能,因此,专家系统技术在自然环境复杂多样的云南山区植被信息提取中具有较为突出的先进性和实用性.对于试验结果,可通过适当的规则修改调整,将有关技术方法应用推广到其它广大山区.

关键词: 专家分类　 滇西北　 植被覆盖　 知识库

Abstract： The expert classification system is a hierarchy of rules,or a decision tree,that describes the conditions under which a set of low level constituent information gets abstracted into a set of high level informational classes.The remote sensing Expert Classifier provides a rules based approach to multi spectral image classification,post classification refinement,and GIS modeling.Dazhongdian township in Northwest Yunnan province was selected as a study case,the vegetation classification method by use of expert classification system provided by ERDAS IMAGE software was explored.In the process of rule base building,besides the remote sensing multi spectral image band data was organized as variables,aspect,slope and elevation obtained from TIN of terrain data by GIS function also being considered as variables.In addition,NDVI,which is known effected for separating vegetation from the others,was also taken part in te rule base builing.Based on the above variables preparation,the multi spectral feature was analyzed and the main types in the study area were defined.The conditions and rule base was set up.The vegetation classification was organized and implemented in Expert Classifier.As a result,four different types of which three vegetation types and one no vegetation wee mapped.The vegetation types are classified as forest,mountain meadow,and agriculture land.Based on the case study,the primary results show that:① Compared with the conventional classification technique that uses only multi spectral information,expert classification can use many more relevance geographic information.② Based on the feature analysis of knowledge in study area,by use of knowledge engineer model,expert can build up knowledge base that included condition variables and rules,so that classification can be effectively organized and implemented.

Key words： expert classification　 Northwest Yunnan　 vegetation cover　 knowledge base

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