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## 中国1999—2009年土地覆盖动态变化的时空特点

### Spatio-temporal feature of land use/land cover dynamic changes in China from 1999 to 2009

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中文关键词: [马尔科夫过程](#) [动态模型](#) [区划](#) [SAM-MDM算法](#) [土地利用/覆盖变化](#) [转移概率矩阵](#)

英文关键词: [markov processes](#) [dynamic models](#) [zoning](#) [SAM-MDM](#) [land use/land cover change \(LUCC\)](#) [transition probability matrix](#)

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#### 中文摘要:

基于SPOT NDVI时间序列研究中国近10 a来(1999—2009年)土地覆盖动态变化的时空特点。首先,对BISE模型进行改进并对数据进行预处理;其次,结合光谱角分类和最小距离分类算法各自的优势构建了一个新的分类算法(SAM-MDM),并对多年NDVI数据分类和后处理,提高了分类精度,能满足土地覆盖变化趋势分析要求;再次,应用土地覆盖动态模型和GIS叠加方法分析了全国土地覆盖的时空变化,建立了土地覆盖类型转移概率矩阵;最后,应用马尔科夫(Markov)过程建立了类型转移演化模型,对未来20 a土地覆盖动态变化过程进行了预测。通过该研究探讨了中国土地覆盖近10 a来在时间上的动态变化特点、空间上的变化差异、土地覆盖类型的转移概率分布和未来10~20 a的时空变化趋势。

#### 英文摘要:

Using the long term NDVI time series derived from SPOT VGT, the spatio-temporal feature of land use/land cover (LUCC) dynamic changes from 1999 to 2009 was investigated. First, the BISE model was improved to become a new pre-processing method for VGT time series processing. Second, a new classification model which can be named as SAM-MDM was reconstructed with SAM and MDM based on the phenological characteristics of annual NDVI time series; and then LUCC maps were retrieved from annual NDVI time series, and the post-classification recoding was performed on them. The classification accuracy was improved obviously and met the requirement of the trend analysis of land use/land cover changes (LUCC). Third, applying the model of LUCC dynamic change rate, the analysis was performed on the spatio-temporal feature of LUCC. Finally, applying the principles of Markov process, a model of LUCC class transition was constructed, and it was used to perform prediction for dynamic changes of LUCC in the next 20 years. These results indicate some conclusions: 1) the cropland, water body and grassland reduced continuously in the past decade; 2) the built-up area, bare land and woodland increased continuously; 3) there are different patterns of the spatio-temporal feature of LUCC for different land covers in different areas in china, including the south east, the north east, the north west and the south west; 4) the transition probability of LUCC which was discovered in the past decade should be continued in the next 20 years; 5) these results can provide information for regional socio-economic development decisions.

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