

研究报告

## 基于人工神经网络的生态环境质量遥感评价

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收稿日期 2005-9-16 修回日期 2006-5-26 网络版发布日期 接受日期

**摘要** 利用ETM遥感数据提取反映生态环境的植被、土壤亮度、湿度, MODIS地表温度产品提取的热度指数、气象指数及其它地学辅助信息作为神经网络的输入, 野外调查标准兴趣区的遥感本底值评分值作为网络输出, 建立一个3层结构的BP神经网络生态环境遥感本底值预测模型. 利用MATLAB软件对网络进行训练和研究区生态环境遥感本底值的预测输出, 并将预测结果按照生态环境遥感本底值分级评分标准进行等级划分. 结果表明, 总体分类精度达87.8%. 利用神经网络方法对生态环境遥感本底值进行预测是可行的. 采用先预测再分级的方法不仅能很好地评价区域生态环境质量, 而且能够和区域生态环境类型紧密的结合起来.

**关键词** [生态环境质量](#) [生态环境背景值](#) [BP神经网络](#) [遥感](#)

分类号

## Evaluation of eco-environmental quality based on artificial neural network and remote sensing techniques

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### Abstract

In the present study, vegetation, soil brightness, and moisture indices were extracted from Landsat ETM remote sensing image, heat indices were extracted from MODIS land surface temperature product, and climate index and other auxiliary geographical information were selected as the input of neural network. The remote sensing eco-environmental background value of standard interest region evaluated in situ was selected as the output of neural network, and the back propagation (BP) neural network prediction model containing three layers was designed. The network was trained, and the remote sensing eco-environmental background value of Fuzhou in China was predicted by using software MATLAB. The class mapping of remote sensing eco-environmental background values based on evaluation standard showed that the total classification accuracy was 87.8%. The method with a scheme of prediction first and classification then could provide acceptable results in accord with the regional eco-environment types.

**Key words** [Eco-environmental quality](#) [Eco-environmental background value](#) [BP neural network](#) [Remote sensing](#)

DOI:

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