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支持向量机回归的碳通量预测

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摘要 如何根据影响因素较好地预测碳通量是许多环境监测者非常关注的问题。但至今尚无一种非常有效的预测模型，为此研究ε-支持向量回归机在碳通量预测中的具体应用，并与BP神经网络模型的预测结果做了比较，分析了两种方法在核函数及相关参数、网络结构、神经元数目选择方面各自不同的特点。实验结果表明，基于ε-支持向量回归机和BP神经网络模型的碳通量预测结果与碳通量实测值之间存在显著相关性。但ε-支持向量回归机方法的预测过程更易掌控，整体预测精度高于BP神经网络的精度。

关键词 ε-支持向量回归 反向传播神经网络 碳通量 预测精度

分类号

Research of predicting methods for carbon flux based on support vector regression

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Abstract

Precisely predicting the carbon flux through impact factors has attracted many ecologists' interest.However，there is still no perfect method to predict carbon flux effectively.In this paper，ε-support vector regression（ε-SVR） is used to predict carbon flux，and the results of ε-SVR and BP neural network（BPNN） for the prediction of carbon flux are compared.ε-SVR with different kernel functions and parameters and BPNN with different numbers of the neurons in hidden layer are analyzed.The experiment results show that the correlation between the carbon flux predicted by ε-SVR and BPNN and the observation values is high.However，ε-SVR converges global optimal more easily than BPNN.And the ε-SVR predicts more accurately than BPNN.

Key words ε-support vector regression Back Propagation（BP） neural network carbon flux predicting

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