不同尺度植被碳汇的遥感估算与时空动态变化分析

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摘要： 净初级生产力（NPP）和净生态系统生产力（NEP）是研究生态系统功能和全球碳循环的关键指标。本研究基于长时间序列的 NPP 数据，采用趋势分析、突变分析与小波分析等方法，实现了全球 NPP 时空动态变化分析，探讨了不同区域植被 NPP 的变化趋势与变化规律。同时，在改进 CASA 模型的基础上，耦合地学统计模型（GSMSR），土壤呼吸—土壤异养呼吸（Rs-Rh）关系模型，实现了洲际、国家与区域尺度陆地生态系统 NEP 的估算。研究结果可为全球碳循环以及不同尺度碳平衡评估与碳中和政策的制定提供科学依据与技术支持。

Remote Sensing Estimation and Spatio-temporal Dynamic Analysis of Vegetation Carbon Sinks at Different Scales

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Abstract： Net primary productivity (NPP) and Net ecosystem productivity (NEP) plays an important role in understanding ecosystem function and the global carbon cycle. In this study, based on the long-time series NPP data products, the global NPP spatiotemporal dynamic change analysis is realized by using the methods of trend analysis, catastrophe analysis and wavelet analysis. And then, the change trend and law of NPP in different regions are analyzed, which can provide a reference for the study of global carbon cycle. In addition, on this basis, by coupling the improved CASA model, geoscience statistical model (GSMSR) and the soil respiration–soil heterotrophic respiration (R_s-R_h) relationship model, the NEP of terrestrial ecosystems at intercontinental, national and regional scales is estimated, which provides scientific basis and technical conditions for carbon balance assessment and carbon neutralization policy formulation at different scales.