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Vegetation Interpretation and Classification from High Resolution True Color Map Images of Shanghai City

J. Zhang\textsuperscript{1}, Y. Huang*\textsuperscript{2}, M. Wang\textsuperscript{3}, M. Wang\textsuperscript{2}

\textsuperscript{1}Shanghai Advanced Research Institute, China
\textsuperscript{2}Shanghai advanced research institute, China
\textsuperscript{3}Shanghai Carbon Data Research Center\textsuperscript{1},Shanghai Advanced Research Institute, Chinese Academy of Sciences, China

Abstract

Vegetation interpretation and classification is the core work of regional ecological monitoring and carbon sinks calculating. Different from traditional remote sensing data, the development of high resolution true color map provides a new possibility of vegetation interpretation and classification, especially for scattered, small-scale vegetation distributions in city regions. In Hue, Saturation and Value (HSV) color space, color model and texture model are combined to extract vegetation features, adjusting weights of the two features as a whole to achieve a better identification effect. Based on the nearest neighbour method, the model matches the features of candidate images with typical training vegetation samples. The main researches and innovations are as follows: (i) The research uses high resolution true color map images to provide real-time and more convenient data, making the study less limited to low spatial resolution of sensing images. (ii) It explores vegetation cover in city regions in an effective way, which is dispersed in size, variable in type and difficult to be located precisely. (iii) The results of simulation show that this method is feasible and the feature-weighted model improves the precision to 83.3\% around by adjusting weight parameters, much better than single feature model. (iv) Combined with the annual Net primary productivity (NPP) values in different vegetation types, the carbon storage of carbon sinks in one area of 23,373 m\textsuperscript{2} is calculated, ranging from 9,000-12,000 kg, providing a new way to track the carbon footprints in city regions.