

OCEAN OPTICS XXIV

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Monday, October 8

Poster Session 1

16:00–18:00

Poster 268

A SIMPLE AUTOMATED DYNAMIC THRESHOLD EXTRACTION METHOD FOR THE CLASSIFICATION OF LARGE WATER BODIES FROM LANDSAT-8 OLI WATER INDEX IMAGES

Traditional manual methods of extracting water bodies from remote sensing images cannot satisfy the requirements for mass processing of remote sensing data, and new automated methods are complicated and require a large amount of auxiliary data. The histogram bimodal method is a frequently used objective tool for threshold selection in image segmentation. However, automatically calculating the threshold is difficult because of complex surfaces and image noise, which lead to imperfect twin peaks. To overcome these difficulties, we developed an operational automated water extraction method. This method does not require the identification of twin histogram peaks but instead seeks minimum values in the threshold range to achieve an automated dynamic threshold. We calibrated the method for 18 lakes in China using Landsat 8 Operational Land Imager images, for which the relative error (RE) and coefficient of determination (R^2) for threshold accuracy were 2.1% and 0.96, respectively. The RE of area accuracy was 0.59%. The advantages of the method lie in its simplicity and minimal requirements for auxiliary data while still achieving an accuracy comparable to that of other automatic water extraction methods. It can be applied to mass remote sensing data to calculate water thresholds and automatically extract large water bodies.

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