

Monitoring Urban Surface Water Bodies Changes Using MNDWI Estimated From Pan-sharpened Optical Satellite Images

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SUMMARY

This study focuses on evaluation of using pan-sharpened Short-wavelength infrared (SWIR) band of remote sensing imagery for extracting urban surface water bodies. The SWIR is a parameter of a equation to calculate the Modification of Normalized Difference Water Index (MNDWI) and other water indexes. There have been a lots of studies using SWIR band of a medium spatial resolution of satellite scenes such as Landsat, Sentinel-2 to extract the surface water. Using satellite data at moderate resolutions will cause the problem of mixing pixels and result to uncertainty and limitation. Insteads of that, we employed the pan-sharpened Short-wavelength infrared (SWIR) band of the Landsat and Sentinel-2 images at the better resolution (as the RGB band of Sentinel-2 and panchromatic of Landsat) for estimating the water index and we found the accuracy was improved. This study also investigated the methods to pan-sharpen the quality of satellite images and figured out how to calculate the MNDWI at highest accuracy. This method was applied for 10-year time series of Landsat and Sentinel-2 images of Hanoi.

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