Suggested Topic: Data Processing

**Evaluation of median filtering impact on satellite-based submerged seagrass mapping accuracy in moderate clarity of tropical coastal water**

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Numerous unwanted information called as ‘noise’ present on digital image often reduces the reliability of desiring output obtained after processing stage. This paper highlights the evaluation on the impact of median filtering process after implementation of water column correction model known as bottom-reflectance-index (BRI) on high spatial resolution digital satellite image namely Worldview-2 (WV-2) on short visible bands for submerge seagrass detection. The evaluation of median filter as a non-linear digital filtering technique was carried out in the type-II coastal water with moderate water clarity in Merambong shoal; the largest seagrass beds in Malaysia. Using different window size such as 3x3, 5x5 and 7x7, the variability of the impact on seagrass detection on satellite image will be analyzed according to the changes from unfiltered BRI value of the whole scene to filtered pixel on digital images. This filtering scheme and the different size of kernel for filtering process are found significantly sensitive to subtle changes among bottom substrates. The filtering process by median scheme discovered its capability to maximize signal-to-noise (SNR) ratio and minimize coefficient of variation (CV) before digital image classification was carried out for seagrass mapping. Results of this study indicated seagrass map generated using BRI of WV-2 visible bands reported good agreement with in-situ verifications after filtering process, with an overall accuracy of >80%, high value of Kappa statistics, reliable producer’s and users accuracy. In addition, the improvement extent after the implementation of median filtering process to the submerged seagrass detection was also being examined. Such analysis is vital in reporting constraints of water turbidity for submerge seagrass in tropical coastal water; thereby allow improvisation of the BRI in turbid waters for submerge seagrass mapping.

**Keywords:** median filtering, digital, signal-to-noise, window, seagrass, tropical