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Author: Dr. Yeonju Choi
Korea Aerospace Research Institute (KARI), Korea, Republic of, choiyj@kari.re.kr

Dr. Joon Min Choi
Korea Aerospace Research Institute (KARI), Korea, Republic of, jmchoi@kari.re.kr

AUTOMATIC DETECTION MODEL OF FLOATING MACROALGAE BLOOMS BASED ON DEEP
LEARNING USING GOCI IMAGES

Abstract

As 'Sargassum' is a type of floating macroalgae blooms, prediction and identification of their distribution or movement by time is very important because it can effectively suppress damage to the fishing and tourism industries. Previously, a threshold-based index method was used to detect surface algae pixels in a multi-species marine color dataset. In addition, studies have been mainly conducted to extract features related to floating matter through correlation analysis with environmental factors such as water temperature and salinity from multi-wavelength remote sensing data such as MODIS and Landsat. In this study, deep learning-based U-net network, which exhibits excellent performance in image segmentation, was applied to GOCI (Geostationary Ocean Color Imager) data to develop a system that can continuously monitor floating objects in the southern coast of the Korean Peninsula. In particular, in order to apply the deep learning technology to the mother-and-child prediction modeling results developed in the previous study, a coordinate system transformation and matching algorithm between heterogeneous data (Orthographic-Mercator projection) with different resolutions was developed. We expect the developed model to be practically applicable and scalable to other datasets as well as GOCI. Through this, it is thought that it can be used as a customized model to monitor marine floats not only on the southern coast of the Korean Peninsula but also in all regions of the world. Not only this, it will be expandable as a monitoring system for global floating material mapping and movement/distribution in the long term.