9. Estimation of Type and Volume of Disaster Waste Using Hyperspectral Camera

Hiroomi Habuchi, Yuya Shimizu, Masaya Iwashita, Fujiko Yoshimura

This research explores the use of hyperspectral cameras (HSCs) for estimating the type and volume of disaster waste. With the increasing frequency and severity of natural disasters due to climate change and other factors, the generation of large volumes of disaster waste has become a pressing issue. Swift and efficient handling of such waste is crucial for effective disaster management. However, accurate predicting of the types and volumes of disaster waste remains challenging due to the variability in waste composition and volumes based on the specific disaster type and location.

To address this challenge, we investigate the applicability of hyperspectral camera, which can capture imagery in the wavelength range of 900 through 1700 nm beyond the visible spectrum. By leveraging the unique spectral information provided by HSC, we aim to develop a methodology for estimating the types and volumes of disaster waste more accurately and efficiently. In this study, we have carried out the several trials to shoot the simulated disaster wastes by HSC and verified that it has possibilities to separate determine the types of components based on the spectral intensities. This research holds significant potential for improving waste management planning and resource allocation in the aftermath of natural disasters.

Keywords: hyperspectral camera, disaster waste, disaster waste estimates, waste management, natural disasters