Optimal Band Analysis of Enhanced Vegetation Index (EVI) from Hyperspectral Data for Estimation Growth Stage of Paddy

Achmad Rival Setyawan[1], Arief Darmawan[2], BangunMuljo Sukojo[1]

[1]Department of GeomaticsEngineering ,InstitutTeknologiSepuluhNopember (ITS)
Kampus ITS Sukolilo, Surabaya 60111, rival09@mhs.geodesy.its.ac.id, bangunms@gmail.com
[2]The Agency For The Assessment and Application of Technology (BPPT), Jakarta
Jl M.H Thamrin No 8. Jakarta 10340. arief.darmawan@bppt.go.id

Abstract

Growth stage is important to know the expected life of paddy to be used as a predictor of productivity. This study aims to determine the growth stage of paddy in paddy field areas in Karawang District, West Java which is based on hyperspectral (HyMap) data. In the study area, dominant variety is Ciherang (local name).

Since decades, several methods have been used to estimate this growth phase with different specific techniques of vegetation indices calculation such as NDVI, SAVI, ARVI, etc. At the present time, EVI was made to combine the SAVI and ARVI so the EVI then becomes one of promising index to estimate vegetation growing phase.

Several previous studies have obtained the EVI optimal bands from broadband data using common formula. In this study, EVI optimal bands have been obtained from narrowband (Hymap) and ground-spectrometer data. Re-sampling technique of Ground-spectrometer data was done in order to get similar number of wavebands with HyMap data and also to minimize misinterpretation and analysis. All available spectral data then used to obtain the optimal band of EVI. By using non-linear method, the result showed the optimal bands of EVI were found in single narrow wavelength at 0.4856 µm (blue), 0.6076 µm (red) and 0.7297 µm (NIR).

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