

Field Spectral Reflectance Measurements in Viikki, Helsinki on 22nd – 26th July, 2011

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Success in acquiring remote sensing data for describing a given target, such as vegetation, is contingent upon an understanding of the reflectance properties of the target and its surroundings [1]. Especially for hyperspectral studies, data gathered from field spectroradiometer is essential [2]. This paper presents a field spectral measurement activity related to AISA flight campaign executed on 25th July 2011. These field spectra data will be a support for hyperspectral image analysis and sensor calibration. The field measurements were carried out with ASD FieldSpec Handheld Spectroradiometer, with a wavelength range of 325–1075 nm. Spectra measurement took place at three field experiment sites with different crop species. Three surface sites (bright, medium and dark) were selected as calibration sites and measured simultaneously with the actual image acquisition.

For field experiment sites, there were several planting replicas in each site. A series of measurements in a single replica (including all species and treatments) were defined as one transect. At the beginning of ASD measurements, spectrometer was optimized above a Spectralon panel. Optimization was also done between measuring each transects. For each species, three spectral measurements were made for each sample point and three sample points were recorded approximately 80-90 cm apart from each other. Between sample point measurements, three Spectralon panel measurements were made, and Spectralon panel was also measured at the beginning and the end of each transect. From these measurements raw Spectralon panel and target spectral signals were acquired as DN mode. For calibration sites, the same measuring protocol was used as for experiment sites.

Eight species were measured in the first field experiment site, seven in the second and three species with different treatments in the third site. After post-processing raw DN data, reflectance values were calculated and plotted as graphs. These data will be combined with a radiative transfer model to retrieve crop structure parameters. The calibration measurements will be used for correcting AISA data.

References

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