

Case Study: ENVI employed in agricultural remote sensing project

Demands on agriculture continue to grow year on year; increased yields, a reduction in the use of fertilisers and pesticides coupled with growing costs of production all demand changes to the way crops are grown.

Environment Systems, a fast-growing, innovative, environmental and geographic intelligence consultancy delivering solutions to the environmental, agricultural and land sectors, is currently undertaking a research and development programme designed to explore the potential for advanced remote sensing in land applications, primarily in high input arable farming.

The project complements currently available remote sensing techniques, for example, satellite-derived information or real-time data, and pushes horizons for information and land management.

In this work Environment Systems utilises an extensive array of software tools, including ENVI which plays an important role in the processing of satellite data for precision farming applications.

The UAS (Unmanned Aerial System) uses a multispectral sensor to capture imagery in a number of different spectral bands. Once the data has been retrieved from the UAS, ENVI in combination with the IDL programming language is used to transform the individual image files from the different spectral bands into a format that can be used with a wider workflow to create orthophotos and image mosaics.

Once the image mosaics have been created ENVI is used again to carry out any

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necessary radiometric correction and layer stacking which ensures that all the spectral bands are correctly registered.

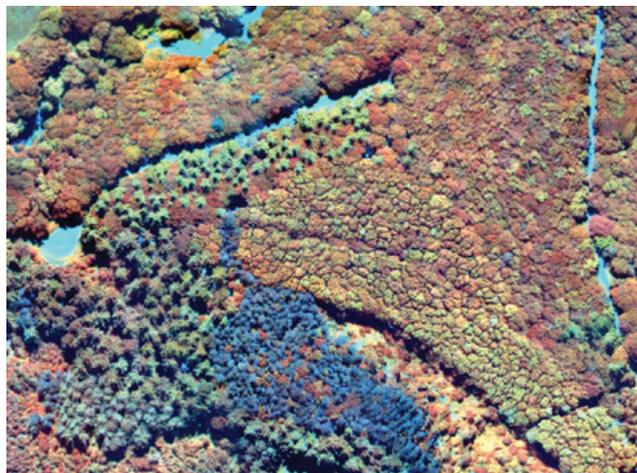
When transforming raw satellite data, ENVI undertakes geometric, radiometric and atmospheric corrections. For example, if there are clouds in the imagery ENVI can

be automated to create cloud masks, grouping image pixels and exporting any areas of cloud as a shape file. This eliminates the need to do any further classification at a later stage which speeds up the workflow.

“ENVI is a crucial part of our workflow in all the projects where we make extensive use of satellite data and has been invaluable in the preparation of data for our research work in precision agriculture,” said Mark Jarman, Senior Remote Sensing & GIS Consultant at Environment Systems.



Crop vigour assessment from satellite of a sugar beet crop from 2013.
Green = high levels of vigour
Red = Low levels of vigour or bare ground



Multispectral UAS woodland image displayed in NIR (Red) - Red-Edge (Green) - Red (Blue) for use in woodland species identification by Aberystwyth University

To find out more about ENVI visit www.exelisvis.eu

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