

OVERLAND™

A New-Generation Land Cover Analysis Tool

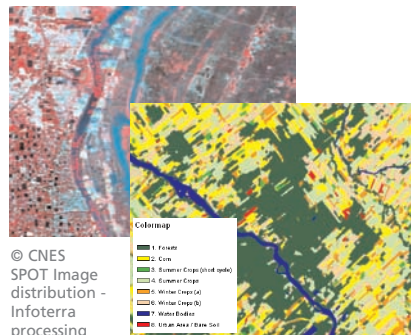
Through both its continued effort in Research and Development and its active involvement in the major national & European programmes, Infoterra France has developed unique expertise in the use of remote sensing data to analyse land cover in general, and especially to monitor crops. Five years ago, this expertise led to the FARMSTAR service – precision farming, with 260,000ha subscribed in France in 2006, and today recognised as one of the main success stories in the EO business.

This know-how is today at your disposal thanks to a new-generation tool called Overland™ - specifically designed to target a wide range of applications that address natural resource analysis and monitoring.

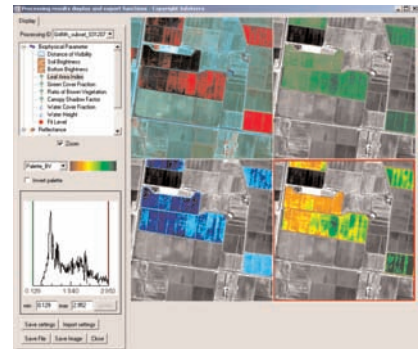
An innovative approach for improved land cover characterization over natural areas

Biophysical parameters give direct information on the physical properties of vegetation, water and soil, and so provide new decoding keys for experts such as agronomists, forest managers or more generally experts dealing with land cover and land use.

In addition to providing an accurate depiction of the natural environment for improved land cover mapping, biophysical parameters are key inputs for a wide range of models - such as yield prediction models and irrigation models, which are needed to create highly added-value information products designed to fulfil end-users needs.



From image to land cover map



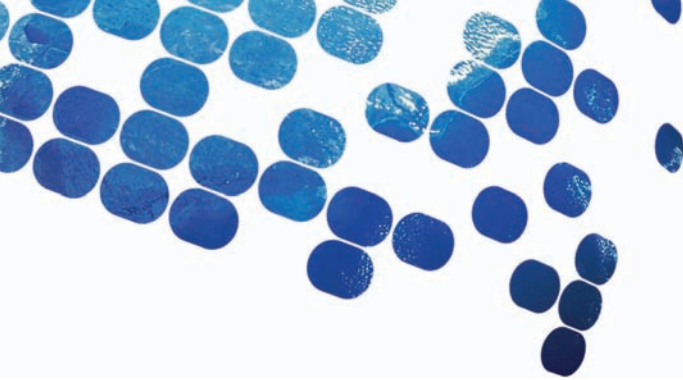
A user-friendly interface for an accurate land cover characterisation

Thanks to the methods developed by Infoterra, these parameters are automatically generated from a wide range of multi- & superspectral images. Once parameters are computed, Overland also gives you access to a large choice of models.

With Overland, there is no longer any need for a remote sensing specialist in order to create accurate environmental analysis. Just define your thematic context (area of interest, parameters sought, etc.), and focus on your thematic expertise!

Background

Based on the original principal of restoring the landscape as observed by Earth observation instruments, Overland includes a set of models that simulate the reflection of objects that contribute to the measured reflection of a single pixel. These models are adjusted until the simulated reflection perfectly matches the measured one (inversion process). A major asset is that the methodology does not depend on local conditions, and so does not need any ground truth or field work.



Overland™ Data Sheet

A thematic-oriented tool

Overland is designed to be easily operated, even by non-remote sensing experts.

- Friendly, MMI-guided interface that allows you to tailor the processing to a specific case study via user-defined thematic preferences.
- Wide range of embedded models to help tackle a large variety of natural areas, ranging from densely vegetated areas (crops, natural growth, mix of both) to deserts, wetlands, burnt or partly flooded areas.
- Recursive approach when user has no prior knowledge about local conditions. Use of different models for step-by-step characterization of land cover, based on objective analysis criteria.
- Accurate and robust parameters, which have been validated in different contexts and are consistent in time and space (i.e. for different dates and locations). A classification scheme based on parameters can thus be applied for any other location.

A plug-in approach

Overland is designed to easily plug in new ingestion module and process new airborne or space-borne data sources. New exploitation functionalities are also easily plugged in to respond to specific requirements for added-value information products (e.g. classification scheme tailored for a specific land cover issue).

Multi-source software

Overland is designed to process any multi- or super-spectral images acquired by airborne or space-borne instruments:

- High resolution images (SPOT class) and medium resolution images (MERIS class), allowing analysis at both local and regional scale. The inherent intra-pixel heterogeneity necessary for medium resolution instruments is handled automatically.
- First version of Overland embeds ingestion module for SPOT, Landsat and MERIS. Thanks to "plug-in" approach, any additional sensor can be easily integrated.
- Independence of biophysical parameters from the data source. Parameters can be compared even if derived from different sources.

Integration in a GIS-based environment

Overland is designed to be operated in a GIS-based environment.

- Processing can be applied only to a user-defined region-of-interest (shape file, ROI).
- For each unitary area in the user-defined ROI, statistical values related to derived parameters (e.g. mean, max, % of area over a user-defined threshold) can be re-injected in the shape file as a new attribute, leading to the easy implementation of a change detection analysis tool.

End products and exploitation tools

- Biophysical parameters on Vegetation
 - Green cover fraction
 - Brown cover fraction
 - Leaf area index
 - Chlorophyll concentration
 - FAPAR
 - Shadowing factor
 - Water content
- Biophysical parameters on Soil
 - Soil cover fraction
 - Soil brightness
 - Soil moisture
- Biophysical parameters on Water
 - Water fraction
 - Water optical depth
 - Chlorophyll concentration
- Biophysical parameters on Atmosphere
 - Visibility distance
 - Water vapour concentration

Note: the ability to derive certain parameters is dependent on the spectral richness of the image source.

- Biophysical parameters can be exported in various formats:
 - Binary format (e.g. geoTiff),
 - Standard image formats (e.g. PNG, ENVI format)
 - Illustration format (e.g. PDF)
- Overland embeds standard exploitation tools such as hierarchical classification tools or metavariable editors. Result of classification or metavariables can be stored and exported as well.

Technical features

- Overland works on different OS configurations
 - SUN-SOLARIS
 - WINDOWS XP / 2000
- 1Gbytes RAM minimum, 2Gb recommended
- IDL-based software
 - IDL run time licence needed.

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