SYSIPHE

Spectral imaging system for defense applications

To develop tomorrow's defense intelligence systems, we first have to develop a spectral imaging system that combines very high spatial and spectral resolution. ONERA now offers Sysiphe, a hyperspectral imaging system that will provide a baseline to help design tomorrow's operational systems.

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The Hyspex Odin (foreground) and Sieleters instruments in a Dornier DO-228 flying testbed.

Sysiphe at a glance

Sysiphe (*Système Spectro-Imageur de mesure des Propriétés Hyperspectrales Embarqués*) is an airborne data gathering system that delivers hyperspectral images, from the visible all the way to the infrared band.

The Sysiphe system comprises two airborne instruments: Hyspex Odin, developed by Norway, covers the visible and near-infrared bands, while Sieleters, designed and built by ONERA, covers the medium-wave IR II band (MWIR) and the long-wave IR III (LWIR) band.
The instruments have been operational since September 2013.

Applications

ONERA is making Sysiphe available to the entire aerospace and defense industry, allowing companies to capitalize on the system's advantages for a wide range of applications, including:

- identification of targets, even through camouflage;
- discrimination between targets/decoys;
- detection and characterization of liquid, solid or gaseous effluents.

False color image from the Sieleters hyperspectral sensor, spotlighting the polystyrene target (red) and roads and paths (yellow).

Advantages

- Outstanding performance, unrivaled in Europe: a 500-meter-wide swath with 50 cm spatial resolution, in over 500 bandwidths.
- A complete system: ONERA also developed the ground data processing and archiving system, and deploys across-the-board expertise, from instrument design to image calibration;
- Paving the way for future developments: Sysiphe provides the data needed to validate ONERA's computation codes.

La recherche CARNOT pour les entreprises

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