# ITRES Applications

*Airborne Hyperspectral Mapping*

Fused SHOALS-3000T LIDAR & CASI-1500 Imagery
New Orleans, Louisiana
Post Hurricane Katrina, October 2005

*Data courtesy JALBTCX*

## Hyperspectral + LIDAR or IFSAR

### Fusing Spectral Profiling & Terrain Modelling Capabilities

Compatible with all
ITRES Sensor Systems

LIDAR/IFSAR Fusion for:
- Image Orthocorrection
- Data Visualization
- Image Analysis

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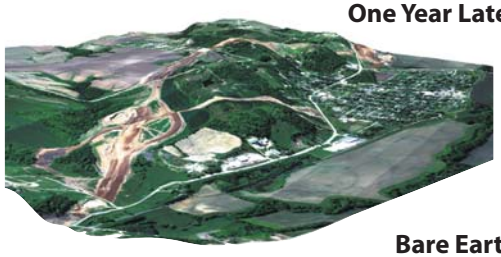
# ITRES Applications

## *Airborne Hyperspectral Mapping*

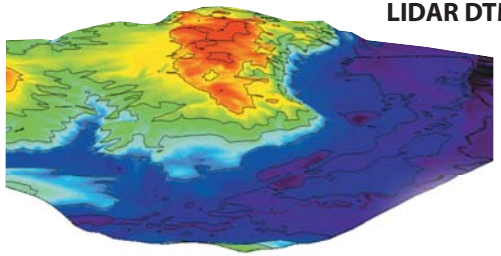
CASI/LIDAR Fusion for Change Detection and Wetland Analysis

**Baseline**

**One Year Later**



**Bare Earth LIDAR DTM**



*Data courtesy EarthData International*
*Imagery processed by ITRES*
*Modelling by Mississippi State University*

## Hyperspectral + LIDAR Data Fusion for Orthocorrection

Digital Terrain Models (DTMs) from LIDAR (Light Detection and Ranging) or IFSAR (Interferometric Synthetic Aperture Radar) sources are used to orthocorrect hyperspectral imagery from ITRES sensors. Doing so removes terrain-related distortions, improving positional accuracy in the output imagery. DTM integration is accomplished using proprietary standard processing software. LIDAR and IFSAR systems can be co-mounted with ITRES sensors for coincident data collection or data can be collected separately and fused in post-processing.

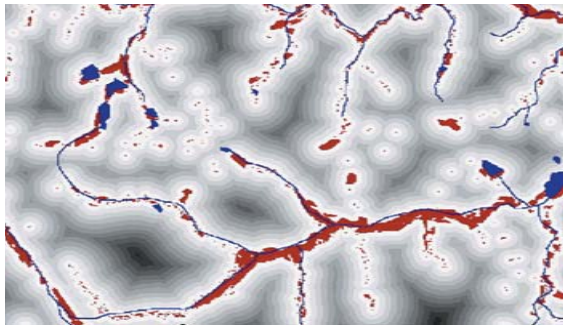
Fusion of hyperspectral and DTMs also allows for mapping drainage networks, potential transportation corridors, urban development, and line-of-sight analysis. When airborne imagery is draped over co-registered elevation models, a three-dimensional perspective of an area can be represented at small mapping scales.

## Hyperspectral/LIDAR Fusion Assists in Change Detection

Draping hyperspectral imagery over LIDAR DTMs serves as an easy way to improve data visualization and interpretation. The images at left show VNIR CASI imagery draped over a LIDAR DTM, before and after highway construction in Eddyville, Iowa.

## Strengthening Spectral Identification with Terrain Modelling

LIDAR and IFSAR DTMs are also used to augment the spectral discrimination power of hyperspectral imagery during analysis and product generation.



*Wetlands probability product from CASI and LIDAR analysis (darker color = higher probability).*
*Data modelling by Mississippi State University, NCRST-E.*

Interested in a similar project? Contact ITRES for further information by telephone, e-mail at info@itres.com, or visit us on the web at **www.itres.com**.

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All ITRES sensors are calibrated to a traceable standard.
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