



## ENVI<sup>®</sup> for ArcGIS<sup>®</sup>

TURN GEOSPATIAL IMAGERY INTO  
USEFUL INFORMATION FOR YOUR  
GIS ON THE DESKTOP, FOR MOBILE  
DEVICES, AND IN THE CLOUD

**HARRIS**<sup>®</sup> TECHNOLOGY TO CONNECT,  
INFORM AND PROTECT<sup>™</sup>

[HarrisGeospatial.com](http://HarrisGeospatial.com)

# ENVI<sup>®</sup> FOR ArcGIS<sup>®</sup>

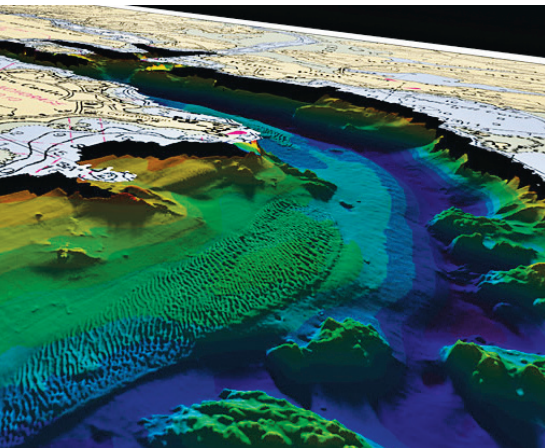
## BENEFITS

Use the full power of ENVI image analysis across the ArcGIS<sup>®</sup> platform

Enhance your GIS by using ENVI LiDAR tools

Fuse information from imagery with GIS layers to gain actionable intelligence

Enable mobile access for your workforce with ENVI for ArcGIS



Improvements in the quality and availability of geospatial imagery has driven both private and government organizations to include geospatial imagery as an integral part of their GIS strategy. The result has been greater productivity and efficiency, while also providing end users with better information to do their jobs. An abundance of geospatial data also poses challenges. Manually sorting through multiple data types while under pressure to provide timely and reliable information in critical circumstances is often impossible. That is why Harris Geospatial and Esri, the makers of ENVI<sup>®</sup> and ArcGIS<sup>®</sup>, have worked as partners to provide solutions that allow you to quickly and easily get the most out of imagery and enhance your GIS.

## ENVI MAKES IT EASY TO ADD INFORMATION TO YOUR GIS FROM VIRTUALLY ANY IMAGE TYPE

The idea that software tools should be easy to learn and use, while quickly providing you with the information you need to make decisions, led to the development of ENVI<sup>®</sup> for ArcGIS<sup>®</sup>. This suite of off-the-shelf software solutions brings the power ENVI image analysis to any ArcGIS implementation that your organization deploys. Additionally, GIS layers such as roads, bridges, and municipal boundaries can be included to enhance your ENVI imagery products.

ENVI for ArcGIS allows you to analyze geospatial imagery such as hyperspectral, multispectral, panchromatic, LiDAR, and SAR within any ArcGIS environment whether deployed on the desktop, in the cloud, or online. This flexibility allows you to implement scientifically proven ENVI image analysis without having to change your existing workflow.

## INTEGRATED SOLUTIONS GIVE YOU QUICK, ACCURATE ANSWERS

Harris Geospatial and Esri have gone beyond providing software solutions that are merely interoperable. Instead, ENVI for ArcGIS provides advanced image analysis capabilities that are completely integrated across the ArcGIS platform. With this integration, ENVI workflows and automated tools open in the ArcToolbox, and allow results to be pushed directly to ArcMap or accessed via ArcOnline. Since Harris Geospatial and Esri are committed to providing the tools that GIS users need to solve problems, collaborative development efforts will undoubtedly result in more innovative offerings in the future.



ENVI FOR ARCGIS ALLOWS YOU TO ANALYZE ALL TYPES OF GEOSPATIAL IMAGERY SUCH AS HYPERSPPECTRAL, MULTISPECTRAL, PANCHROMATIC, LIDAR, AND SAR WITHIN ANY ARCGIS ENVIRONMENT.

Untitled - ArcMap - ArcInfo

File Edit View Bookmarks Insert Sel

Table Of Contents

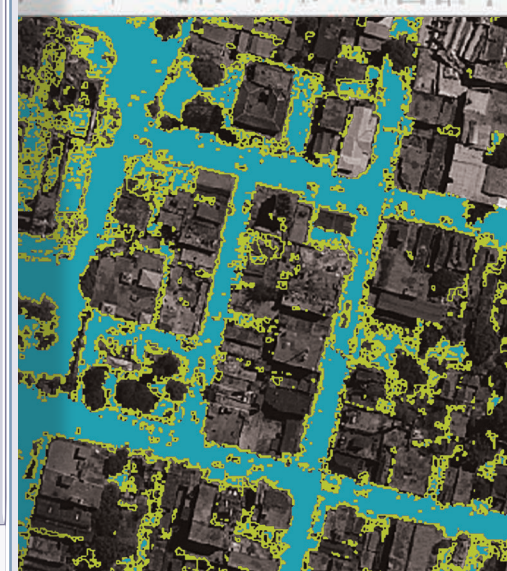
Layers

- trees
- Boulder\_Class
  - <all other values>
  - CLASS\_NAME
  - Class 1
- terrainTIN
- buildings\_perimeter
- buildings
- dem.dat
- Value

ArcToolbox

- ArcToolbox
  - 3D Analyst Tools
  - Analysis Tools
  - Cartography Tools
  - Conversion Tools
  - Data Interoperability Tools
  - Data Management Tools
  - Editing Tools
  - ENVI Tools
    - Example ENVI Tools
      - Convert Raster Format
      - Filter With Convolution
      - LiDAR To Raster
    - Feature Extraction
      - Extract Features With Ruleset
    - Image Processing
      - Auto-Threshold Difference Raster
      - Calculate Image Difference
      - Calculate Thematic Change
      - Classification Raster To Vector
      - Classify With Training
      - Classify Without Training
      - Cleanup Classification Raster
      - Detect Anomalies
      - Intersect Rasters
      - Threshold By Percentage
    - Image Workflows

Editor



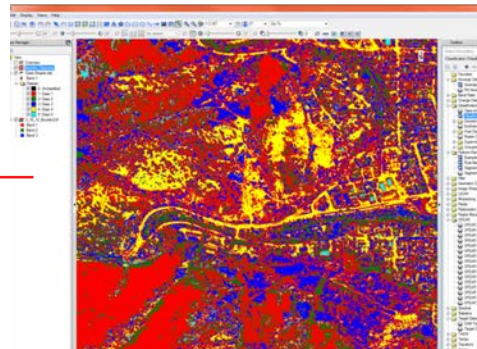




# THE FULL POWER OF ENVI IMAGE ANALYSIS ACROSS THE ArcGIS® PLATFORM

**USING THE SCIENTIFICALLY PROVEN TOOLS IN ENVI FOR ARCGIS, IT'S EASY TO IDENTIFY STRUCTURES IN CLOSE PROXIMITY TO FIRE FUELS.**

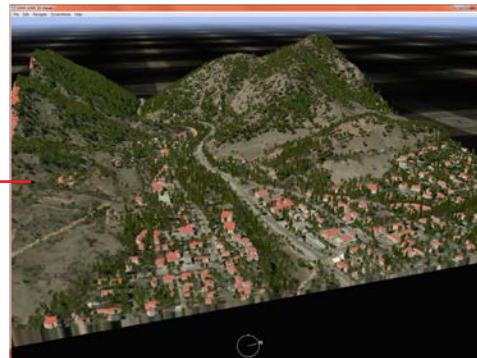
Start by identifying objects like trees and dried vegetation that could potentially fuel a fire by analyzing the spectral information within satellite imagery.



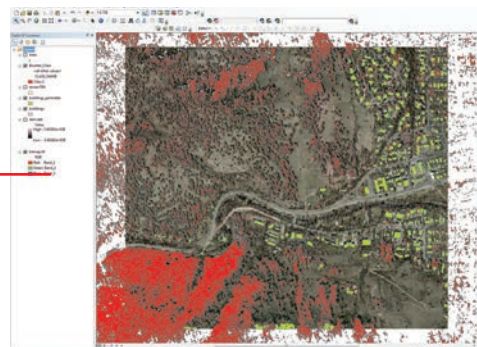
**I NEED TO WARN CITIZENS OF MY COUNTY OF THE DANGER OF FIRE FUEL IN CLOSE PROXIMITY TO THEIR HOMES.**

In planning for the upcoming fire season, a local fire chief will inform home owners of the benefit of clearing fire fuel from around their property. Before approaching home owners, he wants to have specific information in hand about how to maximize their mitigation efforts. To do this, he uses ENVI for ArcGIS to analyze both multispectral imagery and LiDAR data to determine fire fuel in proximity to building locations. In this scenario, using imagery rather than relying on field work results in a more accurate analysis and saves both time and money. Furthermore, when the case for mitigation is based on scientific algorithms and presented to the home owner to see with their own eyes, it is more convincing than having a stranger knock on your door to tell you to cut down some trees.

With the location of fire fuels identified, extract building vectors from the same scene using LiDAR point cloud data.



Push both datasets with one click to ArcGIS for Desktop for further analysis. Using the spatial analyst tools within ArcGIS, the fire chief can now easily identify which houses are closest to extreme fire hazards.



*(Data courtesy of DigitalGlobe Inc.)*

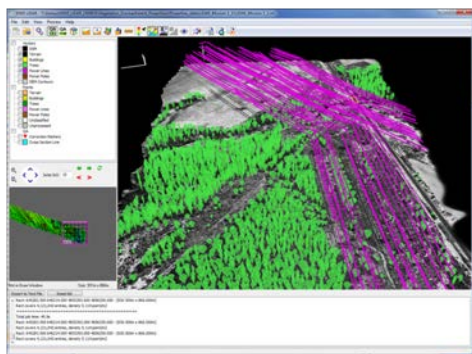


# USE ADVANCED LIDAR TOOLS IN ENVI TO ENHANCE YOUR GIS

## I NEED TO ASSESS MY EASEMENT FOR VEGETATION ENCROACHMENT ON POWER LINES.

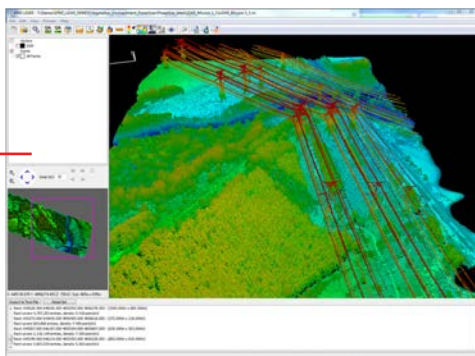
Since vegetation encroachment can pose a significant risk to the operation of power transmission lines, utilities managers spend large sums of money monitoring easements. To reduce the need for teams of workers to drive or walk to visually identify encroachment, utilities managers can use ENVI for ArcGIS to analyze aerial imagery and LiDAR data to identify vegetation risks over broad, inaccessible areas.

ENVI feature extraction routines can extract vector objects from LiDAR data to identify tree locations and power line extents. When integrated with the spatial analysis capabilities of ArcGIS, an accurate assessment of the severity of the encroachment can be made and the appropriate technician/equipment deployed—saving time and money.

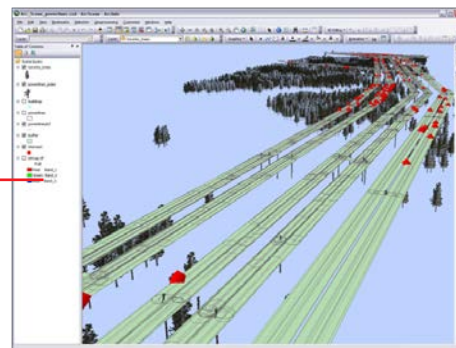


Use LiDAR point cloud data to identify trees and power lines that need to be kept clear of encroaching vegetation.

Use ENVI for ArcGIS to extract these trees and power lines as vector objects and push them to ArcGIS for further analysis.



Now that ENVI for ArcGIS has pushed vector objects into the ArcGIS interface, you can run a 3D spatial analysis to identify tree encroachment within power line distance buffer extents.



**ENVI FOR ARCGIS  
ALLOWS YOU TO  
QUICKLY AND  
ACCURATELY ASSESS  
YOUR EASEMENT WITH  
LIDAR DATA, SAVING  
TIME, MONEY, AND  
RESOURCES.**





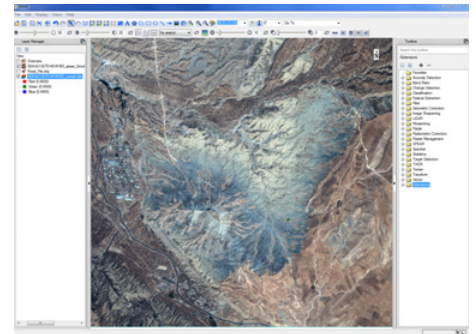
# USE ENVI FOR ARCGIS TO FUSE INFORMATION FROM IMAGERY WITH GIS LAYERS TO GAIN ACTIONABLE INTELLIGENCE

## I NEED TO ENSURE THE SUCCESS OF MY MISSION BY IDENTIFYING POTENTIAL TARGETS OR THREATS.

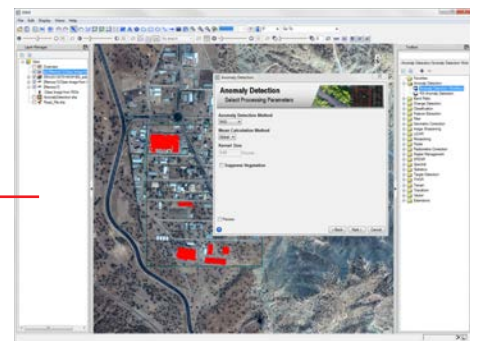
Keeping our world safe from threats is an enormous job that entails unique challenges. Defense and intelligence personnel can use ENVI for ArcGIS to analyze a broad geographic area of interest and quickly identify anomalies that could be important to tactical and operational planning.

Anomalies identified through ENVI spectral image processing can identify anything from disturbed soil to camouflaged enemy equipment, or man-made obstacles. These advanced ENVI target and anomaly detection methods yield actionable information from imagery that together with GIS layers can be used to create comprehensive intelligence reports or risk assessments that support mission planning efforts.

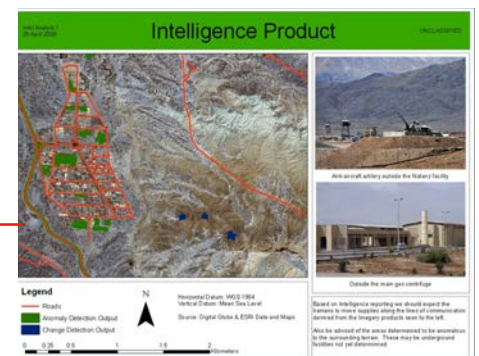
Geospatial imagery of broad geographical area of interest. [Natanz, Iran. Image courtesy of DigitalGlobe]



Use the ENVI for ArcGIS automated workflows for quick and easy detection of targets and anomalies.



Use the actionable information produced by ENVI for ArcGIS with existing GIS layers to create comprehensive intelligence reports.



## USE THE SPECTRAL ANALYSIS TOOLS IN ENVI FOR ARCGIS TO IDENTIFY ANOMALIES THAT MAY POSE A THREAT TO MISSION SUCCESS.

# ENABLE MOBILE ACCESS FOR YOUR WORKFORCE WITH ENVI FOR ARCGIS

**ENVI FOR ARCGIS PROVIDES THE ONLINE, ON-DEMAND INFORMATION YOU NEED TO IMPACT THE SAFETY AND SUCCESS OF YOUR ENDEAVORS.**

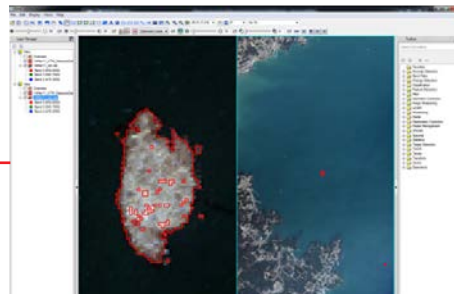
**I NEED TO ENSURE THE SAFETY OF MY CARGO VESSEL BY AVOIDING OCEAN DEBRIS.**

Because ocean shipping lanes are a primary trade conduit for the world's goods, they must be kept free from impediments. Storms and natural disasters, such as a massive tsunami, can introduce debris and contaminants into waterways that pose threats to the successful passage of cargo vessels. Persistent monitoring of the open ocean for such risks is a huge scale operation and can only be accomplished by spaceborne remote sensing platforms. Using ENVI for ArcGIS, spectral target detection techniques on satellite imagery enables the detection and mapping of floating marine debris, and provides information to ensure the safe routing of vessels. The process of preparing image data for analysis, employing target detection methods, and presenting results can be encapsulated as an ENVI workflow, and published to enterprise online resources for consumption and interaction by non-technical users on mobile devices.

Ocean debris, like that pictured above, represents an obstacle to safe maritime operations. Imagery courtesy of DigitalGlobe and NOAA (close-up).



ENVI for ArcGIS analyzes spectral signatures in satellite imagery that can be used to identify and locate ocean debris in the open ocean. These results can be pushed to ArcGIS Online.



With the debris locations identified by ENVI for ArcGIS, and available through ArcGIS Online, users can use mobile web clients to access the information and avoid the debris.



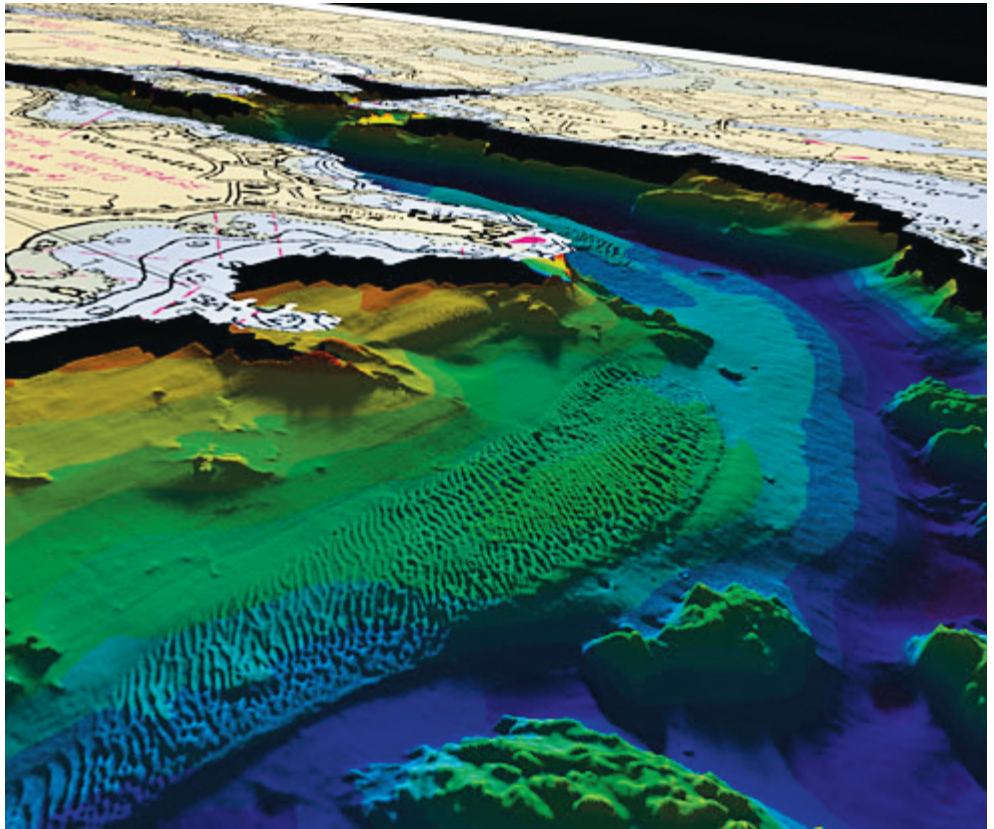
## HIGHLIGHTS

Create maps and other geospatial products for more informed decisions

Access prebuilt ENVI image analysis tools within the ArcToolbox™

Easily add analysis capabilities to your GIS models and applications

Deliver information to your workforce – online, and on demand



## STAY CONNECTED

[HarrisGeospatial.com/ENVIforArcGIS](http://HarrisGeospatial.com/ENVIforArcGIS)

## CONTACT US

Email: [Info@HarrisGeospatial.com](mailto:Info@HarrisGeospatial.com)

Phone: 303.786.9900

## TECHNICAL SUPPORT

[HarrisGeospatial.com/support](http://HarrisGeospatial.com/support)

## LEARNING OPPORTUNITIES

### Classroom Training

Whether you are just learning our products or an experienced pro, we have courses designed to take your abilities to the next level.

### Online Training

Attend a live web seminar or watch a recorded web seminar — the perfect way to learn about the latest product developments right from your desk.

[HarrisGeospatial.com/training](http://HarrisGeospatial.com/training)

### About Harris Corporation

Harris Corporation is a leading technology innovator, solving our customers' toughest mission-critical challenges by providing solutions that connect, inform and protect. Harris supports customers in more than 125 countries, has approximately \$8 billion in annual revenue and 22,000 employees worldwide. The company is organized into four business segments: Communication Systems, Space and Intelligence Systems, Electronic Systems, and Critical Networks.

For more information visit [Harris.com](http://Harris.com).

FLORIDA | NEW YORK | VIRGINIA | BRAZIL | UNITED KINGDOM | UAE | SINGAPORE

### Non-Export-Controlled Information

Harris is a registered trademark of Harris Corporation. Trademarks and tradenames are the property of their respective companies.

© 2016 Harris Corporation 4/16 VIS-AL

**HARRIS**® TECHNOLOGY TO CONNECT,  
INFORM AND PROTECT™