





ENVI AND SARSCAPE IN ARCGIS

Combine Advanced Imagery and GIS Analytics to Derive Business Critical Decisions from One Single Platform



June 4th, 2020

JAMES SLATER | L3HARRIS GEOSPATIAL | CHANNEL MANAGER EMEA NICOLAI HOLZER | L3HARRIS GEOSPATIAL | SALES ENGINEER EMEA ANTONIO SAN JOSÉ ALBACETE | ESRI ESPAÑA | SOLUTION ENGINEER V S S KIRAN | ESRI INDIA | TECHNICAL MANAGER IMAGERY SOLUTION

Agenda



Company Presentation

Application Examples

ESRI India

ESRI España

Technical Brief / Live Demo

Questions and Discussion

Moderator:



James Slater
Senior Channel Management Specialist,
L3Harris Geospatial Solutions

Presenters:



Nicolai Holzer Sales Engineer EMEA, L3Harris Geospatial



Dr. V S S Kiran
Technical Manager
Imagery Solution
Esri India Technologies Ltd



Antonio San José Albacete Solution Engineer, Esri España

Company Presentation







L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs.



~400 LOCATIONS



~130
COUNTRIES



~30
COUNTRIES











Application Examples









ENVI AND SARSCAPE ANALYTICS IN ARCGIS

AGRICULTURE, IRRIGATION AND LAND SUBSIDENCE



WHO WE ARE

Esri builds the most powerful mapping and spatial analytics products in the world.

"One of the more improbable powerhouses in tech... Esri owns more than half the market for so-called GIS software."

- Forbes





ENVI Integration in ArcGIS – WBADMIP



West Bengal Accelerated Development of Minor Irrigation Project (WBADMIP)

Challenges:

- Visible transformation from single cropped area to double cropped area
- Tracking scheme
- Tracking crop demonstration programme
- More than 70000 households expected for irrigation scheme
- Multi cropping for more than 30000 hectares
- Feeble agriculture, horticulture and fishery practice

Solution:

- Web Based Geospatial Solution
 - ESRI Enterprise to develop web based Solution
 - ENVI Tools for Image Analysis
 - ENVI Analytics in ArcGIS to build the data and publish it into Server







Ref : WBADMIP

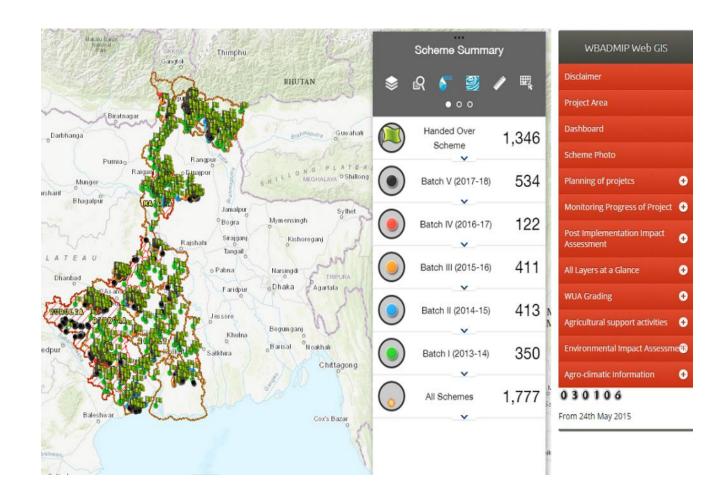
Solutions



West Bengal Accelerated Development of Minor Irrigation Project (WBADMIP)

Solutions:

- Implementation of robust online Web GIS portal for citizen
- It has brought faster and transport way of project area identification and planning process
- Introduced online geo-specific design tools for creating minor irrigation structures like check dam, weir, etc. with comprehensive in-situ water resource analysis and water budgeting
- Simultaneous live monitoring of projects at different implementation stages and faster decision support system (DSS)
- Tracking post implementation impact assessment of each project through current remote sensing data, stakeholder's feedback and necessary measures



Ref: WBADMIP

Post Implementation Impact Assessment

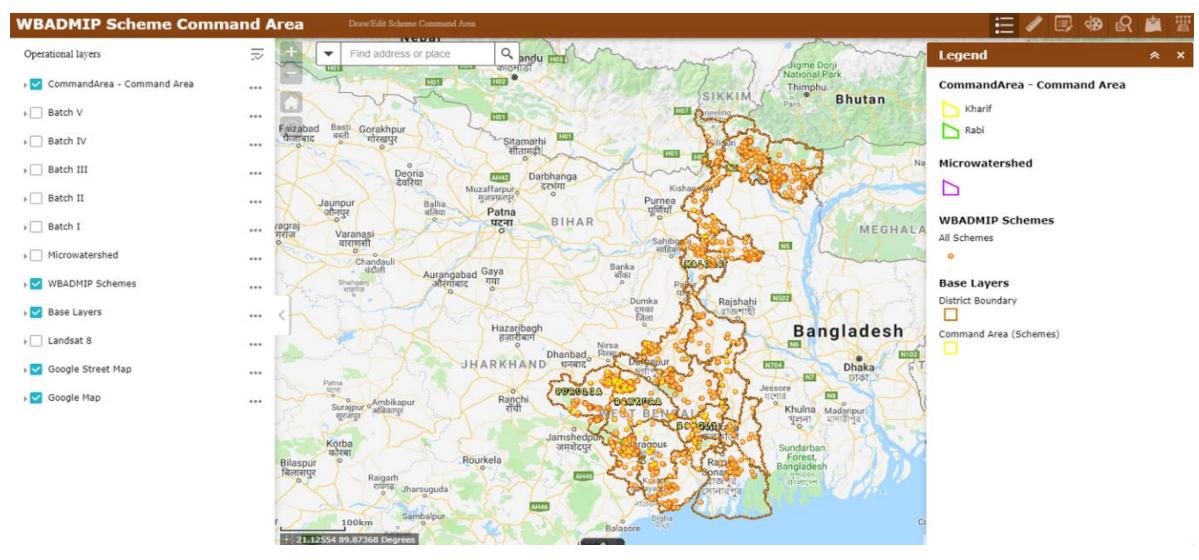




Ref: WBADMIP

Command Area Analysis

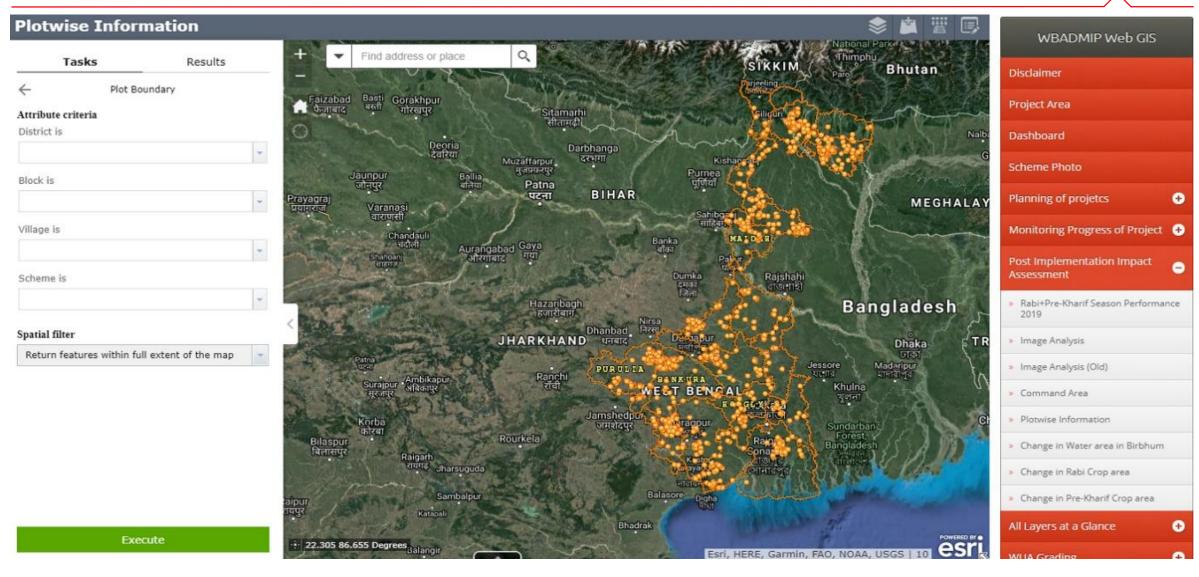




Ref: WBADMIP

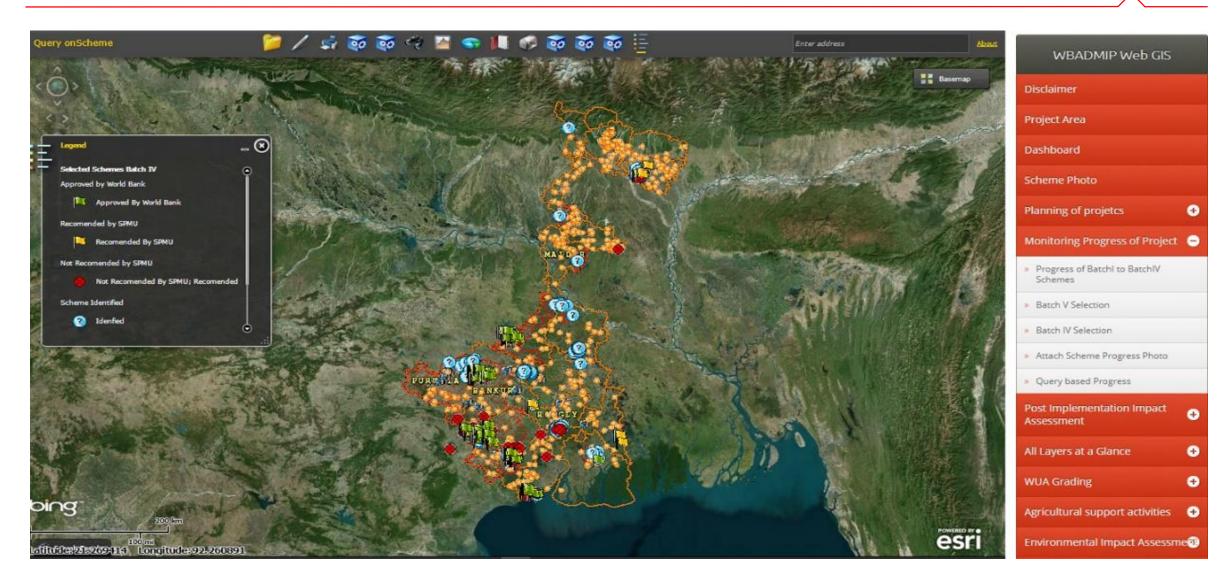
Plot Wise Watershed Analysis





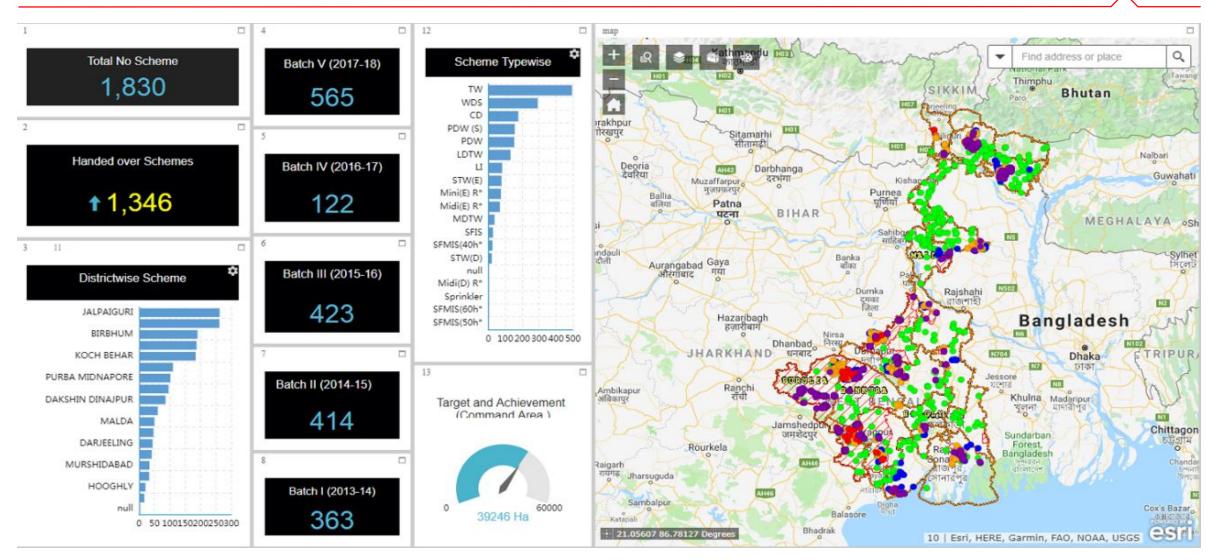
Batch Wise Project Progress Monitoring





WBADMIP – Citizen Centric Functionality – DSS





Ref: WBADMIP

ENVI Integration in ArcGIS – CSIR4PI



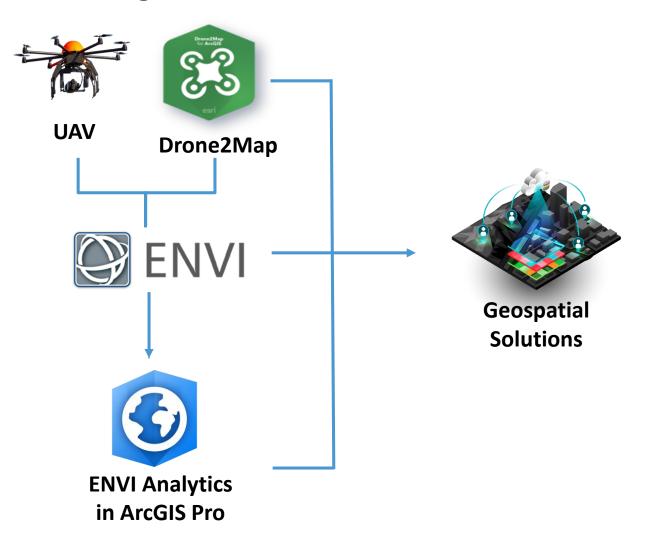
DRONE Based Multi-Spectral Imaging and Data Processing

Challenges:

- Monitoring Cotton Flowering Stage
- Monitoring and Identifying the Rice Blast Area
- Crop Count and Health Monitoring on Mango Trees

Solution:

- One Geospatial Solution
 - UAV Data Analysis
 - Performing Spectral Indices
 - Performing Crop Science
 - Sharing the Data

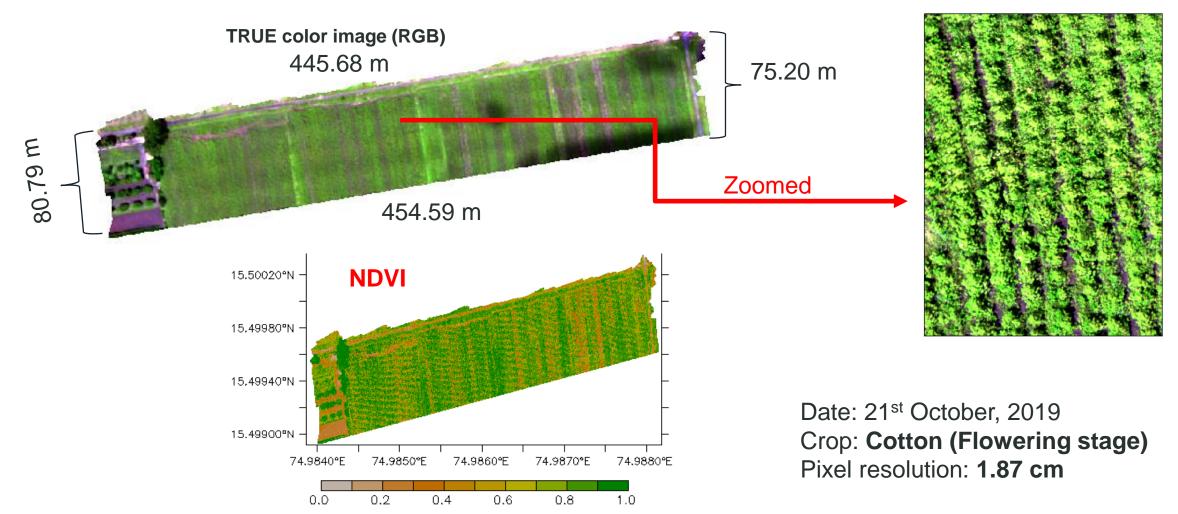


Ref: Dr K V Ramesh, CSIR 4PI, Bangalore, kvram55@gmail.com

ENVI Crop Science Integration in ArcGIS – CSIR4PI



DRONE Based Multi-Spectral Imaging and Data Processing

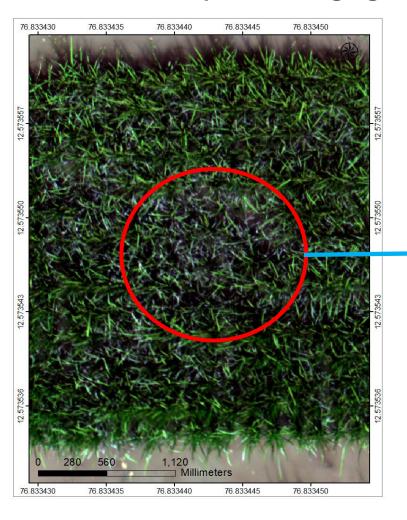


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ENVI Crop Science Integration in ArcGIS – CSIR4PI

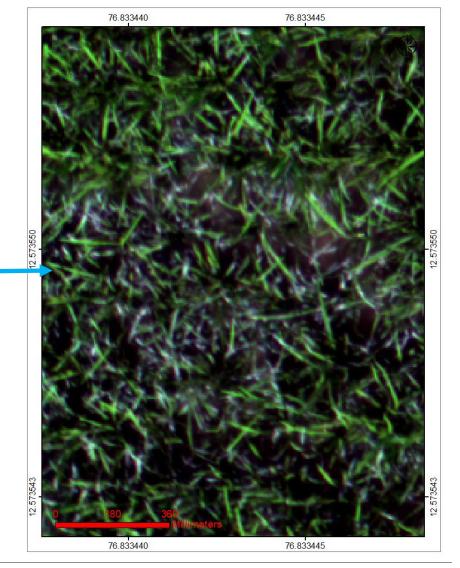


DRONE Based Multi-Spectral Imaging and Data Processing



Rice Blast

UAS Mandya ~5 mm resolution

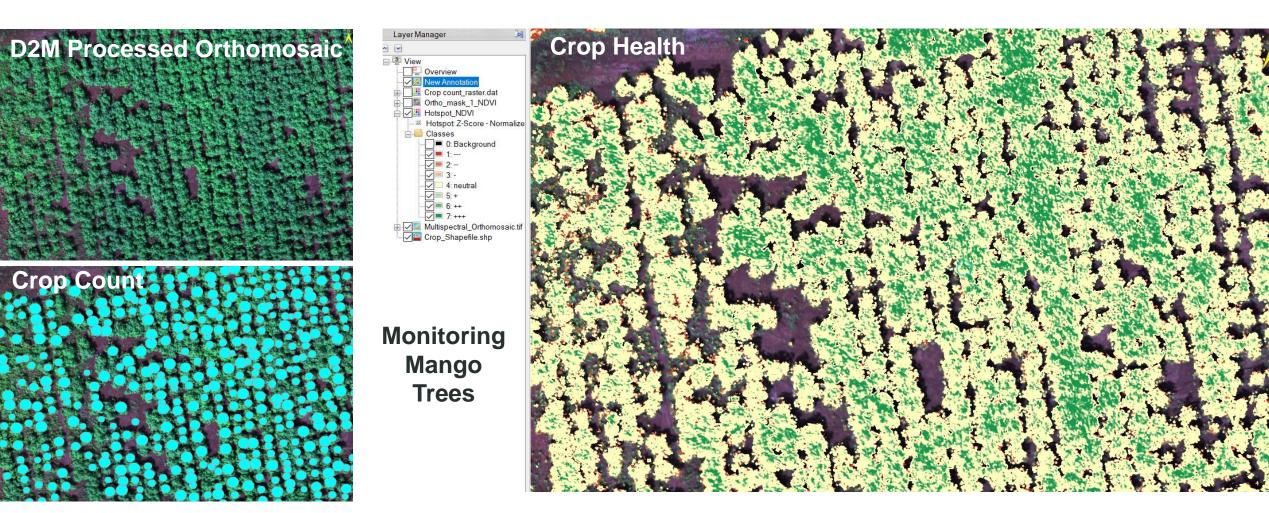


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ENVI Crop Science Integration in ArcGIS – CSIR4PI



DRONE Based Multi-Spectral Imaging and Data Processing



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ENVI & SARscape Integration in ArcGIS – SSDM, SDC



Monitoring of landslides and surface deformations affecting the main municipalities of Sikkim through Sentinel-1 SAR data

Analysis of surface deformations and landslides affecting the main urbanized areas of Sikkim Region

Gangtok, Namchi, Geyzing, Pelling, Soreng, and Sombaria

This work has been supported by the Swiss Development Cooperation (SDC) and the results have been presented and provided to Sikkim State Disaster Management Authority (SSDM)













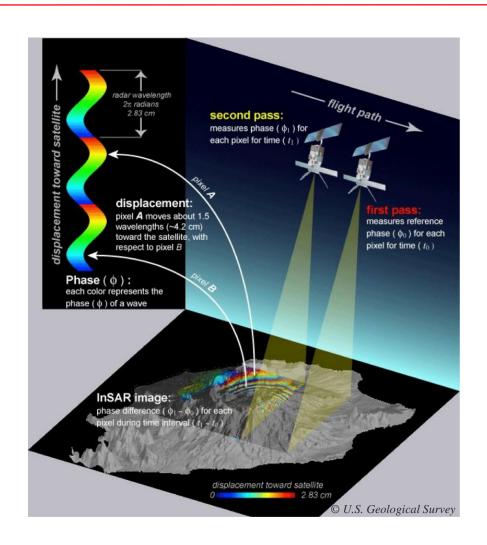




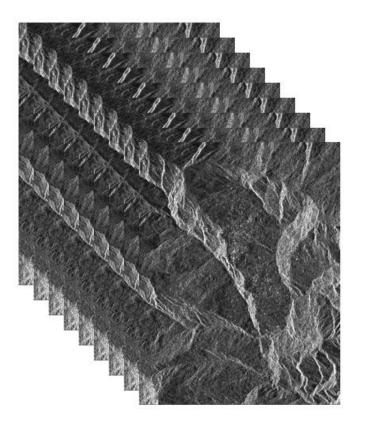
Ref: SSDM, SWISS Development Corporation and SARMAP

Multi Temporal SAR Interferometry





Sentinel-1 Synthetic Aperture Radar data have been analyzed to retrieve the evolution of surface deformation with **millimeter accuracy**



Time period: October 2014 – September 2018

N. Acquisitions: ~90 images

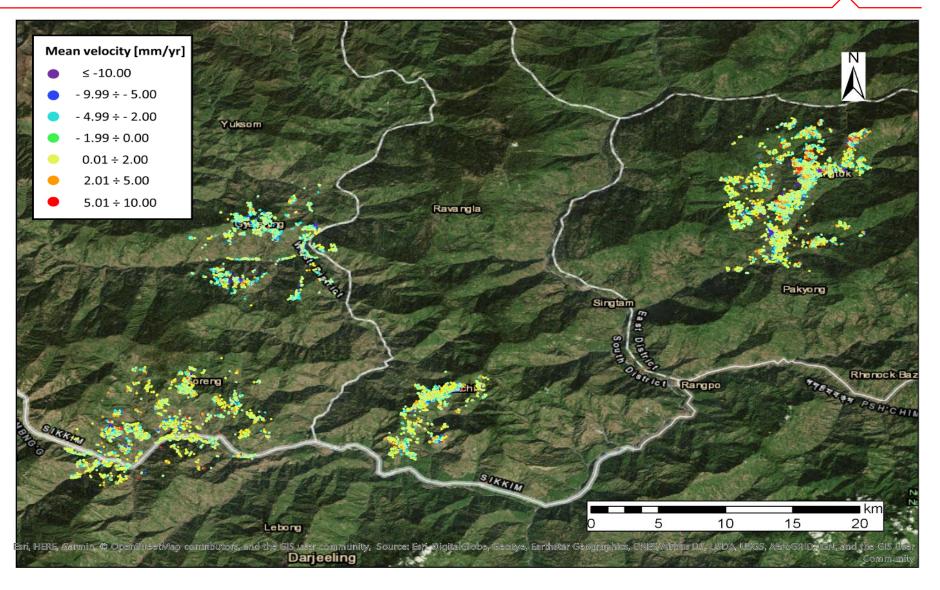
Revisiting time: Up to 12 days

Ref: SSDM, SWISS Development Corporation and SARMAP

Mean Velocity Map



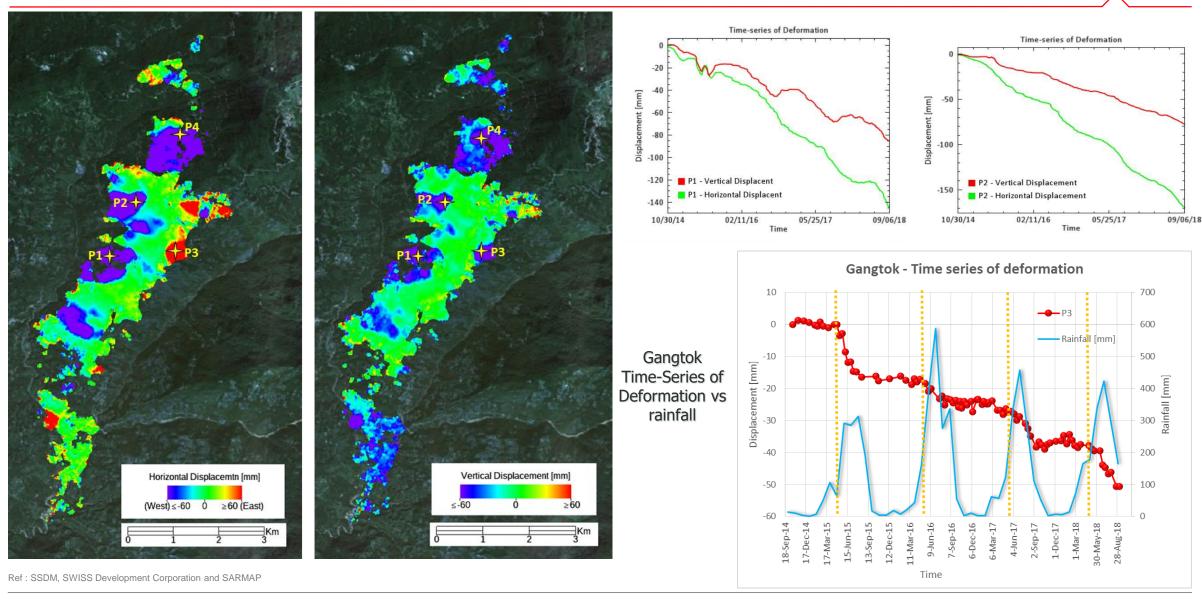
Line-of-sight mean
velocity map of
deformation of the
considered study
areas, obtained from
the Sentinel-1
ascending dataset
related to the time
interval October 2014
– September 2018.



Ref: SSDM, SWISS Development Corporation and SARMAP

Gangtok – Vertical and Horizontal Time-Series of Deformation





Application Examples









NATURAL DISASTER MONITORING WITH SENTINEL-1

Intensity Time Series and DInSAR Techniques

Esri Spain and L3Harris



European Union Satellite Center



EUROPEAN UNION SATELLITE CENTRE

Analysis for decision making

Spanish Ministry of Defense



Hisdesat



Copernicus Program: Sentinel Data





European Space Agency



- Sentinel-1



- Sentinel-2



European Commission













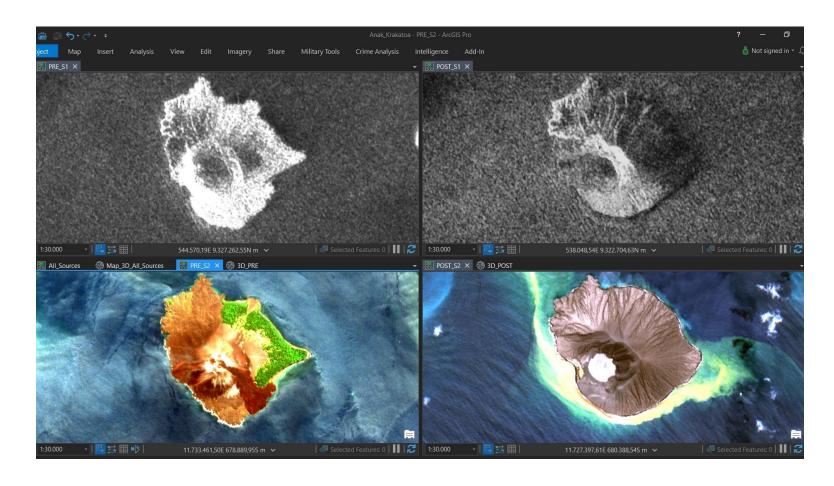


Anak Krakatoa



Volcano Monitoring with

Intensity Time Series

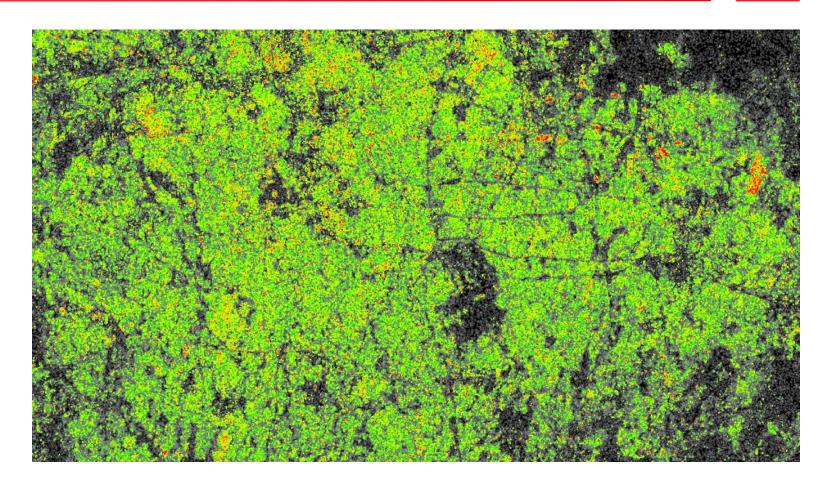


Anak Krakatoa – Esri Story Map: https://geogeeks.maps.arcgis.com/apps/Cascade/index.html?appid=b9f503724b9447f0aaceefaa6dcf1507

Jakarta



Subsidence Monitoring with DInSAR Techniques



Jakarta Subsidence – Esri Story Map: https://geogeeks.maps.arcgis.com/apps/Cascade/index.html?appid=c8ea594eecb0414b9c643ab52e35effb

Technology



ENVI & SARscape



ArcGIS Pro







ArcGIS Enterprise & Image Server







ArcGIS Online







Conclusions



Satellite imagery for Disaster Monitoring

SAR technology + EO data

ENVI/SARscape + ArcGIS Platform











Thank you very much for your attention



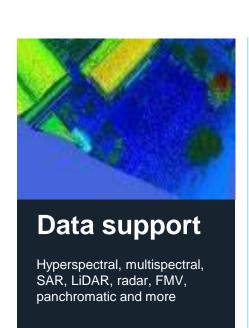
Technical Brief / Live Demo

ENVI Analytics in ArcGIS
SARscape Analytics in ArcGIS





ENVI image analysis software uses scientifically-proven analytics to deliver expert-level results.





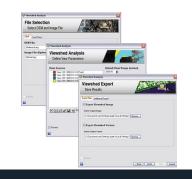
ArcGIS integration

Workflows and automated tools to execute ENVI analytics and access results within any ArcGIS environment



Automated workflows

Change detection, anomaly detection, viewshed analysis and more



Extensible modules

Deep learning, SAR analytics, feature extraction, DEM extraction, atmospheric correction, photogrammetry and NITF



Accessible

Accessible when and where you need in enterprise, partner platforms and in the cloud

ENVI SARscape

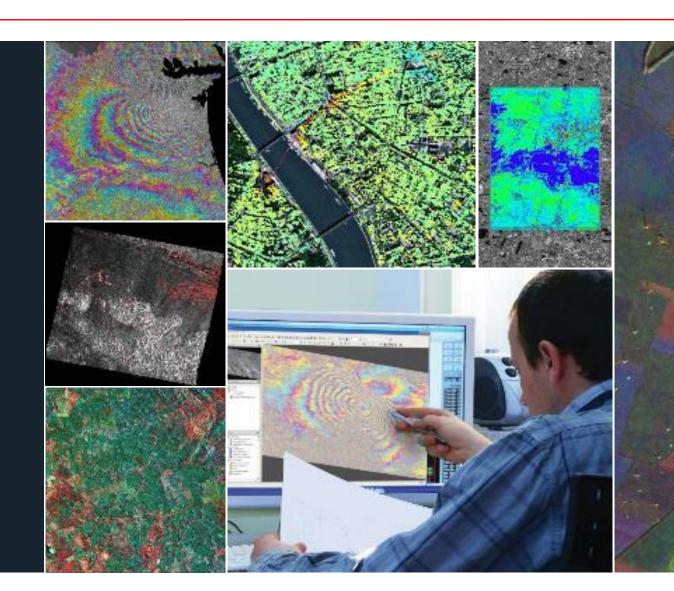


Easily process and analyze SAR data

ENVI integration brings advanced image processing and analysis together with SAR processing in one package

Generate products (like DEMs or surface deformation maps) that can be integrated with other geospatial products

Built-in workflows and modules simplify processing and can be customized



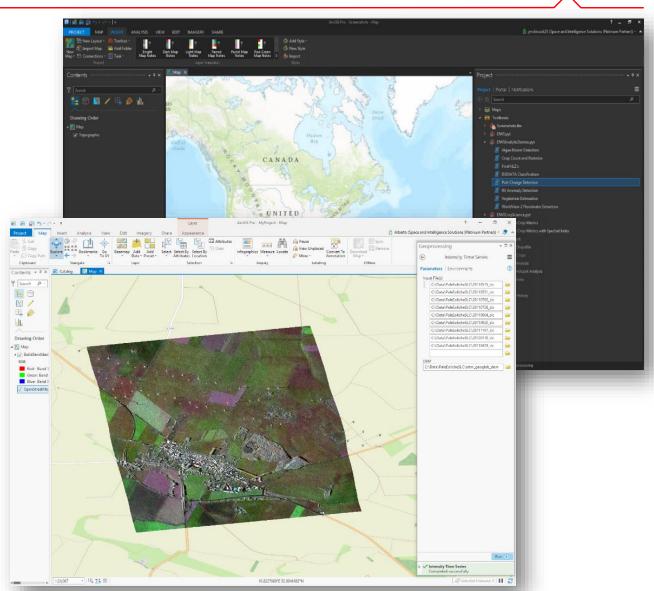
ENVI and SARscape Integration in ArcGIS



ENVI 5.5 expands on the existing ENVI and ArcGIS integration

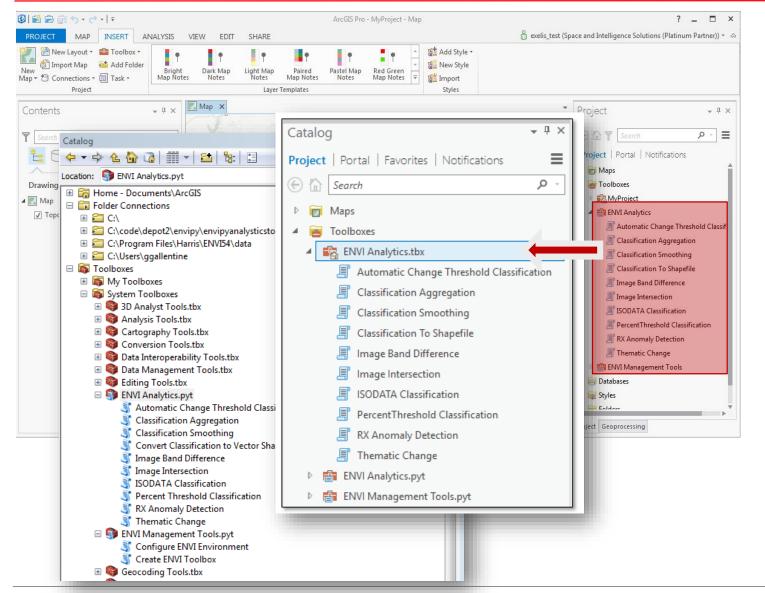
ENVI Analytics can be run in ArcMap and ArcGIS Pro

SARscape Analytics generates ready-to-use products from SAR in ArcGIS Pro



ENVI Analytics in ArcGIS Pro





L3Harris and Esri are close partners to bring trusted ENVI analytics into ArcGIS

ENVI Py leverages ArcGIS Python support to run ENVI tasks in Desktop ArcGIS (ArcGIS Pro and ArcMap)

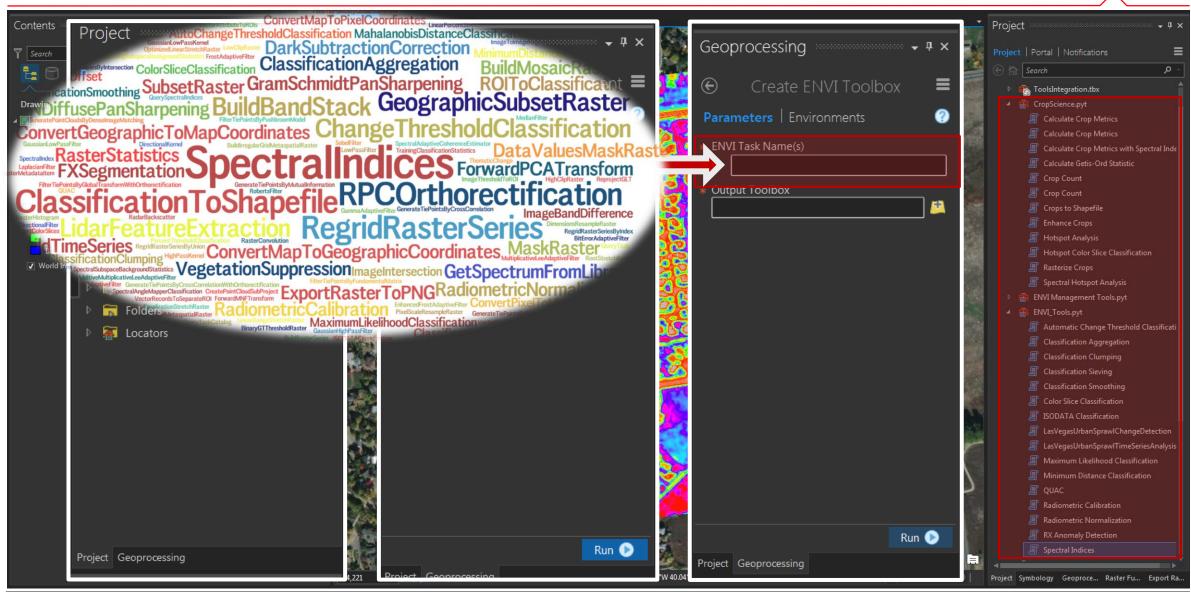
ENVI Analytics Toolbox in ArcGIS includes ready-to-use ENVI tasks as GPTools

Enables custom ENVI task creation in ArcGIS and supports ArcGIS ModelBuilder

ENVI Modeler makes it easy to create and publish custom ENVI workflows to ArcGIS

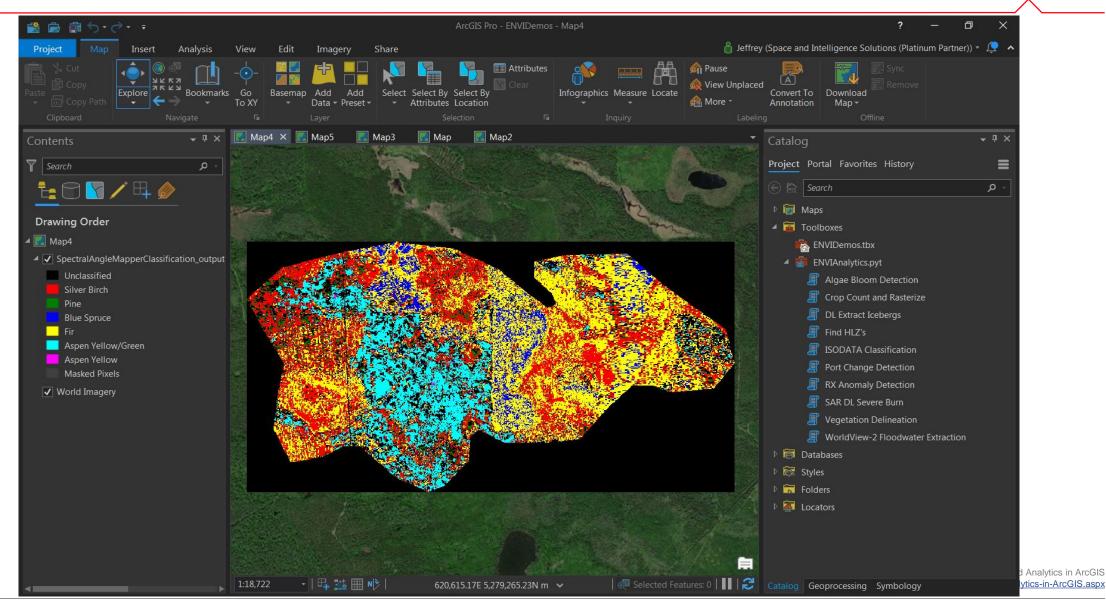
ENVI Analytics in ArcGIS Pro





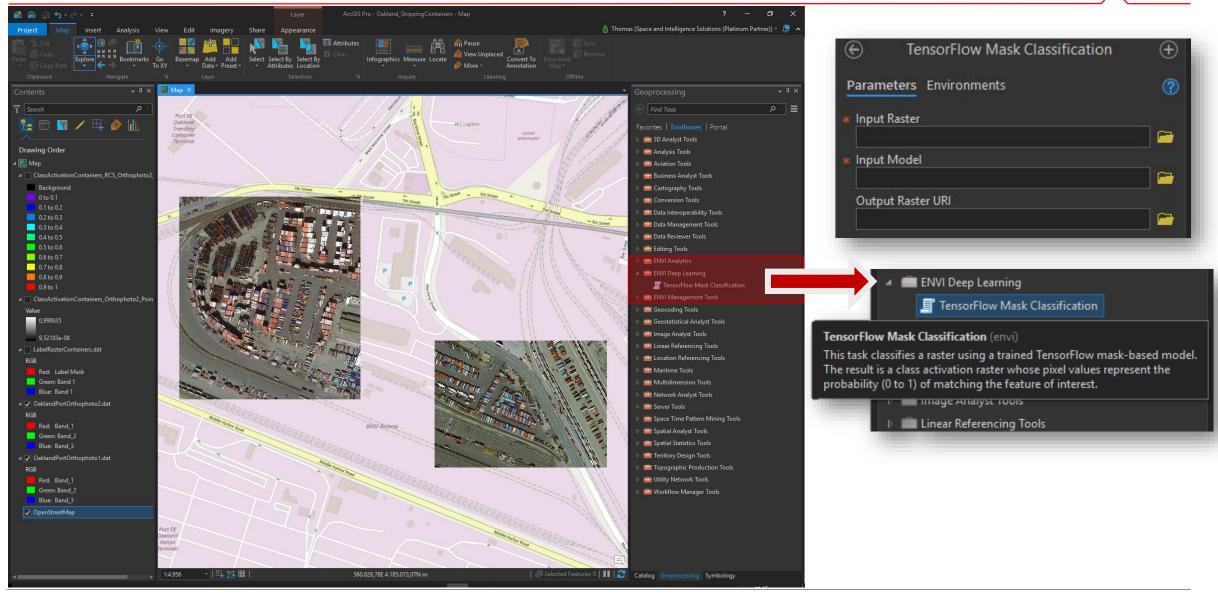
Example: ENVI Hyperspectral Image Classification in ArcGIS





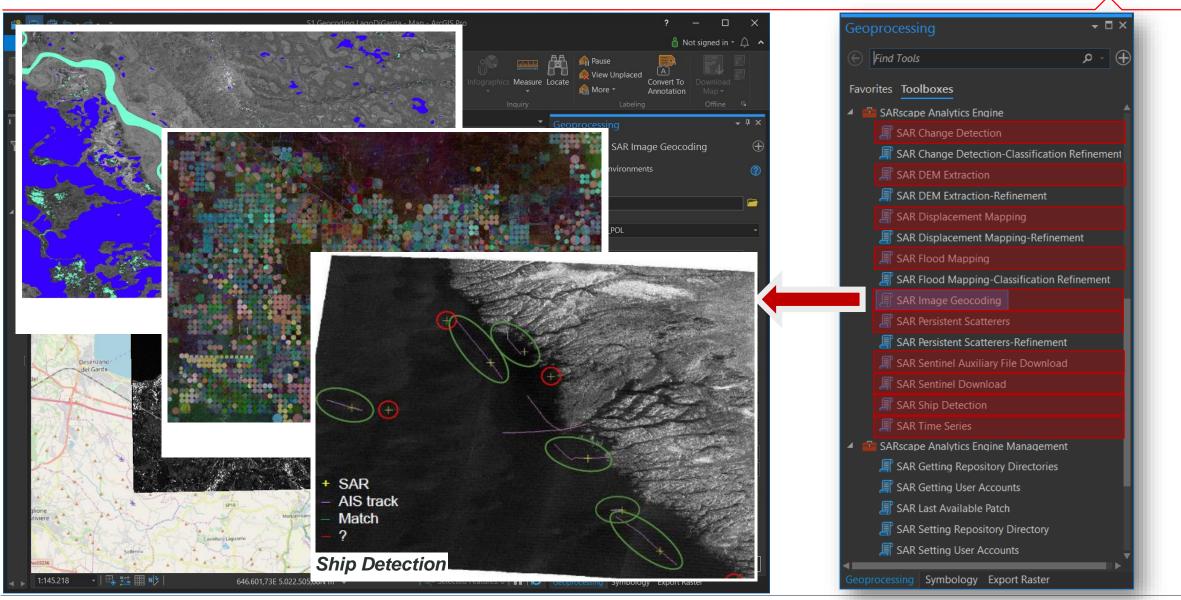
ENVI Deep Learning in ArcGIS Pro





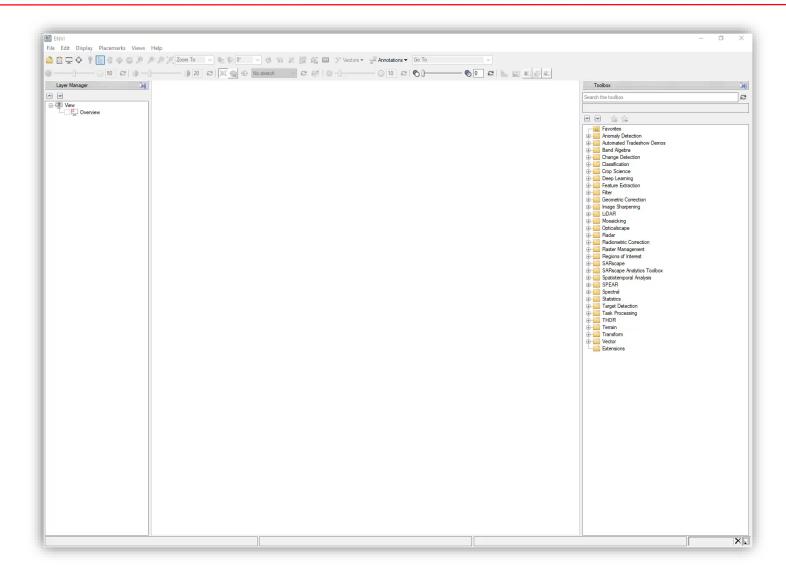
ENVI SARscape Analytics in ArcGIS Pro





Live Demo – ENVI in ArcGIS Pro









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