

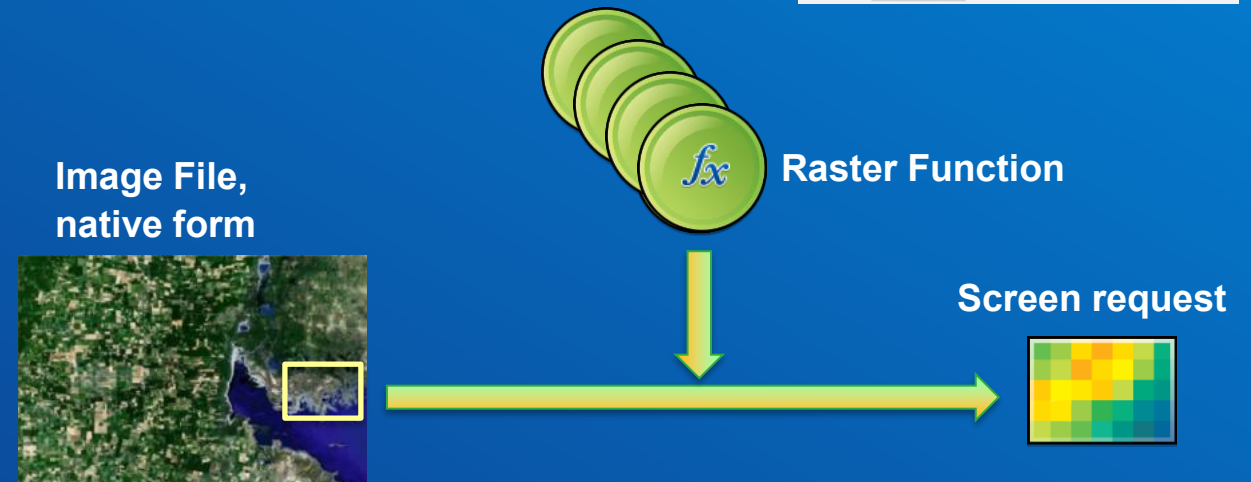
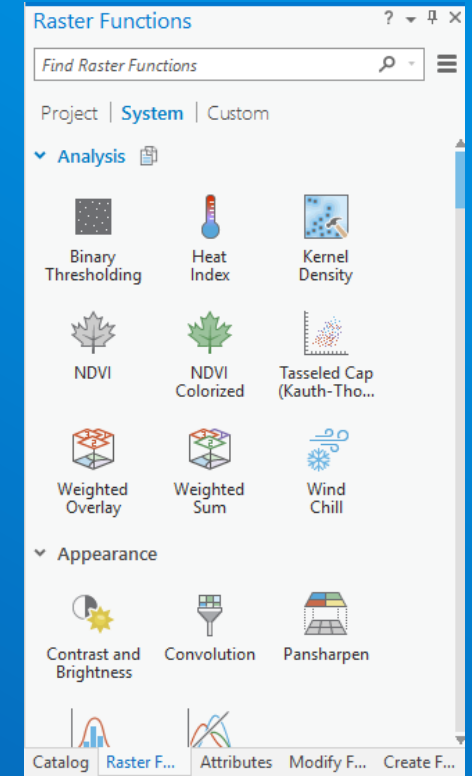
Fundamentals of Raster Functions

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Raster Functions

Processing imagery in ArcGIS

- Primary component which processes raster data
- Takes input pixels and transform output pixels into meaningful products
- Raster functions to process:
 - **Pixels/block of pixels**
 - Raster datasets or a collection of raster datasets
 - Mosaic datasets
- Machinery behind “on-the-fly” processing
- Chained together to create “processing chains”
- Geometric, Radiometric or defined selection
- 150+ out-of-the box
- Extensible
<https://github.com/Esri/raster-functions>



Raster Functions are everywhere ...

Parameter	Name	IsPublic	IsDataset
DEM	Raster Funct	<input type="checkbox"/>	<input type="checkbox"/>
Azimuth	Azimuth1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Altitude	Altitude1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SlopeType	SlopeType2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ZFactor	Z-factor	<input type="checkbox"/>	<input type="checkbox"/>
PSPower	PSPower_20'	<input type="checkbox"/>	<input type="checkbox"/>
PSZFactor	PSZFactor_20'	<input type="checkbox"/>	<input type="checkbox"/>
RemoveEdge	RemoveEdge	<input type="checkbox"/>	<input type="checkbox"/>

Raster Functions in services (Living Atlas)

The screenshot displays the Esri Living Atlas interface. The main map area shows a Sentinel-2 Level-2A satellite image of a rural landscape, with a processing templates panel on the right. The panel is titled "Sentinel-2 Level-2A" and contains a list of processing templates. The "Short-wave Infrared for Visualization" template is selected, indicated by a blue dot. The interface includes a search bar at the top left, a map navigation toolbar on the left, and a user profile at the top right. The bottom of the interface shows the text "Powered by Esri" and "Earthstar Geographics | Esri, Microsoft, ESA, European Commission".

Search

Q Belleme

Untitled map

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ameroni_VT8

Sentinel-2 Level-2A

Processing templates

Switching the processing template will affect the display options that are available for visualization.

+ Import user defined template

- Natural Color for Visualization
Natural Color bands red, green, blue (4, 3, 2) displayed with dynamic range adjustment applied. Thi...
- Agriculture for Visualization
Bands shortwave IR-1, near-IR, blue (11, 8, 2) with dynamic range adjustment applied. Vigorous veg. ...
- Bathymetric for Visualization
Bands red, green, coastal/aerosol(4, 3, 1) with dynamic range adjustment applied. Useful in bathymet...
- Color Infrared for Visualization
Bands near-infrared, red, green (8,4,3) with dynamic range adjustment applied. Healthy vegetation is...
- Short-wave Infrared for Visualization
Bands shortwave infrared 2, shortwave infrared-1, red (12, 8, 4) with dynamic range adjustment appli...
- Geology for Visualization
Bands shortwave IR-2, shortwave IR-1, blue (12, 11, 2) with dynamic range adjustment applied. Highli...
- Urban for Visualization
Bands shortwave IR-2, shortwave IR-1, red (12, 11, 4) with dynamic range adjustment applied. This t...
- NDMI Colorized for Visualization
Normalized difference vegetation index (NDVI) computed as $(b8 - b4) / (b8 + b4)$ with color map. Dark...
- NDMI Colorized for Visualization
Normalized Difference Moisture Index with color map computed as $(b8 - b11) / (b8 + b11)$. Wetlands an...

Done Cancel

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Raster Functions in Raster Types (Pleiades)

The image shows a screenshot of a GIS application window. The top portion displays a high-resolution satellite image of a city, likely Paris, with a river and dense urban development. Below the image is a toolbar and a status bar showing coordinates (7.7644025°E 48.5573147°N) and a scale of 1:25,000. The bottom portion of the screenshot shows a workflow diagram with two parallel paths of processing steps:

- Top Path:** IMG_P... → RasterInfo (MS) → Geometric (MS) → Extract Band → Pansharpening → Stretch
- Bottom Path:** IMG_P... → RasterInfo (Pan) → Geometric (Pan) → Convolution → Pansharpening → Stretch

Arrows indicate the flow of data from left to right, with the 'Convolution' step in the bottom path feeding into the 'Pansharpening' step in the top path.

Processing Templates in Mosaic Dataset (MD)

The screenshot displays the QGIS interface with a map of a rural area. The map shows a mosaic dataset with NDVI values, overlaid with various processing templates. The left sidebar contains the Drawing Order panel, which lists the layers and their drawing order. The right sidebar shows the Processing Templates panel, which lists several templates for NDVI analysis.

Drawing Order

- Map
- Hybrid Reference Layer
- Pansharpen_DIM_PHR1A_MS_201706101032...

RGB

- Red: Red
- Green: Green
- Blue: Blue

dem_COP30_ortho.tif

Value

- 1149.14
- 120.774

S2_Year_Comparison

- Boundary
- Footprint
- Image

ClassName

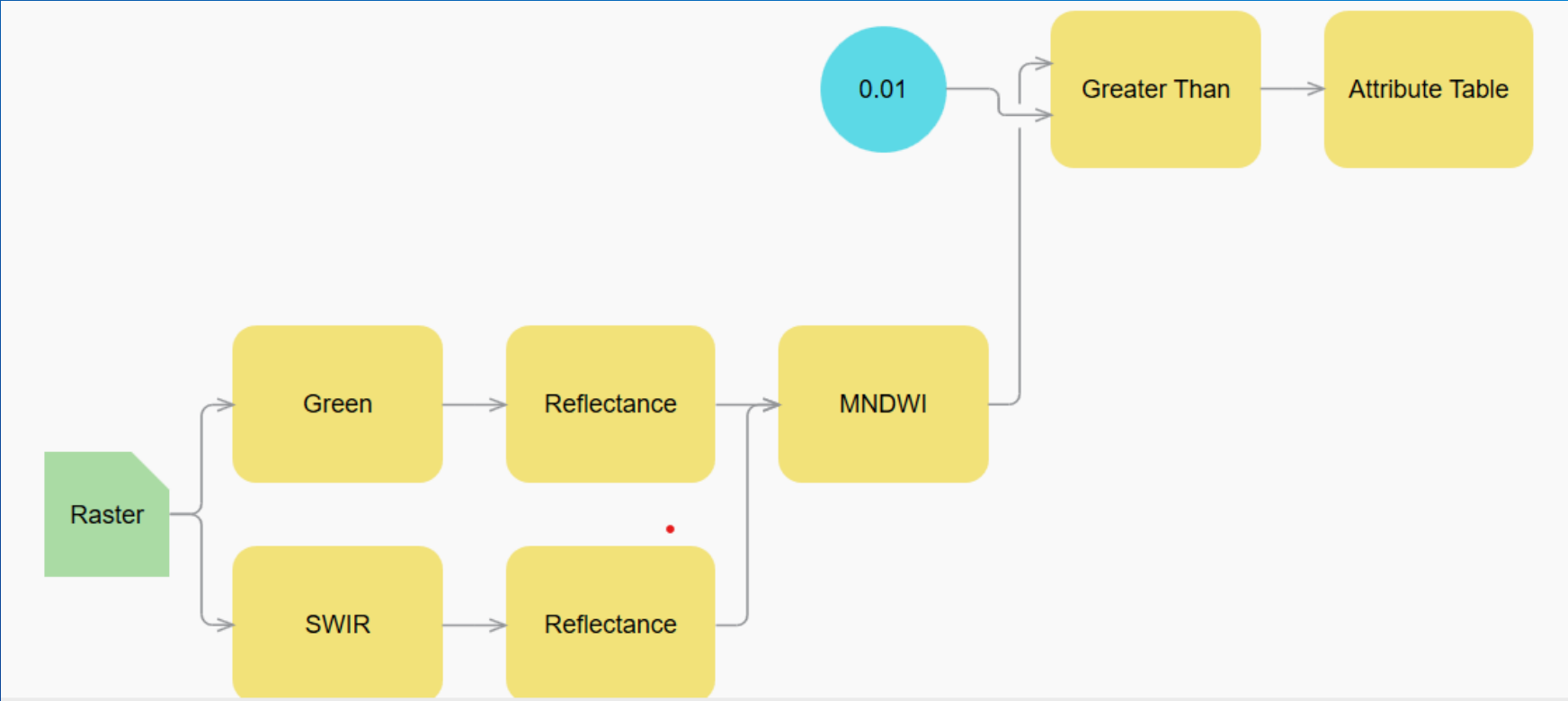
- Dark area
- NoVeg
- LoVeg
- Veg1
- Veg2
- Veg3
- Veg4
- Veg5
- VegMax

World Imagery

Processing Templates

- None
The original raster dataset with no function chain applied.
- NDVI Legend
NDVI Symbols Sentinel Hub
- NDVI Legend 2023
NDVI Symbols Sentinel Hub
- NDVI difference with Legend
NDVI Symbols Sentinel Hub
- NDVI Legend Copy
NDVI Symbols Sentinel Hub
- Test 2023
NDVI Symbols Sentinel Hub

Demo





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