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Black Sea CROSS BORDER COOPERATION

LAI & NDWI calculation using SNAP software and Sentinel-2 data

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Creating the subset

- Open product zip

- Raster --> Subset (fix the scene end X and Y for the next scene - 1200 x 1200)

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Resampling the data

- Raster --> Geometric --> Resample

Band	Resolution	Central Wavelength	Description
B1	60 m	443 nm	Ultra blue (Coastal and Aerosol)
B2	10 m	490 nm	Blue
B3	10 m	560 nm	Green
B4	10 m	665 nm	Red
B5	20 m	705 nm	Visible and Near Infrared (VNIR)
B6	20 m	740 nm	Visible and Near Infrared (VNIR)
B7	20 m	783 nm	Visible and Near Infrared (VNIR)
B8	10 m	842 nm	Visible and Near Infrared (VNIR)
B8a	20 m	865 nm	Visible and Near Infrared (VNIR)
B9	60 m	940 nm	Short Wave Infrared (SWIR)
B10	60 m	1375 nm	Short Wave Infrared (SWIR)
B11	20 m	1610 nm	Short Wave Infrared (SWIR)
B12	20 m	2190 nm	Short Wave Infrared (SWIR)

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Calculating the Leaf Area Index

- Optical --> Thematic land processing --> Biphysical Processor --> Biophysical processor S2
- Colour Manipulation --> Editor --> Colour ramp
- View --> Tool windows --> Pixel info
- Repeat for the second image

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Monitoring of changes

- Raster --> Geometric --> Collocation

- Right click on collocated file --> Band Math --> Edit expression --> substract one from another

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NDWI and NDWI2 Indexes

One is used to monitor changes in water content of leaves, using near-infrared (NIR) and short-wave infrared (SWIR) wavelengths, proposed by Gao in 1996:[1]

$$\mathrm{NDWI} = \frac{(Xnir - Xswir)}{(Xnir + Xswir)}$$

Another is used to monitor changes related to water content in water bodies, using green and NIR wavelengths, defined by McFeeters (1996):

$$\mathrm{NDWI} = \frac{(Xgreen - Xnir)}{(Xgreen + Xnir)}$$