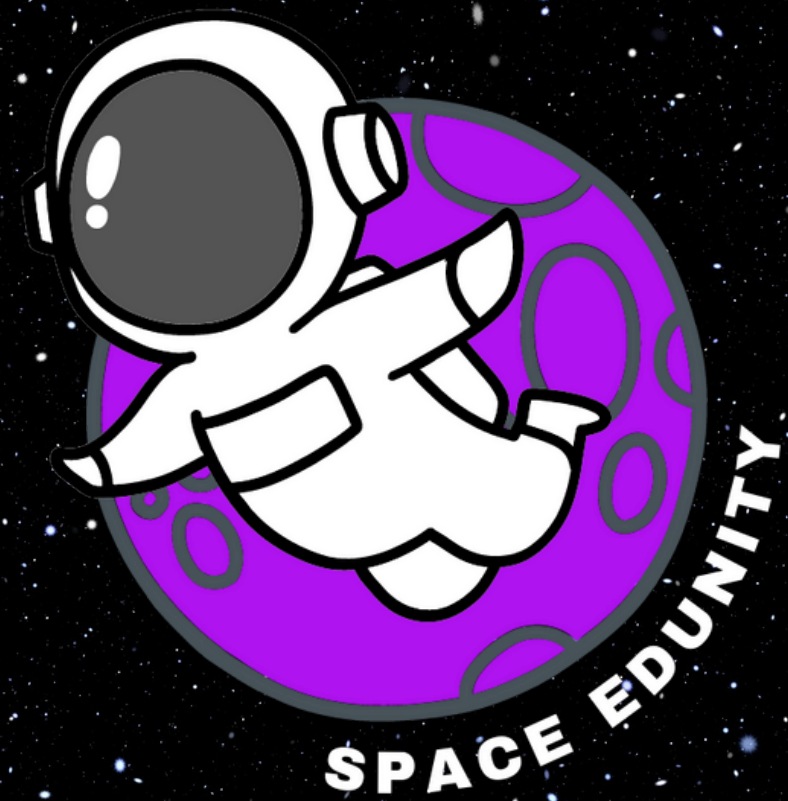


EO Browser Tutorial



Co-funded by
the European Union

Το EO Browser είναι ένα διαδικτυακό εργαλείο ανοιχτού κώδικα για περιήγηση, οπτικοποίηση και ανάλυση δορυφορικών εικόνων

Περιέχει μεγάλο εύρος δεδομένων από τους δορυφόρους των προγραμμάτων Copernicus, Landsat, MODIS κ.α.

Αρχικά, πρέπει να δημιουργηθεί ένας λογαριασμός χρήστη στη σελίδα -> <https://www.sentinel-hub.com/>

Γενικές Πληροφορίες

The screenshot shows the EO Browser interface with several key elements highlighted in red boxes:

- Discover**: A search button in the top navigation bar.
- Data sources**: A list of satellite data sources including Sentinel-1, Sentinel-2 (selected), Sentinel-3, Sentinel-5P, Landsat, Envisat Meris, MODIS, DEM, Proba-V, and GIBS.
- Time range [UTC]**: A date range selector showing 2021-02-24 to 2021-03-24.
- Search**: A large yellow search button at the bottom of the left sidebar.

The screenshot shows the EO Browser map interface with several key elements highlighted in red boxes:

- Go to Place**: A search bar in the top right corner.
- Map**: A map of Rome and surrounding areas, showing various geographical features and labels.

1. Επιλογή δορυφορικού συστήματος
2. Επιλογή χρονικής περιόδου
3. Επιλογή τοποθεσίας
4. Αναζήτηση αποτελεσμάτων

Γενικές Πληροφορίες

5. Επιλογή δορυφορικής απεικόνισης

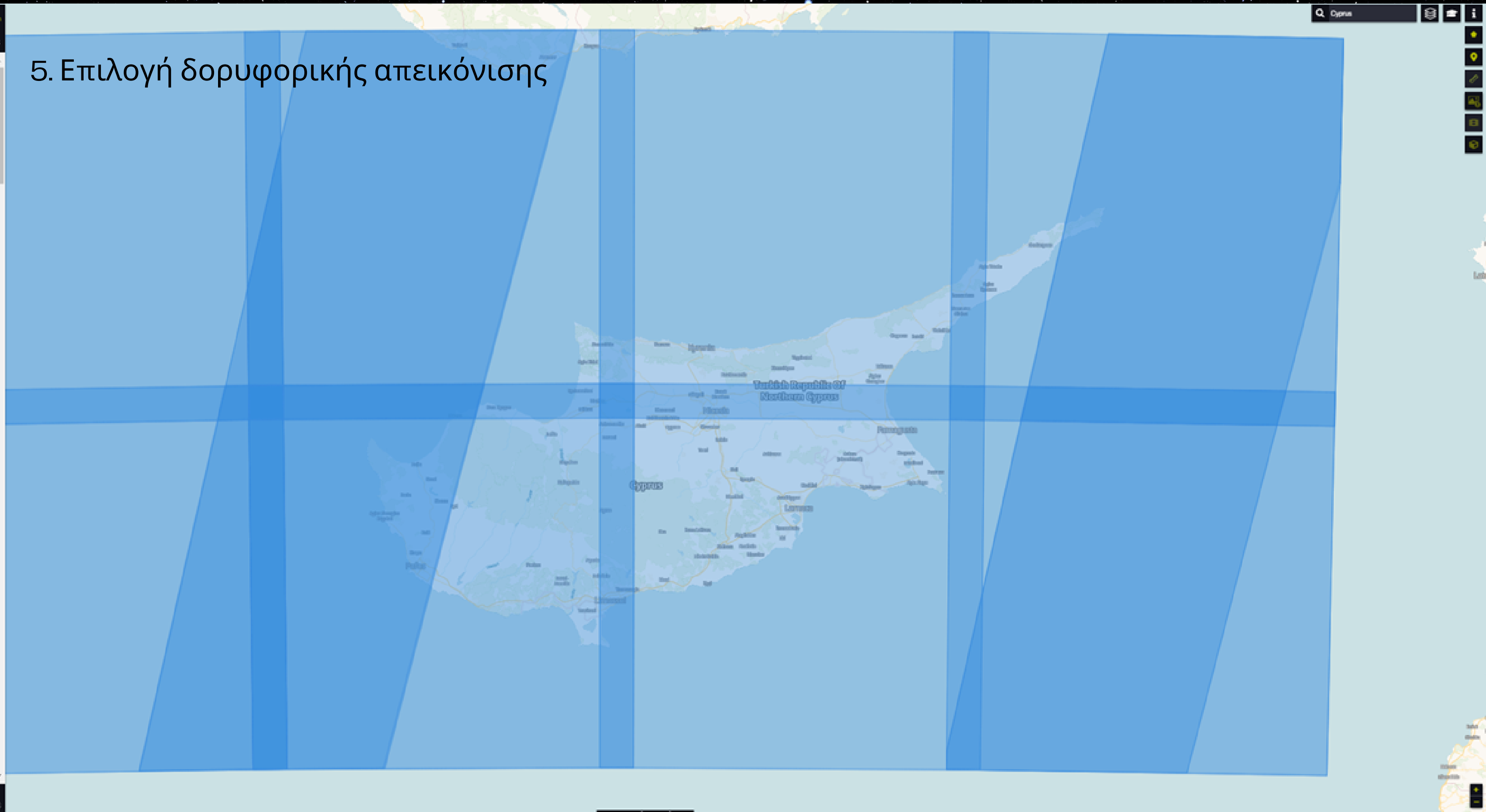
EO Browser

Discover Visualize Compare Pins

Back to search Showing 10 results

- Sentinel-2 L2A
2021-03-22
08:50:35 UTC
0.2 %
36SUD
- Sentinel-2 L2A
2021-03-22
08:50:31 UTC
10.1 %
36SVD
- Sentinel-2 L2A
2021-03-22
08:50:21 UTC
1.7 %
36SUE
- Sentinel-2 L2A
2021-03-22
08:50:16 UTC
0.0 %
36SVE
- Sentinel-2 L2A
2021-03-21
08:30:32 UTC
0.0 %
36SXD
- Sentinel-2 L2A
2021-03-21
08:30:17 UTC
0.0 %
36SXE
- Sentinel-2 L2A
2021-03-19
08:40:39 UTC
1.7 %
36SUD
- Sentinel-2 L2A
2021-03-19
08:40:35 UTC
3.3 %
36SVD

Free sign up for all features
Powered by Sentinel Hub with contributions by ESA



Παράδειγμα Πυρκαγιών
Ελλάδα

Data sources
Please select a theme.

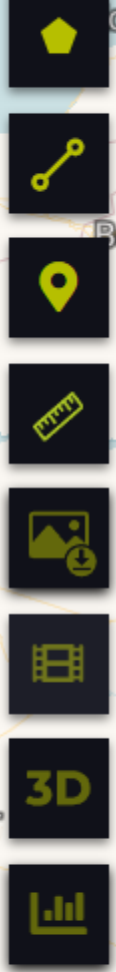
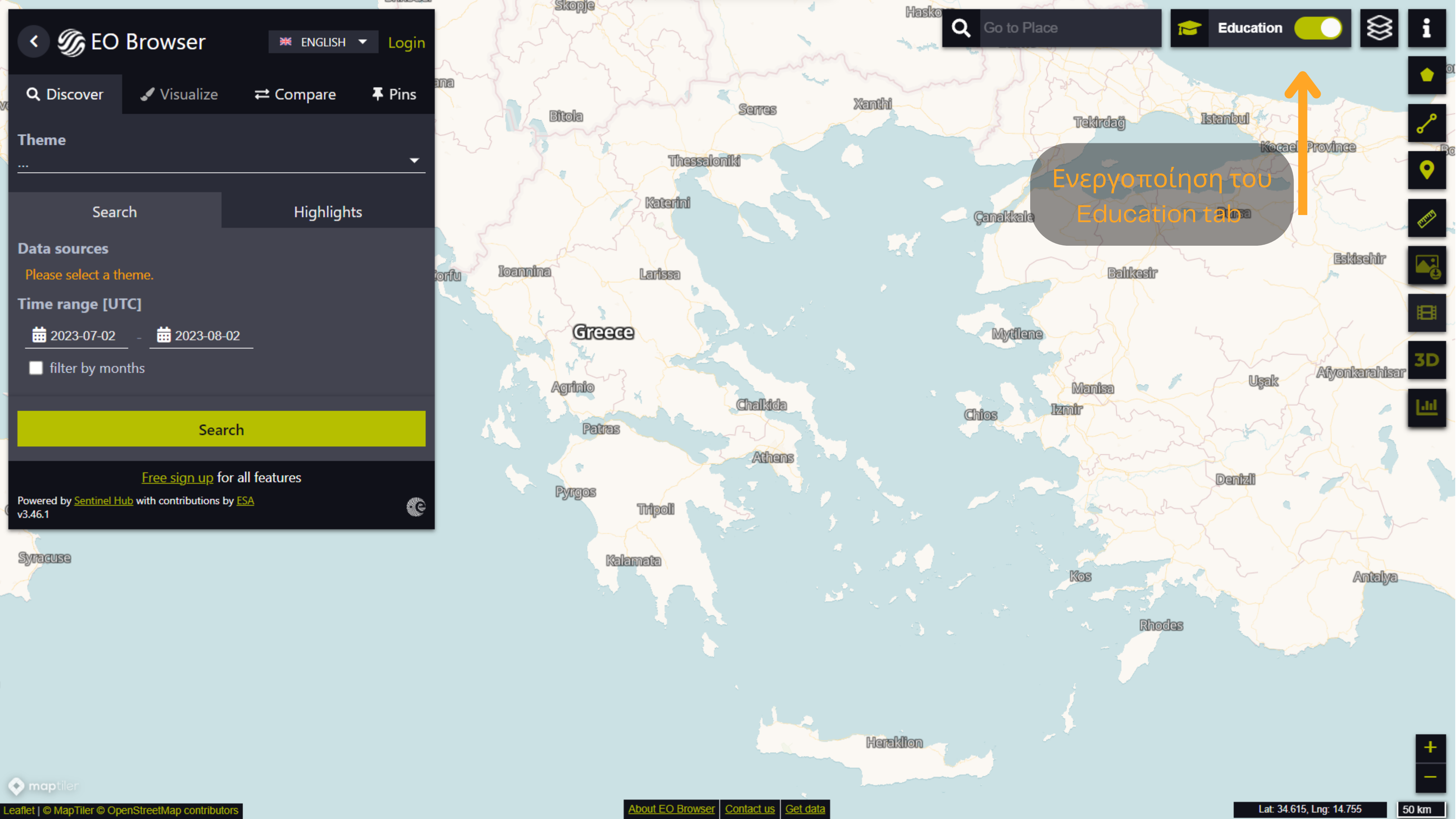
Time range [UTC]
2023-07-02 - 2023-08-02
filter by months

Search

Free sign up for all features

Powered by Sentinel Hub with contributions by ESA v3.46.1

Ενεργοποίηση του Education tab



Theme

- Highlights of the Month
- Monitoring Earth from Space
- Agriculture
- Atmosphere and Air Pollution
- Change Detection through Time
- Floods and Droughts
- Geology
- Ocean and Water Bodies
- Snow and Glaciers
- Urban
- Vegetation and Forestry
- Volcanoes
- Wildfires

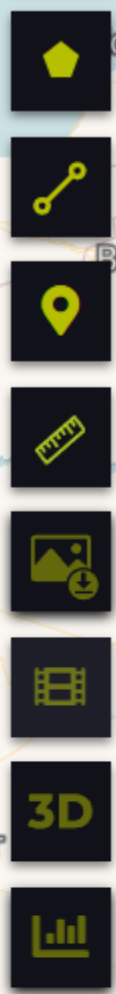
Search

Free sign up for all features

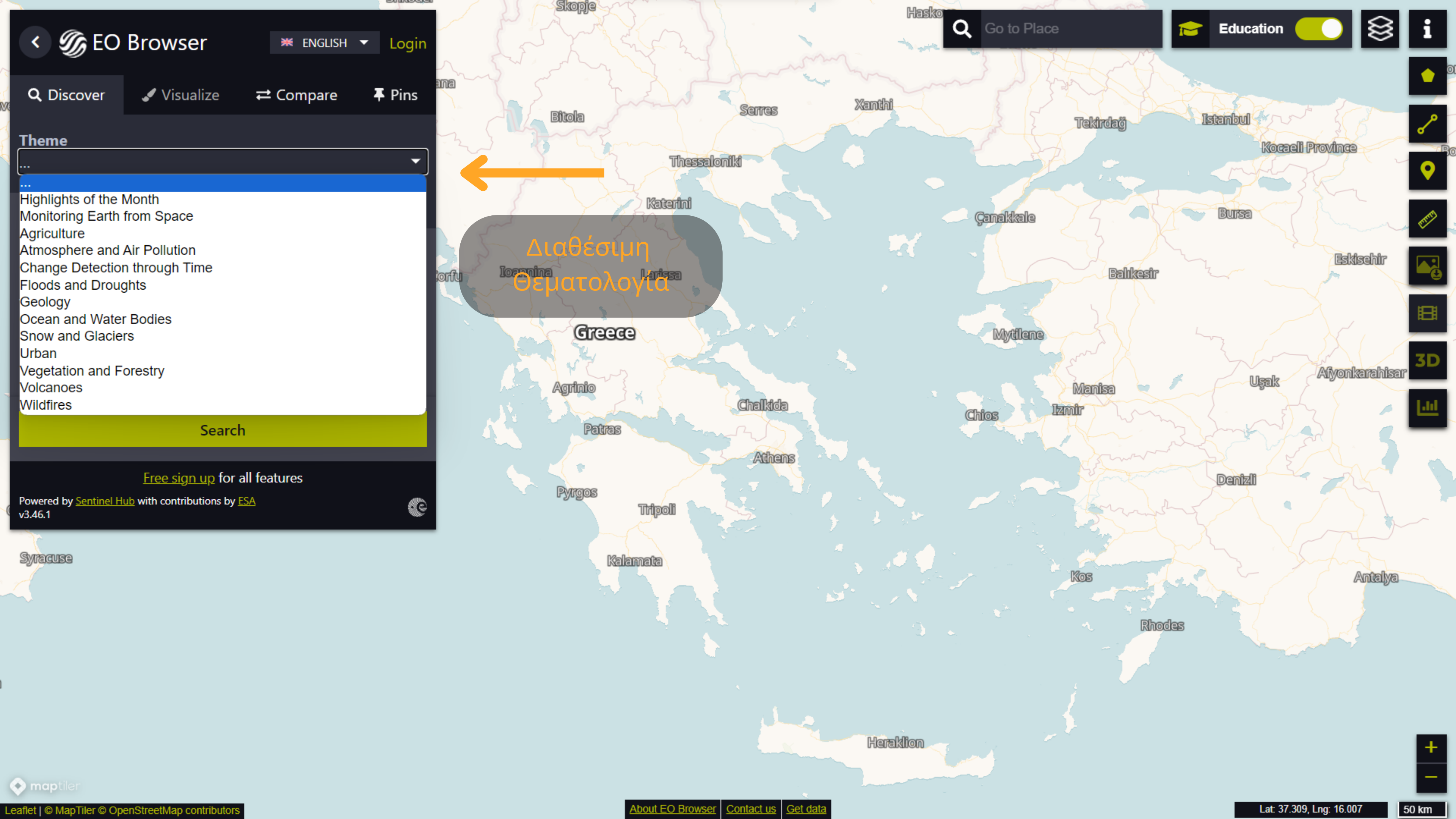
Powered by Sentinel Hub with contributions by ESA v3.46.1

Go to Place

Education



Διαθέσιμη Θεματολογία



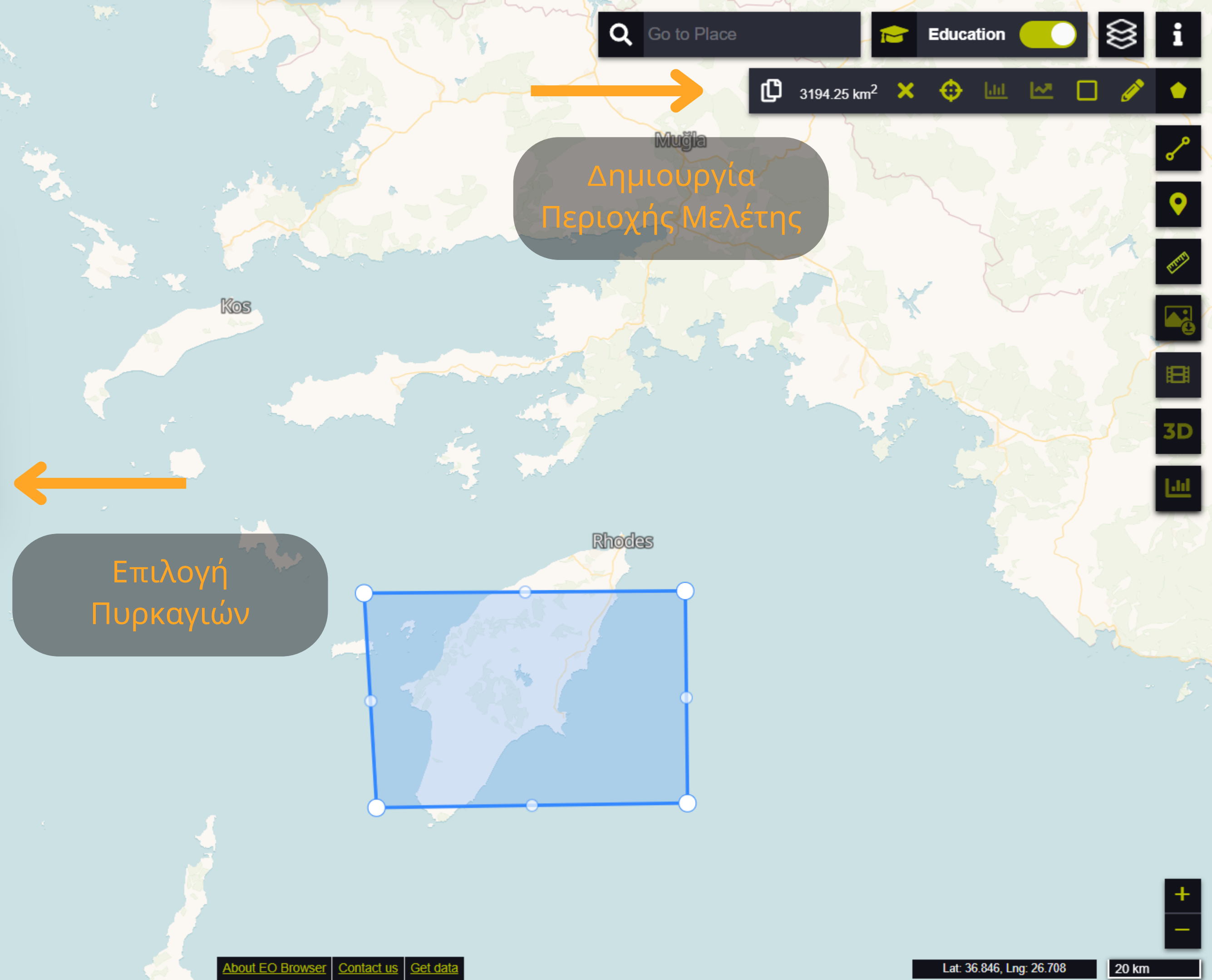
Theme

- Highlights of the Month
- Monitoring Earth from Space
- Agriculture
- Atmosphere and Air Pollution
- Change Detection through Time
- Floods and Droughts
- Geology
- Ocean and Water Bodies
- Snow and Glaciers
- Urban
- Vegetation and Forestry
- Volcanoes
- Wildfires**

Search

3194.25 km² [Close] [Home] [Layers] [Layers] [Layers] [Layers] [Layers] [Layers]

[Layers] [Layers] [Layers] [Layers] [Layers] [Layers] [Layers] [Layers] [Layers] [Layers]



Επιλογή Πυρκαγιών

Δημιουργία Περιοχής Μελέτης

Data sources

- Sentinel-1
- Sentinel-2
- Advanced search:
- Sentinel-3
- Sentinel-5P

Time range [UTC]

2023-07-02 - 2023-08-02

filter by months

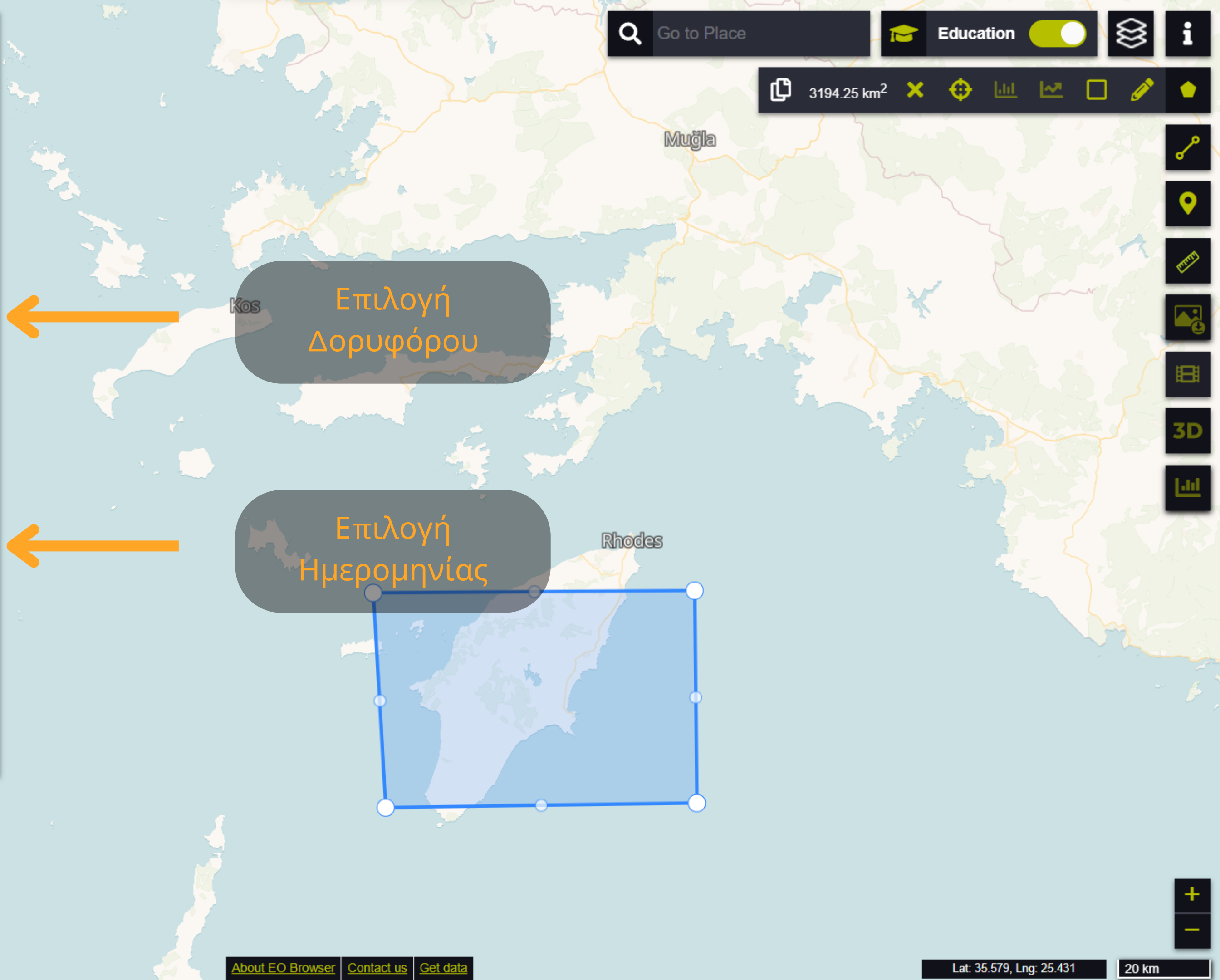
Search

Free sign up for all features

3194.25 km²

✕ 📍 📊 📈 📏 🖌️ 🏠

🔗 📍 🗺️ 📺 3D 📊



Επιλογή Δορυφόρου

Επιλογή Ημερομηνίας

Back to search Showing 50 results

Sentinel-2 L2A

2023-07-31

09:10:35 UTC

0.0%

35SMV

Visualize

Sentinel-2 L2A

2023-07-31

09:10:31 UTC

0.0%

35SNV

Visualize

Sentinel-2 L2A

2023-07-31

09:10:24 UTC

0.0%

35SLA

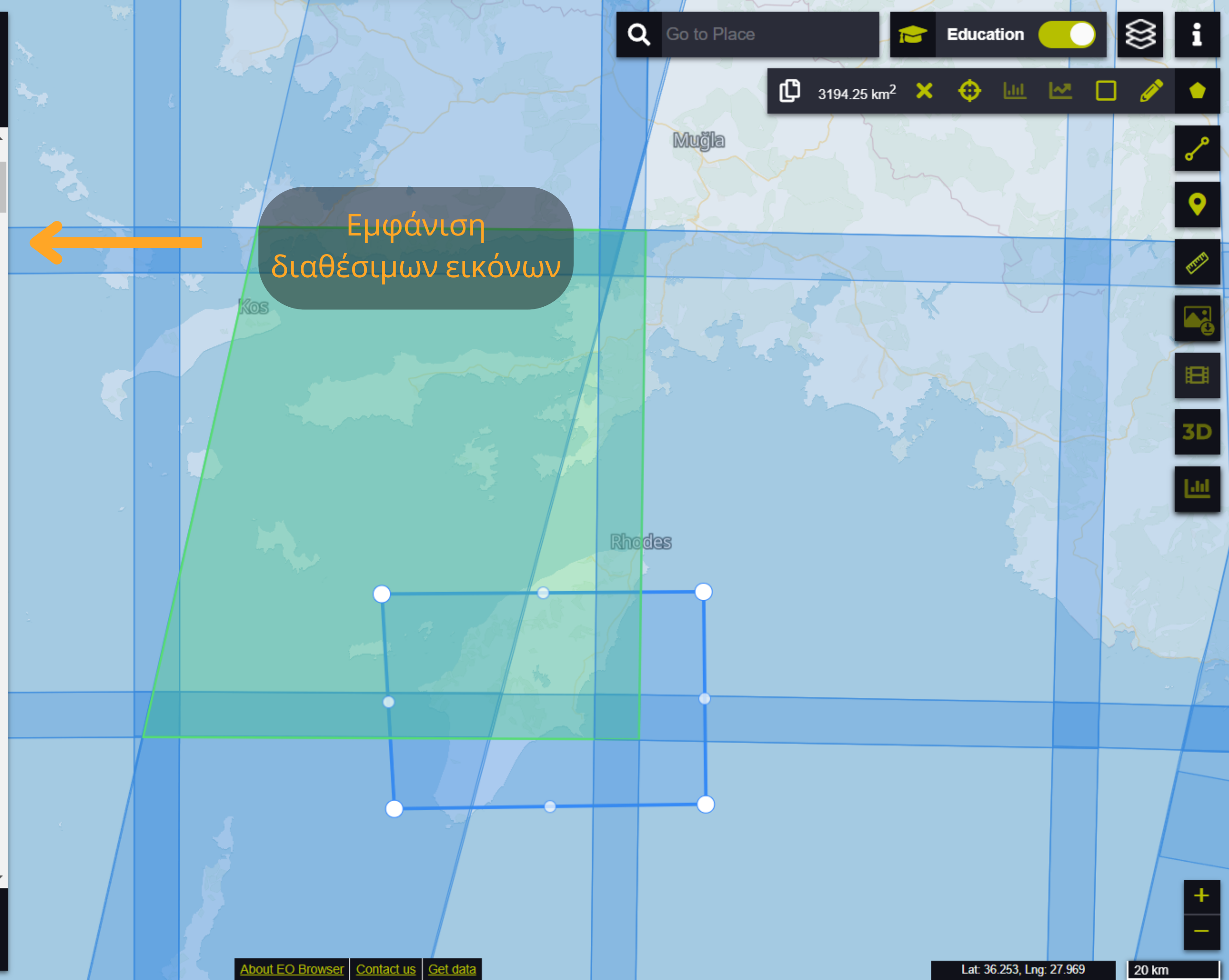
Visualize

Sentinel-2 L2A

2023-07-31

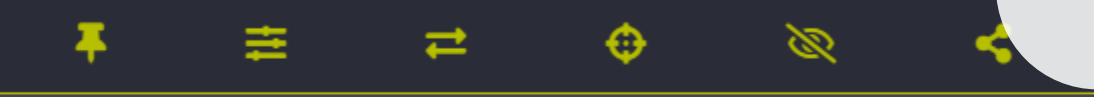
3194.25 km²

Εμφάνιση διαθέσιμων εικόνων



Dataset: Sentinel-2 L2A Show L1C

Date: 2023-07-23



- True color
Based on bands 4,3,2
- False Color
Based on bands 8, 4, 3
- Atmospheric Penetration
- Burned Area Detection
- NDMI
Normalized Difference Moisture Index
- NBR
Normalized Burn Ratio
- NDVI
Normalized Difference Vegetation Index
- Wildfires
- Custom
Create custom visualization

Free sign up for all features

Εμφάνιση διαθέσιμων ημερομηνιών

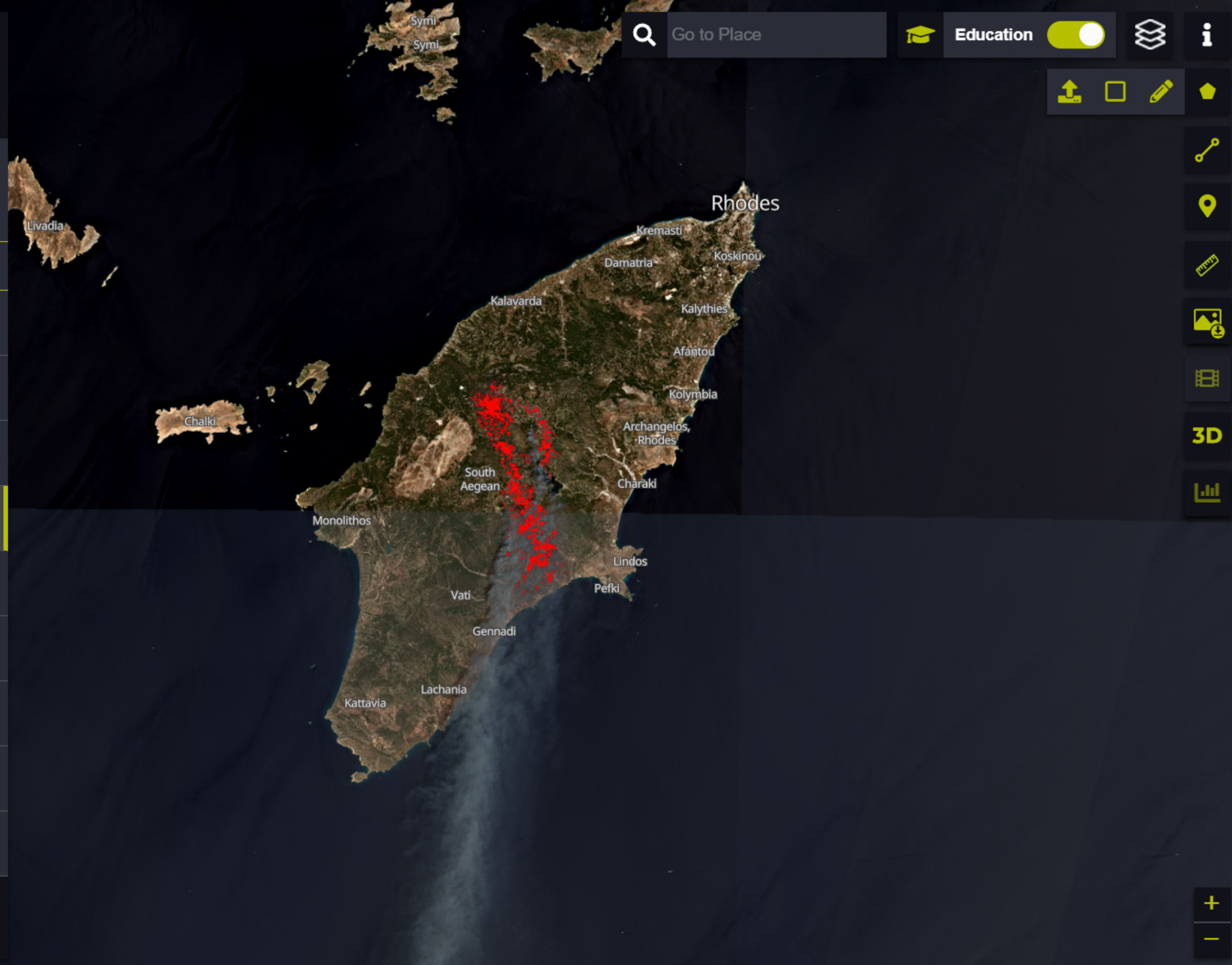
Εμφάνιση διαφορετικών ειδών απεικόνισης



- True color
Based on bands 4,3,2
- False Color**
Based on bands 8, 4, 3
- Atmospheric Penetration
- Burned Area Detection
- NDMI
Normalized Difference Moisture Index
- NBR
Normalized Burn Ratio
- NDVI
Normalized Difference Vegetation Index
- Wildfires
- Custom
Create custom visualization



- True color
Based on bands 4,3,2
- False Color
Based on bands 8, 4, 3
- Atmospheric Penetration
- Burned Area Detection**
- NDMI
Normalized Difference Moisture Index
- NBR
Normalized Burn Ratio
- NDVI
Normalized Difference Vegetation Index
- Wildfires
- Custom
Create custom visualization

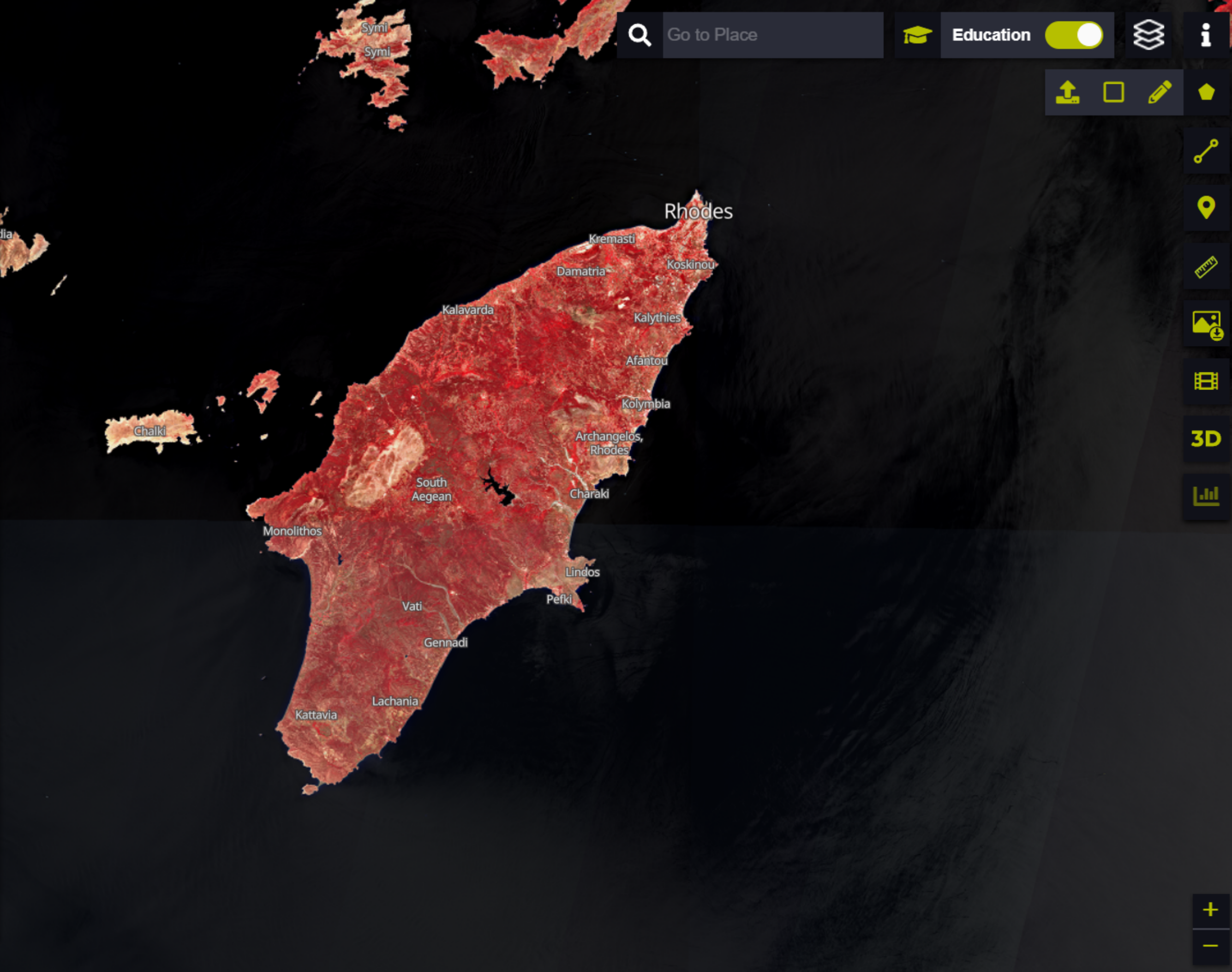


Education

Map interaction icons: Upload, Crop, Draw, Home, Share, Location, Layers, Image, Video, 3D, Legend

Add pins εικόνα πριν την πυρκαγιά

- Add to Pins
- True Color Based on bands 4,3,2
- False Color Based on bands 8, 4, 3
- Atmospheric Penetration
- Burned Area Detection
- NDMI Normalized Difference Moisture Index
- NBR Normalized Burn Ratio
- NDVI Normalized Difference Vegetation Index
- Wildfires
- Custom Create custom visualization



Add pins εικόνα μετά την πυρκαγιά

Add to Pins

True color
Based on bands 4,3,2

False Color
Based on bands 8, 4, 3

Atmospheric Penetration

Burned Area Detection

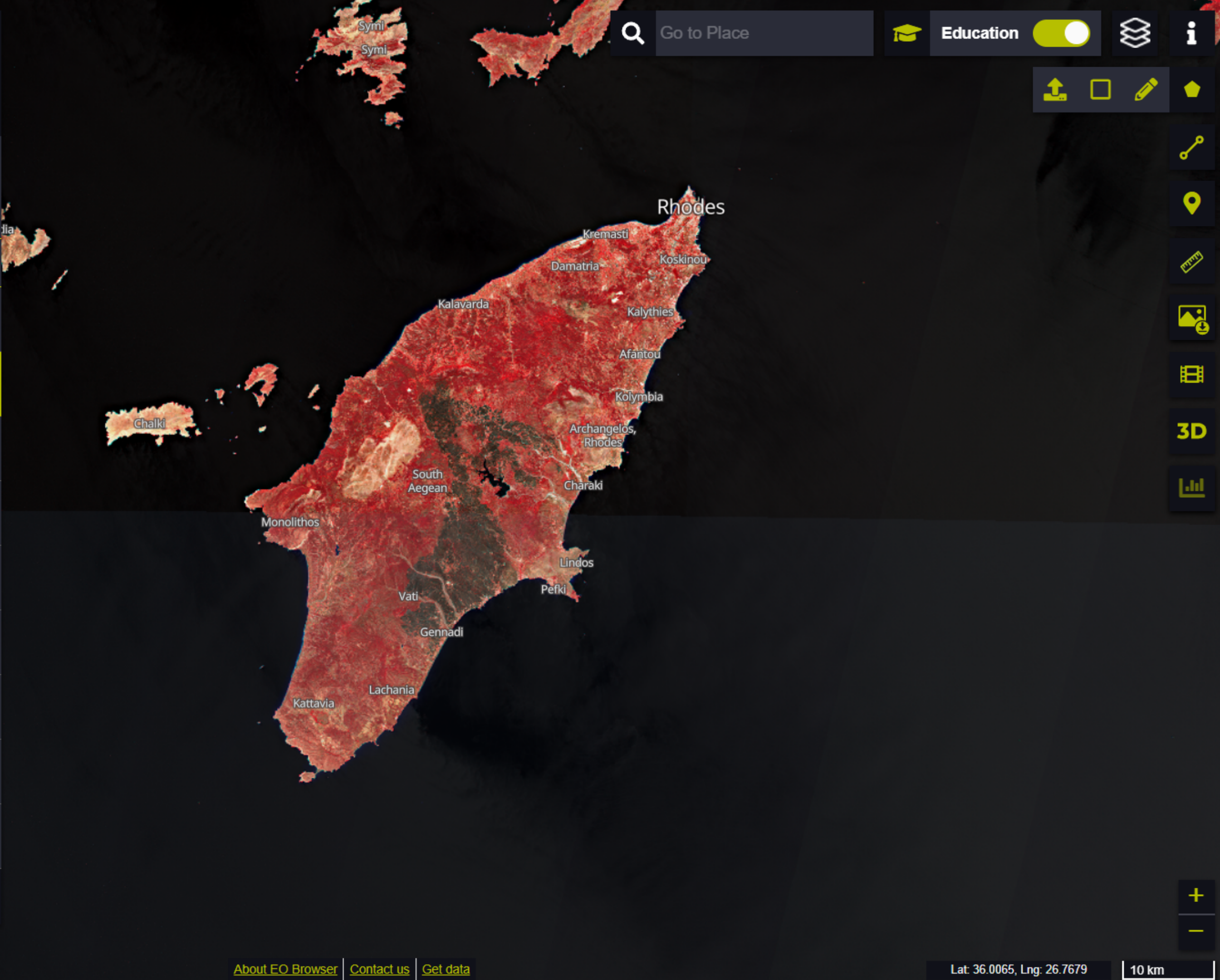
NDMI
Normalized Difference Moisture Index

NBR
Normalized Burn Ratio

NDVI
Normalized Difference Vegetation Index

Wildfires

Custom
Create custom visualization



Map navigation icons: Upload, Square, Eraser, Home

Map navigation icons: Share, Location, Measure, Download, Full Screen, 3D, Legend

Map navigation icons: Zoom In, Zoom Out

EO Browser

ENGLISH

Hello, Lefteris Theodoropoulos

Discover Visualize Compare Pins

Remove all Add all pins Share Split

Sentinel-2 L2A: False Color (Wildfires)
Date: 2023-07-28
Lat/Lon: 36.16, 27.81 | Zoom: 10

Split position: [Slider]

Sentinel-2 L2A: False Color (Wildfires)
Date: 2023-07-13
Lat/Lon: 36.16, 27.81 | Zoom: 10


Split position: [Slider]

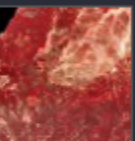
Powered by Sentinel Hub with contributions by ESA
v3.46.1

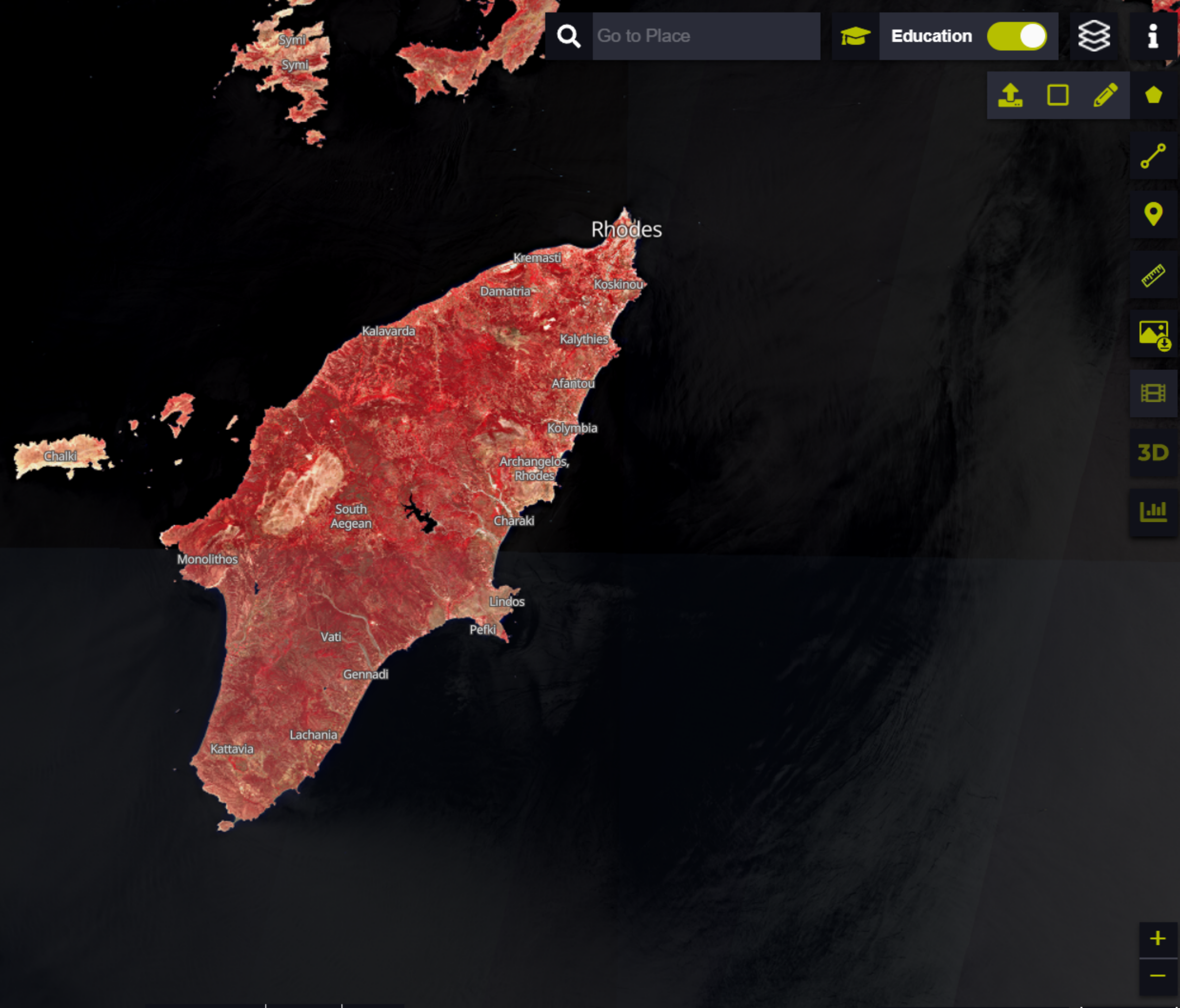
Χρήση του Compare για σύγκριση των εικόνων πριν και μετά την πυρκαγιά


Μετακίνηση της μπάρας split position για σύγκριση

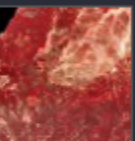


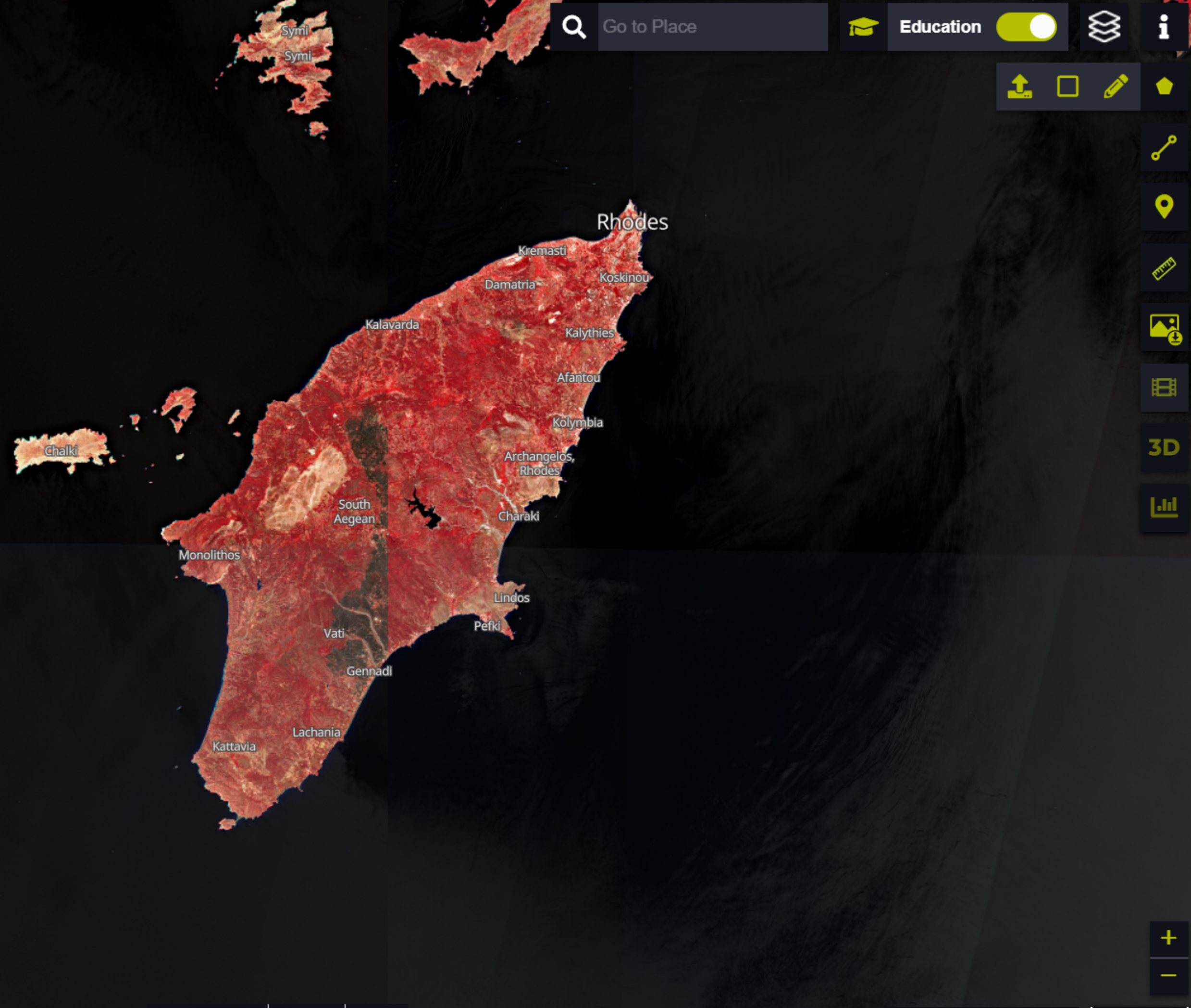

 Sentinel-2 L2A: False Color (Wildfires)
 Date: 2023-07-28
 Lat/Lon: 36.16, 27.81 | Zoom: 10
 Split position:

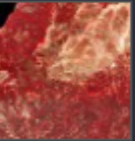

 Sentinel-2 L2A: False Color (Wildfires)
 Date: 2023-07-13
 Lat/Lon: 36.16, 27.81 | Zoom: 10
 Split position:





 Sentinel-2 L2A: False Color (Wildfires)
 Date: 2023-07-28
 Lat/Lon: 36.16, 27.81 | Zoom: 10
 Split position:


 Sentinel-2 L2A: False Color (Wildfires)
 Date: 2023-07-13
 Lat/Lon: 36.16, 27.81 | Zoom: 10
 Split position:

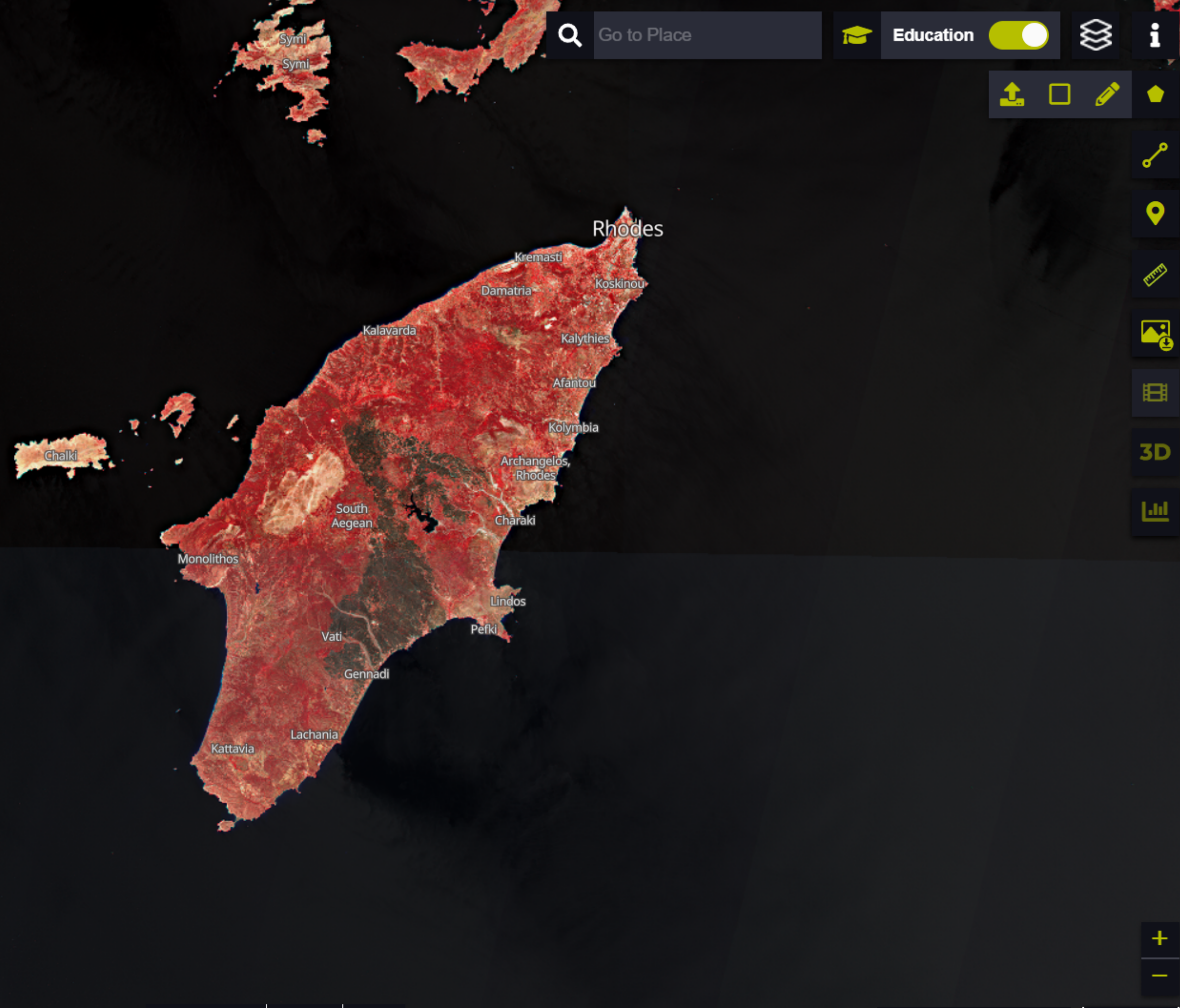



 Sentinel-2 L2A: False Color (Wildfires)
 Date: 2023-07-28
 Lat/Lon: 36.16, 27.81 | Zoom: 10

Split position:

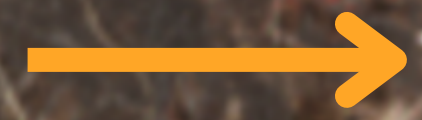

 Sentinel-2 L2A: False Color (Wildfires)
 Date: 2023-07-13
 Lat/Lon: 36.16, 27.81 | Zoom: 10

Split position:



- True color
Based on bands 4,3,2
- False Color**
Based on bands 8, 4, 3
- Atmospheric Penetration
- Burned Area Detection
- NDMI
Normalized Difference Moisture Index
- NBR
Normalized Burn Ratio
- NDVI
Normalized Difference Vegetation Index
- Wildfires
- Custom
Create custom visualization

Χαρτογράφηση καμένων εκτάσεων



6.50 km 2.04 km²



- Info icon
- Home icon
- Share icon
- Location pin icon
- Layers icon
- Image download icon
- Video icon
- 3D icon
- Bar chart icon

- True color
Based on bands 4,3,2
- False Color**
Based on bands 8, 4, 3
- Atmospheric Penetration
- Burned Area Detection
- NDMI
Normalized Difference Moisture Index
- NBR
Normalized Burn Ratio
- NDVI
Normalized Difference Vegetation Index
- Wildfires
- Custom
Create custom visualization



- Home
- Share
- Location
- Layers
- Download
- Fullscreen
- 3D
- Statistics

📅 2023-06-28 - 📅 2023-07-28

🗒 filter by months

Select 1 image per:

🕒 orbit 🕒 day 🕒 week 🕒 month 🕒 year

Sentinel-2 L2A: False Color

🔍 Search

➕ Add layers from pins

Visualisations

Min. tile coverage:

🗪 0%

Max. cloud coverage:

☁️ 100%

🗒 Borders

🗒 Select All

🕒 2023-07-13

🕒 2023-07-16

🕒 2023-07-18



Sentinel-2 L2A
False Color

Coverage: 100%
Cloud cover: 0%

🕒 2023-07-21

🕒 2023-07-23



Sentinel-2 L2A
False Color

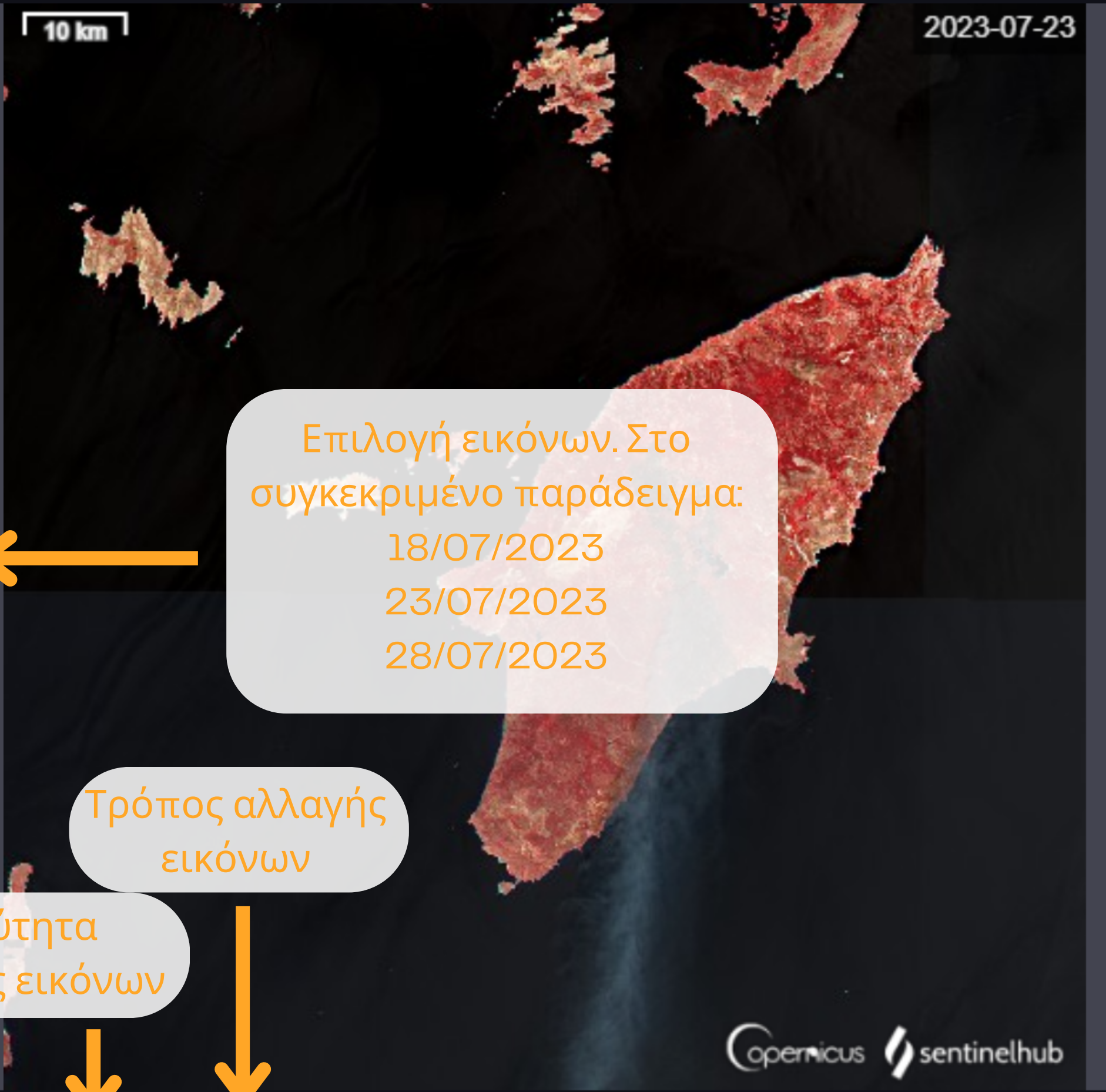
Coverage: 100%
Cloud cover: 0%

🕒 2023-07-26

🕒 2023-07-28



Sentinel-2 L2A
False Color



Επιλογή εικόνων. Στο συγκεκριμένο παράδειγμα:
18/07/2023
23/07/2023
28/07/2023



Τρόπος αλλαγής εικόνων

Ταχύτητα αλλαγής εικόνων



Speed: 1 fps

Transition: Fade

2 / 3

⚙️

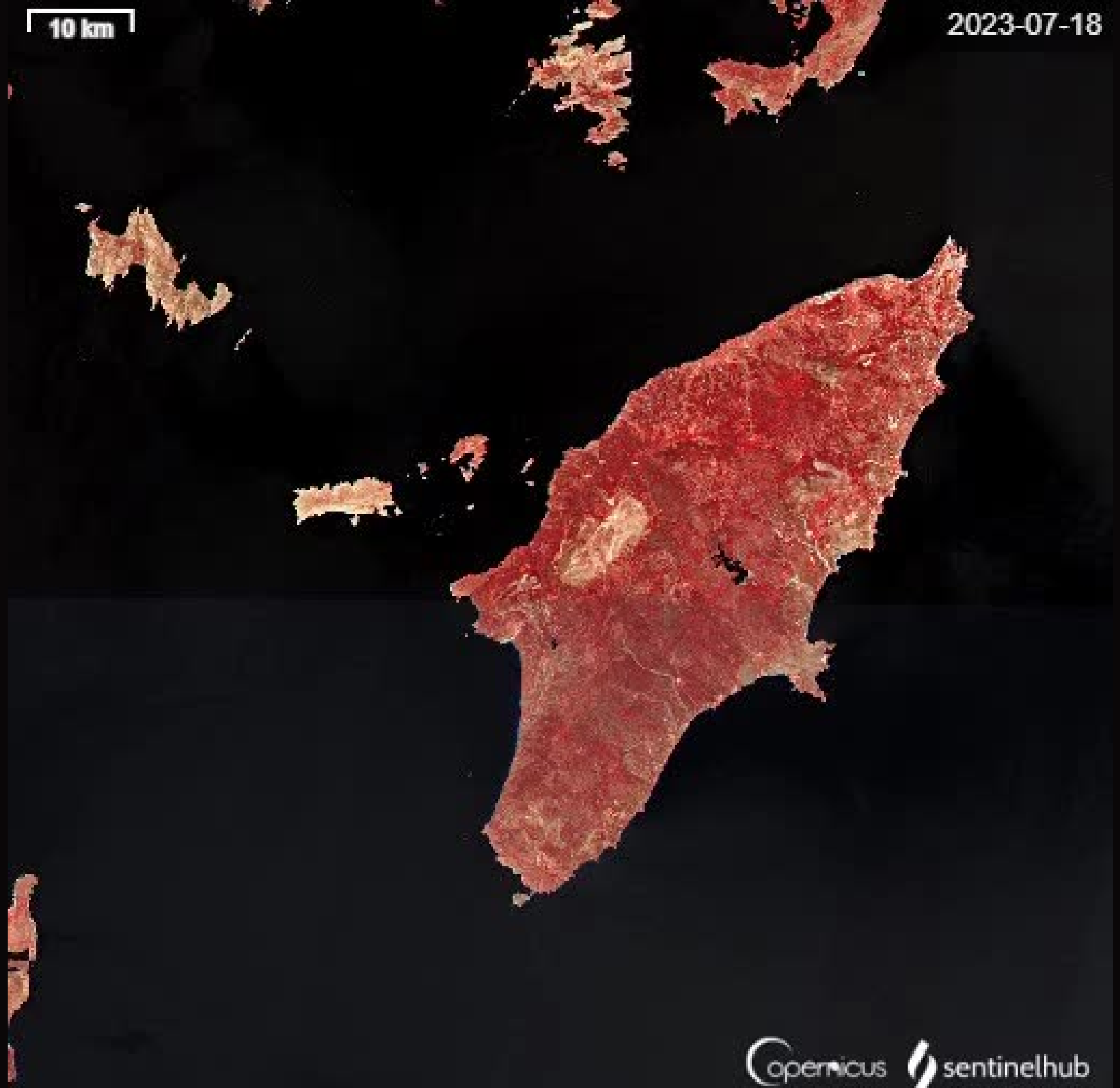


Download

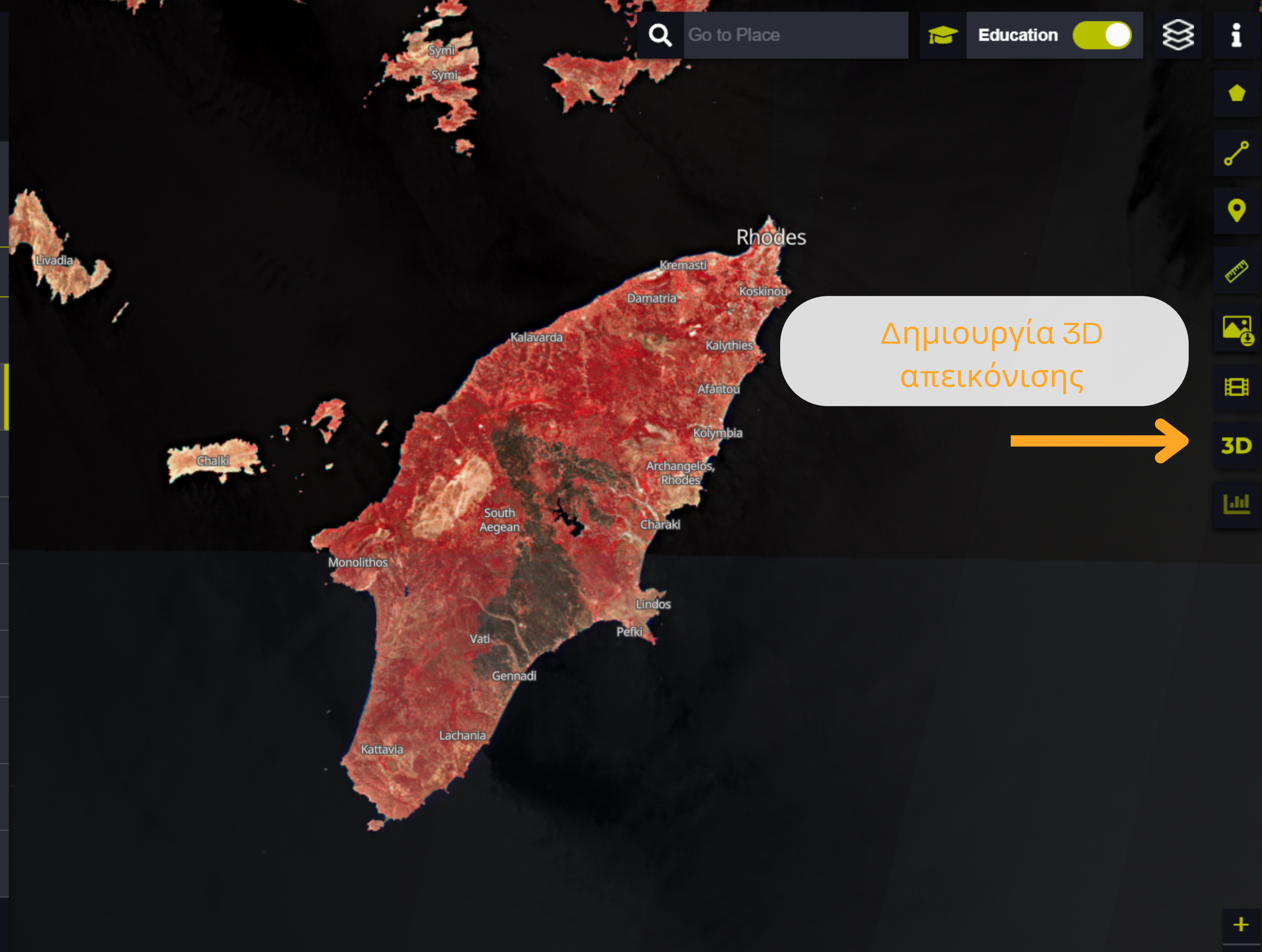
Share

10 km

2023-07-18



- True color Based on bands 4,3,2
- False Color Based on bands 8, 4, 3**
- Atmospheric Penetration
- Burned Area Detection
- NDMI Normalized Difference Moisture Index
- NBR Normalized Burn Ratio
- NDVI Normalized Difference Vegetation Index
- Wildfires
- Custom Create custom visualization



Δημιουργία 3D απεικόνισης

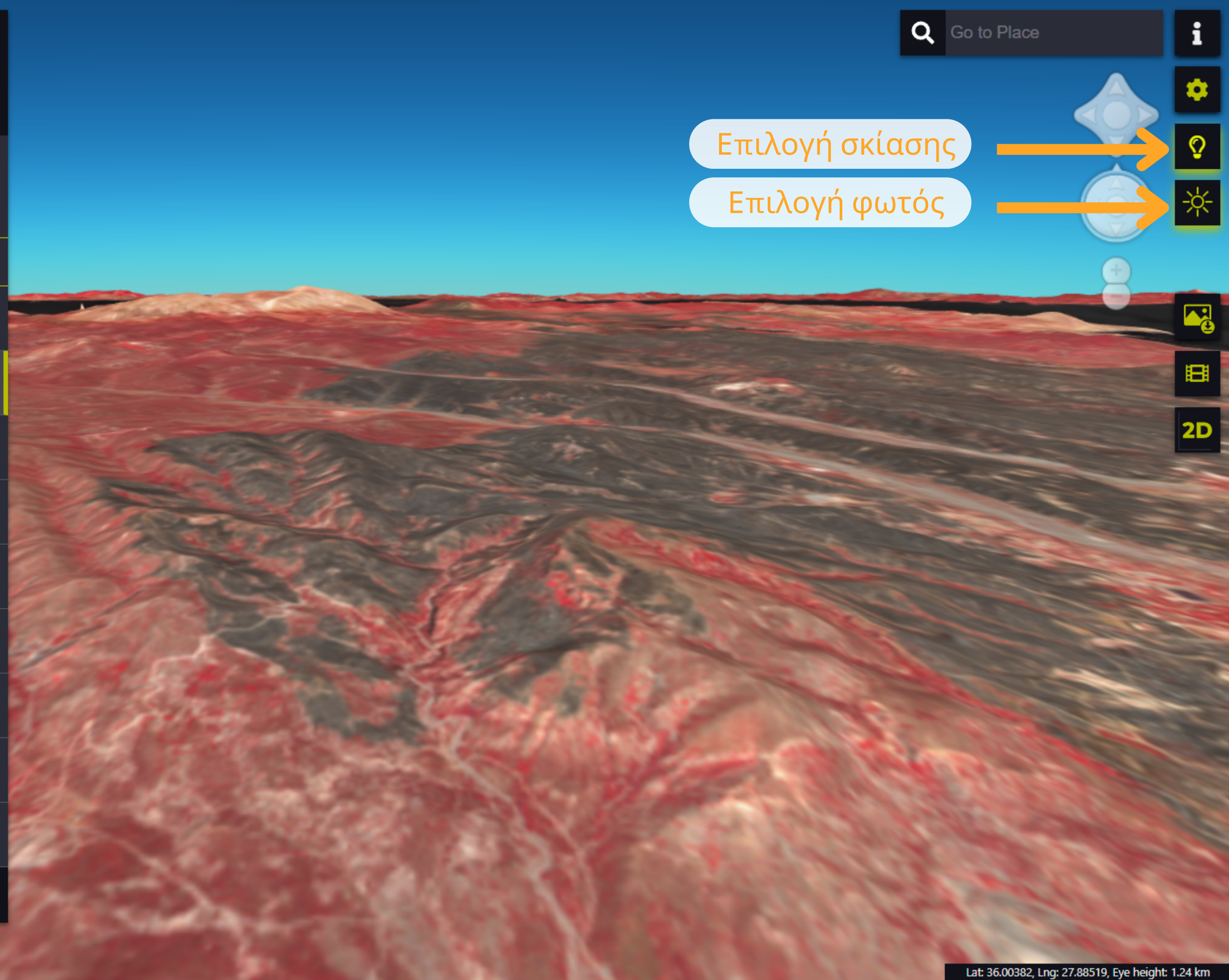


- Home icon
- Share icon
- Location pin icon
- Layers icon
- Image download icon
- Video icon
- 3D icon**
- Bar chart icon

- True color
Based on bands 4,3,2
- False Color**
Based on bands 8, 4, 3
- Atmospheric Penetration
- Burned Area Detection
- NDMI
Normalized Difference Moisture Index
- NBR
Normalized Burn Ratio
- NDVI
Normalized Difference Vegetation Index
- Wildfires
- Custom
Create custom visualization

Επιλογή σκίασης

Επιλογή φωτός



Παραδείγματα εφαρμογών
Κύπρος

Σύγκριση εικόνων Καλοκαίρι vs Άνοιξη

Καλοκαίρι

16/08/2020



Άνοιξη

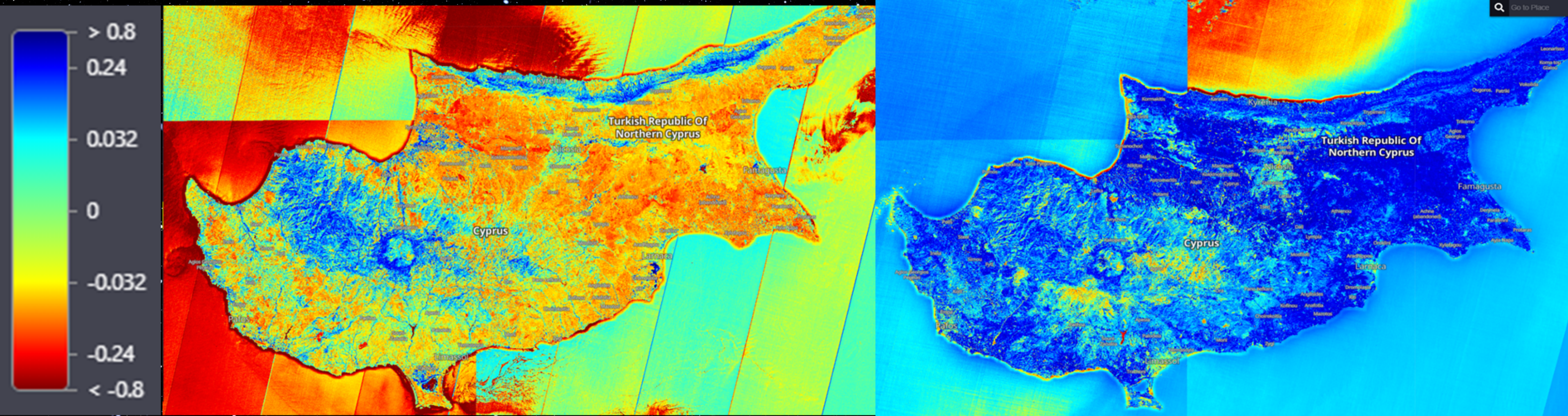
24/03/2020



Δείκτης υγρασίας

Καλοκαίρι
16/08/2020

Άνοιξη
24/03/2020



Δείκτης βλάστησης

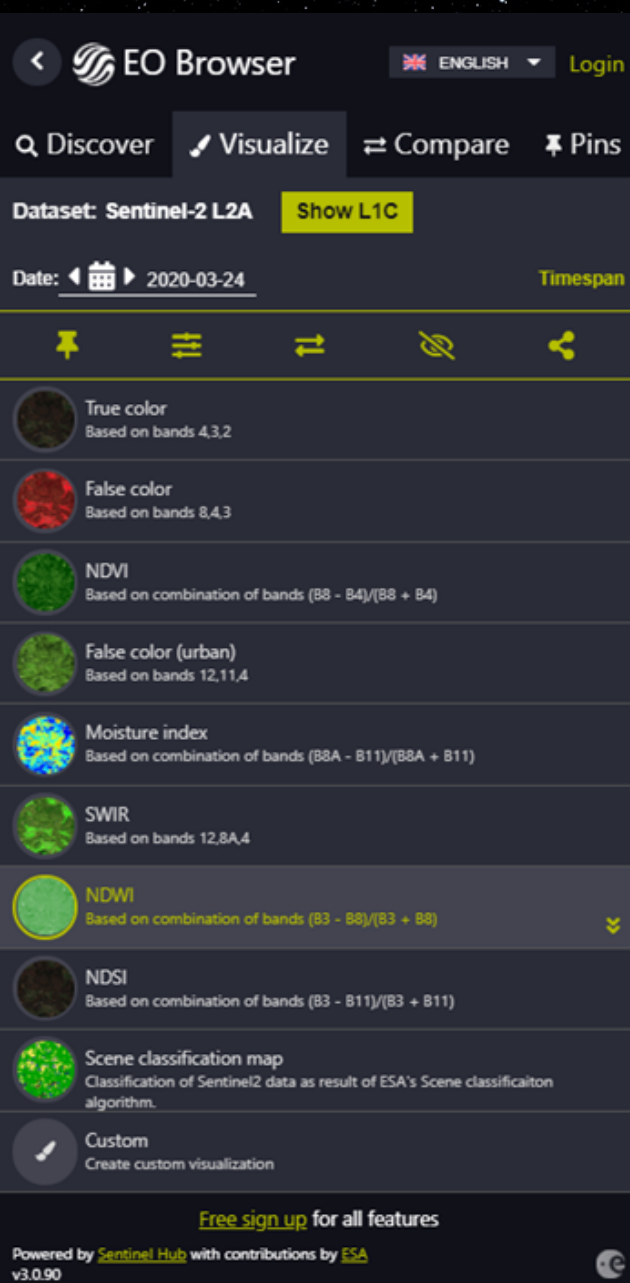
Καλοκαίρι
16/08/2020

Άνοιξη
24/03/2020

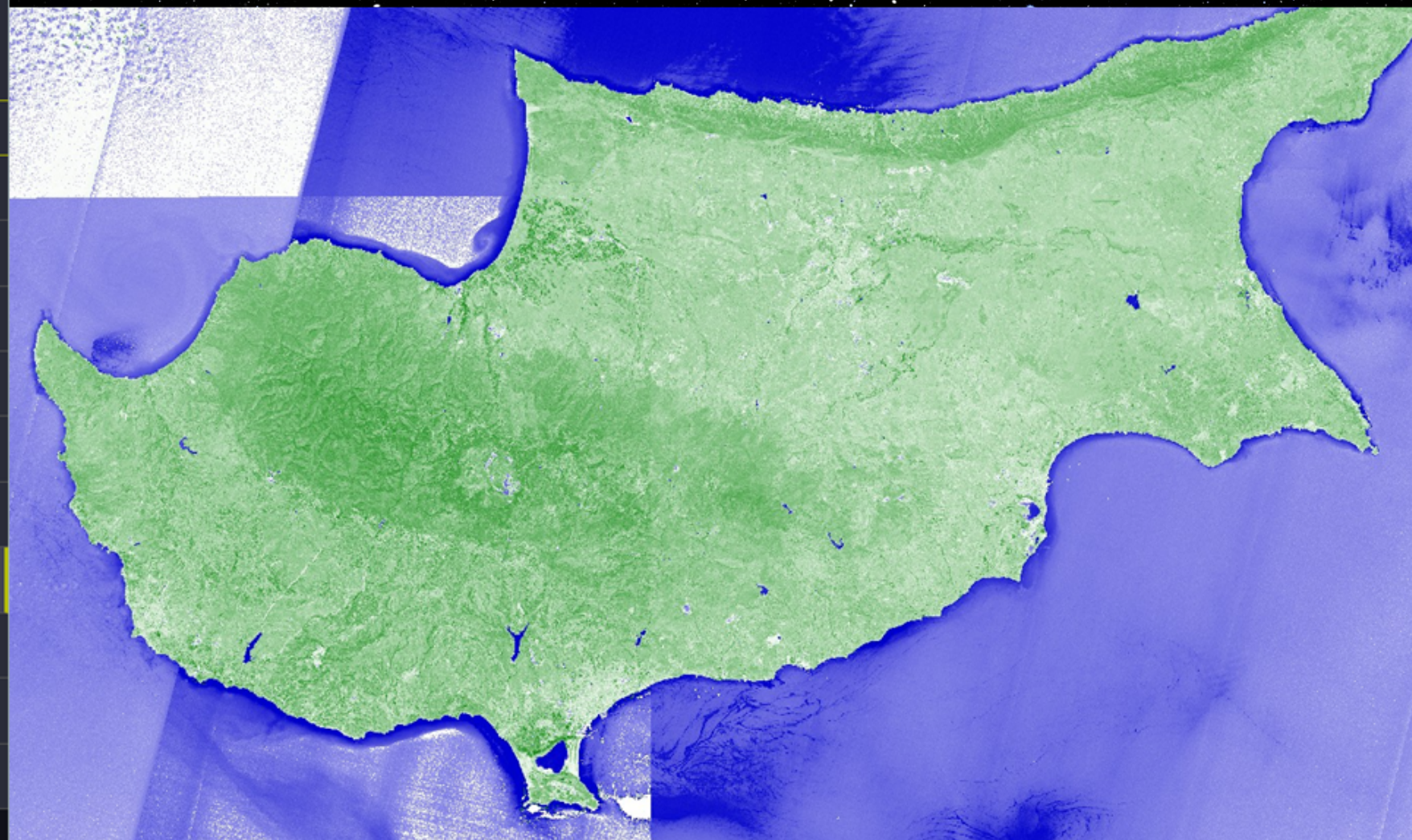


Εντοπισμός φραγμάτων

Χρησιμοποιήστε τον δείκτη NDWI και εντοπίστε
3 φράγματα και 2 αλυκές – Sentinel 2: 19/8/2020

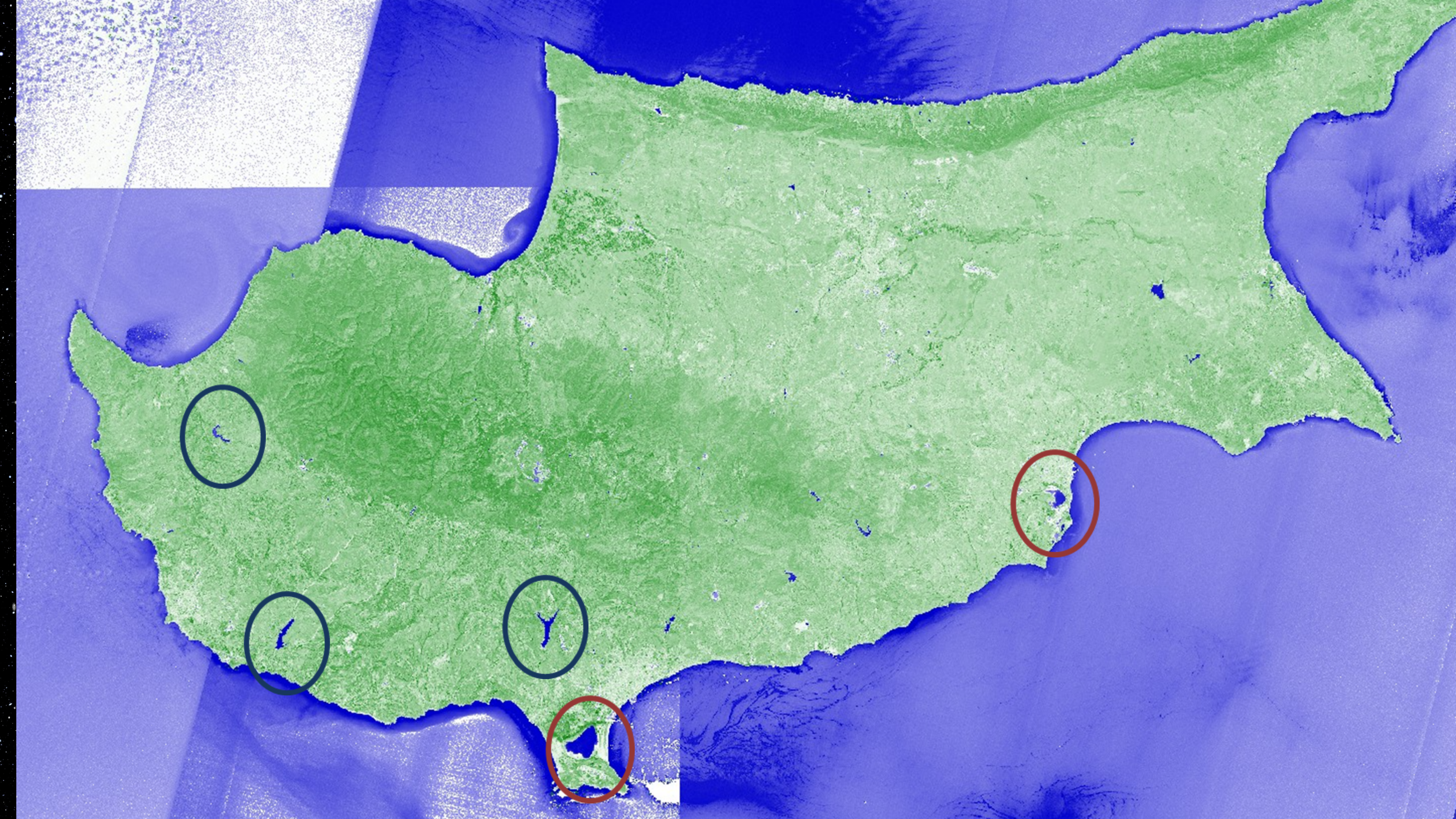


The screenshot shows the EO Browser interface. The top navigation bar includes 'EO Browser', 'ENGLISH', and 'Login'. Below it are buttons for 'Discover', 'Visualize', 'Compare', and 'Pins'. The main panel shows 'Dataset: Sentinel-2 L2A' and 'Date: 2020-03-24'. A list of visualization options is shown on the left, with 'NDWI' selected. The NDWI option is described as 'Based on combination of bands (B3 - B8)/(B3 + B8)'. Other options include True color, False color, False color (urban), Moisture index, SWIR, NDSI, and Scene classification map.

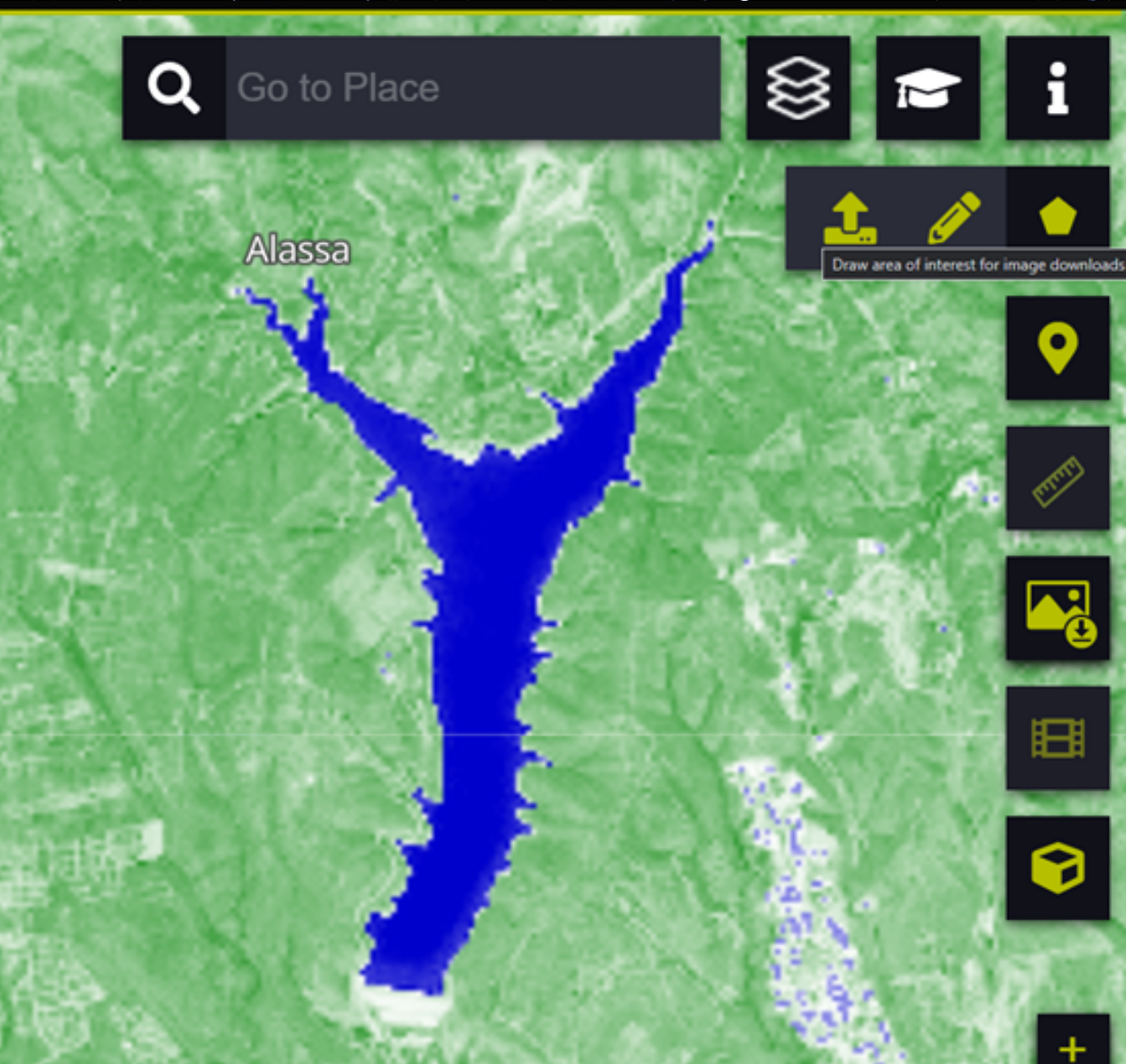


Ο κανονικοποιημένος δείκτης νερού (NDWI) είναι κατάλληλος για χαρτογράφηση υδάτινου σώματος. Τα υδάτινα σώματα έχουν τιμές μεγαλύτερες από 0,5 ενώ η βλάστηση έχει μικρότερες τιμές. Άλλα χαρακτηριστικά όπως τα κτήρια έχουν τιμές από 0-0,2

$$NDWI = \frac{GREEN - NIR}{GREEN + NIR}$$



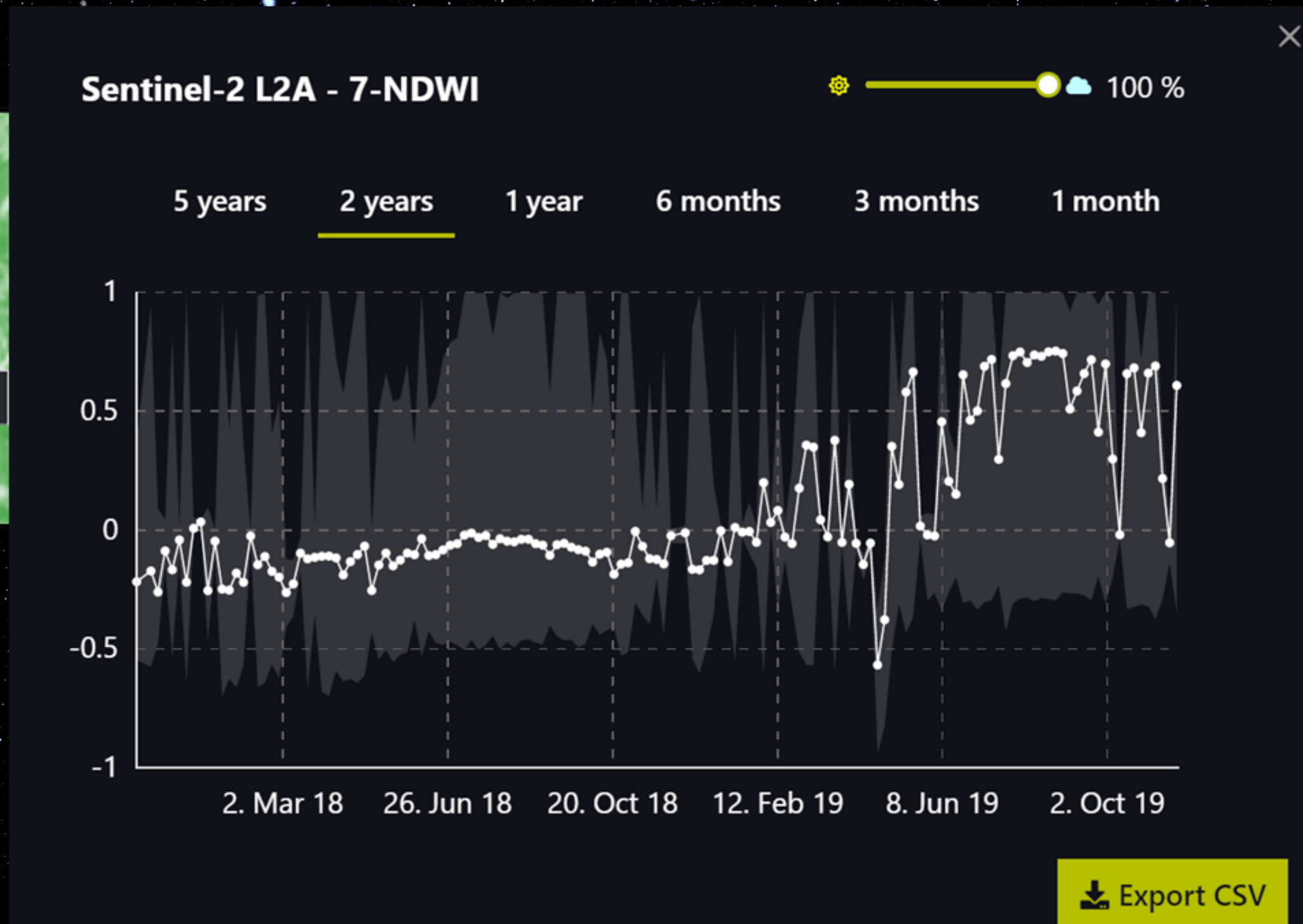
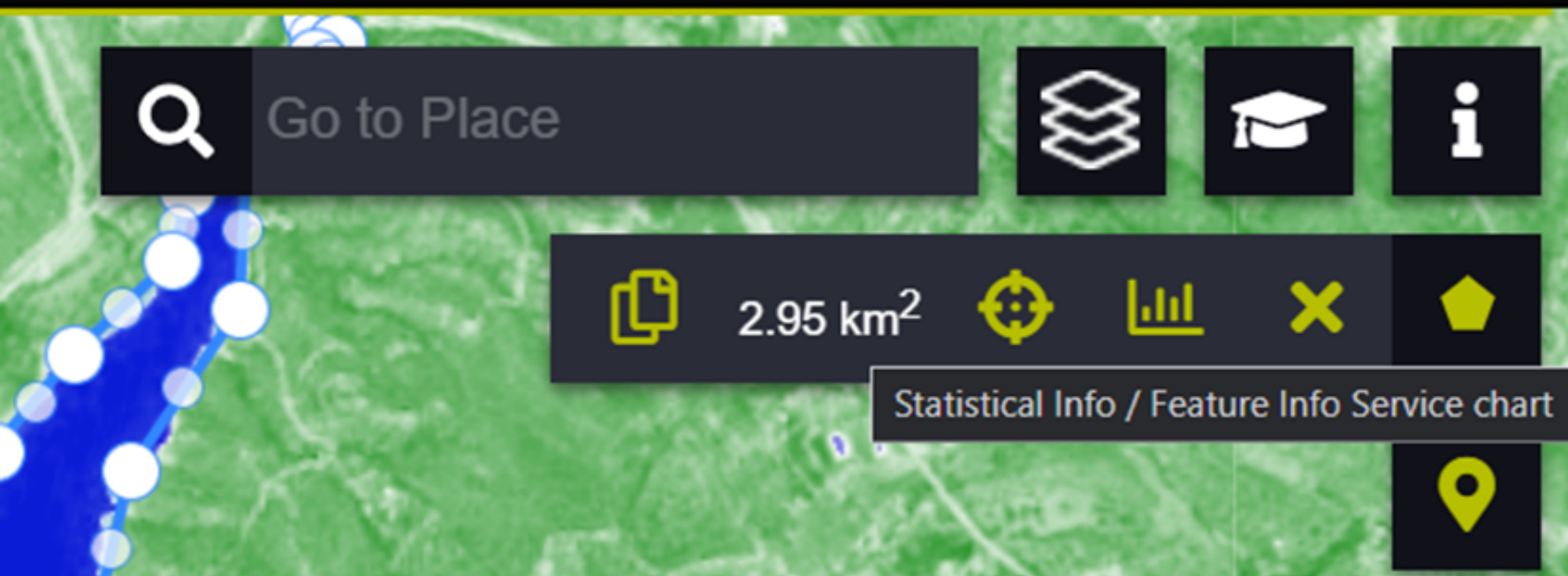
Υπολογίστε το εμβαδόν ενός από τα φραγματα που βρήκατε



Με το drawing tool μπορούμε να σχεδιάσουμε ένα πολύγωνο πάνω από το φράγμα που θέλουμε

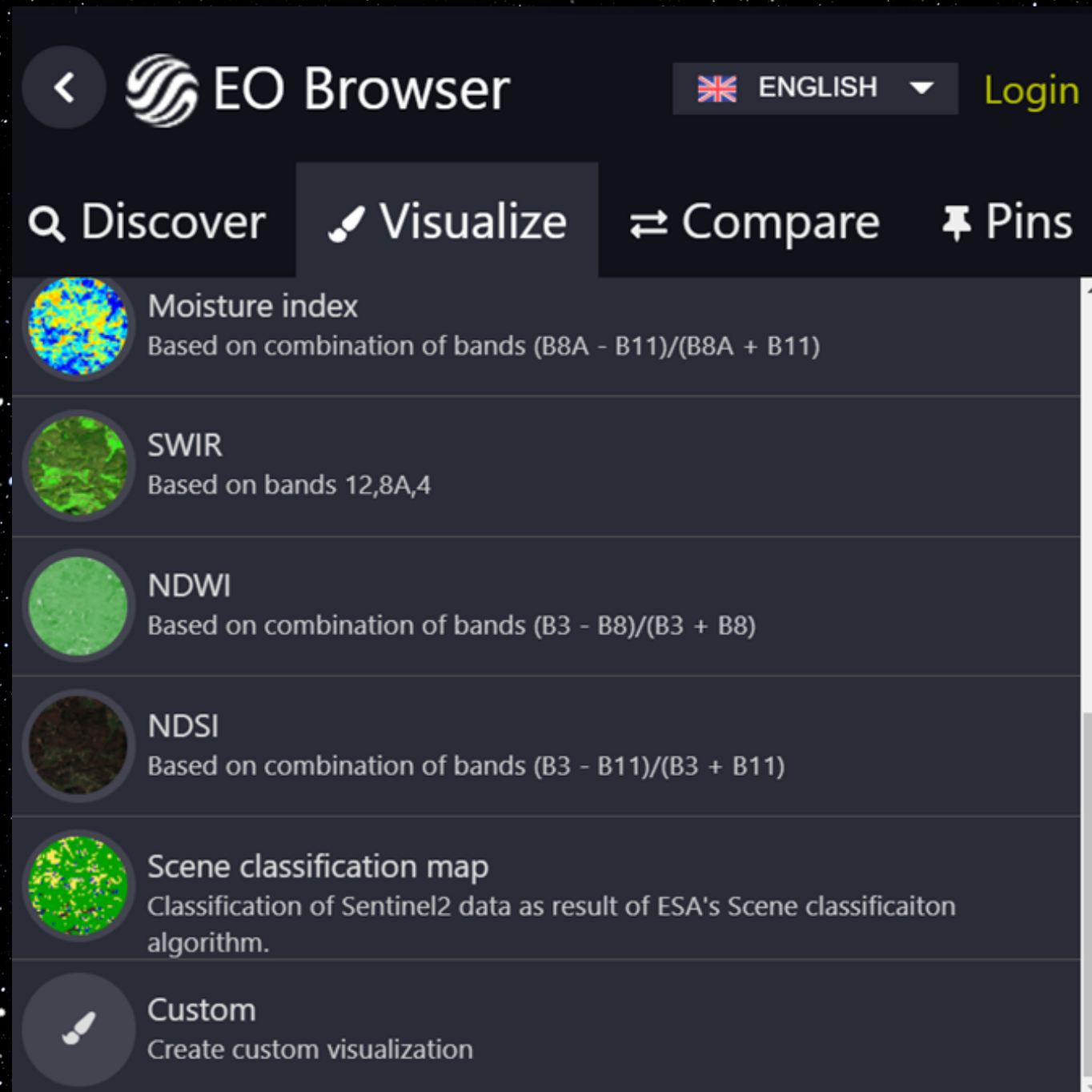


Βρείτε τις διακυμάνσεις των τιμών του δείκτη για τα τελευταία 2 χρόνια



Εντοπισμός πυρκαγιάς

Χρησιμοποιήστε τον δείκτη NBR και εντοπίστε την πυρκαγιά



The screenshot shows the EO Browser interface with the following elements:

- Header: EO Browser logo, language dropdown (ENGLISH), and Login button.
- Navigation: Discover, Visualize (selected), Compare, and Pins buttons.
- Visualization List:
 - Moisture index: Based on combination of bands $(B8A - B11)/(B8A + B11)$
 - SWIR: Based on bands 12,8A,4
 - NDWI: Based on combination of bands $(B3 - B8)/(B3 + B8)$
 - NDSI: Based on combination of bands $(B3 - B11)/(B3 + B11)$
 - Scene classification map: Classification of Sentinel2 data as result of ESA's Scene classificaiton algorithm.
 - Custom: Create custom visualization

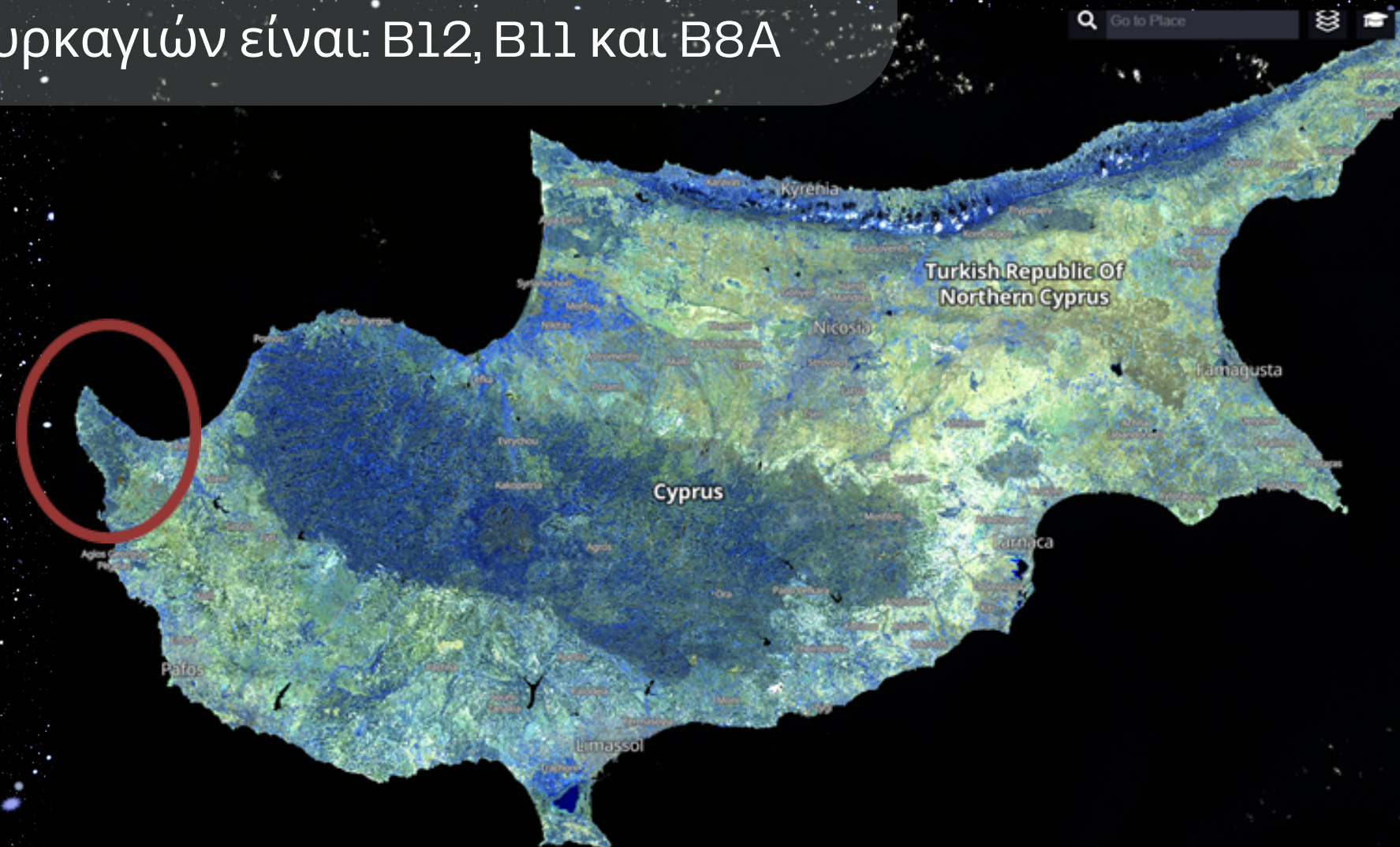
Με το custom μπορούμε να δημιουργήσουμε διαφορετικά έγχρωμα σύνθετα και άλλους δείκτες

Χρησιμοποιήστε τον δείκτη NBR και εντοπίστε την πυρκαγιά που έγινε στον Ακάμα στις 13/11/2019

Στο composite μπορούμε να αλλάξουμε τους συνδυασμούς των καναλιών και να δημιουργήσουμε ένα άλλο ψευδοχρωματισμό.

Ένας σημαντικός συνδυασμός που βοηθά στην ανίχνευση πυρκαγιών είναι: B12, B11 και B8A

The screenshot shows the EO Browser interface. At the top, there is a navigation bar with 'EO Browser', 'ENGLISH', and 'Login'. Below this are tabs for 'Discover', 'Visualize', 'Compare', and 'Pins'. The main area shows 'Dataset: Sentinel-2 L2A' and 'Date: 2020-03-24'. A 'Composite' panel is open, displaying a grid of band selection buttons (B01 to B06, B07 to B09, B11, B12, B8A). Below the grid, the RGB configuration is set to 'R: B12', 'G: B11', and 'B: B8A'. The interface also includes a 'Back' button, 'Index', and 'Custom script' options.



[Free sign up](#) for all features



Neo Chorio

Androlikou

Fasli

Πυρκαγιά Ακάμα, 13/11/2019

Στο Index μπορούμε να δημιουργήσουμε τον δείκτη πυρκαγιάς NBR

Composite ▾

Index ▲

Drag bands into the index equation

B01 B02 B03 B04 B05
B06 B07 B08 B09 B11
B12 B8A

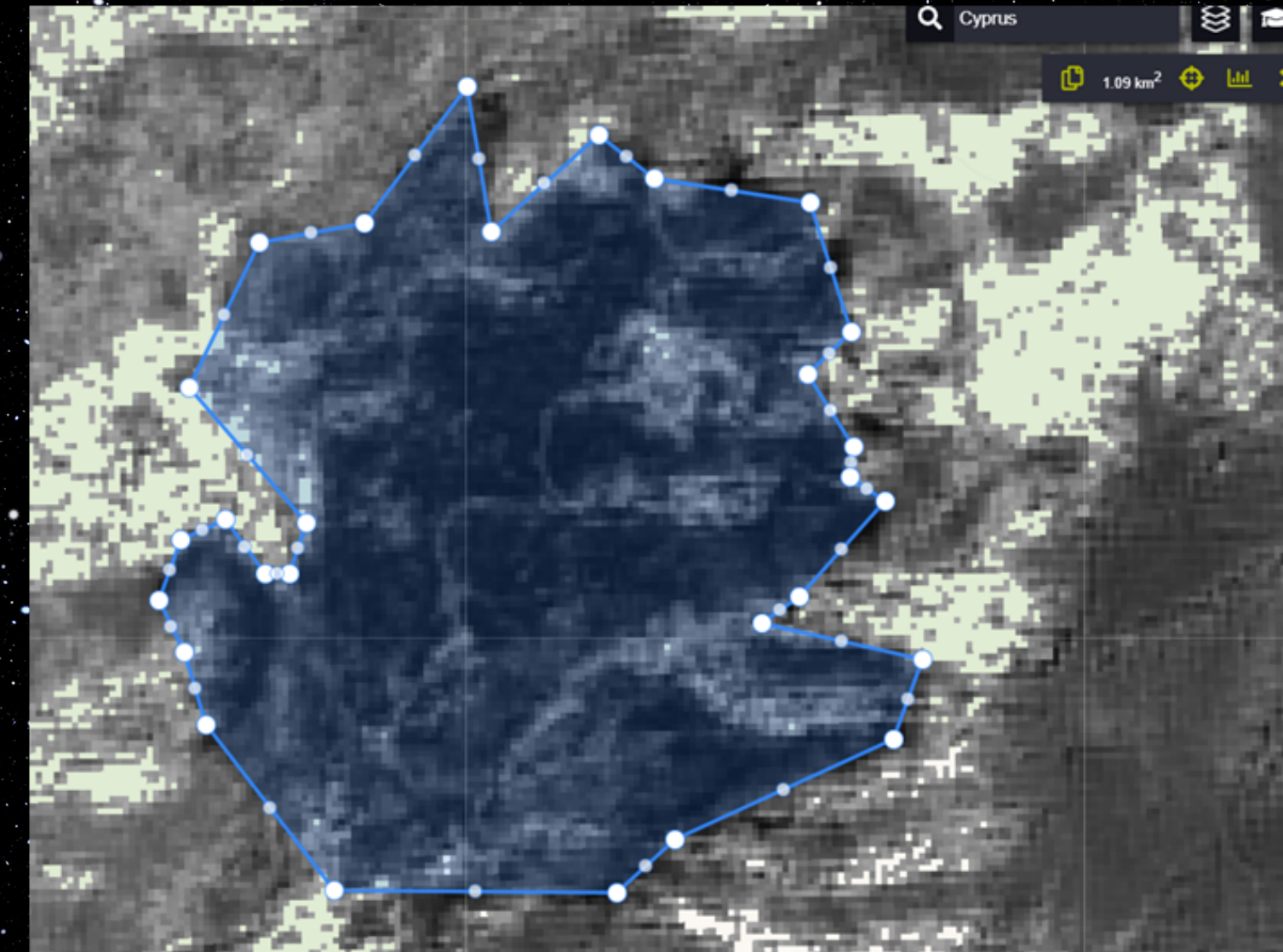
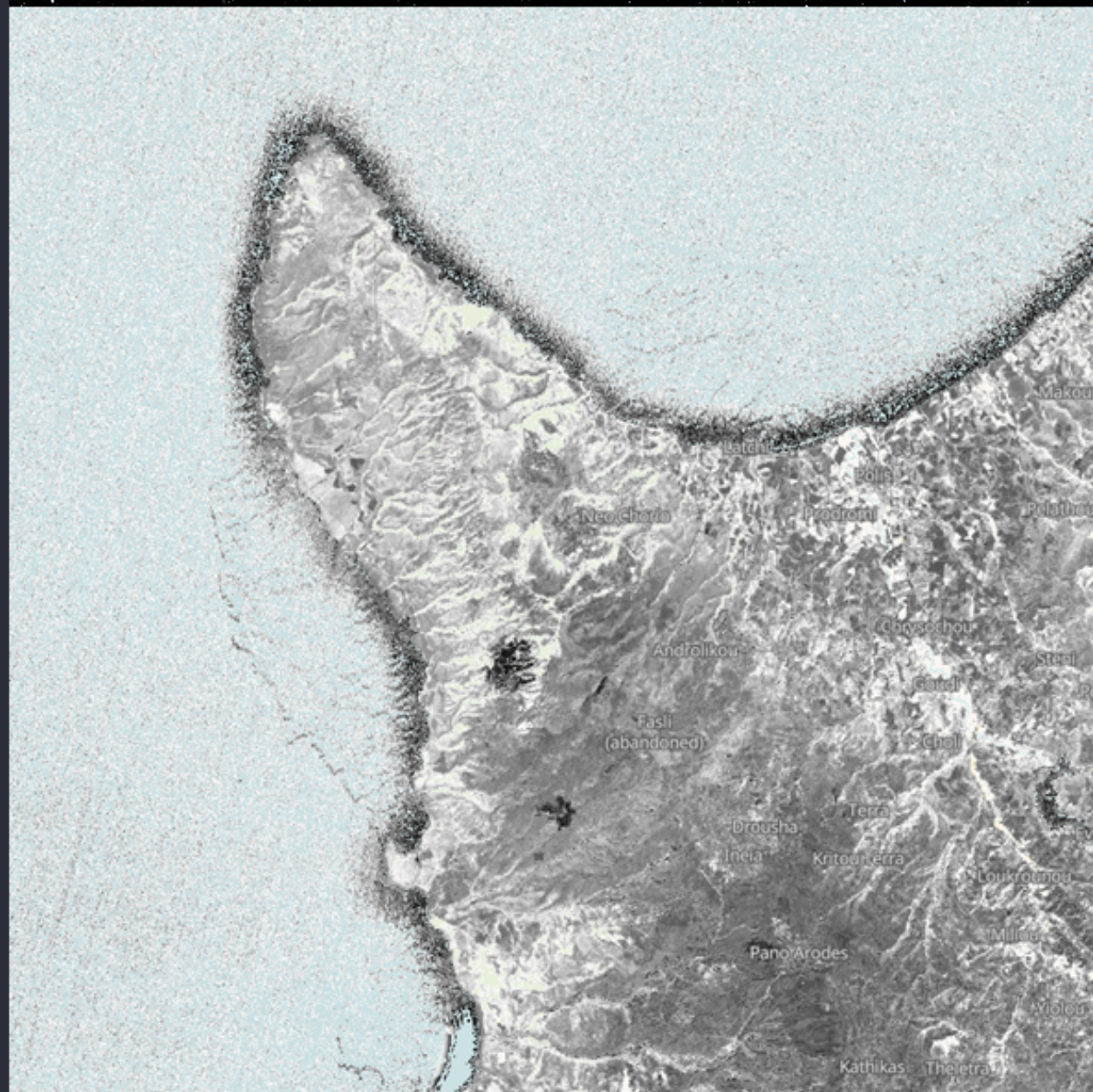
Index $(A-B)/(A+B)$ ▾

$(B08 - B12) / (B08 + B12)$

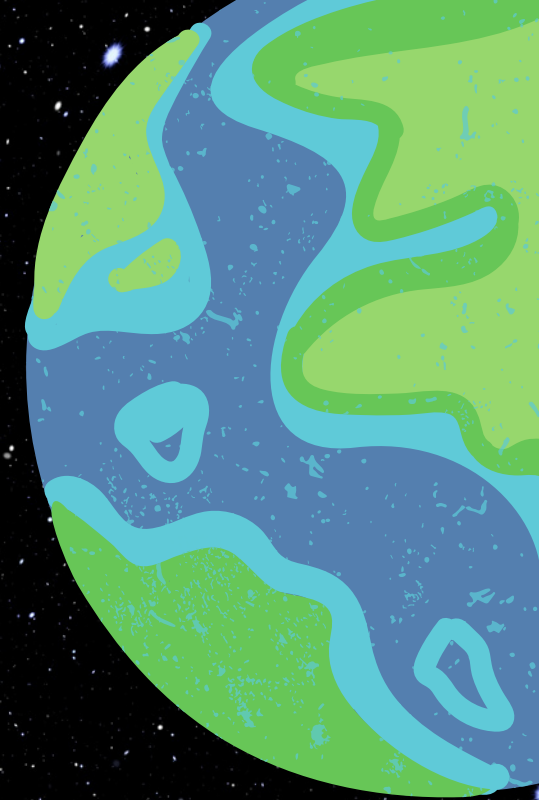
Threshold ⚙

-0.5 0.5

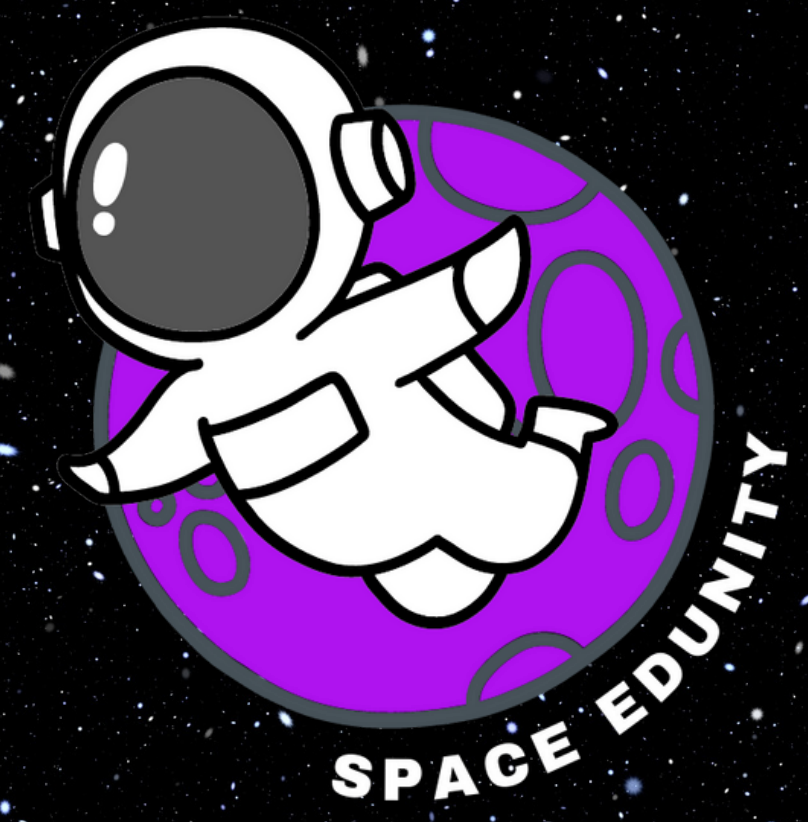
Custom script ▾



Μπορούμε χονδρικά να υπολογίσουμε το εμβαδόν της καμένης έκτασης



Ευχαριστούμε



Κέντρο Επιστημών Παρατήρησης της Γης
και Δορυφορικής Τηλεπισκόπησης



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