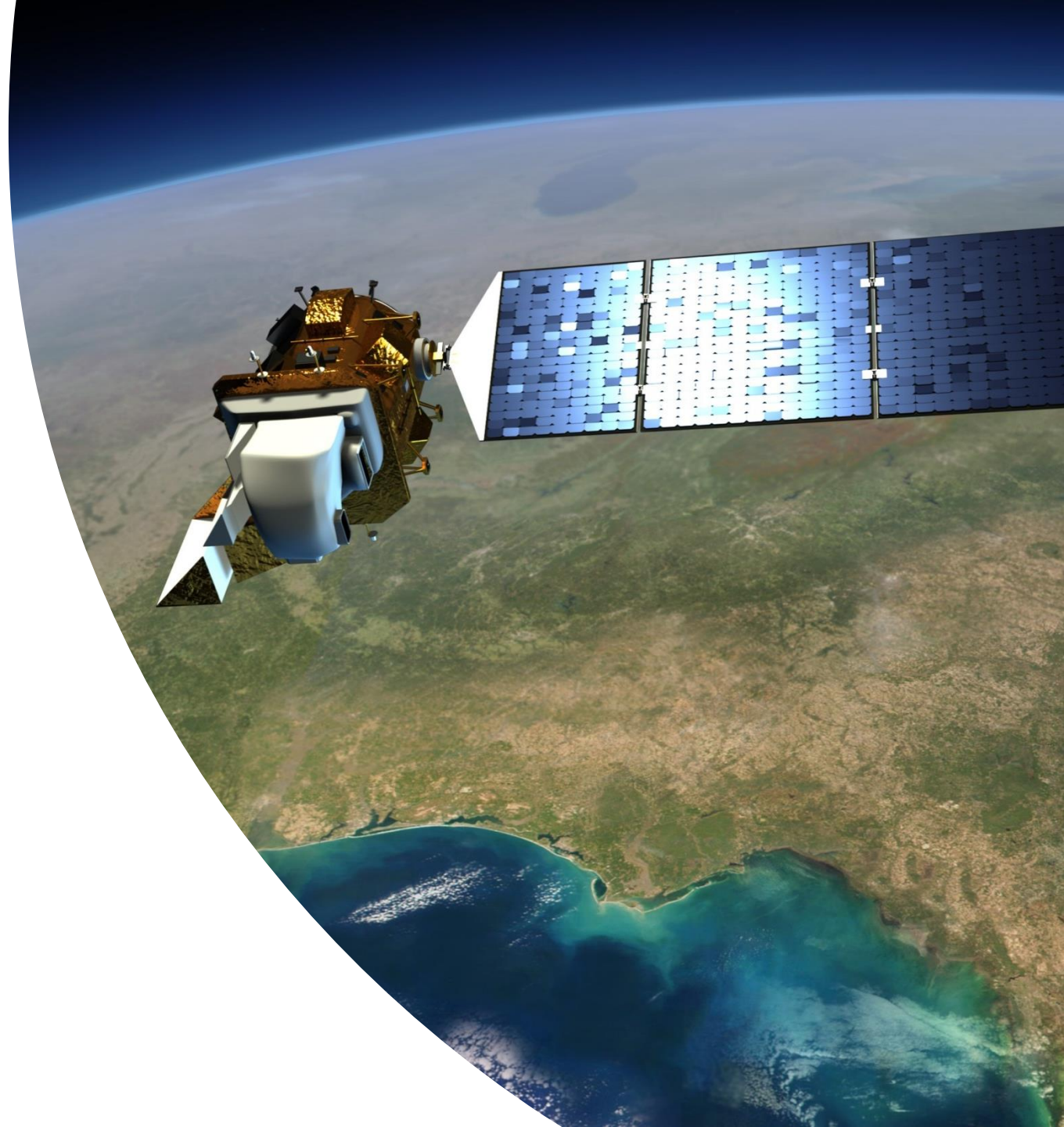

Základy diaľkového prieskumu Zeme – cvičenia

Mgr. Katarína Onačillová, PhD.





Základné info

Prednášky: doc. Mgr. Michal Gallay, PhD.

Cvičenia: Mgr. Katarína Onáčillová, PhD.

Kontakt: katarina.onacillova@upjs.sk

13 týždňov → ± 13 cvičení

Povolená 2x absencia

Dáta ukladané na:

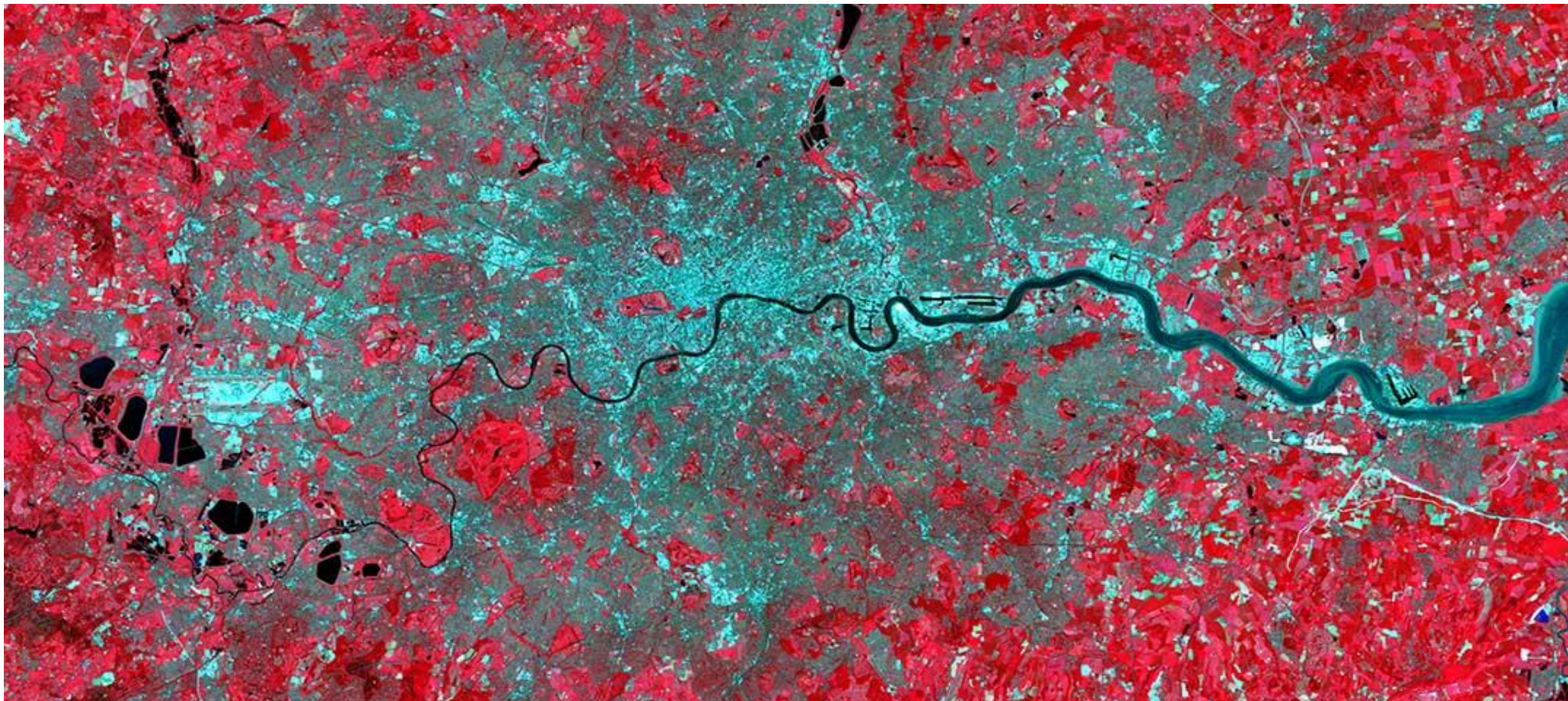
https://uge-share.science.upjs.sk/webshared/Vyucba/Zaklady_DPZ/

+ na MS Teams

Podmienky na absolvovanie predmetu

- 2x písomný test z prednášok (v polovici a na konci semestra)
- 1 semestrálna práca
- skúška v skúškovom období

Na skúšku sa môže prihlásiť študent, ktorý v priebežnej kontrole (2 testy, 1 semestrálna práca) získal hodnotenie minimálne na úrovni známky E (min. 50 bodov zo 100).



“Diaľkový prieskum Zeme je veda, technológia a umenie získavania informácií o objekte, území, jave na základe analýzy dát získaných zariadením, ktoré nie je v priamom fyzickom kontakte s týmto skúmaným objektom, územím alebo javom”

Lillesand et al. (2007)

A satellite in orbit over Earth, with a colorful data visualization overlay on the ground below. The satellite is a gold-colored rectangular box with two large black solar panel arrays extending from its side. Below the satellite, a wide, colorful strip of data visualization is shown, featuring a rainbow spectrum of colors (red, orange, yellow, green, blue) overlaid on a topographic map of the Earth's surface. The background shows the curvature of the Earth with blue oceans, white clouds, and brown/green landmasses.

Cv. 1. Zdroje DPZ údajov na webe a interpretácia metadát

Zdroje DPZ dát

Earth Explorer (USGS)

<https://earthexplorer.usgs.gov/>

Sentinel (ESA)

<https://sentinels.copernicus.eu/web/sentinel/home>

WorldDem (Airbus Defence & Space)

<http://www.intelligence-airbusds.com/worlddem/>

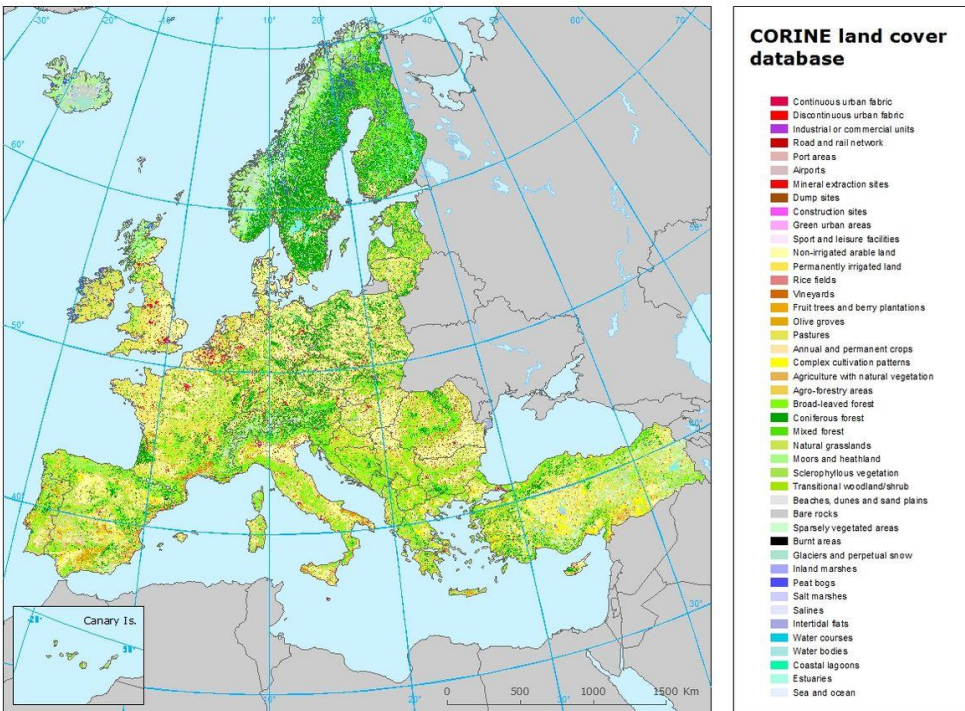
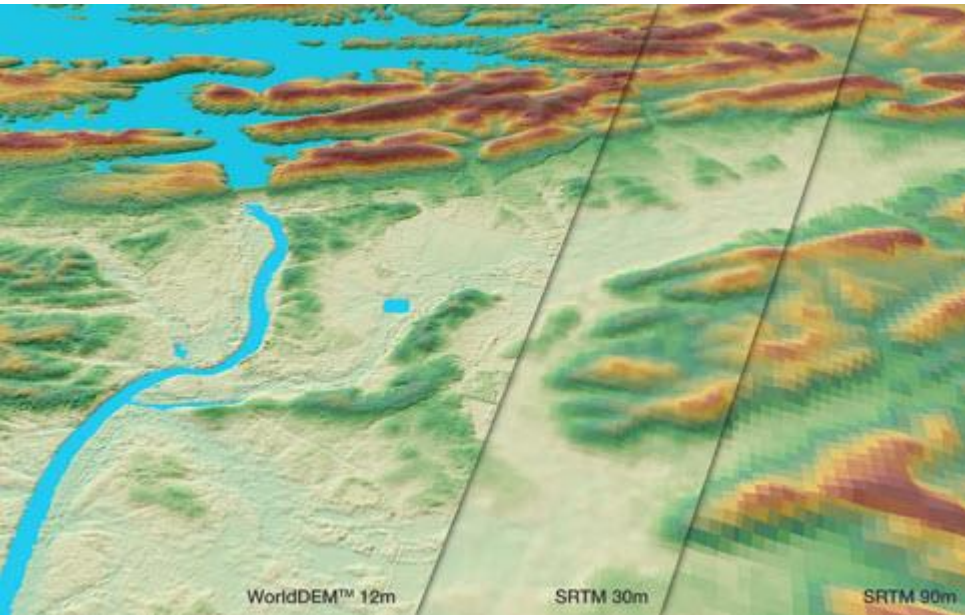
Corine Land Cover (Copernicus)

<https://www.eea.europa.eu/publications/COR0-landcover>

Urban Atlas

<http://land.copernicus.eu/local/urban-atlas>

Google Earth, Google Maps, súkromné spoločnosti...



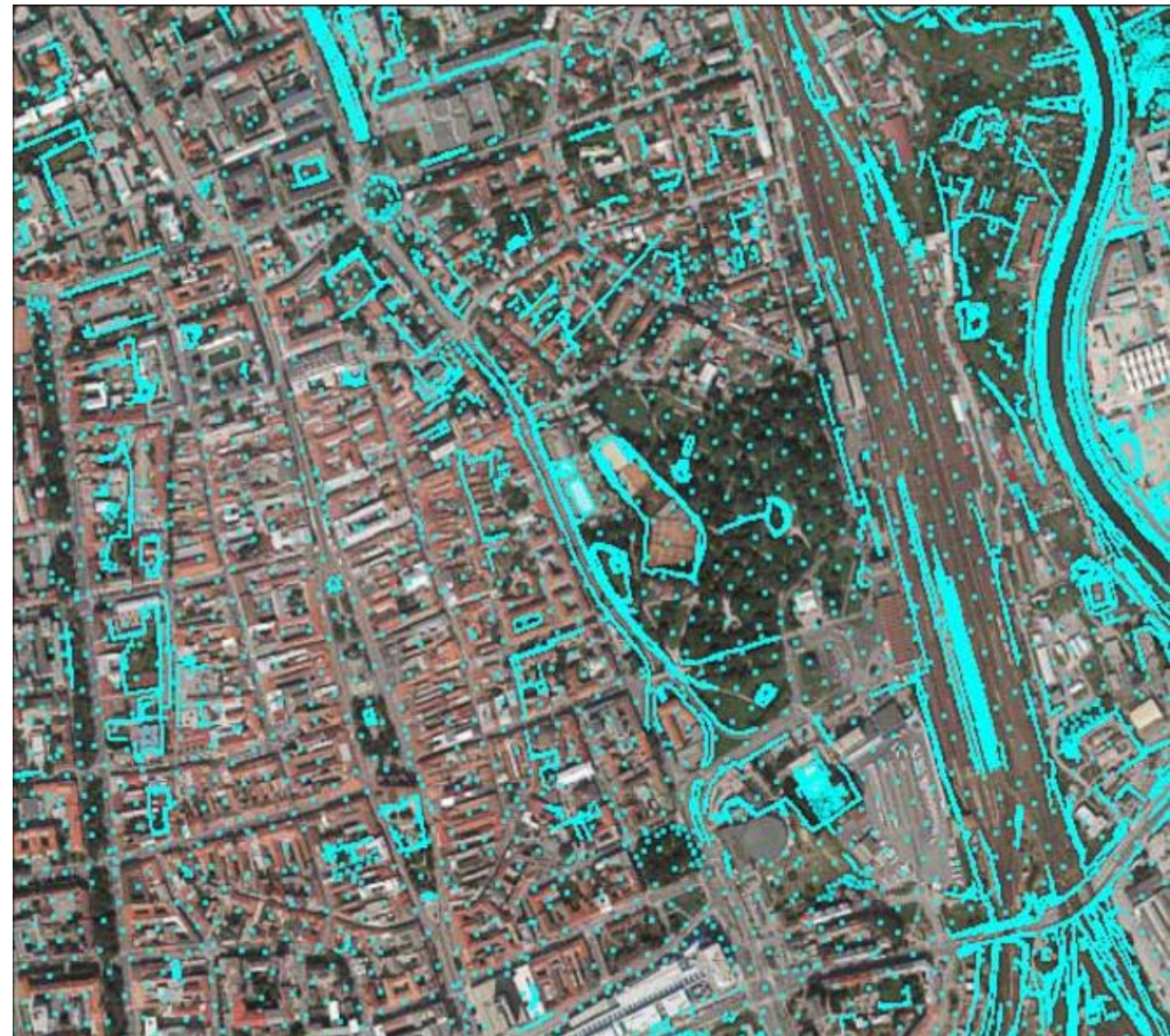
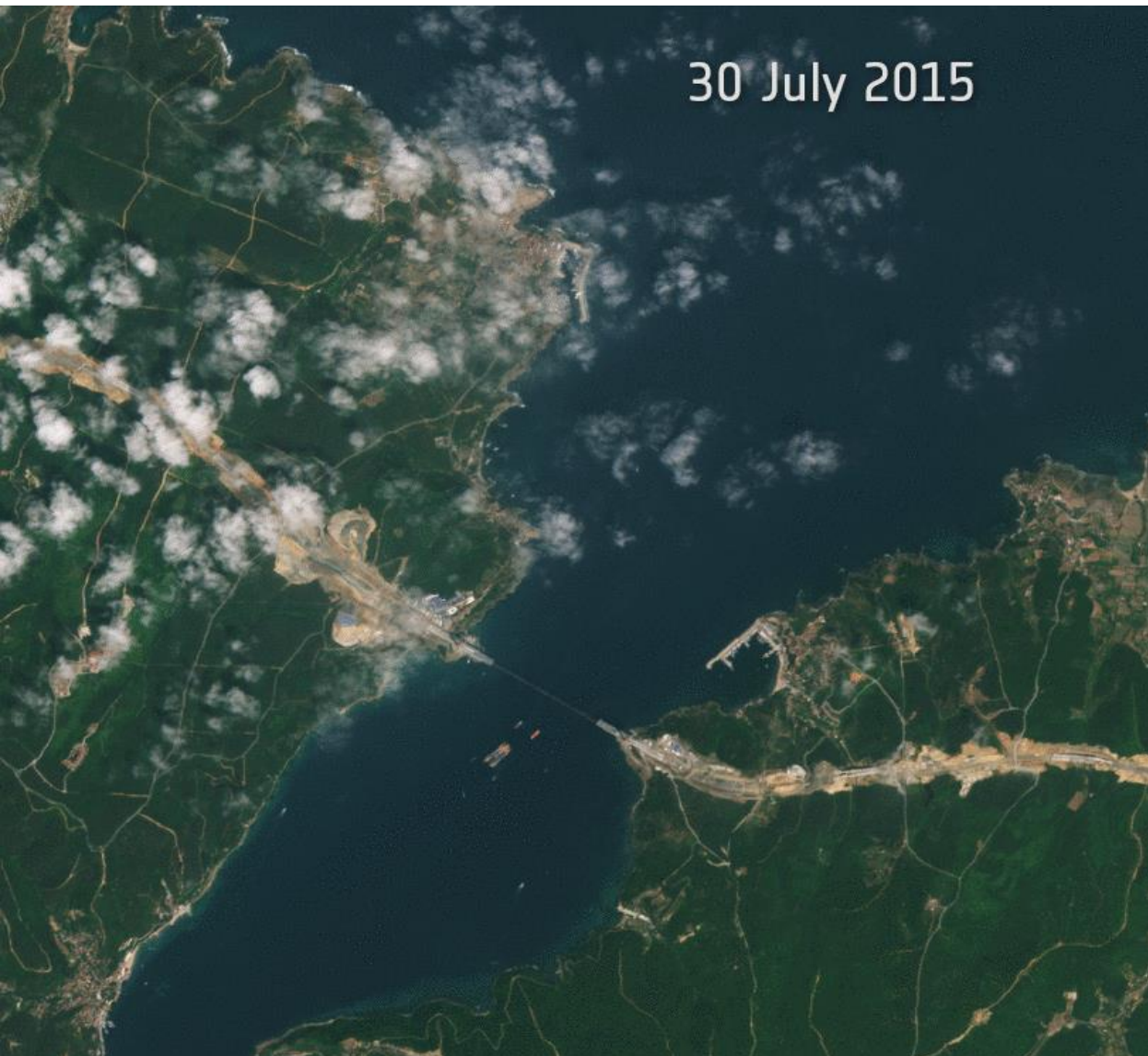
ZMENY V KRAJINE



Rozdiel v zalesnení oblasti Malužiná (Nízke Tatry) medzi rokmi 2006 a 2016.

Zdroj: Google Earth

ÚZEMNÉ PLÁNOVANIE



17 scén zo satelitu Sentinel-2A ukazuje ročný pokrok vo výstavbe 3. Bosporského mostu v Istanbulu, Turecku.

Zdoj: ESA

POĽNOHOSPODÁRSTVO

*Využitie GIS, komplexných nástrojov
pre analýzu, senzorov*



Informácia v reálnom čase



Delenie polí na zóny



ŽIVELNÉ POHROMY- požiare



14 August
2017

Animácia ukazuje požiar a jeho následky – zdevastovanú oblasť 35 km SV od Atén v Grécku.

Zdroj: ESA

ŽIVELNÉ POHROMY- záplavy



17-02-2017

Záplavy v Indonézii.

Zdroj: ESA

1

Earth Explorer
– registrácia a stiahnutie datasetu

1.1 Registrácia na web stránke Earth Explorer <http://earthexplorer.usgs.gov/> od Geologickej služby Spojených štátov (USGS) a prihlásenie sa.

The screenshot displays the Earth Explorer website interface. At the top, the USGS logo is visible with the tagline "science for a changing world". The page title is "EarthExplorer". In the top right corner, there are links for "USGS Home", "Contact USGS", and "Search USGS". A "Page Expires In 1:59:18" timer is also present. The main navigation bar includes "Home", "1 New System Message", "Login", "Register" (highlighted with a red box and a red number 1), "RSS", "Feedback", and "Help".

The "Search Criteria" section is active, showing a "Search Criteria Summary (Show)" and a "Clear Criteria" button. The search area is divided into several sections:

- 1. Enter Search Criteria**: Instructions to narrow the search area by typing an address, coordinates, or using map tools. A "help documentation" link is provided.
- Address/Place**: A text input field with "Show" and "Clear" buttons.
- Coordinates**: Includes "Predefined Area", "Shapefile", and "KML" options. A "Degree/Minute/Second" and "Decimal" format selector is present. A message states "No coordinates selected." with "Use Map", "Add Coordinate", and "Clear Coordinates" buttons.
- Date Range**: Includes "Result Options" and a "Date Range" selector. The search range is set from "mm/dd/yyyy" to "mm/dd/yyyy" with calendar icons. The search months are set to "(all)".

The main map area shows a satellite view of Europe and surrounding regions. The map is titled "Mapa" and "Satelitné". The current coordinates are displayed as "(59° 42' 43" N, 120° 56' 15" E)". There are "Options" and "Overlays" buttons in the top right of the map area.

2

User Registration

User Credentials

Contact Demographic

Contact Information

Complete Registration

Registration and login credentials are required to access all system features and download data from USGS EROS web services. To ensure privacy and security, ERS uses Hypertext Transfer Protocol with Secure Sockets Layer (HTTPS) to encrypt user authentication.

To register, please create a username and password. The information gathered from the registration process is not distributed to other organizations and is only used to determine trends in data usage. Review [USGS Privacy Policies](#).

The Cancel button can be used to exit the registration process at any time and information entered will be lost.

Username

New Password

Confirm New Password



Type the text

[Privacy & Terms](#)

Continue

Username Requirements

- Must be between 4 and 30 characters
- May contain alphabetic and numeric characters
- May only contain the following special characters
 - period "."
 - at sign "@"
 - underscore "_"
 - dash "-"

Password Requirements

- Must be between 8 and 16 characters
- Must contain at least one alphabetic character
- Must contain at least one numeric character
- May only contain the following special characters
 - comma ","
 - hyphen "-"
 - period "."
 - pipe "|"
 - pound "#"
 - underscore "_"



EarthExplorer

Search Criteria Data Sets Additional Criteria Results

Search Criteria Summary (Show) **3** Clear Criteria

1. Enter Search Criteria

To narrow your search area: type in an address or place name, enter coordinates or click the map to define your search area (for advanced map tools, view the [help documentation](#)), and/or choose a date range.

Address/Place Path/Row Feature Circle

Show Clear

Coordinates Predefined Area Shapefile KML

Degree/Minute/Second Decimal

i No coordinates selected.

Use Map Add Coordinate Clear Coordinates

Date Range Result Options

Search from: mm/dd/yyyy to: mm/dd/yyyy

Search months: (all) ▼



1.2 Vyhraničenie záujmovej oblasti a zadanie požadovaného obdobia zhotovenia snímky.

Search Criteria Summary (Show) Clear Criteria

Mapa **Sateltné** (47° 45' 41" N, 024° 42' 29" E) Options Overlays

**1.) Vpísanie adresy/miesta...
...alebo súradníc...**

...alebo priblíženie sa a klik na Use Map

2.) Voľba dátumového intervalu alebo mesiacov

3.) Klik na Data Sets

1. Enter Search Criteria
To narrow your search area: type in an address or place name, enter coordinates or click the map to define your search area (for advanced map tools, view the [help documentation](#)), and/or choose a date range.

Address/Place Path/Row Feature Circle

Show Clear

Coordinates Predefined Area Shapefile KML

Degree/Minute/Second Decimal

1. Lat: 48° 54' 42" N, Lon: 020° 15' 21" E	🗑️ ❌
2. Lat: 48° 33' 43" N, Lon: 020° 29' 12" E	🗑️ ❌
3. Lat: 48° 36' 40" N, Lon: 021° 31' 59" E	🗑️ ❌
4. Lat: 48° 57' 30" N, Lon: 021° 35' 56" E	🗑️ ❌

Use Map Add Coordinate Clear Coordinates

Date Range Result Options

Search from: 08/01/2016 to: 08/30/2016

Search months: (all)

Data Sets » Additional Criteria » Results »

1.3 Výber datasetu (datasetov) (napr. Landsat 8 OLI/TIRS, Landsat 7 ETM+, a pod.)

Search Criteria **Data Sets** Additional Criteria Results

2. Select Your Data Set(s)

Check the boxes for the data set(s) you want to search. When done selecting data set(s), click the *Additional Criteria* or *Results* buttons below. Click the plus sign next to the category name to show a list of data sets.

Use Data Set Prefilter [\(What's This?\)](#)

Data Set Search:

- Global Fiducials
- Global Land Survey
- HCMM
- ISERV
- Land Cover
- Landsat Archive**
 - Collection 1 Level-1
 - Pre-Collection Level-1
 - L8 OLI/TIRS
 - L8 OLI/TIRS Pre-WRS-2
 - L7 ETM+ SLC-off (2003-present)
 - L7 ETM+ SLC-on (1999-2003)
 - L4-5 TM
 - L1-5 MSS
 - Collection 1 Higher-Level (On-Demand)
 - Landsat Legacy
 - NASA LPDAAC Collections

Clear All Selected **Additional Criteria »** Results »

Search Criteria Summary (Show) **Clear Criteria**

Mapa **Sateltné** (47° 37' 42" N, 023° 32' 37" E) Options Overlays

Map showing a satellite view of Central Europe, with a red rectangular selection box highlighting the area around Košice, Slovakia. The map includes labels for various cities and countries: Česko (Czechia), Slovensko (Slovakia), and Magyarország (Hungary). Major cities like Bratislava, Košice, and Budapest are visible. The selection box is centered on the Košice area, which is highlighted in a reddish-brown color.

1.4 Výber prídavných kritérií

Search Criteria | Data Sets | **Additional Criteria** | Results

3. Additional Criteria (Optional)

If you have more than one data set selected, use the dropdown to select the additional criteria for each data sets.

Data Sets:
L8 OLI/TIRS ▾

Cloud Cover
All
Less than 10%
Less than 20%
Less than 30%
Less than 40% ▾

Výber parametrov (napr. oblačnosť menšia ako 10%)

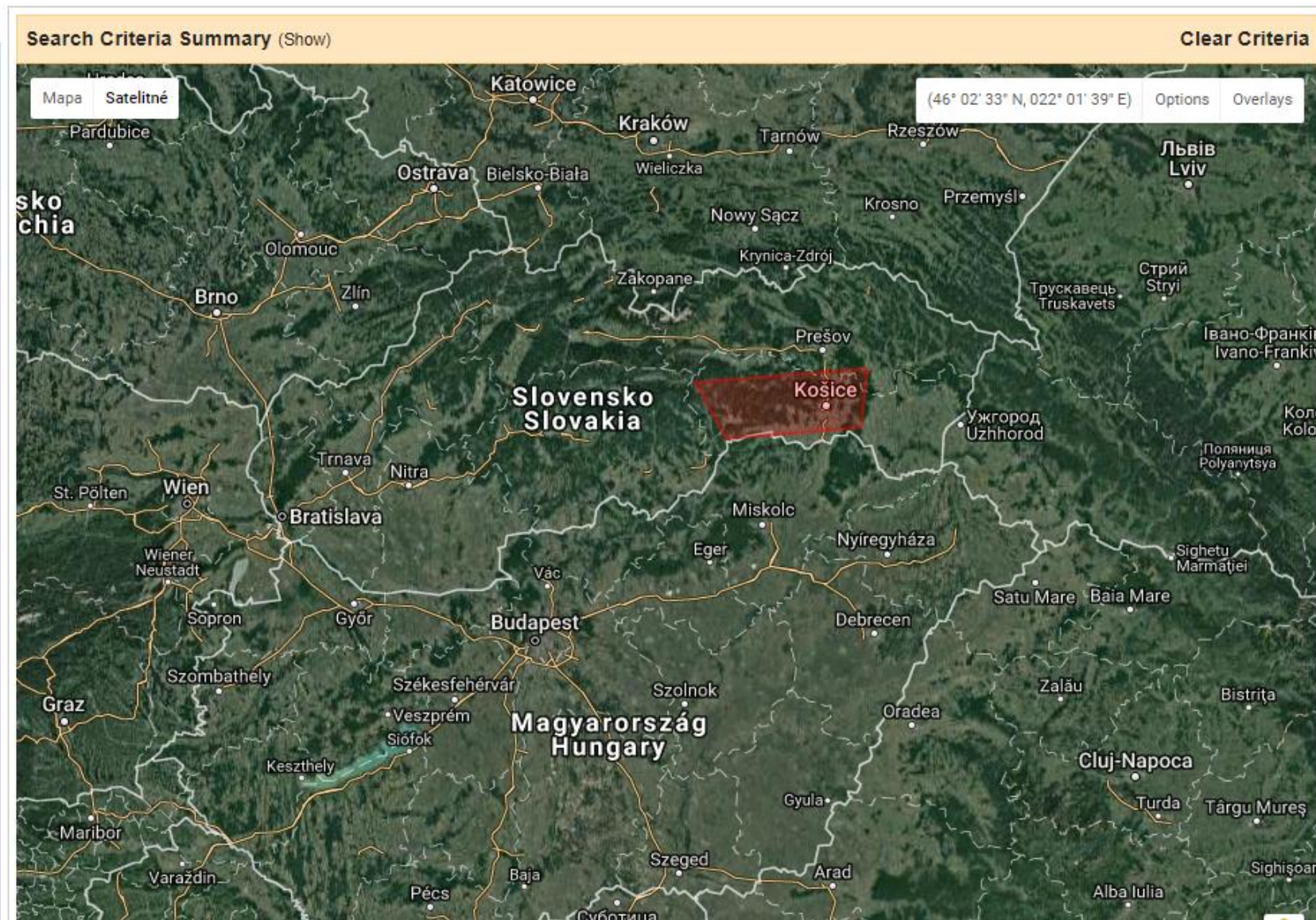
Date L1 Generated (Ex. YYYY/MM/DD)
 to

Day/Night Indicator
All
Day
Night ▾

Nadir/Off Nadir
All
Nadir
Off Nadir ▾

Processing Software Version
All
LPGS_2.5.1
LPGS_2.5.0
LPGS_2.4.0
LPGS_2.3.0 ▾

Clear All Criteria | **Results »**



1.5 Výsledky a výber datasetu na stiahnutie

Search Criteria | Data Sets | Additional Criteria | **Results**

4. Search Results

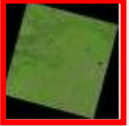
If you selected more than one data set to search, use the dropdown to see the search results for each specific data set.

Show Result Controls

Data Set [Click here to export your results »](#)

L8 OLI/TIRS

« First < Previous 1 Next > Last »
Displaying 1 - 1 of 1 ⓘ

1 

Entity ID:LC81870262016221LGN00
Coordinates:48.86645,20.91212
Acquisition Date:08-AUG-16
Path:187
Row:26

« First < Previous 1 Next > Last »

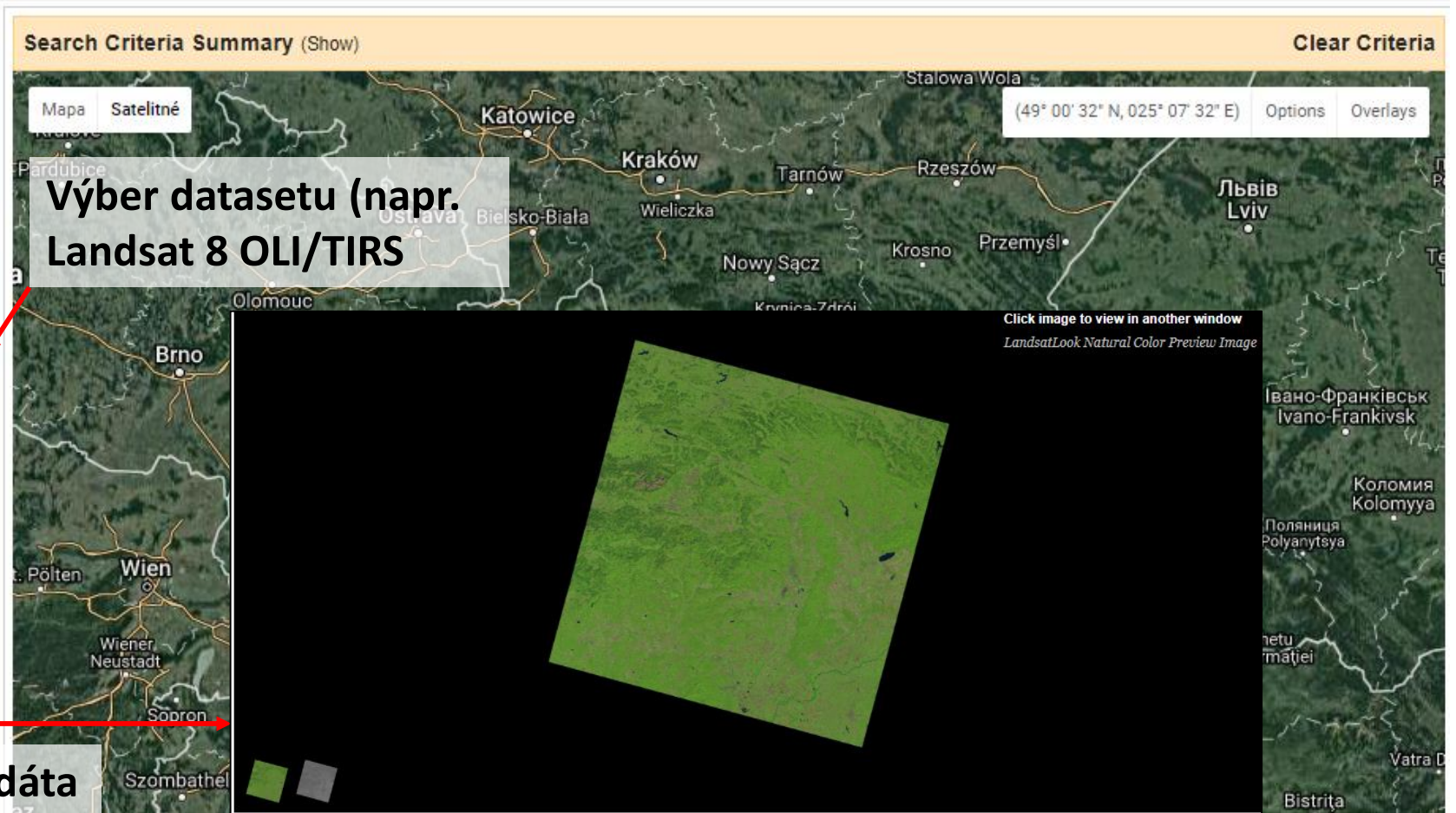
Search Criteria Summary (Show) Clear Criteria

Mapa | Satelitné

(49° 00' 32" N, 025° 07' 32" E) Options Overlays

Výber datasetu (napr. Landsat 8 OLI/TIRS)

Click image to view in another window
LandsatLook.Natural Color Preview Image



2.) Ľavý klik – Náhľad a metadáta

Data Set Attribute	Attribute Value
Landsat Scene Identifier	LC81870262016221LGN00
WRS Path	187
WRS Row	026
Target WRS Path	187
Target WRS Row	026

1.6 Stiahnutie vybraného datasetu (napr. full dataset = Level 1 GeoTIFF Data Product)

4. Search Results

If you selected more than one data set to search, use the dropdown to see the search results for each specific data set.

Show Result Controls


Data Set [Click here to export your results >](#)

L8 OLI/TIRS


« First < Previous 1 ▾ Next > Last »

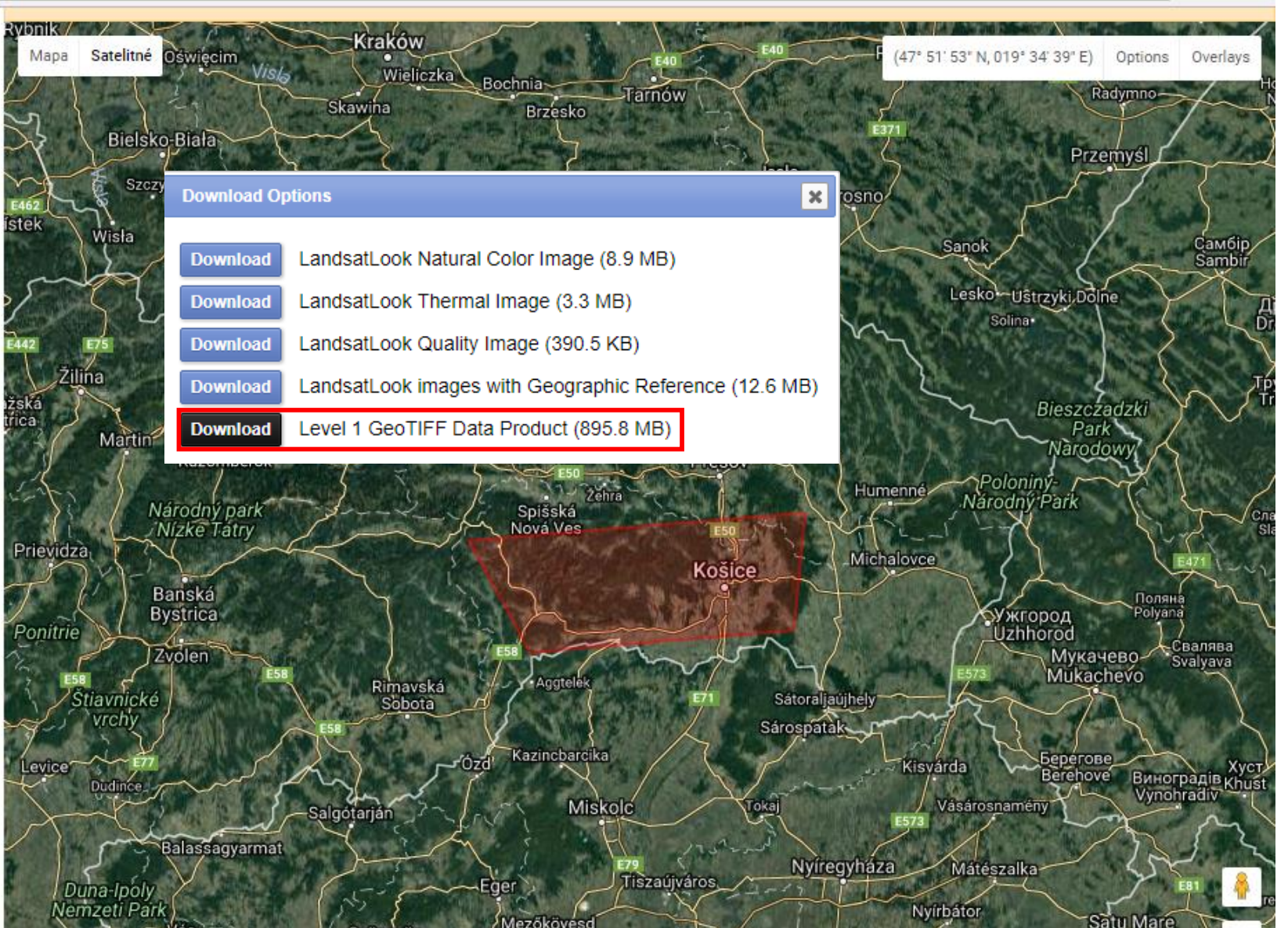
Displaying 1 - 1 of 1 ⓘ

Entity ID:LC81870262016221LGN00
Coordinates:48.86645,20.91212
Acquisition Date:08-AUG-16
Path:187
Row:26



1





Download Options

- Download LandsatLook Natural Color Image (8.9 MB)
- Download LandsatLook Thermal Image (3.3 MB)
- Download LandsatLook Quality Image (390.5 KB)
- Download LandsatLook images with Geographic Reference (12.6 MB)
- Download Level 1 GeoTIFF Data Product (895.8 MB)**

Ľavý klik – Možnosti sťahovania

Úloha – klimatické zmeny a ústup ľadovca

1. Vyhľadanie alebo zoom na “Jökulsárlón” (ľadovcová lagúna, Island)
2. Stiahnutie 2 bezoblačných scén:
 - 1 Súčasný dataset (napr. z roku 2021, kedy snímal Landsat 8)
 - 1 Historický dataset (napr. z roku 1987, kedy snímal Landsat 4-5)

Pozn.:

- *Využitie „Prídavných kritérií“ pre výber scén s malou oblačnosťou*
- *V „Data Sets“ výber družice/satelitu Landsat misie (L8, L4-5) nájdete pod „Landsat – Landsat Collection 1 Level-1“*

3. Rozzipovanie stiahnutého súboru (cez 7zip, TotalCommander...), resp. skopírovanie potrebných .tif súborov do nového priečinka

Address/Place Path/Row Feature Circle

Jökulsárlón

Show Clear

Click on an Address/Place to show the location on the map and add coordinates to the Area of Interest Control.

Num	Address/Place	Latitude	Longitude
1	Jökulsárlón, Island	64.0784	-16.2306

Date Range Result Options

Search from: 08/01/1987 to: 08/31/1990

Search months: August



**Ďakujem za
pozornosť 😊**

Mgr. Katarína Onačillová

