CLIMAAX Toolbox

Na základe stretnutia v Katalánsku:

1. Zistiť čo jednotlivé piloty potrebujú (nie len Heat-Wave)
2. Na základe požiadaviek pripraviť toolbox
3. Toolbox by mal používať primárne verejne dostupné údaje, mal by byť prispôsobený na doplnenie lokálnymi údajmi
4. Toolbox sa otestuje s pilotmi
5. Na základe spätnej väzby od pilotou bude toolbox upravovaný
6. Vznik finálnej verzie

Heat-wave Žilina:

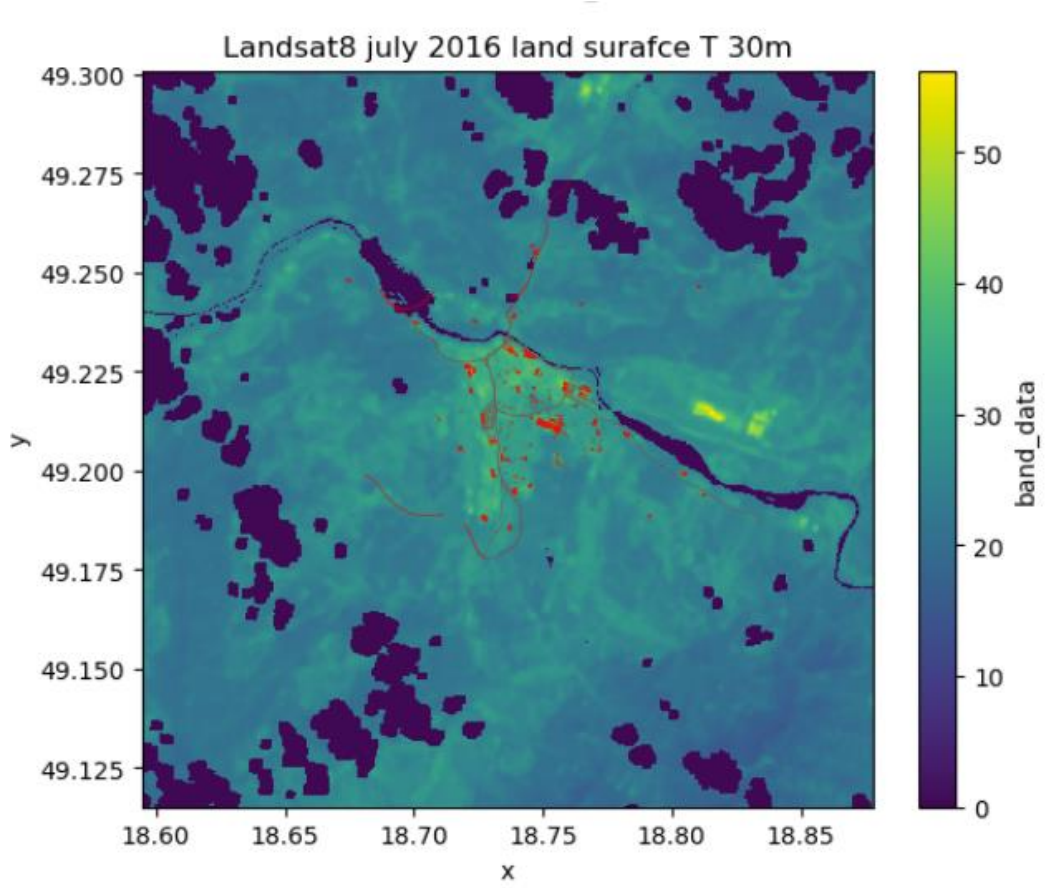
Otázky, ktoré už vieme zodpovedať:

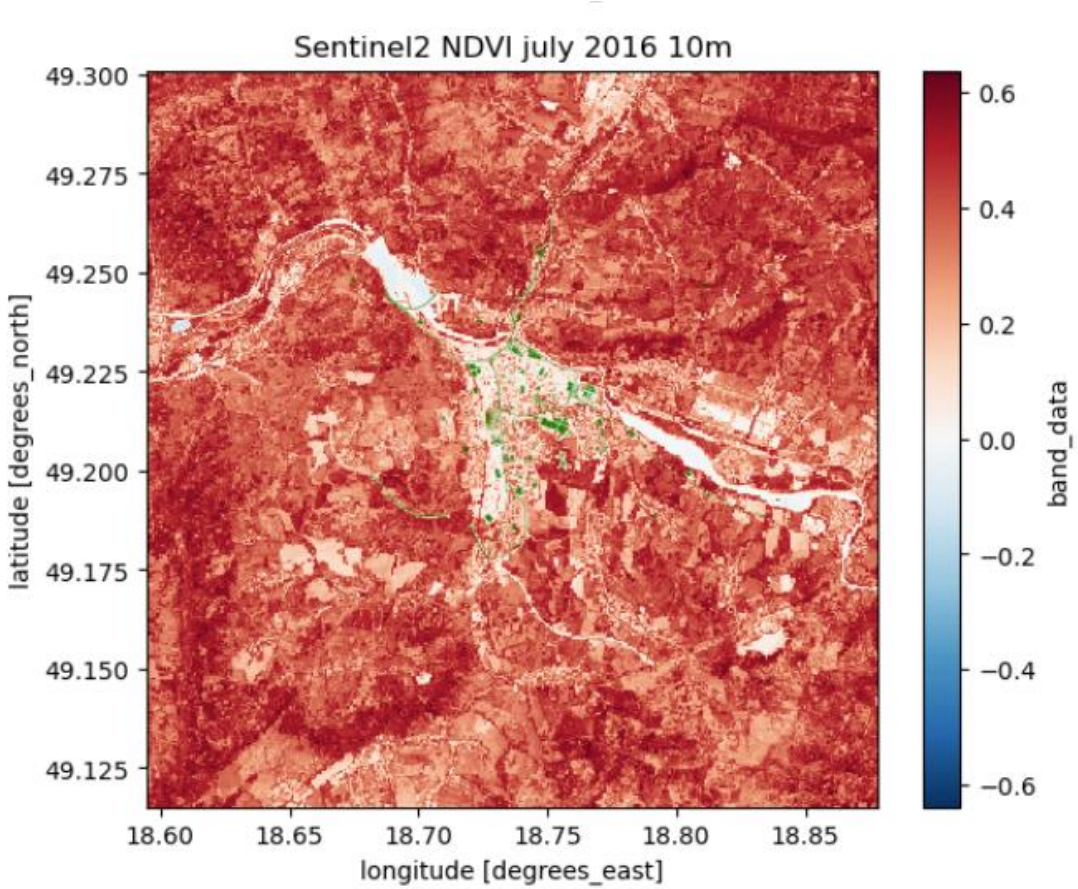
- **Kde môžeme očakávať riziko?** Pozorované údaje z minulosti o teplote zemského povrchu[L8 LST 30m zadarmo].
- **Ako často?** Klimatické scenáre [Euro-Cordex 11km denné údaje, Euro-Corde Heat-wave (len pre vybrané mestá Žilina nie) cez ECMWF API, Chelsa 1km zadarmo]
- **Ako zabrániť?** Dáta pre adaptáciu na zmenu klímy [Sentinel2 10m zadarmo], Vegetačné charakteristiky NDVI, NDBI, NDDI, NDWI lokalizácia miest bez vegetačného krytu.
- **Lokálne údaje** (kritická infraštruktúra, dáta zo senzorov...)

Dáta:

- **Euro-Cordex** – scenáre – teplota vzduchu v 2m pre roky 2026-2100, 11km gride v dennom časovom kroku, rozlíšenie nie je vhodné pre mestá.
- **Chelsa** scenáre downscalované (1km grid; mesačné hodnoty, denné už sú témou jednaní) v súčastnosti sa pracuje na downscalingu
- **Sentinel2-** dáta o hustote a stave vegetácie (10-20m grid;časový krok 5-10 dní) (NDVI, NDWI, LAI, NDDI, NDBI) ###
- **Landsat8-** teplota zemského povrchu 2016-2020 (15-30m grid; časový krok 8-16 dní) ###

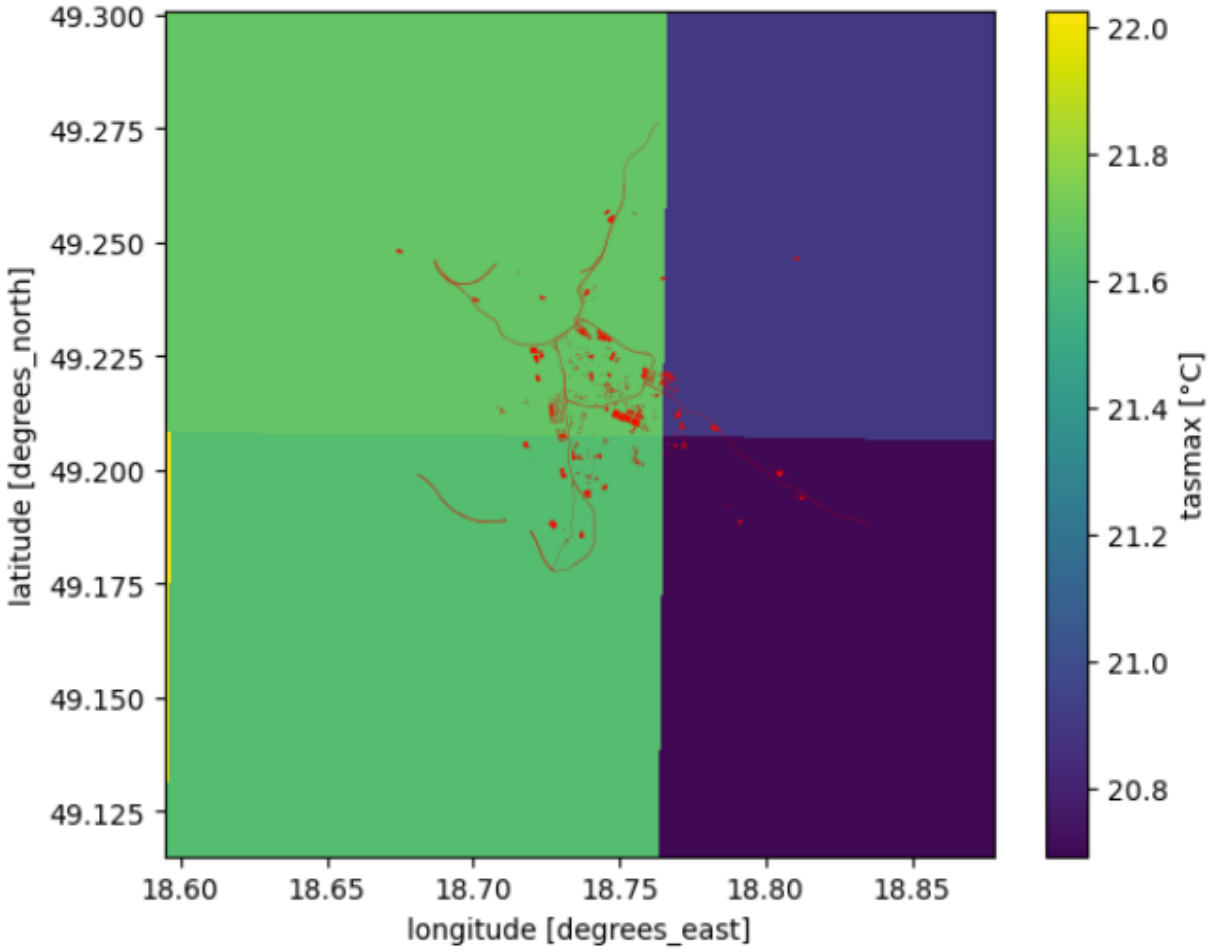
Pozorované údaje:



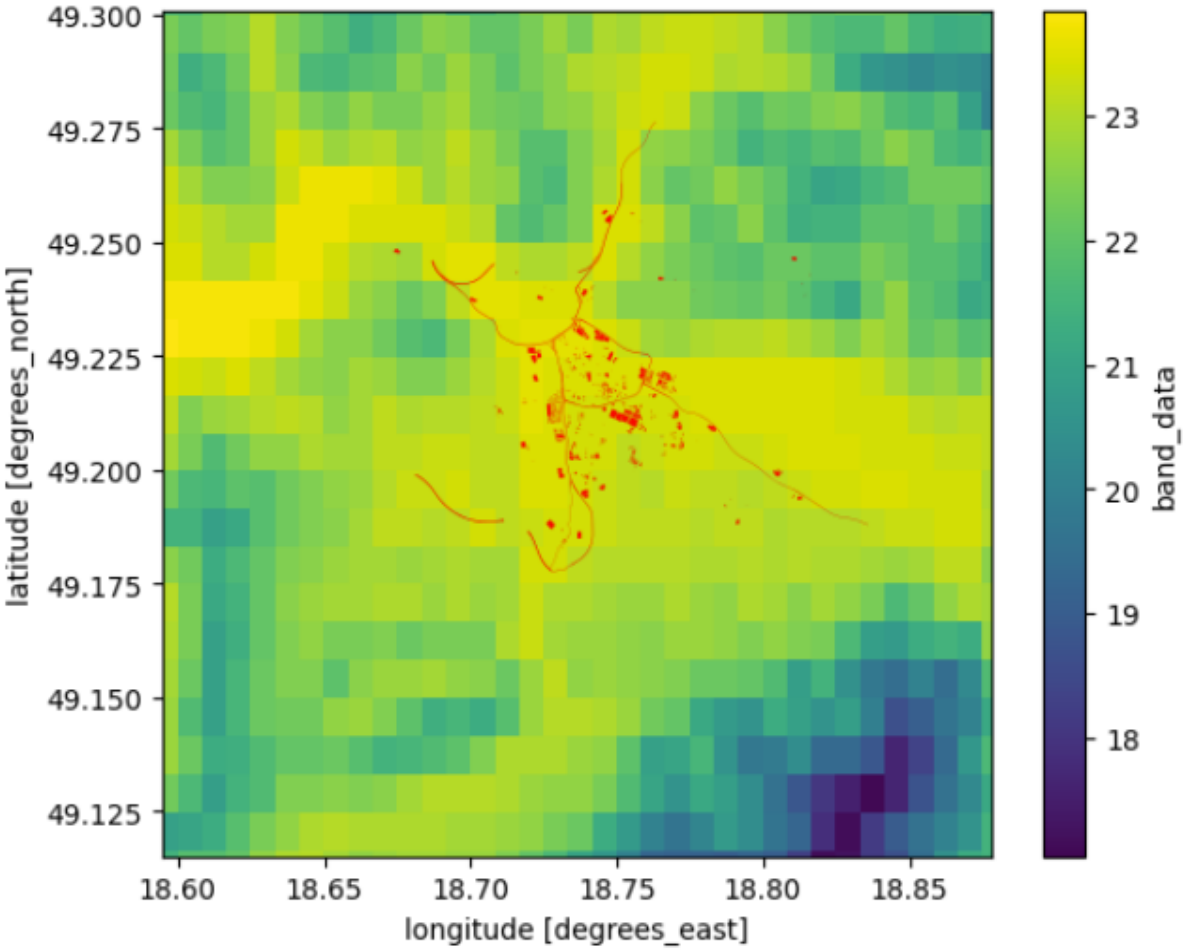


Klimatické Scenáre:

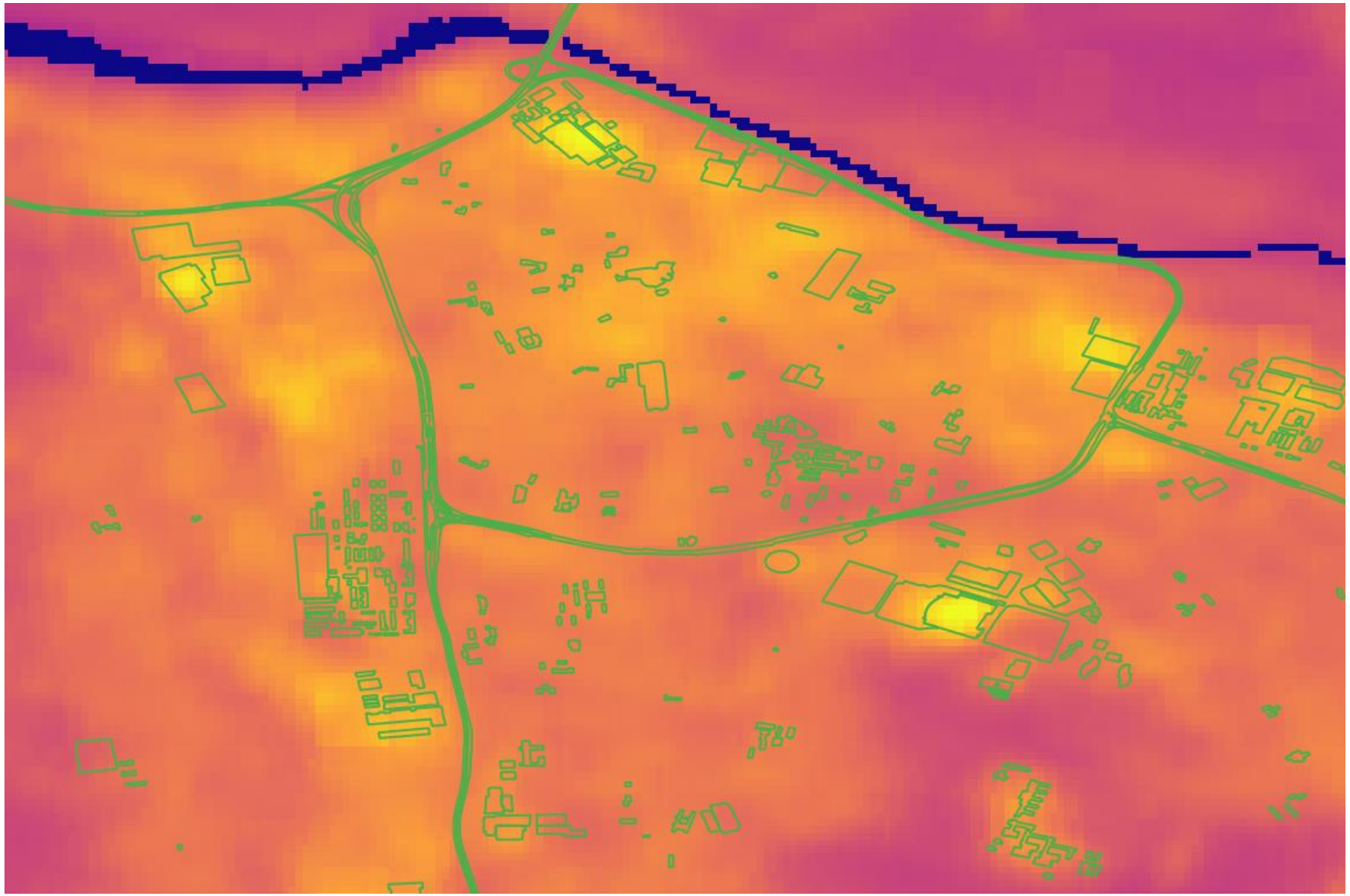
Euro-Cordex July avg max daily air T 1km



Chelsa July avg max daily air T 1km

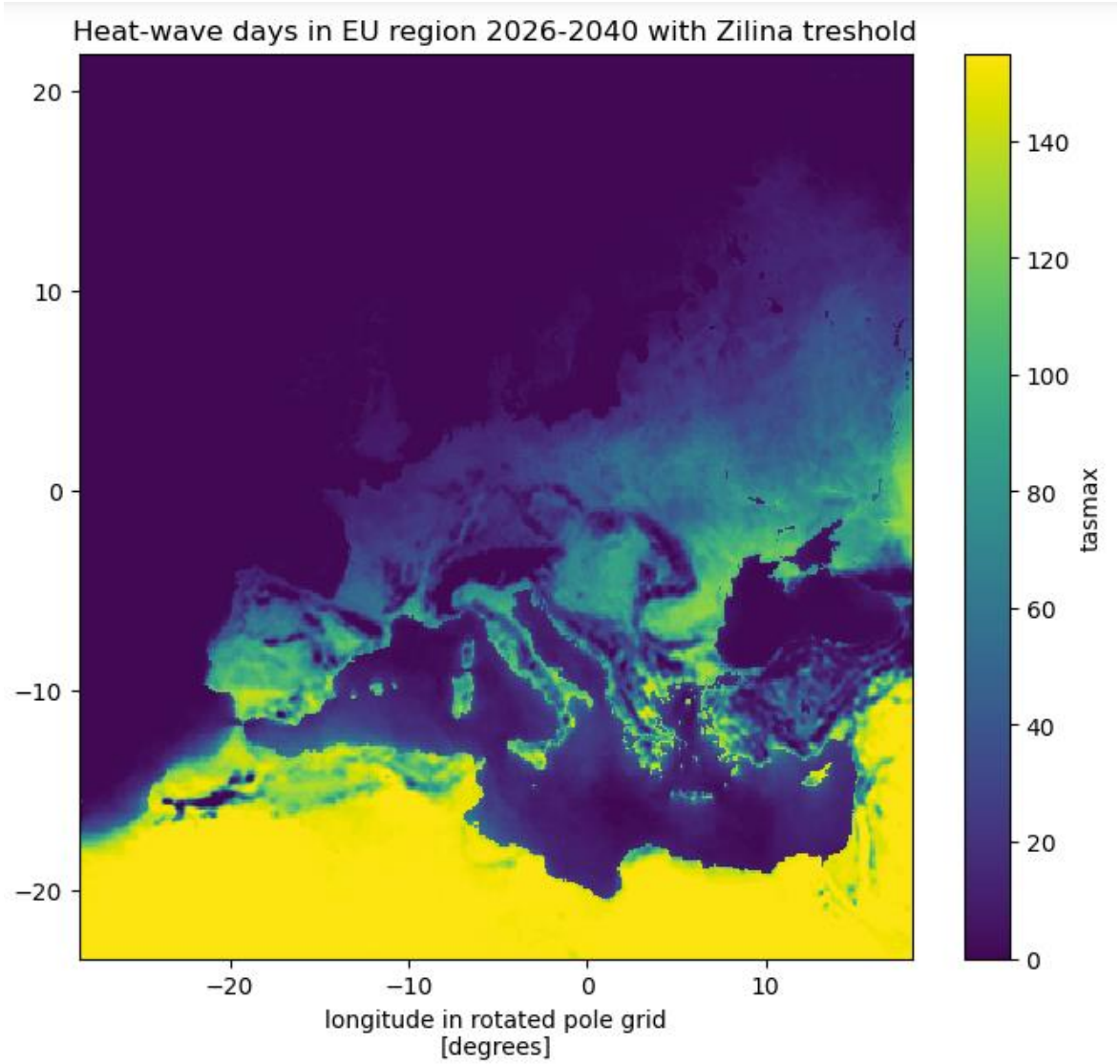


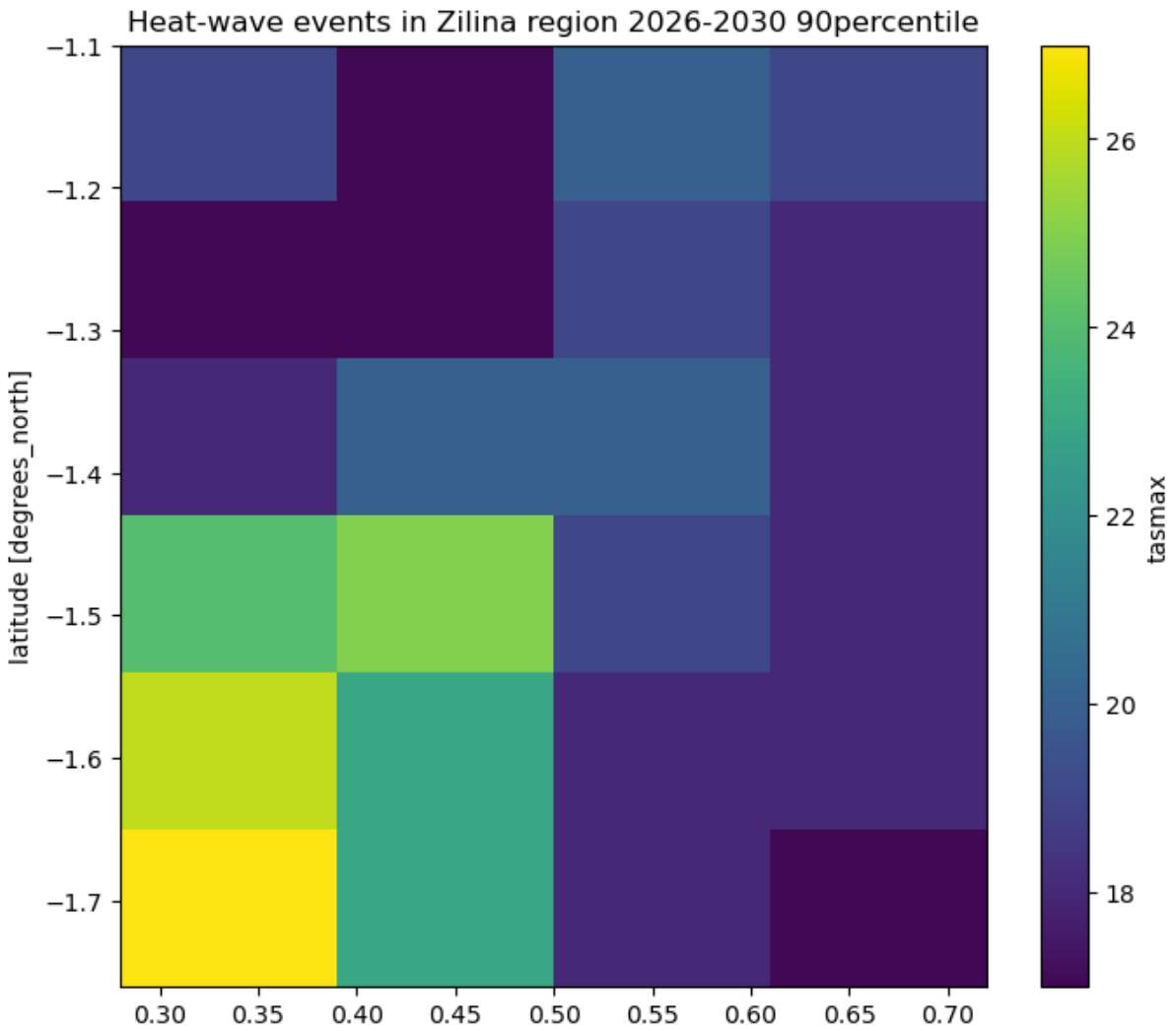
Identifikácia miest, ktoré sú prehrievané LS8:



Výskyt Vĺn horúčav (Heat-wave):

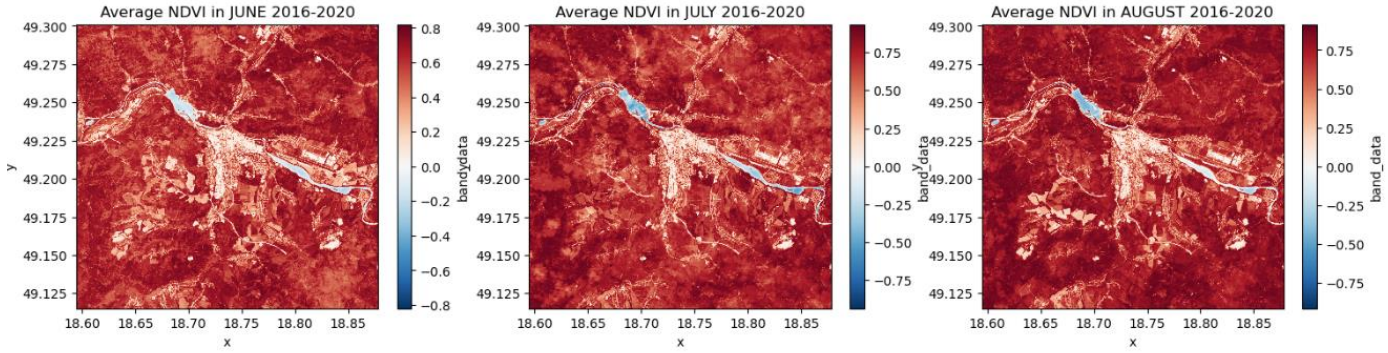
- Peseta IV – aspoň tri posebe idúce dni s maximálnou dennou teplotou vyššou akou 90 percentil

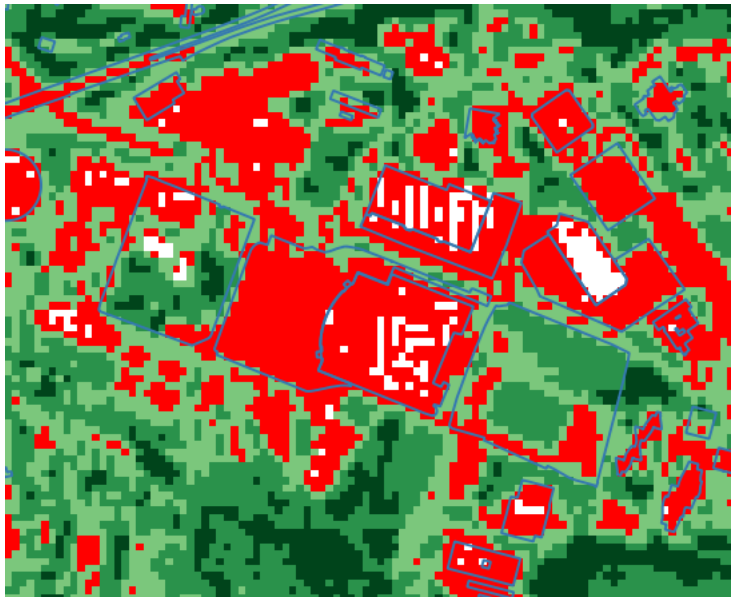




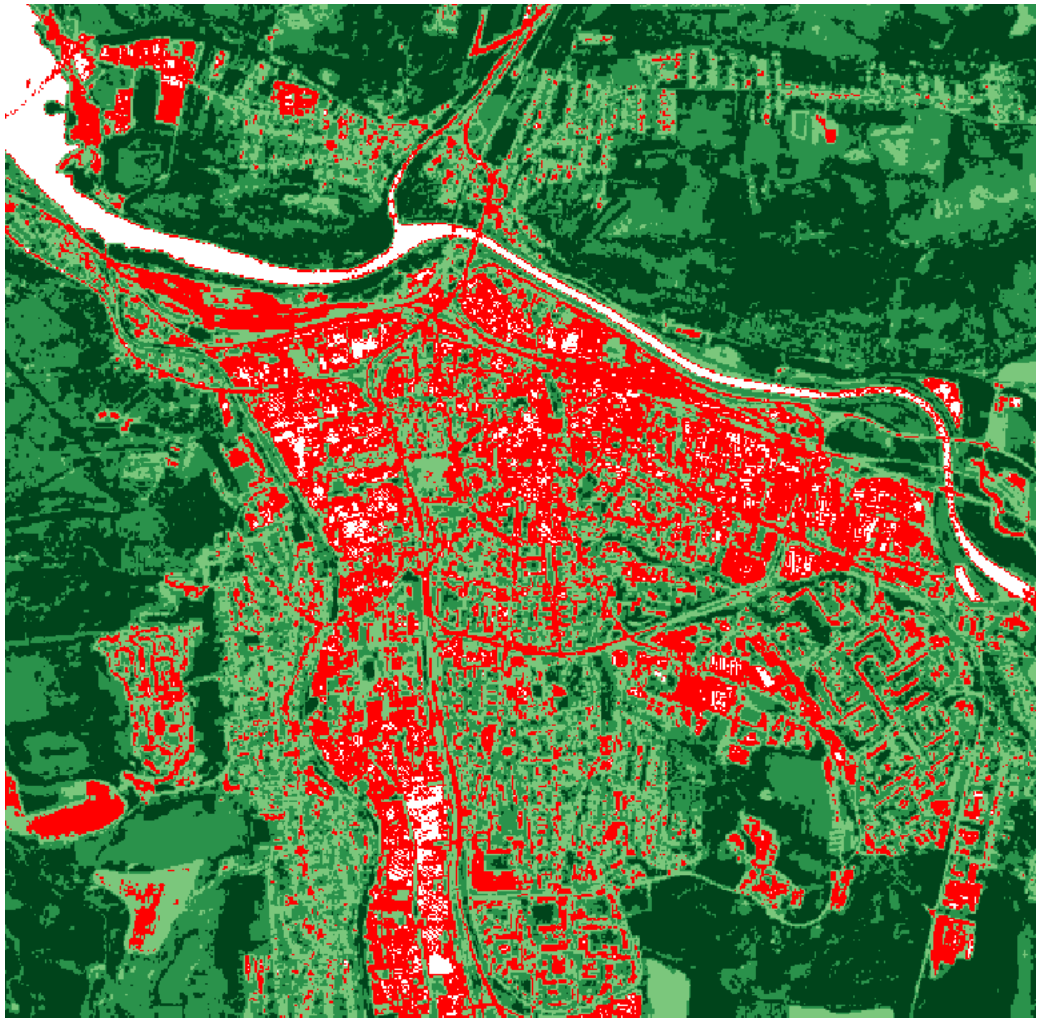
Opatrenia:

Opatrenia:





No Data (Water, steer)
Buildings and bare surface
Grass
Shrubs
Dense Vegetation



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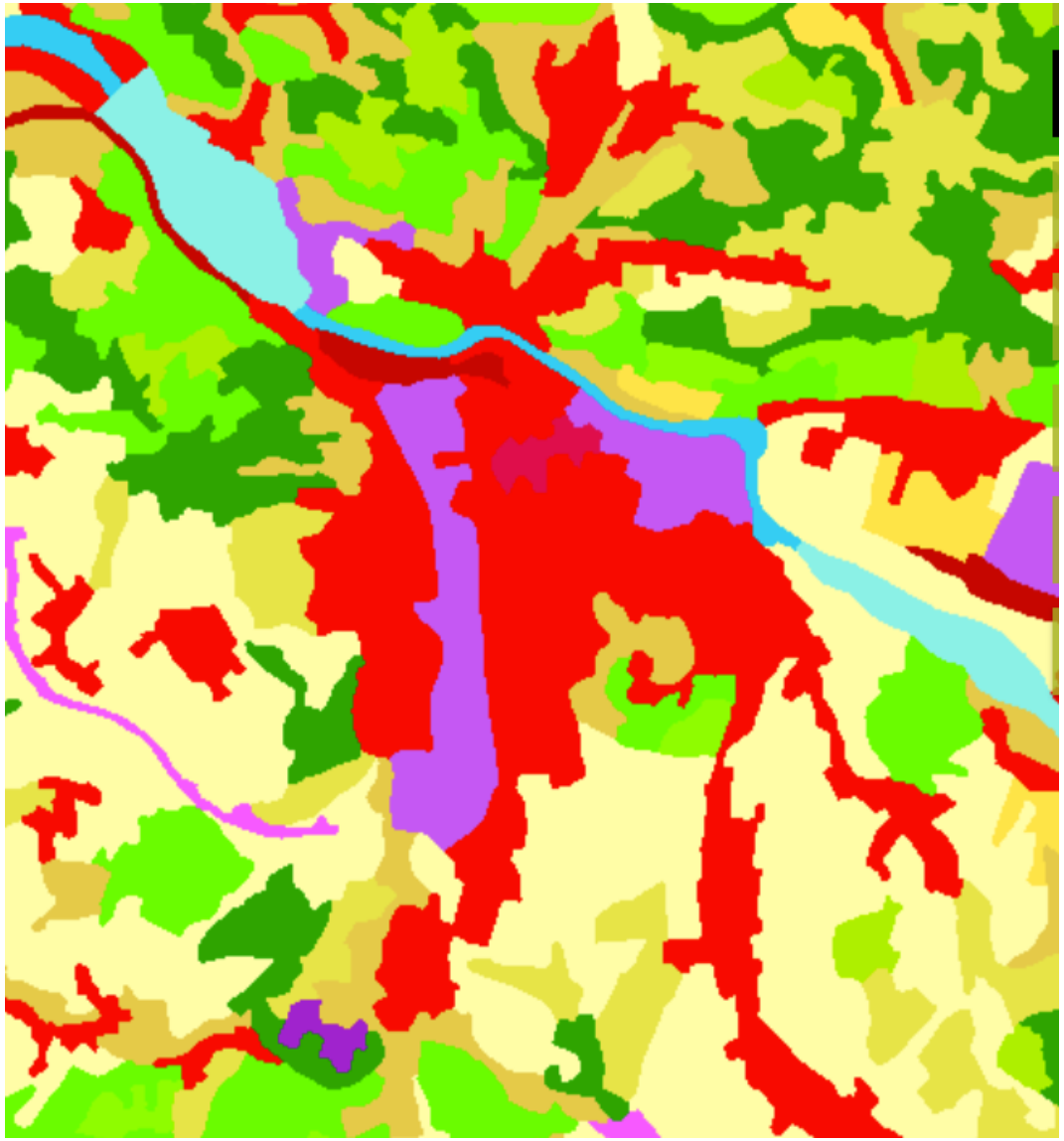

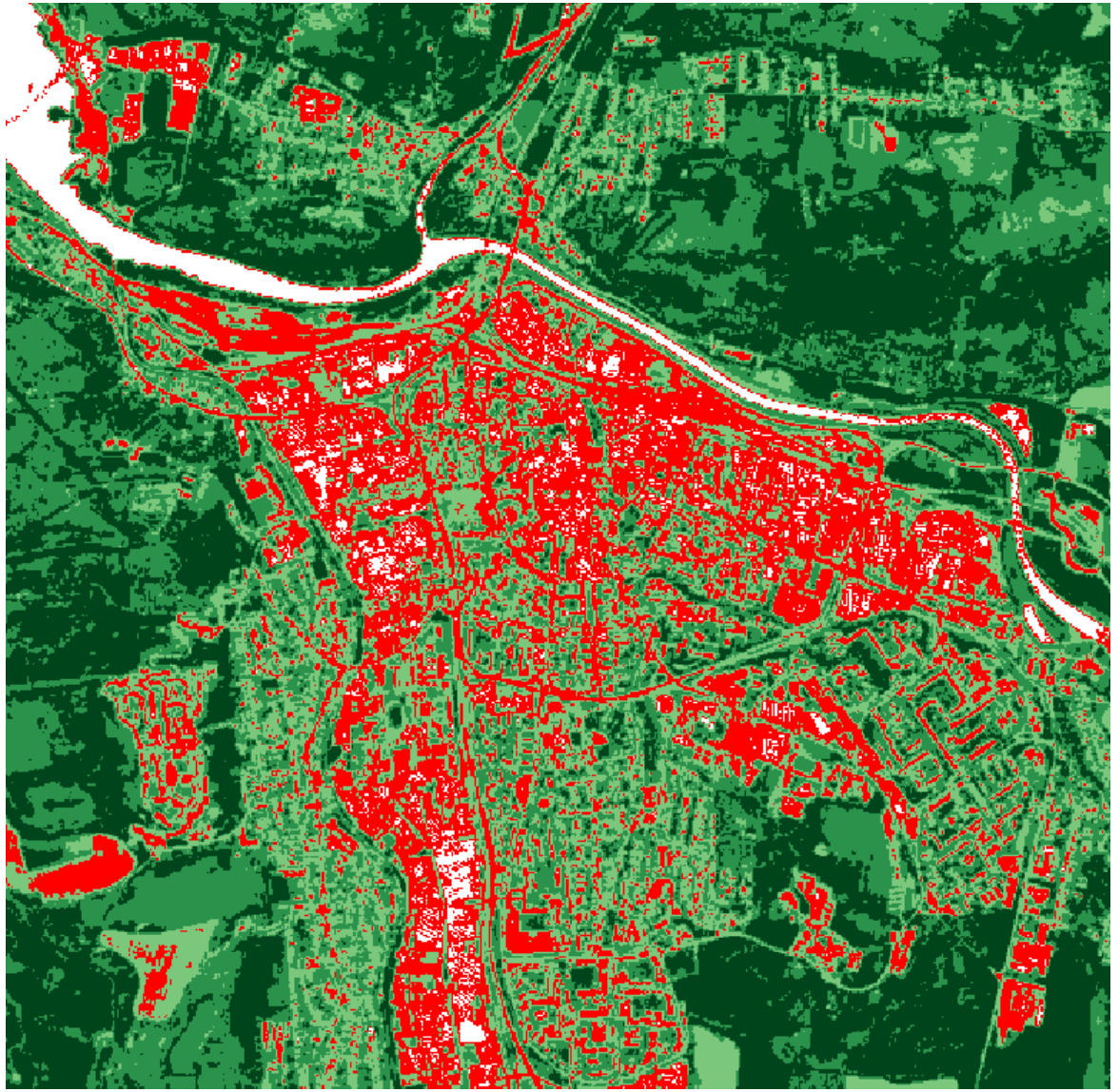

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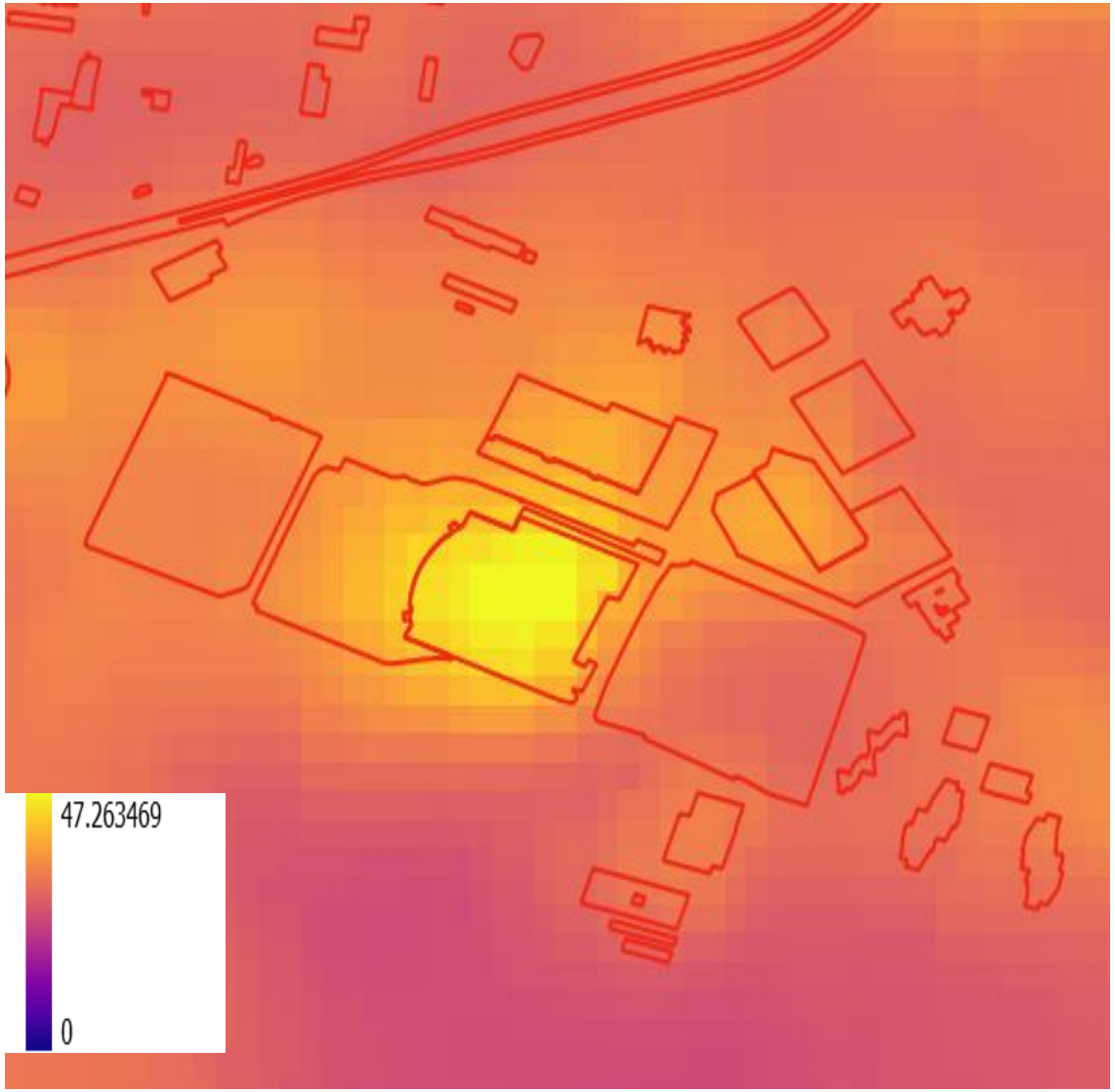
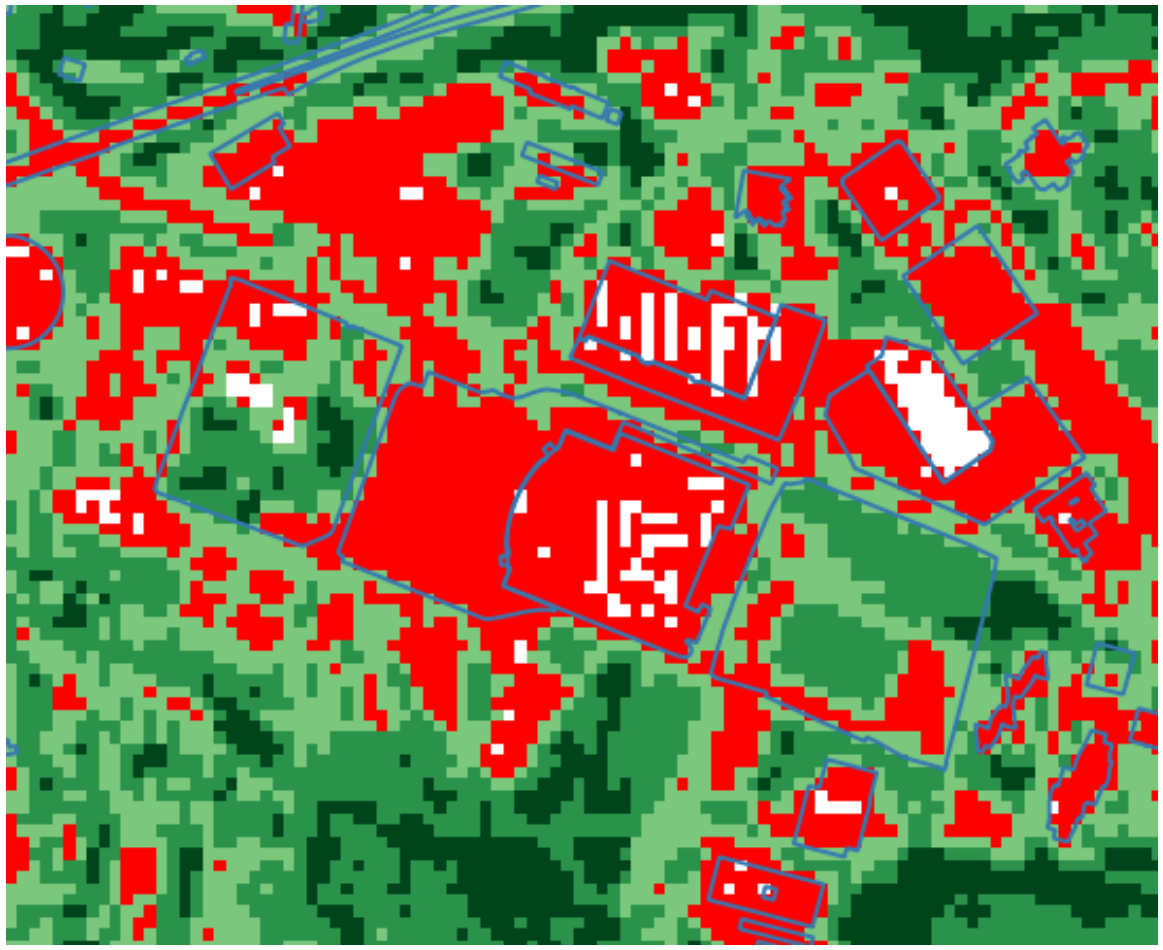

47.263469
0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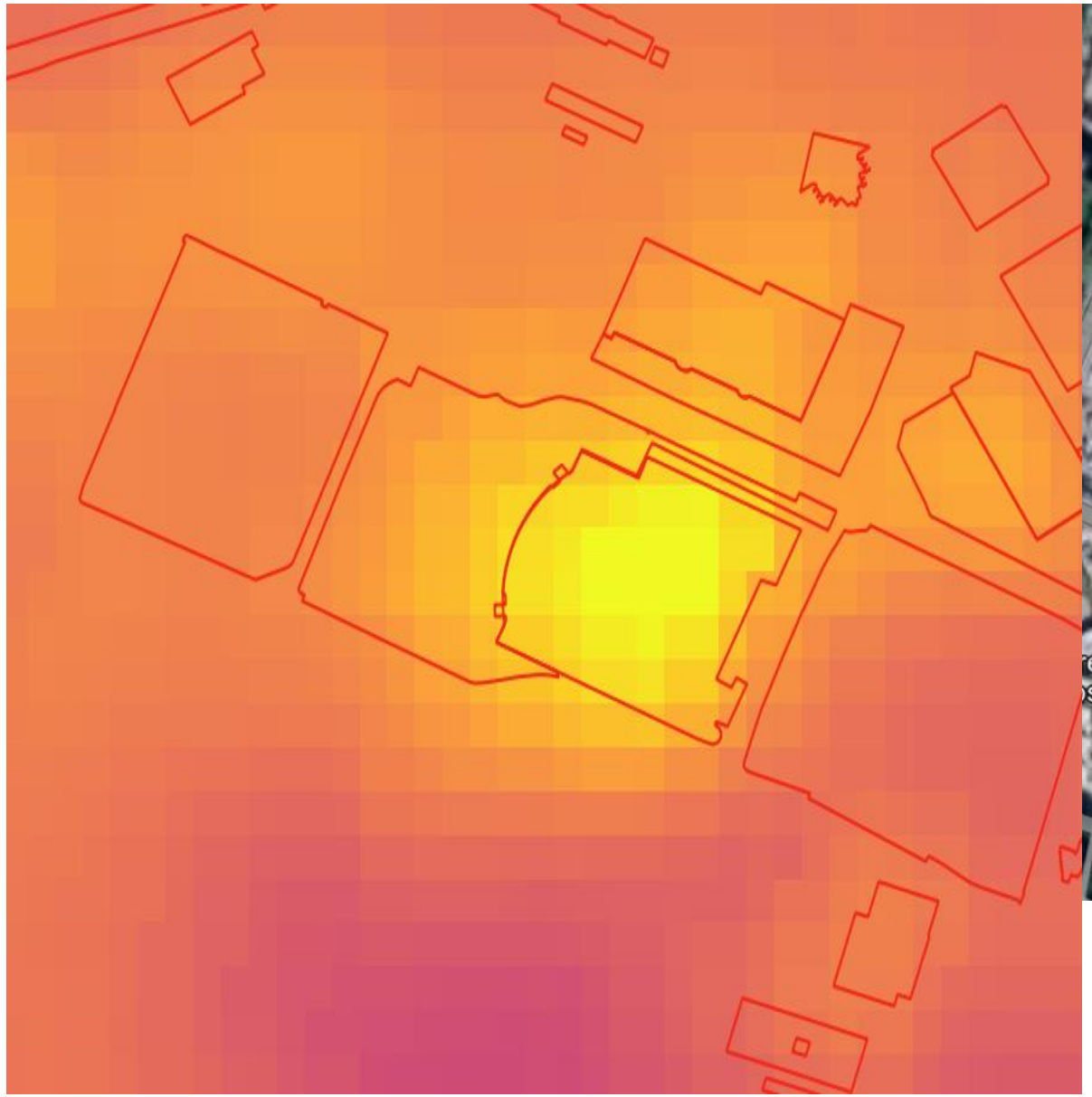
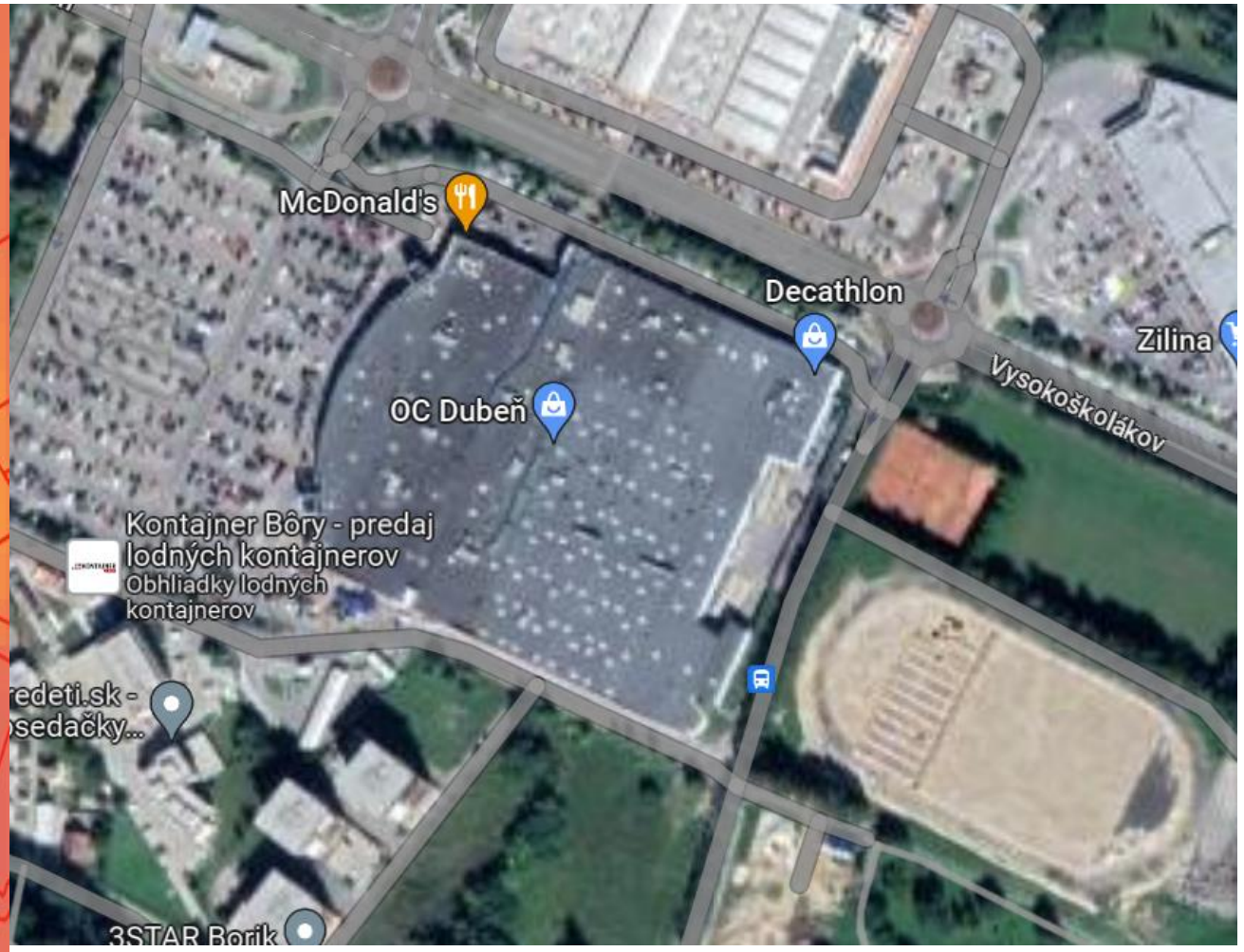
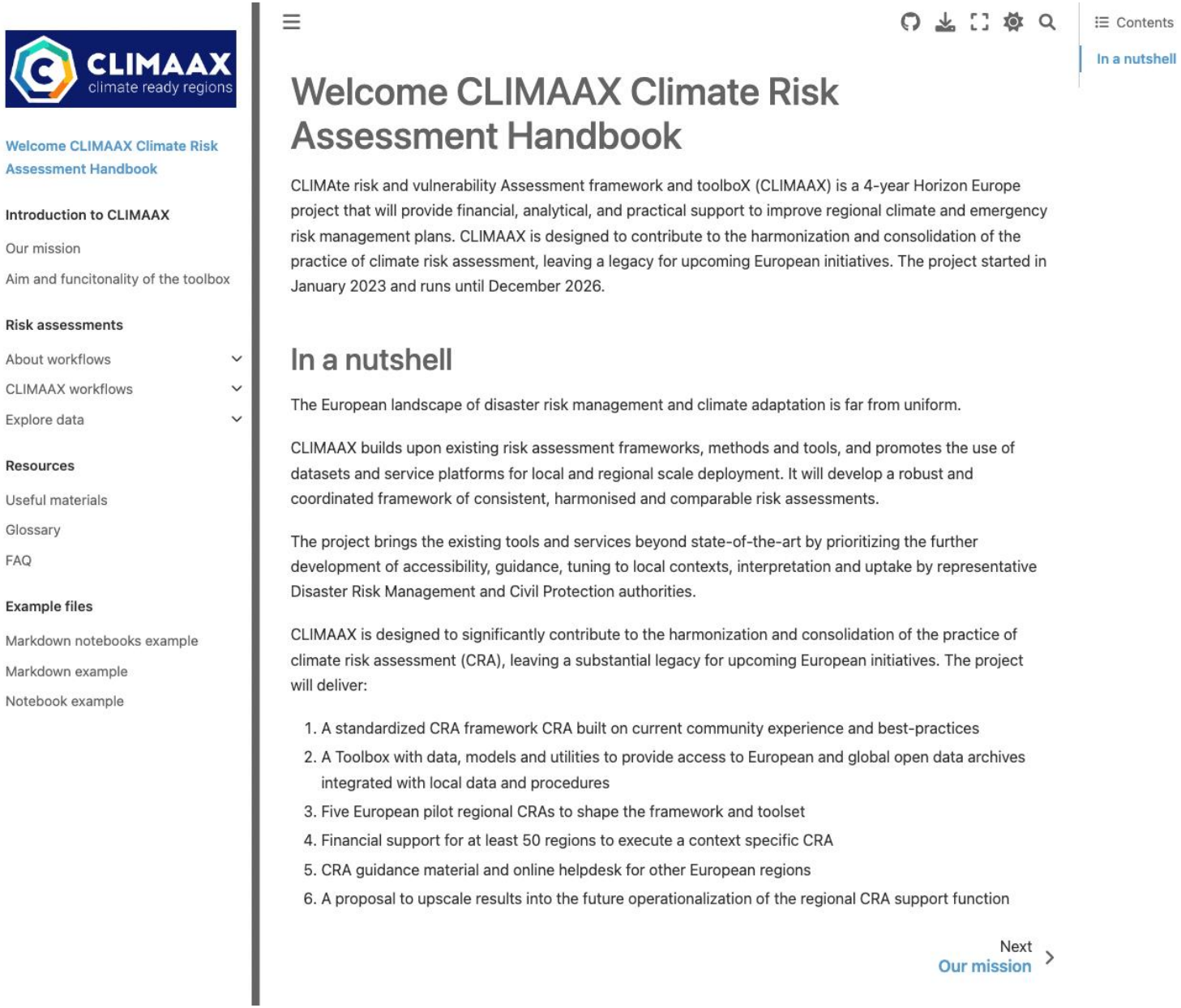
Buildings and bare surface
Grass
Shrubs
Dense Vegetation

Opatrenia:

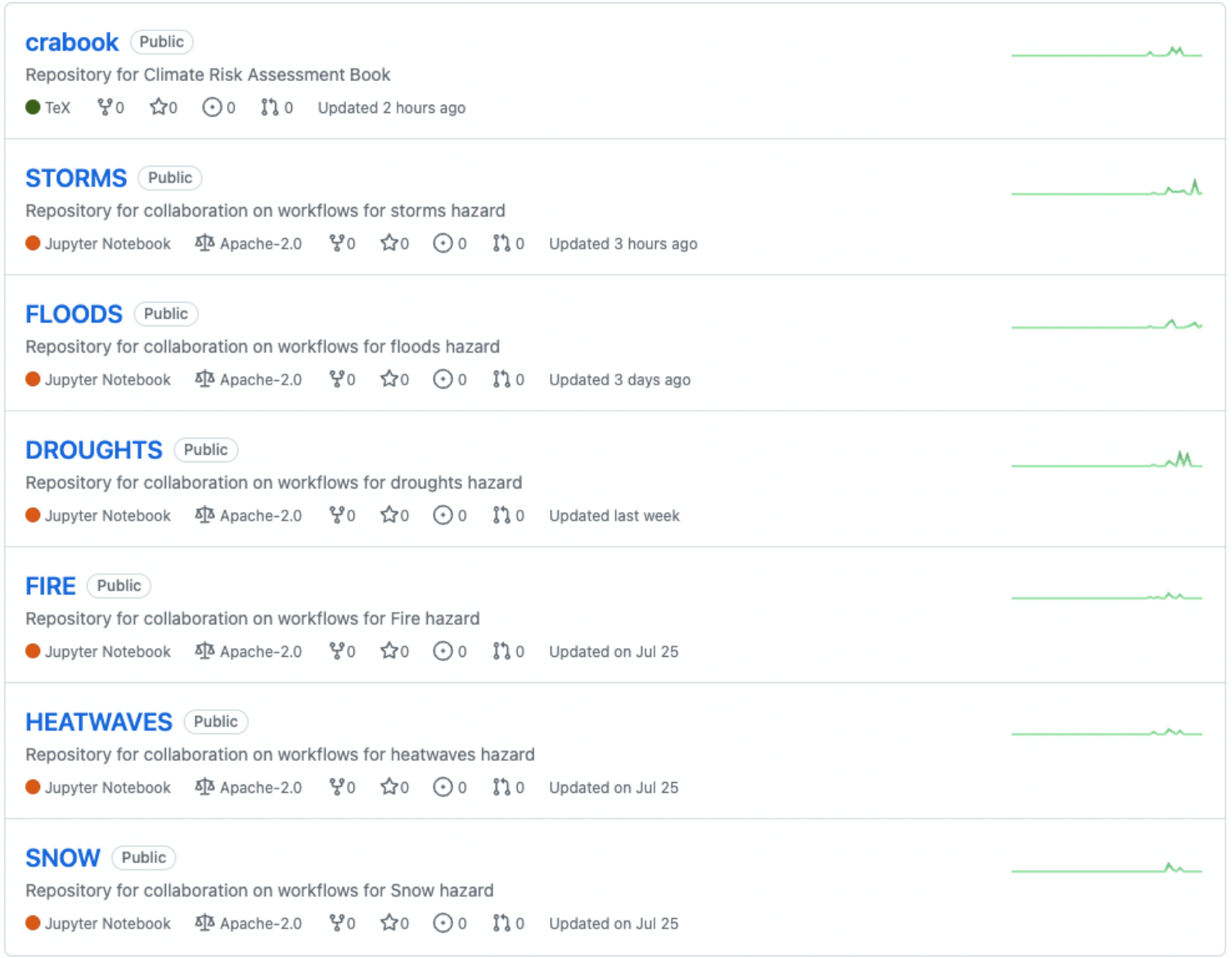



McDonald's
Decathlon
Zilina
Vysokoškolákov
OC Dubeň
Kontajner Bôry - predaj lodných kontajnerov
Obhliadky lodných kontajnerov
3STAR Borik

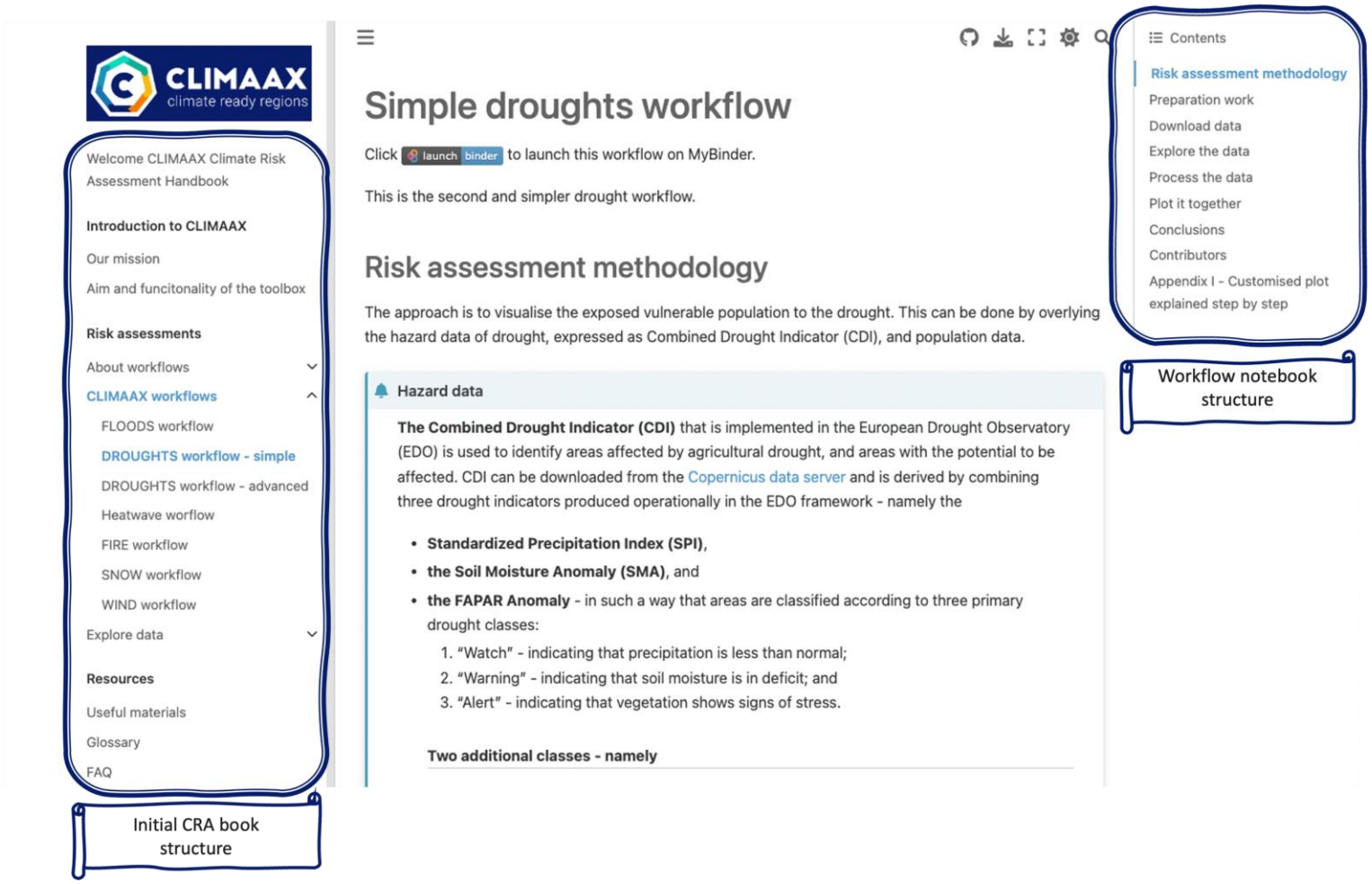
Ukážka toolboxu (prvotná verzia):



Ukážka toolboxu (prvotná verzia):



Ukážka toolboxu (prvotná verzia):



Ukážka toolboxu (prvotná verzia):

Chelsea, July 2016 max mean daily air temperature

6]:
```
# load of the Chelsa data
#https://envicloud.wsl.ch/#/?prefix=chelsa%2Fchelsa_V2%2FGLOBAL%2F
ch='C:/Work/KAJO/CLIMAAX/GitHub/Downscale/CHELSA_tasmax_07_2016_V.2.1.tif'
#EC= xr.open_dataset(ec, decode_coords="all")
CH= xr.open_dataset(ch)
CH=CH['band_data']
#CH.plot()
CH=CH[0]
# (18.59485688668886, 49.1151186646496, 18.87809569577174, 49.30106992846235)
CHZA = CH.rio.clip_box(minx=18.59485688668886, miny=49.1151186646496, maxx=18.87809569577174, maxy=49.30106992846235)
CHZA=(CHZA/10) - 273.15
#CHZA.plot()
```

7]:
```
# Chelsa data reproject to Landsat
CHZA84=CHZA.rio.reproject_match(LS)
```

8]:
```
# Plot Cordex, Chelsa, Landsat
fig, axes=plt.subplots(ncols=3, figsize=(18,4))
ECmax84.plot(ax=axes[0])
axes[0].set_title('Cordex july 2016 max daily air T 11km')
CHZA84.plot(ax=axes[1])
axes[1].set_title('Chelsa july 2016 max daily air T 1km')
LS.plot(ax=axes[2])
axes[2].set_title('Landsat8 july 2016 land surafce T 30m')
plt.draw()
```