



S E C A P

RANLJIVOST IN TVEGANJA IZPOSTAVLJENOSTI KLIMATSKIM UČINKOM

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**"Krize so v 21. stoletju postale norma zaradi
zbliževanja globalizacije, urbanizacije in podnebnih
sprememb."**

Sprememba podnebja

Kaj so podnebne spremembe?



Kaj so podnebne spremembe?

Podnebne spremembe lahko opredelimo kot:

statistično pomembne razlike v povprečnem stanju podnebja ali njegovi spremenljivosti, ki trajajo dlje časa (običajno desetletja ali več).

Podnebne spremembe pomenijo spremembo statističnih lastnosti in jih ni mogoče povezati z enim samim dogodkom (poplava, snežna nevihta itd.)

Razsežnost podnebnih vplivov

Kaj so podnebne spremembe? ☐ teritorialni vpliv

Podnebne anomalije

MailOnline

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Vancouver Olympic chiefs truck in snow to combat city's warmest winter on record while rest of globe shivers (typical, isn't it?)

By MAIL FOREIGN SERVICE
Last updated at 3:31 PM on 4th February 2010

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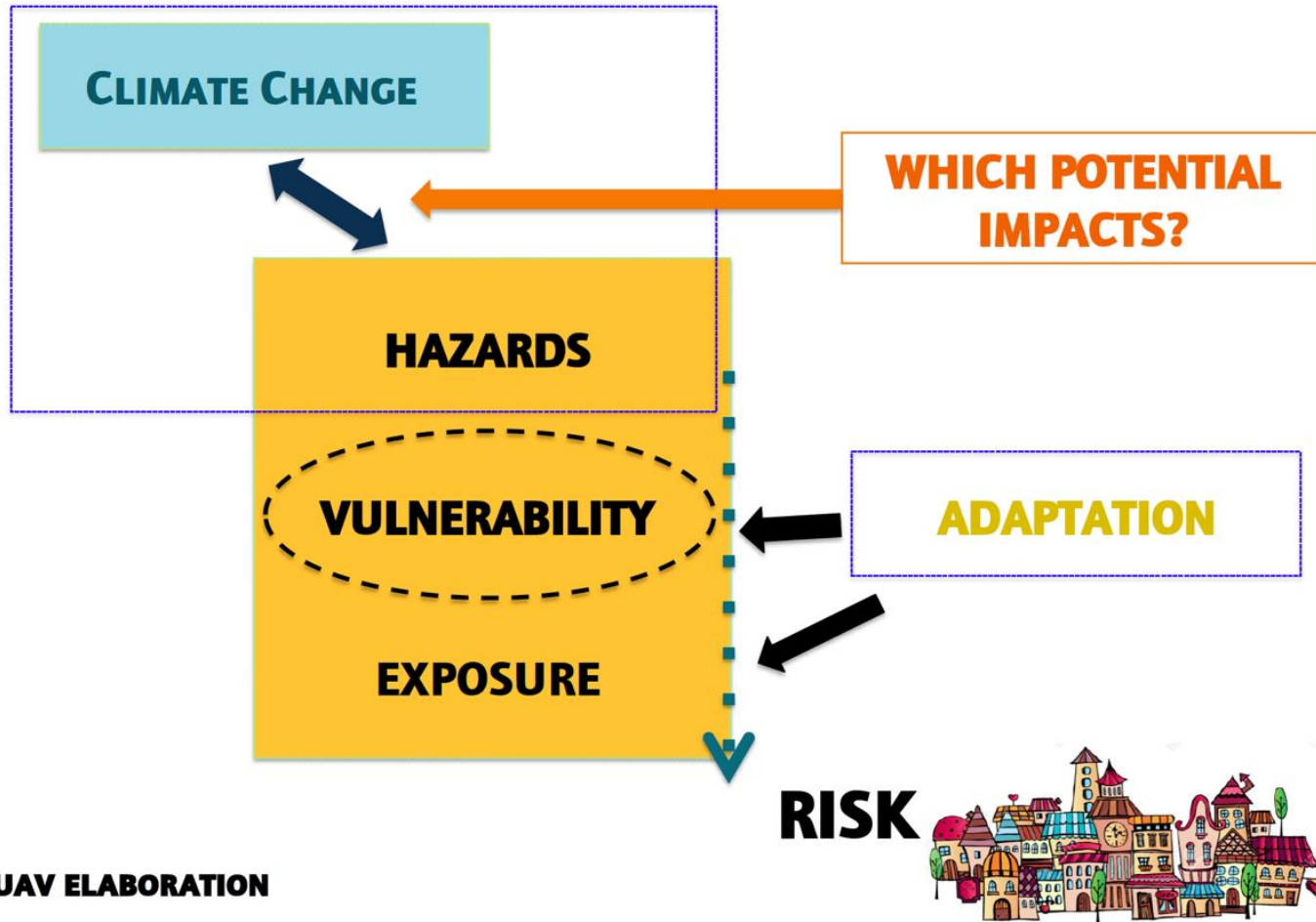
Britain may have suffered its longest cold snap in decades while parts of north Asia, Europe and the U.S. suffered record snowfalls.

But the one place in the world where icy conditions would be appreciated – the site of the Winter Olympics – has just had the warmest January on record and is unseasonably mild.

Organisers of the Vancouver Games are so worried about the lack of snow they have been forced to bring in truckloads of it in a desperate bid to save the event.



IPCC 2014 APPROACH (FIFTH ASSESSMENT REPORT)



IUAV ELABORATION



Vernazza – Cinque Terre
2011



Gargano 2014

FOGG



Genova – 2013



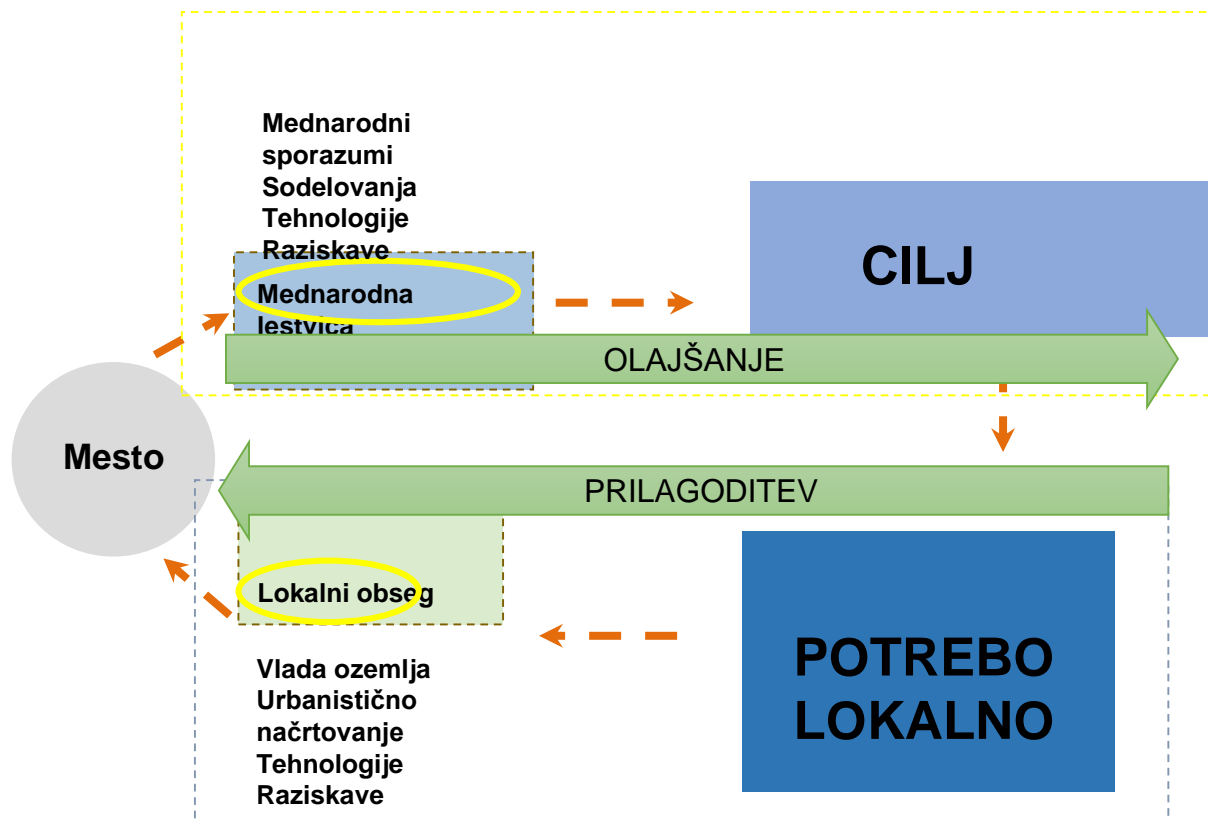
Ancona 2016

© Adriano Carbone 2016



**Emilia Romagna
2017**

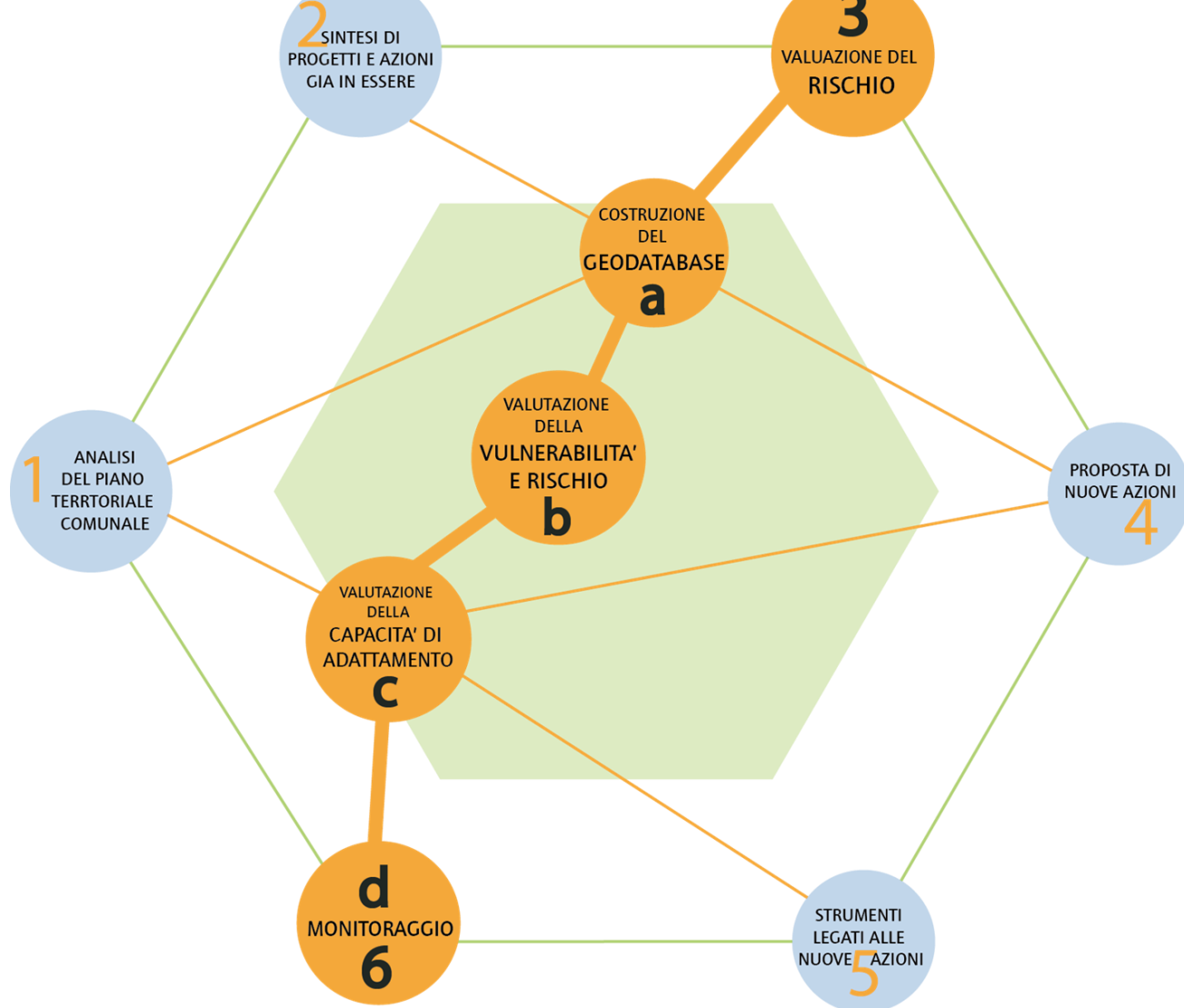
Načrtovanje podnebnih dokazov



GLOBALNO OGREVANJE PROTI KLIMATSKIM SPREMEMBAM



Pomen ranljivosti za usmerjanje prilagajanja



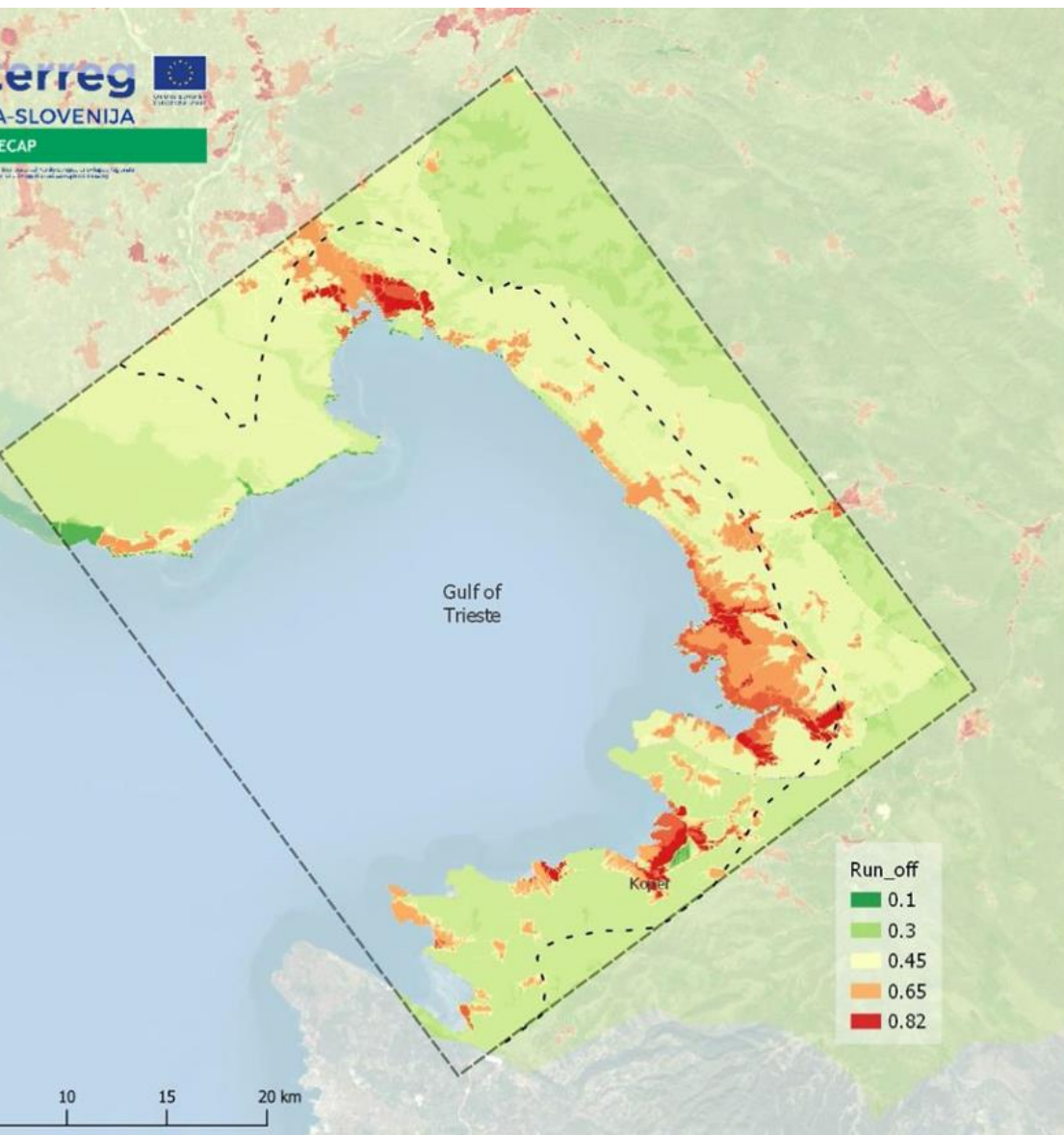
a
Hazard, ICT,
Open Data

b
Sensitivity,
Exposure,
Index

c
Adaptation
Capacity,
Adaptation
Design

d
Real Time

EsemPrimer ranljivosti in prilagoditve

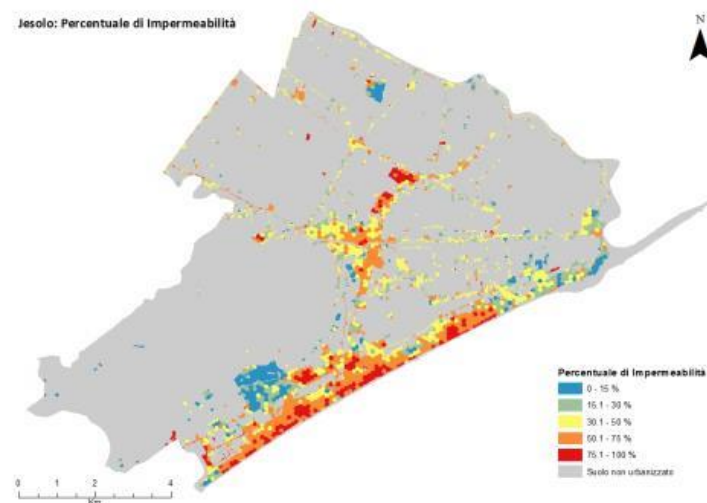
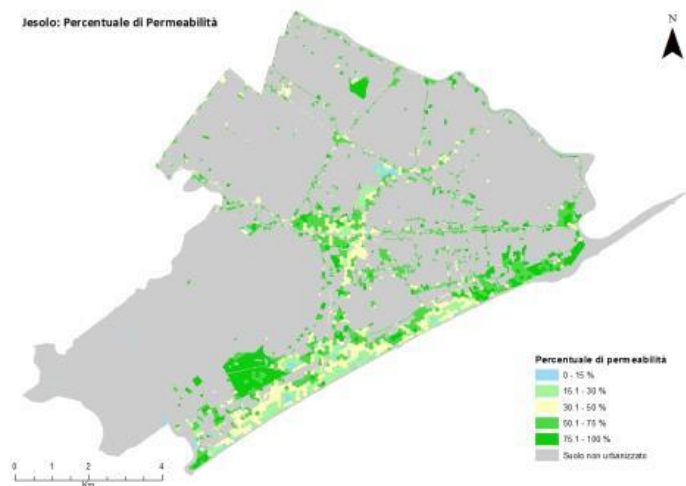


3. Vulnerability Maps

Urban Run-Off Vulnerability Gulf of Trieste

Elaboration From Landsat 8 Satellite Image
(July, 2017)

Primer ranljivosti in prilagoditve



Pilotno območje za izvajanje prilagoditvenih ukrepov

Pomen tehnologij za pridobivanje vesoljskih informacij



Daljinsko zaznavanje



Nove tehnologije



Obdelava podatkov



NIZKO



VISOKO
ZELENA



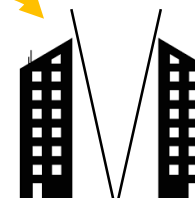
GRADBENA
POVRŠINA



Vodotesna površina



TEMPERATURE



FAKTOR SKY VIEW

Kazalniki

URBANO POPLAVJE

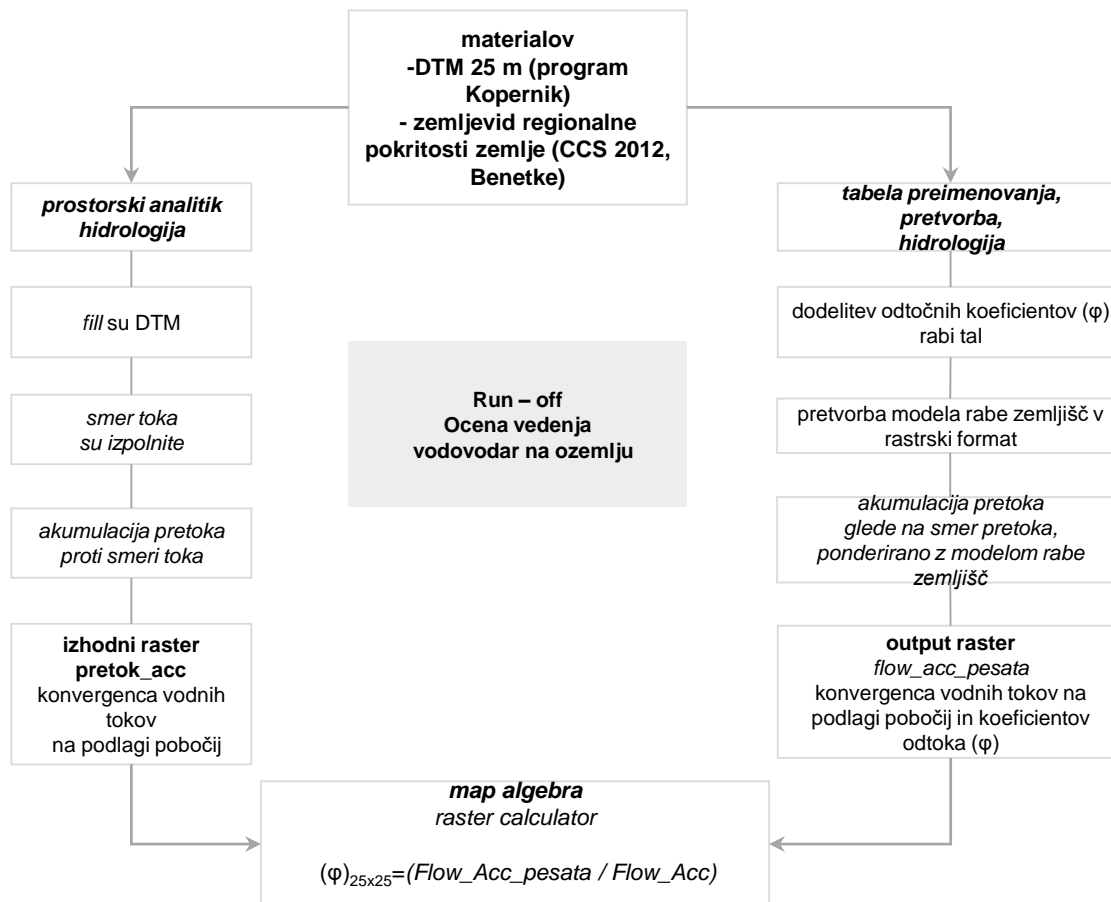


URBANO POPLAVJE



URBANO POPLAVJE– Flow Chart

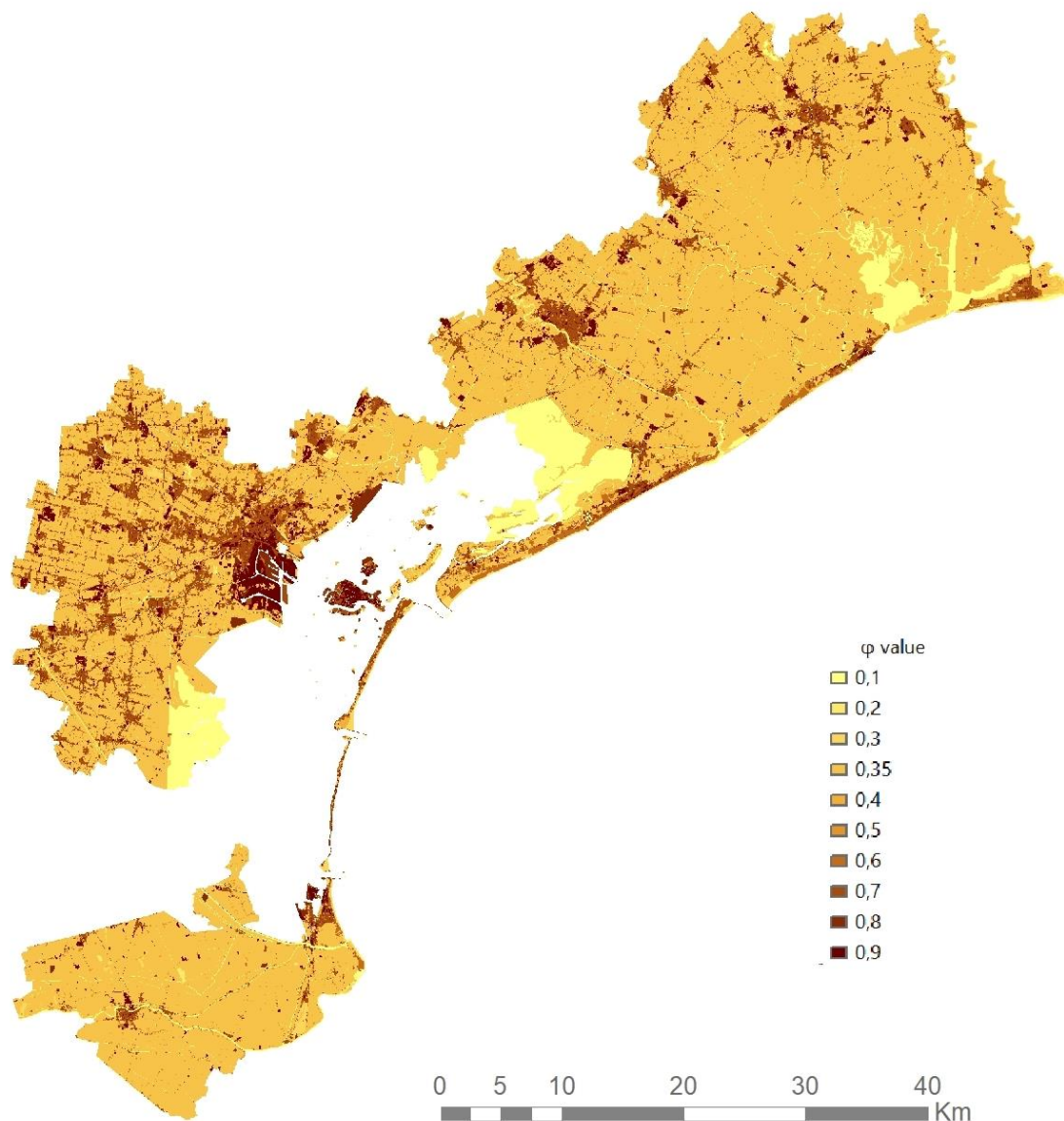
Prostorski algoritem za izračun odtekanja



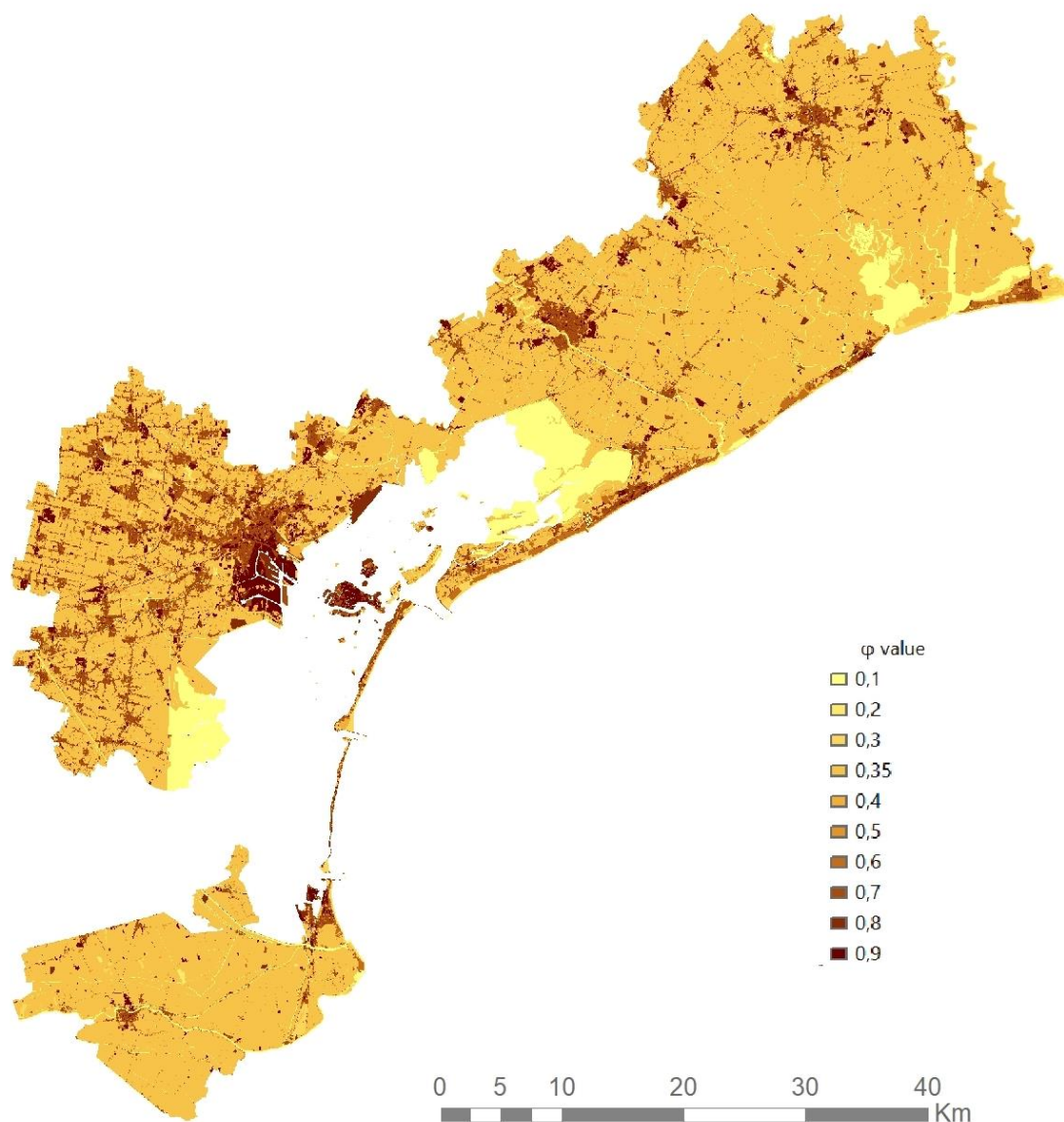
Razmerje vam omogoča, da koeficientom pretoka dodelite akumulacijo pretoka Flow_Acc in vrnete "hidravlične vplive" ϕ (ali $\phi_{25 \times 25}$). Ta korelacija je izražena kot % padavin, ki se spremenijo v površinski odtok (v območju od 0,2 do 0,9). Il procedimento, calibrato a scala di bacino, è cumulativo.

NAPOTILO: Rezultati odtekanja so parametri, ki jih je mogoče določiti v sprejemnem intervalu na podlagi poglobljenih analiz tudi geološke narave.

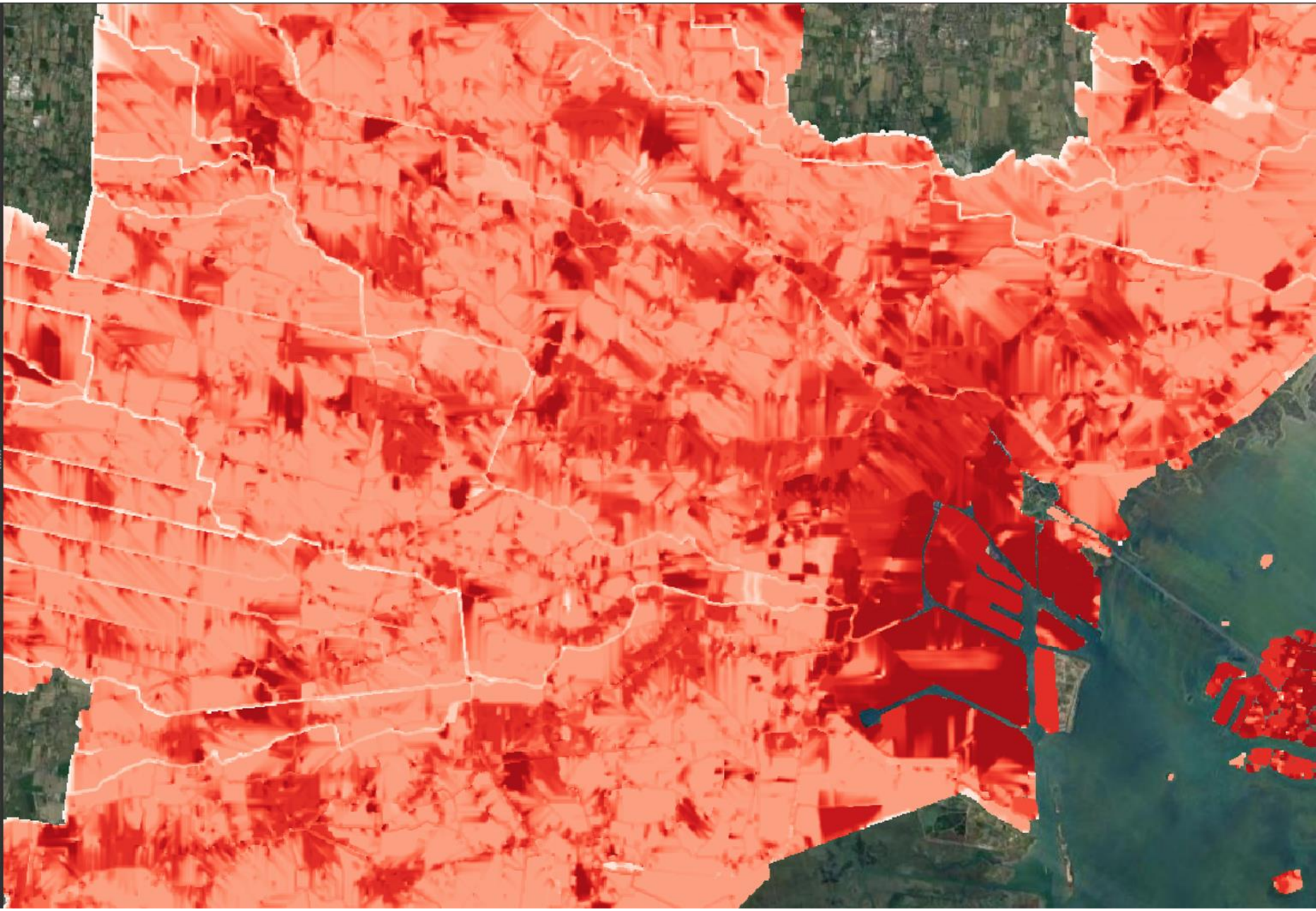
URBANO POPLAVJE– Koeficienti odtoka

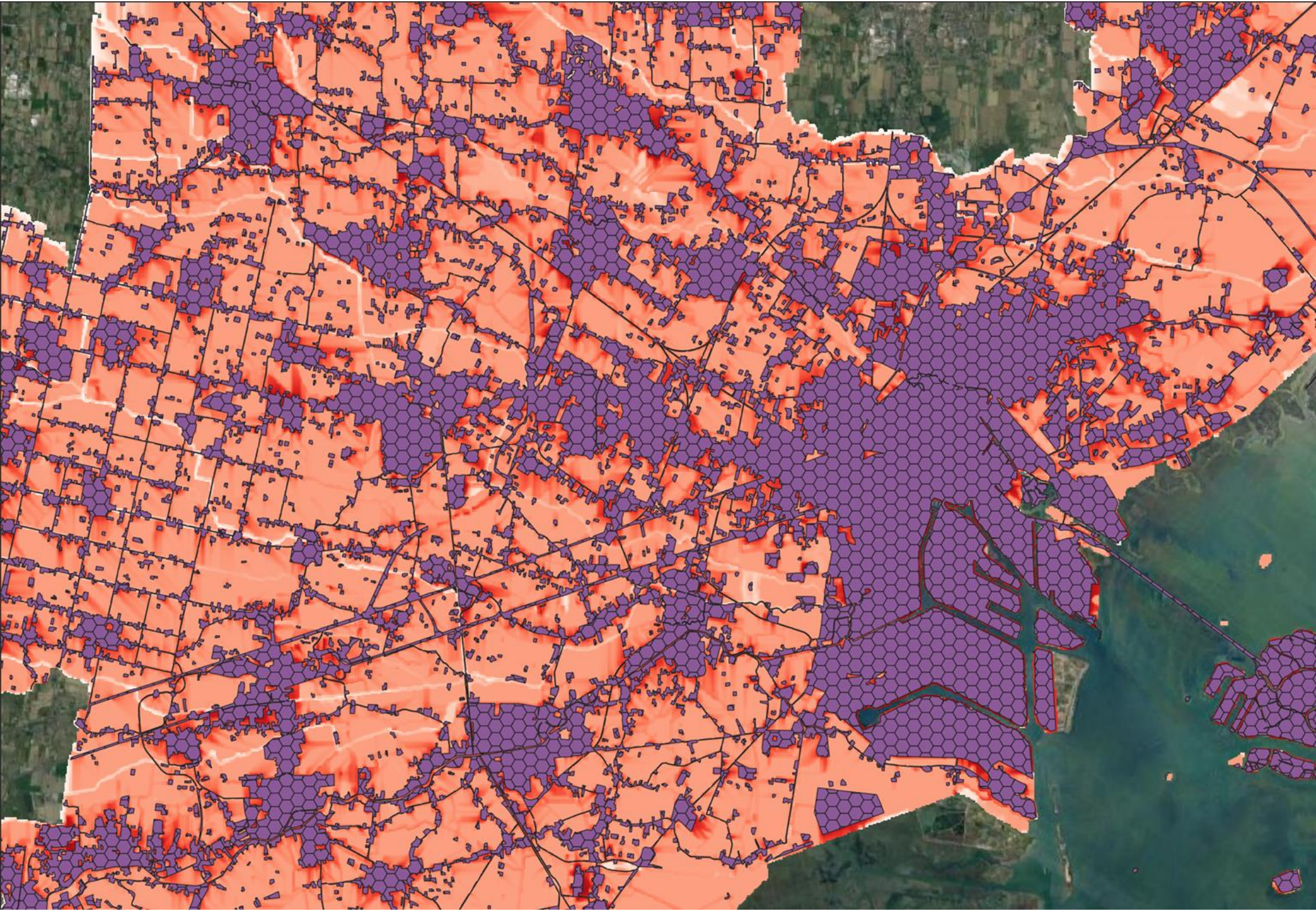


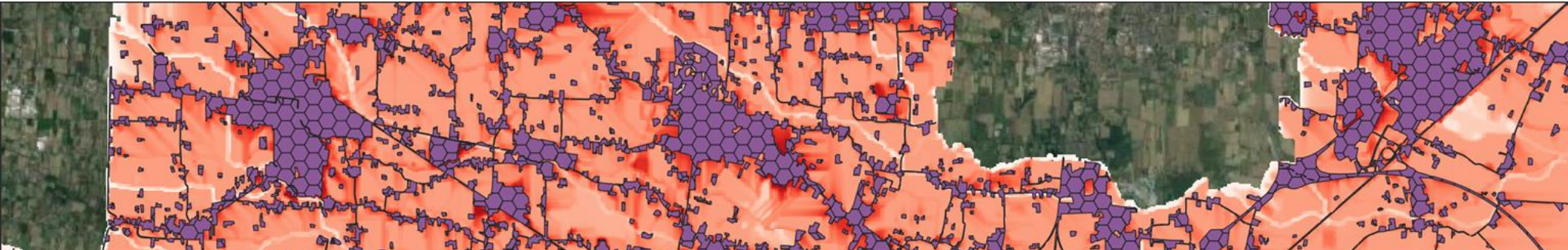
URBANO POPLAVJE– Ranljivost



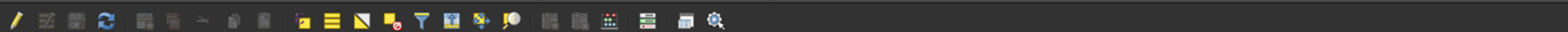






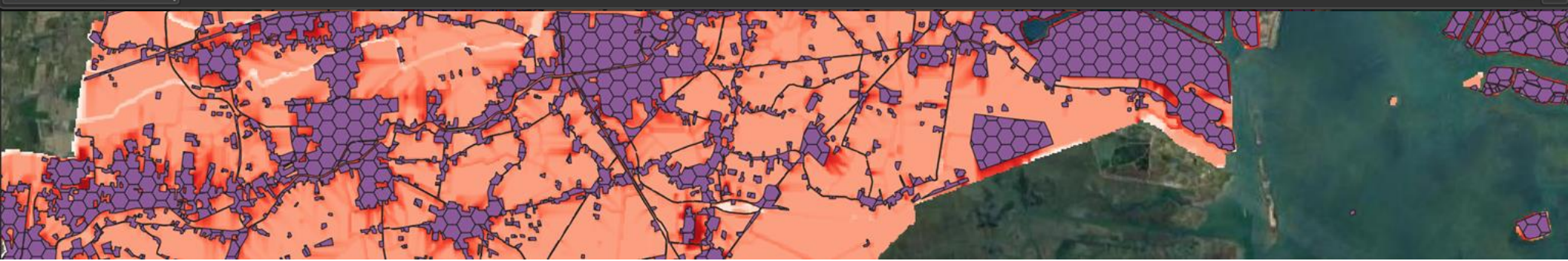


cmve_t_hexgrid150m_20200121 :: Totale degli elementi: 21763, Filtrati: 21763, Selezionati: 0



	d_exten	vuln1	vuln11	vuln111	expo1	expo11	expo111	risk1	risk11	risk111	_floodmean	_floodmin	_floodmax
1	1	0,361470991...	NULL	NULL	0,004366126...	NULL	NULL	0,001578227...	NULL	NULL	0,403976266...	0,384444445...	0,429263114...
2	1	0,354380399...	NULL	NULL	0,004106788...	NULL	NULL	0,001455365...	NULL	NULL	0,401001443...	0,384629637...	0,424426943...
3	1	0,200942734...	NULL	NULL	0,000115665...	NULL	NULL	2,324218368...	NULL	NULL	0,380952549...	0,380784273...	0,381450921...
4	1	0,365571442...	NULL	NULL	9,382025643...	NULL	NULL	3,42980064...	NULL	NULL	0,314721864...	0,277491480...	0,368659704...
5	11	0,183639487...	0,184871683...	NULL	0,000167161...	0,000167161...	NULL	3,069750798...	3,09034840...	NULL	0,100812403...	0,100713446...	0,100927397...
6	11	0,2010910119...	0,202491430...	NULL	6,266858876...	6,266858876...	NULL	1,260208993...	1,268985220...	NULL	0,385144206...	0,384444445...	0,398222208...
7	11	0,203493179...	0,204791451...	NULL	5,497582809...	5,497582809...	NULL	1,1187206037...	1,125857963...	NULL	0,602146606...	0,601728439...	0,60659998...
8	1	0,361796341...	NULL	NULL	0,001850200...	NULL	NULL	0,00066939...	NULL	NULL	0,533185184...	0,459851861...	0,606518507...
9	1	0,358802380...	NULL	NULL	0,007097761...	NULL	NULL	0,002546693...	NULL	NULL	0,472047742...	0,390408158...	0,529909968...
10	1	0,198736120...	NULL	NULL	0,000120394...	NULL	NULL	2,39266566...	NULL	NULL	0,1114908087...	0,110476896...	0,111696206...
11	111	0,557440679...	0,557987885...	0,555614819...	0,093841653...	0,093841653...	0,103836905...	0,0523111550...	0,052362505...	0,057693323...	0,804657115...	0,713333308...	0,819999933...
12	1	0,316708964...	NULL	NULL	0,005174269...	NULL	NULL	0,001638737...	NULL	NULL	0,447051651...	0,390899479...	0,490490674...
13	1	0,360899450...	NULL	NULL	0,000152593...	NULL	NULL	5,507086751...	NULL	NULL	0,448937333...	0,430000007...	0,449599981...

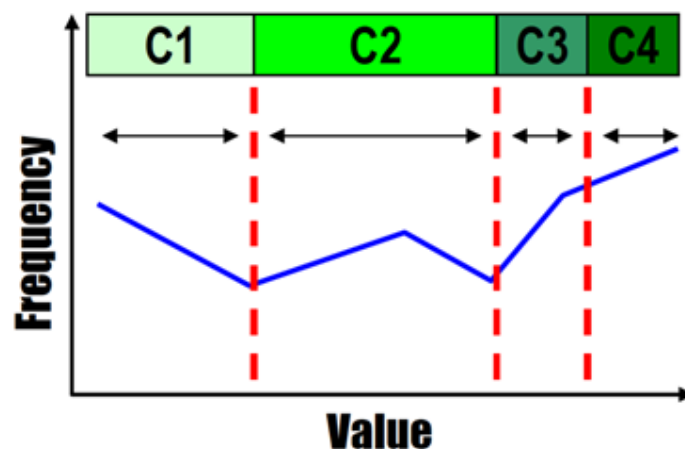
Mostra Tutti gli Elementi



URBANO POPLAVJE– Ranljivost

OPOMBE: kako razvrstiti številska polja

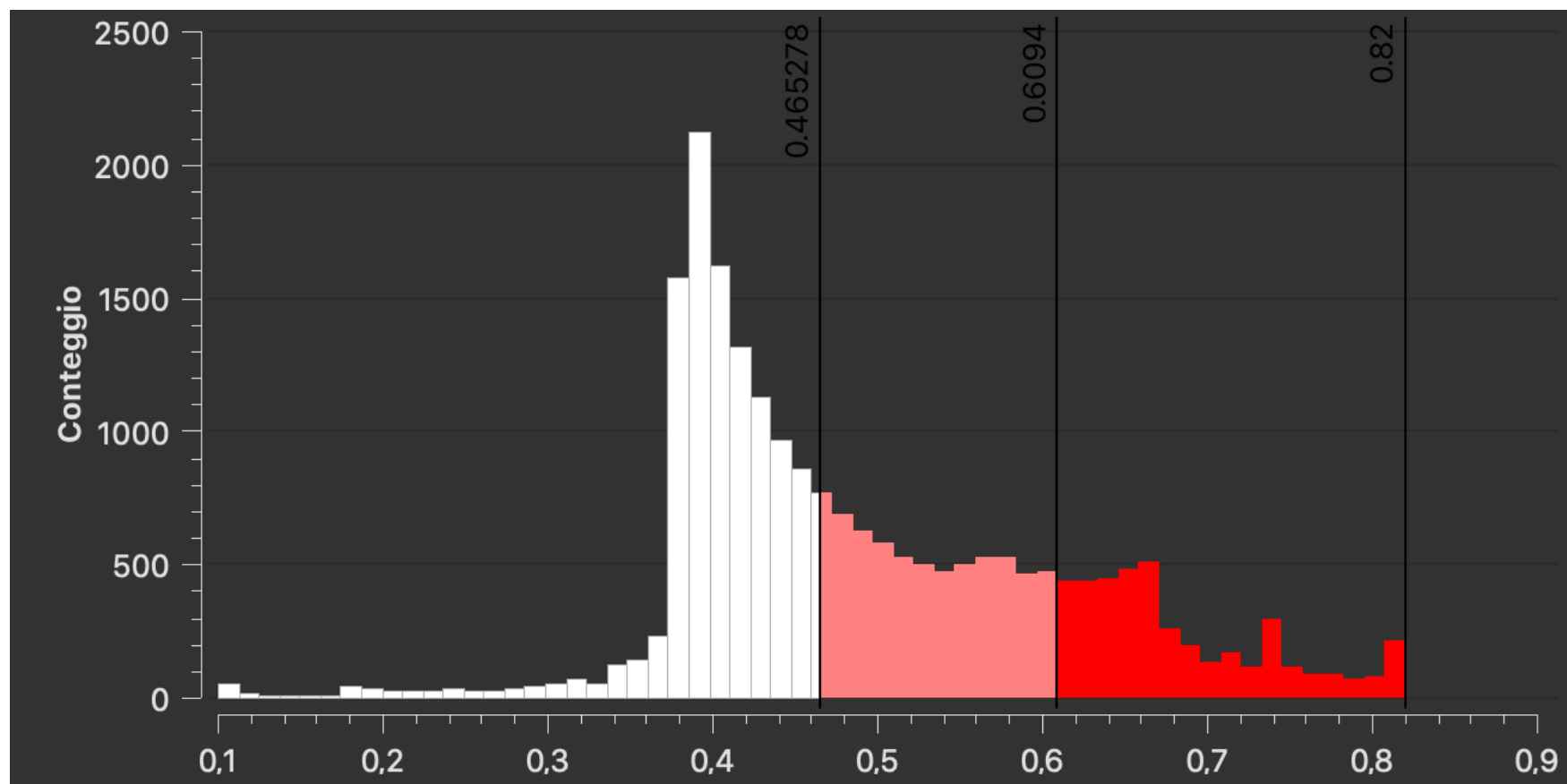
3 za količino ----- intervali - naravni prelomi

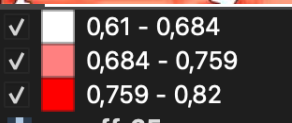
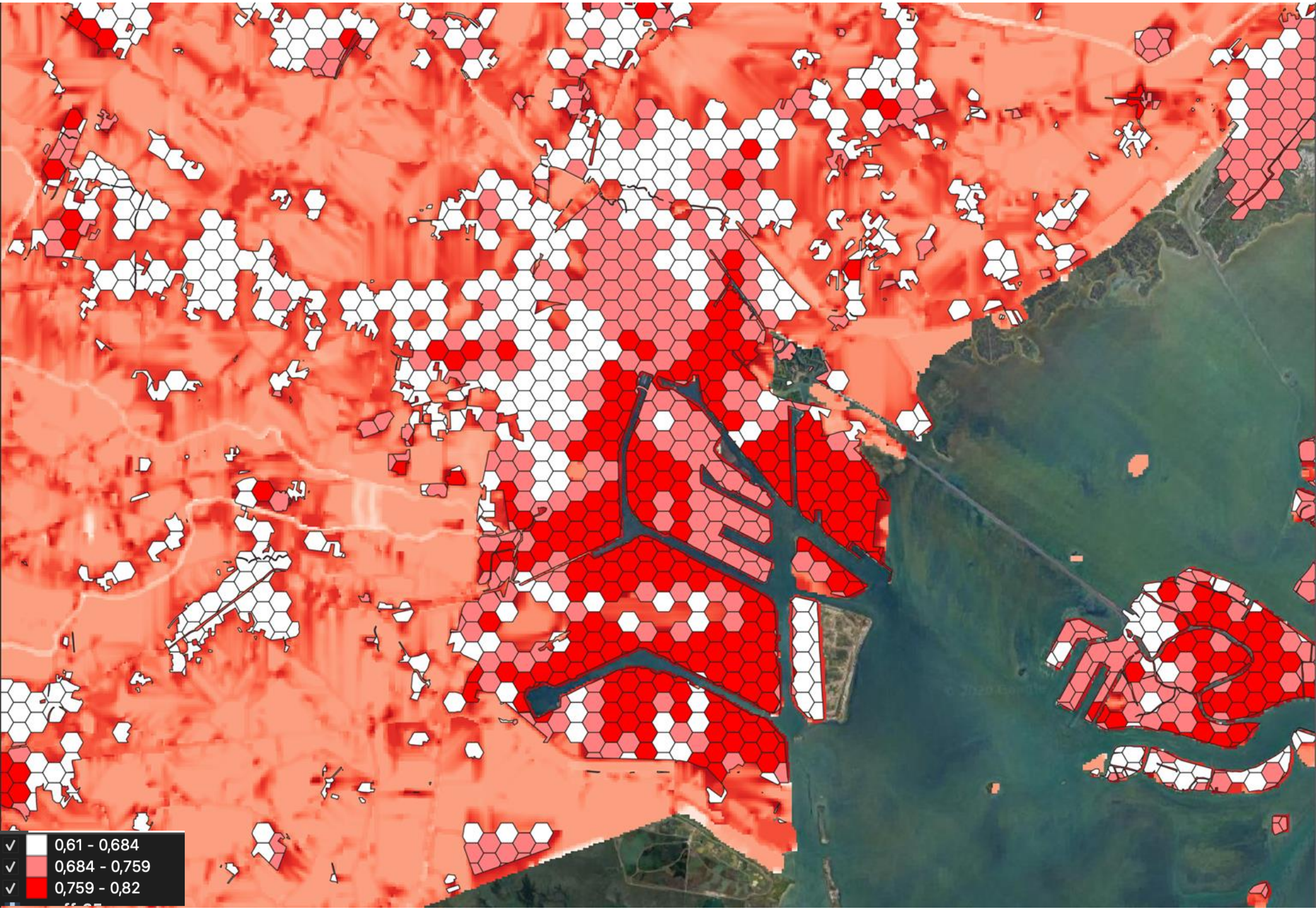


Intervali so opredeljeni, kadar pride do velikih prekinitev ali preskokov pri porazdelitvi vrednosti atributov.

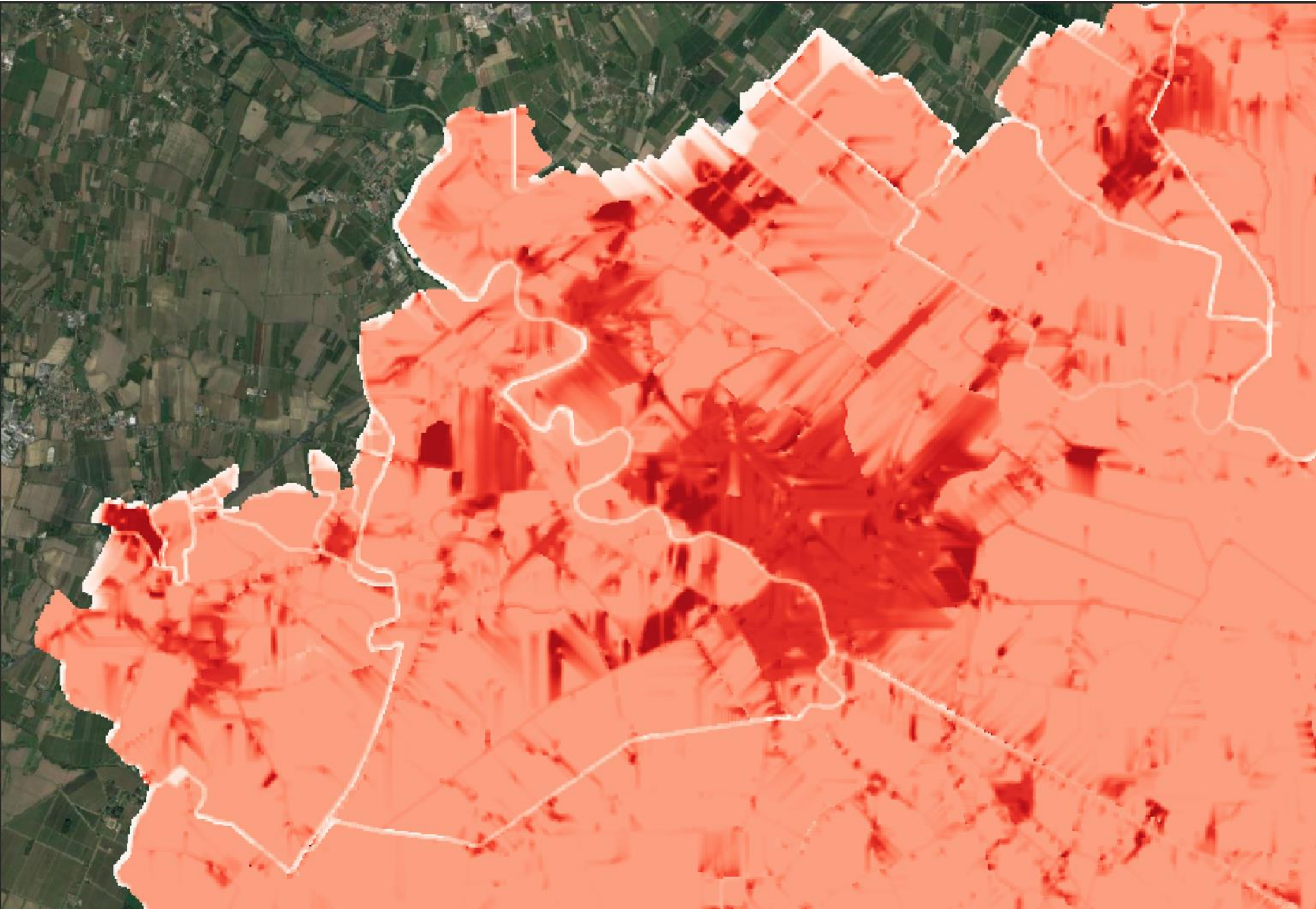
Dobro za podatke, ki niso enakomerno porazdeljeni

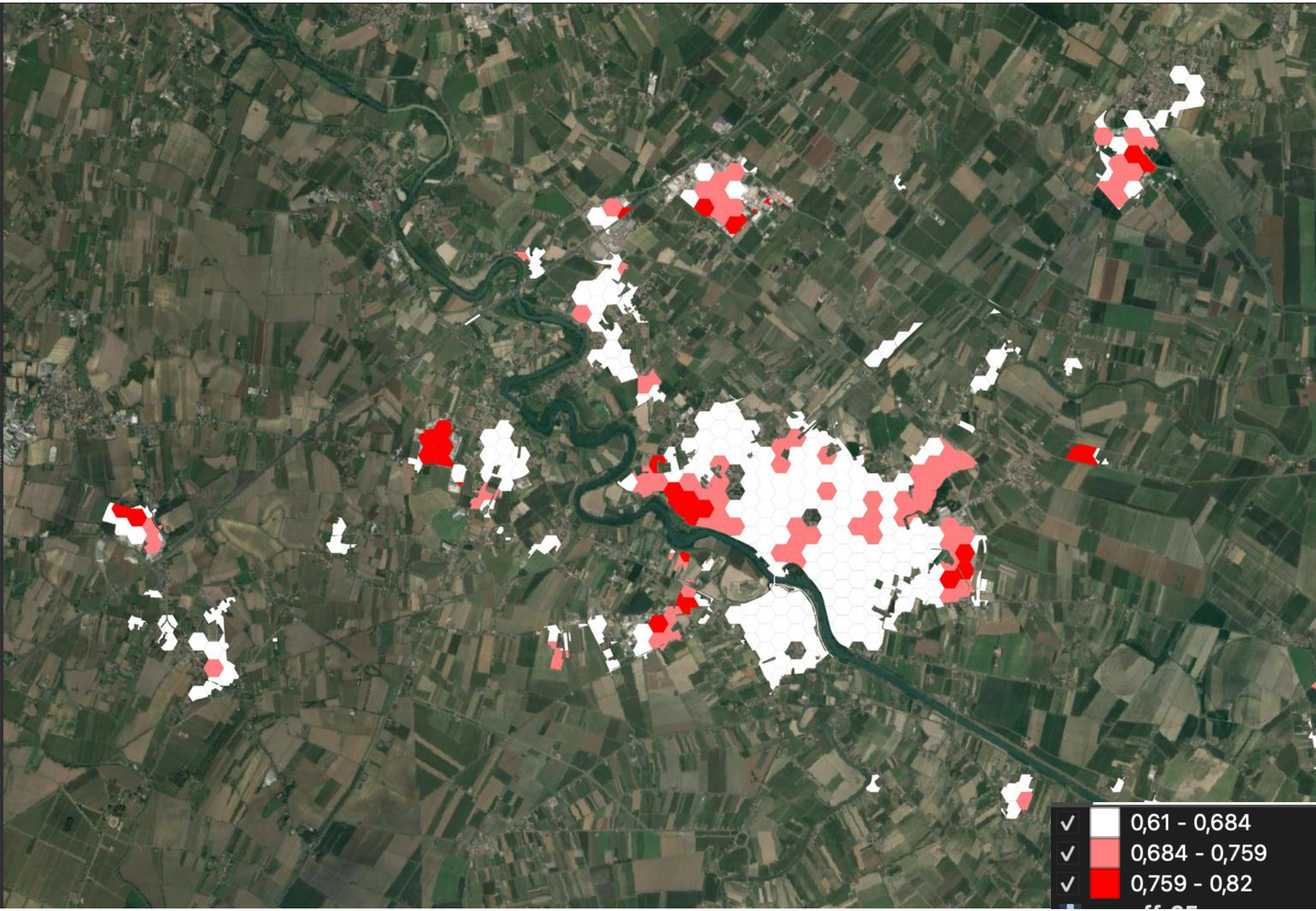
URBANO POPLAVJE– Ranljivost

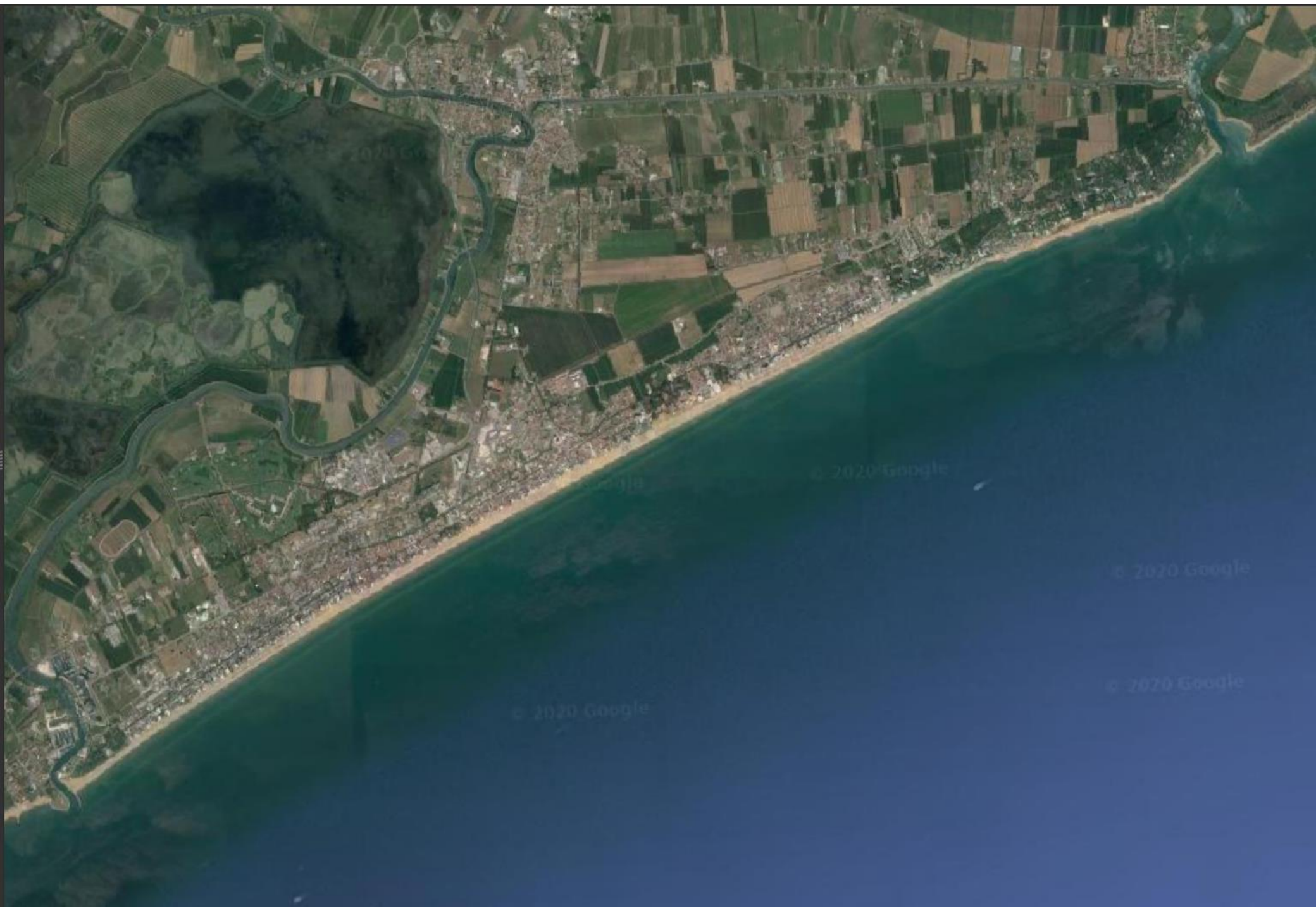


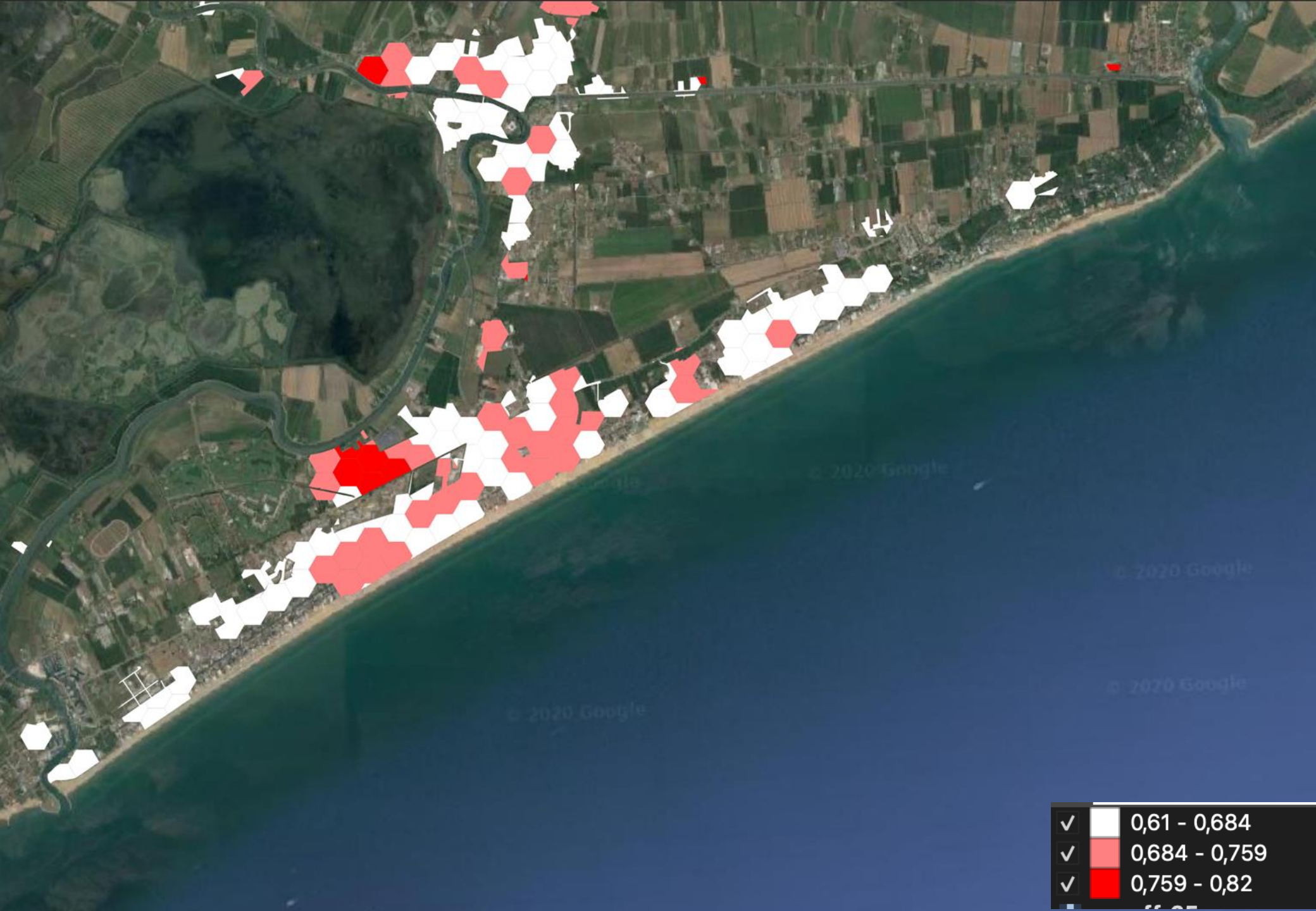












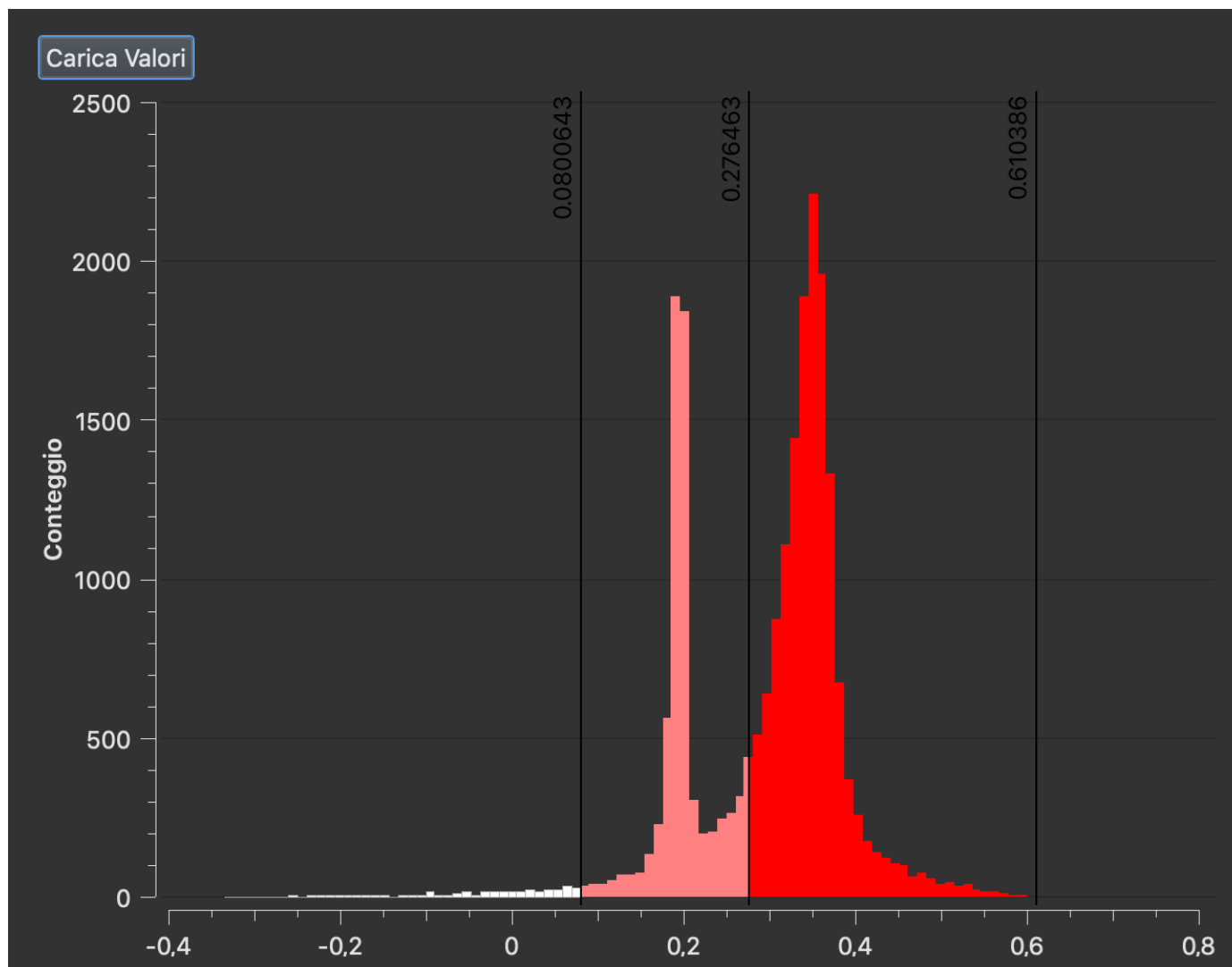
Ocene ranljivosti

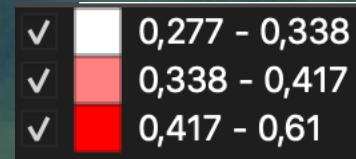
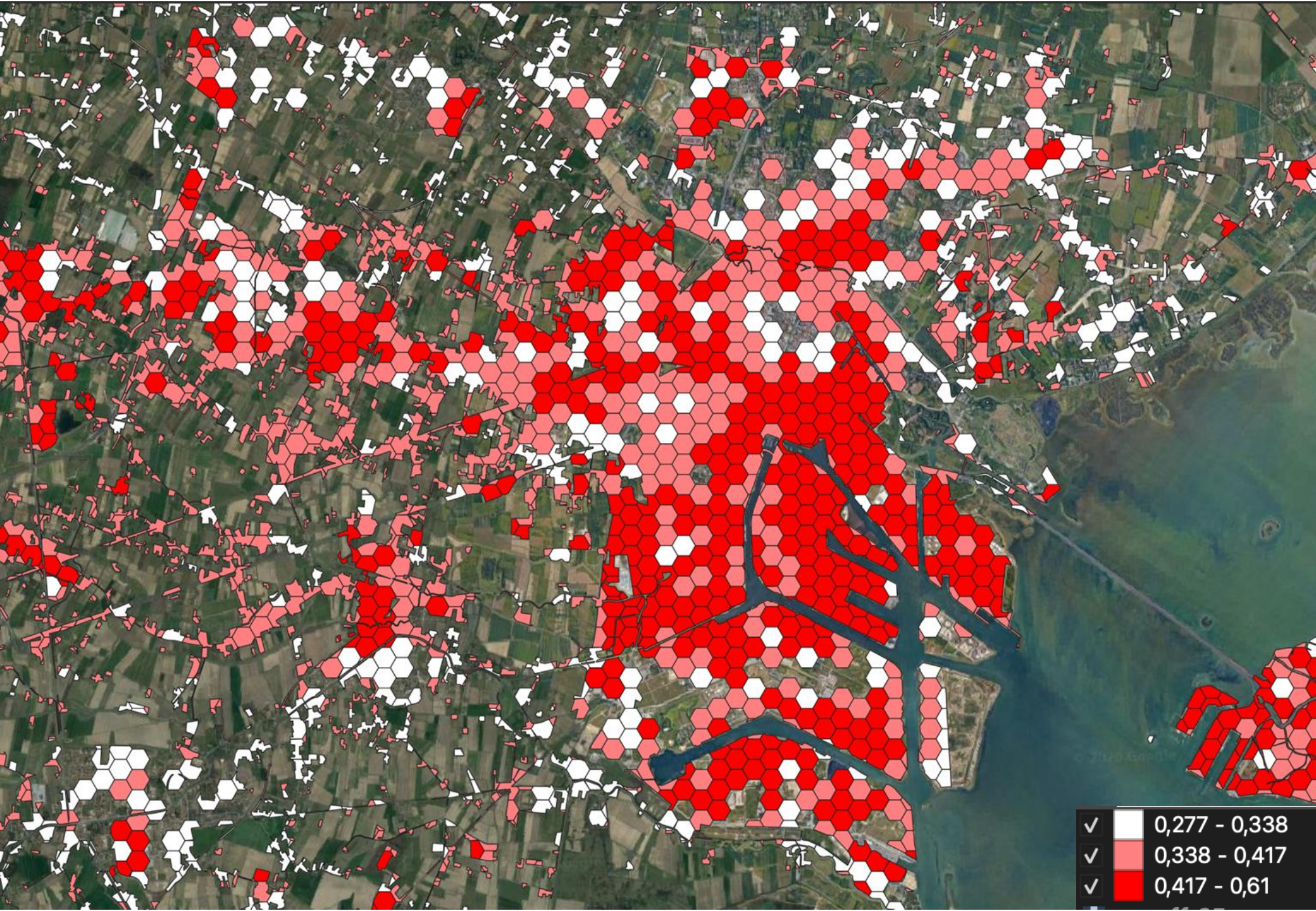
TOPLITNI VALOVI

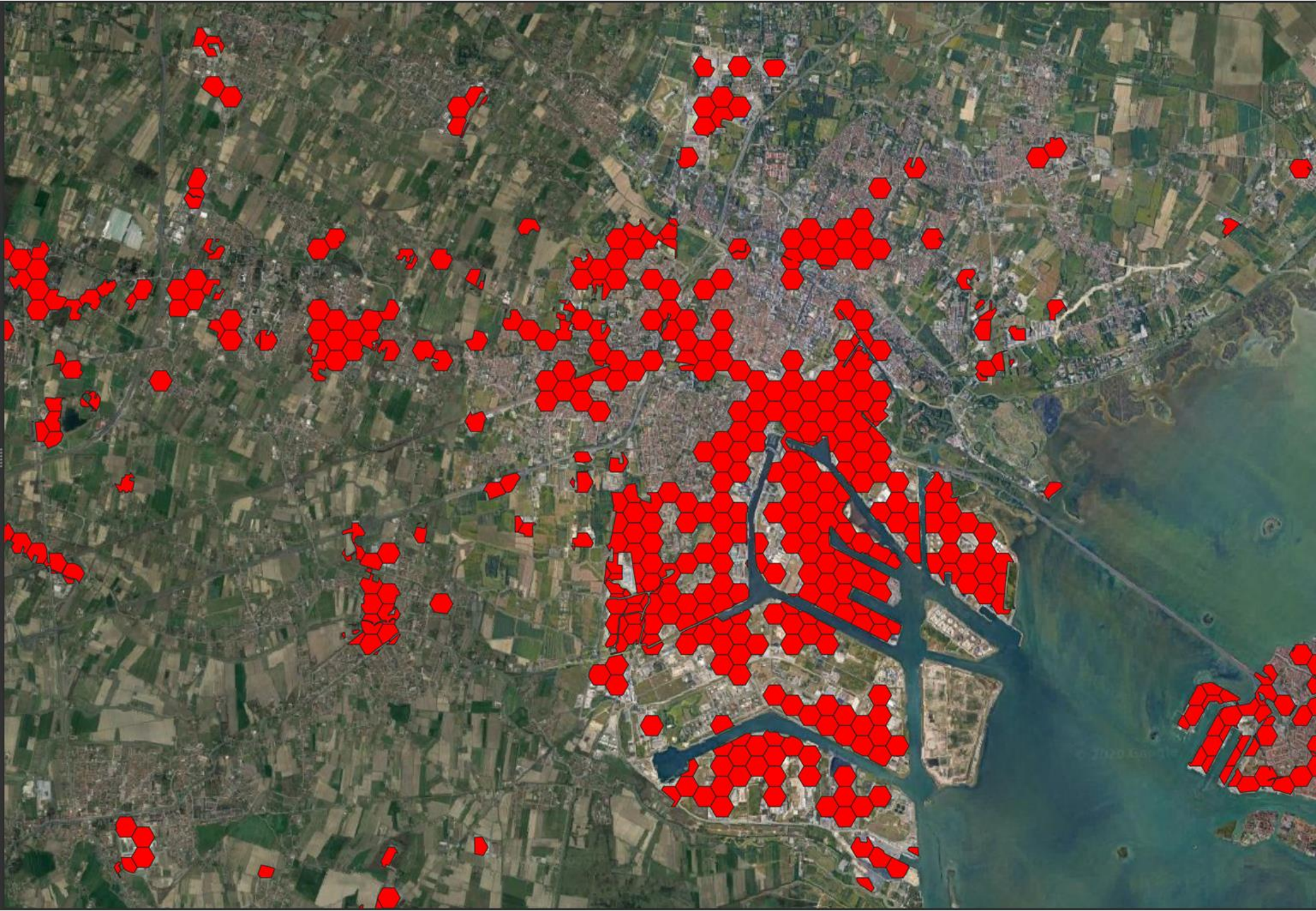
URBAN FLOODING – Vulnerabilità

✓		-0,33 - 0,1
✓		0,1 - 0,28
✓		0,28 - 0,61

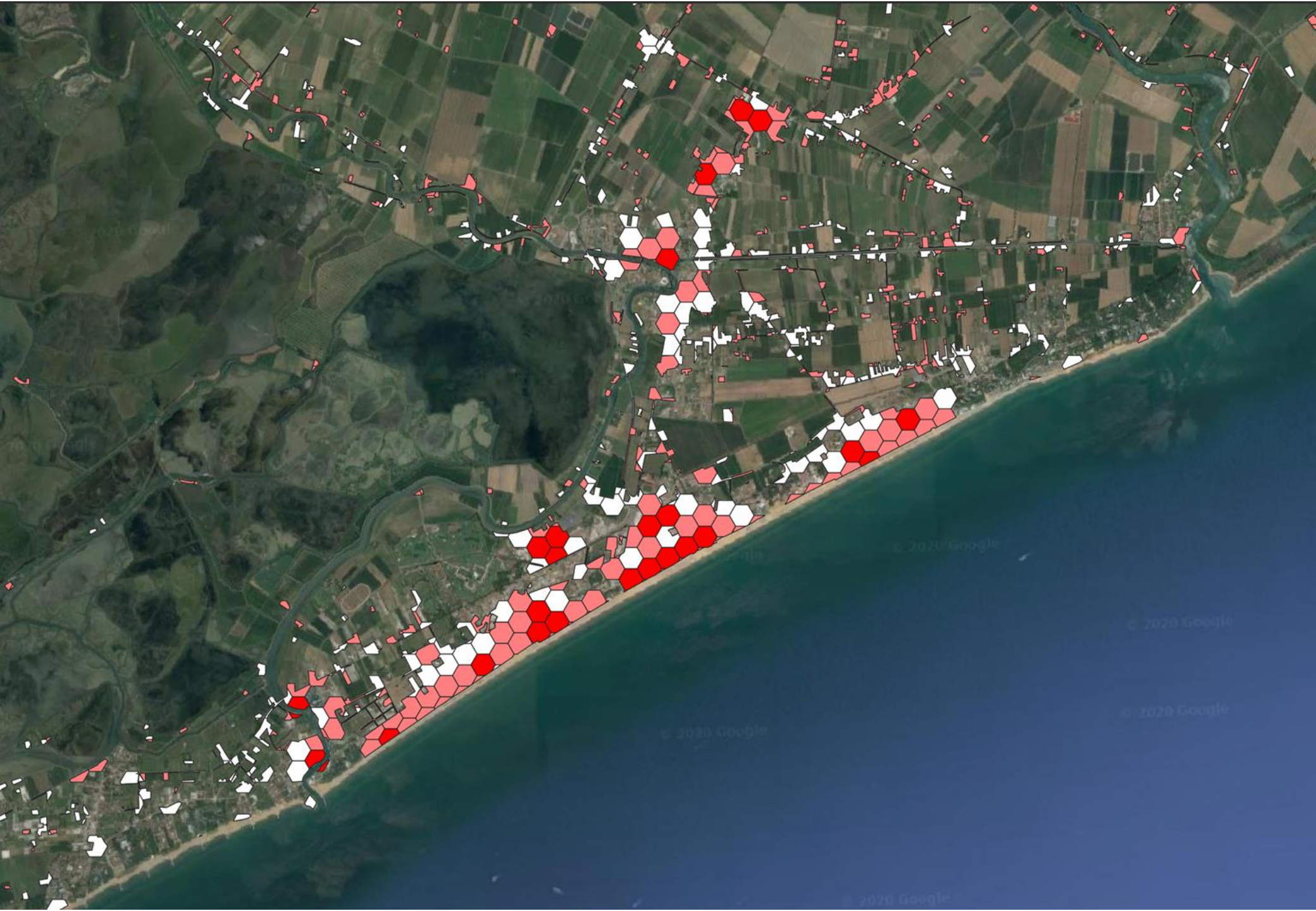
UHI - ranljivost







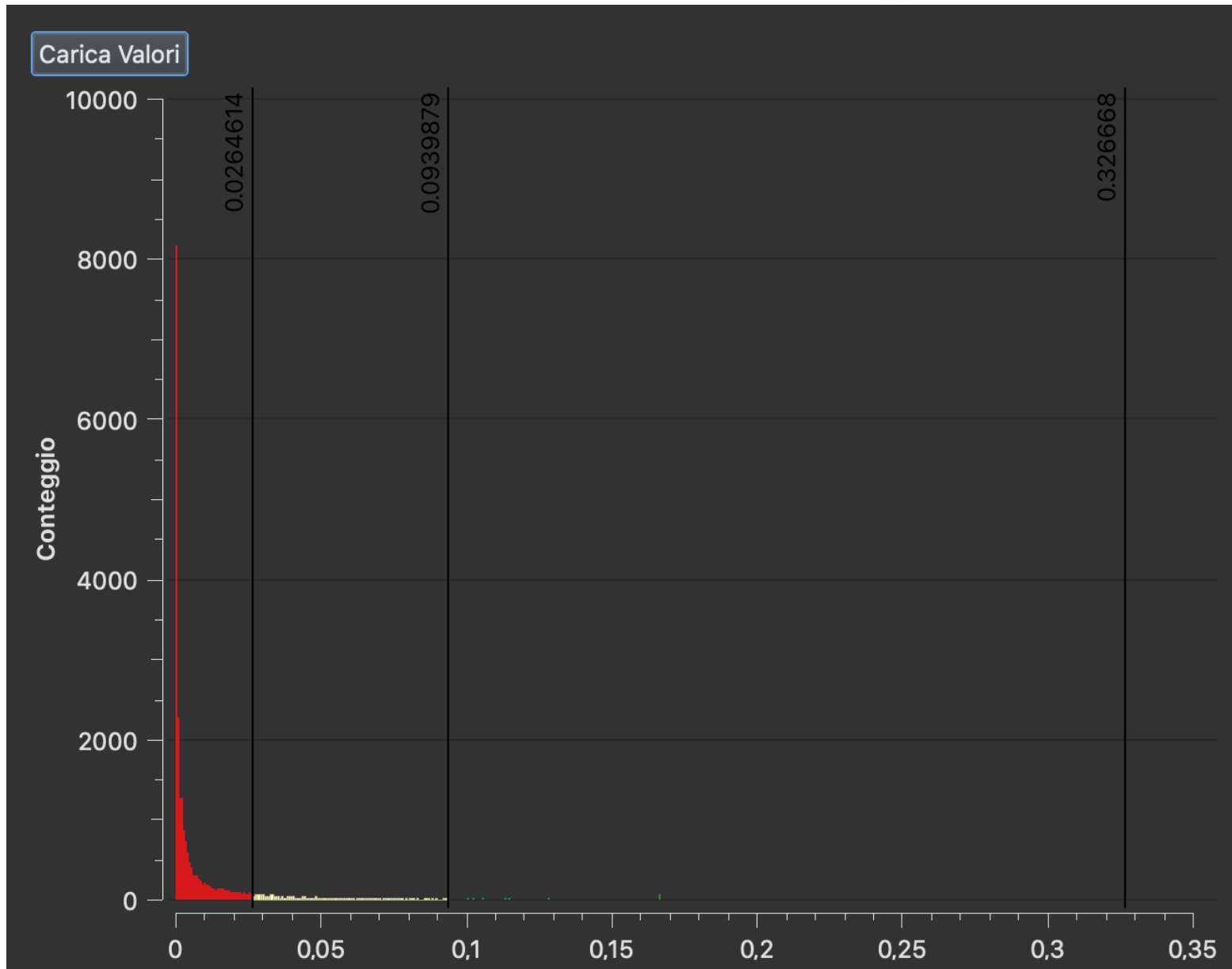




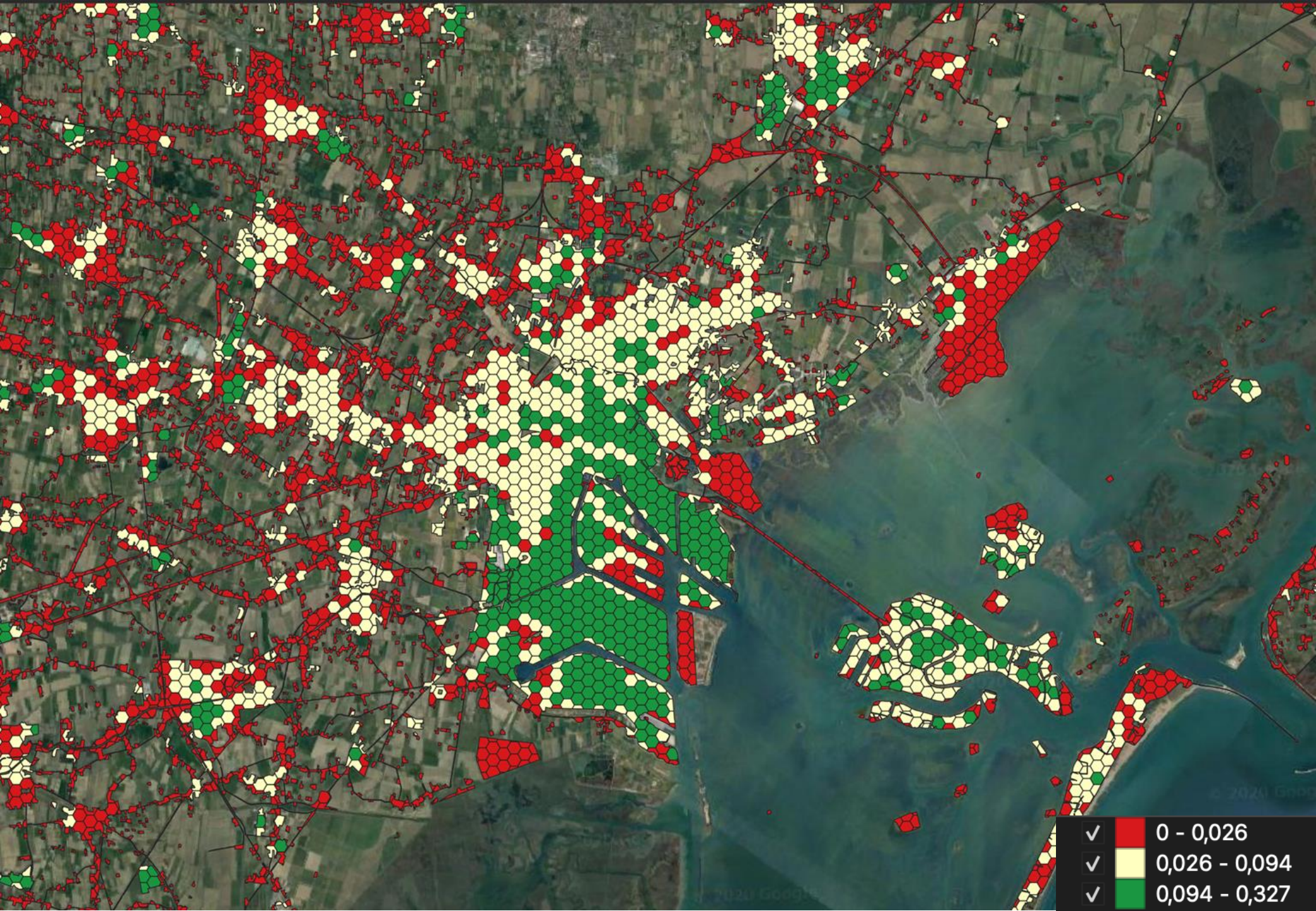
Ocene tveganja

TOPLOTNI VALOVI

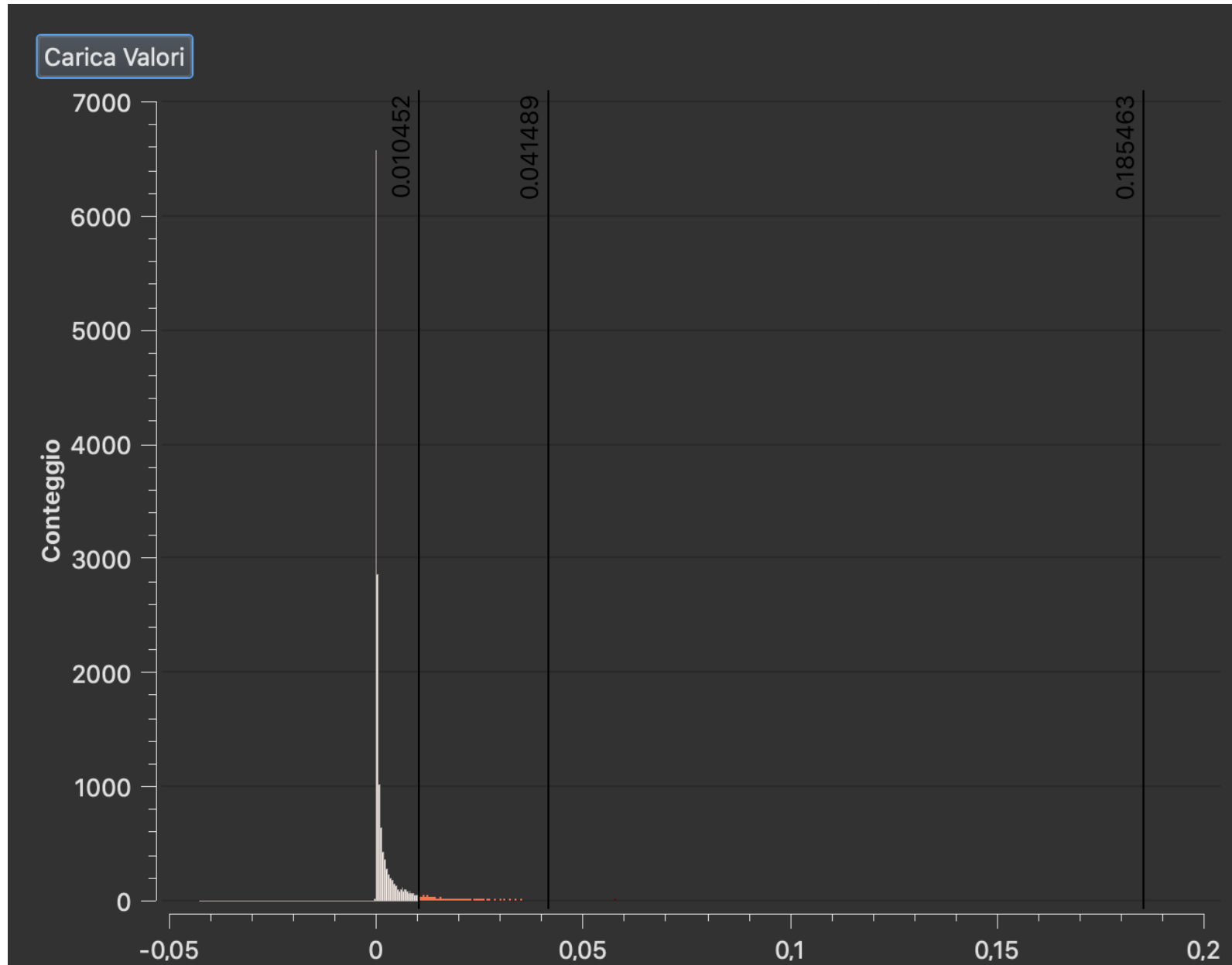
UHI - IZPOSTAVLJENOST

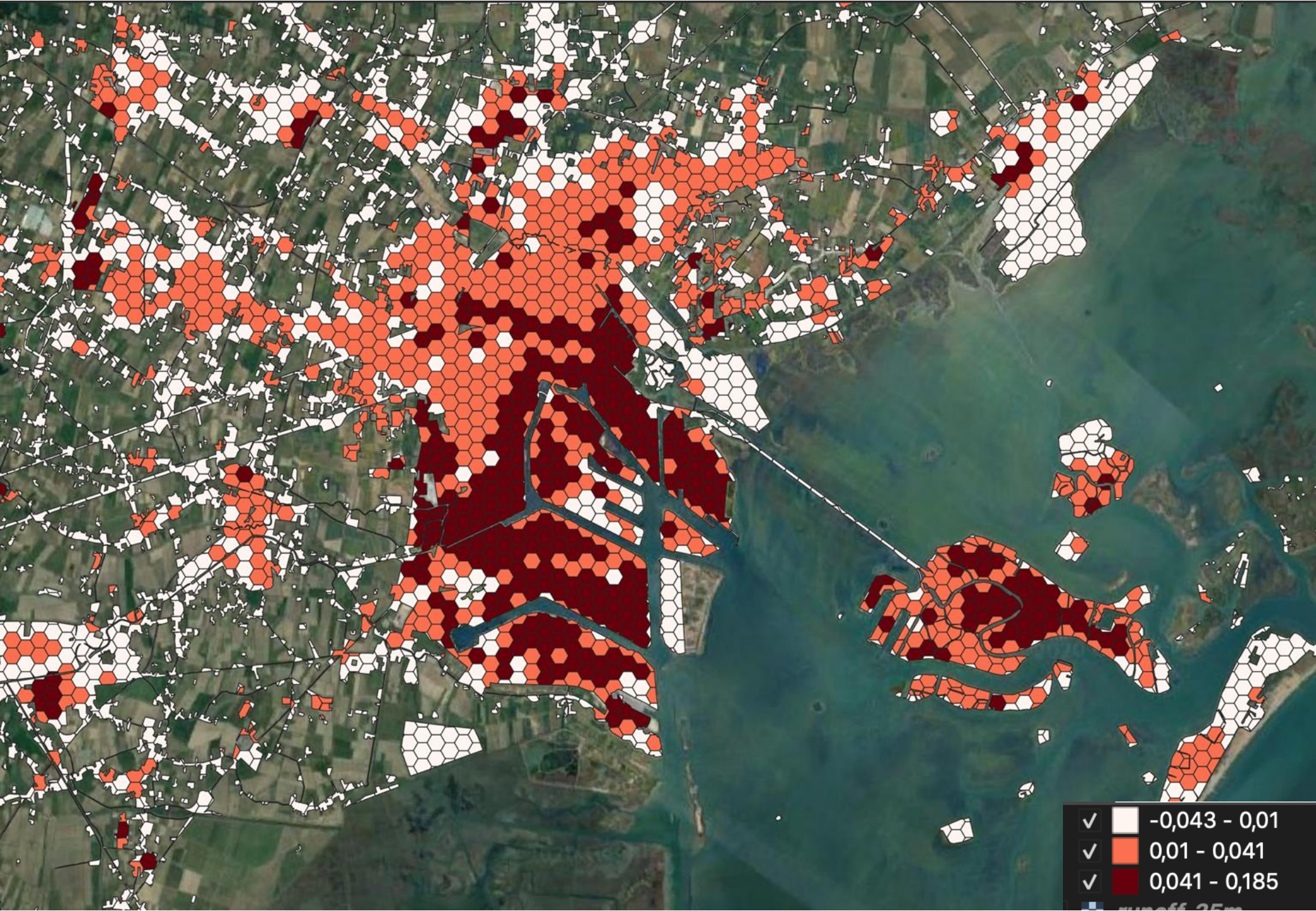


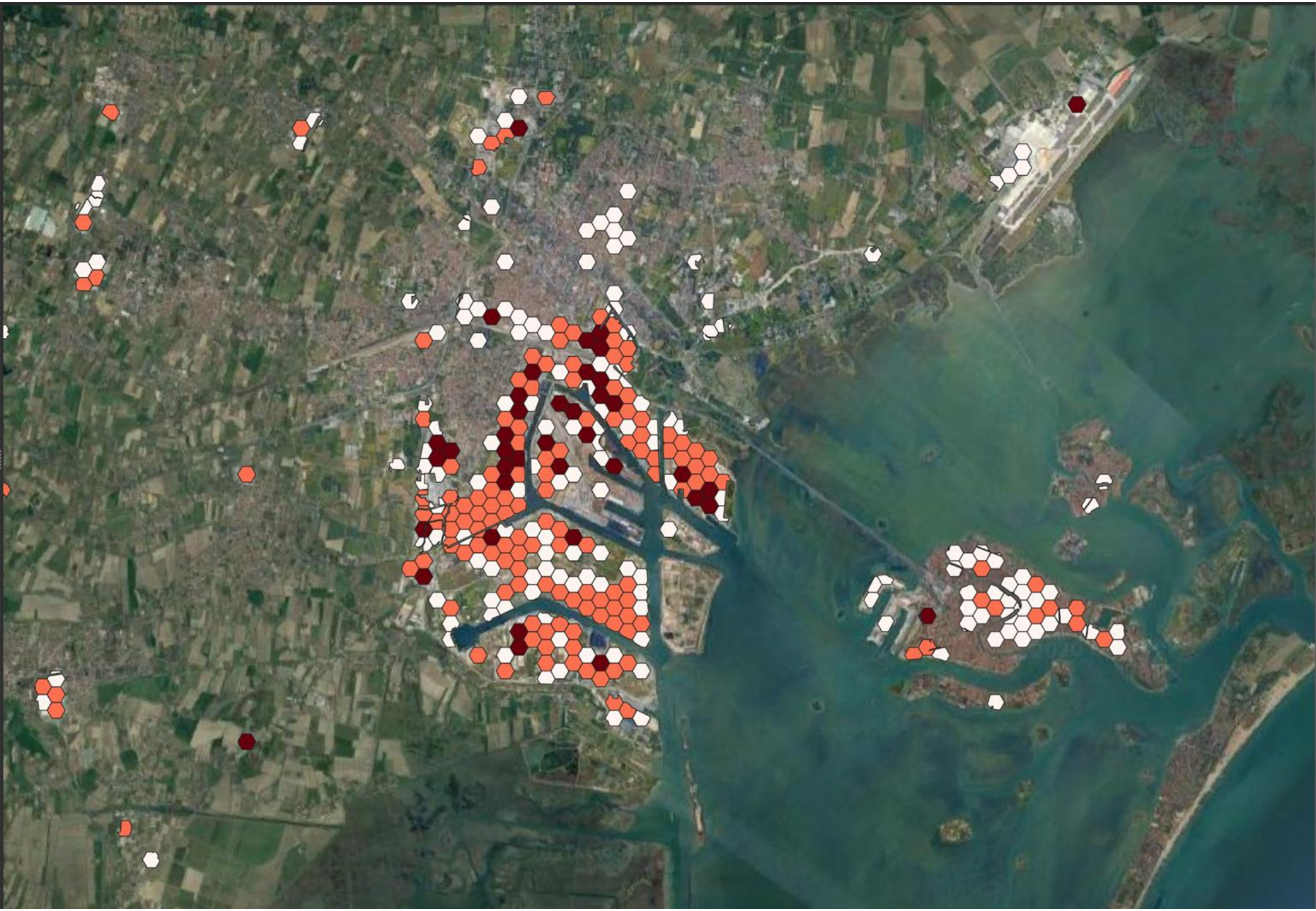




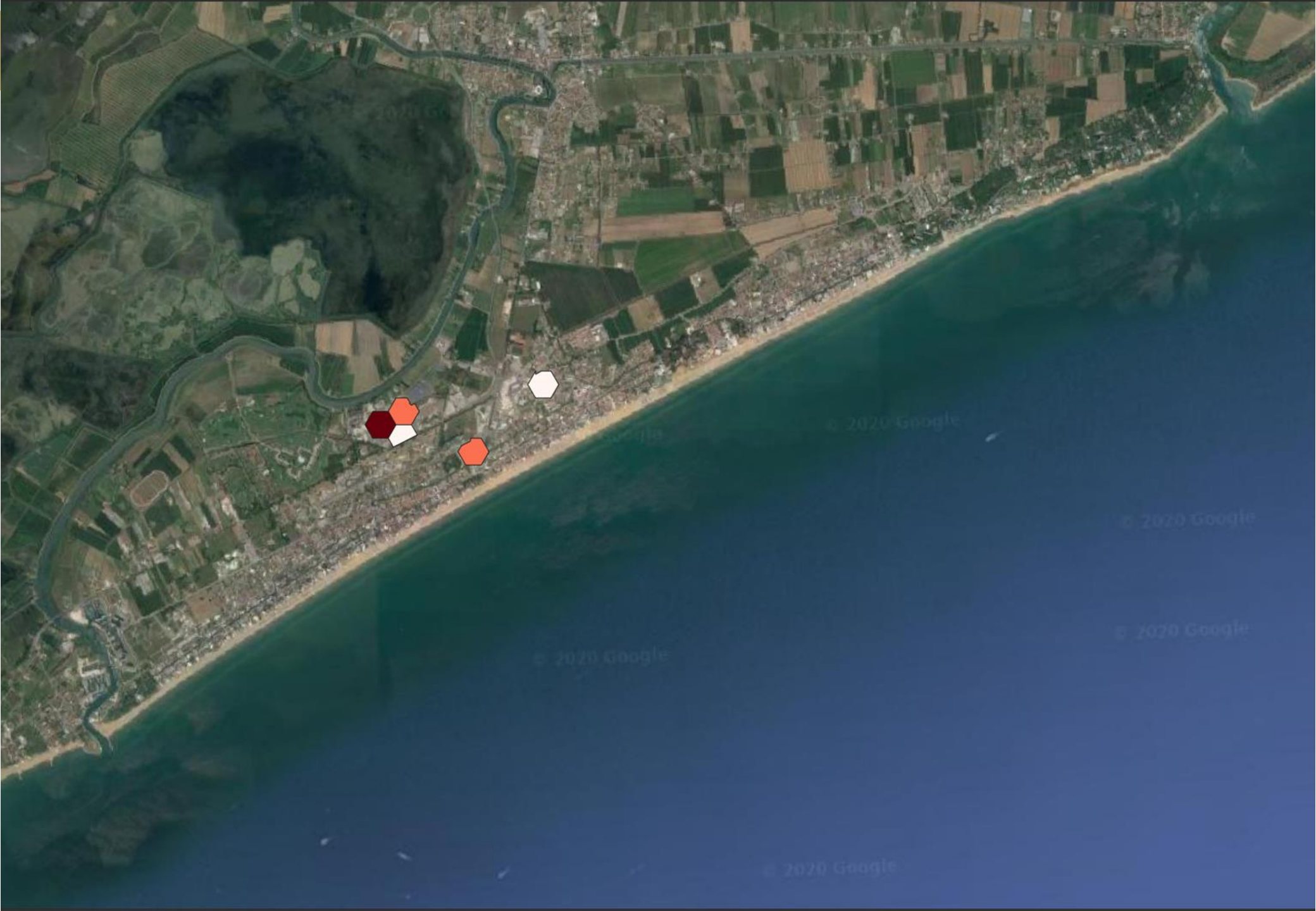
UHI - TVEGANJE

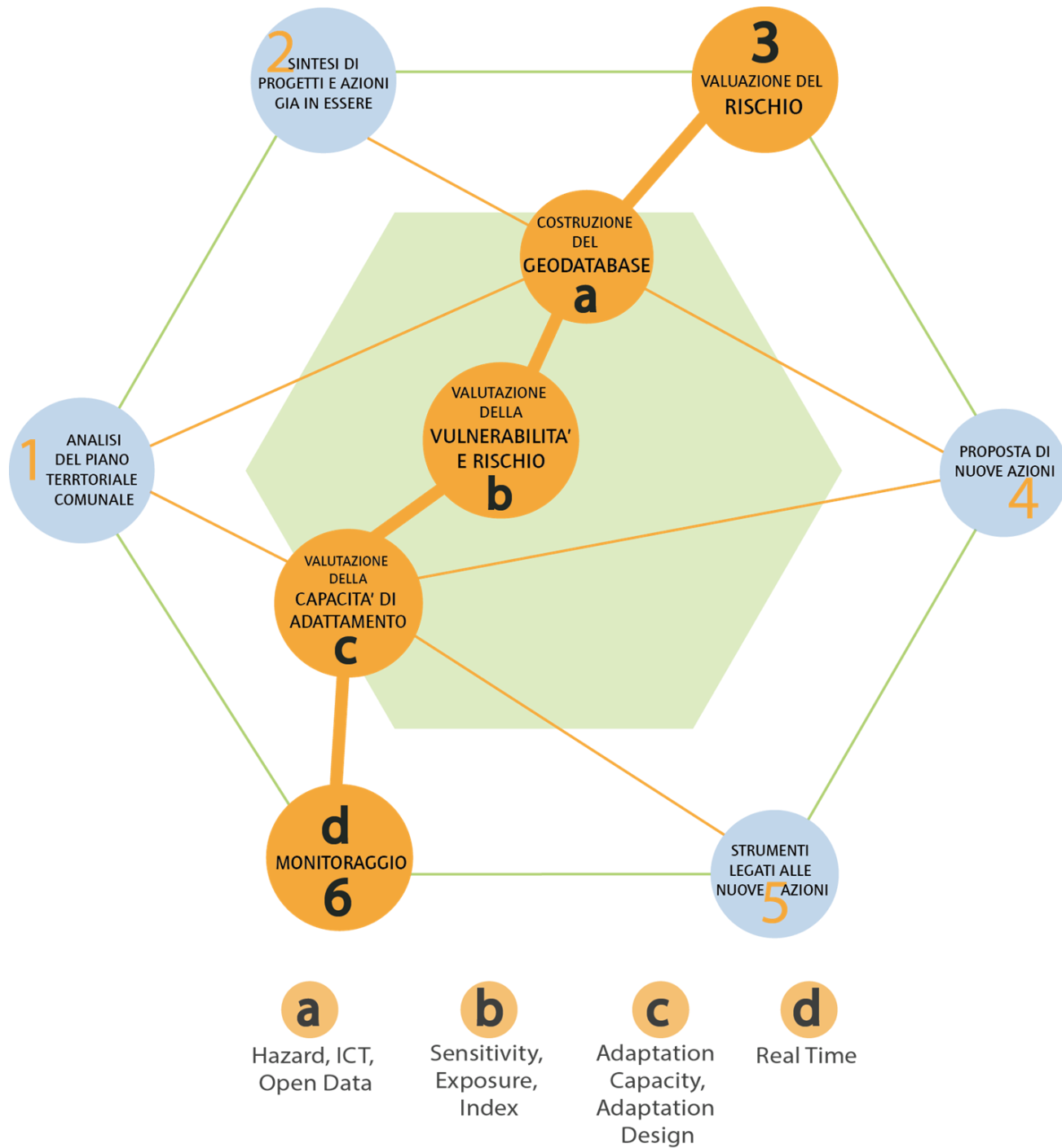












Delovna pot

Študije o LCZ

Nove tehnologije

Primer Padove

- proces združevanje v skupine
- pridobljeni rezultat
- podrobna območja
- zbirni zemljevidi
- Razmerje med kazalniki (regresijska analiza)

Prilagoditveni posegi

Abakus intervencij

- Podatkovni list

Potencial dela

Podatkovni list



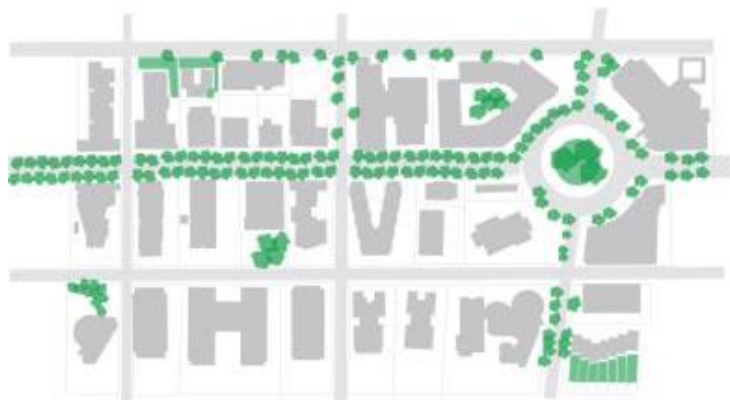
INTERVENTI GRIGI	Cool roofs	
	Cool pavements	
	Trattamenti alle pareti vetrate	
	Depermeabilizzazione	
	Colorazioni chiare per i materiali da costruzione	
	Strade raffreddate ad acqua	
	Strade con colorazioni chiare	
	Spostamento aree di sosta	
INTERVENTI VERDI	Green roofs	
	Pareti verticali verdi	
	Viali alberati	
	Rain Garden	
SMART SOLUTIONS	Piani di sensibilizzazione	
	Allarmi informativi	
	Partecipazione per gli allarmi	
	Piani di soccorso mirati	
	Installazione di sensori e ICT	

Abakus iz intervencije

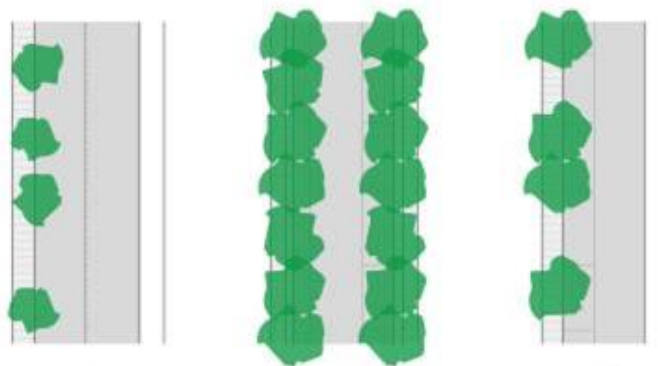
NAČRTI LEGENDE

- Piano del Traffico - Piano Urbano della Mobilità Sostenibile
- Piano Regolatore Generale
- Piano del Verde
- Piano Comunale della Protezione Civile
- Piano degli Interventi
- Piano per Insediamenti Produttivi
- Regolamento Edilizio

DEL II - Prestrežanje običajnega



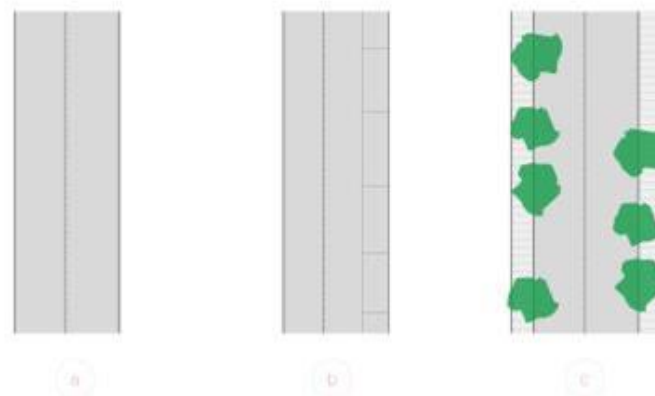
Javne zelene površine



Večja cestna infrastruktura ³

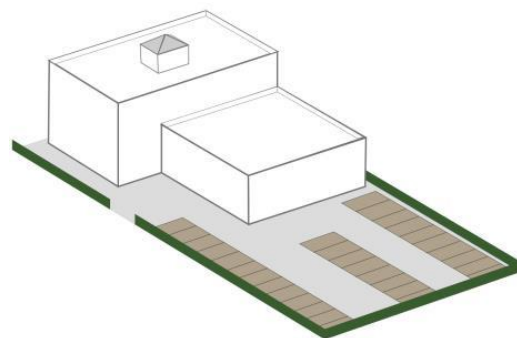


Naklon streh



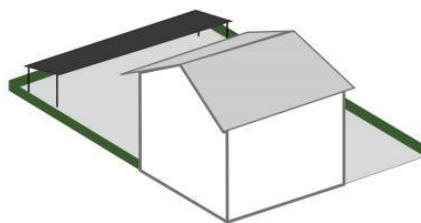
Sekundarna infrastruktura

DEL II - Prestrežanje običajnega



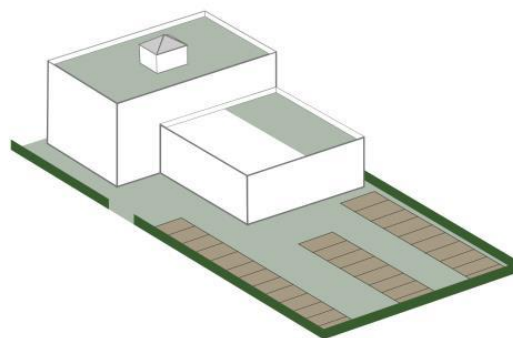
2015

Hotel z neuporabljenimi
ravnimi strehami



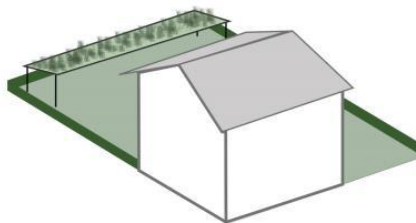
2020

Parkirišče v zasebni
hiši vodoodporen



2020

Hotel z zelenimi
strehami



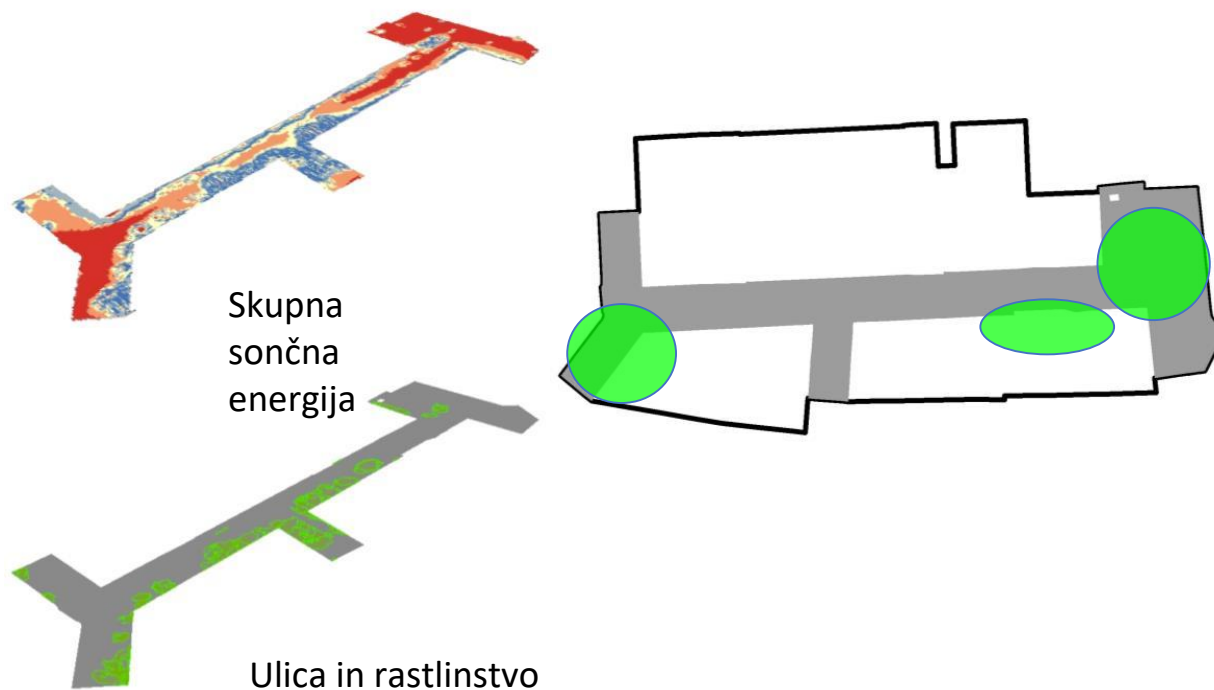
2020

Predelava v prepustno parkirišče



Primer ranljivosti in prilagoditve

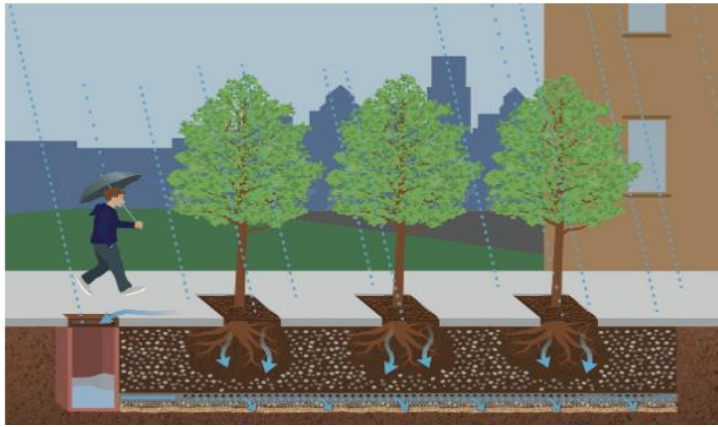
Potreba po lokalnem delu na območjih, kjer je večja ranljivos

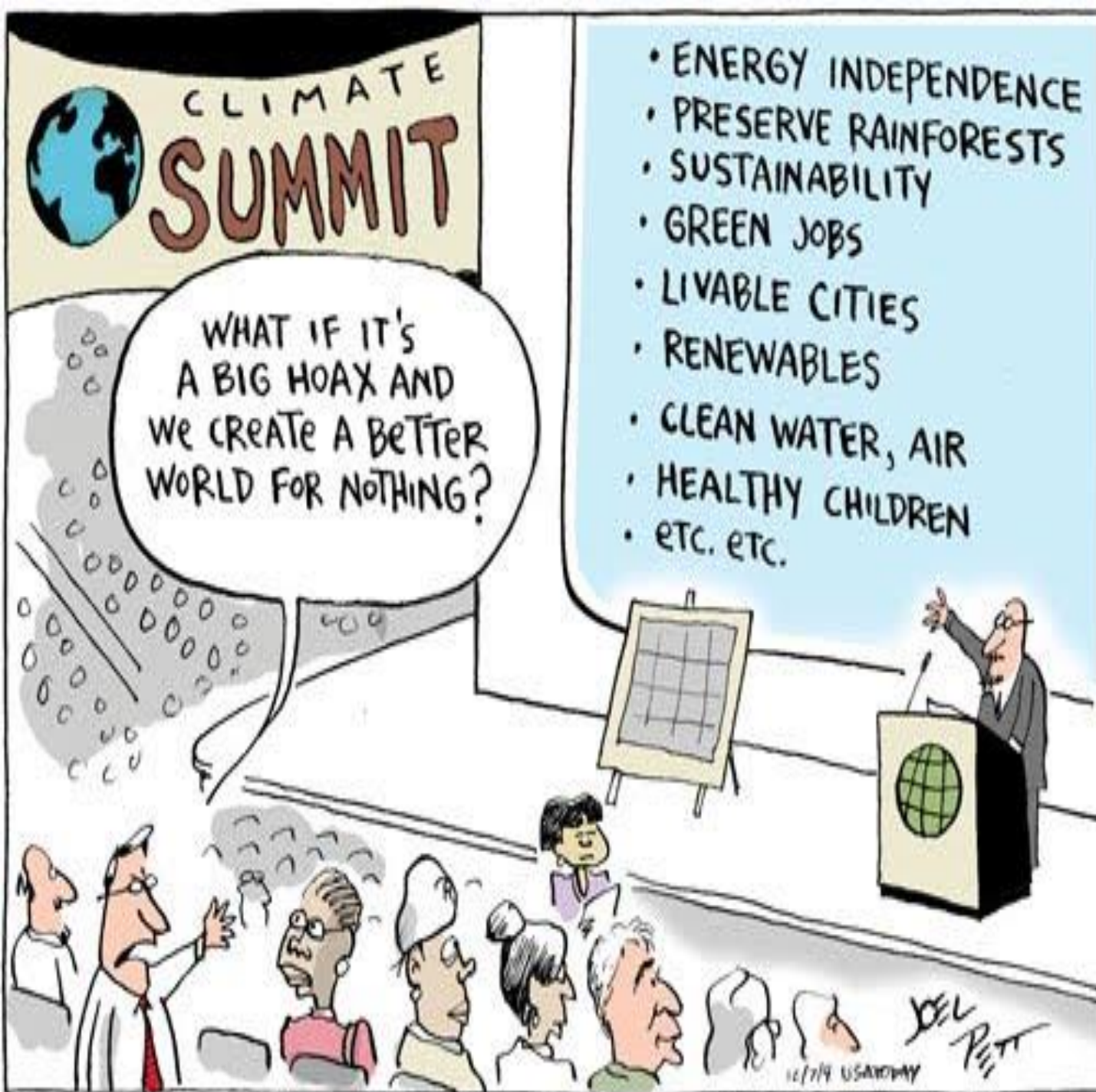


SISTEMI PRILAGODITVE Z ZELO INFRASTRUKTURO



SISTEMI PRILAGODITVE Z ZELO INFRASTRUKTURO





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