CLIMAAX

Climate ready regions

Co-funded by the European Union

CLIMAAX climate ready regions

CLIMAAX

CLIMate risk And vulnerability Assessment framework and toolboX

Regional Risk Assessments for Civil Protection and Climate Adaptation

Daniel Sempere
Bart van den Hurk

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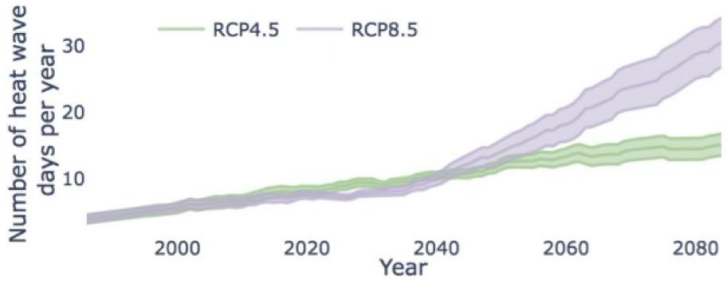
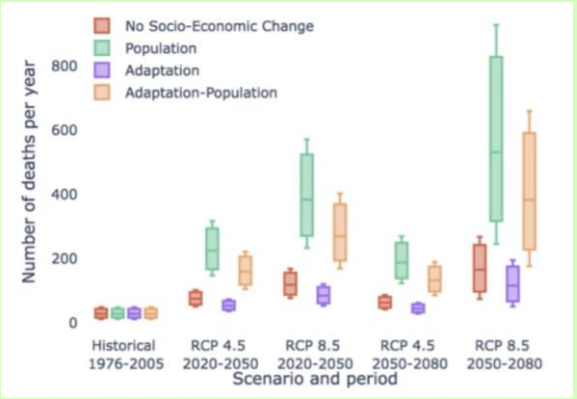
https://www.climaax.eu/

PRESENT RISKS

INCREASE OF IMPACTS DUE TO CLIMATE CHANGE



FUTURE RISKS



METHODOLOGICAL APPROACH for REGIONAL/LOCAL SCALE

ADAPTATION strategies to increase regional Resilience and Improve local Risk Management Plans

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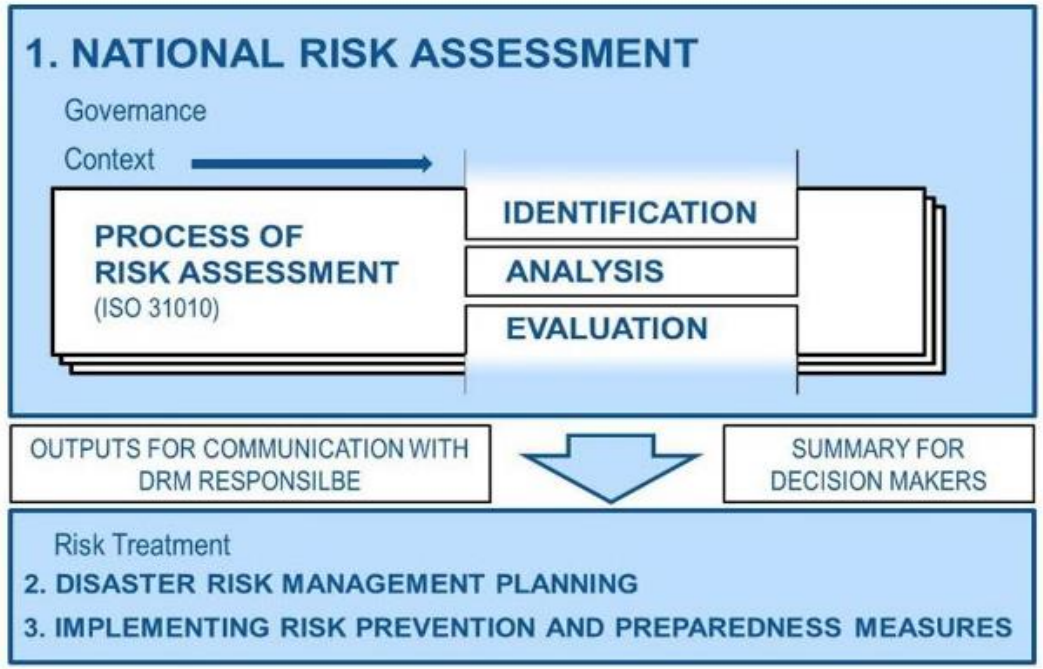
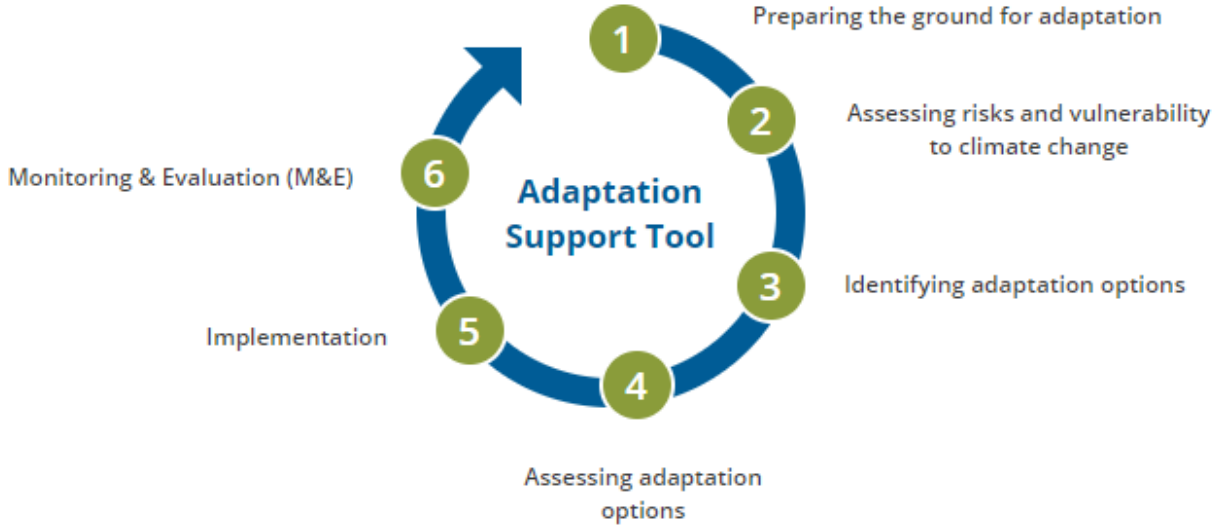
Adapted Risk Management Planning for Civil Protections



Climate Adaptation Support Tool



https://climate-adapt.eea.europa.eu

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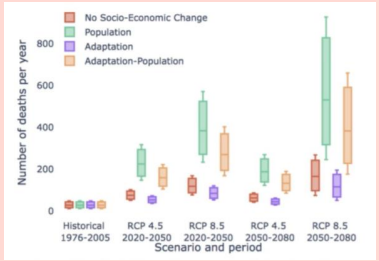
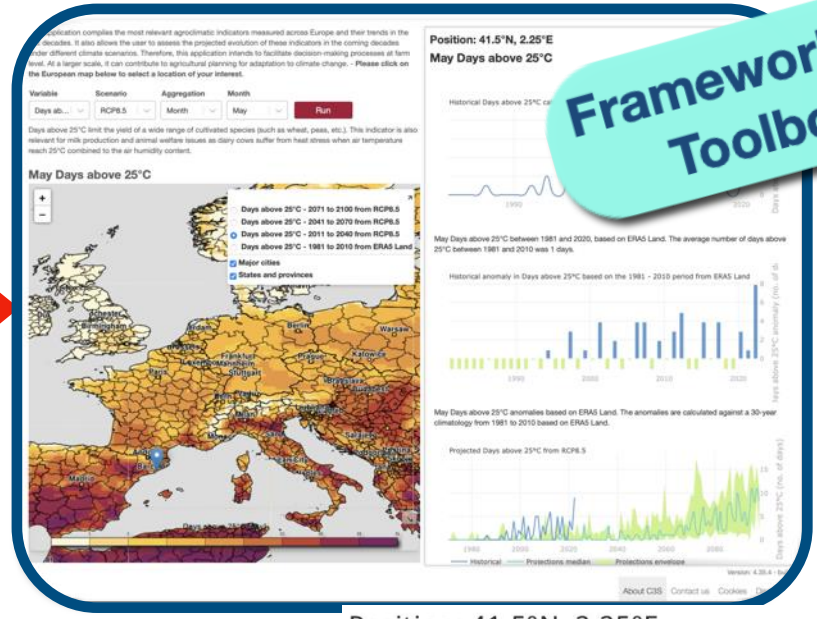
Floods
Flash floods
Landslides
Wildfires
Heatwaves
Coldwaves
Droughts
Wind storms
Snow falls…

METHODOLOGIES to assess the Increase of Impacts





Framework + Toolbox

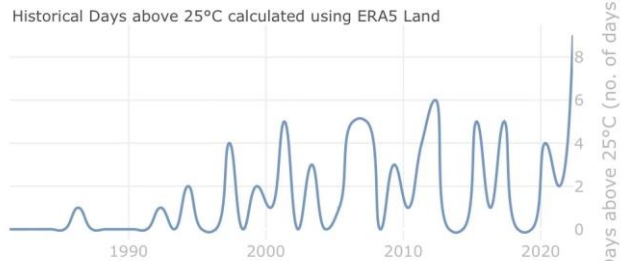
Position: 41.5°N, 2.25°E
May Days above 25°C

FOR ANY HAZARD

- Define a set of Climatic Indicators related to the variables triggering the different hazards
- Be able to calculate them in the PAST
- And in the FUTURE (projections)
- Pre-calculate these Indicators thoroughly => **NON BIASED projections**
- Be able to easy extract and represent them at any location

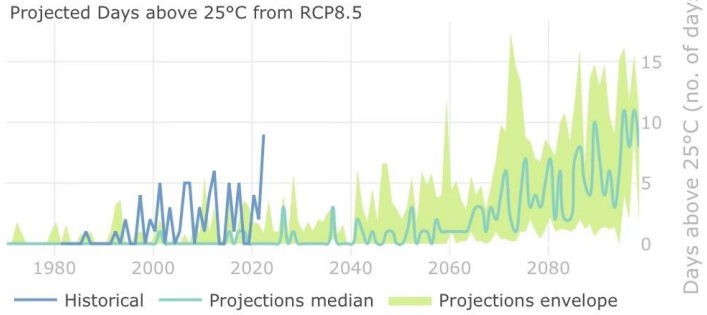
PAST

- ERA5 reanalysis



FUTURE

- NON-BIASED EURO-CORDEX dataset on different RCPs



High Intensity Rainfall Floods

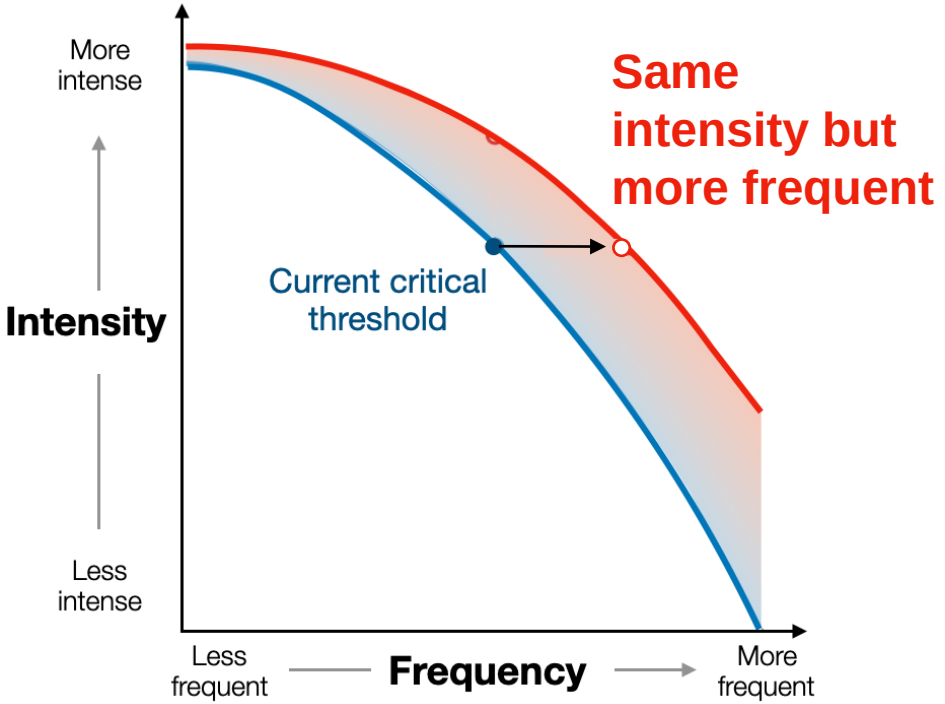
How do we manage the expected
change in frequency and magnitude?

T > 10 years

30 mm/ 30 min

T > 2 years

30 mm/ 30 min



High Intensity Rainfall Floods

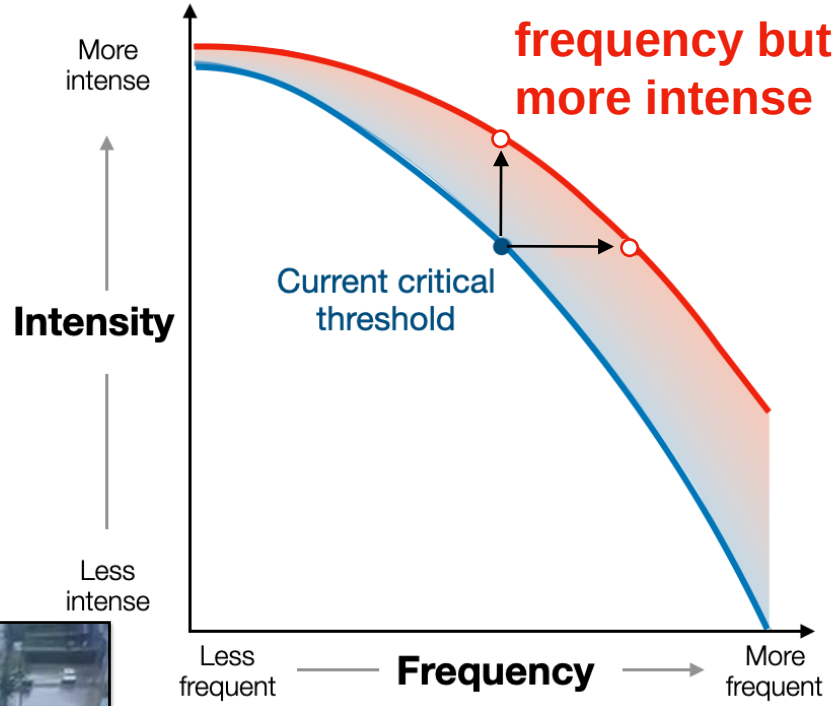
How do we manage the expected
change in frequency and magnitude?

T > 10 years

30 mm/ 30 min

T > 10 years

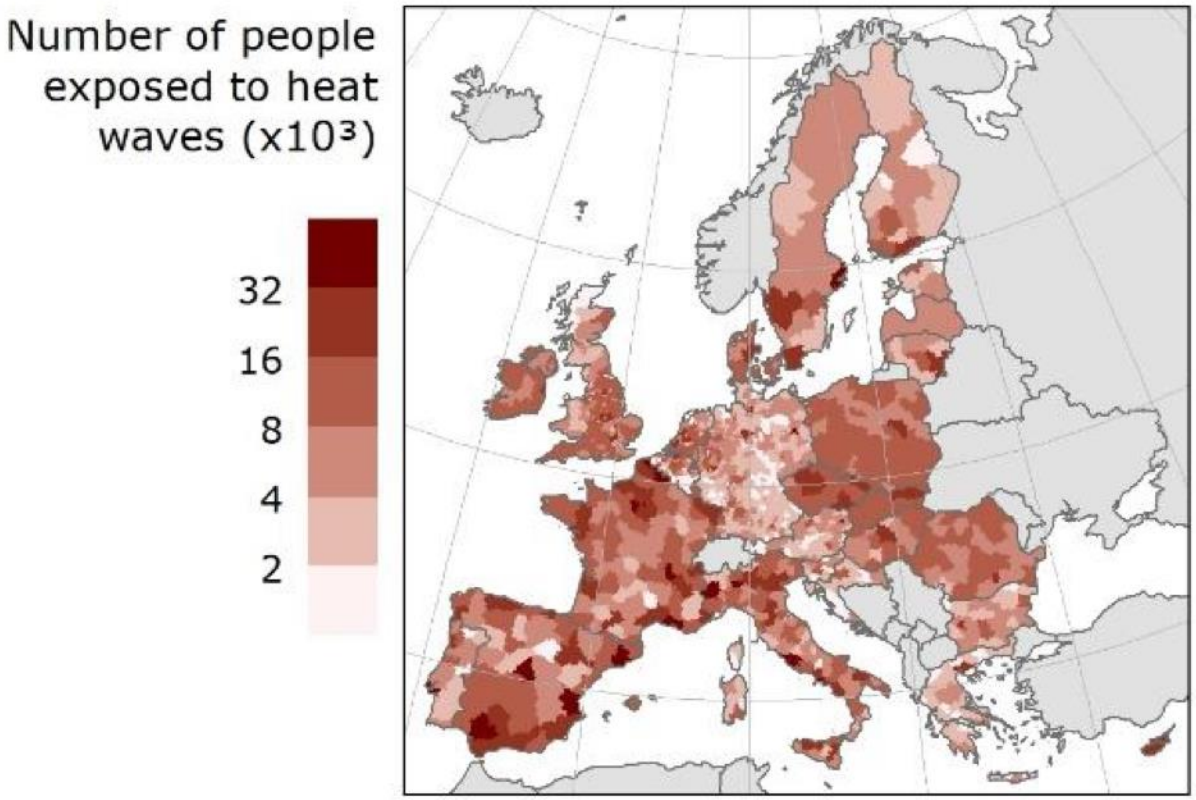
45 mm/ 30 min



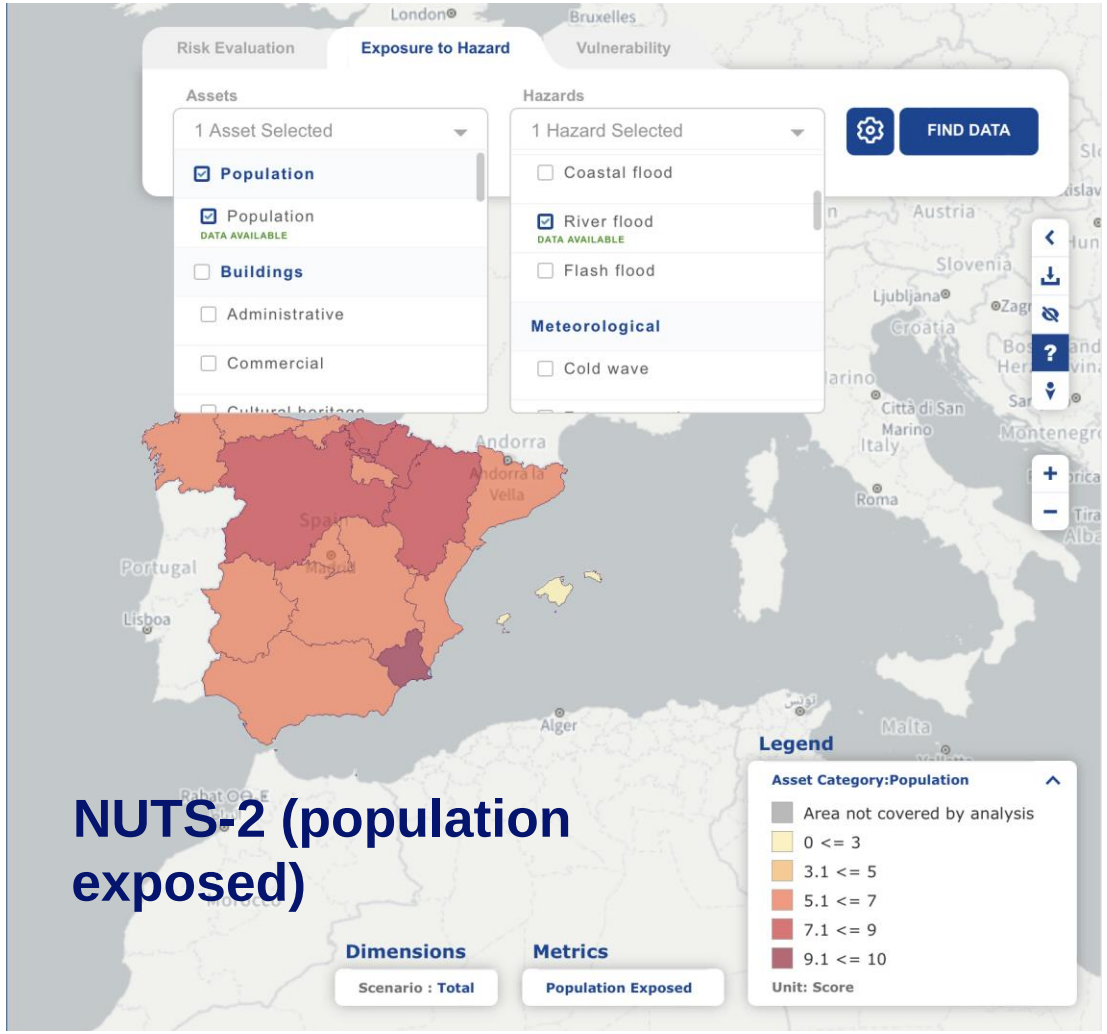
EXPOSURE

Peseta IV / TRACE

EU Reference Scenario from LUISA modelling platform



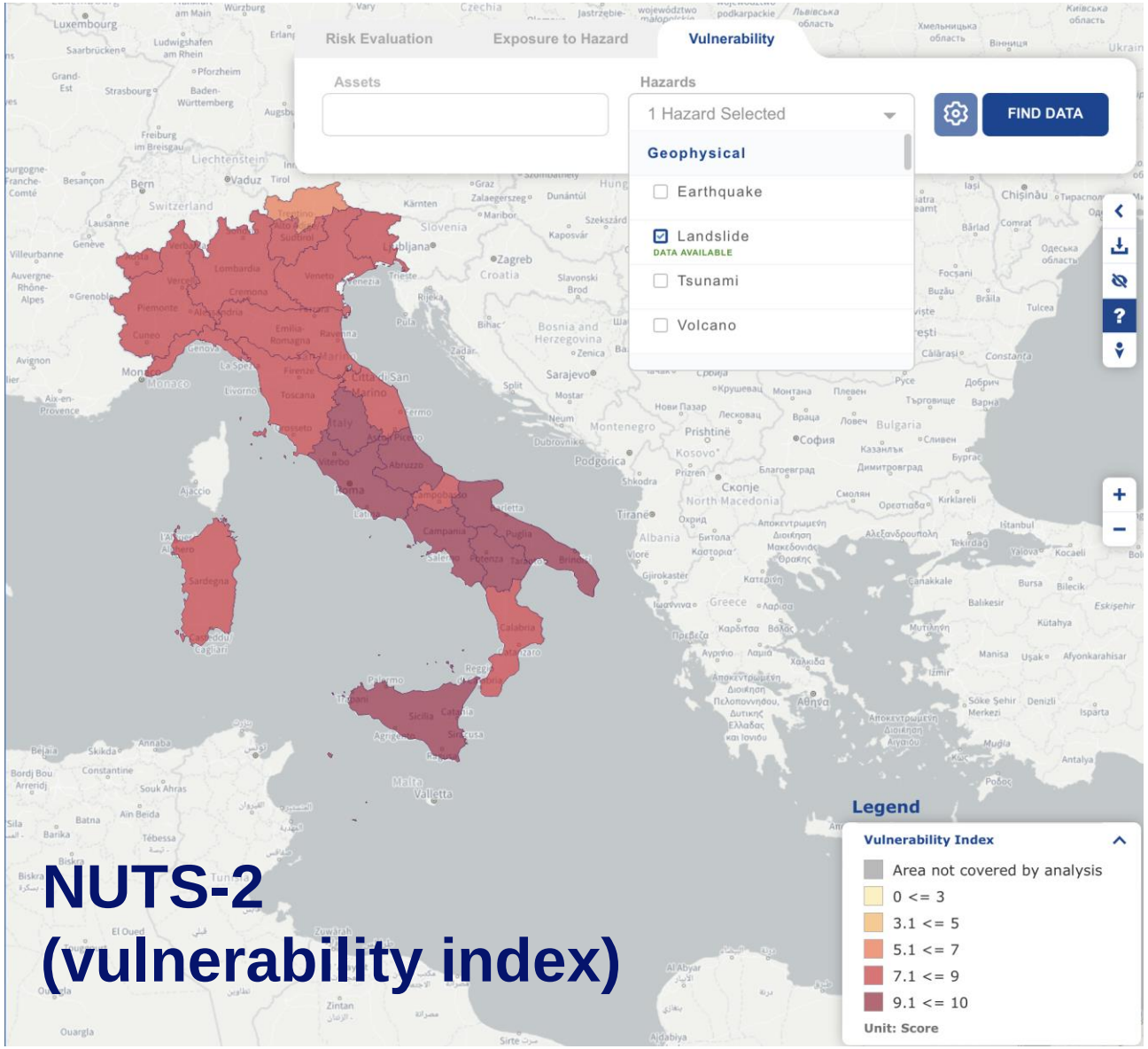
Risk Data Hub



NUTS-2 (population exposed)

VULNERABILITY

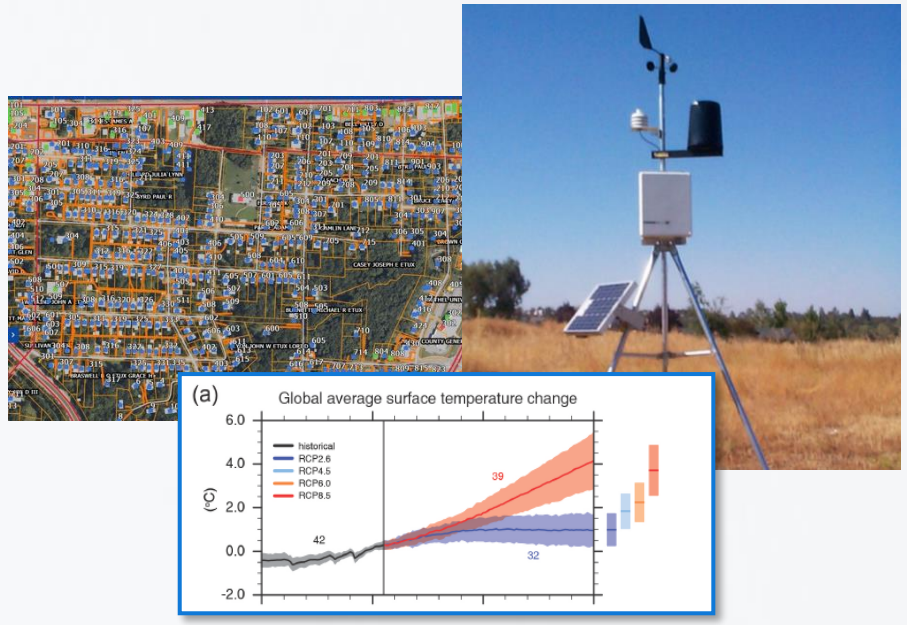
Risk Data Hub



NUTS-2 (vulnerability index)

Requirements for a regional CRA

- Represent local characteristics (at high resolution)
- Represent local climate variability
  - *Regional climate trends*
  - *Local weather characteristics*
- Forward looking for hazard, exposure and vulnerability
- → Regional data and expertise is required



Toolbox validated in 5 pilots

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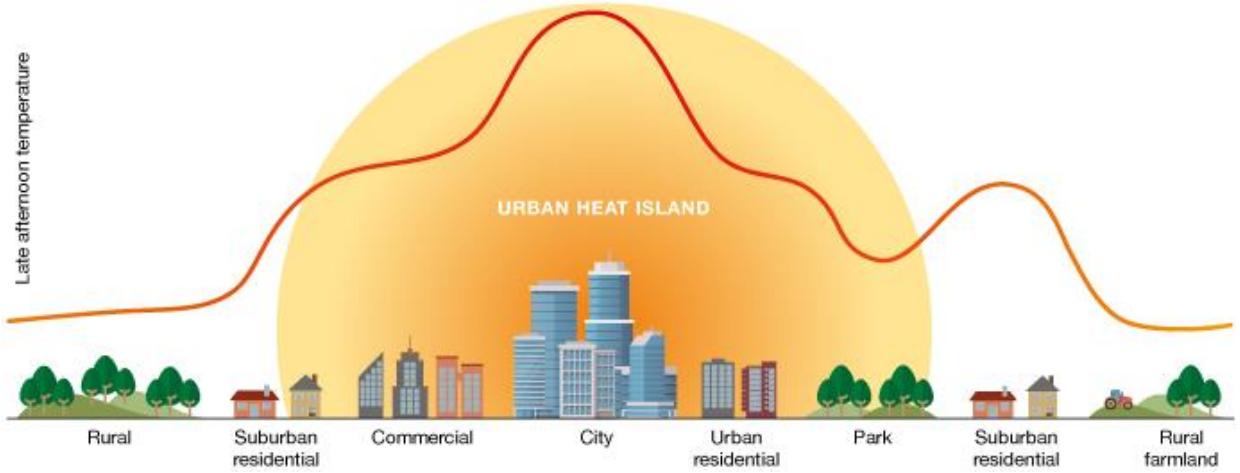
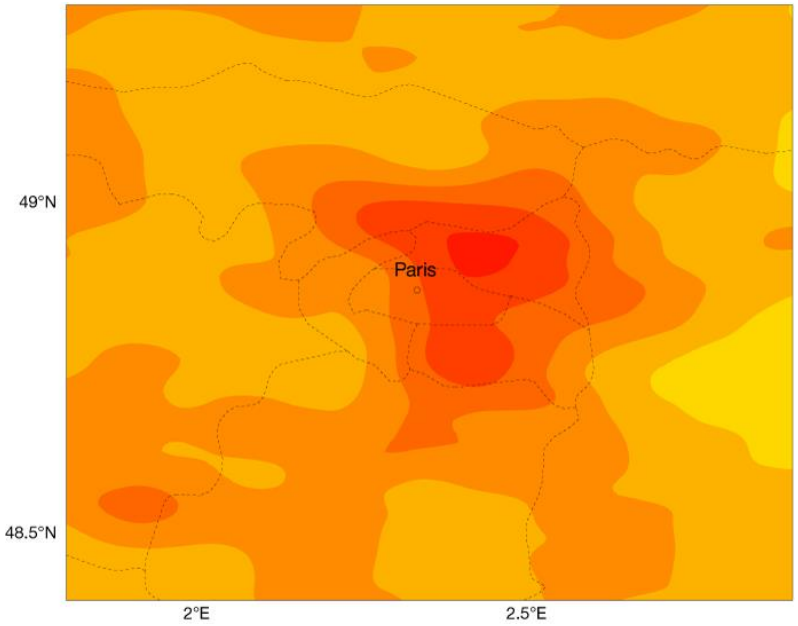
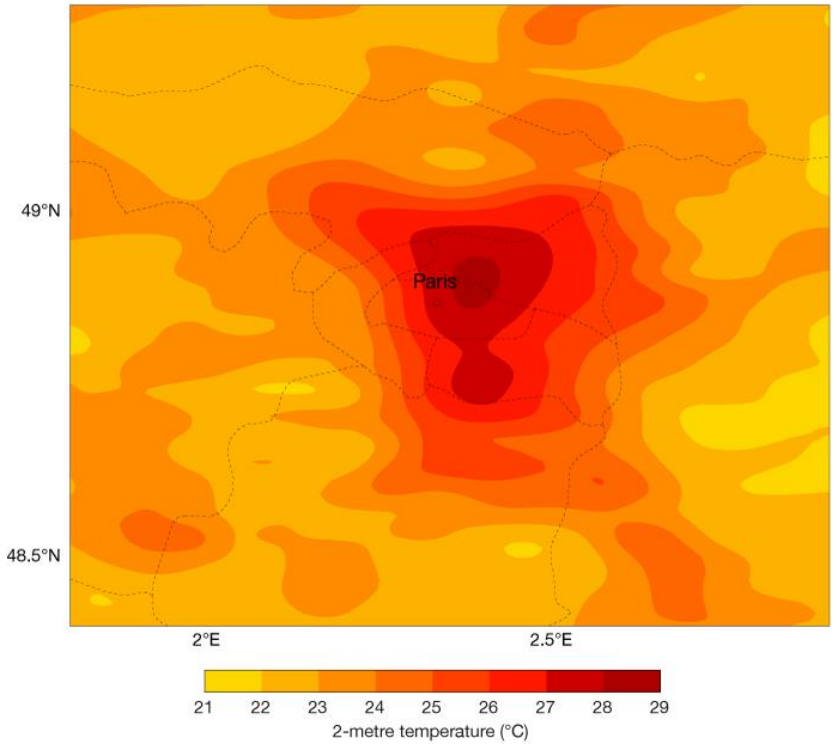
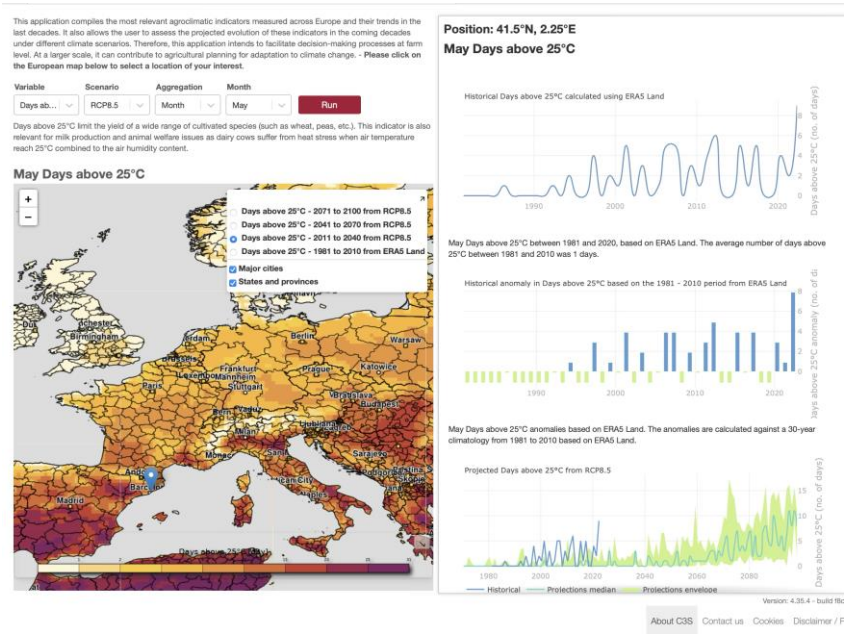
Heat Waves: Critical to take into account Urban Heat Island Effects

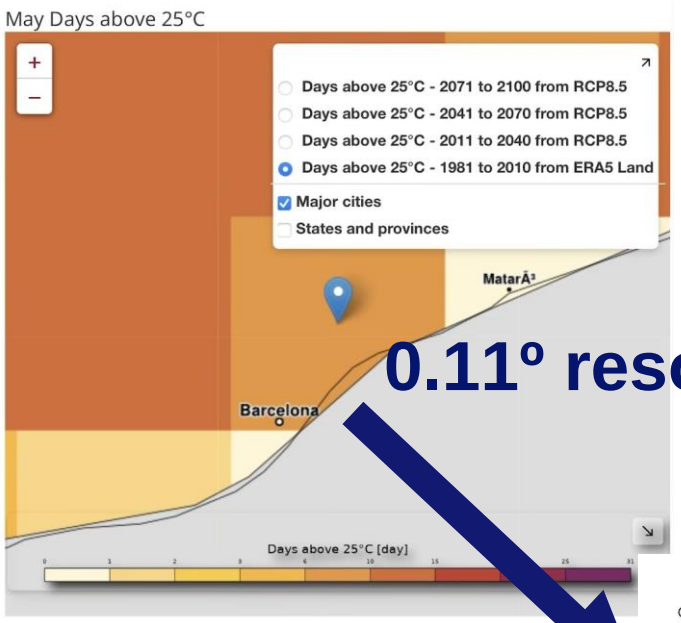






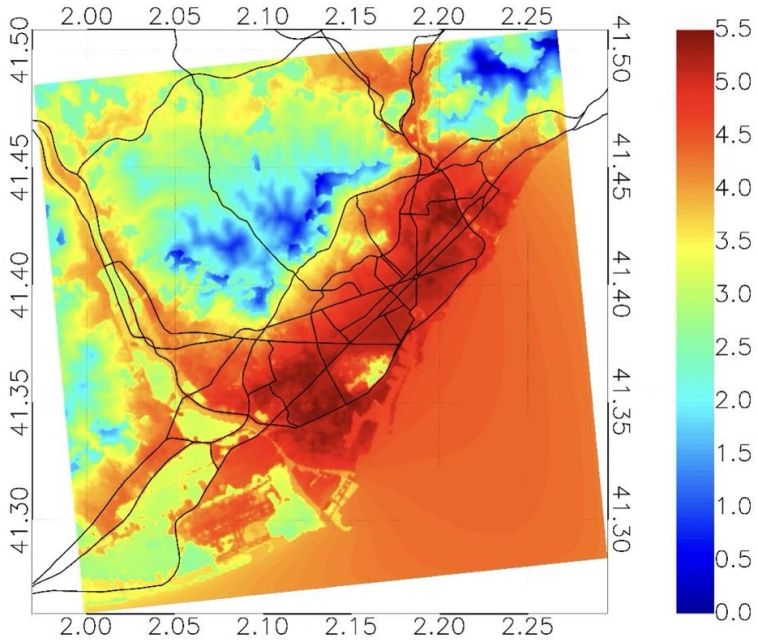
Need of downscaling and include local data





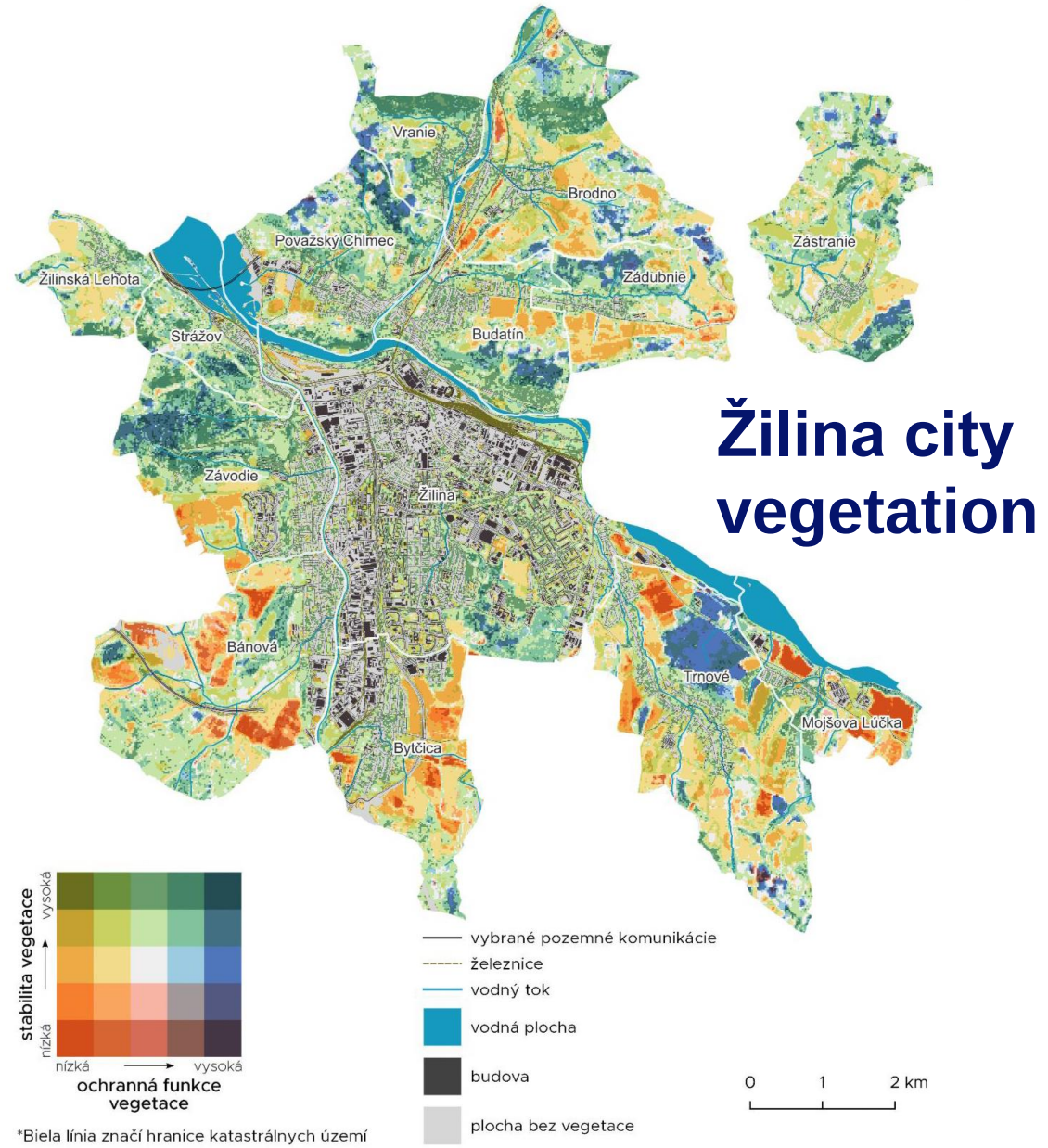
EURO-CORDEX pixel

0.11º resolution



Need to support local downscaling and data integration at local/city level

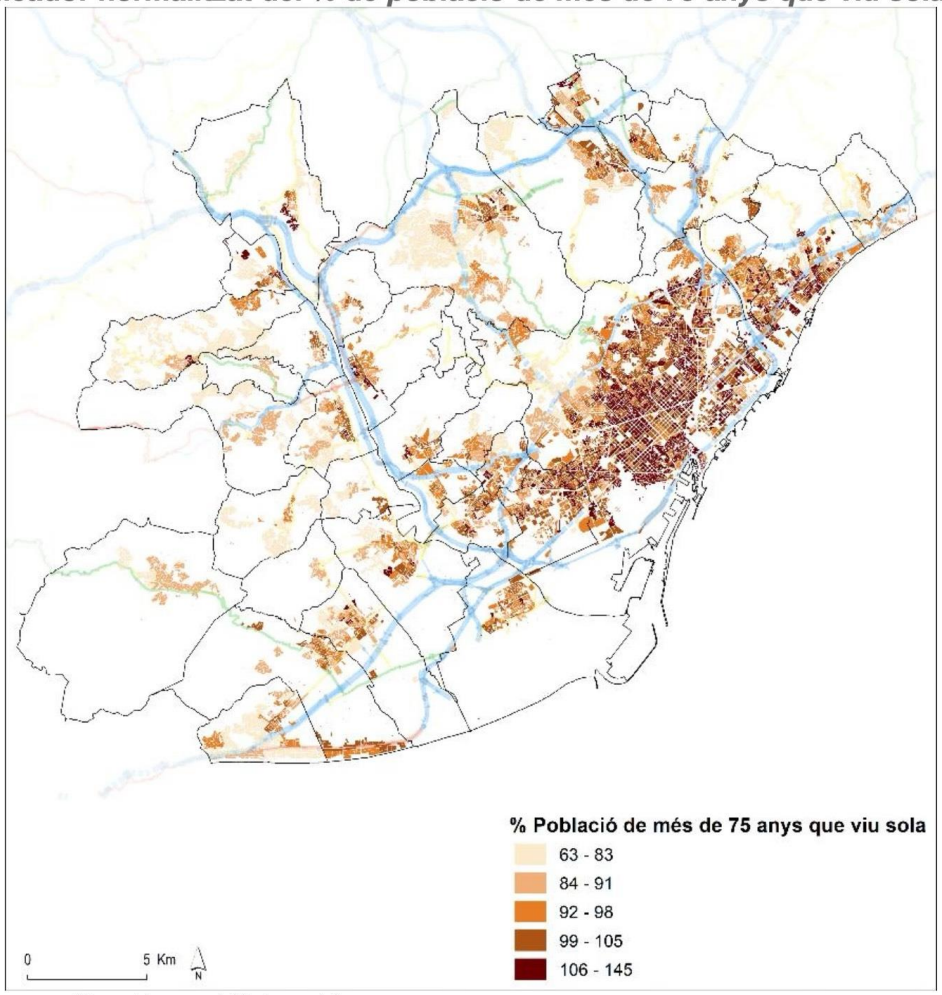
Use of local data ENCOURAGED



Žilina city vegetation

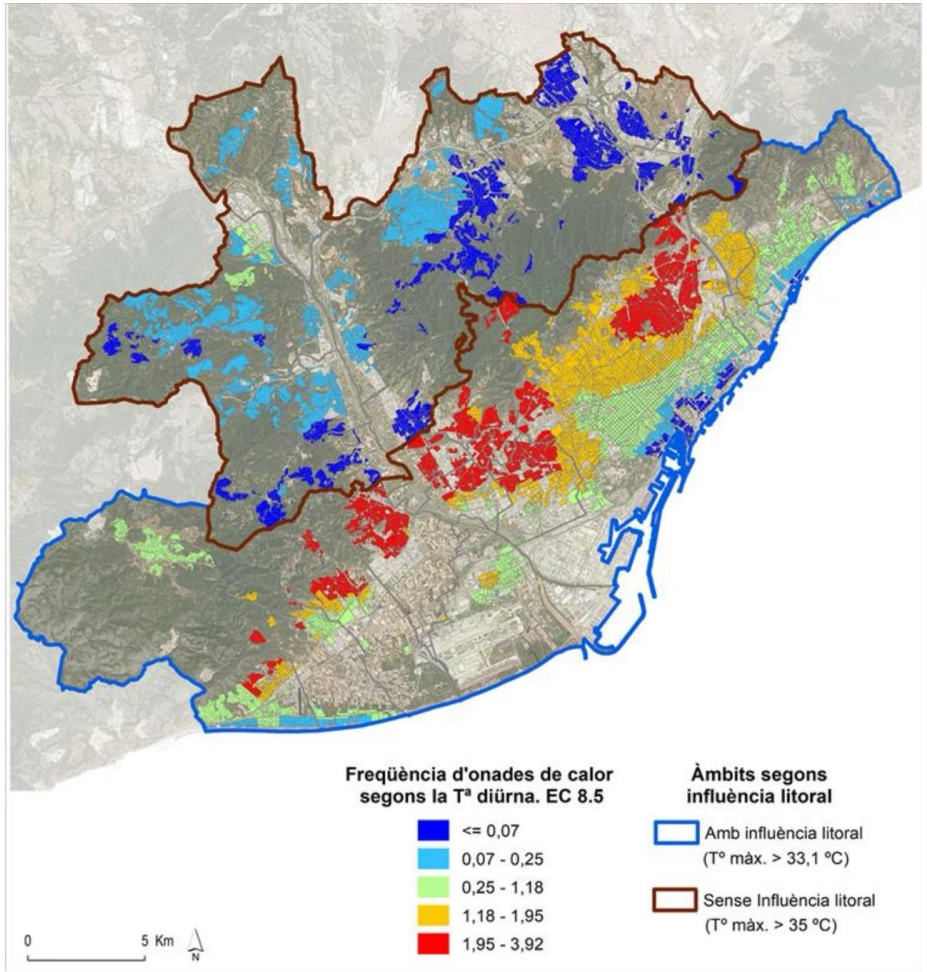
% of Population over 75 years that lives alone in Barcelona Metropolitan Area (2018): IERMB from IDESCAT

Mapa 3.10. Indicador normalitzat del % de *població de més de 75 anys que viu sola*. 2018.



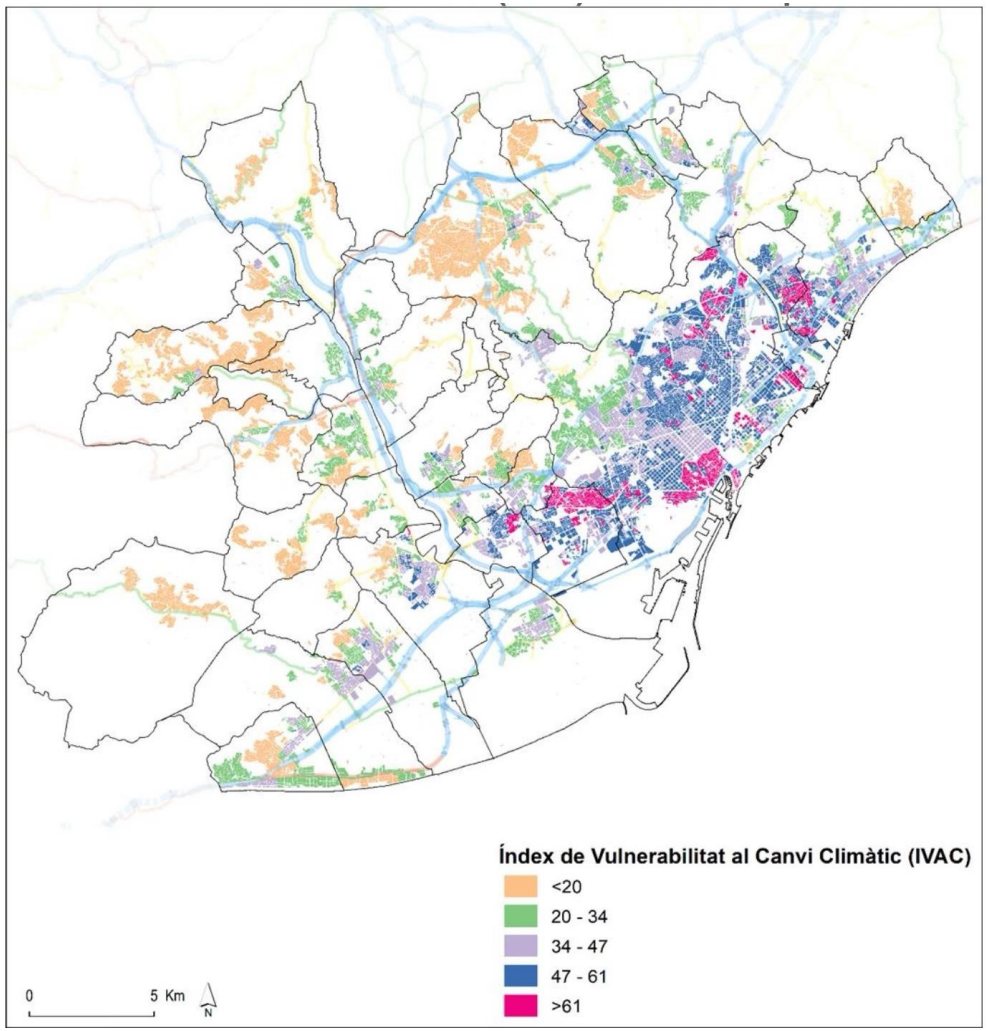
Nota: Mètode de normalització: μ = 100 i σ=10.
Font: IERMB a partir de Padró municipal d'habitants, IDESCAT.

Climatic Indicator of Heat Waves annual frequencies in the Barcelona Metropolitan Area (2011-2040): IERMB



Nota: A partir del nombre mitjà anual de ratxes de tres o més dies consecutius amb temperatures molt elevades. L'Indicador resultant és la suma dels valors actuals (escenari Control) + les variacions de l'escenari RCP8.5.
Font: IERMB a partir de Estudi SMC 2018.

Vulnerability index to Climate Change in Barcelona Metropolitan Area (2019): IERMB

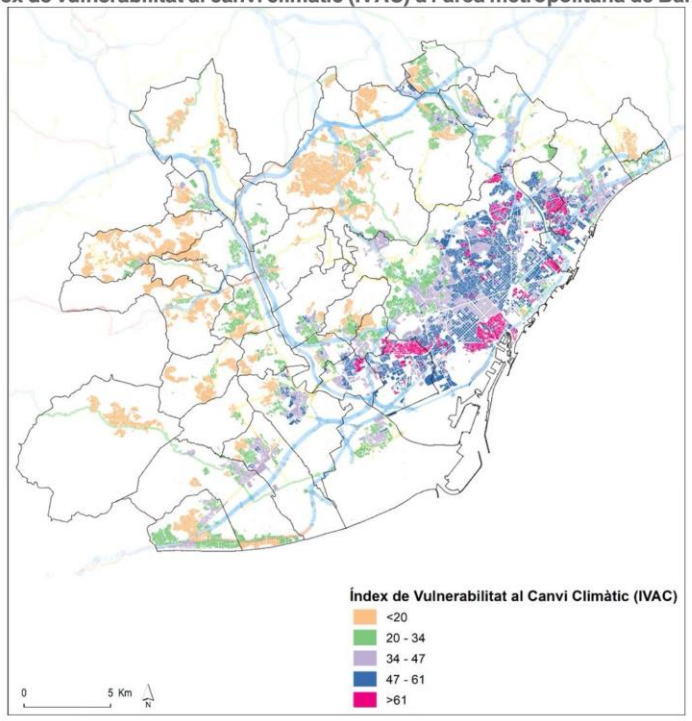


CLIMAAX cannot do local studies…

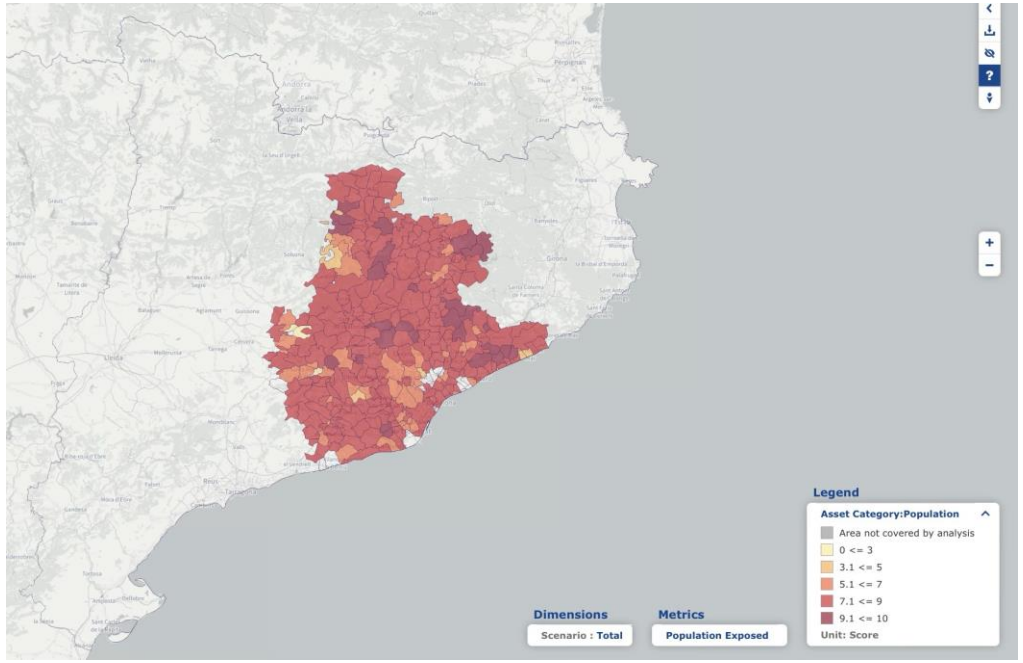
… but can support third parties to do it at their regional/local scale

CHALLENGE: How to adapt the methodology to extend it to a maximum num

Mapa 4.1. Índex de vulnerabilitat al canvi climàtic (IVAC) a l'àrea metropolitana de Barcelona. 2019.



Font: IERMB.



also for wildfires, flash floods, landslides, droughts…

The pillars of CLIMAAX

Framework for regional CRA

→ supporting civil protection and climate adaptation

Toolbox and pilots

→ testing data needs and diversity of requests

Cascading fund

→ Financial support for >60 regions

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The CLIMAAX framework

Norms & principles

- Inventory of experience, best practices
- Consultation in regions & sectors

Practical guidance

- Past and future trends
- Risk indicators & viewpoints

Follow-up

- uptake into DRM and climate adaptation strategy

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The CRA toolbox principles

- **Base layer**: similar to Risk Data Hub (regional climate/exposure/vulnerability data from pan-European datasets) (**non-expert user**)
- **Dashboard layer**: online risk assessment tool with local data (**local user**)
- **Download layer:** local manipulation of all scripts and data (**advanced user**)

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The cascading fund

Financial support for regions

- At least 60 regions & communities
- Criteria include diversity and needs

Formal call procedure

- Selection procedure & criteria

1st Call open

8 December 2023 – 8 March 2024

- 2 rounds
- 2yr projects finalize autumn 2026

https://climaax-call4regions.fundingbox.com/

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Financial Support for Third Parties

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M6

STEP 1: COMMON METHODOLOGY applicable at regional/local scale in Europe

- Multi-risk
- Applicable in any interested region/municipality/community
- Able to establish a common Risk Assessment benchmark across Europe
- Using as much as possible the information already available
- Applicable in any location in EU

M18

STEP 2: REFINED REGIONAL/LOCAL HR ANALYSIS AND RISK ASSESSMENT

- Using local data /downscaling of the projected climate indicators by third parties
- Capable to integrate local high-resolution data and approaches
- Able to enhance regional/local risk assessments
- Applicable by third parties to any location in EU

M24

STEP 3: BETTER REGIONAL/LOCAL ADAPTATION STRATEGIES AND RISK MANAGEMENT PLANS

- Uptake into regional/local adaptation strategies and RMPs in the region/community
- Produce technical documents to support the look for funding to implement the adaptation strategies
- Examples of best practices

IMPLEMENTATION IN 60-100 regions/municipalities/communities

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What do we want to learn from this?

Framework for regional CRA

→ supporting civil protection and climate adaptation

Toolbox and pilots

→ testing data needs and diversity of requests

Cascading fund

→ Financial support for >50 regions

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Regional Climate Risk Assessments are very diverse

Many challenges

Multiple
data sources

Our motto:
standardized flexibility

Many regions

Learning by doing

5 Pilot regions

- Site visits revealed key issues
- Helping with shaping toolbox & application

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the European Union

Learning by doing

5 Pilot regions

- Demo for applicants

Demo workshop

~29-31 January

Setubal (PT) + online

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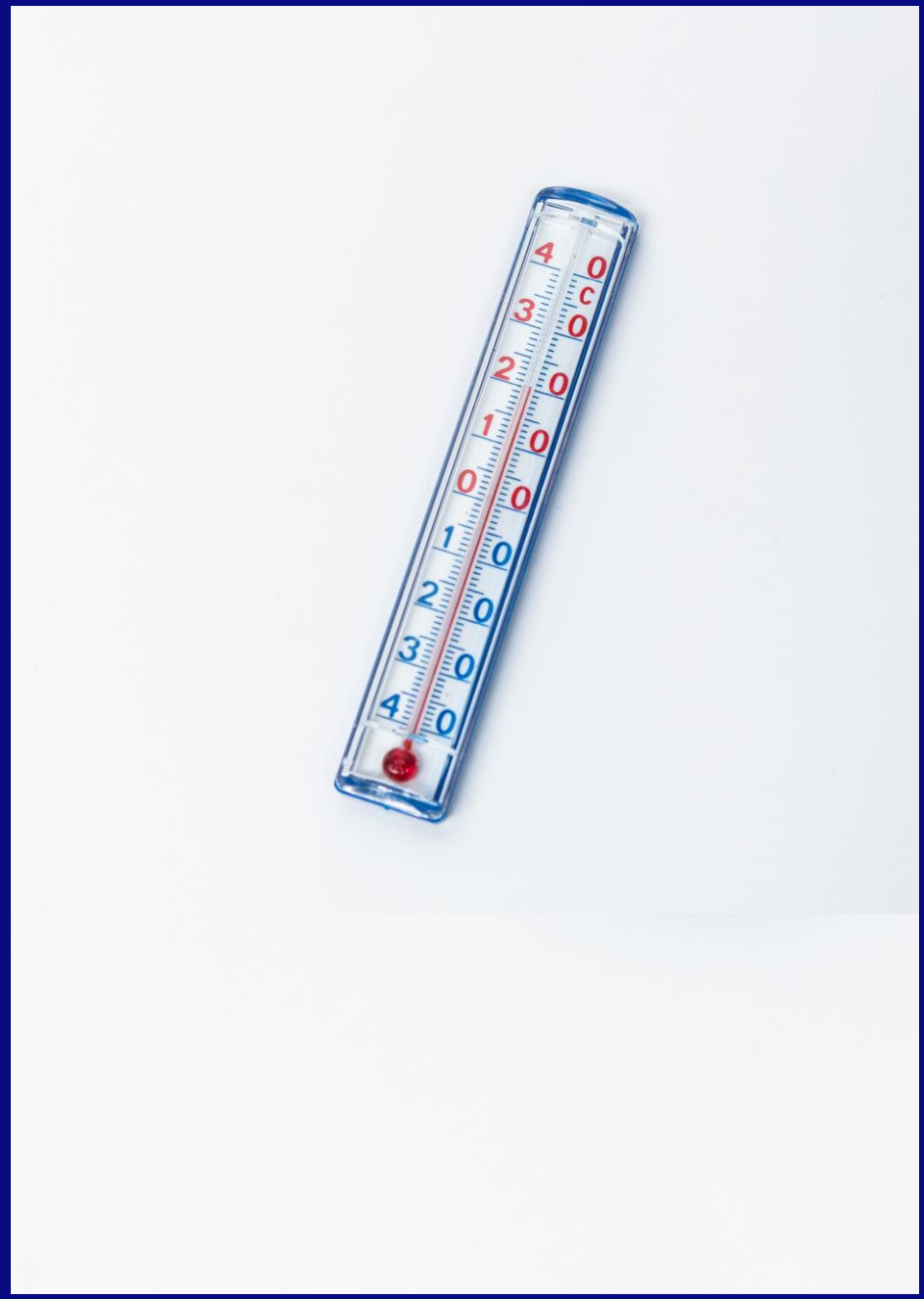
Synthesis of regional CRAs

Lessons to be learned

- Fine tuning the regional support service
- Exploit the market potential
- CRA standardisation and connection to European policies



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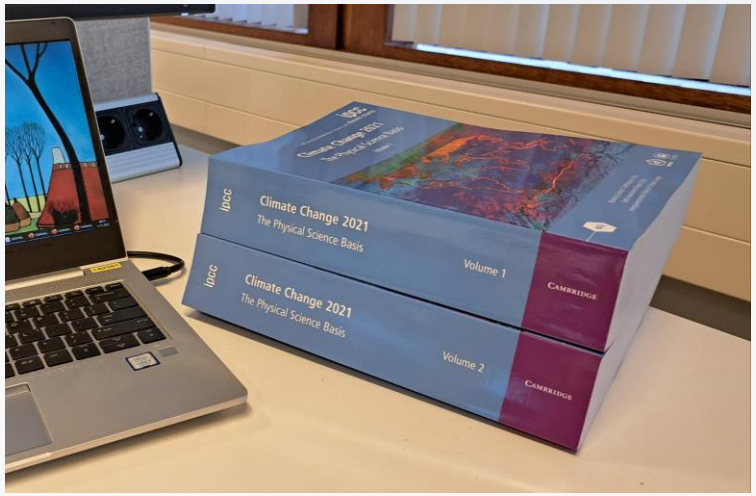
Legacy for my role in IPCC

Co-chair Working group 2

Action holders could recognize themselves better

→ Assessment via a set of *decision archetypes*



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Contact info

https://www.climaax.eu

info@climaax.eu

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