RNCA
REDE NACIONAL DE COMPUTAÇÃO AVANÇADA

Encontro RNCA 2023

07 e 08 de novembro de 2023
UTAD, Vila Real

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Climate change

Modeling and projection of several Climatic events

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PRR Plano de Recuperação e Resiliência
REPÚBLICA PORTUGUESA
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General Objective

- Climate change threats to the Portuguese winemaking sector

SO1
- Very high-resolution climate change projections

SO2
- Risk assessment of extreme weather and climate events

SO3
- Agroclimatic zoning and suitability assessments

SO4
- Climate change impact assessments

SO5
- Consulting service on climate-smart and carbon-neutral strategies

SO6
- Knowledge transfer and capacity building

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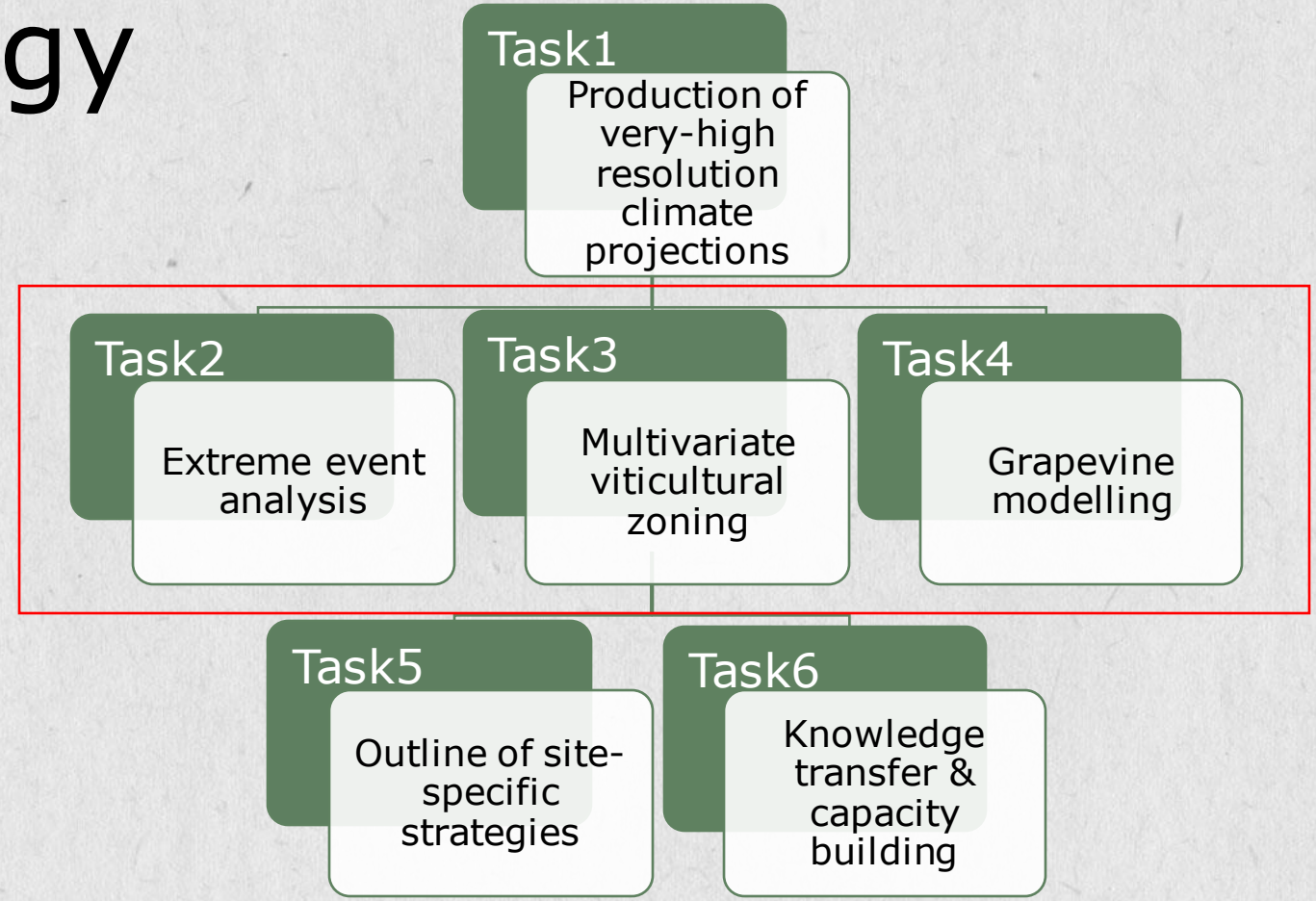
Methodology



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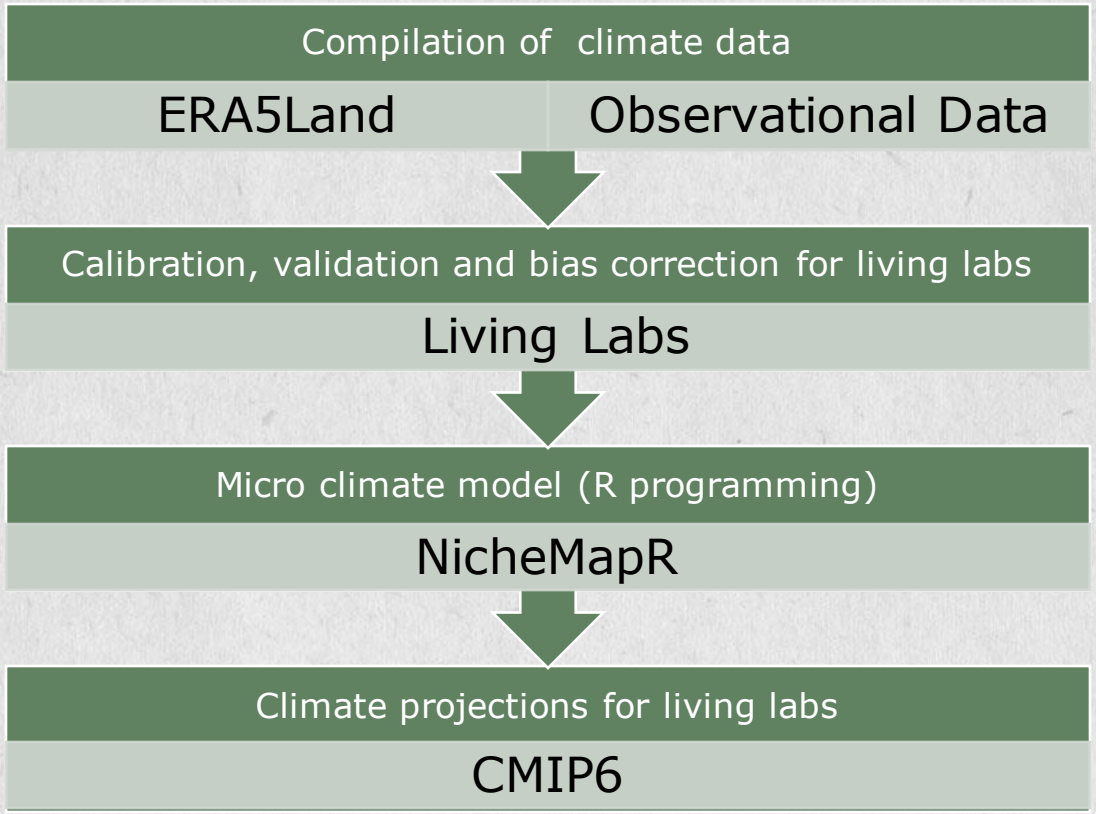
Production of very-high resolution climate projections



- Homogeneity tests between station data.
- Quantile mapping techniques.
- 10m spatial resolution of climate data for the living labs; Assessment of several climate indices.

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Compilation of climate data

	ERA5Land	Station Data	
		Livinglabs	Livinglabs
Frequency	1979 – 2022	2012 – 2022	2019 – 2022
Precipitation	✓	✓	✓
Temperature	✓	✓	✓
Dewpoint Temperature	✓	✓	–
Cloud Cover	✓	–	–
Wind	✓	✓	✓
Solar Radiation	✓	✓	✓

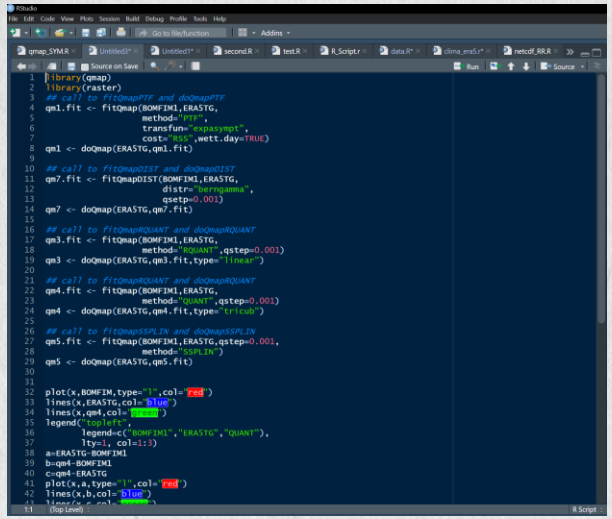
Quantile Mapping

Distribution derived transformations

Parametric transformations

Empirical quantiles

Smoothing spline



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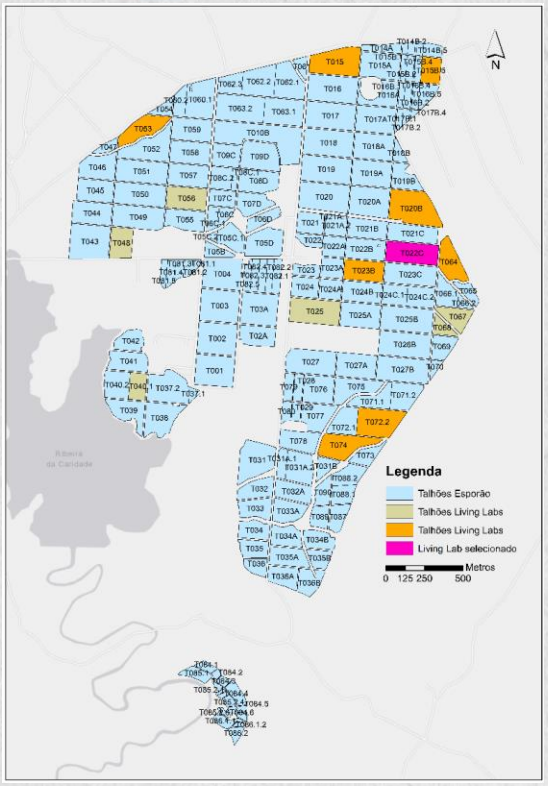
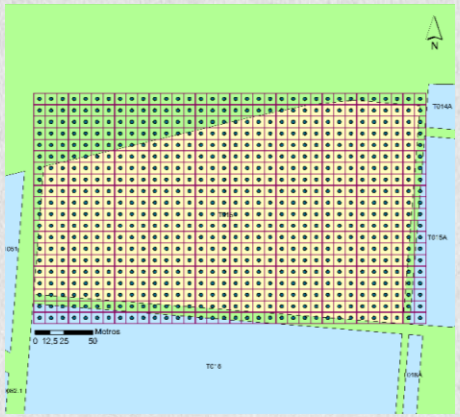
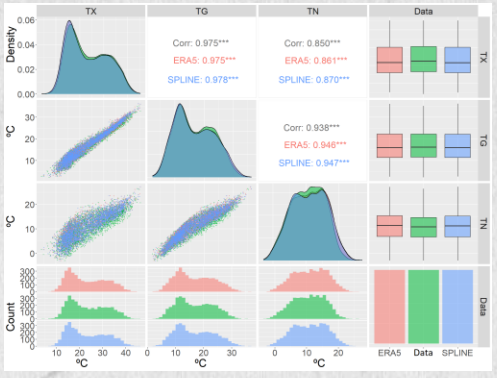
Quantile Map Results

(R programming)

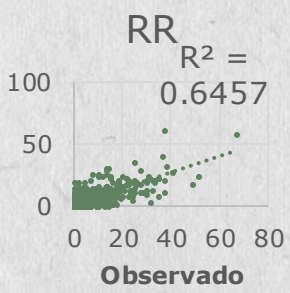


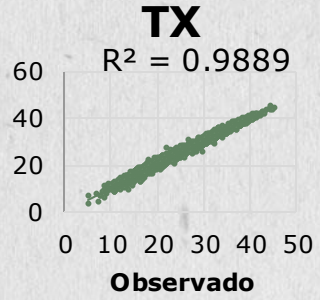


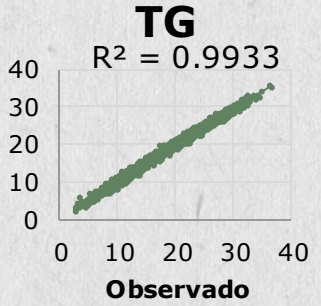
Fitted a smoothing spline to the quantile-quantile plot of observed and modelled time series.

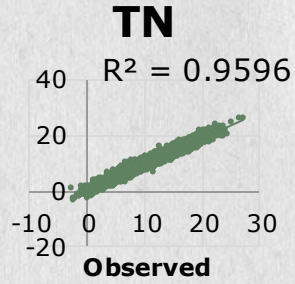


Living Lab 1

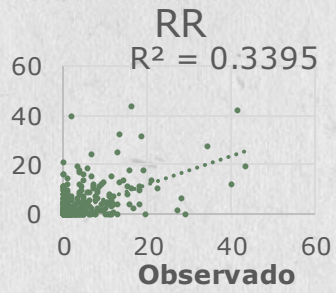


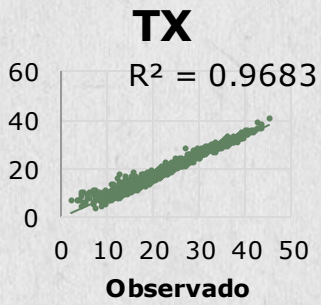


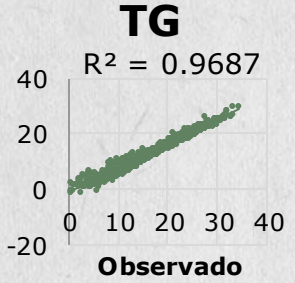


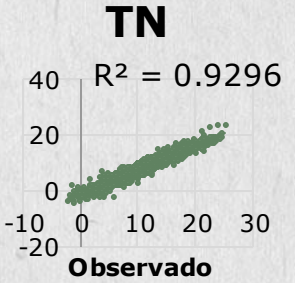


Living Lab 2



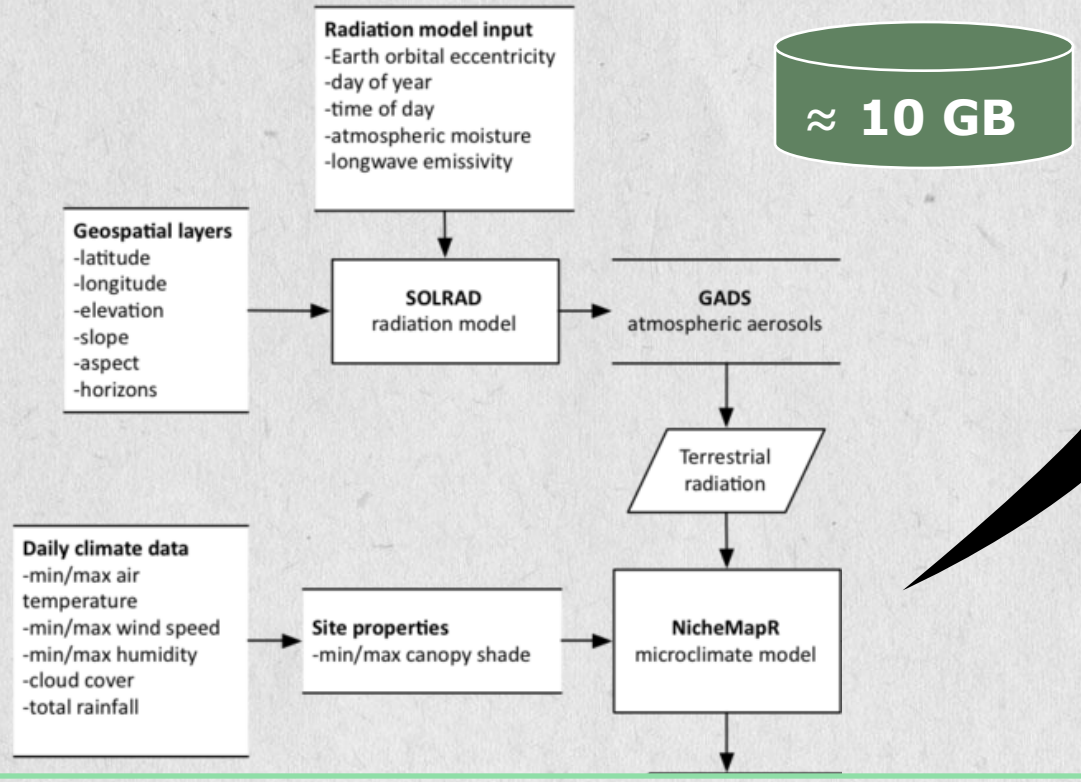




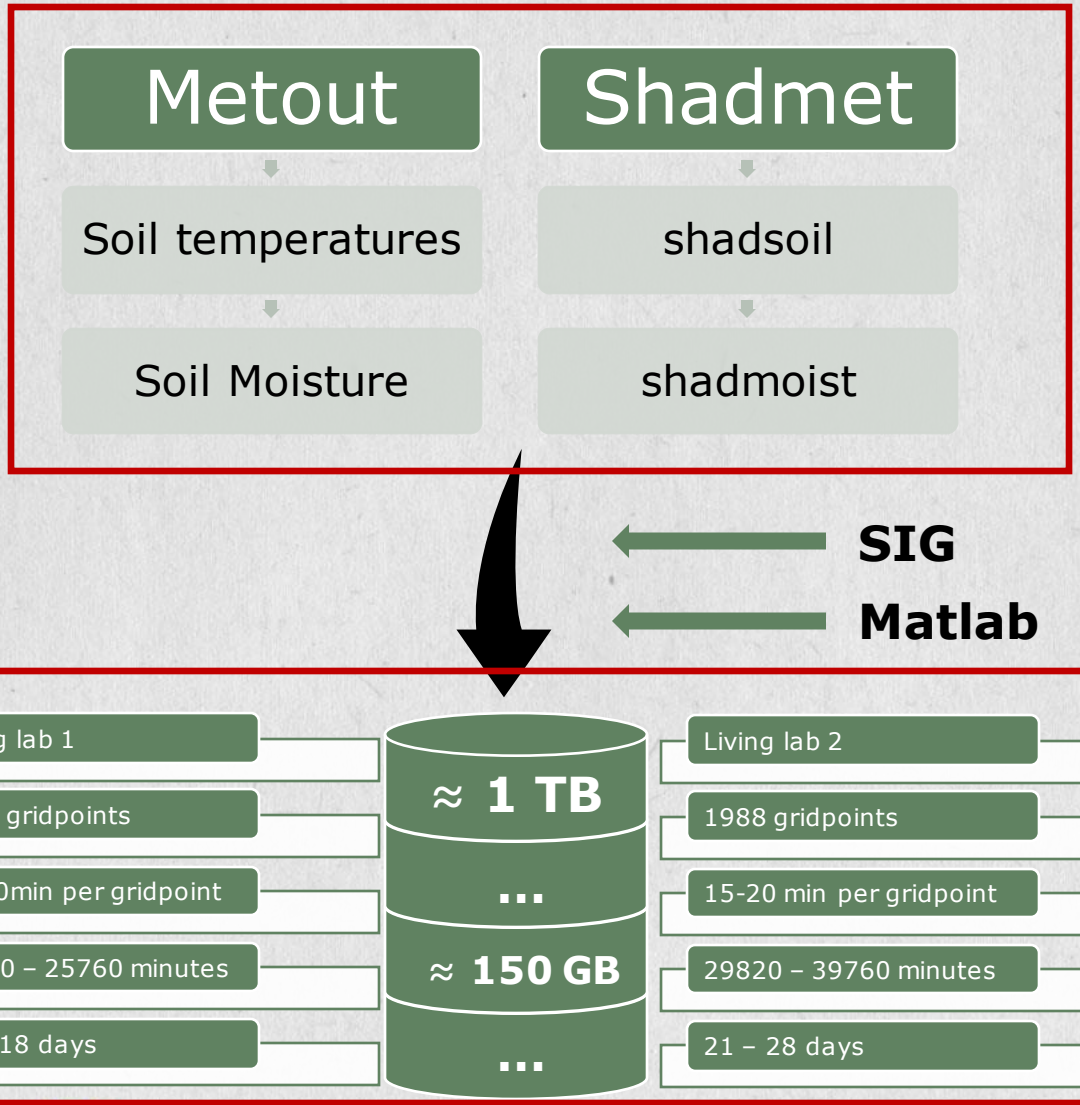


Micro climate model

- NicheMapR



Adapted from: Carter, Anna, et al. "Modelling the soil microclimate: does the spatial or temporal resolution of input parameters matter?." Frontiers of Biogeography 7.4 (2015).



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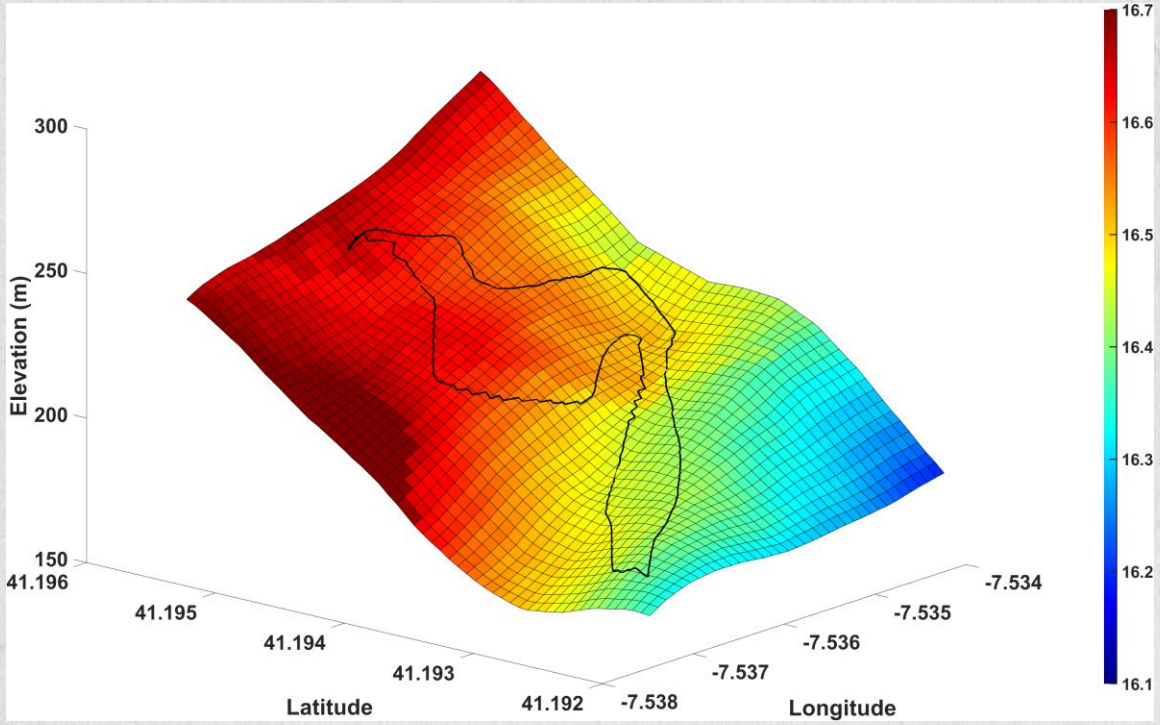
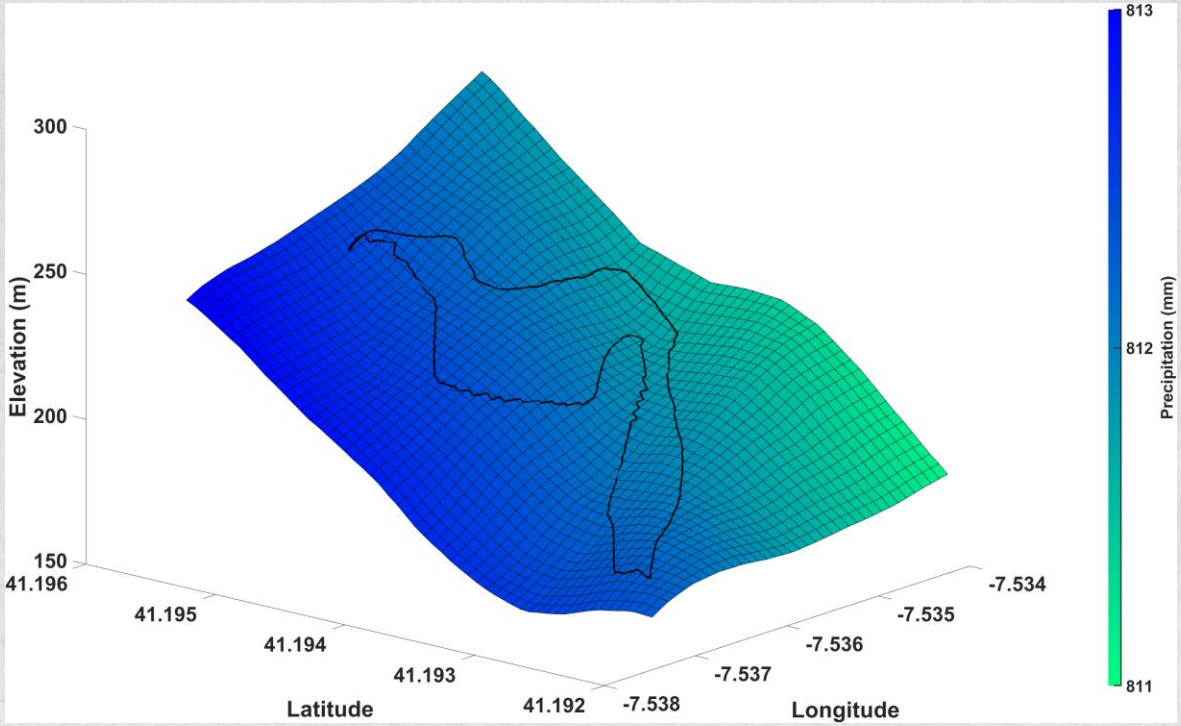
Living Lab (1979 – 2022)

Temperature



Precipitation



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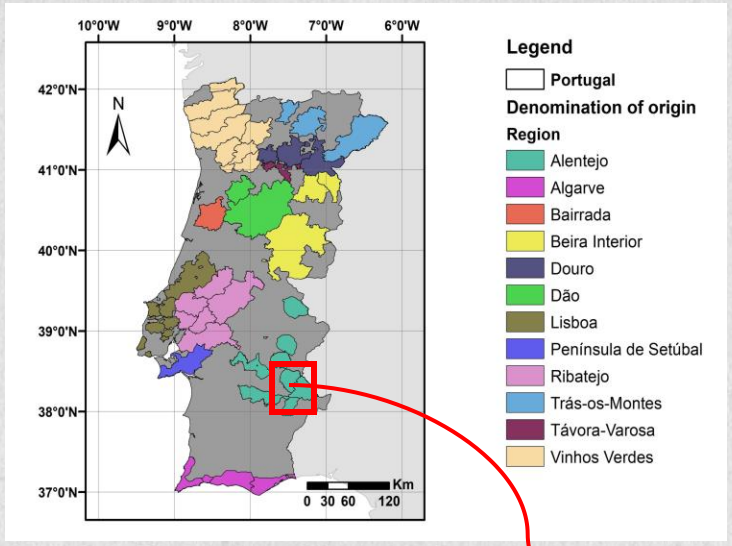
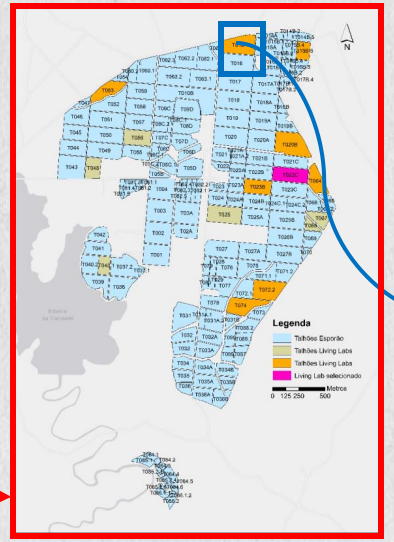
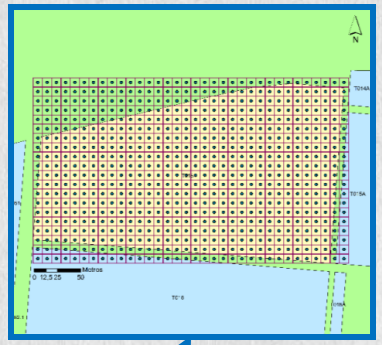
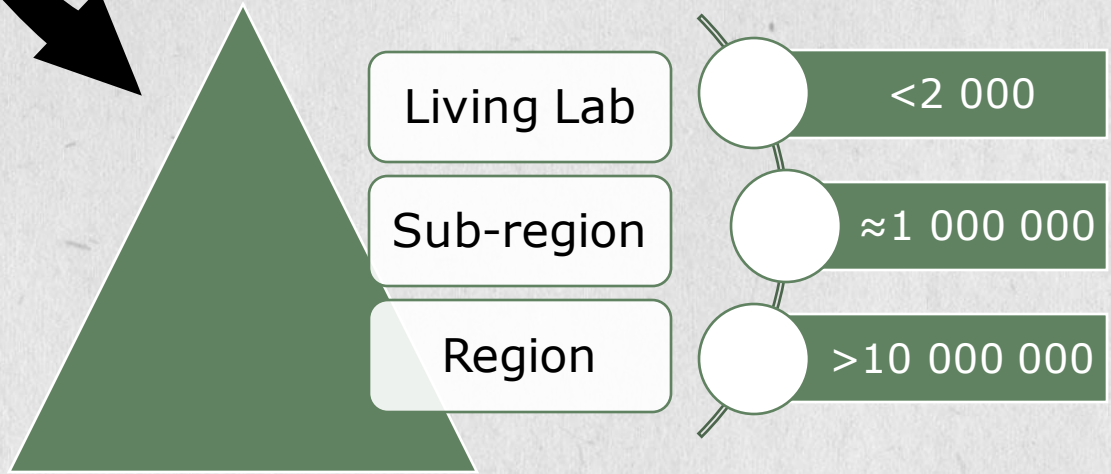
A0 – Experimental Access









HPC Resources	50 000 CPU core.hours
	0 GPU.hours
	100 GB HD
Centre and Platform	INCD_Cirrus
Predicted start date	1/9/2023
Duration	6 months

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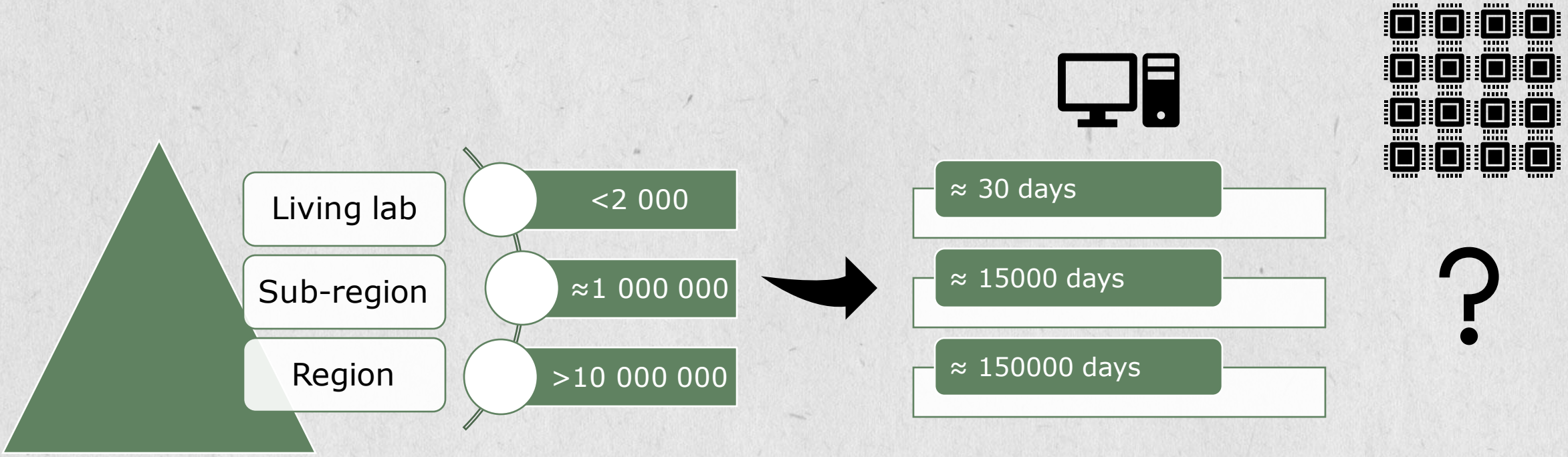

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Thank you for your attention!

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