VEClim

Climate-driven Vector-Borne Disease Risk Assessment

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wellcome

Climate-driven vector-borne disease risk assessment

VEClim

Wellcome Trust Digital Technology Development Awards
Climate-Sensitive Infectious Disease Modelling

Model and data repository
Open-access repository of vector-pathogen models, climate projections, environmental variables, and surveillance data

Short/medium/long-term predictions
Risk maps, seasonal activity, temporal projections of vector activity and disease transmission

Decision support tool
Web-based interactive GIS platform to display risk, run customized scenarios, and inform prevention and control



Aedes albopictus



Invasive
Aggressive
Competent
chikungunya
dengue, zika

Phlebotomus papatasi



Non-invasive
Neglected
Competent
leishmaniasis
sand fly fever

Erguler K, *et al.* (2024) Wellcome Open Research

veclim.com

VEClim's risk indicators

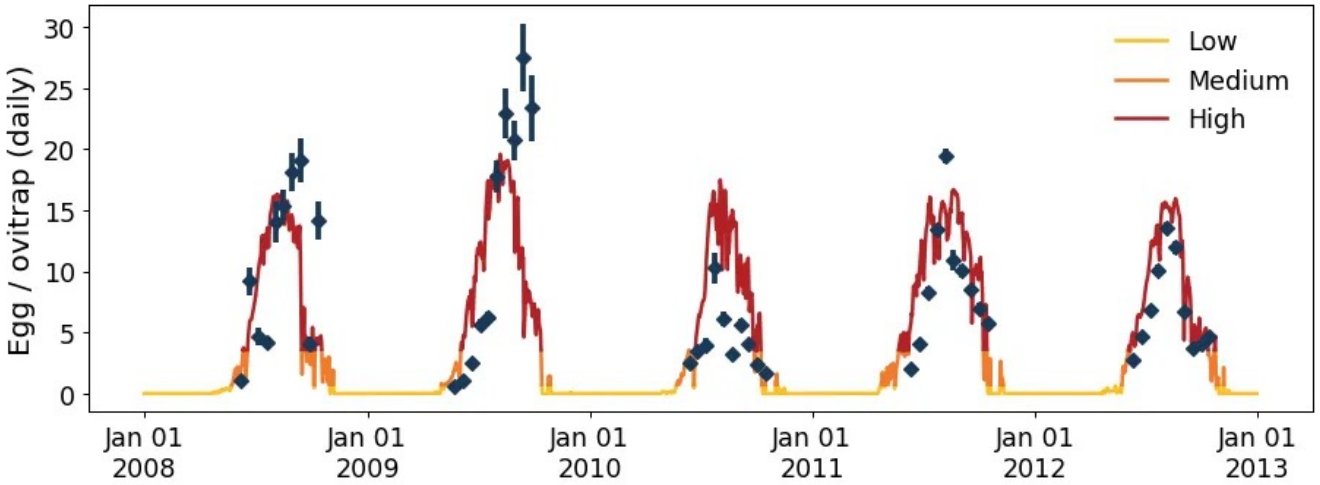


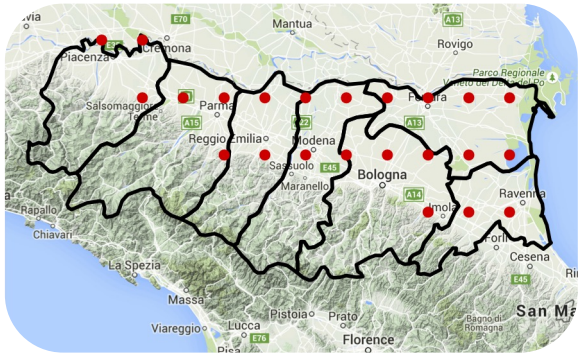
Larva: Larvae in a typical breeding site
Biting: Mosquito activity (bites on people)
Outbreak: Outbreak risk due to an imported case
Impact: Average impact of an imported case

Low
Medium
High

VEClim presents a set of indicators of daily vector activity and disease risk at 0.25° resolution based on ERA5 decadal averages and an age-structured population dynamics model of *Aedes albopictus* and CHIKV transmission.

Erguler et al. 2016-2017





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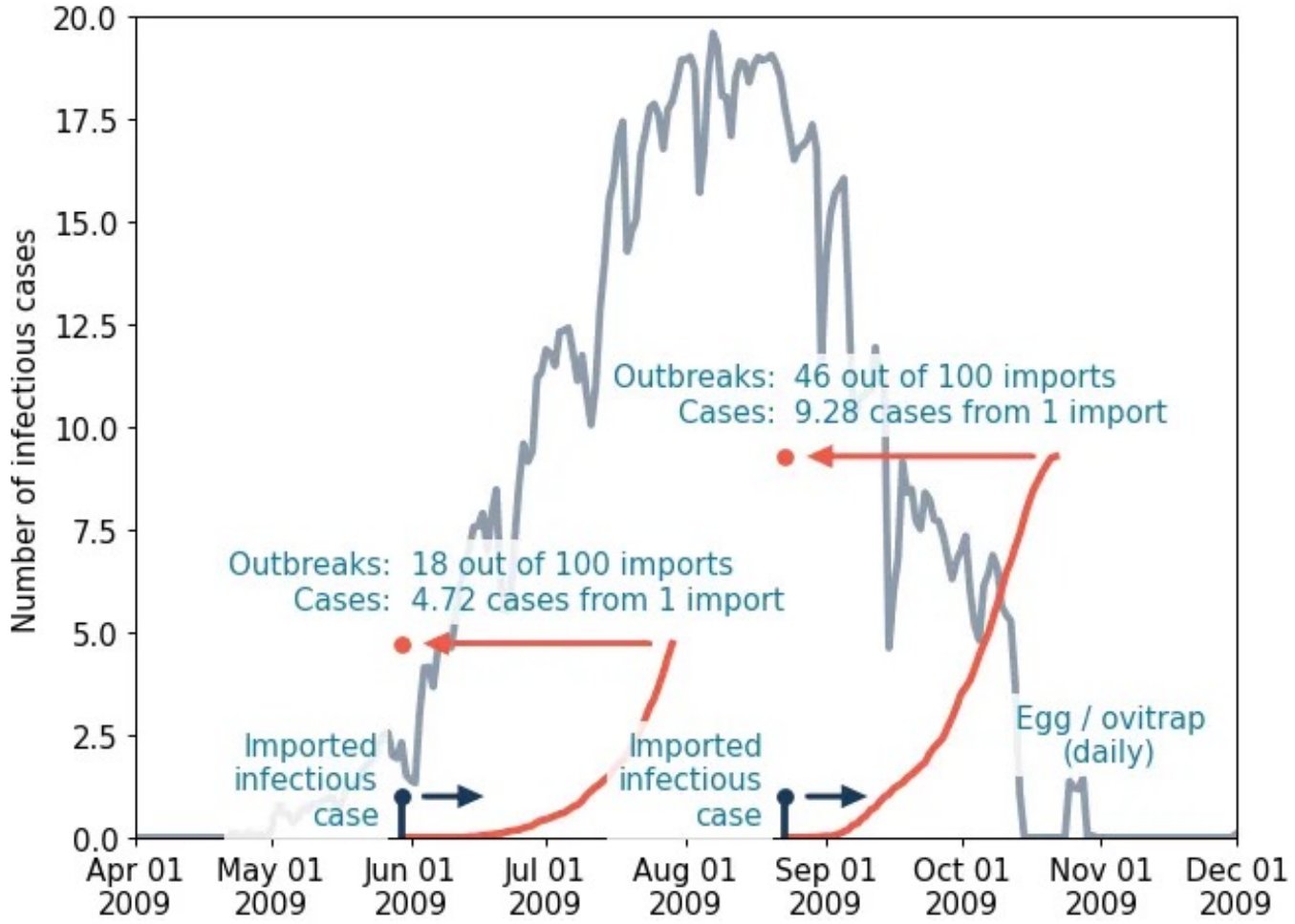
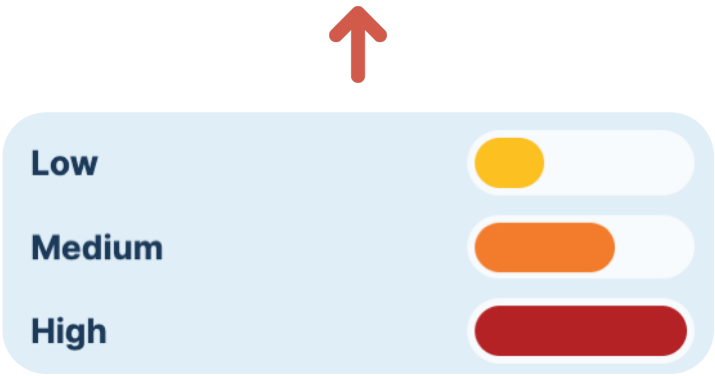
Relative activity and risk indicators
(disease-related)

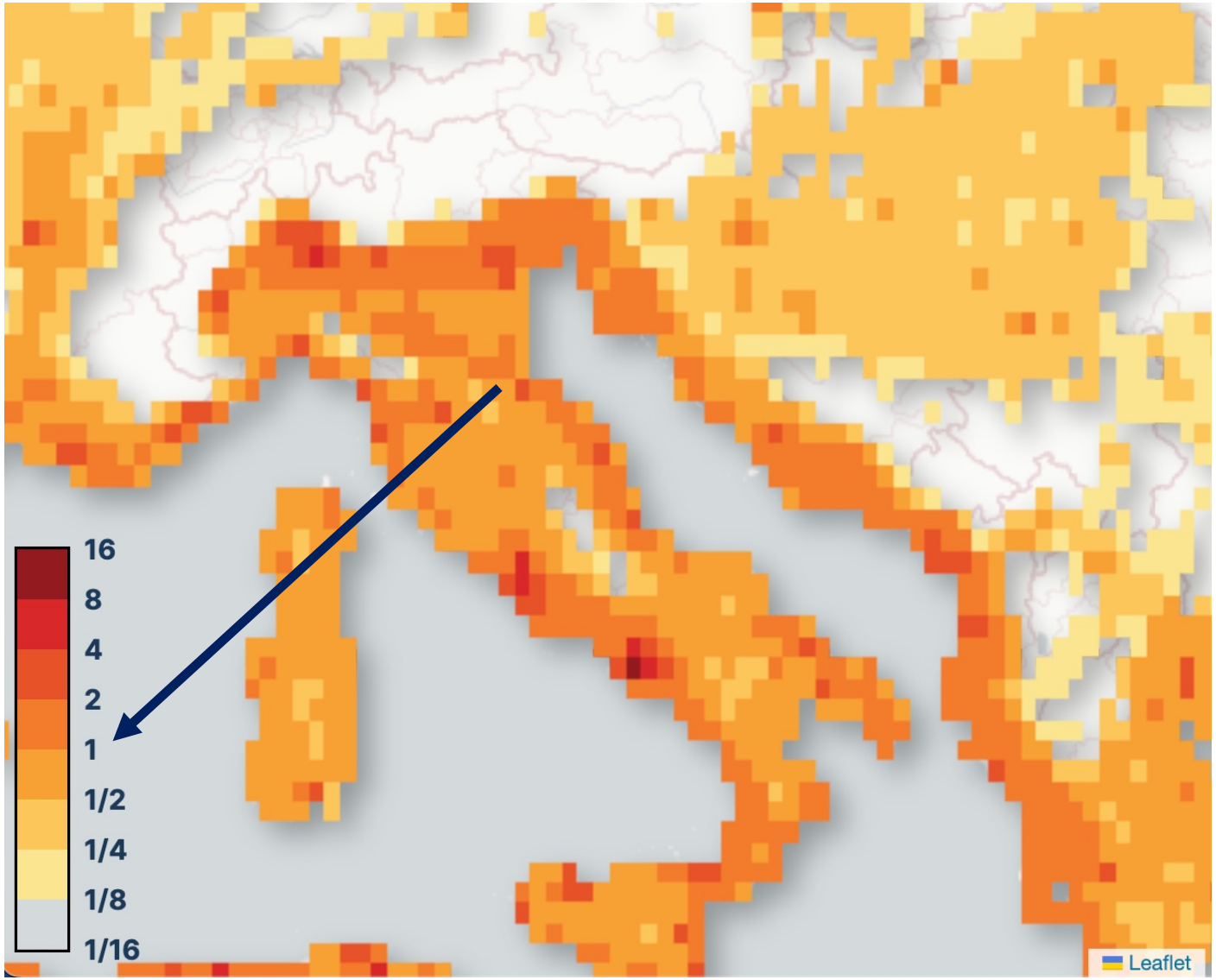


Lower than 1%
Less than 10 cases



Larger than 50%
More than 500 cases

Relative average decadal activity



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HOME PROJECT POLICY METHODS TUTORIALS MAP >



15 NOVEMBER

albopictus
1 / 4 · Search

There are reports of the **tiger mosquito** in your region



Larva

Biting

Outbreak

Impact

Accuracy

252 humans per km^2

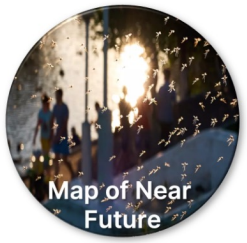
12.0 °C - 30.6 °C

4.9 mm

74.5 %

Naughty Little Mosquito

She bites and spreads disease with ease
A tiny pest we can't appease
When vigilance and diligence and ingenuity meet
This tiny foe we can defeat







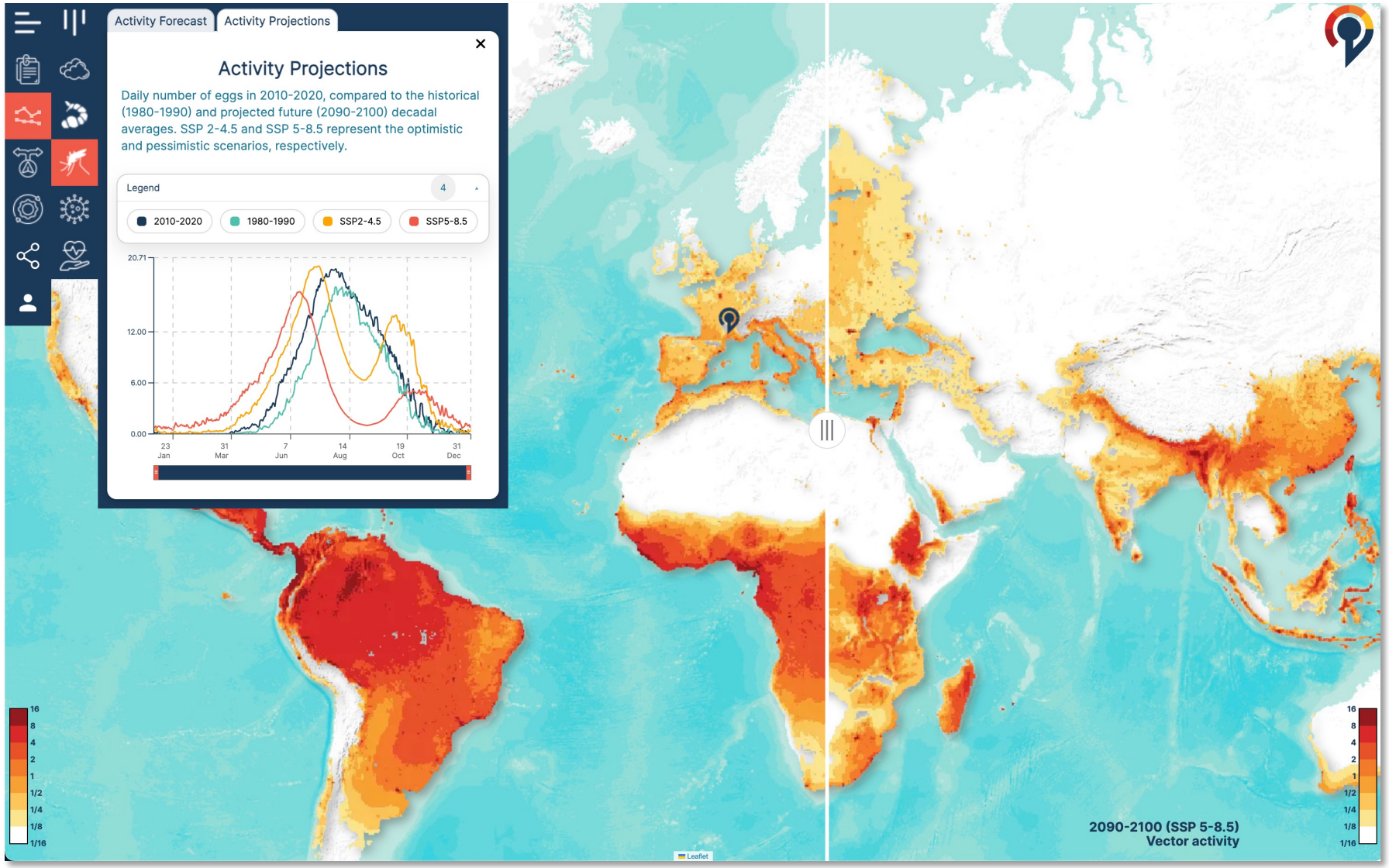
Will it rain mosquitoes today?



Scientists have been perfecting weather forecasts for decades - even if we think that those could still be a bit more accurate. A global effort, an endless collection of data, and mathematical ingenuity, all culminate in a notification on a mobile phone that it may rain today. Better get my umbrella!

This website is a portal to what may be described as an early attempt to predict the risk of catching a disease from a mosquito. Not all mosquitoes can carry disease-causing pathogens. The ones that can are called vectors. Mosquitoes, ticks, sand flies, and many other insects can be vectors, and many vectors organise their lives religiously according to weather.

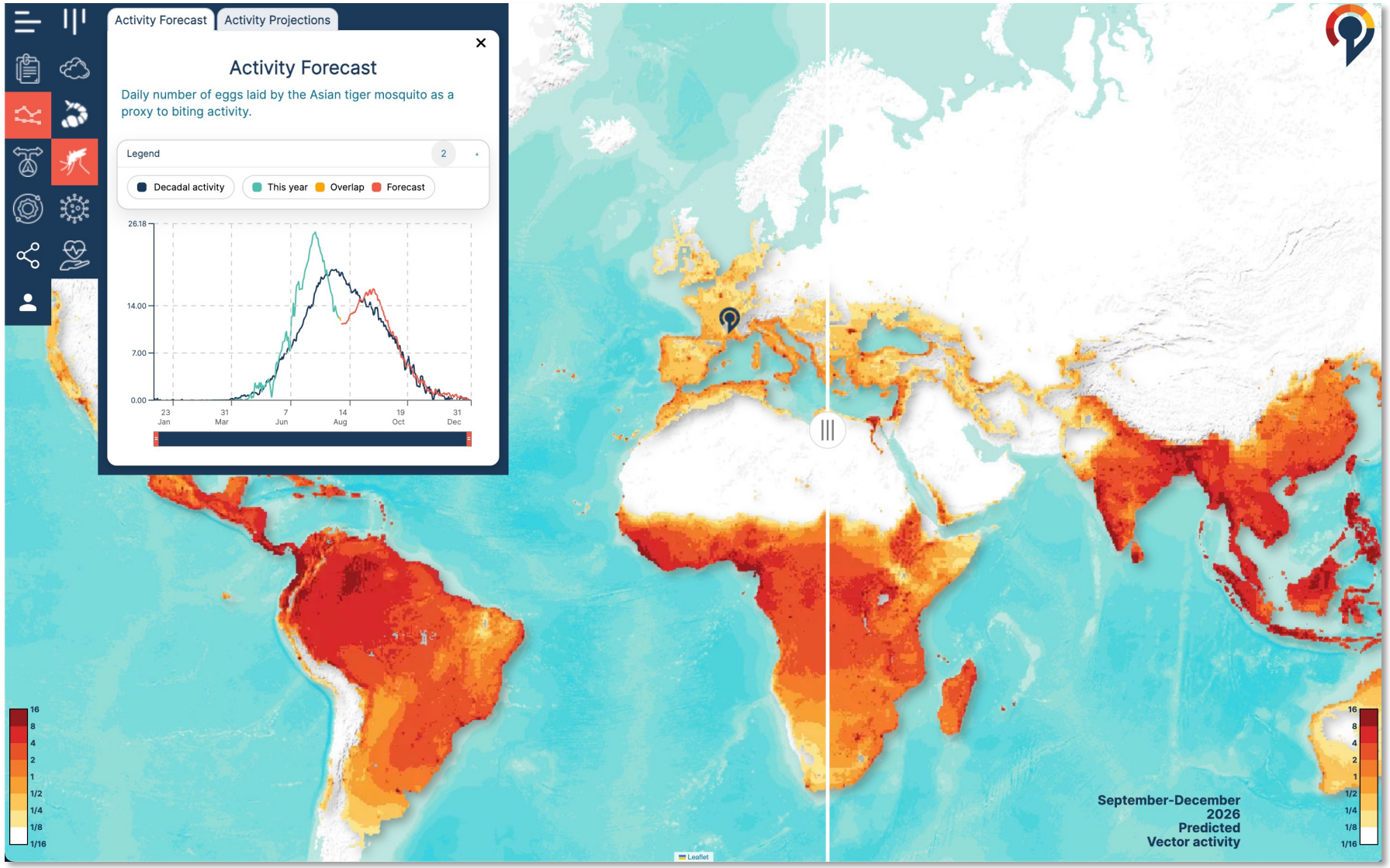
Projections of climate change impact



NEX- GDDP-CMIP6 models
ACCESS-CM2, ACCESS-ESM1-5, and EC-Earth3

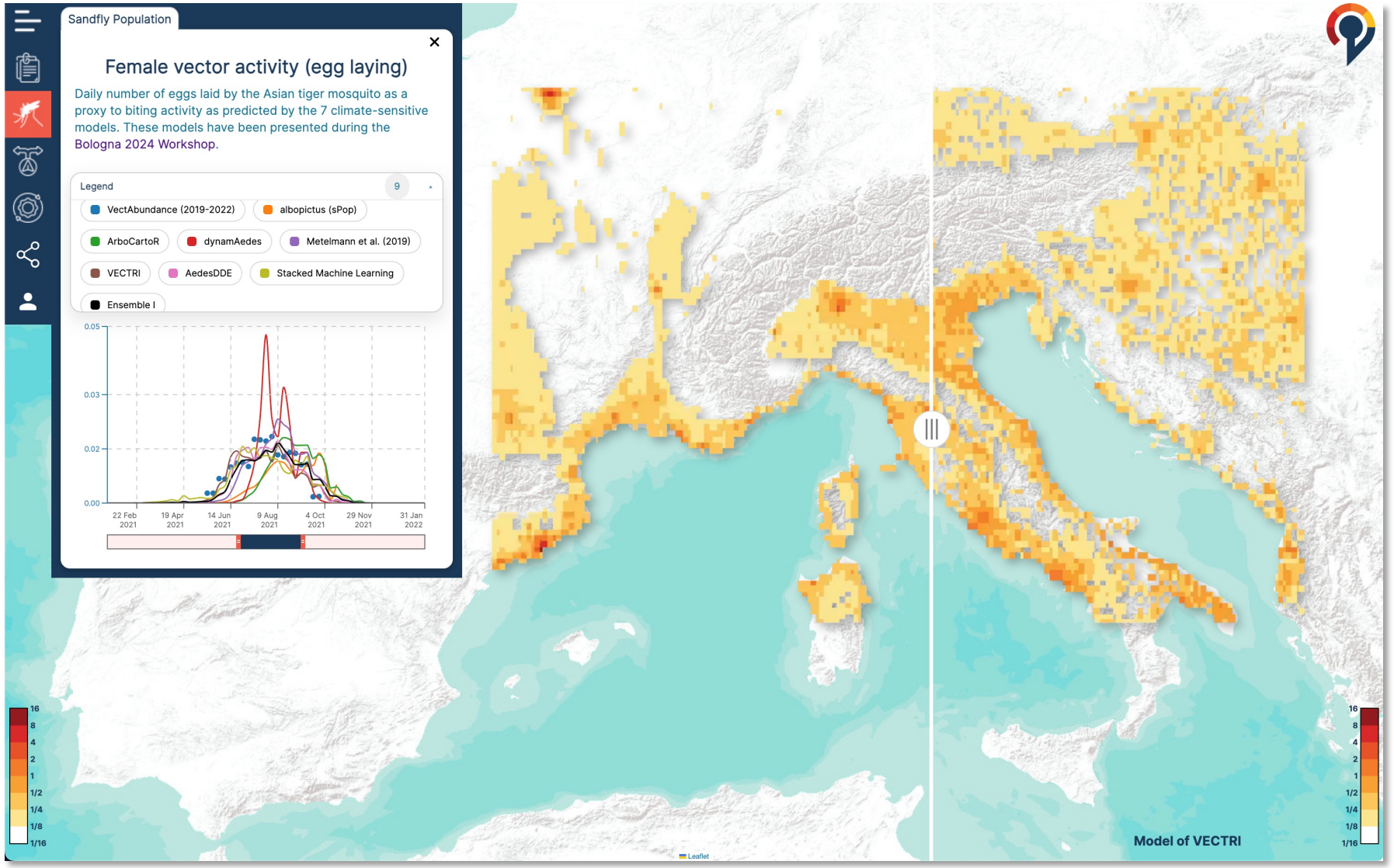
Shared Socio-economic Pathways
SSP 2-4.5 and SSP 5-8.5

Medium-term predictions



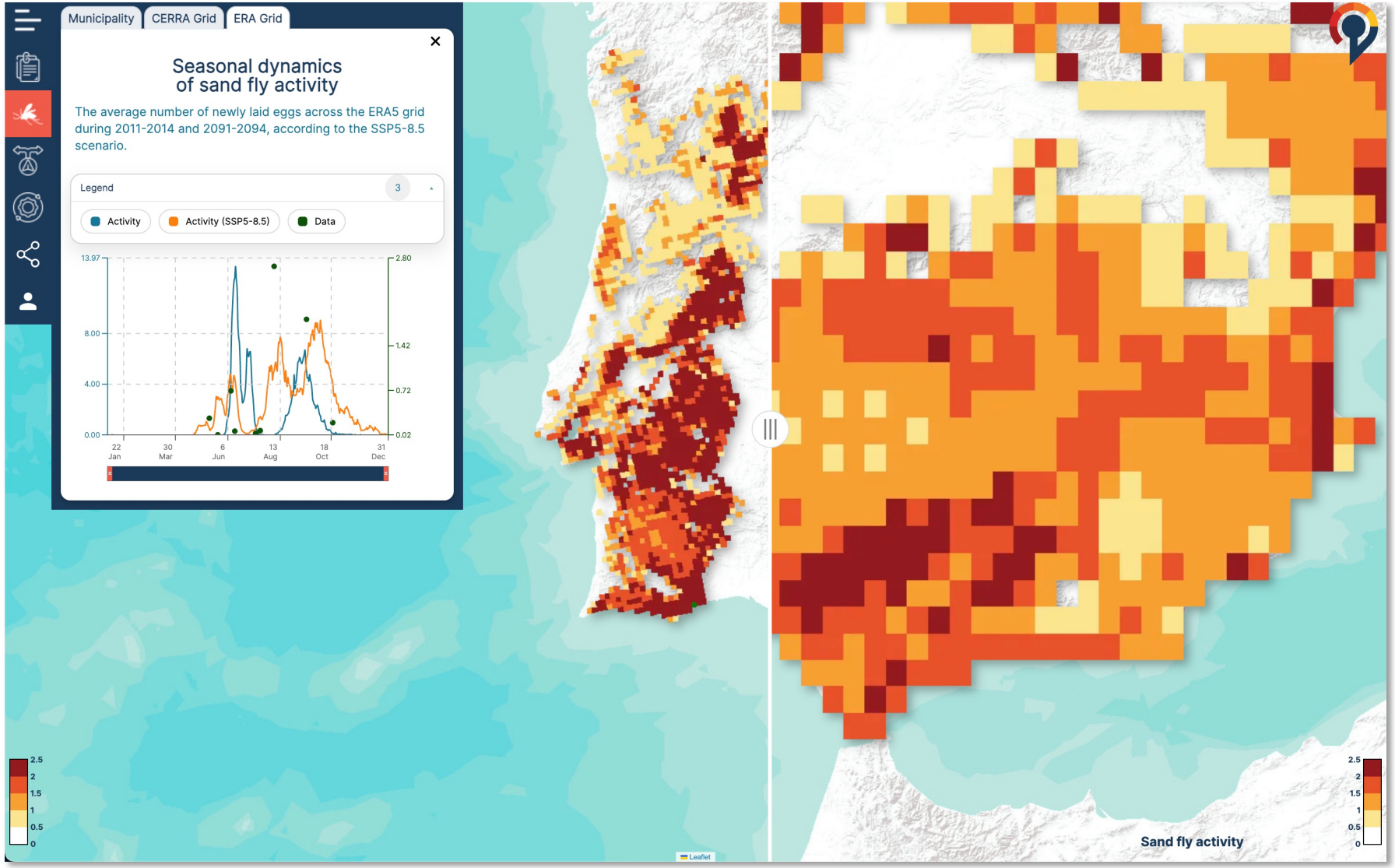
6-month forecast using ECMWF Seasonal Forecast

Model repository and multi-model analysis



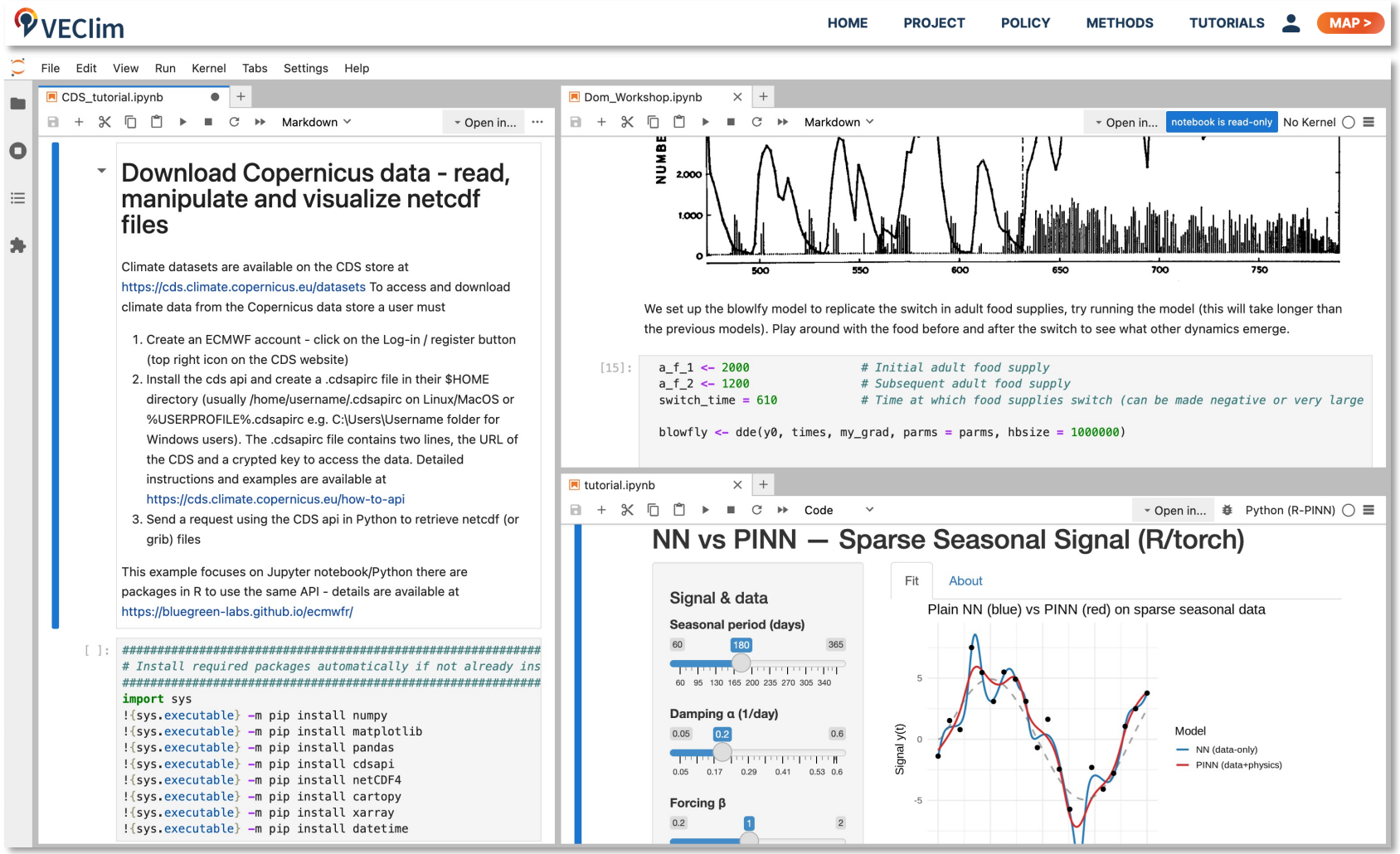
Seasonal profiles predicted by the 7-model ensemble brought together in the 1st CSVD Modelling Workshop in Bologna (Italy, 2024)

Operational forecasting in Living Labs



VEClim contributes to the Zoonotic Living Lab of the ISMED-CLIM project to test the adoption of early warning systems, first in Portugal in 2026

Interactive tutorials



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THANK YOU

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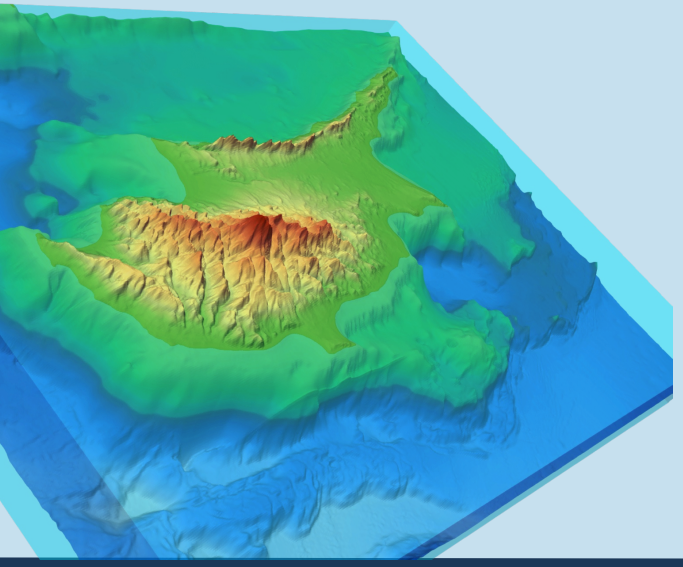

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