MODELLING
OAK PROCESSIONARY MOTH

Sustainable Forest Management & Health Risk Control under Climate Change

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The **Oak Processionary Moth** (OPM) is one of the most dangerous invasive insect pests in urban and non-urban oak forests of Europe. Understanding its ecology is not only important to scientists, but also to stakeholders and policy makers.

This project explores **risk factors** of outbreaks at different spatial scales, ecosystem consequences of pest epidemics, **human health** strategies, and region-specific climate change mitigation policies.

Pest invasions reduce photosynthesis and increase greenhouse gas emissions in oak forests, thereby resulting in a **carbon cycle feedback**.

Pest infestations respond to large-scale climate and small-scale forest structures, with significant spatial clustering.

Spatial modelling provides a **tool** for risk assessments and climate change scenarios.

+58% ←
VOC-C emissions from oak leafs

-83% ←
Adsorption capacity of light (Photosystem II)

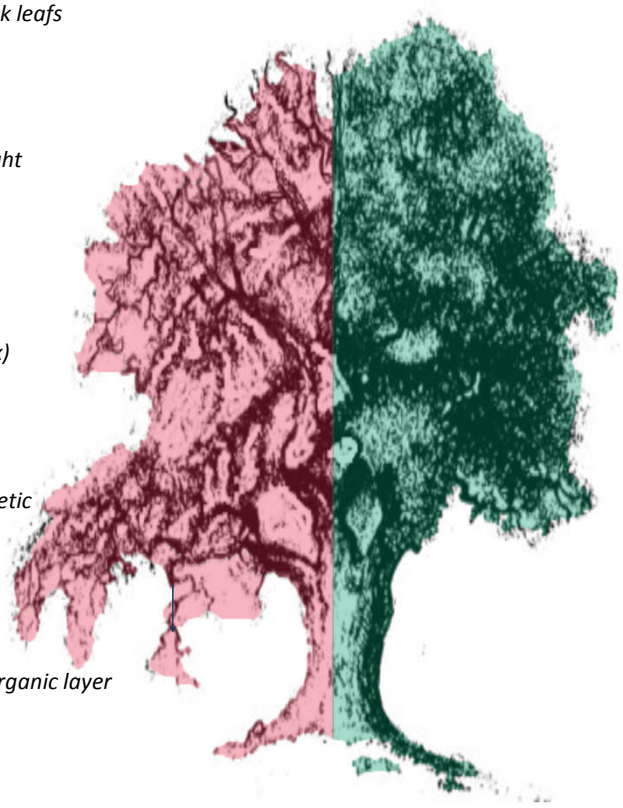
+38% ←
Heat emissions (plant performance index)

-52% ←
Efficiency of photosynthetic chain

+25% ←
VOC-C emissions from organic layer

+73% ←
CO2-C emissions from organic layer

Pest invasion



Microbial activity

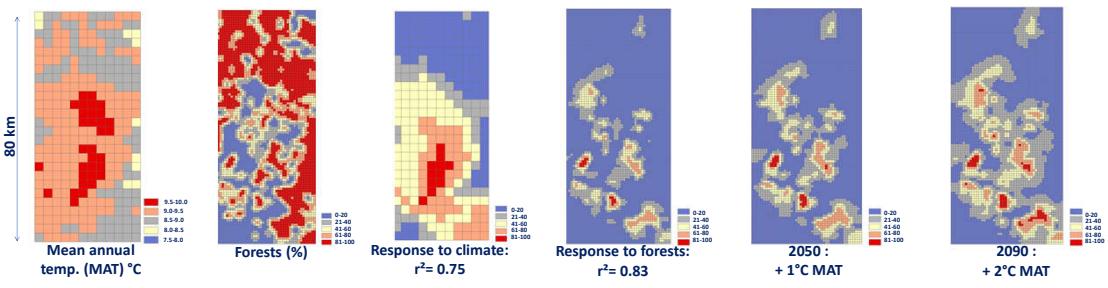
Rural Bavaria

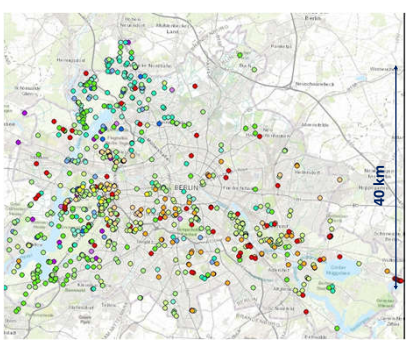
Urban Berlin

Infestation gradients

Risk assessment → Szenarios

Infestation cluster





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