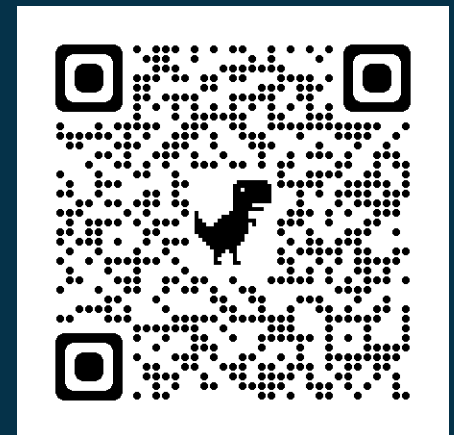


Model applications from the City Explorer Toolkit

Cooling potential, and air pollution removal

Laurence Jones, UKCEH LJ@ceh.ac.uk

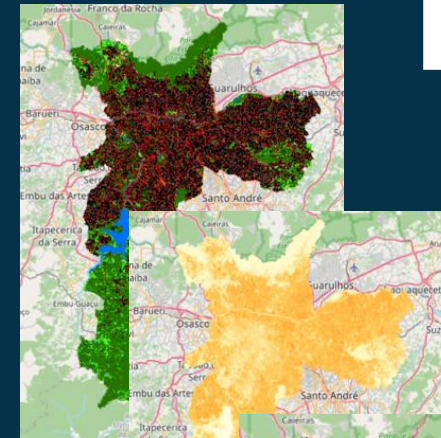
<https://www.ceh.ac.uk/city-explorer>



TOOLKIT OVERVIEW

- Mapping of pressures (heat etc.)
- Model the services provided by green and blue infrastructure
- Social & equity assessment
- Supports economic valuation

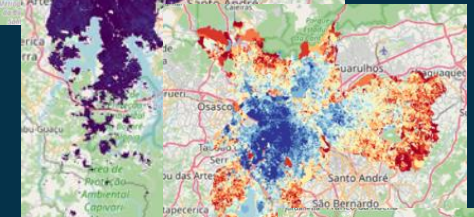
Land cover



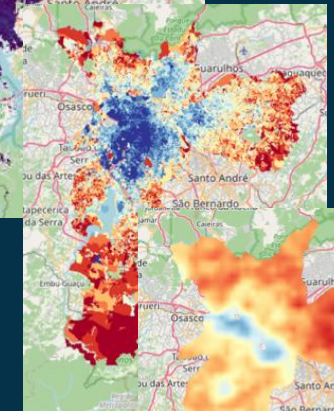
Heat



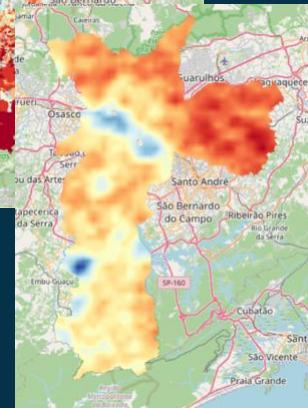
Population



Poverty



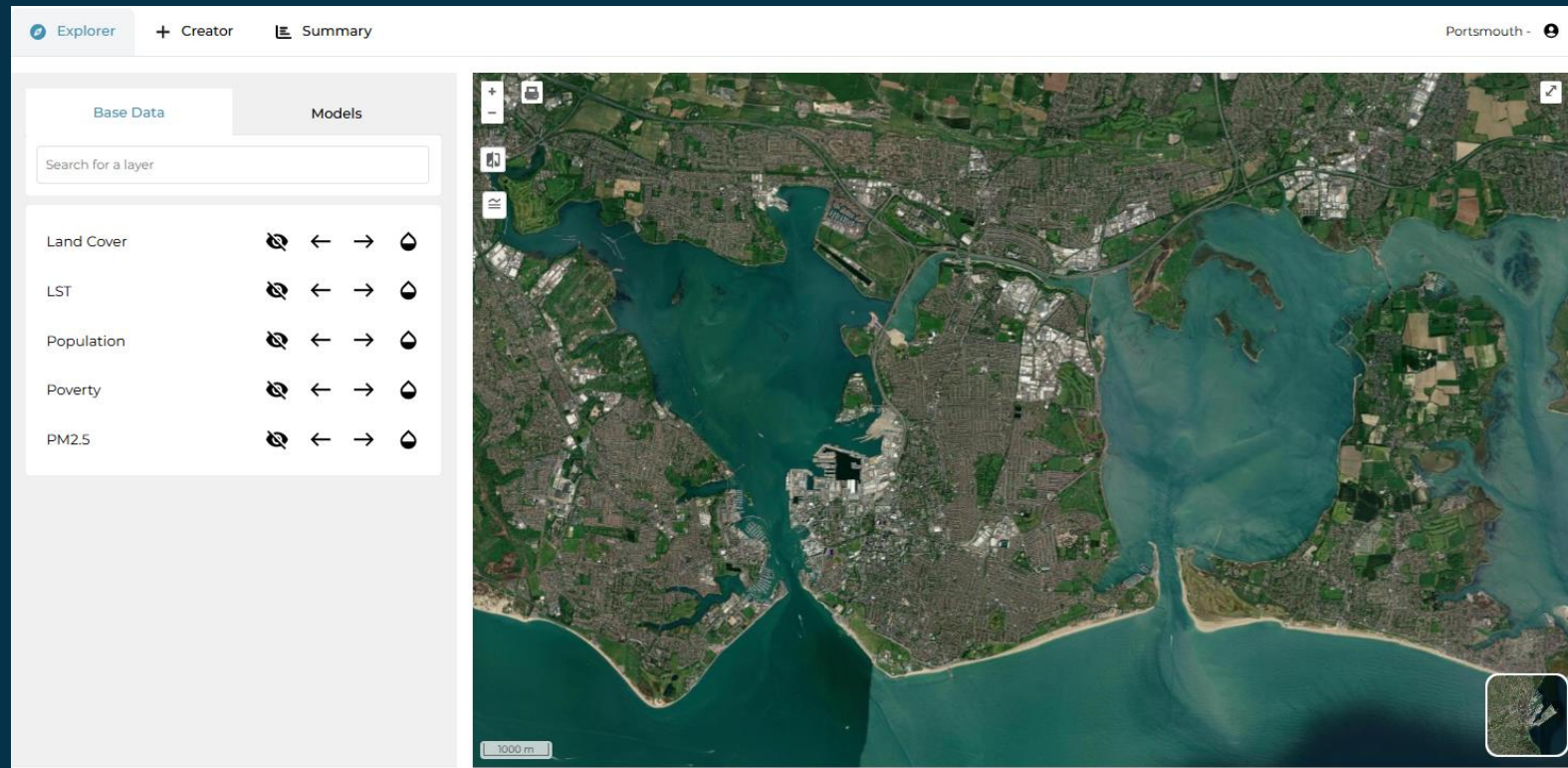
Air pollution



São Paulo,
Brazil

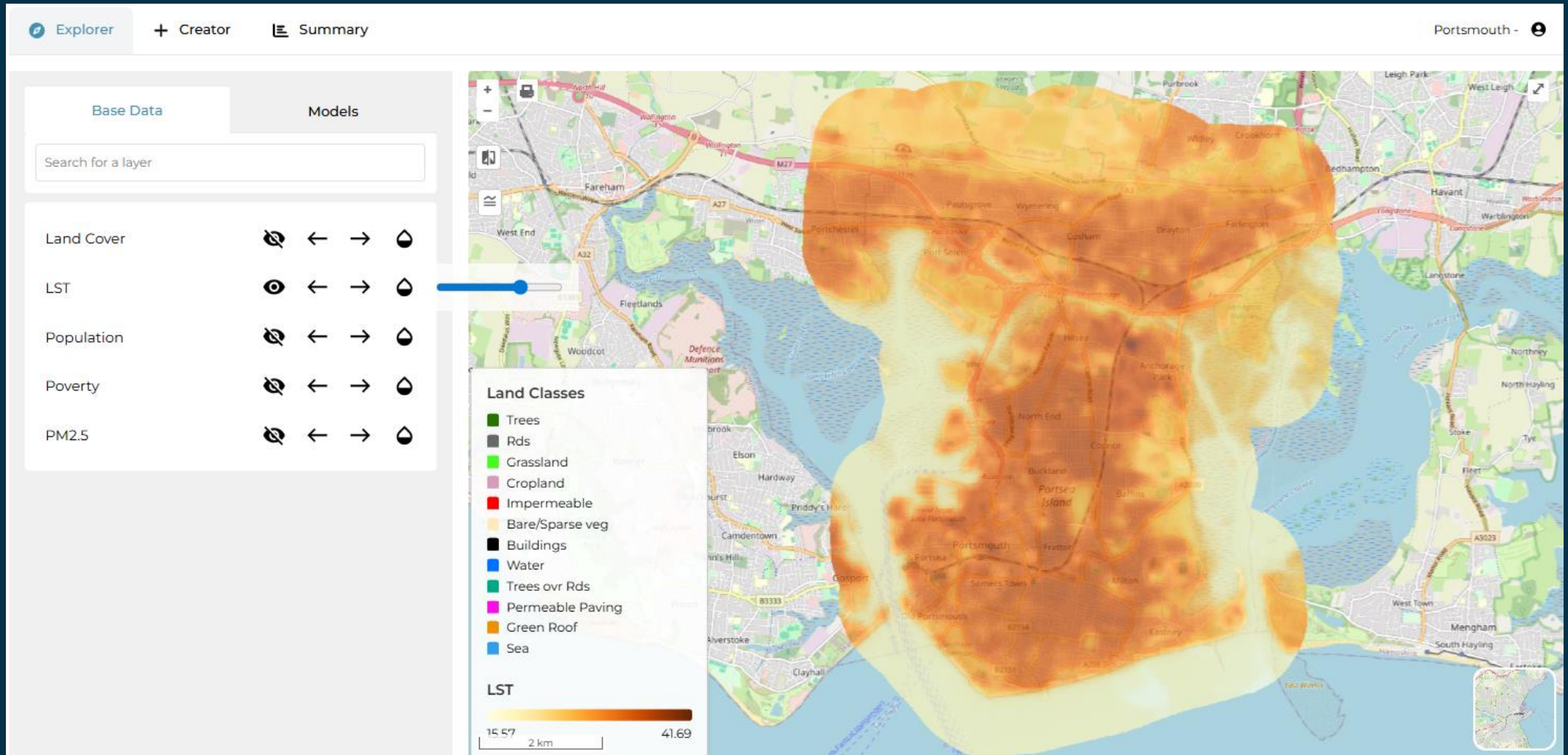
EXAMPLE EXPLORATION, Portsmouth, UK

- Coastal location (south coast of England)
- Low tree cover (9.8%)
- Limited space for new green interventions
- Working with City Council to explore greenspace benefits



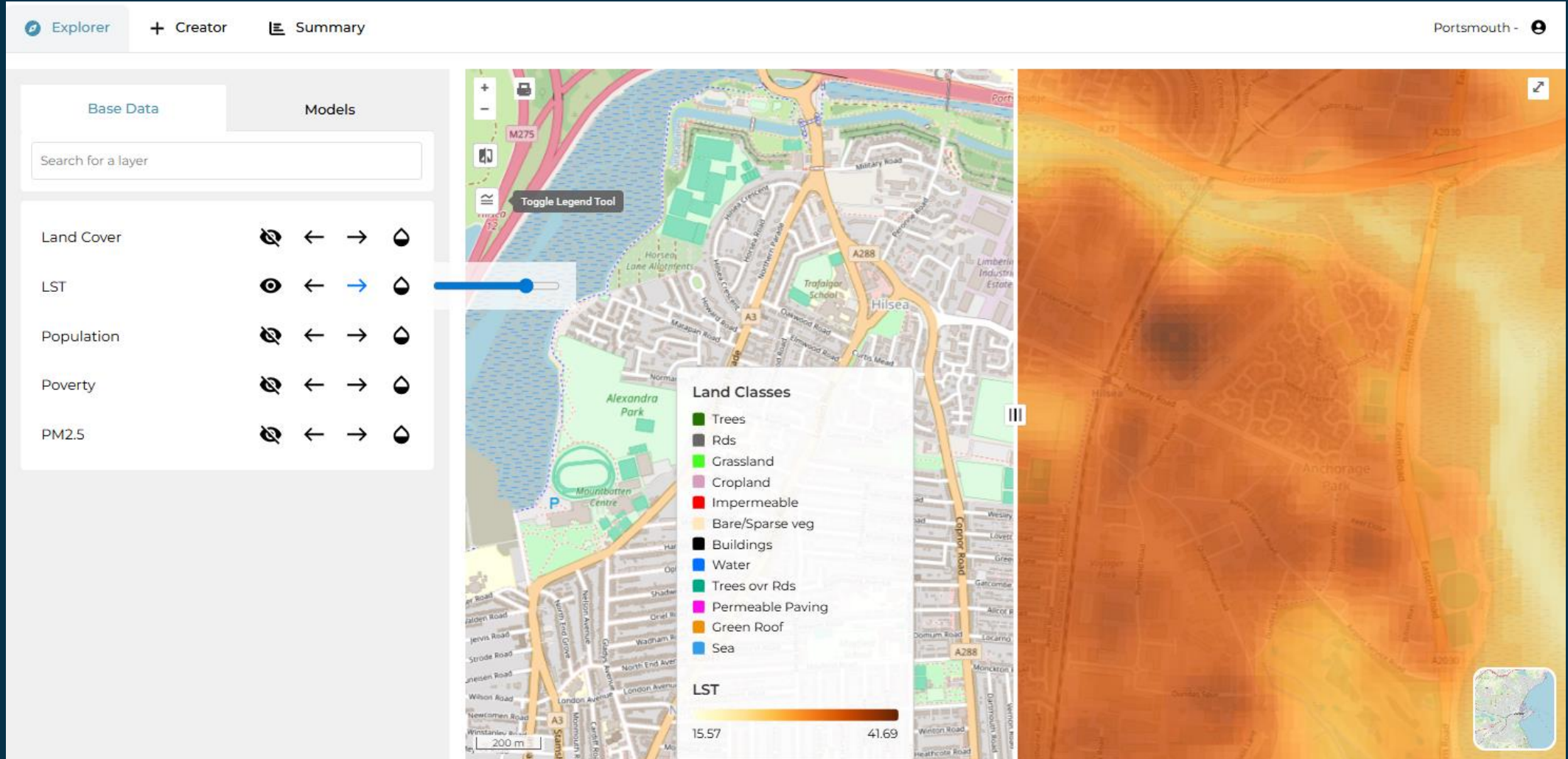
EXAMPLE EXPLORATION, Portsmouth, UK

- #1 Pattern of hot-day heat pressure (land surface temperature)



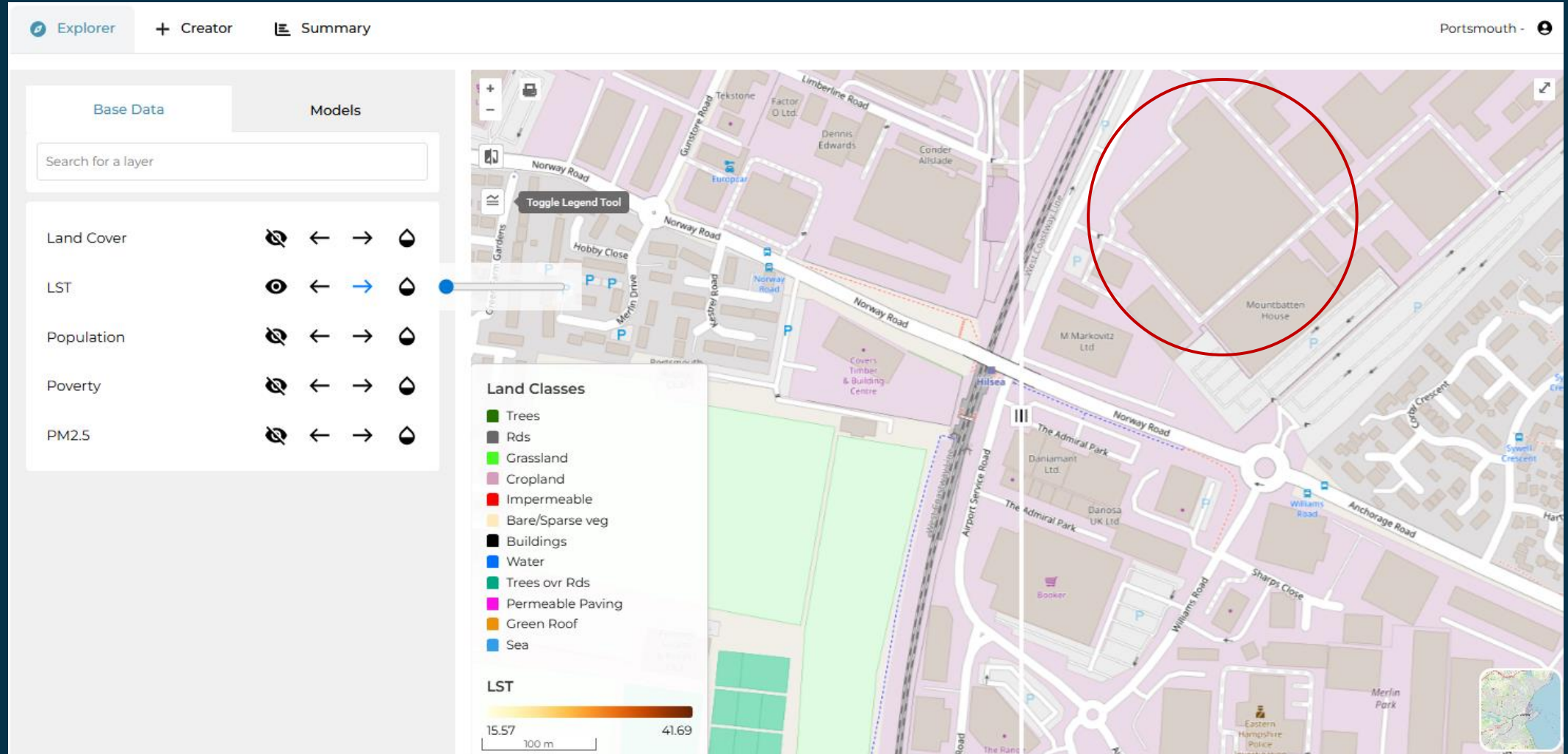
EXAMPLE EXPLORATION, Portsmouth, UK

- E.g. super-hot-spot in north-east part of the city



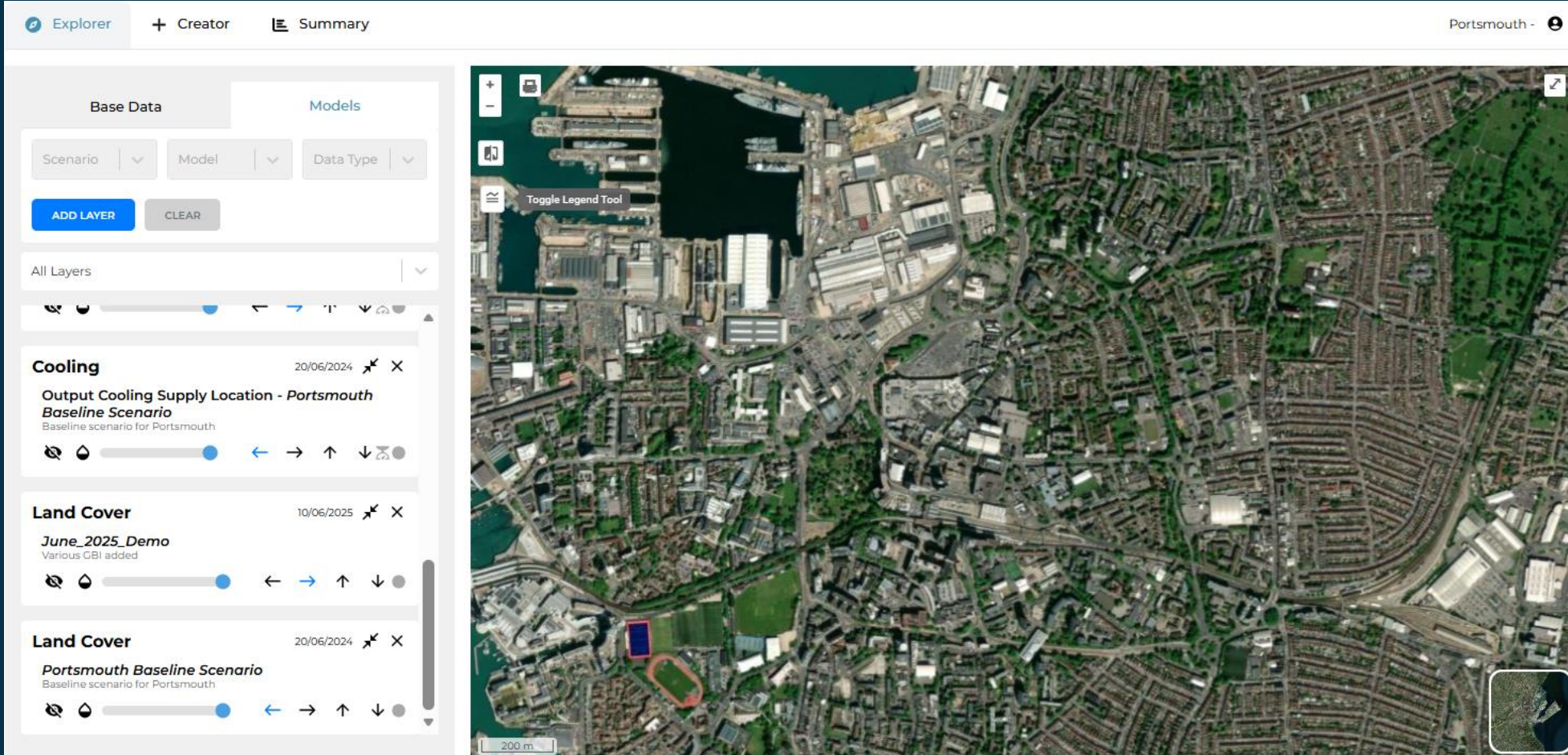
EXAMPLE EXPLORATION, Portsmouth, UK

- Hot-spot narrowed down to industrial building, are there options for adding green infrastructure nearby ?



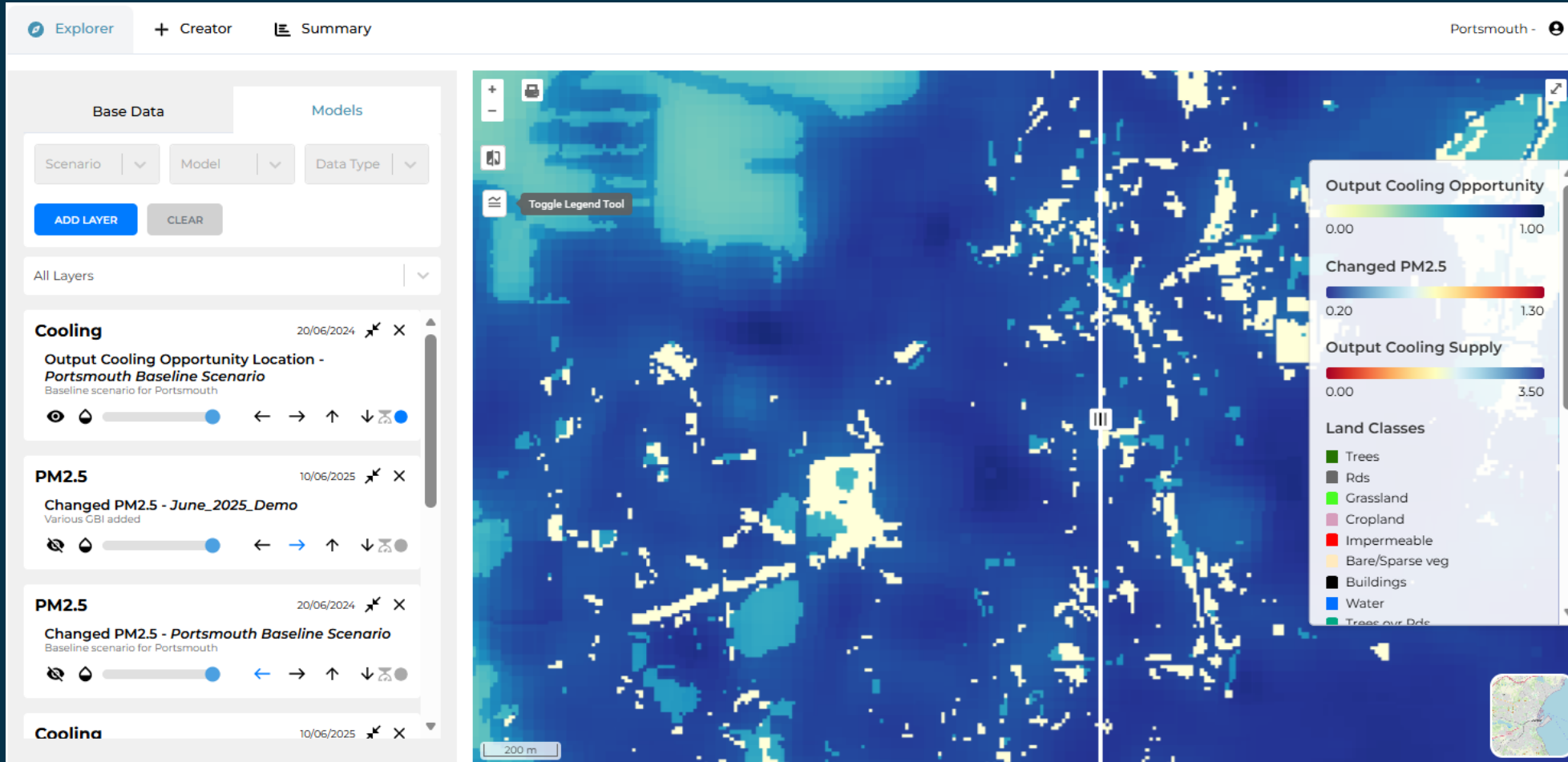
EXAMPLE EXPLORATION, Portsmouth, UK

- #2 Built up areas near the naval yards
- - urban heat & greening options



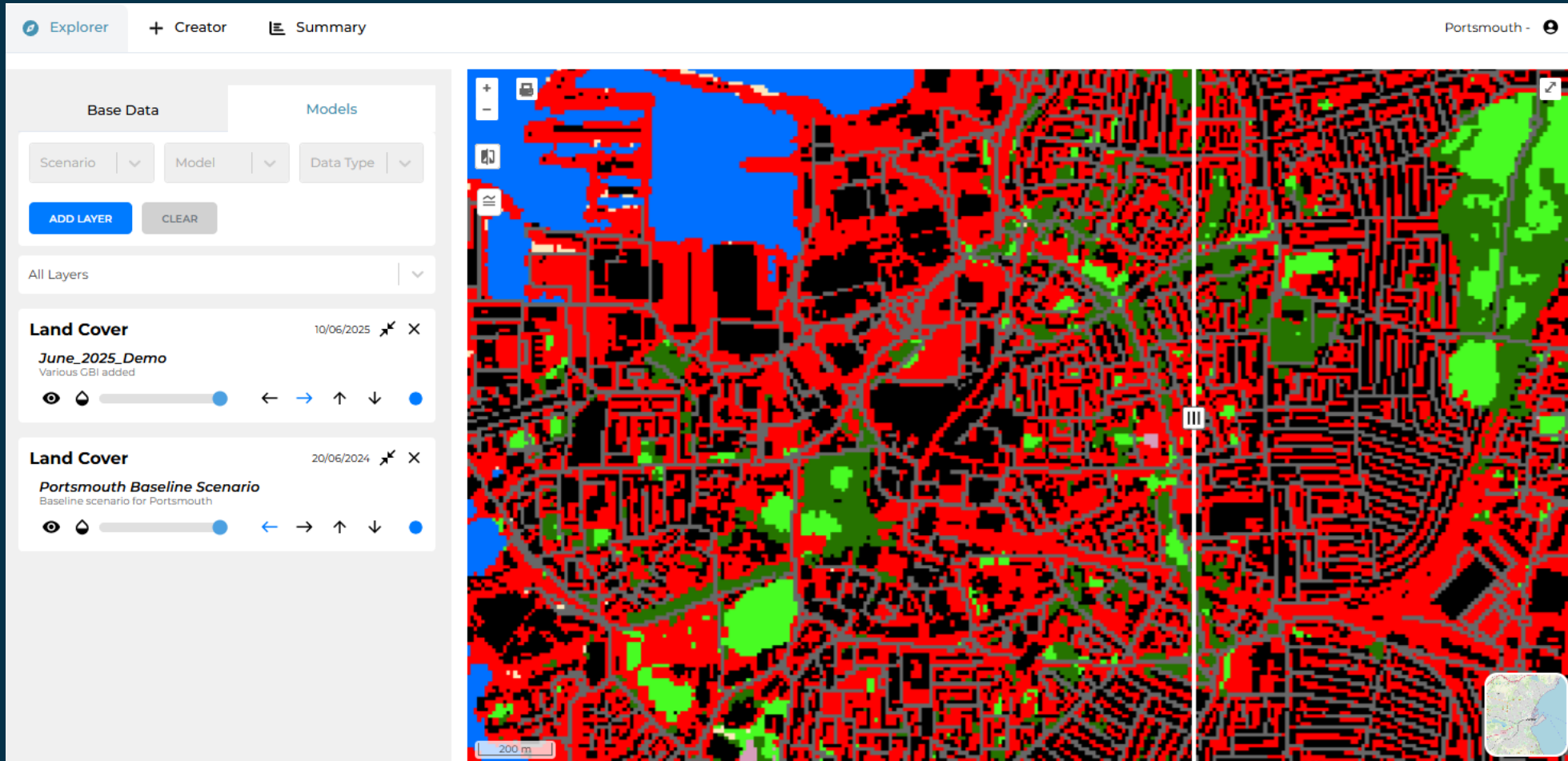
EXAMPLE EXPLORATION, Portsmouth, UK

- Built up areas near the naval yards
- Using 'opportunity mapping' to explore greatest potential for cooling
- Darker blue colours indicate greatest opportunity



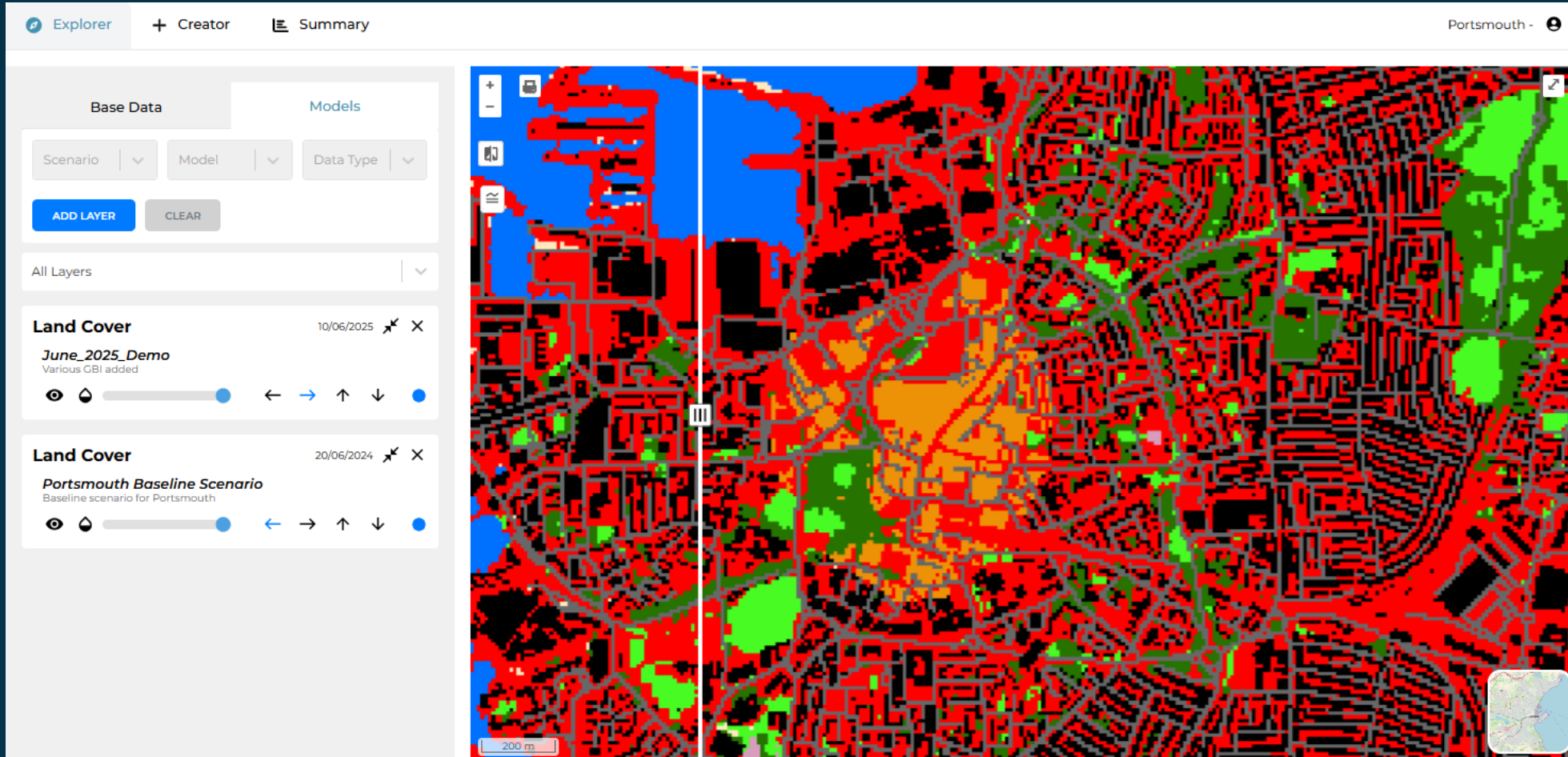
EXAMPLE EXPLORATION, Portsmouth, UK

- Simplified land cover identifies built features (roads, buildings, impermeable surfaces) and greenspace options (street trees, trees, grass, water)



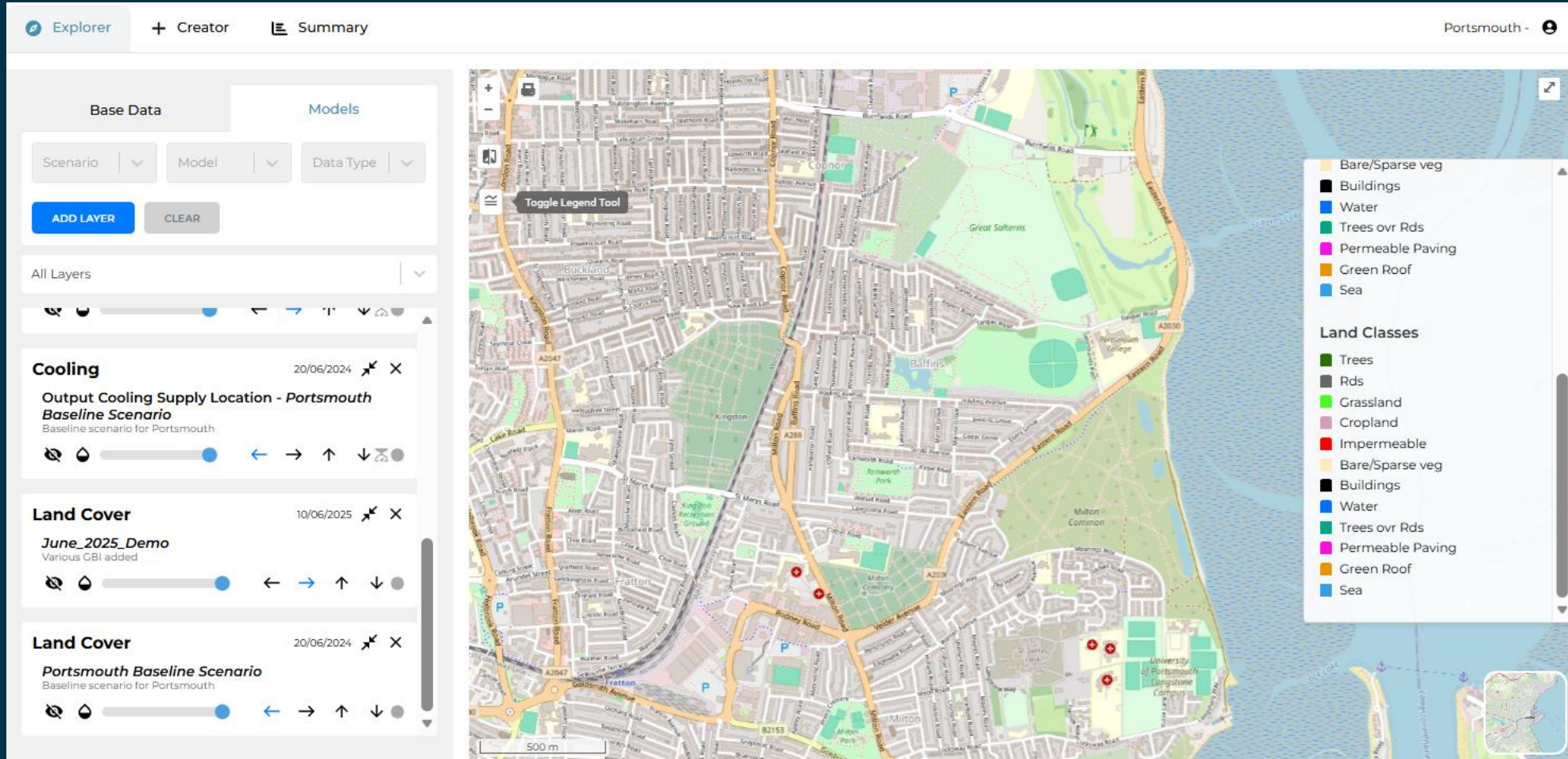
EXAMPLE EXPLORATION, Portsmouth, UK

- Scenario creation allows evaluation of strategies like widespread implementation of green roofs (in orange on map)



EXAMPLE EXPLORATION, Portsmouth, UK

- #3 Effect of new trees on air pollution concentrations
- Planting options largely restricted to existing areas of open grass/shrub



EXAMPLE EXPLORATION, Portsmouth, UK

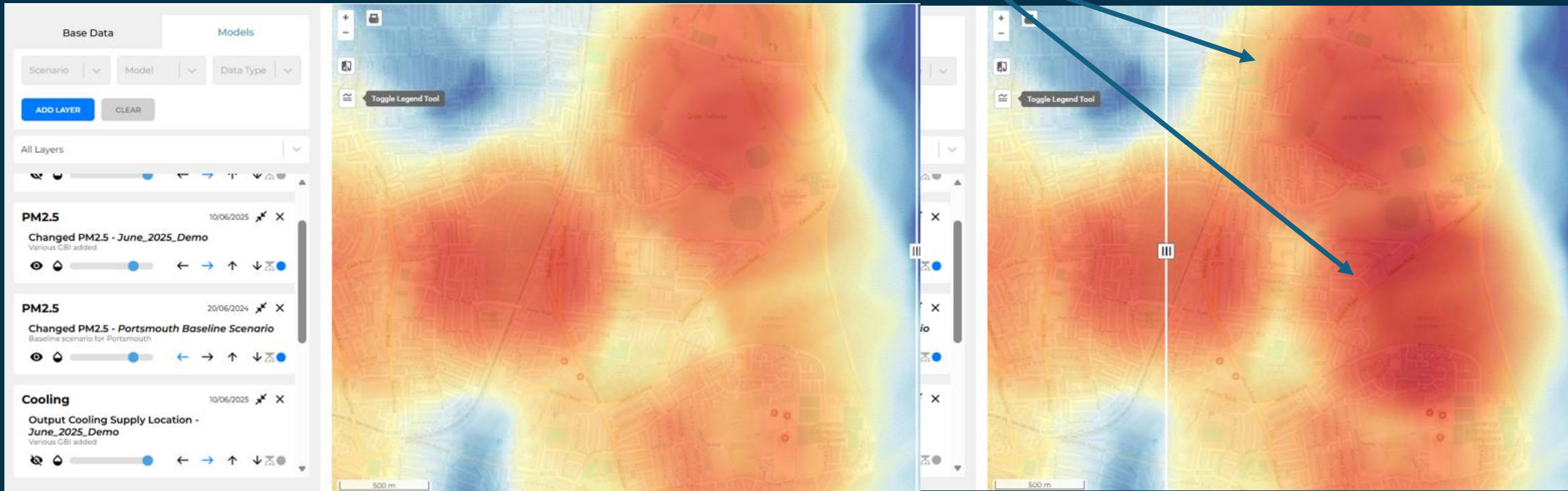
- Scenario with new trees planted in grassy areas, avoiding golf course etc.



EXAMPLE EXPLORATION, Portsmouth, UK

- Run air pollution model to see effect of new tree plantings on air quality

Darker reds show a reduction in PM2.5 concentrations



SUMMARY DATA to support decision-making, Portsmouth scenarios, UK

- Graphs and tabular data show the calculated benefits
- Can be broken down by demographic data such as poverty bands, age, etc.
- Can be linked to economic valuation and health impacts

