

URBAN SQUARE

UrbanSquare: DestinE Empowering Urban Resilience Against Climate Challenges

Destination Earth User eXchange #3

15-16 October 2024



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DestinE Platform

Your gateway to a sustainable future

A unique ecosystem of services
harnessing the power of
Destination Earth.

5 DestinE use-cases:

- GFTS
- DESIDE
- CityNexus
- DRE
- **UrbanSquare**

The Team

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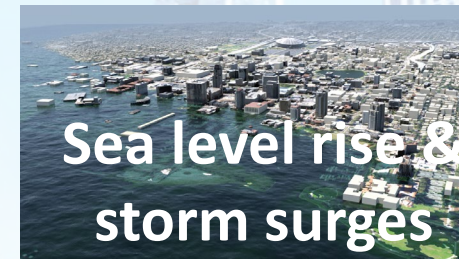


The Challenge

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Understanding and mitigating the impacts of heat waves, storms, air pollution, flooding, and infrastructure disruptions



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Focus: what is the challenge that municipalities are facing regarding flooding ?

Climate change: recent years river discharge across Europe

- Lower than average 2/3 of the year
- November and December 158 flood notifications

This has important impact on the climate conditions in the entire continent.

<https://climate.copernicus.eu/ESOTC/2019/river-discharge>



Municipalities

- Engaged in emergency response situations
- Comply with national level emergency response regulations
- Implement centralized flood risk reduction measures
- Face damage control needs
- Responsible for the population
- Identify and plan the recovery of urban infrastructure
- Relate and cater to inundated agricultural fields
- etc.

Need

- Get warning about an upcoming flood way in advance
- Get indication about the flood span and the size of the damages
- Plan in compliance with the emergency response regulations
- Get information about what resources will be needed for recovery
- Be able to plan based on what-if scenarios

Flood

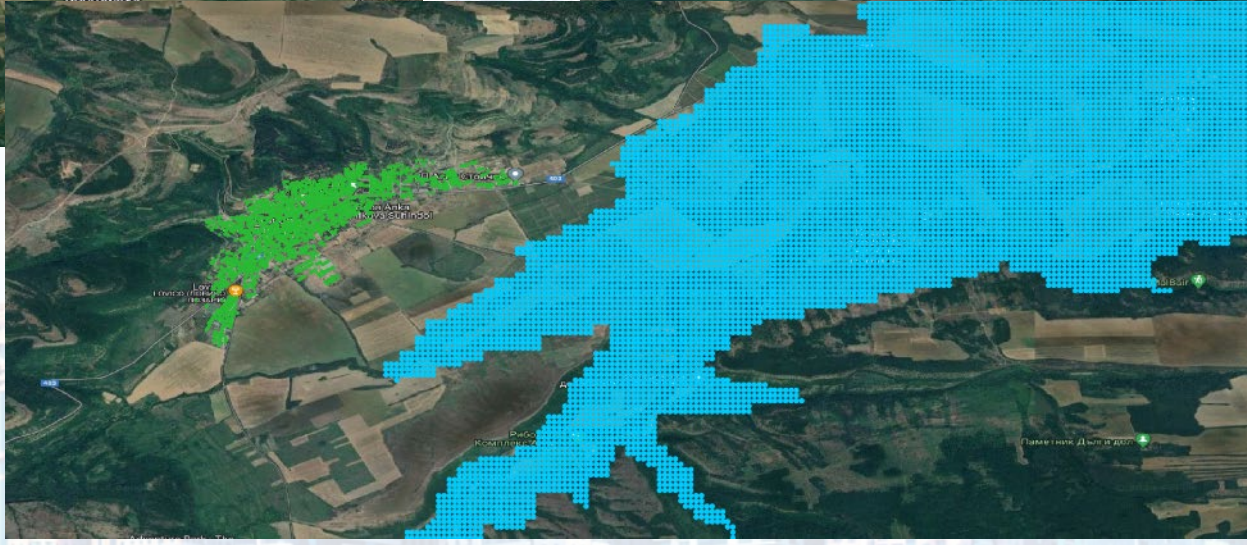
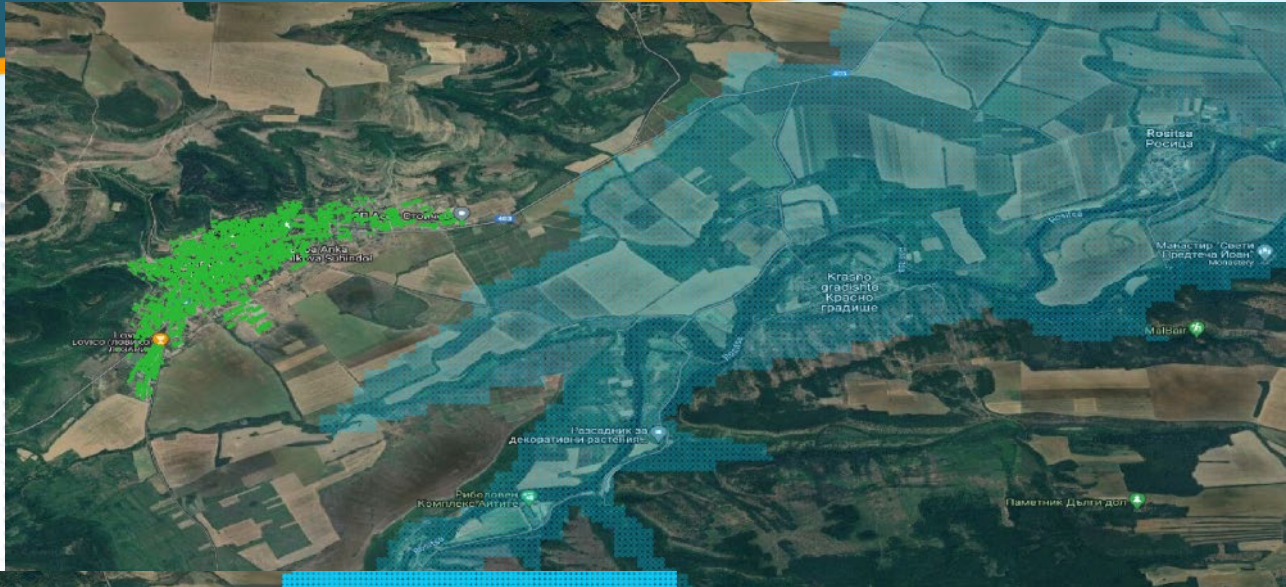
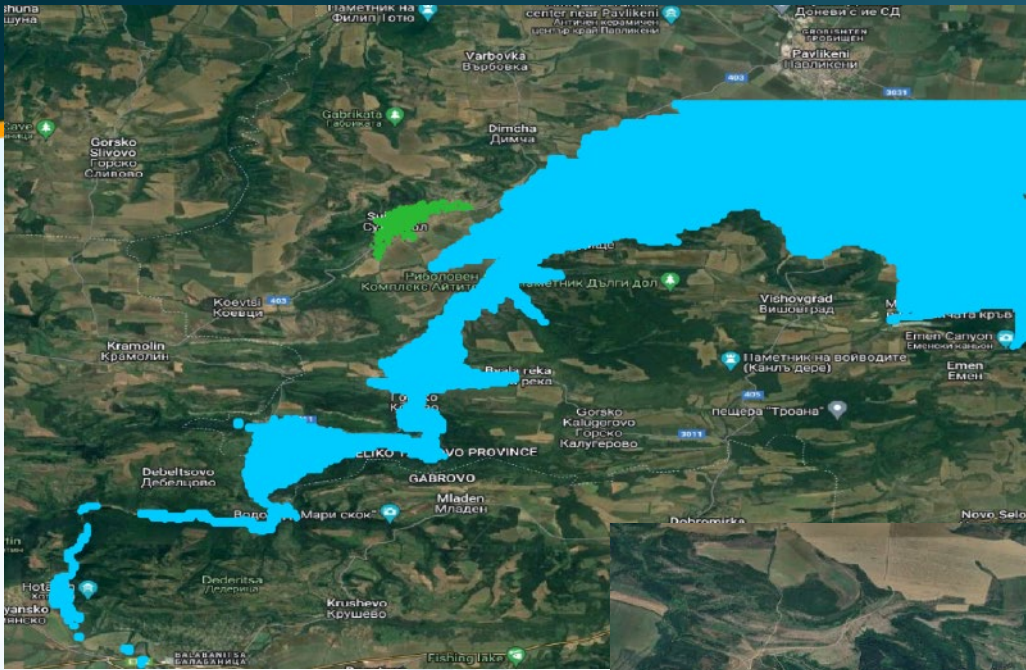
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The screenshot displays a web application interface for flood monitoring and management. The interface is divided into several sections:

- Header:** Includes a search bar with the text "What are you looking for" and a "Search" button. There is also a language selector set to "English" and a user profile icon.
- Sidebar:** A vertical navigation menu on the left side with options: Home, Water Balance, Snow Stock, About Us, Help, Manage Water Balance, Manage Snow Stock, Fairway, River Hydrology, Manage River Hydrology, Manage Fairway, User Management, Group Management, Log, User Water Balance, and User Snow Stock.
- Main Dashboard:**
 - Forecast Section:** Offers "3 Days Forecast", "5 Days Forecast", "7 Days Forecast", and "30 Days Forecast" options, with a "Uncheck" button.
 - Filters:** Includes dropdown menus for "River" (Rositsa), "Monitoring station" (No Station), "Feature" (Water level), and "Quantity" (default).
 - Date Range:** A date range selector showing "2023/09/28 - 2024/05/28" with a search icon.
 - Calendar:** A calendar view for September 2023 and October 2023, with a date range of "2023/09/28 - 2024/05/28" and "Apply" and "Cancel" buttons.
 - Alerts:** Three red warning icons with text: "Rositsa, 2023-09-04, flood Extent amount : 926 cm Deviation Amount : 74 cm", "Rositsa, 2023-09-03, flood Extent amount : 1048 cm Deviation Amount : 134 cm", and "Rositsa, 2024-01-01, flood Extent amount : 968 cm Deviation Amount : 84 cm".
 - Table:** A table with columns "Date", "Monitoring station", and "Water Level (cm)". It shows data for "2023-09-04" at "No Station" with a "Water Level" of "516.0".
 - Map:** A satellite map showing a river system in a mountainous region.
- Footer:** A small satellite map at the bottom center.

Flood span and damages evaluation

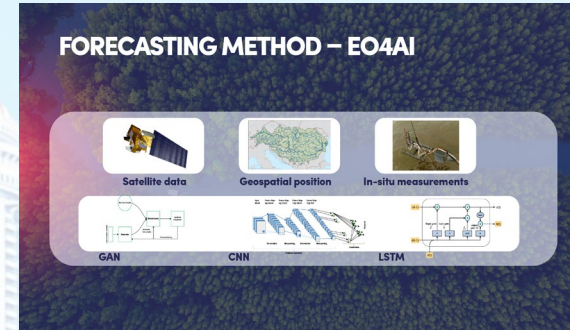
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Flood forecasting and simulation

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EO4AI to forecast water levels and river discharge for 30 days ahead and more



Simulation with increased of discharge and precipitation levels and elevation

Design and experiment with What-if scenarios via administrative GUI

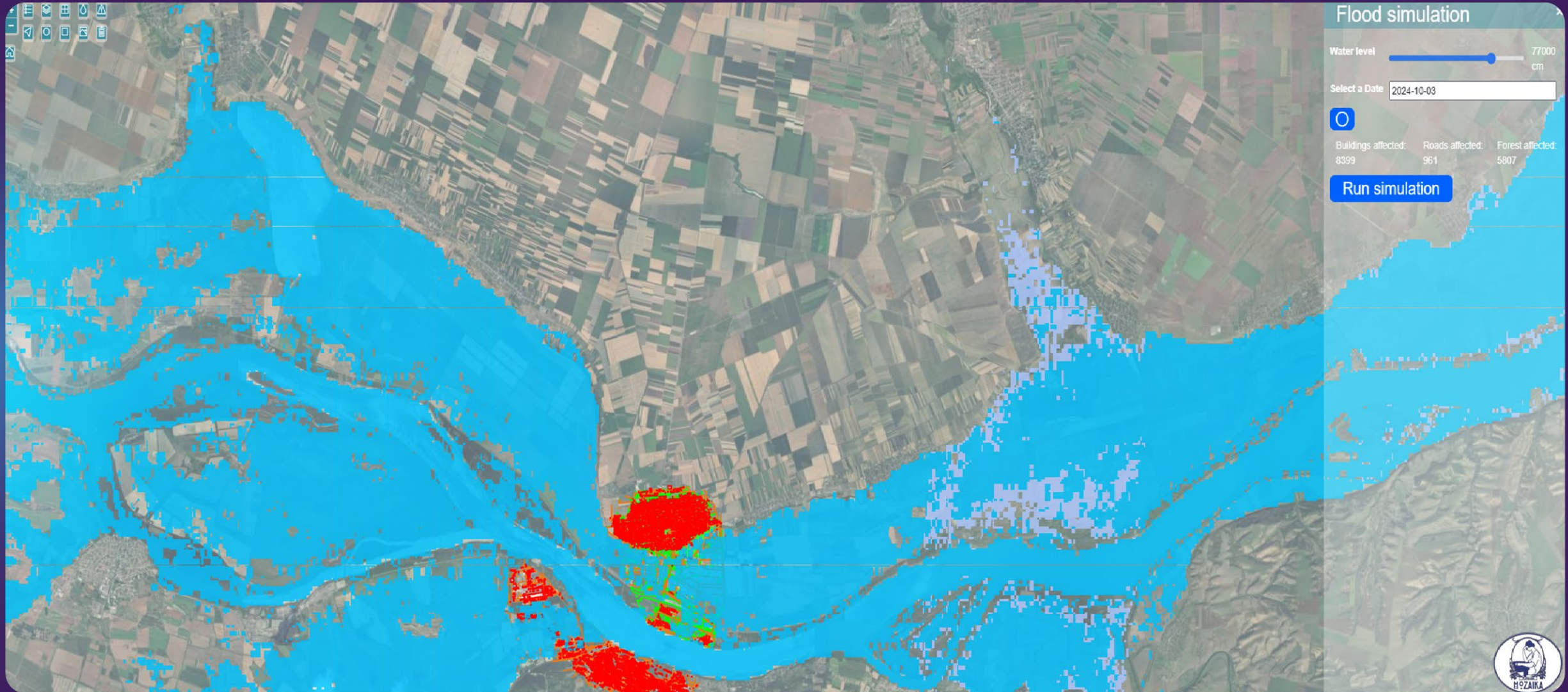


DestinE integration



Go global

FLOOD SIMULATION AND FORECASTING



Next steps

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The tools to scale-up

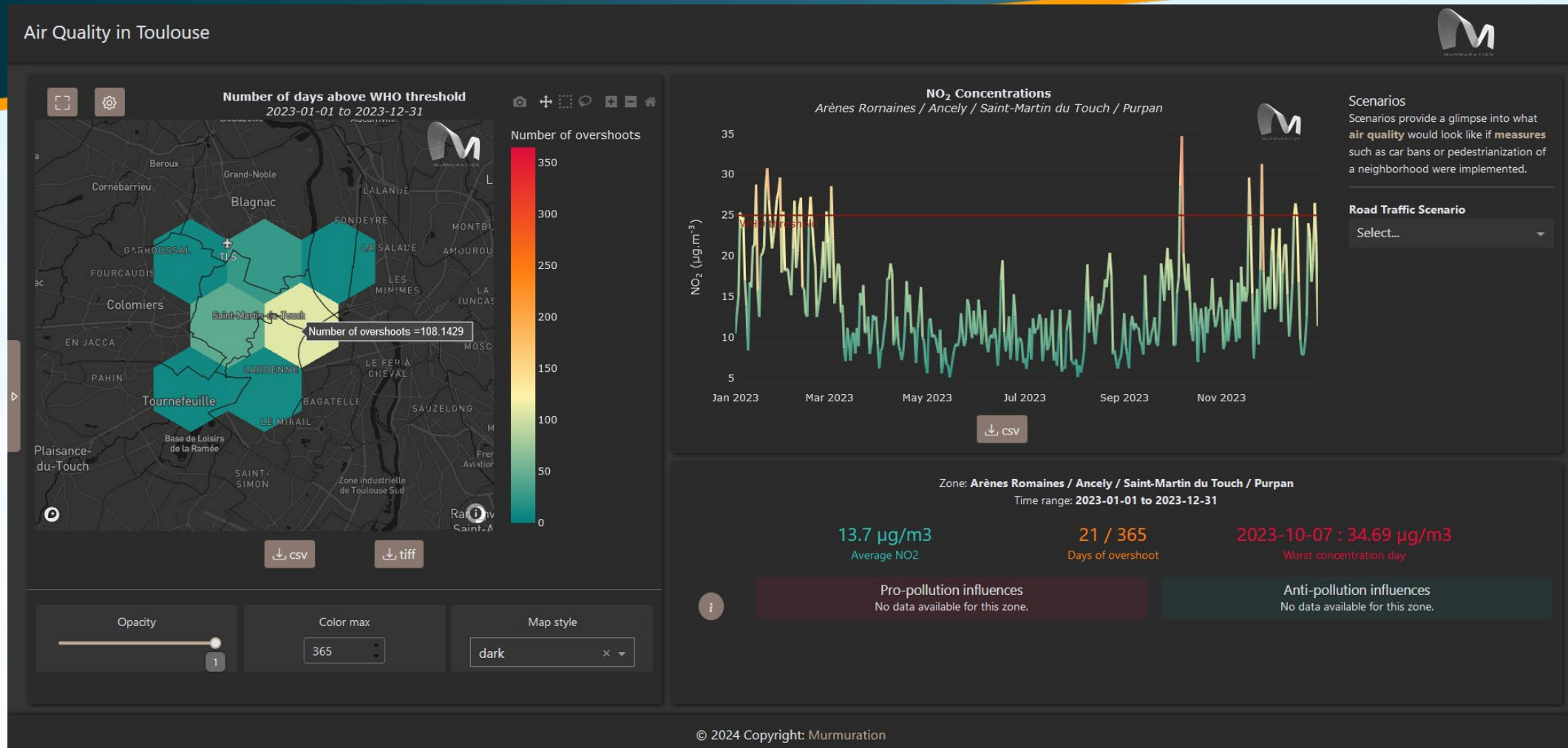
- Generalise the approach to a global scale service
- Adapt to a growing number of instantiations across the globe
- Building on DestinE as an operational platform : scalability & efficient data access

One place to access a wide range of data

Dataset	Component
CAMS air quality forecast	Air
ERA-5 meteorological condition	Air
Landsat 8/9 thermal imagery	Heat
Sentinel-2 optical imagery	Heat, Infrastructures
Water quantity indicators	Flood
CAMS solar radiation	Flood
CLMS vegetation indices	Flood
CEMS River discharge	Flood
Copernicus Elevation Model	Sea level rise, Air
Climate Digital Twin	Air, Heat, Sea level rise, Flood, Resources
Eurostat Population distribution	Resources

Air quality dashboard

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Audience Q&As

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Any questions?

