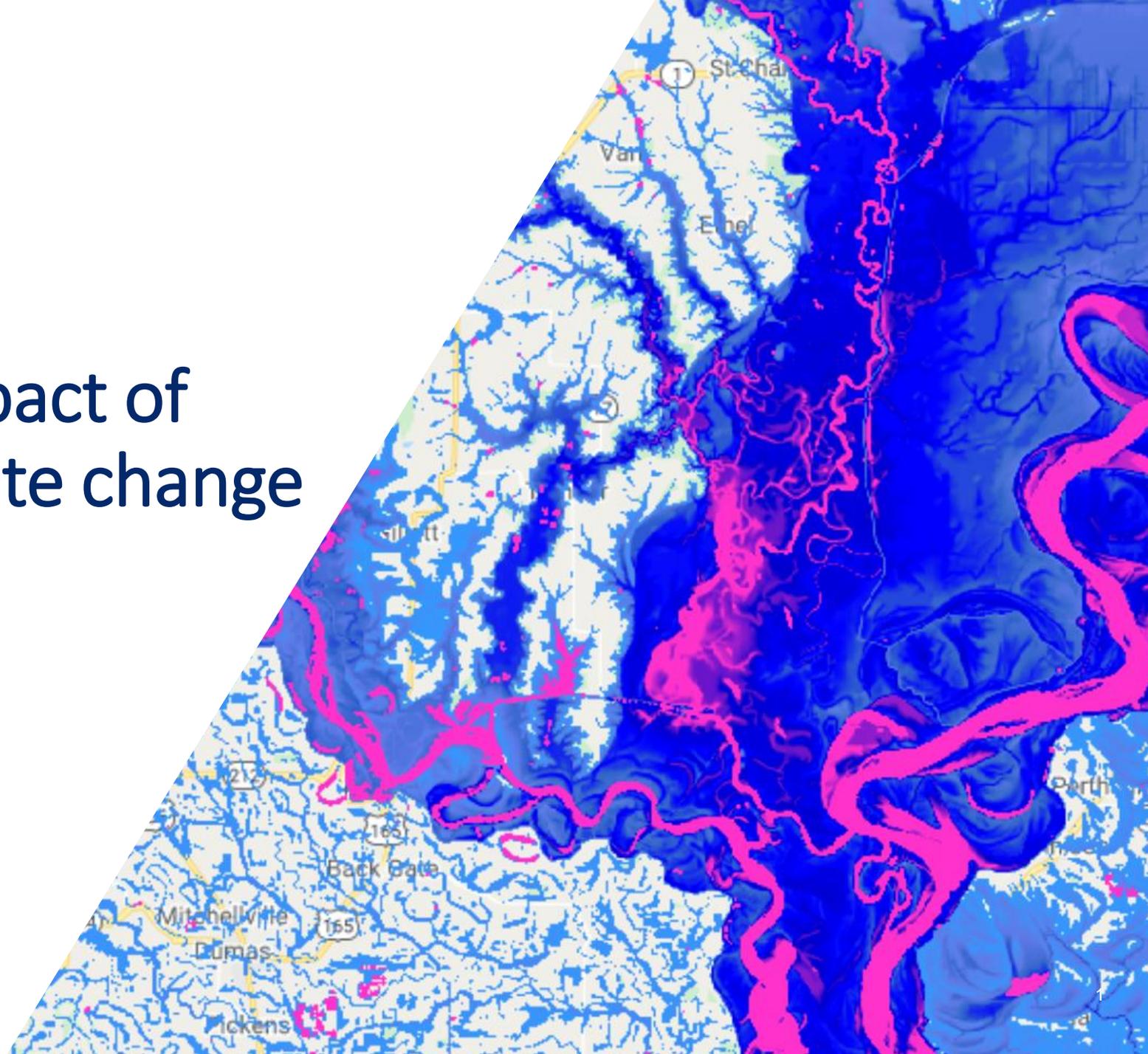


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Understanding the impact of flood hazard and climate change on infrastructure

7th February 2023



All flooding is local



Coastal

Pluvial / fluvial

Human greenhouse gas emissions

Warmer atmosphere (~1°C)

More atmospheric moisture (Clausius Clapeyron 7%/°C)

Larger rainfall events and flash floods

Larger river floods?

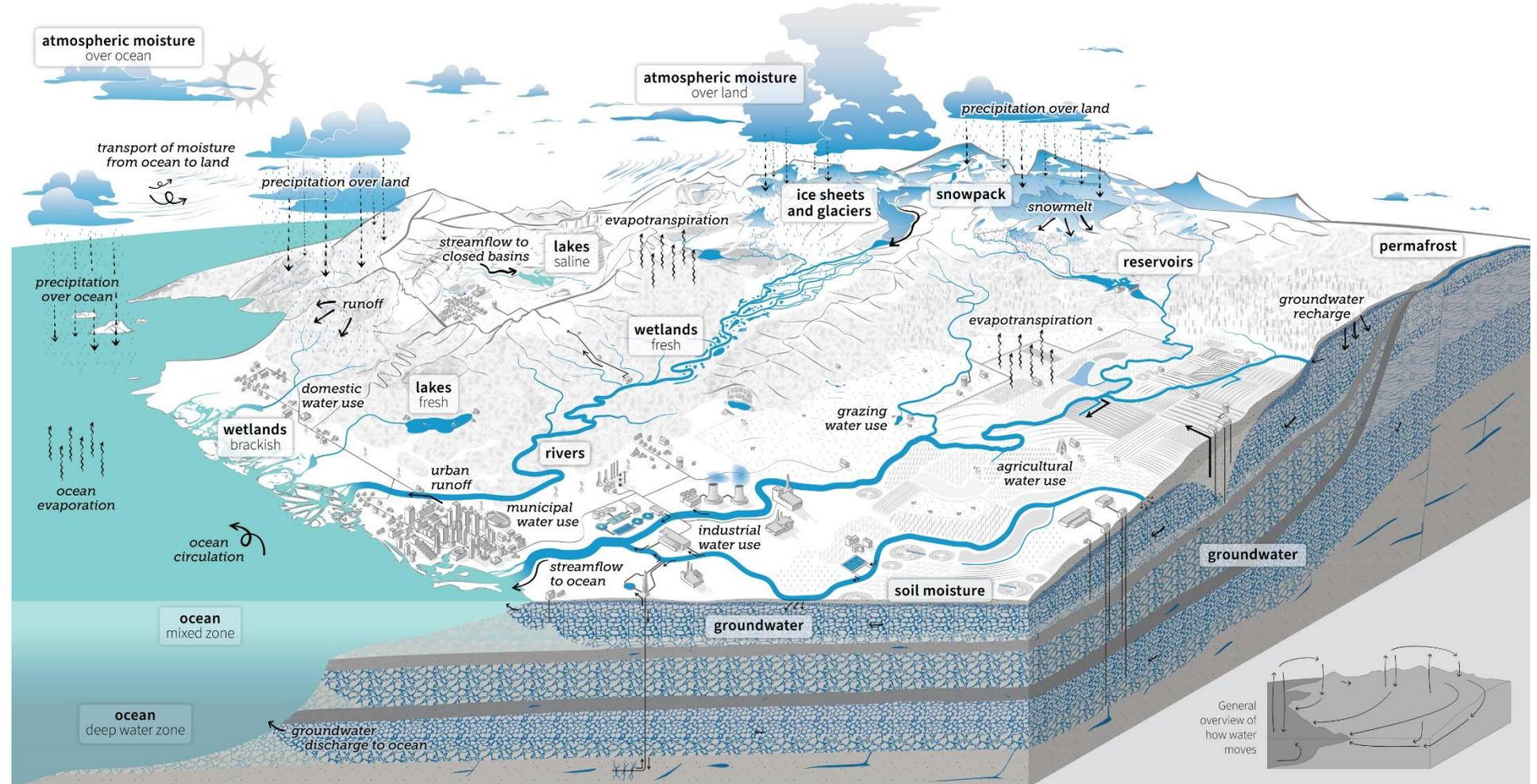
Warmer oceans

Land ice melt

Thermal expansion

Sea level rise

More coastal flooding



Models to anticipate future changes



General circulation models (GCMs) or regional climate models (RCMs)



Extreme rainfall



Hydrological models



Ocean models



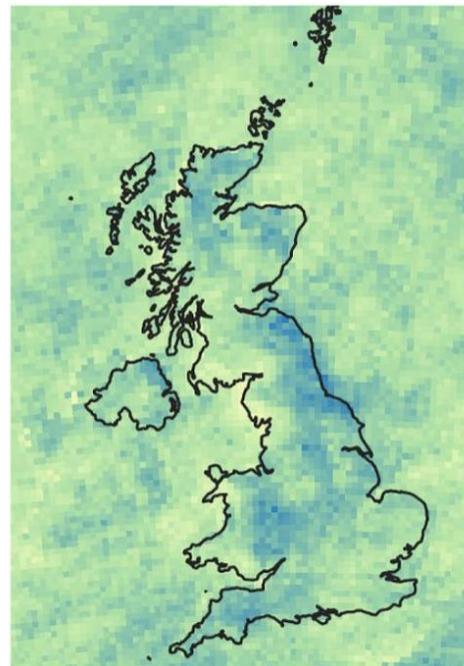
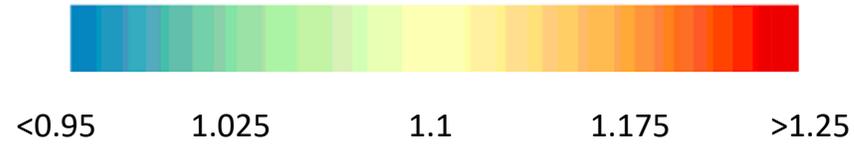
Changes in flash flooding, extreme river flows and coastal water levels

Flooding & Climate Change

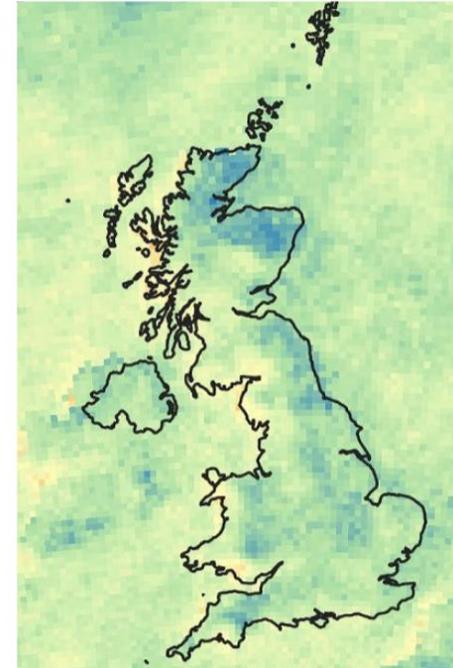
Fluvial and pluvial climate change simulations based on UKCP18 future climate projections

Coastal climate change simulations incorporate sea level rise changes as outlined in Kopp et al. (2014)

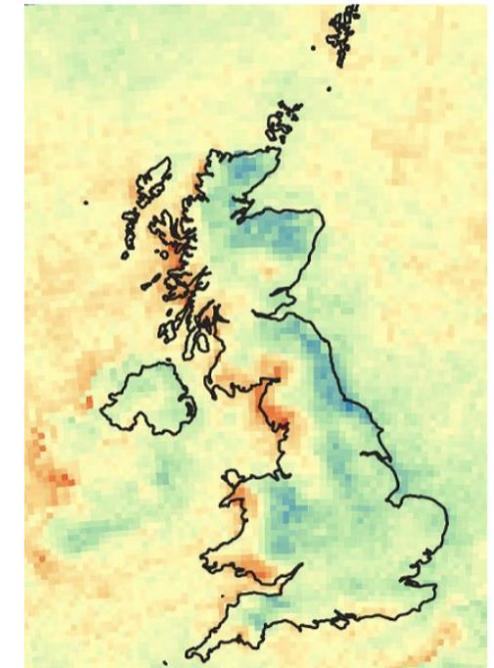
Change in extreme rainfall from present day for RCP8.5 future time horizons



2030



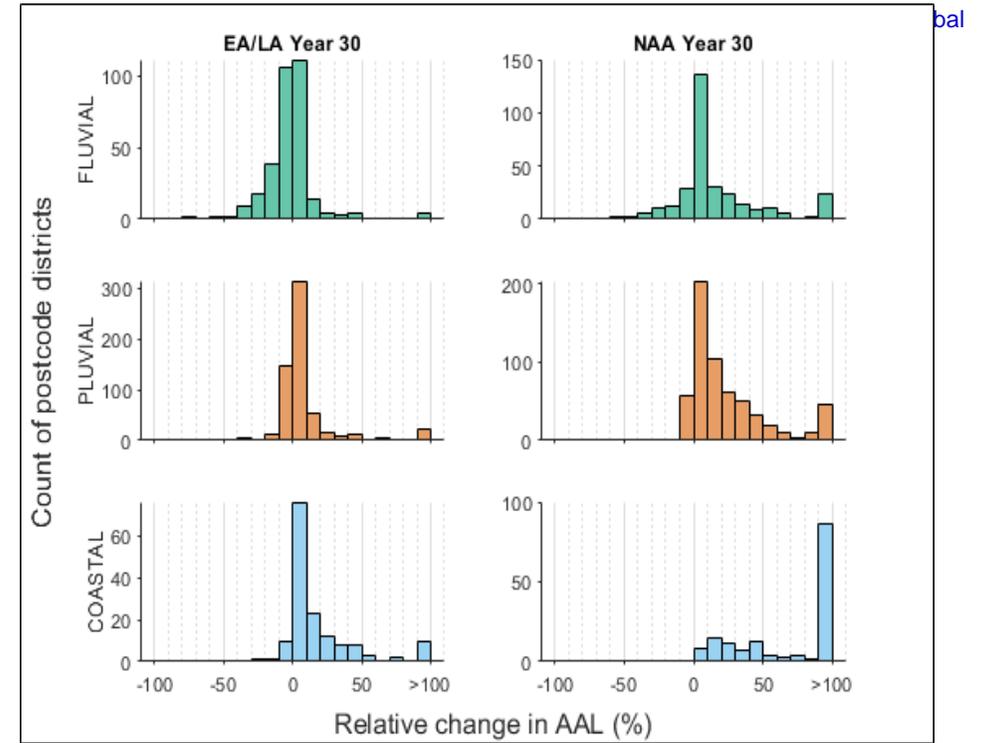
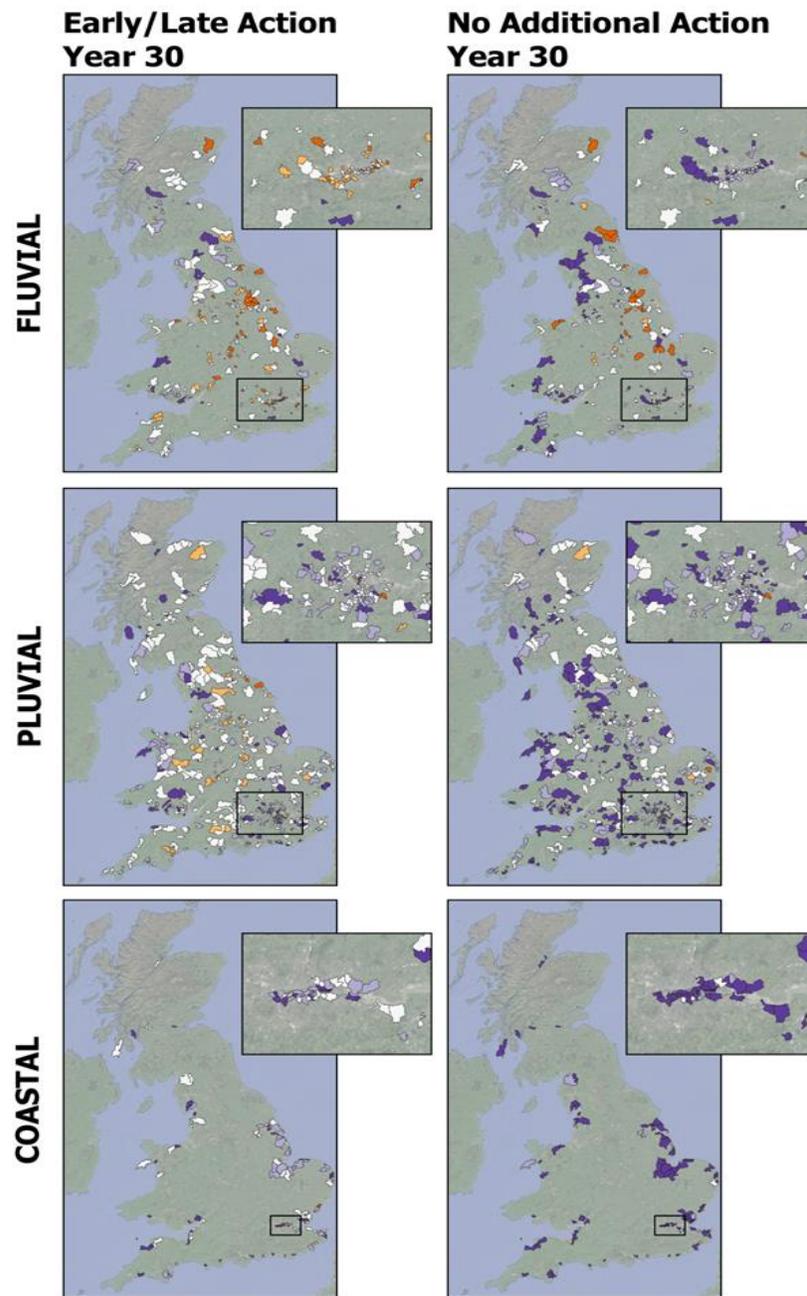
2050



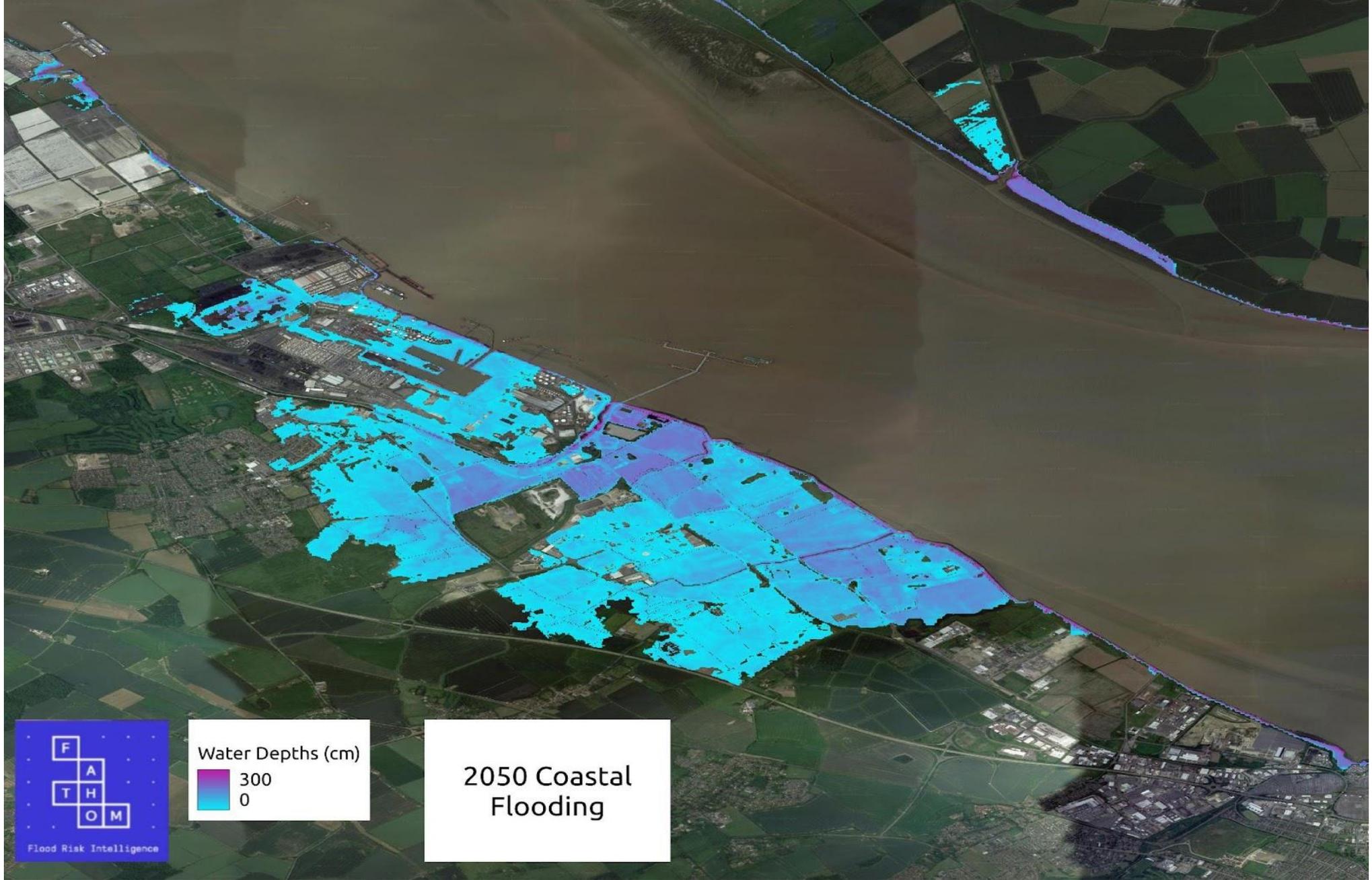
2070

Fathom-UK Future

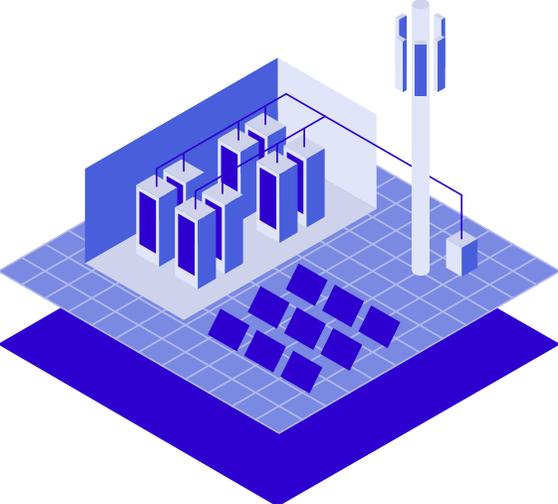
- Fluvial
- Pluvial
- Coastal



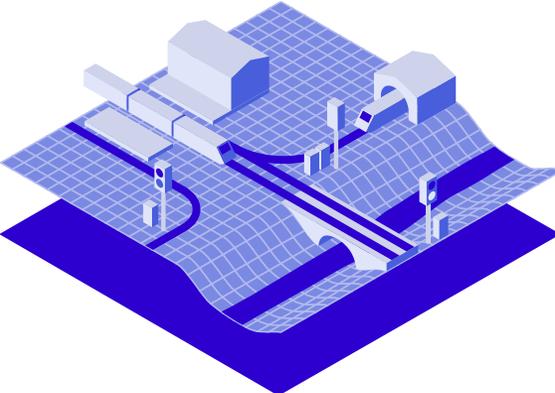
Explicit physical models are required to fully understand changing climate risks.



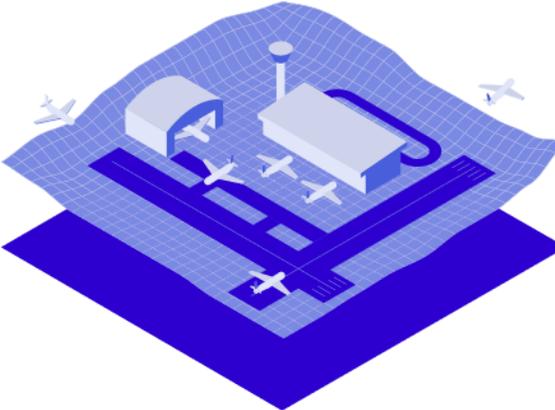
Use cases



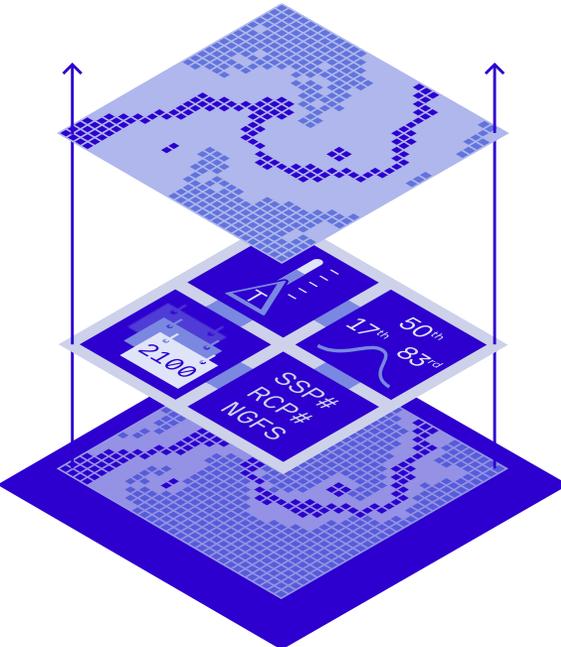
Site selection



Linear assets

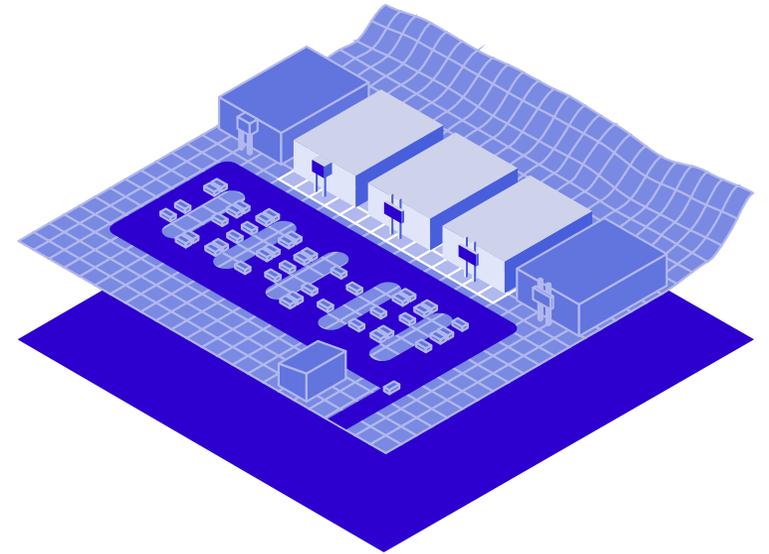
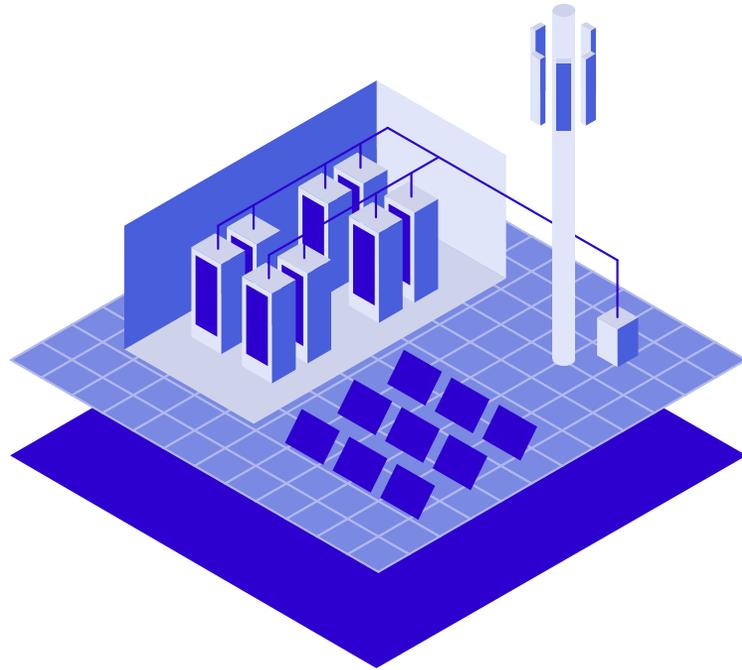
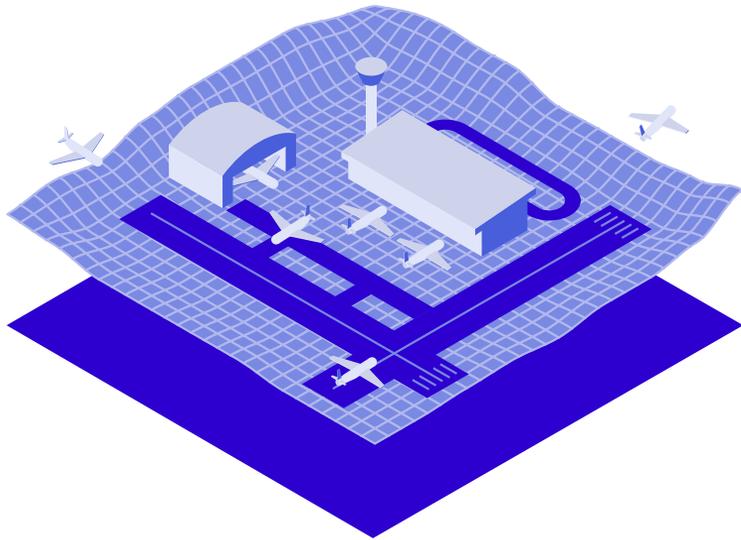


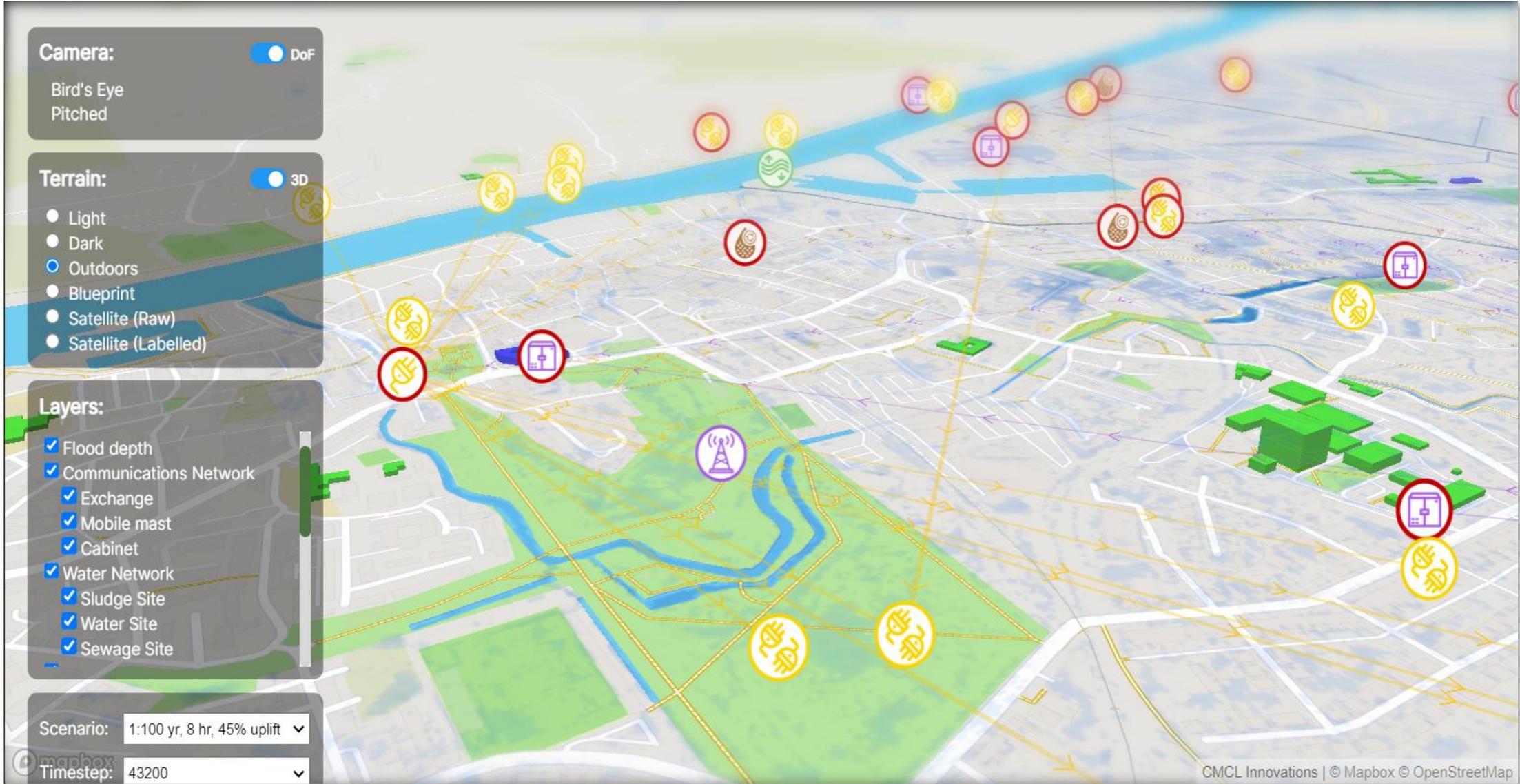
Critical infrastructure

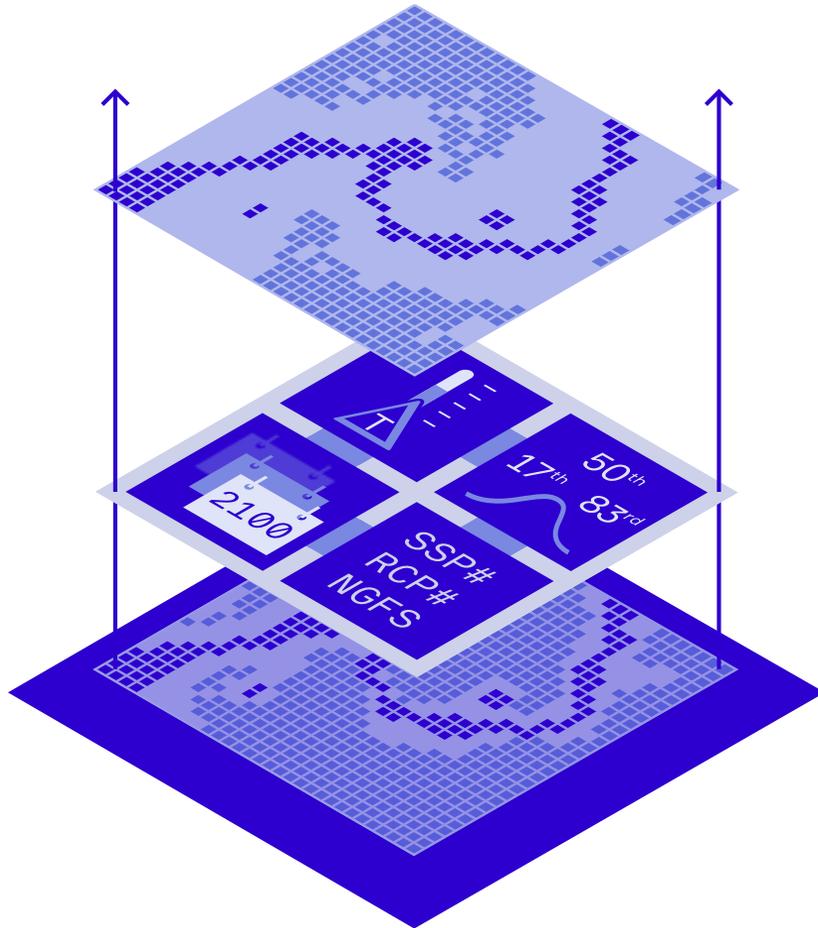


Climate analytics

Critical assets







- Climate Dynamics Framework
- Based layer is Flood Map for current climate state
- Flexibility on the parameters:
 - Climate scenarios
 - Time horizon
 - Percentiles
- Output is a climate conditioned flood map
- Delivers ultimate flexibility for defining future flood risk
- Portfolio screening or detailed climate resilience assessment

Thanks! Any questions?

Contact us: g.lewis@fathom.global



Catch up on our launch and CPD webinars:

- Access them at fathom.global/events/

Meet us at:

- World Water-Tech Summit, London, February 2023
- NCE Flood Resilience, London, April 2023
- Flood & Coast, Telford, June 2023

