CLIMATE X

Global climate risk
data analytics

Using SBAS to constrain ground deformation and shrink-swell across the UK

Project Objectives

01 Constrain ground deformation across the UK

02 Evaluate the relationship between ground deformation and the distribution of clay rich soils

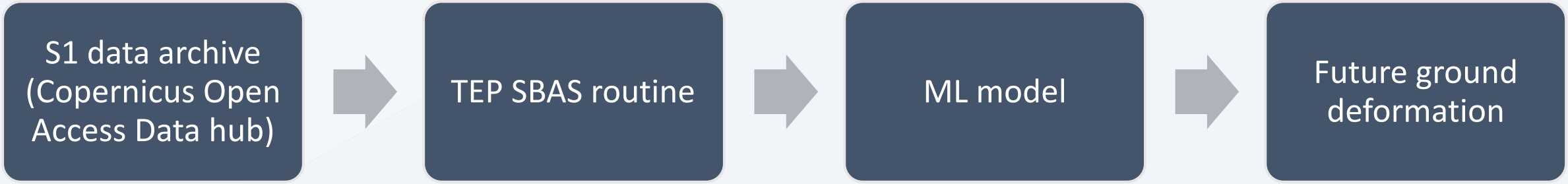
03 Use the ground deformation rates alongside a number of time-invariant variables to create a map of susceptibility to ground deformation

04 Using annual variations in ground displacement alongside climate variables to train a statistical model

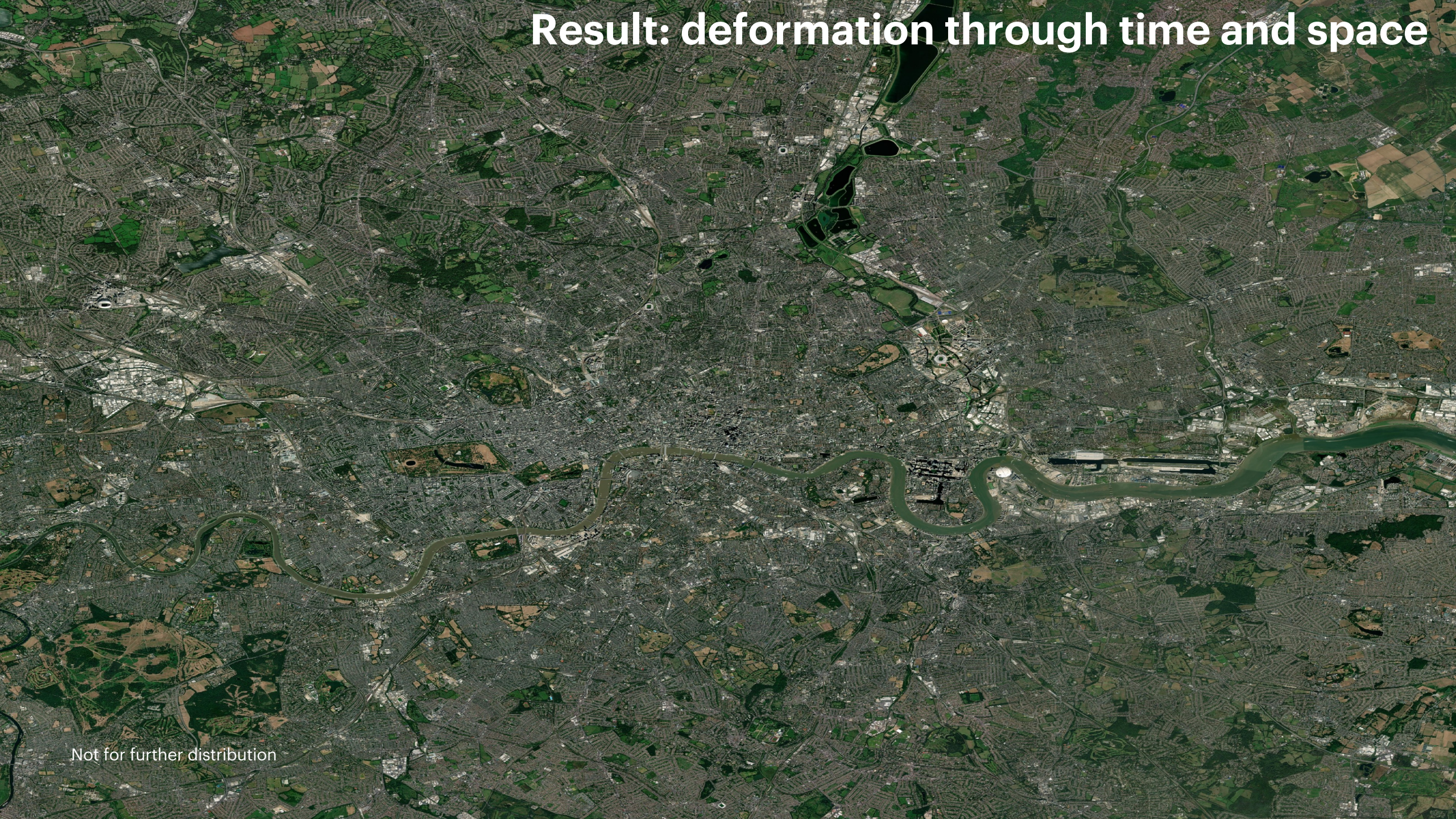
05 Assess drivers of ground displacement across the UK

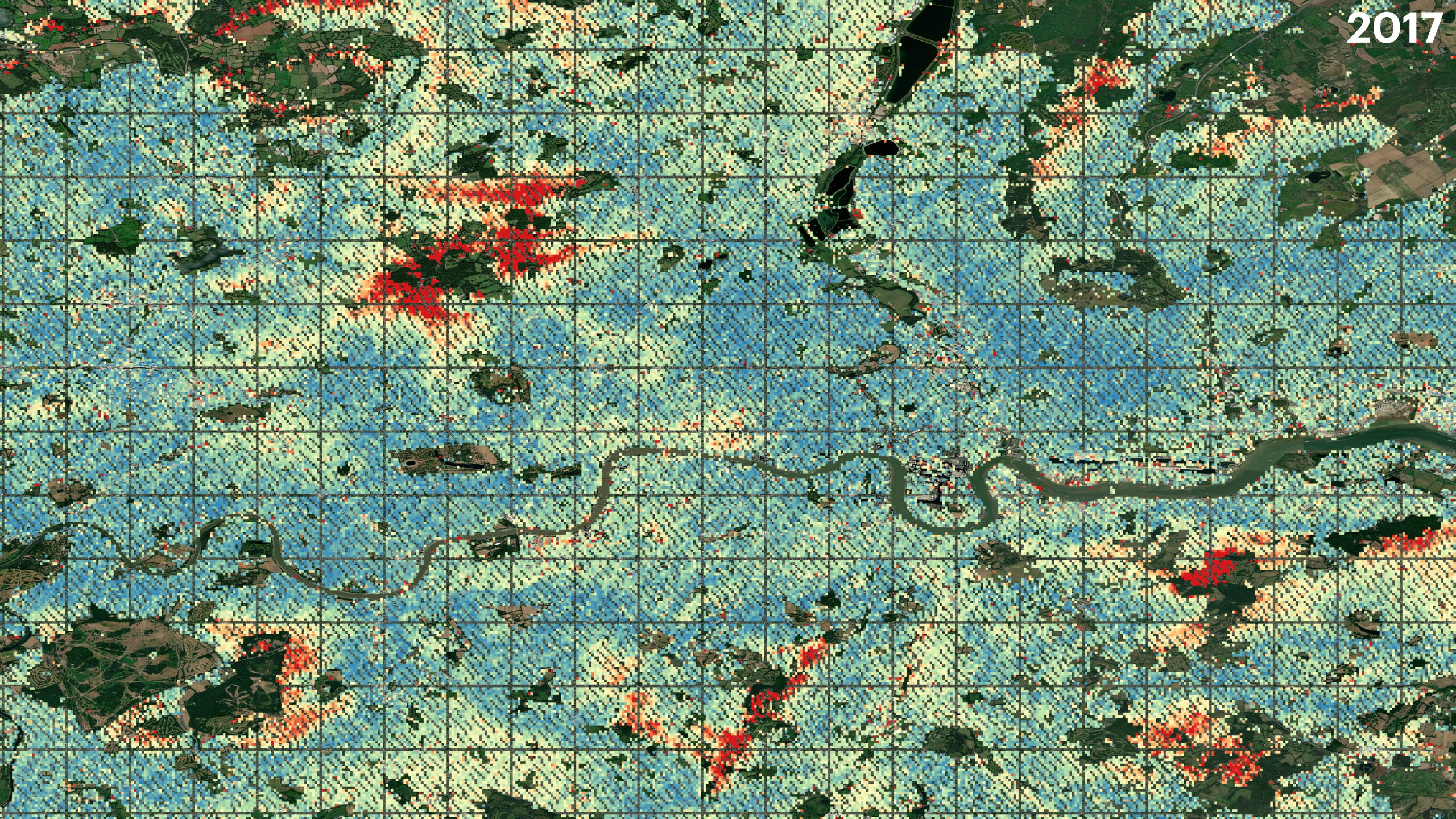
Processing Chain

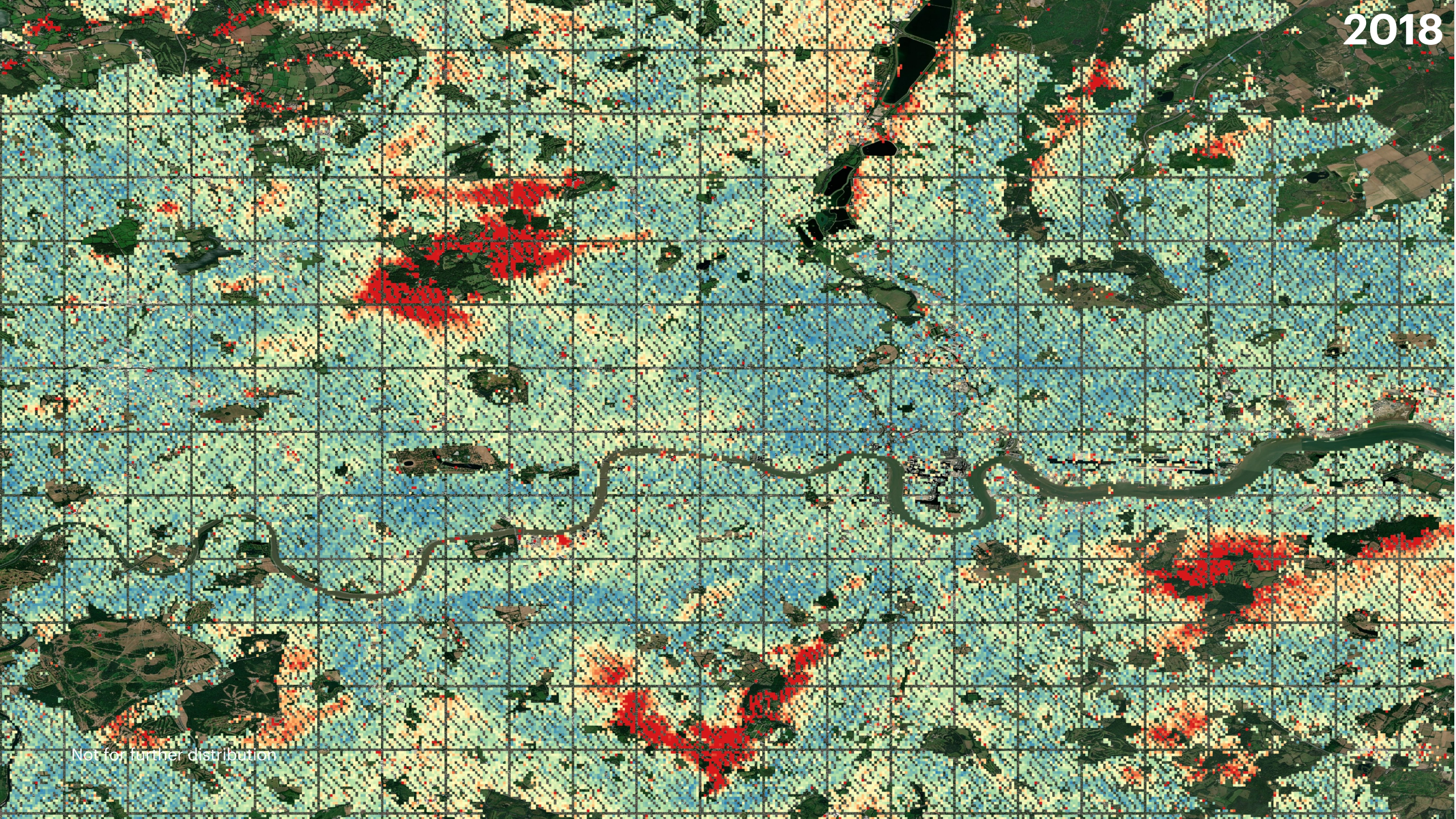
1. Use the Geohazards Thematic Exploitation Platform (TEP) to produce multi-annual measurements of ground deformation using the Small BAseline Subset (SBAS) algorithm
2. Coverage of the UK for 2017-2019.
3. Train a statistical machine learning model to predict future changes in ground deformation.

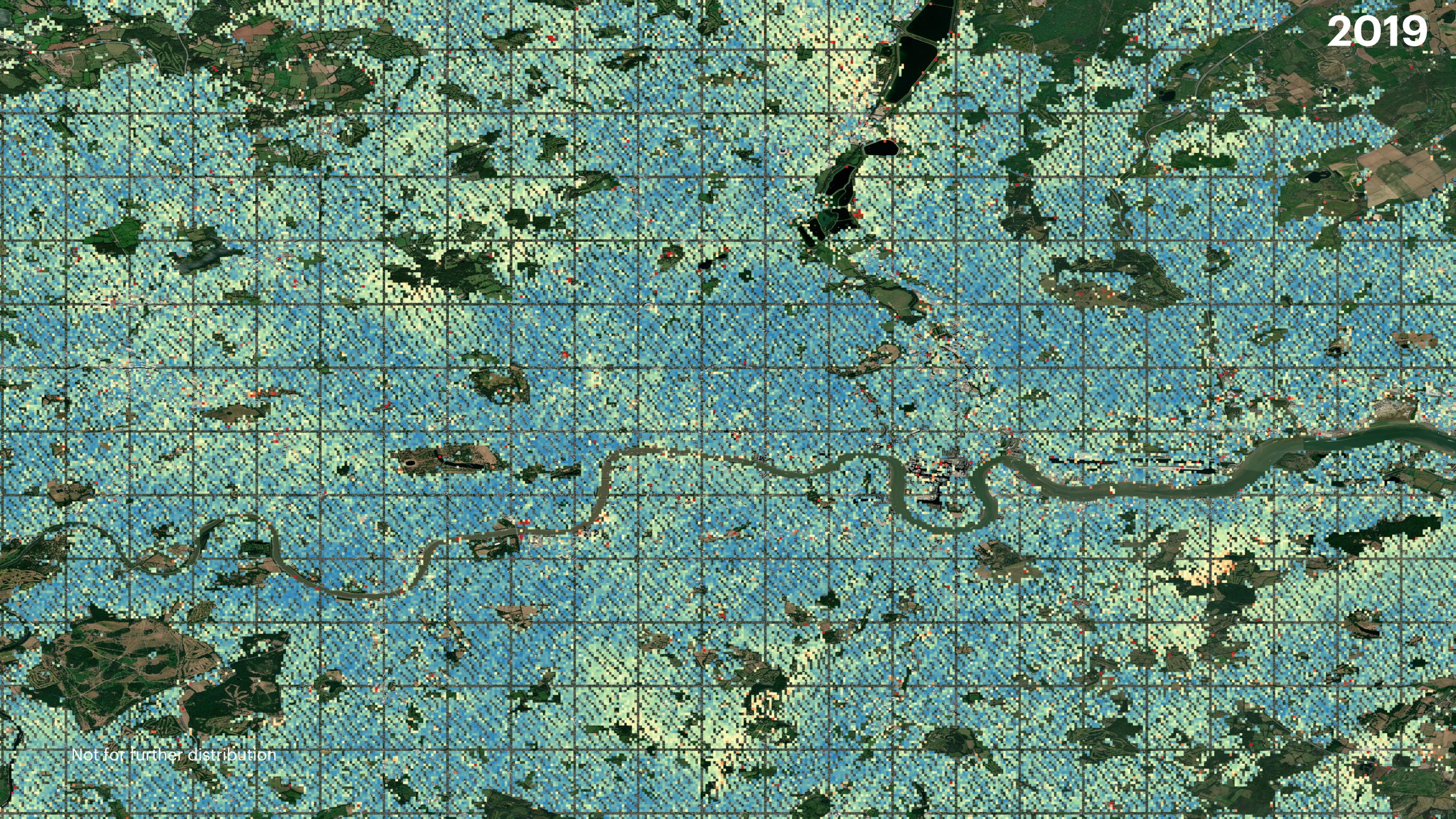


Result: deformation through time and space



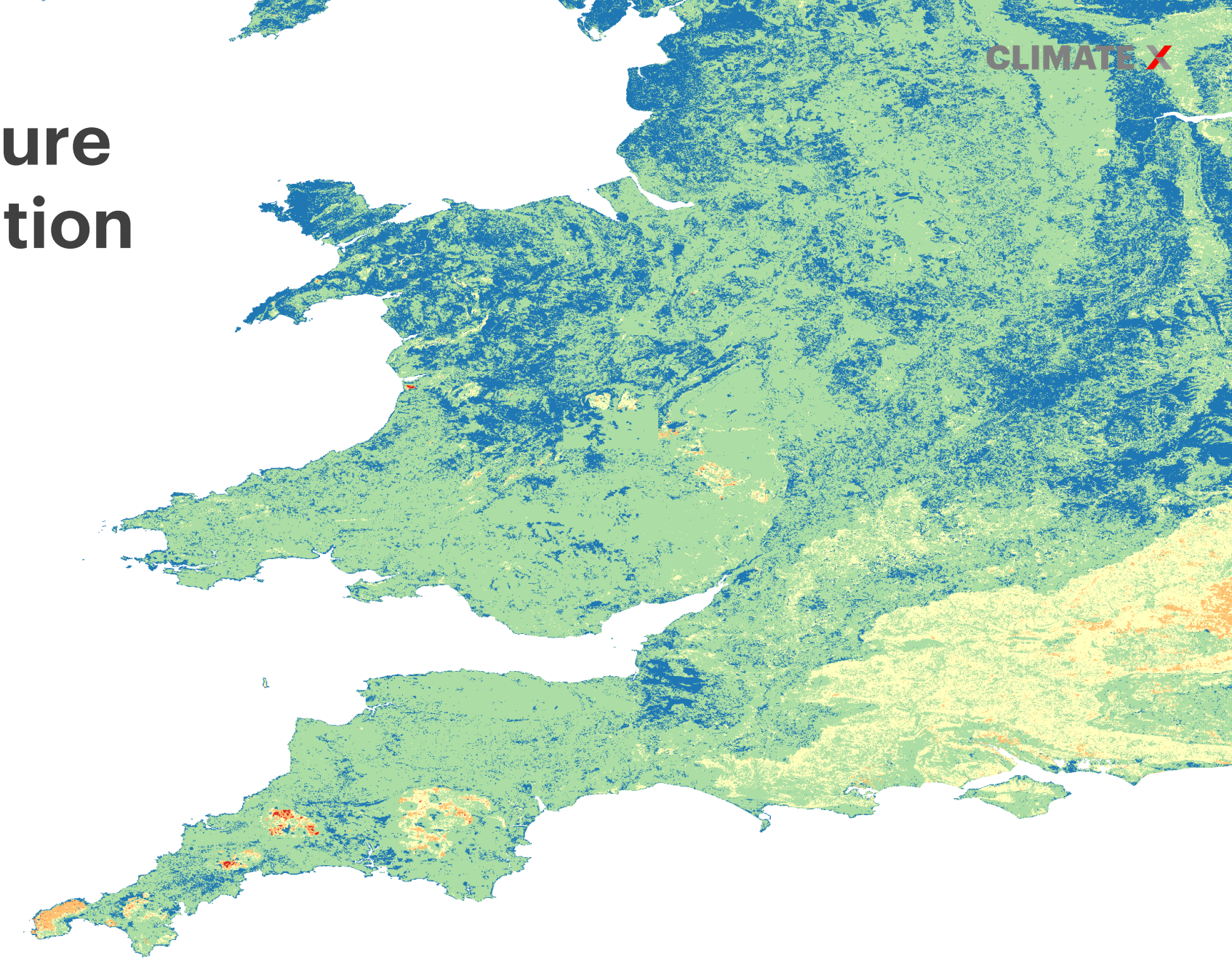

2017


2018
Not for further distribution


2019
Not for further distribution

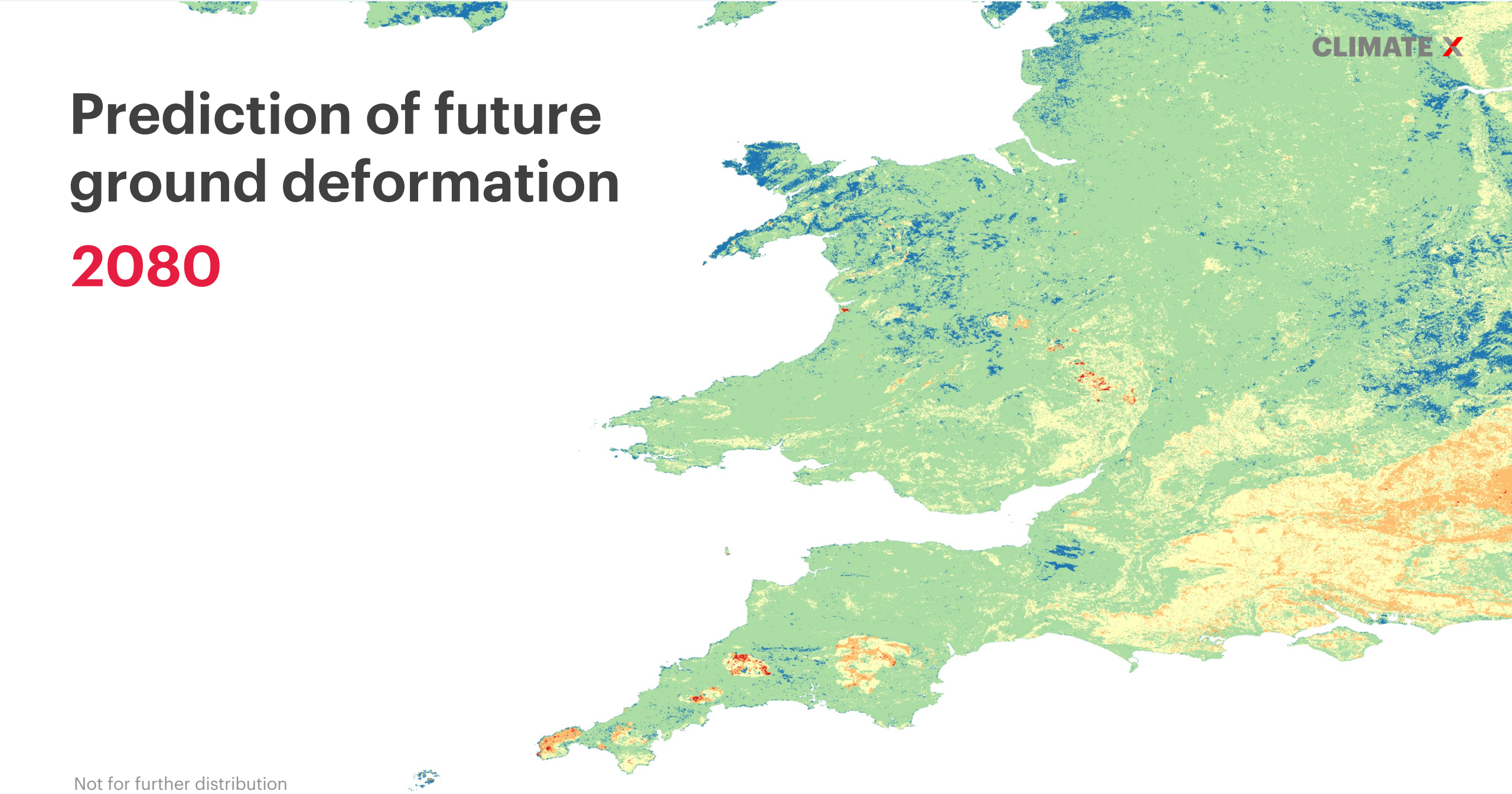
Prediction of future ground deformation

2020



Prediction of future ground deformation

2080



CLIMATE X

Conclusions

1. UK-wide satellite-derived ground displacement measurements achieved through use of the Geohazards TEP platform
2. Direct input to modelling efforts to build resilience to future changes in subsidence risk across the UK.