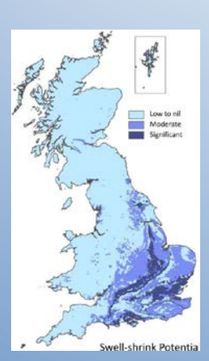
British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

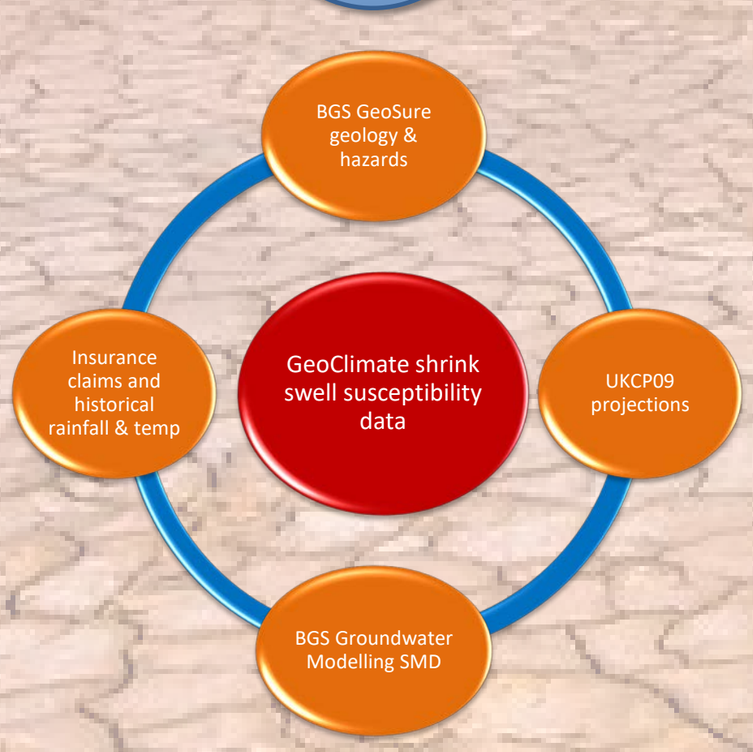
GeoClimate: Shrink-swell

Learning from the past to support planning for the future

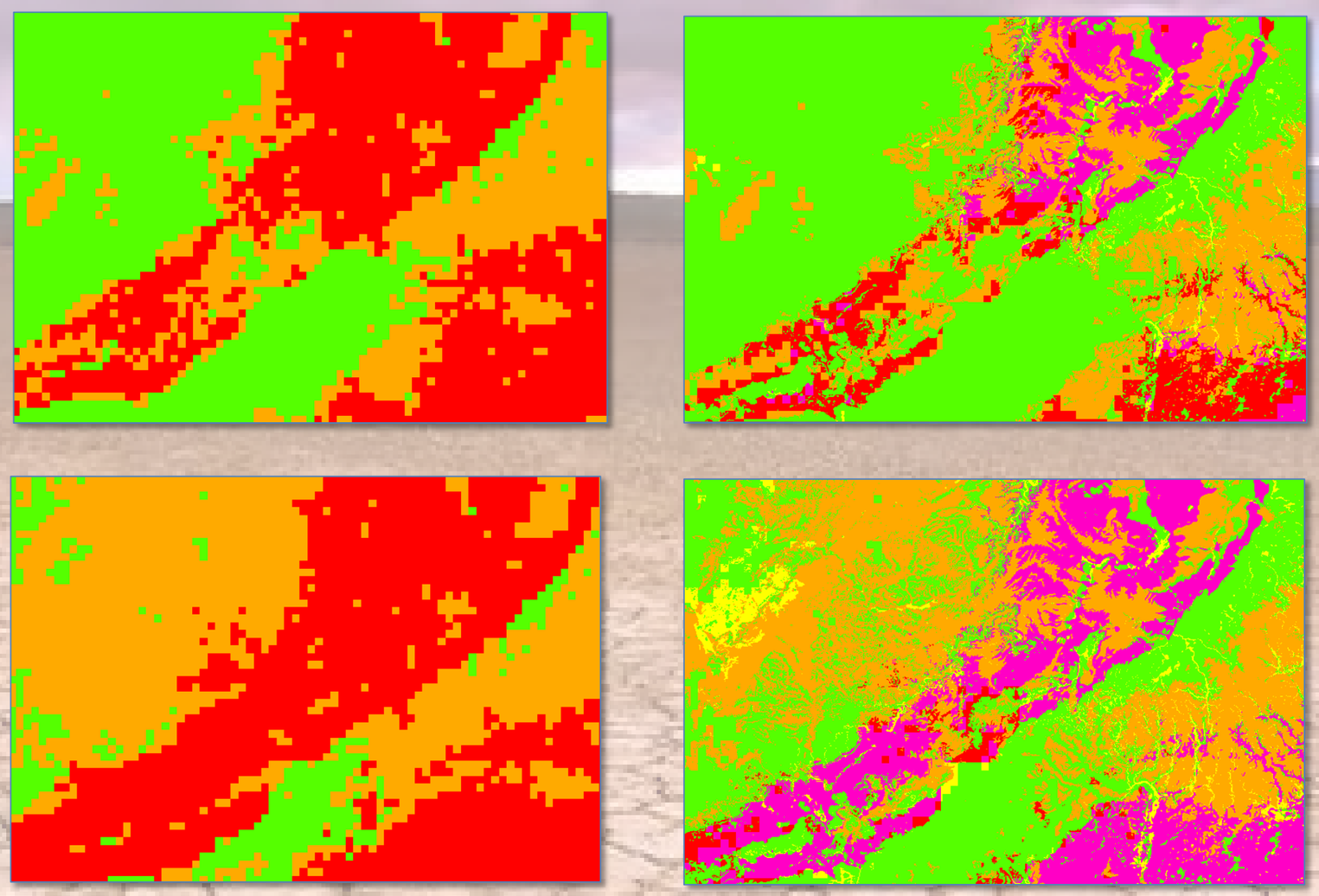
A BGS cross-directorate team have developed a new 'GeoClimate' data product for future clay shrink-swell subsidence susceptibility. Considering past weather trends, geological parameters, soil moisture conditions and historical subsidence occurrence, the key causal relationships and trigger thresholds have been identified. The drought periods identified and aligned with UKCP09 climate scenario projections have been verified by correlations with subsidence insurance claims damage data.



What is the potential impact of climate change on shrink-swell hazard?



GeoClimate Basic | **GeoClimate Premium**



Colour	Associated susceptibility text
Green	It is 'doubtful' that foundations will be affected by shrink/swell occurrence under these climatic conditions.
Orange	It is 'possible' that foundations will be affected by shrink/swell occurrence under these climatic conditions.
Red	It is 'probable' that foundations will be affected by shrink/swell occurrence under these climatic conditions.

Colour	Associated susceptibility text
Green	Foundations are 'highly unlikely' to be affected by shrink/swell occurrence under these climatic conditions.
Yellow	Foundations are 'unlikely' to be affected by shrink/swell occurrence under these climatic conditions, unless external changes occur e.g. planting or removal of trees near the building or drainage changes.
Orange	Foundations are 'likely' to be affected by shrink/swell occurrence under these climatic conditions.
Red	Foundations are 'highly likely' to be affected by shrink/swell occurrence under these climatic conditions.
Purple	Foundations are 'extremely likely' to be affected by shrink/swell occurrence under these climatic conditions.

GeoClimate: shrink-swell for the 2020s and 2080s, for an area of the UK.

Results indicate that subsidence hazards are likely to increase in the future in some areas of GB. These data will help ensure buildings and assets are future-proofed by:

- supporting **asset management & maintenance** regimes,
- providing information to aid **planning and costing**
- informing **mitigation** practices
- aiding **longer-term resilience planning**.

GeoClimate will be available in two formats:
BASIC: simplified overview dataset for average susceptibility, for 3 set time slices (2020s, 2050s, 2080s)
PREMIUM: detailed dataset that presents drier, average and wetter scenarios, from 2020s to 2080s
Tailored solutions from a bespoke service are also planned.
R&D is continuing to incorporate other geohazards, e.g. flooding & drought resilience, in future versions.

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