

National groundwater flood susceptibility maps

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Approximately 1.6 million properties in the UK may be at risk from groundwater flooding and insurers have estimated the average annual cost of groundwater flooding to be between £50 and £100 million. The British Geological Survey (BGS) has undertaken national mapping of the areas susceptible to this form of flooding. This provides a key tool for environment regulators to meet their legislative requirements, an aid to planners and developers, and a means for homeowners and property buyers to assess the potential for groundwater flooding.

What is groundwater flooding?

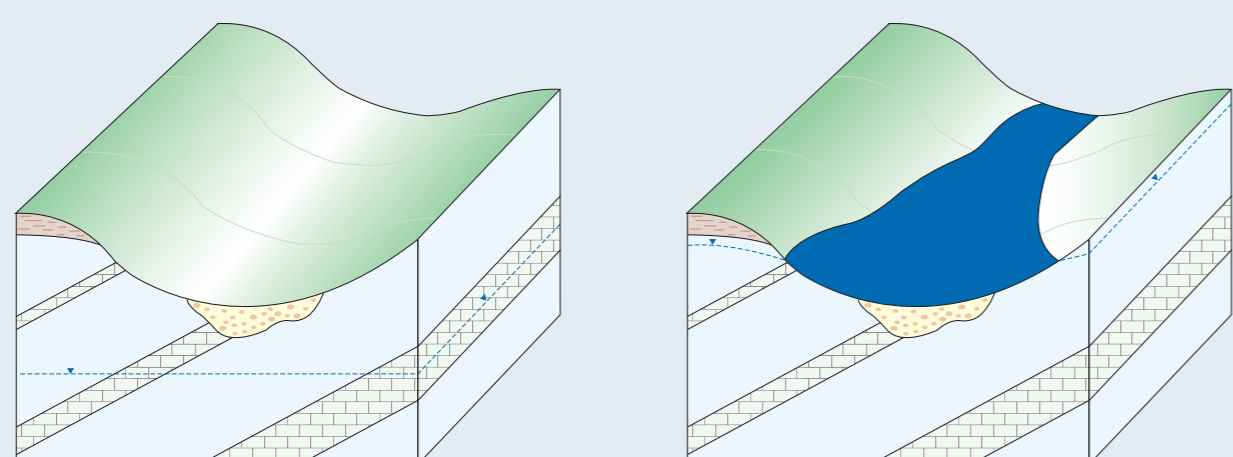
- Emergence of groundwater at the ground surface or the rising of groundwater into man-made ground occur where the normal ranges of groundwater level are exceeded.
- It can cause inundation of property and infrastructure in low-lying areas and downstream of previously dormant springs.
- High groundwater levels can flood basements and reduce bearing capacity of foundations and the shrinking and swelling of clays.
- It often longer lasting than river flooding — up to months in Chalk catchments.

The need for groundwater flooding maps

- The past decade has seen significant groundwater flooding events in the UK.
- The requirement for groundwater flood risk assessment is included in the EU Floods Directive and UK regulations. In England and Wales responsibility for assessment lies with Local Authorities (LAs).
- There is demand from planners, developers and households and property buyers for information on the potential risk from groundwater flooding.
- National maps not available from any other provider.

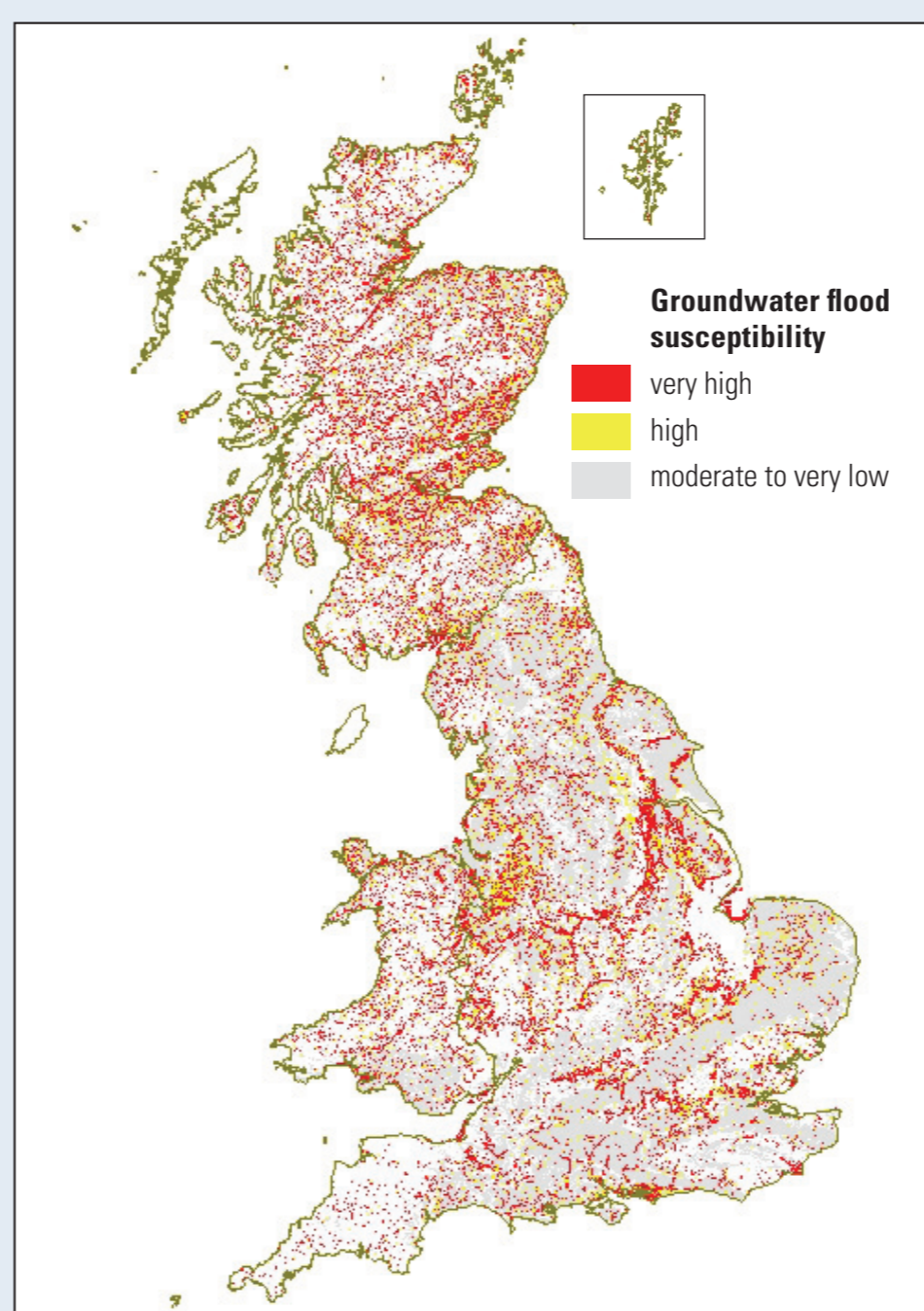
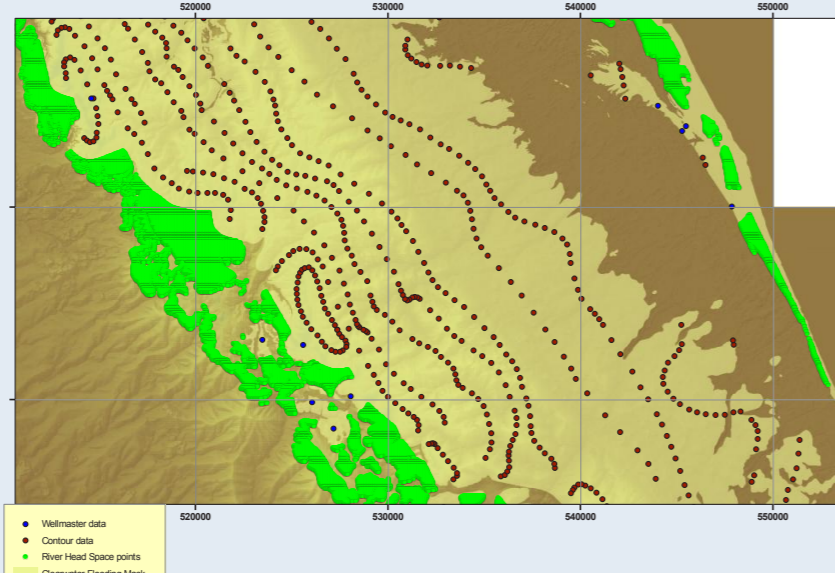
Methodology for mapping groundwater flood susceptibility

Identify settings where groundwater flooding can occur

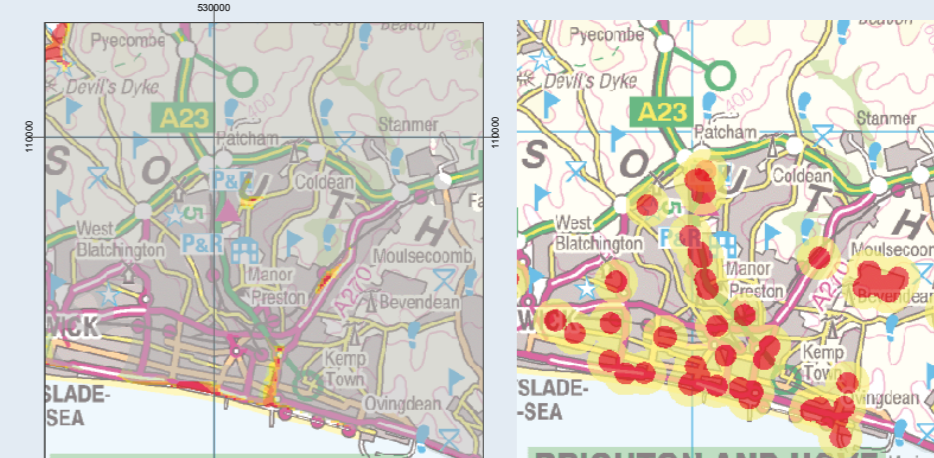


Bring together and further develop relevant BGS datasets

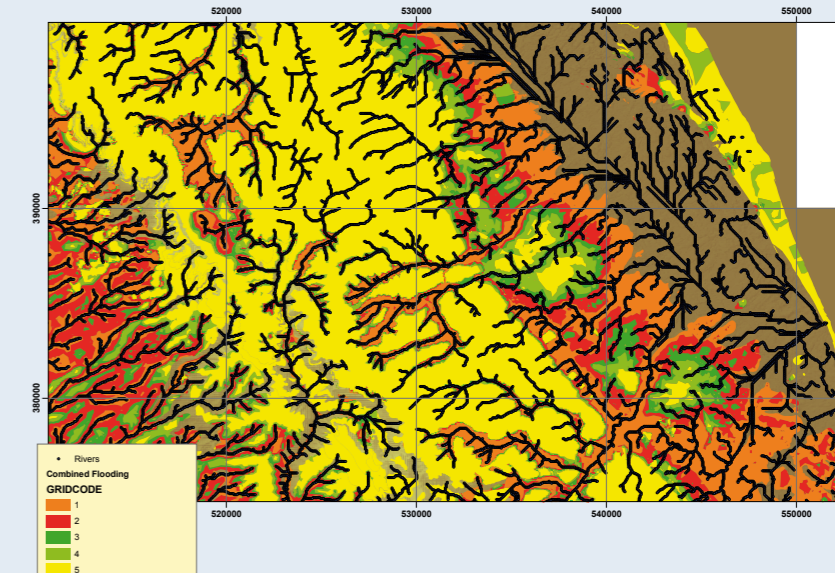
- Permeability
- Water level
- Water level fluctuation
- Topography
- Validation



Validate maps with groundwater flood observations



Combine datasets for groundwater flood settings



BGS groundwater flooding research

- BGS is in unique position to develop national maps of groundwater flooding susceptibility due to the combination of national datasets, for which it is the custodian, and the scientific expertise on the topic.
- Insights have been obtained from a series of research projects undertaken on groundwater flooding in a range of settings. Research includes field studies and computer modelling.
- Information on groundwater flooding has come from property owners and local authorities, through the BGS enquiry service.

Impact of BGS groundwater flooding maps

- The Environment Agency has used BGS national groundwater flood susceptibility maps within their guidance to LAs on how to assess groundwater flood risks.
- BGS maps are used by environmental consultancies working for LAs, both for groundwater flood risk assessment and in support of Surface Water Management Plans.
- BGS maps are used by value-added resellers within their home buyer's reports.



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