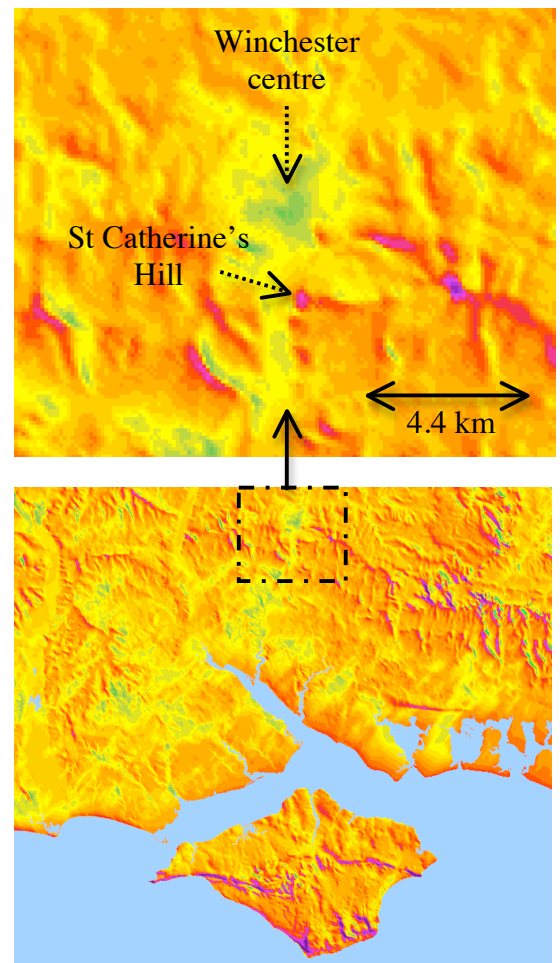
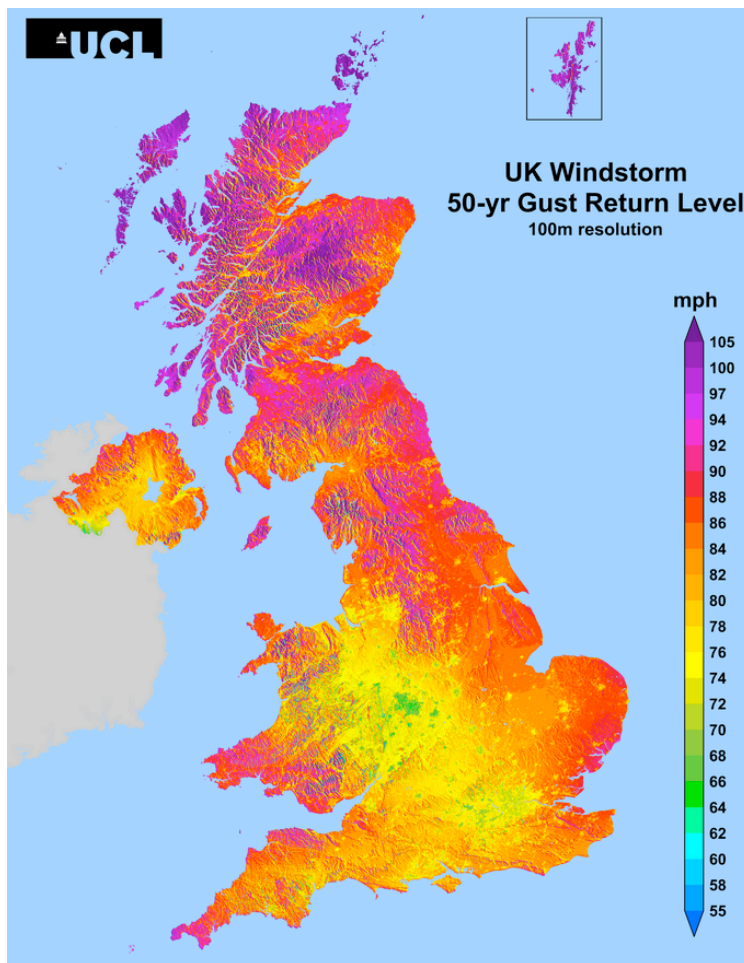


Extreme winds are a significant environmental risk for the UK infrastructure sector and are a major peril for the UK insurance industry. Statistics from the Association of British Insurers for the period 1998 to 2013 show that windstorms were responsible for 45% of UK household weather-related insurance claims compared to 30% attributable to flood. Despite the impact of extreme winds, current methods for quantifying wind hazard across the UK are highly uncertain and are often based on model outputs. Maps of UK wind hazard lack spatial resolution, local accuracy and robust estimates of uncertainty.

We offer UK windstorm gust return level maps at 100 m resolution for the whole UK including Northern Ireland. This spatial resolution is over 40 times better than the current state-of-the-art. Our maps are based on high quality observational data and explicitly modelled additional wind modifiers. Examples of our product are shown below. The product includes the following features and differentiators:

- Based on 45 years of continuous hourly gust observations from 282 UK weather stations.
- Data rigorously cleaned and corrected for consistency.
- Secondary wind modifiers (for topography and upstream surface roughness) physically modelled.
- Available for gust return levels between 1 yr and 1000 yrs. A 95% confidence interval is included for each gust return level.
- Maps available in British National Grid (Ordnance Survey) format at 100 m projection.
- A gust return level mean error of only 6-7% at 100 m resolution.



*UCL UK windstorm 50 year gust return levels (mph) for the whole UK (left panel), Hampshire and the Isle of Wight (lower right panel), and for the area around Winchester (upper right panel). The previous state-of-the-art spatial resolution of 4.4 km is shown for reference. The influence of orography and upstream surface roughness on local gust return levels is evident.*