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SurgeWatch: a user-friendly database of coastal flooding in the United Kingdom from 1915–2014

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Coastal flooding caused by extreme sea levels can be devastating, with long-lasting and diverse consequences. Historically, the UK has suffered major flooding events, and at present 2.5 million properties and £50 billion of assets are potentially exposed to coastal flooding. However, no formal system is in place to catalogue which storms and high sea level events progress to coastal flooding. Furthermore, information on the extent of flooding and associated damages is not systematically documented nationwide. Here we present a database and online tool called 'SurgeWatch', which provides a systematic UK-wide record of high sea level and coastal flood events over the last 100 years (1915-2014). Using records from the National Tide Gauge Network, with a dataset of exceedance probabilities and meteorological fields, SurgeWatch captures information of 96 storms during this period, the highest sea levels they produced, and the occurrence and severity of coastal flooding. The data are presented to be easily assessable and understandable to a range of users including, scientists, coastal engineers, managers and planners and concerned citizens. We also focus on some significant events in the database, such as the North Sea storm surge of 31 January–1 February 1953 (Northwest Europe's most severe coastal floods in living memory) and the 5–6 December 2013 "Xaver" Storm and floods.