

GOING UNDER

During the 20th century, global sea level rose by around 20 cm, a rate that may be higher than at any time during the past thousand years. Without a reduction in greenhouse gases, the UK Met Office estimates that sea-levels may rise a further 41cm by 2080, a reflection primarily of the melting of small glaciers and ice sheets and the thermal expansion of sea-water as temperatures continue to rise. This estimate takes no account, however, of catastrophic melting of major ice sheets, such as the Greenland and West Antarctic (WAIS) ice sheets, which is capable - at some time in the future - of raising sea levels by several metres.

In a visualisation study commissioned by UKTV, the BHRC and UCL's Department of Geomatic Engineering produced three 'what if?' scenarios, showing the effects of 7m, 13m and 84m sea-level rises on the shape of the UK. When combined with aforementioned causes of future rising sea levels, the melting of either the Greenland or West Antarctic ice sheets, could be expected to raise sea level by around 7m - sufficient to inundate many of the UK's coastal towns and cities. If both melted, then a rise of around 13m could occur. Additional melting of the gigantic East Antarctic ice sheet (EAIS) could result in a cataclysmic rise of 84m, which would drown much of eastern and southern England and separate Scotland from England and Wales.

So what are the probabilities of any of these scenarios being realised and how soon? Collapse and melting of the EAIS is extremely unlikely, and is probably only remotely possible many thousands of years into the future if we doing nothing to moderate greenhouse gas emissions and a runaway Greenhouse Effect develops as a result. Some models predict that with a relatively small temperature increase, half the Greenland ice sheet may melt within a thousand years, and may disappear entirely within 3,000 years. Most worrying of all is the West Antarctic ice sheet, which is showing signs of becoming increasingly unstable, and which may have a 1 in 20 chance of collapsing and melting within the next 200 years. To access the sea-level rise maps go to: www.benfieldhrc.org

[Image caption: The shape of the UK after an 84m sea-level rise; an extremely unlikely scenario even many thousands of years into the future]

