British Geological Survey

NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS flood response

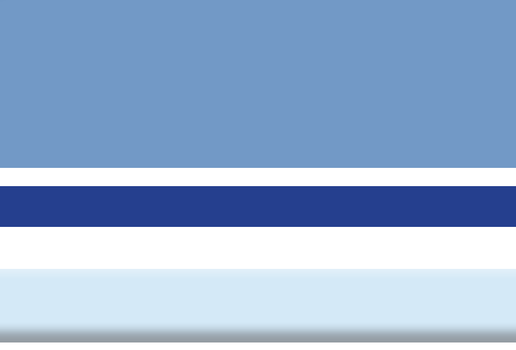
Marieta Garcia-Bajo

Introduction

Geological maps show where all the floodplains and coastal plains in Britain are located and therefore the main areas at greatest risk of flooding. From this information BGS has produced a map dataset called 'geological indicators of flooding' (GIF).

To investigate the link between floodplain extent and extreme flooding events, BGS carries out aerial surveys after a flood event disaster. This photographic collection will be used to improve our understanding of floodplain processes and management of floodplains. By extracting and digitising the actual extent of the flooding, these images also provide first hand information to validate the GIF dataset.

Figure 1 Aerial photograph of flood waters near Papcastle, west Cockermouth (2009).



Geological Indicators of Flooding dataset, British Geological Survey © NERC 2009. OS topography © Crown Copyright. All rights reserved. BGS 100017897/2011.

Figure 2 Geological indicators of flooding map in Papcastle. This map shows that the landsurface has been modified by the construction of a railway embankment, now a road.

Figure 3 Aerial photograph of flood waters in Great Clifton east of Workington, Cumbria (2009).

Geological Indicators of Flooding dataset, British Geological Survey © NERC 2009. All rights reserved. BGS 100017897/2011; NEXTMap Britain elevation data from Intermap Technologies.

Figure 4 Virtual image showing the GIF over the same area with two zones of vulnerability (Dark blue: high, Pale blue: low).

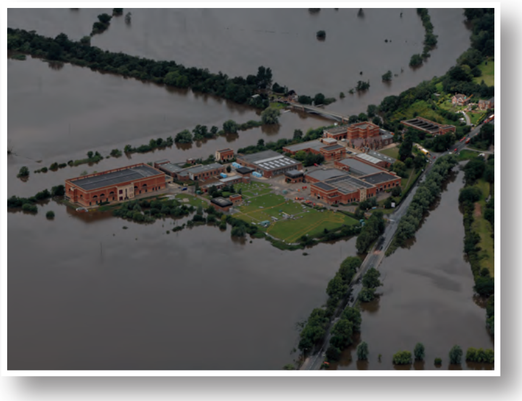
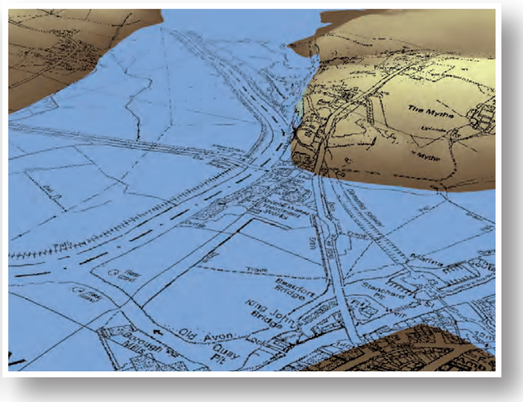


Figure 5 Aerial Photograph of flooding around Mythe Waterworks, Tewkesbury (2007).



Geological Indicators of Flooding dataset, British Geological Survey © NERC 2011. OS topography © Crown Copyright. All rights reserved. NEXTMap Britain elevation data from Intermap Technologies.

Figure 6 GIF and DTM around Mythe Waterworks, Tewkesbury. The GIF shows where flooding was expected.

Figure 7 Aerial photograph of flood waters in Worksop, Nottinghamshire (2007).

Geological Indicators of Flooding dataset, British Geological Survey © NERC 2011. OS topography © Crown Copyright. All rights reserved. BGS 100017897/2009.

Figure 8 The GIF accurately predicted flooding of these buildings.

Figure 9 Aerial photograph over the River Ryton, Bircotes, south of Doncaster. It illustrates that fluvial flooding takes place within low-lying tracts — the floodplains — bordering the main river channel (2007).

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Figure 10 Virtual image showing GIF with two zones of vulnerability. Zone 1: dark blue, highlights initial extent of flooding, Zone 2: pale blue, has been partially encroached upon by flood waters.

Disappearance of the floodplain in the Catcliffe area, Yorkshire: a case study

The photographs and the flooding GIS are available to researchers and agencies who wish to improve their understanding of floodplain processes and the management of floodplains.

Figure 11 The outline of the river is shown in dark blue and the floodplain as indicated by the GIF is pale blue. It is easy to see that the river is no longer flowing within the floodplain. Why is this? Something is happening in this area.

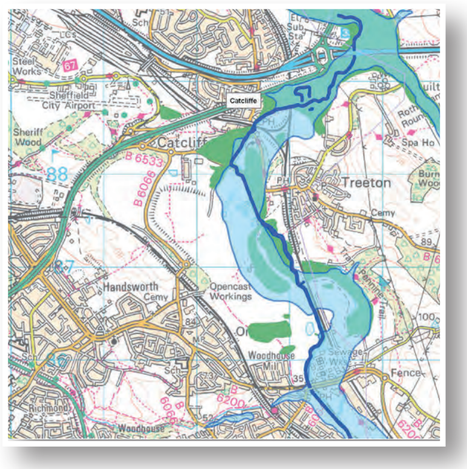

Figure 12 We now add, in pale green, the actual extent of flooding as extracted from BGS aerial photographs. We can now see that flooding occurs outside of the floodplain at Catcliffe, and large areas of the floodplain appear dry. Why is that?

Figure 13 By adding the extent of artificial ground mapped by the BGS, it is possible to see that the floodplain has been heavily modified. This has affected the natural flow of the flood waters, causing flooding to occur in areas where it wasn't expected. It is therefore important for planners to consider the possibility that land-use changes made to the floodplain may affect the surrounding areas.

Contact information

Marieta Garcia-Bajo www.bgs.ac.uk email: flooding@bgs.ac.uk