

UK Storm Surge Impacts Mapped Using UAS

Cley - Salthouse Breach locations



One year on from the biggest UK storm surge for 60 years, new aerial photos have revealed details of breaches to the natural and manmade coastal defences on part of the East Anglian coastline. Researchers from the University of East Anglia (UEA) and the Centre for Environment, Fisheries & Aquaculture Science (Cefas) are mapping selected areas hit by the surge on 5 December 2013 as part of a short-term project, funded by Natural Environment Research Council (NERC), to better understand the initial environmental and societal impacts caused by the 2013 storm surge and the resulting saltwater flooding.

The Cefas aerial mapping team, led by Coastal Scientist Dr Tony Dolphin, used their small Remote Piloted Aircraft (RPA – or Unmanned Aerial System – UAS) to build very-high-resolution photo and topographic maps of parts of the North Norfolk coastline. These maps chart the storm surge breaches in the manmade coastal defences along the North Norfolk Coastal Path near Blakeney and breaches and sediment movement along the Cley – Salthouse gravel barrier.

According to Tony Dolphin, the UAS technique is ideal for mapping the physical breaches and sediment movement, as well as the impact on vegetation, and habitats caused by the storm surge. Compared to traditional aerial photography, the UAS can be rapidly deployed following extreme events and provides higher resolution map products.

In addition to mapping and analysis of the storm surge, Cefas are using the UAS technique on a large range of coastal applications, including salt marsh and river bank erosion, flood defence monitoring, beach monitoring and intertidal habitat mapping.

Cefas' high-resolution aerial datasets form part of a wider project aiming to assess the short-term effects of the surge, which will provide the basis for future work assessing longer-term impacts. Other data from the project indicate soil and freshwater invertebrates were killed by the saltwater flooding. However, plants living along the coast were more resilient. The functioning of soil microbes that are vital for maintaining a healthy habitat were also impacted.

Image: Impact of the storm surge on the coastline. Image courtesy: Dr Tony Dolphin, Cefas.