

Features of erosion and sedimentation due to the September 2015 flooding of the Kinu River, central Japan

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Fluvial flooding is among the most destructive natural disasters comparable to tsunamis. An accurate identification between flood and tsunami deposits still remains controversial, which complicates appropriate future risk assessments for these disasters. Enhancing descriptive data on modern flood and tsunami deposits is one of the basic approach to the problem. In this study, we describe the patterns of erosional scour and sedimentary deposition generated by the September 2015 flooding of the Kinu River in Joso City, Ibaraki Prefecture, central Japan. During the flooding event, water levels in the Kinu River rose rapidly due to heavy rain that ultimately overtopped, and subsequently breached a levee, causing destructive flooding on the surrounding floodplain. Distinctive erosional features are found near the breached levee, with sandy crevasse-spray deposit distributed adjacent to them. Based on the observation in conjunction with grain-size and diatom analyses, the deposit can be divided into three sedimentary units. The vertical and lateral changes of these sedimentary features might be the result of temporal and spatial changes associated with flow during the single flooding event. These observations and quantitative data provide information that can be used to reveal the palaeohydrology of flood deposits in the stratigraphic records, leading to improved mitigation of future flooding disasters.

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