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Influence of discharge control by dam on the 2003 Hokkaido Hikada flood sediment dispersal in marine environments

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Flood is an important event to transport terrigenous materials to deep-sea. Hyperpycnal flow, a kind of density underflow, is an essential mechanism for the transport. Continuous discharge of highly suspended flood water makes a suitable condition to produce the hyperpycnal flow near the river mouth. Hyperpycnal deposits by the 2003 Hokkaido Hidaka flood were collected from the Hidaka shelf and slope off Saru-gawa River mouth. However, there is no clear evidence of the past flood deposits at the slope before construction of the Nibutani dam. Controlled discharge by the Nibutani dam during the 2003 flood prevented the bank overstopping and bank breaking in the lower reach, and transported the large amount of suspended materials directly to the coastal sea, which made a suitable condition to produce the hyperpycnal flows. There is a possibility that the controlled discharge during the 2003 flood made a longer distance transport of terrigenous materials and larger sediment dispersal in marine environments than the past floods.

Keywords: flood, hyperpycnal flow, marine environment, discharge control, marine sediment