



## WireWall – measuring wave overtopping distribution

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The impact of rising sea level on the flood hazard from sea defence overtopping means new coastal schemes need to remain resistant to changing wave and water levels over the next 100 years. The design of new coastal flood defences and the setting of tolerable hazard thresholds requires site-specific information of wave overtopping during storms of varying severity, which are combined with future projections in sea level. By converting an existing wave measurement technology into an overtopping monitoring system "WireWall", observations of wave-by-wave overtopping velocity and volumes have been made. Prior to field tests this winter at our study site Crosby, in the North West of England, the system was validated and refined in HR Wallingford's physical modelling laboratories. During August and September we collected our first measurements of wave overtopping distribution for a scale model of the Crosby beach system; designed using available data from the North West Regional Coastal Monitoring Programme. These results were shared with our followers @WireWall\_NOC and the #FlumeFriday community. Together the new flume and field system has collect measurements that will provide site-specific data to:

- perform calibration of overtopping tools, e.g., EurOtop;
- perform validation of flood forecasting systems and overtopping models; and,
- develop site-specific safety tolerances to inform flood risk response plans.

Recent advances in technology mean existing wave height sensors can now measure at the high frequencies (a few 100 Hz) required to obtain overtopping data, making this the ideal time to initiate a step-change in coastal hazard monitoring capabilities. At Crosby a business case for a new sea wall is underway. Deployments at this site will provide the Coastal Group with the site-specific data and calibrated overtopping tools that they need to design a new, cost-effective sea wall. The deployment of WireWall at Crosby will be the first step towards the development of an overtopping monitoring system that could ultimately be integrated into new coastal schemes as part of the UK's regional coastal monitoring programmes. Such data would enable long-term trend analysis of the changing flood hazard as a consequence of sea level rise and climate change at the coast.