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Long-term environmental and health implications of morphological change and sediment transport with respect to contaminants

Christopher Sneddon (1), David Copplestone (1), Andrew Tyler (1), Peter Hunter (1), and Nick Smith (2)

(1) Biological and Environmental Sciences, University of Stirling, United Kingdom (christopher.sneddon@stir.ac.uk), (2) National Nuclear Laboratory, Warrington, United Kingdom

The EPSRC-funded Adaptation and Resilience of Coastal Energy Supply (ARCoES) project encompasses four research strands, involving 14 institutions and six PhD studentships. ARCoES aims to determine the threats posed to future energy generation and the distribution network by flooding and erosion, changing patterns of coastal sedimentation, water temperature and the distribution of plants and animals in the coastal zone. Whilst this research has direct benefits for the operation of coastal power stations, ARCoES aims to have a wider stakeholder engagement through assessing how the resilience of coastal communities may be altered by five hundred years of coastal evolution.

Coastal evolution will have substantial implications for the energy sector of the North West of England as former waste storage sites are eroded and remobilised within the intertidal environment. The current intertidal environmental stores of radioactivity will also experience reworking as ocean chemistry changes and saltmarsh chronologies are reworked in response to rising sea levels. There is a duel requirement to understand mass sediment movement along the North West coast of England as understanding the sediment transport dynamics is key to modelling long term coastal change and understanding how the environmental store of radioactivity will be reworked.

The University of Stirling is researching the long-term environmental and health implications of remobilisation and transport of contaminated sediments around the UK coastline. Using a synergy of hyperspectral and topographic information the mobilisation of sediment bound contaminants within the coastal environment will be investigated. Potential hazards posed by contaminants are determined by a set of environmental impact test criteria which evaluate the bio-accessibility and ionising dose of contaminants. These test criteria will be used to comment on the likely environmental impact of modelled sediment transport and anticipated changes in ocean chemistry.