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Storm Induced Dissolved Organic Matter Release

L. Cork (1,2,3), C. Evans (1), C. Freeman (2), **D.N. Thomas** (3), B. Reynolds (1)

(1) Centre for Ecology and Hydrology, Bangor, Wales, (2) School of Biological Sciences, University of Wales-Bangor, (3) School of Ocean Sciences, University of Wales-Bangor (d.thomas@bangor.ac.uk)

This investigation addressed the effect of a single storm at multiple locations along the river Conwy, from the head waters (a carbon rich source) to the estuary (a sink where DOC is exported to the ocean). Sampling occurred on two occasions, the first was after a dry period and the second, four days later during a storm in April 2003. Inorganic nutrient concentration (namely: phosphate, nitrate, nitrite, silicate and ammonium) were not significantly affected by the storm. However, significant increases in both DOC ($P<0.0001$) and DON ($P<0.0001$) concentrations were apparent. Regression analysis suggests that allochthonous DOC was exported from high altitude organic wetland areas (mainly blanket peat) and was rapidly transported along the river resulting in an approximate doubling of pre storm estuarine DOC concentrations. DON behaved differently and although an increase in export was apparent from the wetland sites (an average of 200%), the storm response was greatest at intermediate locations along the river. Such locations are rivers draining farmland areas and the flushing of nitrogen rich organic matter from agricultural sources is the most probable cause of this rise.