Conceptualizing and upscaling process understanding of the hydrological and biogeochemical functioning of larger catchments

M. Speed (1), D. Tetzlaff (1), J.J. Dawson (1), M. Hrachowitz (1), S. Waldron (2), I.A. Malcolm (3), S.M. Dunn (4), and C. Soulsby (1)

(1) Northern Rivers Institute, School of Geosciences, University of Aberdeen, AB24 3UF, Scotland, UK (markspeed@abdn.ac.uk), (2) Department of Geographical and Earth Sciences, University of Glasgow, Glasgow, G12 8QQ, UK, (3) FRS Freshwater Laboratory, Faskally, Pitlochry, PH16 5LB, UK, (4) The Macaulay Institute, Craigiebuckler, Aberdeen, AB15 8QH, Scotland, UK

A two year environmental tracer study is being carried out on the 2,105km² catchment of the River Dee, Aberdeenshire to investigate hydrological functioning and to aid process conceptualisation at a range of spatial and temporal scales using geochemical and isotopic tracers for sourcing and residence time estimates. This poster presents the first twelve months of data (from October 2007) collected at nested spatial scales. Data so far indicates that runoff from soil-derived hydrological pathways dominate high flows and facilitate a relatively rapid translation of precipitation isotope signatures into the channel network. This appears most marked in catchment headwaters which appear to strongly influence the downstream network.