Geophysical Research Abstracts
Vol. 20, EGU2018-17080, 2018
EGU General Assembly 2018

Knickpoint Migration and Long-term Submarine Channel System Evolution within Bute inlet, British Columbia, Canada

Ye Chen (1), Daniel Parsons (1), Matthieu Cartigny (2), John Hughes Clarke (3), Cooper Stacey (4), Sophie Hage (2), Peter Talling (2), Maria Azpiroz (5), Michael Clare (6), Jamie Hizzett (5), James Hunt (6), Gwyn Lintern (4), Esther Sumner (5), Age Vellinga (5), Daniela Vendettuoli (5), Stephen Simons (1), and Rebecca Williams (1)

(1) School of Environmental Sciences, Hull University, UK, (2) Department of Geography, Durham University, UK , (3) Center for Coastal and Ocean Mapping, University of New Hampshire, USA, (4) Natural Resources, Geological Survey of Canada, Canada, (5) School of Ocean and Earth Science, University of Southampton, UK, (6) Marine Geoscience, National Oceanography Centre, UK

Turbidity currents are responsible for forming some of the largest sedimentary deposits on Earth. Knickpoints are a major morphological feature in many submarine channel systems. We combine data, collected in Bute inlet, British Columbia, Canada, on the flow velocity, sediment cores and bed samples, and repeat high-resolution seafloor mapping, to examine the deposits and dynamics that result from knickpoints migration within a submarine channel system. Based on the repeat seafloor mapping with high-resolution multibeam echo sounder, we are able to examine the evolution of knickpoints formed and maintained by turbidity currents. Through a series of moored ADCP (Acoustic doppler current profiler) within the channel during a four-month period in 2016, a sequence of turbidity currents within the channel were captured. The velocity structure and suspended sediment concentrations of the flow over a study knickpoint will be presented. The factors controlling knickpoint migration will be discussed and questions over the role knickpoint dynamics play in linking system scale sediment transfers, and temporary storage to distal sections of submarine channel systems will be explored.