International Association of Sedimentologists (IAS) Oral Presentation: "Knickpoint Characteristics and Migration in Submarine Channel Systems"

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Conference Overview

This research was presented at the IAS conference in September 2019 with thanks to the support from the British Society of Geomorphology's Postgraduate Conference Attendance Grant (£500). This conference comprises of various topics of sedimentology with diverse cutting-edge techniques. Presenting my research at IAS provided me an excellent opportunity to meet fellow researchers and resulted in profound suggestions and feedback.

Summary

In the submarine channel environment, we define knickpoints as larger-scale channel morphology features, with a steep face and in the order of 10s to 100s of meter height. Knickpoints are known to play a major role in governing channel evolution, sediment delivery and channel terrace formation etc. Recent system-scale wide process studies in submarine systems have explored the relationships between supercritical flows, upstream migration knickpoints and the depositional records. However, questions like how the submarine channel is composed of and the influences of knickpoints migration on superimposed crescentic bedforms and the associated sedimentary signature are still unclear.

Here we describe new perspectives on the development of knickpoints and associated crescentic bedforms in submarine channels gained by studying a sequence of bathymetric data acquired in Bute inlet, British Columbia, Canada. For the first time, we investigate the seafloor morphology in a submarine channel system by wavelet analysis. A suite of sediment cores over a study knickpoint provide insights into the depositional architecture and sedimentary facies. Knickpoint geometries, in terms of height, width and slope, vary both spatially and temporarily. Knickpoint height is up to 10s of meters and slope is up a few degrees in the Bute Inlet submarine channel system. Knickpoints migration speed is in the order of hundreds of meters per year and varies both spatially and temporarily. Migration speed generally decreases from proximal to distal and turbidity current frequency and runout are very likely to play a dominant role on governing the migration rate. The aggradation rate is highest just downstream of a knickpoint. The region just downstream of knickpoint dominates the preservation potential in terms of bedforms within a submarine channel system. These results further our understanding of knickpoints in submaine channel systems and their development, sediment dispersal and deposition.

Figure 1. Oral presentation in IAS

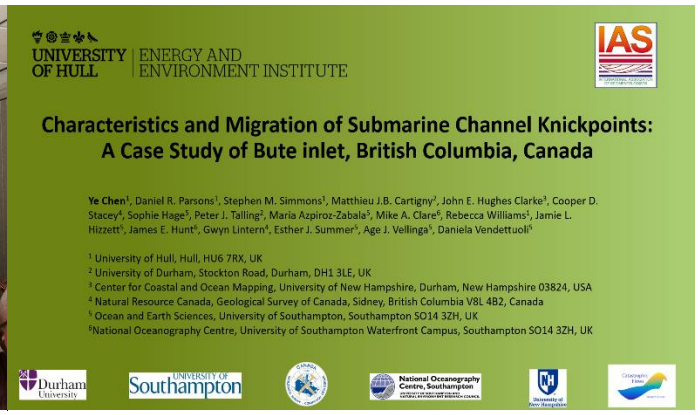

Figure 2. The title page of my presentation

This was my first time attending the IAS conference. I have learned a lot from discussing with different people from various perspectives, which also leads valuable networking opportunities. I appreciate the support from BSG to provide me this opportunity to present my PhD research.

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