

Modelling the Morphodynamics and Co-Evolution of Coast and Estuarine Environments

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Research Summary

The morphodynamics of coast and estuarine environments are known to be sensitive to environmental change. However, whilst these systems have received considerable individual research attention, how they interact and co-evolve is relatively understudied. These systems are intrinsically linked and it is therefore advantageous to study them holistically in order to build a more comprehensive understanding of their behaviour.

My PhD research aims to explore the morphodynamic interactions and co-evolution of these systems, controls on their behaviour and the influence that changing sea levels and wave climates may have over the next century. This is being achieved through the modification and coupling of the one-line Coastline Evolution Model (CEM) with the hydrodynamic, landscape evolution model CAESAR-Lisflood (C-L). The study is being applied to the Holderness Coast, Humber Estuary and Spurn Point, which possess diverse geomorphologies and complex sediment pathways.

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The BSG's Postgraduate Conference Attendance Grant was used to financially support my attendance to the European Geosciences Union (EGU) General Assembly 2017.

At EGU, I presented my research in the form of a Presenting Interactive COntent (PICO) presentation (Figure 1) and a poster. The interactive nature of the PICO session was ideally suited to my research as I was able to show simulations and discuss the development of the CEM, which has been my primary focus so far; a 360° video of my interactive poster presentation can be viewed on the SeriousGeoGames YouTube Channel (SeriousGeoGames, 2017). In the poster session, I focused more on model outputs and discussed some results from preliminary simulations.

Participating in both of these sessions gave me the opportunity to share my research with people from a wide variety of disciplines and in various stages of their career. I was able to place my project in the wider scientific community and amongst other research currently taking place. I had many useful and interesting conversations, which helped me to develop ideas about the progression and direction of my research.

I also attended a whole host of sessions at EGU, centred on themes including coastal morphodynamics, modelling Earth surface processes and communication and education in geoscience. As well as broadening my knowledge, these sessions provided valuable opportunities to network and I left a number of sessions with contacts and ideas for my current and future research.

References

SeriousGeoGames (2017) *EGU 2017 - PICO Session* [YouTube]. Retrieved 03/05/2017 from <https://www.youtube.com/watch?v=BiMkLibAyuo>



Figure 1: Presenting “2 minutes of madness” in a PICO session at EGU 2017