



## **Application of meandering centreline migration modelling and object-based approach of Long Nab member**

Saad Saadi

University of Manchester, Manchester, United Kingdom (saad.saadi@manchester.ac.uk)

### Abstract

Characterizing the complexity and heterogeneity of the geometries and deposits in meandering river system is an important concern for the reservoir modelling of fluvial environments. Re-examination of the Long Nab member in the Scalby formation of the Ravenscar Group (Yorkshire, UK), integrating digital outcrop data and forward modelling approaches, will lead to a geologically realistic numerical model of the meandering river geometry. The methodology is based on extracting geostatistics from modern analogous, meandering rivers that exemplify both the confined and non-confined meandering point bars deposits and morphodynamics of Long Nab member. The parameters derived from the modern systems (i.e. channel width, amplitude, radius of curvature, sinuosity, wavelength, channel length and migration rate) are used as a statistical control for the forward simulation and resulting object oriented channel models. The statistical data derived from the modern analogues is multi-dimensional in nature, making analysis difficult. We apply data mining techniques such as parallel coordinates to investigate and identify the important relationships within the modern analogue data, which can then be used to drive the development of, and as input to the forward model.

This work will increase our understanding of meandering river morphodynamics, planform architecture and stratigraphic signature of various fluvial deposits and features. We will then use these forward modelling based channel objects to build reservoir models, and compare the behaviour of the forward modelled channels with traditional object modelling in hydrocarbon flow simulations.