

## Project background

Depositional models are primarily based on outcrop analogue studies and do not consider the fundamental link between sediment transport processes and the form of the deposits preserved in the subsurface.

In particular, they have considerable limitations because they:

- are strongly reliant on static (in time and space) observations of 2D morphology and stratigraphy
- give little consideration to the upscaling of alluvial architecture across different river sizes
- rely on data and observations derived from laboratory models that ignore time and grain size scaling criteria and thus are difficult to upscale for field application
- often focus on within-channel deposits (especially bars) rather than the full channel belt
- provide little understanding of the 3D intrinsic variability in channel and depositional unit morphology

The South Saskatchewan River project was initiated to address many of these shortfalls by using some of the very latest methods and approaches in surface and subsurface imaging. This study analyses modern depositional environments using ground penetrating radar (GPR) profiles tied to cores which are interpreted using knowledge of bed topography change from digital aerial photogrammetry. This results in a powerful new approach for linking modern and ancient and thus answering the fundamental question; What gets preserved in the rock record?

