MANCHESTER 1824

The University of Manchester

Funded PhD Project :
Stratigraphic evolution of a low-gradient, mixed-load fluvial system: Huesca fluvial fan, Ebro Basin, Spain.

Supervisors: Dr. David Hodgetts[1], Philippe Ruelland[2], Prof. Jonathan Redfern[1], Prof. Brian PJ Williams [1].
Contact Email: david.hodgetts@manchester.ac.uk
[1]School of Earth, Atmospheric and Environmental Sciences, University of Manchester.
[2] TOTAL Geoscience Research Centre (GRC), Aberdeen.

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Deadline for applications: Friday 10th Feb. 2012. Position to start March 2012.

This proposal builds upon existing studies to enhance the three dimensional understanding of fluvial systems in the well-exposed outcrops of meandering river deposits on the northern rim of the Ebro Basin, Spain. The exposures around the town of Piraces provide both horizontal and vertical sections though a meandering systems providing a unique opportunity to investigate 3D geometry and architecture of point bars and channels (Donselaar and Overeem, 2008).

Several key exposures will be analysed for object geometry and depositional architecture by collecting geostatistical information from a Digital Outcrop Model created using terrestrial LiDAR data. A key aspect of the approach will be the integration of the Digital Outcrop Model with field observations such a sedimentary logs, grainsize distributions, palaeocurrents and any other data collected in the field. The geostatistics derived from the DOMs will be used to build accurate geocellular outcrop models which will allow visualization and improved understanding of the depositional systems, as well as aiding in the application of the outcrop data to the subsurface.

The study will be carried out using terrestrial laser scanning, differential global positioning system (DGPS), digital photogrammetry and detailed outcrop logging. The dense dataset will allow the mapping of structural geology, facies, geological object distribution and architecture.

The Manchester Petroleum Geoscience Centre (PGC) has unique facilities and research expertise to form the base for quantitative outcrop data collection, software available to the group include RiScan Pro, Polyworks ™, PetrelTM, GeoFrame®, VoxelGeo® and ArcInfo ™ among others, as well as our own in-house VRGS software.

Requirements: Applicants should have a first or upper second class undergraduate degree in geology or geoscience related subject.

For applications go to : http://www.manchester.ac.uk/postgraduate/howtoapply/

Donselaar, M. E., and I. Overeem, 2008, Connectivity of fluvial point-bar deposits: An example from the Miocene Huesca fluvial fan, Ebro Basin, Spain: AAPG Bulletin, v. 92, p. 1109-1129.

Hodgetts, D., 2009, Geological Applications, *in* G. Heritage, and A. Large, eds., Laser Scanning for the Environmental Sciences, Wiley.