

## CONFERENCE REPORT

From River to Rock Record: The preservation of fluvial sediments and their subsequent interpretation.

University of Aberdeen, 12-14 January 2009

The first "From River to Record" conference was held in the Geology Department of the University of Aberdeen, Scotland, UK on the 13-14 January 2009. This was preceded by a one day core workshop at a nearby core storage facility in Aberdeen. The main initiative behind convening this meeting was to allow fluvial geomorphologists and sedimentologists from Academia and Industry the opportunity to interact and exchange ideas and information. Hopefully this will lead to more collaborative research to improve our understanding of rivers and their sediments, with the aim that both disciplines are developing in tandem rather than in parallel.

The general consensus is that this conference has been a great success, with calls for a follow-up "From River to Rock Record II" at some point. Delegates agreed that they appreciated the relaxed, informal atmosphere with lots of good feeling and information transfer. The response and interest in this event have far exceeded expectations, which are very gratifying from the perspective of the main organiser of the event. Luckily, international attendees even managed to appreciate Scotland in some of the finest winter weather we had seen in a while.

The conference began with a one-day workshop at a local core store in Aberdeen where selections of cores from North Sea oil and gas wells were on display. The cores were chosen to illustrate a range of fluvial environments and their problematic interpretation. This highlighted how difficult it is for sedimentologists to interpret fluvial systems from cylinders of core 6 - 8 inches in diameter. Some key experts from the oil and gas exploration and production industry described sections of core before the floor was opened for questions and debate. This proved to be a very useful exercise, with several leading experts in fluvial sedimentology and geomorphology discovering that perhaps we do not appreciate the full complexity of fluvial variability.

The following two day meeting did not have parallel sessions and the posters were on display in the same building for the whole time. This avoided problems of not being able to be in more than one place at the same time. Each session topic was introduced by a keynote speaker of international repute, representing both Academia and Industry interests in rivers and their sediments. Session topics were chosen to discuss the problems involved with reconstructing fluvial systems from their sediments, including, the affect of allogenic and autogenic processes, the interaction with other non-fluvial environments, and how we might transfer our knowledge of modern rivers to the rock record.

The first day's sessions were primarily devoted to understanding what is preserved in the rock record and what lessons we can learn from modern-day fluvial processes. Four keynotes presented their contributions to solving these problems (Frank Ethridge:

Variability in modern alluvial rivers: is this variability recognized in ancient river deposits?; Martin Gibling: Estimating width and thickness of fluvial channel bodies: a pragmatic approach from the rock record; Gary Weissmann: The Distributary Fluvial System (DFS) paradigm: re-evaluating fluvial facies models based on observations from modern continental sedimentary basins; John Holbrook: A persisting preference for progressive piling: rock vs. river biases in the medium-term processes and architectural complexity of channel-belt stacking).

The second day's sessions were mainly concerned with interpreting fluvial sediments in relation to their interaction with non-fluvial environments and the effect of short-term processes on fluvial architecture. The concluding two sessions provided a spot-light on the problems faced by Industry when trying to interpret fluvial sediments in the subsurface. Five keynotes presented their experience with these particular aspects of fluvial sedimentology (Ron Steel: Cretaceous Shoreline-Attached Fluvial Systems within Source-to-Sink Transects; Suzanne Leclair: Revising assumptions about short-term hydrosedimentary processes and the preservation of river dune deposits; Penny Patterson: Alluvial hierarchy: description of alluvial strata in the rock record; Jean-Loup Rubino & Richard Labourdette: The problems involved in interpreting fluvial reservoirs: bridging the gap between sedimentologists and reservoir engineers).

With over 120 attendees from 15 countries the range and quality of the presentations and posters was excellent. Countries represented included Australia, Canada, Egypt, France, Germany, Hungary, India, Italy, Japan, Norway, Romania, Switzerland and The Netherlands, UK and US. Data and case studies were presented from diverse environments from Botswana to Alaska. Opportunity was provided at coffee breaks and lunch times to view the poster displays and question the authors. The added incentive of free beer in the poster room proved particularly appealing to delegates at the end of day one. The conference dinner was successfully hosted in the mediaeval Elphinstone Hall on campus, followed by a sojourn to a local pub for more discussion.

The open forum wrap-up discussion at the end of the conference proved very insightful into the thought processes of those at the forefront of applied and research fluvial sedimentology and geomorphology. The majority confirmed opinion from the core workshop that we, as disciplines, do not account for the full range of river variability and do not give due importance to the information retained in overbank processes and sediments. Discussion then turned to how we train future sedimentologists to account for the lapses in our knowledge and understanding; do we train people to understand rivers, understand the preservation of sediments or understand their potential as reservoirs for natural resources? Should we be teaching form or process or both? I would add to this that geomorphologists do not fully appreciate how much quantitative data they have at their finger-tips that is potentially useful to the sedimentology community. Although discussion had to stop as people were leaving to travel home, the over-riding conclusion was that we do not yet fully understand the preservation of fluvial sediments and have raised more questions than we have answered. Food for thought.

Many thanks go to my colleagues Sophie Leleu and Colin North for their support in bringing this conference to fruition. Thanks go to the presenters and attendees for contributing thought-provoking and stimulating topics for discussion. Thanks also go to the sponsors of this event for their generous support.

More information and abstracts can be found at

<http://www.abdn.ac.uk/geology/deptinfo/events/river2rock/river2rock2>

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