

Doctoral Thesis review

Charles University, Faculty of Science, Institute of Geology and Palaeontology

Candidate **Tomáš Štor**

Thesis title **Paleogeographic development of the Cenozoic river systems in the central and northern Bohemia and its link to climatic changes and neotectonics**

Review by Dr Gary Nichols, FGS, C.Geol: Head of Technical Development, Training, RPS Energy, Woking UK and Senior Lecturer, School of Environment and Technology, University of Brighton. Brighton, UK.

Thesis introduction

The candidate has provided a clear and concise account of the research carried out as part of this doctoral thesis. A satisfactory statement of the research objectives has been provided: the context for the study is clearly set out and the methodology used is clearly stated. The main conclusions of this work are set out.

Appendix I

Schaller et al EPSL

This study on terrace formation and incision rates casts doubts on correlations that have been made between terrace formation and climatic cycles. It also shows that there may be errors in past determinations of incision rates based on different means of dating geomorphological features. This demonstrates the value of using different analytical techniques and challenges assumptions about the relationships between climatic cycles and geomorphic features.

Appendix II

Schaller et al Geomorphology

A notable result of this piece of work is that it documents the absence of correlation between a number of geomorphic factors and denudation rates. This is a valuable outcome because it challenges assumptions about controls on denudation rates, demonstrating that they are more complex than simple cause and effects relationships. It would be useful to ask the candidate about these results and the implications that they have for general understanding of denudation rates

Appendix III

Štor et al Geoscience Research Report

This study documents the stages in the evolution of a modern river with a narrow flat floodplain in the Bohemian massif. The stages are related to climatic stages of the Late Pleistocene and Holocene. It is noted that an anabranching river form is interpreted for some periods of the river evolution. It would be interesting to learn from the candidate how an anabranching river form can be determined from a palaeoriver. To conclude that the river was anabranching it must be demonstrated that more than one channel was active at the same time: this is difficult to demonstrate and discussion of what other criteria may be used to establish an anabranching form as opposed to a repeatedly avulsing form of river.

Appendix IV

Štor et al Geomorphology (submitted)

This study is to be commended for the methodological approach used in the study and for the presentation of alternative models. Firstly, there is a thorough and systematic approach to the description and interpretation of the depositional facies of fluvial succession: this provides an excellent context for the OSL dating carried out. A sound sedimentological context provides greater validity to the dating process and reinforces the interpretation of results. Secondly, both tectonic and climatic controls have been considered and evaluated, resulting in a holistic analysis of the controls on geomorphic systems. The study of the tectonic lineaments and attempts to establish the ages of faulting events is a useful exercise. Thirdly, alternative models based on different assumptions have been presented in the conclusions: this is good scientific practice.

General comments

The research presented in this doctoral thesis is of a good standard. There is a sound methodological approach used throughout and there is very good integration of different styles of analysis, including fluvial sedimentology, neotectonics, climatic analysis and modern geomorphic dating systems. Whilst not all the results are conclusive, this does not in any way detract from the quality and validity of the research: it is just as important to present results which do not concur with assumptions made about climatic and geomorphic controls on processes and to present models which are ambiguous in their implications.

On the basis of the evidence presented I am satisfied that the candidate meets the requirements for the award of a PhD from Charles University, Prague.

Signed



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