



## **The influence of surface topography on the upper crustal thermal structure**

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The fact that topographic relief can and does have an influence on the thermal structure of the upper crust is now well recognised. Understanding this influence is particularly important in for new low-temperature geochronological methods that allow the resolution of exhumation histories over the last few vertical kilometres. A number of modelling studies have investigated this influence and applied thermal models to regions in New Zealand and at Nanga Parbat. Systematic studies investigating the influence systematically have been performed with one-dimensional advection by Stüwe et al (1994) and with two dimensional advection by Stüwe and Hintermüller (2000). However, the asymmetric erosion model used by Stüwe and Hintermüller (2000) bears significant shortcomings with respect to the description of real geomorphic processes. We have therefore re-visited the subject and are currently implementing a fully three dimensional thermal model. Our model uses digital elevation models to describe the surface topography and a multigrid method to solve the diffusion advection equation. We plan to investigate the thermal structure in regions of important current tunnelling projects in the Alps, for example the Gotthard and the Brenner region. This paper presents a progress report of our project.

### **References**

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