

# A new comparison of numerical and analogue model experiments of crustal-scale processes

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Numerical and analogue modelling methods are widely used, but rarely compared directly to one another. Direct comparisons for well-defined setups can help in testing and understanding model behaviour and increase confidence in modelling results by establishing the robust features of models. A challenge in such comparisons is to have boundary conditions and material behaviour as similar as possible.

Recent comparisons of crustal-scale experiments have shown that to a first order, analogue and numerical results have a similar evolution with localisation of deformation onto shear zones and that different numerical solution methods successfully reproduce structures seen in the sandbox experiments. However, the results also highlighted differences in, for example, location, spacing, dip and evolution of shear zones. The aim of the new experiments is to better constrain and understand the variability among analogue and numerical models and to improve our understanding of the causes of differences among the models results.

'Benchmark' experiments should, among others, have a simple set-up, with prescribed model dimensions, resolution and time step size, and use material properties, including those of side-walls and the base, that are well quantified. We present two experimental setups for the new numerical and analogue model comparisons and invite discussion on all aspects of the proposed benchmarks.

More information on: <http://www.geodynamics.no/benchmarks>