Geophysical Research Abstracts, Vol. 8, 03920, 2006
SRef-ID: 1607-7962/gra/EGU06-A-03920

Influence of regional topography on Deep Seated Gravitational Slope Deformation by a Physical Modeling study.

D. Bachmann, S. Bouissou, A. Chemenda

Géosciences Azur, Université de Nice Sophia-Antipolis, 250 rue A. Einstein, 06560 Valbonne, France. (bachmann@geoazur.unice.fr)

Deep Seated Gravitational Slope Deformation, also known as sackung or sagging, is a common phenomenon in mountain ranges. It acts as an important factor regarding mountain morphology. The failure surfaces resulting from such a gravitational failure are often difficult to distinguish from tectonic faults. Furthermore such phenomenon has been poorly studied with modeling technique, and never at very large scale including several mountains. We propose to analyse the shape of the rock unit involved in the Deep Seated Gravitational Deformation initiation and evolution at such a large scale. This is undertaken by using a 3-D physical modeling technique. The latter is based on the use of scaled analogue materials, as well as a vertical accelerator device.

We previously studied failure initiation and evolution of an isolated mountain. We now studied the role of more realistic boundary conditions by taking into account the presence of adjacent mountains next to the one undergoing failure. That was done both in 2-D and in 3-D by the addition of a valley perpendicular to the crest line. We then studied the deformation of a massif composed of several mountains perpendicular to a main crest line. Results show that the thickness of the mobilized mass is reduced by the presence of adjacent mountains, and that its shape is conditioned by the 3-D model topography.