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The Influence of Oblique Reactivation of Faults on Basin Structure: An Experimental Study

Field studies frequently emphasize the role of fault reactivation in the deformation of the upper crust. However, this mechanism is generally not taken into account by analogue and numerical models performed to study fault network growth. We present analogue models in which preexisting discontinuities are reactivated in extension. We show that it influences (i) the orientation and the morphology of the main faults, (ii) the chronological activation of different fault sets, (iii) the geometry of secondary small faults and (iv), the location of depocenters. These results are compared with good agreement to different natural cases that are the Gulf of Suez rift, the Viking Graben and the Lake Tanganyika rift. This work should help to define rules for the interpretation of normal fault networks and to predict sub-seismic structures.