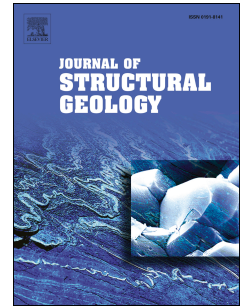


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Evolution of a fold-thrust belt deforming a unit with pre-existing linear asperities:
insights from analog models

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1 **Evolution of a fold-thrust belt deforming a unit with pre-existing linear asperities: insights**
2 **from analog models**

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8
9 **Abstract**

10 Heterogeneity, whether geometric or rheologic, in crustal material undergoing compression
11 affects the geometry of the structures produced. This study documents the thrust fault
12 geometries produced when discrete linear asperities are introduced into an analog model,
13 scaled to represent bulk upper crustal properties, and compressed. Varying obliquities of the
14 asperities are used, relative to the imposed compression, and the resultant development of
15 thrust fault traces and branch lines in map view is tracked. Once the model runs are
16 completed, cross-sections are created and analyzed. The models show that asperities confined
17 to the base layer promote the clustering of branch lines in the surface thrusts. Strong clustering
18 in branch lines is also noted where several asperities are in close proximity or cross. Slight
19 reverse-sense reactivation of asperities cut through the sedimentary sequence is noted in
20 cross-section, where the asperity and the subsequent thrust belt interact. The model results are

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