



Scaling of steps between strike-slip faults

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Widths of steps between strike-slip fault segments obey power-law scaling relationships, probably from widths of millimetres to tens or hundreds of kilometres. This is shown by exposure-scale fault zones and by the lengths of mid-ocean ridges, which are effectively the steps between active transform faults. Analogue model shows that smaller steps progressively develop as small faults develop to accommodate deformation within bigger steps. These steps are broken as a through-going fault system develops, increasing the fault length and thereby promoting interaction with other large faults within the region. The power-law scaling relationship shown by fault steps implies scale invariance, so it is valid to use interpretations of exposure-scale structures as analogues for regional-scale steps. The implications of the power-law scaling of fault steps for seismicity along strike-slip faults, and for observed relationships between fault-trace complexity and earthquake recurrence, are discussed.