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Shear zones – a review

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Abstract

Strain in the lithosphere localizes into tabular zones known as shear zones that grow from small outcrop-size individual zones to large composite structures. Nucleation is related to distributed microscale flaws or mesoscale structures such as fractures and dikes, and they soon establish displacement profiles similar to faults. Also similar to faults, they grow in width and length primarily by segment linkage as they accumulate strain and displacement, and this process typically results in shear zone networks. Consequently, mature shear zones are heterogeneous and composite zones characterized by anastomosing patterns and local variations in thickness and finite strain. Kinematic vorticity estimates suggest that most shear zones deviate from simple shear, and even if subsimple shear may be a useful reference model in many cases, finite strain data indicate that many shear zones involve three-dimensional combinations of coaxial and

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