

VII. Kinematic analysis and strain

A. The basic movements

1. Translation
2. Rotation
3. Dilation
4. Distortion

B. Strain

1. Heterogeneous strain and homogeneous strain
2. Strain along lines
 - a) Changes in length (longitudinal strain)
 - b) Changes in angle (shear strain)
3. Strain ellipse
4. Strain ellipsoid
5. Strain axes

C. Deformation histories

1. Rotational and non-rotational deformation
2. Finite deformation and deformation rate
3. Coaxial and non-coaxial deformation
 - a) Pure strain
 - b) Simple shear

VIII. Dynamic analysis and stress

A. Force and stress

- a) Units of force
- b) Units of stress

B. Stress on a plane

- a) Normal stress
- b) Shear stress

C. State of stress at a point

- a) Hydrostatic and Lithostatic stress
- b) Non-hydrostatic and differential stress
- c) Stress axes
- d) Effective stress
- e) Stress regimes

D. Stress-strain relationships

- a) Experimental vs. geological strain rates
- b) Elastic
- c) Brittle
- d) Plastic
- e) Viscous
- f) Competence