

Index



- accommodation zone, 389
 active folding, 265
 Aegean, 97
 aerial photos, 8
 allochthonous, 357, 433
 salt, 421
 Alpine Fault, 402
 Alps, 18, 60, 259, 357, 362, 368, 371, 436
 AMS method, 303
 Anderson, E. M., 309
 Andersonian stress regimes, 93, 132, 225
 Andes, 96, 97
 Angola, 392
 angular shear, 32, 61
 anisotropic stress component, 98
 anisotropic volume change, 36, 37
 annealing, 247
 Antarctica, 185, 246, 344
 anticline, 260
 anticrack, 126, 230
 antiform, 260
 antitaxial veins, 171
 antithetic fault, 180
 aperture, 155, 167
 Appalachians, 158, 357, 407
 Appennines, 385
 Araçuaí belt, 304
 Arches National Park, 160, 207, 333
 area change, 33
 Argand, E., 259
 Armorican Shear Zone, 343
 Atacama, Chile, 356
 autochthonous, 357
 axial plane cleavage, 291
 axial surface, 260
 axially symmetric extension, 33
 axially symmetric flattening, 33

 backstripping, 451
 back-thrust, 360
 balancing, 442
 Basin and Range, 97, 377, 381, 382, 442
 Belgium, 316
 bending, 265, 269
 Billefjorden Fault, 402, 407
 Bingham materials, 111
 Borehole breakouts, 85, 94
 boudins and boudinage, 305, 316
 aspect ratio, 316
 asymmetric, 319, 345
 barrel-shaped, 317
 chocolate tablet, 322
 classic, 316
 fish-mouth, 317
 folded boudins, 323
 foliation, 321
 graduation-cap, 317
 lithospheric, 324
 necking, 316
 strain, 322
 box folds, 260
 branch line, 361
 branch point, 361
 Brazil, 12, 248, 249, 288, 296, 304, 317, 323, 436
 breccia, 184
 Breddin graph, 63
 Bristol Channel, 373
 brittle, 20, 116, 190, 236, 237
 regime, 116, 124
 shear zone, 332
 strain, 20, 60
 brittle strain, 30
 brittle–ductile transition, 117
 brittle–plastic shear zone, 332
 brittle–plastic transition, 117
 buckling, 265
 bulk modulus, 106
 Byerlee, J. D., 140
 Byerlee's law, 141, 245

 Caledonides, 5, 16, 17, 27, 28, 61, 68, 246, 269, 276, 277, 288, 289, 292, 295, 297, 302, 306, 309, 318, 344, 346, 357, 358, 359, 360, 362, 370, 372, 395, 407, 459, 460, 461, 462
 Canadian Rocky Mountains, 260, 358, 442, 443, 444
 Canyonlands National Park, 11, 205, 422
 cataclasis, 124
 cataclastic flow, 124, 237
 Catskill, NY, 307
 c-axis, 347
 center-to-center method, 66
 channel flow, 394
 chatter marks, 223
 chemical compaction, 241
 chevron folds, 258, 272
 Chile, 373
 chocolate tablet boudinage, 322
 Christmas-tree folds, 276
 Class 1, 2 and 3 folds, 263
 clay smear, 146
 clay smear potential, 214
 cleavage, 283, 285, 294
 axial plane, 291
 compaction, 287
 continuous, 286
 crenulation, 291
 disjunctive, 289
 domainal, 289
 M-domains, 289
 mineral, 286
 pencil, 289
 phyllitic, 290
 pressure solution, 289
 QF-domains, 289
 refraction, 291, 293
 secondary, 291
 slaty, 289
 spaced, 286
 strain, 294
 stylolitic, 287
 transected, 295
 climb, 243
 coaxial deformation, 38
 coaxial deformation history, 43, 47
 Coble creep, 240
 coefficient of internal friction, 131
 coefficient of sliding friction, 140
 cohesive strength, 132, 134
 Colombia, 366
 Colorado Plateau, 91, 149, 199, 269, 436
 compaction, 37, 38, 446
 compaction cleavage, 287
 compaction zone, 337
 concentric folds, 258, 263
 confining pressure, 113, 115
 conglomerates, 63, 65, 67, 68, 69, 70, 261
 conjugate
 deformation bands, 148
 faults, 225
 folds, 260
 foliation boudins, 321
 joints, 154, 166
 kink bands, 273
 shear fractures, 129, 224
 strike-slip faults, 406, 408
 veins, 173

- conjugate faults, 224, 406
 constitutive equations, 102
 constriction, 33
 continuous cleavage, 286
 continuum mechanics, 102
 contraction, 32
 extension, 37
 thermal, 161, 166
 uniaxial, 37
 contractional faults, 356
 contractional strike-slip duplexes, 408
 Cordilleran, 363
 corrugations, 224
 Couette flow, 421
 Coulomb failure envelope, 132
 Coulomb fracture criterion, 131
 Coulomb material, 132
 CPO, 248, 347
 (non-)coaxial strain, 251, 252
 pole figures, 251
 slip system, 250
 strain geometry, 252
 crack, 125
 crack-seal mechanism, 170
 creep, 110, 113, 203
 steady-state, 113
 crenulation cleavage, 291
 crenulation lineation, 305
 critical taper model, 369
 critical tensile strength, 132
 critical tensile stress, 134
 cross-sections, 8
 crush breccia, 185
 crystal defects, 239
 dislocations, 239
 crystallographic fabric, 115
 crystallographic preferred orientations, 248
 crystal-plastic deformation mechanisms, 237
 crystal-plasticity, 116, 237
 cylindrical, 16
 cylindricality, 259, 346
- Dahlstrom, C., 442
 damage zone, 183, 193, 196, 210
 Dead Sea, 409
 Death Valley, 409
 décollement, 357, 386, 436
 décollement folds, 367, 435
 deformation, 26, 29
 brittle, 20
 ductile, 20
 heterogeneous, 29
 history, 29, 46
 homogeneous, 29
 intracrystalline, 236
 inverse, reciprocal, 30
 irreversible, 108
 phases, 456
 plastic, 109
 polyphasal, 457
 progressive, 27, 39, 457
- rigid body, 26
 rotation, 28
 steady-state, 45
 strain, 28
 translation, 27
- deformation band, 143, 195
 cataclastic, 147, 195
 compaction, 145
 dilation, 145
 disaggregation, 145
 phyllosilicate, 146
 shear, 145
 zone, 195
- deformation history, 29, 46
 deformation matrix, 30, 336, 341, 410
 incremental, 45
 deformation mechanism maps, 241
 deformation mechanisms, 236
 brittle, 236, 237
 Coble creep, 240
 diffusion creep, 240
 frictional sliding, 237
 grain boundary diffusion, 240
 grain boundary sliding, 237, 241
 grain rotation, 237
 intergranular fracturing, 237
 intragranular fracturing, 237
 microfracturing, 237
 Nabarro–Herring creep, 240
 plastic, 236
 pressure solution, 241
 twin gliding, 238
 twinning, 238
 volume diffusion, 240
- deformation processes, 236
 Denmark, 368
 detachment, 357
 detachment folds, 367
 deviatoric stress, 78, 79, 97
 dextral, 402
 diagenesis, 213
 diapirs and diapirism, 420
 differential compaction, 270, 427
 differential loading, 425
 differential stress, 79, 97
 diffusion, 239, 243
 grain boundary, 240, 241
 pressure solution, 241, 290
 volume, 241
 wet, 241, 290
- digital elevation model (DEM), 10
 dike, 155, 230, 336
 dilation zone, 337
 dip isogons, 263
 dip separation, 182
 dipmeter data, 85, 190, 193
 discrete crenulation cleavage, 291
 disjunctive cleavage, 289
 dislocation, 110, 239, 242
 climb, 243
 creep, 242, 420
- edge, 242
 glide, 242, 243
 pile-ups, 243
 screw, 242
 slip, 242
 slip plane, 242
- displacement, 187, 210
 field, 27
 loading, 426
 vector, 26, 181
 displacement field, 181
 domainal cleavage, 289
 dome, 262
 domino faulting, 379
 drag, 187, 197, 201, 427
 displacement-induced, 201
 normal, 198
 reverse, 199
 driving stress, 137
 ductile, 20, 116, 190, 278
 ductile shear zone, 330, 332
 duplex
 contractional, 359, 360, 362, 364
 extensional, 387
 strike-slip, 408
 dynamic analysis, 20
 dynamic recrystallization, 247
- earthquakes, 203, 229
 characteristic earthquake
 model, 204
 focal mechanisms, 86
 uniform slip model, 204
 variable slip model, 204
 East African rift system, 97, 389, 403
 EBSD technique, 248
 edge dislocation, 242
 effective stress, 141
 eigenvectors, eigenvalues, 31
 Ekofisk Field, 126
 elastic deformation, 104
 elastic modulus, 103
 elastic perfect plastic, 110
 elasticity, 85, 103, 450
 linear, 103
 non-linear, 104
 perfect, 105
 elastic–plastic materials, 109, 110, 111
 Elliott graph, 65
 elongation, 31
 Engelder, T., 158
 Espirito Santo Basin, 436
 expansion index, 183
 extension, 32
 uniaxial, 37
 extension fractures, 125, 128, 154
 extensional collapse, 394
 extensional crenulation cleavage, 295
 extensional duplex, 387
 extensional faults, 378
 extensional strike-slip duplex, 409

- fabric, 115, 284
 - linear (L), 284
 - LS, 284
 - planar (S), 284
 - primary, 284
 - random, 284
 - tectonic, 284
- facing, 261
- fault, 125, 178, 330
 - antithetic, 180
 - bend, 408
 - breccia, 184
 - concentric, 429
 - conjugate, 224, 225, 406
 - core, 183, 210
 - cutoff lines, 182
 - damage zone, 183, 193, 196, 210
 - displacement, 187
 - displacement vs. length, 210
 - drag, 187
 - extensional, 378
 - fault cut, 190
 - geomechanical modeling, 191
 - gouge, 184, 185
 - grooves, 307
 - heave, 182
 - inversion, 372
 - listric, 179, 197, 380, 462
 - low-angle, 179, 203, 381, 382, 383
 - normal, 179
 - populations, 204
 - process zone, 193
 - radial, 429
 - ramp, 179, 360
 - reactivation, 140, 358, 372, 379, 383, 388, 395, 436
 - relay, 204
 - reverse, 179, 356
 - slip, 181
 - smear, 199
 - striations, 223
 - strike-slip, 179, 402
 - subseismic, 189, 190
 - syndepositional, 183
 - synthetic, 180
 - thickness, 178
 - throw, 182
 - thrust, 179, 356, 357
 - transcurrent, 404
 - transfer, 360, 402
 - transform, 402
 - transmissibility, 211
- fault linkage, 204
 - hard, 205
 - relay, 206, 462
 - releasing overlaps, 209
 - restraining overlaps, 209
 - soft, 205
 - vertical, 208
- fault populations
 - complex, 225
 - conjugate, 224
 - orthorhombic, 225
- fault sealing, 211, 213
 - juxtaposition, 212
- fault slip inversion, 226
- fault smear, 199, 213
 - clay smear potential, 214
 - shale gouge ratio, 214
 - shale smear factor, 214
 - triangle diagram, 215
- fault zone, 180
- fault-bend fold, 270, 365
- fault-plane solution, 229
- fault-propagation fold, 277, 365, 366
- fiber lineation, 306
- fibers, 172
- field data, 5
- field sketches, 6
- finite strain, 45
- fissure, 125, 154
- flat-ramp-flat, 360
- flexural flow, 271
- flexural slip, 270
- Flinn diagram, 35, 51, 302, 340
- floor thrust, 357
- flow, 20, 102
 - steady-state, 111
- flow apophyses, 41, 42
- flow laws, 110, 243
- flow parameters, 40
- flow patterns, 39
- fluid flow, 147, 167, 203, 209, 210, 211
- fluid pressure, 141, 142
- fluids, 114, 115, 118, 141
- focal mechanisms, 229
- fold, 258
 - amplitude, 258
 - asymmetric, 345
 - axial surface, 260
 - axial trace, 260
 - axis, 305
 - bluntness, 258
 - cylindricity, 259, 346
 - dip isogons, 263
 - drag, 197, 201
 - enveloping surface, 262
 - facing direction, 261
 - fault-propagation, 199, 277, 366
 - fold axis, 259, 261
 - harmonic, 259
 - hinge, 258
 - hinge line, 259
 - hinge zone, 258
 - interference, 274
 - interlimb angle, 262
 - recumbent, 260
 - tightness, 262
 - vergence, 264
 - wavelength, 258
- fold symmetry, 263
 - M-, S- and Z-folds, 264
 - orthorhombic, 264
- fold types
 - anticline, 260
 - antiform, 260
 - antiformal syncline, 262
 - basin, 262
 - box, 260
 - chevron, 258, 272
 - Christmas-tree, 276
 - Classes 1–3, 263
 - concentric, 263
 - dome, 262
 - drag, 197, 201, 427
 - fault-bend, 365
 - fault-propagation, 199, 277, 365
 - isoclinal, 262
 - kink, 272
 - monocline, 262
 - parallel, 263
 - polyclinal, 260
 - relay ramp, 206
 - sheath, 275
 - similar, 263
 - syncline, 260
 - synform, 260
 - synformal anticline, 262
 - upright, 260
- folding
 - active, 265
 - bending, 265, 269
 - buckling, 265
 - décollement folds, 367
 - detachment, 367
 - drag, 427
 - fault propagation, 199
 - fault-bend, 270
 - flexural, 265, 268
 - flexural shear or flow, 271
 - flexural slip, 270
 - forced, 269
 - orthogonal flexure, 271
 - passive, 265, 268
 - trishear, 270
- foliation, 283, 284
 - cleavage, 285
 - gneissic banding, 296
 - migmatitic, 296
 - mylonitic, 297
 - primary, 285
 - schistosity, 290, 295, 296
 - secondary, 285
 - shear zone, 334
 - tectonic, 285, 288
 - transposition, 296
- foliation boudinage, 321, 345
- foliation fish, 345
- footwall, 179
- footwall collapse, 387, 388
- forced folds, 199, 269
- foreland, 357, 362
- Formation MicroImager (FMI), 191

- forward modeling, 442
 Fourier transformation, 258
 fractal, 391
 fracking, *see* hydraulic fracturing
 fracture, 125, 154
 extension, 125, 128, 154
 hybrid, 127
 hydraulic, 157, 158, 168
 intergranular, 124
 intragranular, 124
 Mode I, 127
 Mode II, 127
 Mode III, 127
 shear, 125, 129
 tensile, 142
 tension, 157
 toughness, 137
 fracture cleavage, 287
 frictional regime, 116, 124
 frictional sliding, 124
 frontal ramp, 360
 Fry method, 67
- garnet inclusion patterns, 345
 general linear materials, 112
 geologic maps, 8
 geometric analysis, 18
 Gibbs, A., 442
 girdle, 348
 GIS, 10
 glaciotectonics, 2
 gneissic banding, 296
 Google Earth, 10
 graben, 180, 389
 grain boundary diffusion, 240
 granular flow, 124, 201, 237
 gravity, 74
 gravity collapse, 4, 60, 97, 275, 276, 310, 371,
 388, 393, 394, 429, 431, 435
 gravity tectonics, 2
 Great Glen Fault, 358, 402, 407
 Great Slave Lake Shear Zone, 402
 Griffith cracks, 134
 Griffith fracture criterion, 134
 Griffith, A.A., 134
 groove lineation, 307
 Gulf of Corinth, 385
 Gulf of Mexico, 431
 Gullfaks oil field, 18, 19, 180, 193, 195, 380,
 392, 448, 449
- hackles, 165
 halokinesis, 418
 halokinetic cycle, 429
 hanging wall, 179
 hanging-wall collapse, 387
 heave, 182
 Heim, A., 259
 heterogeneous deformation, 29
 Highland Boundary Fault, 358
 Himalayas, 12, 97, 370, 394
- hinge collapse, 274
 hinterland, 357
 homogeneous, 115
 homogeneous deformation, 29, 30, 31
 homogeneous strain, 29, 115
 homologous temperature, 113
 Hooke's law, 103
 horizontal separation, 181
 horses, 359
 horsetail fractures, 138
 horst, 180, 387, 389
 Hossack, J., 68
 Hsü diagram, 36
 Hubbert and Rubey, 369
 Huismans, R., 324
 hydraulic fracturing, 86, 157, 158, 168
 hydrostatic pressure, 87
 hydrostatic stress, 79
- Iceland, 86, 129, 158
 ideal shear zone, 333
 imbrication, 359, 387
 incremental strain, 40, 45
 injectites, 157
 InSAR, 8
 in-sequence thrusting, 362
 instantaneous strain, 47
 instantaneous stretching axes, 55, 406
 intersection lineation, 305, 308
 intracrystalline deformation, 236
 inversion, 372
 Iran, 424, 425, 426, 427, 431, 433, 436, 444
 irreversible deformation, 108
 isochoric deformations, 35
 isoclinal folds, 262
 isotropic
 rocks, 103
 strain, 115
 stress, 98, 115
 volume change, 36, 37
- Italy, 290, 324
- joint, 92, 125, 128, 154, 193
 aperture, 167
 arrest lines, 165
 connectivity, 168
 exfoliation, 160
 fringe zone, 165
 hackles, 165
 non-systematic, 154
 plumose, 164
 relative age, 166
 release, 161
 ribs, 165
 set, 154
 spacing, 161
 stress, 156
 system, 154
 systematic, 154
 unloading, 160
- Jotun Nappe, 27
- Kelvin viscoelastic materials, 111
 Kilve, 373
 kinematic analysis, 20
 kinematic axes, 309
 kinematic indicators, 342
 boudins, 345
 CPO, 347
 deflected markers, 343
 fibers, 348
 folds, 345
 foliation, 343
 foliation fish, 345
 mica fish, 345
 microfaulting, 348
 myrmekite, 347
 porphyroclasts, 345
 quarter structures, 346
 S-C structures, 344
 shear bands, 343
 tiling, 348
 transfer structures, 348
 veins, 348
- kinematic vorticity number, 43, 44
 kinematics, 20
 kink bands, 258, 272
 klippe, 357
 Kvale, A., 309
- Laramide orogen, 126, 269, 362, 363, 364, 379
 lateral ramp, 360
 L-fabric, 284
 lineament, 302
 linear elastic fracture mechanics, 107
 linear fabric, 284
 linear materials, 107
 lineation, 302
 boudin, 305
 crenulation, 305
 fiber, 224, 303, 306
 geometric striae, 308
 groove, 223, 307
 intersection, 305, 308
 mineral, 302, 306
 mullion, 306
 pencil, 306
 penetrative, 302
 primary, 302
 rodding, 303
 slickenlines, 224
 stretching, 303
 striations, 223, 224, 307
 surface, 302
 tectonic, 302
- listric fault, 179, 197, 380, 462
 lithostatic pressure, 79
 lithostatic stress, 97
 Lohest, M., 316
 low-angle faults, 179, 203, 381
 low-angle normal faults, 382, 383
 LS-tectonite, 284, 302
 L-tectonite, 284, 302

- Magnetic declination, 8
 magnetic susceptibility, 303
 mapping, 6
 Maxwell viscoelastic materials, 111
 McKenzie model, 389
 M-domains (cleavage), 289
 mean stress, 78
 mechanical analysis, 21
 mechanical stratigraphy, 209
 Mediterranean, 324
 megamullions, 385
 metamorphic core complex, 382, 384, 393
 mica fish, 345
 microstructures, 236
 microtectonics, 3, 21
 migmatitic foliation, 296
 mineral cleavage, 286
 mineral lineations, 302, 306
 Moab Fault, 212
 Mode I–III fractures, 127
 Mohr circle, 79
 Mohr diagram, 79, 130
 Mohr failure envelope, 133
 Moine nappe, 309
 Moine thrust, 309, 310, 341, 357, 358
 mullions, 306
 mylonite, 186, 341
 mylonitic foliation, 297
 myrmekite, 347
- Nabarro–Herring creep, 240
 nappe, 357
 necking, 316
 neotectonics, 3
 Nettleton, L. L., 423
 neutral point, 292
 neutral surface, 266, 292
 Newtonian material, 107
 Niger delta, 372
 non-coaxial deformation, 38
 non-coaxial deformation
 history, 43, 47
 non-linear materials, 112
 normal fault, 179
 normal stress, 74
 North Anatolian Fault, 402
 North Sea, 13, 17, 51, 52, 87, 89, 126, 180,
 189, 191, 193, 198, 207, 208, 213, 231,
 380, 387, 390, 391, 392, 418, 419, 422,
 428, 435, 442, 448
 North Sea Rift, 403
 numerical modeling, 4, 15, 127
- oblate strain, 35, 411
 oblique plate margins, 413
 oblique ramp, 360
 oblique slip fault, 181
 Occam's Razor, 442
 oceanic core complex, 385
 oriented sample, 8
 orogenic collapse, 393, 394
 orogenic wedge, 368
 orthogonal flexure, 271
 Oseberg, 191
 Oslo, 155
 out-of-sequence thrusting, 364
 Outer Hebrides Thrust, 358
 overcoring, 85
 overpressure, 89, 278
 overprinting relations, 456
- paleopiezometer, 253
 paleostress, 221, 226, 230
 from faults, 224, 226
 from grain size, 253
 from joints, 156
 Paradox Basin, 421, 422, 435, 436
 parallel folds, 263
 parasitic folds, 264
 parautochthonous, 357
 particle paths, 27, 39
 particulate flow, 237
 passive folding, 265, 268
 passive layers, 268
 passive margin, 392
 P-axes, 227, 229
 P-criteria, 223
 pencil cleavage, 289
 pencil structures, 306
 penetrative lineations, 302
 perfectly ductile shear zone, 332
 perfectly plastic, 110
 periodic folding, 266
 permeability, 144, 167
 Petit, J.-P., 223
 petroleum geology, 10, 13, 85, 86, 92, 126,
 141, 147, 148, 149, 153, 167, 168, 177,
 206, 207
 P-fractures, 222
 phyllitic cleavage, 290
 physical experiments, 4, 14, 39, 113, 127, 371,
 386, 387, 408
 bending, 162
 boudinage, 319
 centrifuge, 424
 clay, 405
 constant strain, 114
 creep, 113, 114
 folding, 267
 plaster, 40, 208, 386, 387
 ringshear, 128
 salt diapirs, 423
 sand, 361, 381, 450
 scaling, 14, 424
 strength, 98, 104
 triaxial, 14, 128
 uniaxial, 14, 128
 pinch-and-swell structures, 316
 pitch, 181
 planar fabric, 284
 plane strain, 33, 35, 224, 225
 plastic, 236
 plastic deformation, 103, 109
 plastic regime, 203
 plastic shear zone, 332
 plasticity, 116
 elastic perfect plastic, 110
 perfectly plastic, 110
 plate tectonics, 2, 94
 basal drag, 95
 collisional resistance, 96
 plumose structures, 164
 Poiseuille flow, 420
 Poisson effect, 105
 Poisson's ratio, 90, 104, 105
 from acoustics, 107
 pole figures, 251
 pore pressure, 142
 poroelasticity, 143
 porosity, 142, 237
 porphyroblast, 457
 porphyroclasts, 341, 345
 postrift sediments, 388
 power-law distribution, 391
 Prandtl materials, 111
 prerift sediments, 388
 Presidential Range, 296
 pressure, 74, 157
 confining, 113, 115
 hydrostatic, 87
 pressure solution, 241, 289
 principal strain axes, 34
 principal stress axes, 225, 226
 principal stresses, 77, 224
 process zone, 134, 193
 prograde metamorphism, 457
 progressive deformation, 27, 39, 47, 457
 pure shear, 47, 49
 simple shear, 47
 subsimpler shear, 50
 prolate strain, 35, 411
 protolith, 341
 protomylonite, 341
 Provence, France, 148
 pseudotachylyte, 184, 185
 P-shears, 405
 P–T paths, 457, 458, 459
 P–T–t paths, 460
 pull-apart basin, 409, 461
 pulverization, 124
 pure shear, 38, 51, 389
- QF-domains (cleavage), 289
 quadratic elongation, 32
 quarter structures, 346
- R' shears, 405
 Ramberg, H., 317, 371, 424
 ramp-flat-ramp fault geometry, 179, 386
 Ramsay, J., 63
 R-criteria, 223
 reciprocal deformation, 30
 recovery, 246

- recrystallization, 246
 annealing, 247
 dynamic, 247
 grain boundary migration, 246
 static, 247
 subgrain rotation, 246
reduction spots, 60, 61, 294
reference states of stress, 87
relay structure, 206, 462
releasing bend, 409
remote sensing, 4
remote stress, 136
residual stress, 92, 93, 161
restoration, 442
 3-D, 451
 backstripping, 451
 compaction, 446
 constant area, 444
 constant length, 444
 flexural slip, 445
 geomechanically based, 450
 map view, 447
 rigid block, 443
 sections, 442
 shear, 445
 trishear, 446
restraining bend, 408
retrograde metamorphism, 457
reverse fault, 356
 R_f/ϕ -method, 63
R-fractures, 222
rheologic analysis, 21
rheologic stratification, 118
rheology, 102, 117
Ribeira Belt, 249
ridge push, 95
Riedel shears, 222, 405
rift basins, 461
rifting, 388
 active, 388
 passive, 388
 pure shear, 389
 simple shear, 389
 strain, 390
 symmetric, 389
rigid body deformation, 26
rigid domino model, 379
ringshear apparatus, 128
rock mechanics, 102
Rocky Mountains, 199, 269
rodding, 303
rolling hinge model, 383
rollover, 179, 197
roof thrust, 357
rotation, 28
rotational deformation, 38
R-shears, 405

Saint Venant material, 110
salt
 active diapirism, 429
 allochthonous, 433
 anticline, 420
 buoyancy, 418
 canopy, 434
 concentric faults, 429
 décollement, 436
 diapirism, 418
 downbuilding, 429
 glacier, 431, 433
 halokinetic cycle, 429
 intrusion, 435
 karstification, 435
 minibasin, 427
 nappes, 433
 passive diapirism, 429
 pillow, 420
 radial faults, 429
 reactive diapirism, 429
 roller, 430
 sheet, 431, 433
 stock, 421
 teardrop diapir, 432
 tectonics, 2, 418
 wall, 421
 weld, 420
 withdrawal, 420
San Andreas Fault, 385, 402, 403, 408,
 409, 413
sand dikes, 158
Sander, B., 286, 309
Sanderson, D., 410
satellite images, 8
S-C structures, 344
scale model, 14
scanlines, 8
schist, 290
schistosity, 286, 290, 295, 296
Scotland, 309, 357
Scottish Highlands, 358
screw dislocation, 242
sealing faults, 211, 213
sectional strain ellipse, 33
seismic data, 10, 13, 188, 366, 409
self-similarity, 391
Sevier orogen, 286, 363
shale gouge ratio, 214
shale smear factor (SSF), 214
sharp discontinuity, 144, 154
shear bands, 295
shear folds, 263, 268
shear fracture, 125, 129
shear modulus, 104
shear strain, 32
shear stress, 74
shear zone, 330
 brittle, 332
 brittle-plastic, 332
 compactional/dilational, 337
 foliation, 334
 general, 337
 growth, 349
 ideal, 333
 lineation, 335
 marker, 336
 non-plane strain, 340
 offset, 336
 perfectly ductile, 332
 plastic, 332
 pure shear, 330
 semi-ductile, 332
 simple shear, 330, 337
 strain, 339
 subsimple shear, 330, 339
sheath folds, 275
Silverpit “Crater”, 422
simple shear, 38, 51, 336, 389
simple shear zone, 337
single-layer folds, 266
sinistral, 402
slab pull, 95
slates, 61
slaty cleavage, 287, 289
slickenlines, 307
slickensides, 224, 307
slip
 aseismic, 202
 hardening, 202
 seismic, 202
 stable sliding, 202
 stick-slip, 202
slip fiber lineations, 307
slip hardening, 202
slip surface, 125, 196
slip system, 242, 250
smear, 212, 213
soft domino model, 381
soft-sediment deformation, 277, 278
sole thrust, 357
Southern Uplands, 295
spaced cleavage, 286
spherical projections, 8
splay faults, 138
Statfjord Field, 391
static recrystallization, 247
steady-state flow, 45, 111
S-tectonite, 284, 302
stereonet, 20
stickolites, 308
stick-slip, 202
stiffness, 104, 161
strain, 28, 339
 active markers, 70
 and cleavage, 294
 area change, 33
 brittle, 20, 60
 cleavage, 61
 coaxial, 38
 compatibility, 46
 ellipse, 32, 33
 ellipsoid, 34, 35
 energy, 243
 finite, 20, 45
 geometry, 35, 67
 heterogeneous, 29, 30, 67
 homogeneous, 29, 115

- incremental, 20, 40, 45
 instantaneous, 40
 invariants, 34
 isochoric, 35
 isotropic, 115
 markers, 60
 non-coaxial, 38
 oblate, 35, 411
 one-dimensional, 30, 60
 partitioning, 67, 413
 passive markers, 68
 plane, 33
 principal axes, 34
 prolate, 35, 411
 rate, 108, 114
 shadows, 345
 softening/hardening, 110, 111, 195, 408
 surfaces of no finite strain, 35
 three-dimensional, 33
 two-dimensional, 32, 246
 uniaxial, 37
 volumetric, 28, 36, 115
 weakening, 114
 X, Y, Z axes, 32, 33, 34
 strain analyses
 one-dimensional, 60
 two-dimensional, 60
 stratigraphic separation, 183
 strength, 97, 98, 161
 shear, 87
 tensile, 74
 stress, 4, 74
 Andersonian regimes, 93
 anisotropic, 98
 at a point, 75, 77
 compressive, 74
 constant-horizontal-stress
 reference state, 90
 deviatoric, 79
 differential, 79, 97
 driving, 137
 effective, 141
 ellipsoid, 226
 from grain size, 253
 hydrostatic, 79
 inversion, 226
 isotropic, 98, 115
 lithostatic, 79, 97
 lithostatic reference state, 87
 mean stress, 78
 normal, 74
 on a surface, 74
 principal directions, 77
 principal planes, 77
 reference states, 87
 shear, 74
 sign conventions, 75
 tensile, 74, 157
 tensor, 77, 226
 uniaxial-strain reference
 state, 89, 97
 vector, 74
 stress ellipsoid, 76
 stress guides, 364
 stress versus strain, 52, 74
 stretching, 32, 392
 stretching lineation, 303, 335
 stretching veins, 171
 striations, 223, 224, 307
 strike and dip, 7
 strike-slip fault, 179, 402
 conjugate, 406
 releasing bend, 409
 restraining bends, 408
 stepover, 408
 transcurrent, 404
 transfer, 402
 transform, 402
 structural geology, 2, 3
 stylolite, 126, 222, 230, 241
 stylolitic cleavage, 287
 subgrain rotation recrystallization, 246
 subgrains, 246
 subseismic faults, 189, 190
 subsimpl shear, 39
 subsimpl shear zones, 339
 superplasticity, 242
 surface lineations, 302
 surface roughness, 140
 surfaces of no finite strain, 35
 susceptibility ellipsoid, 303
 Svalbard, 359, 360, 407
 syncline, 260
 syndepositional faults, 183
 synform, 260
 synrift sediments, 388
 syntaxial veins, 170
 synthetic fault, 180
 tabular discontinuity, 144
 tangent-lineation diagrams, 226
 T-axes, 227, 229
 T-criteria, 223
 tear fault, 360
 tectonic
 analysis, 21
 fabric, 284
 foliation, 288
 model, 4
 overpressure, 88
 stress, 92
 window, 357
 tectonics, 2
 glacioteonics, 2
 gravity tectonics, 2
 microtectonics, 3, 21, 22
 neotectonics, 3
 plate tectonics, 2, 94
 salt tectonics, 2
 tensile strength, 132, 134, 157
 tension fractures, 157
 T-fractures, 222, 405
 thermal loading, 426
 thermobarometry, 459
 thick-skinned, 362
 thin-skinned, 362
 three-dimensional strain, 33, 51
 throw, 182
 thrust, 179, 357
 thrust fault, 356
 thrust nappe, 141, 357, 461
 thrusting
 extrusion model, 371
 gliding model, 371
 gravitational collapse, 371
 gravity model, 370
 in-sequence, 362
 out-of-sequence, 364
 spreading model, 371
 wedge model, 368
 Tibetan Plateau, 12, 96, 97, 370, 395
 Tornquist Zone, 402
 traction, 74
 transcurrent fault, 404
 transected folds, 295
 transecting cleavage, 295
 transfer fault, 360, 402
 transform fault, 402, 403, 404
 translation, 27
 transposition, 296
 transpression, 410
 deformation matrix, 410
 lineations, 412
 strain partitioning, 413
 transtension, 410
 triangle diagram, 215
 triaxial test, 128
 trishear, 199, 200, 270, 448
 twinning, 238
 deformation twins, 238
 growth twins, 238
 transformation twins, 238
 ultramylonite, 341
 undulose extinction, 246
 uniaxial contraction, 37
 uniaxial extension, 37
 uniaxial strain, 37
 uniaxial test, 128
 uniform extension, 33
 uniform flattening, 33
 Upheaval Dome, 422
 Uppsala, 424
 Utah, 11, 125, 126, 146, 147, 154,
 160, 165, 168, 186, 205, 207,
 208, 209, 210, 213, 278, 287,
 308, 333, 356, 378, 421, 422,
 423, 435, 436
 vein, 125, 154, 168
 antitaxial, 171
 arrays, 172
 stretching, 171
 syntaxial, 170
 velocity field, 41
 velocity tensor, 41

- Viking Graben, 392
viscoelastic materials, 111
viscoplastic materials, 111
viscosity, 107, 420
 linear (Newtonian), 107, 266
 non-linear, 108
volume change, 28
 anisotropic, 36
 isotropic, 36
volumetric strain, 28, 36, 115
von Mises fracture criterion, 133
vorticity, 41, 43
vorticity number, 34, 41
vorticity vector, 44
Wales, 295
Wallace–Bott hypothesis, 225
Wasatch Fault, 186, 208
Wellman method, 62
Wernicke model, 389
wet diffusion, 241, 290, 420
Wilson cycle, 393
window, 357
wing crack, 139, 160, 169, 406
wing cracks, 138
work hardening, 110
work softening, 111
World Stress Map Project, 94
yield stress, 109
Young's modulus, 103, 104, 209
Zagros, 436, 444
Zagros Mountains, 431
Zechstein salt, 418, 435
zonal crenulation cleavage, 291