## Earth’s structure

Gravitational acceleration

Radius of the Earth

Mantle (potential) temperature

Geotherm

Geothermal gradient

Adiabatic geotherm

Outer core

Mantle

Crust

Lithosphere

Asthenosphere

Tectosphere

Moho

410-km discontinuity

660-km discontinuity

D’’ (D double prime) discontinuity

## Phenomena

Convection

Thermal/chemical convection

Advection

Diffusion

Plume

Super plume

Subduction

Slab

Rift/Rifting

Subduction, subduction zone

Accretionary wedge/prism,

Faulting

Fault

Normal fault

Reverse fault

Thrust

Strike-slip fault

Detachment

Decollement

Low-angle normal fault

Metamorphic core complex

Oceanic core complex

Fold-and-thrust belt

Melting

Partial melting

Large igneous province

mid-ocean ridge

fracture zone

passive margin

## Governing equations

Mass (balance/conservation) (equation/law)

(Linear) Momentum balance/conservation equation/law

(Heat) energy balance/conservation equation/law

1st law of thermodynamics

2nd law of thermodynamics (Clausius-Duhem inequality)

advection, diffusion

inertial term

internal force

external force

body force

surface force

## Kinematics (description of motion)

Strain

Strain rate

Stress

Plastic strain

Permanent strain

Elastic strain

Viscous strain rate

Additive decomposition

Multiplicative decomposition

Principal strain/strain rate/stress

First/second/third invariants of strain/strain rate/stress

Thermal contraction

Thermal expansion

Thermal stress

## Material properties

Density

Reference density

Density difference

Bulk modulus

Shear modulus

Linear/volumetric thermal expansion coefficient

Clapeyron slope

Heat conductivity

Heat diffusivity

Heat capacity at constant pressure/volume

Specific heat capacity at constant pressure/volume

Viscosity

Permeability

Porosity

Anisotropy

## Rheology

Newtonian

Power-law

Non-linear

Creep

Non-linear creep

Diffusion creep

Dislocation creep

Peierls creep

Pre-exponential constant

Exponent

Linear/non-linear elastic

Plastic

Elasto-plastic/elastic-plastic

Visco-plastic/viscous-plastic

Elasto-visco-plastic

Yielding

Failure

Yield stress

Failure criterion

Yield function

Flow potential

Flow rule

Cohesion

Friction angle

Dilation angle

Mohr-Coulomb

Damage

Void density

…

## Scales

Length scale

Relaxation time scale

Advection time scale

…

## Dimensionless numbers

Rayleigh number

R eynolds number

Peclet number

Prandtl number

Nussel number

Deborah number

…

## Terms specific to a numerical method

Finite element method

Finite difference method

Eulerian

Lagrangian

Staggered grid

Stokes equation

Stokes flow

Sticky air

Drunken seaman instability

Particle-in-cell

Uzawa algorithm/scheme

Multigrid

Direct solver

Interative solver

Gauss-Seidel

Petsc

Krylov subspace method

Bi-conjugate gradient

Generalized minimum residual

Artificial viscosity

Adaptive mesh refinement

Streamline upwind Petrov-Galerkin method

Explicit

Implicit

Predictor-corrector

Forward Euler

Backward Euler

Q2-P1

Q2-Q1

P1

Level set

Particle, marker, tracer, material point

Domain decomposition

Ghost elements

Parallel/parallelization

MPI

OpenMP