

### Quiz 9: Archean Tectonics (Ch. 11)

1. Komatiites are often found in greenstone belts. What does this tell us about the Archean which is different from today?

peridotite rocks (mantle) melted at higher temperatures near the surface

2. Sketch a cross section of dome-and-keel continental structure, and label the diagnostic features.

Sketch should include concave-down domes of TTG (granitoids) with concentric deformation fabrics, alternating with synformal belts composed of mafic volcanic rocks and sediments (greenstone belts)

3. Explain one argument supporting either faster or slower plate motions during the Archean (relative to today)

examples: faster due to more vigorous convection if mantle was cooling more quickly; slower because drag would be less between the low viscosity mantle and the plates; slower because negative buoyancy of slab would be less with thicker crust

4. What geothermal gradients are characteristic of subduction zones where blueschist - eclogite facies metamorphic rocks are formed?

less than 10°C per km. “cold” or “low gradient” not sufficient