

# Geology 100

## Notes on Planet Earth version 3.0

Review - Exam 3

Chapter 8

# General features

- Solid-state recrystallization
- Protolith
- Fabric
- Foliation
- Non-foliated

Directed  
pressure



Foliation

Directed  
pressure



Non-foliated



# Examples

- Slate, phyllite, schist, gneiss
- Marble, quartzite, amphibolite

# Common Non-foliated Metamorphic Rocks



**Marble**  
*Limestone*



**Quartzite**  
*Quartz arenite*  
*Chert*



**Amphibolite**  
*Basalt*

# Types of Foliated Metamorphic Rocks

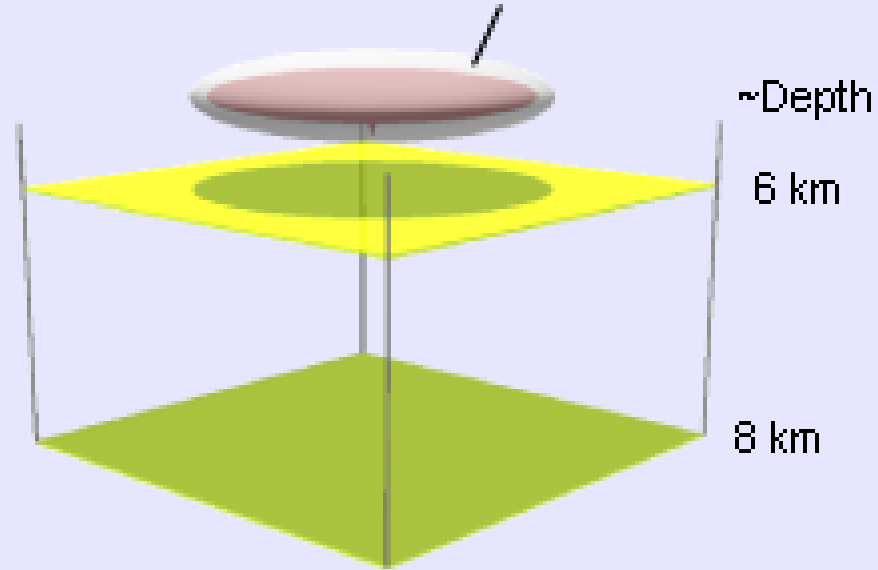
- Slate
- Phyllite
- Schist
- Gneiss



# Contact metamorphic aureole

- hornfels

Heat given off by the crystallizing magma produces an envelope of recrystallized rock called a contact metamorphic aureole

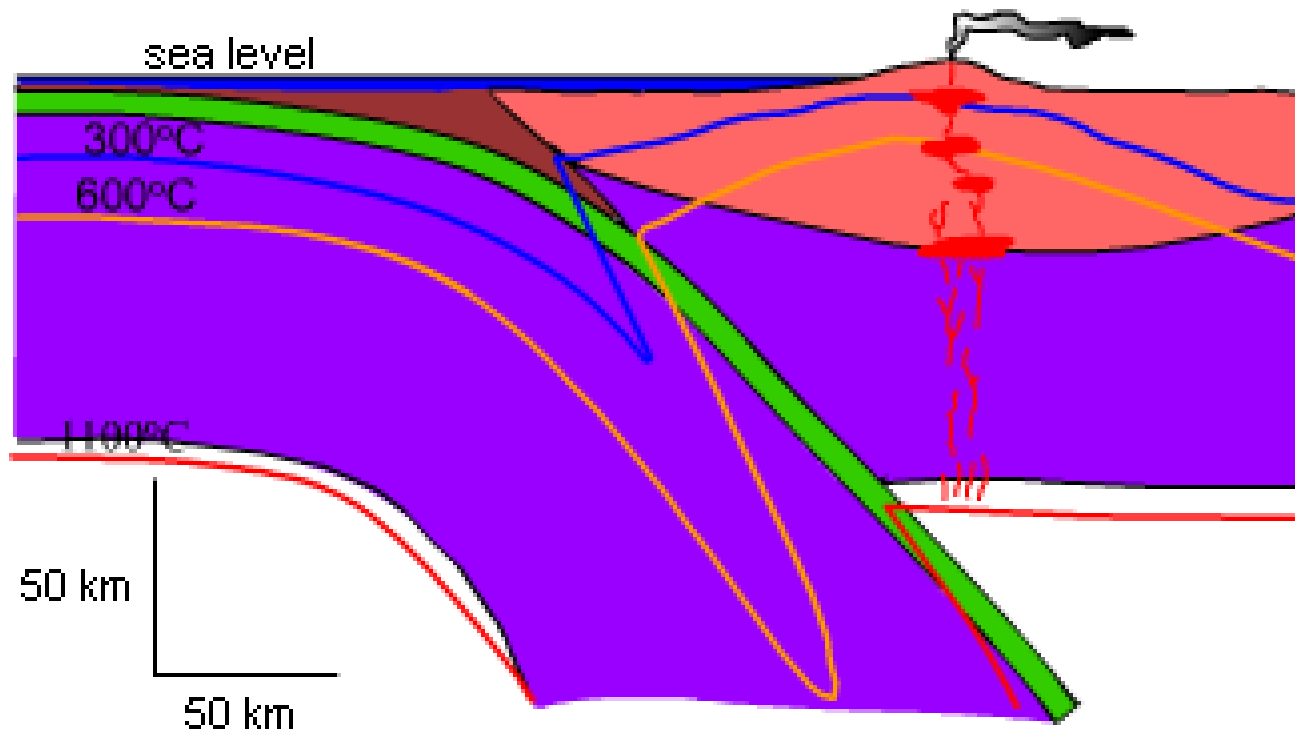


# Geothermal Gradient and Isotherms

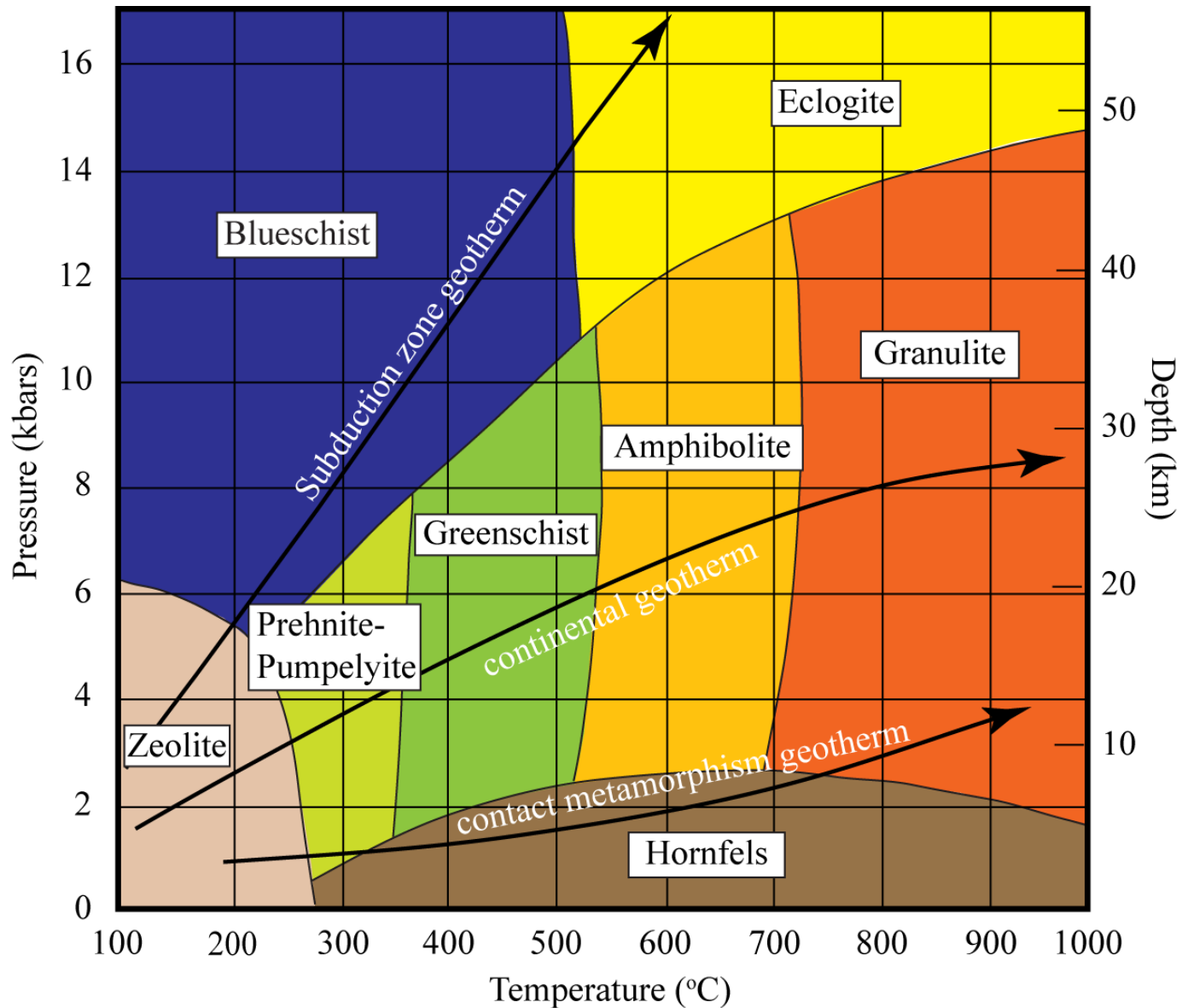
Continental interiors –  $30^{\circ}\text{C}/\text{km}$

Magmatic arcs –  $50^{\circ}\text{C}/\text{km}$

Subduction zones –  $10^{\circ}\text{C}/\text{km}$

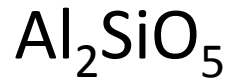


# Metamorphic Facies





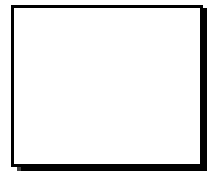
# Phase diagrams



Andalusite, sillimanite, and kyanite all have the same chemical formula:  $\text{Al}_2\text{SiO}_5$



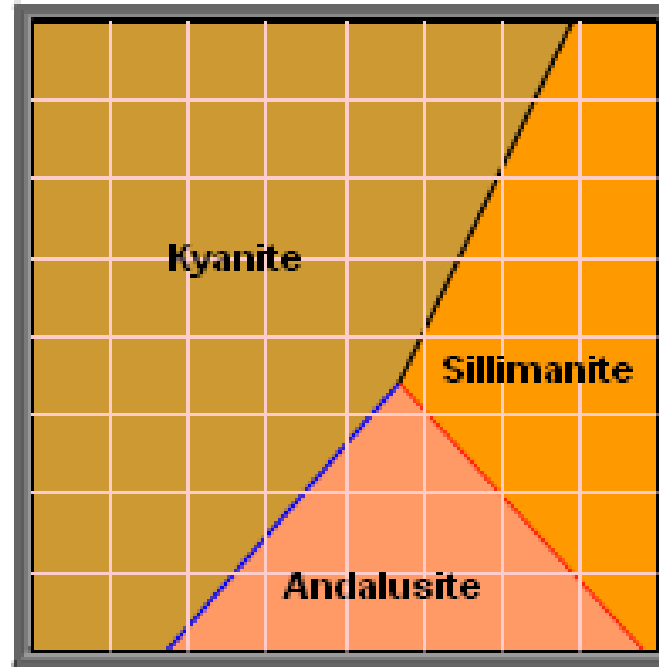
Pressure



What phase is stable:



Show Random Point



Temperature