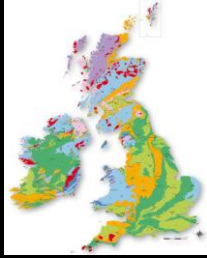


An Introduction To Geological Maps



Dr Liam Herringshaw: lgh865@hotmail.com

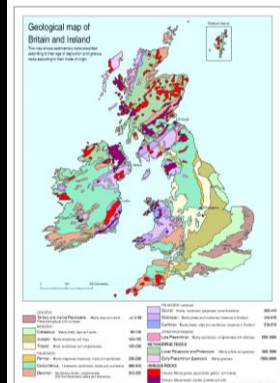
Week 7

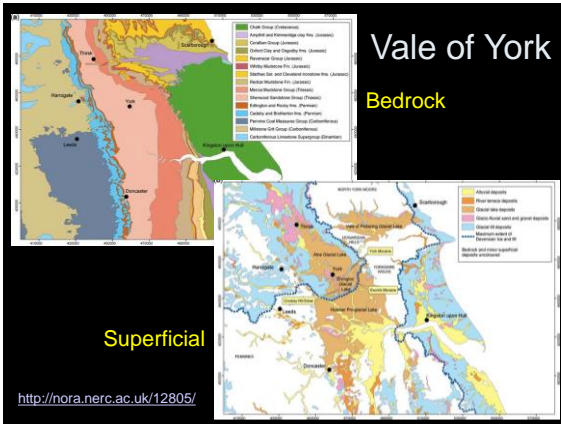
Recap from last week
Igneous Rocks
Bedrock vs Superficial mapping

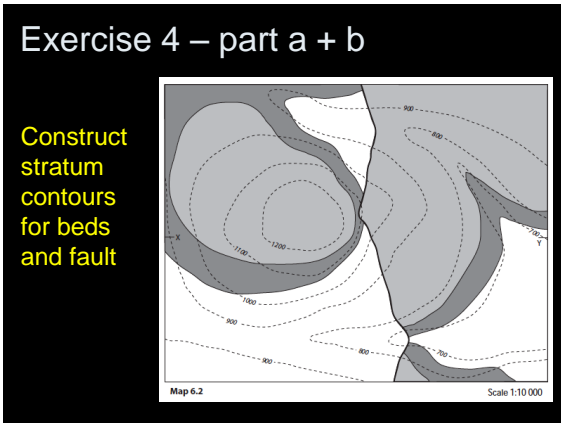
Exercise 4
Metamorphic rocks

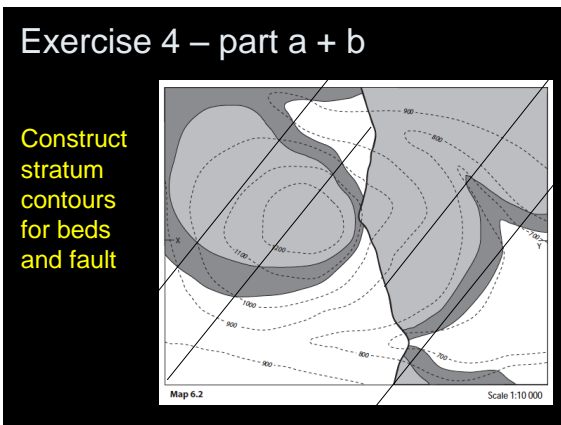
Igneous rocks

Various links
added to
Fossilhub



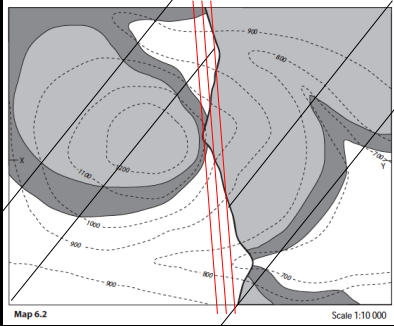






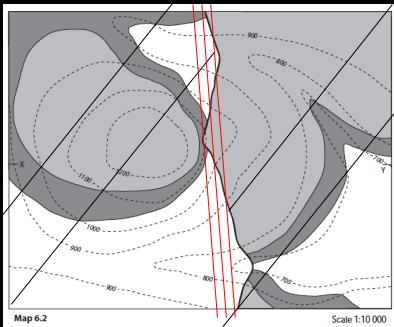
Exercise 4 – part a + b

Construct stratum contours for beds and fault



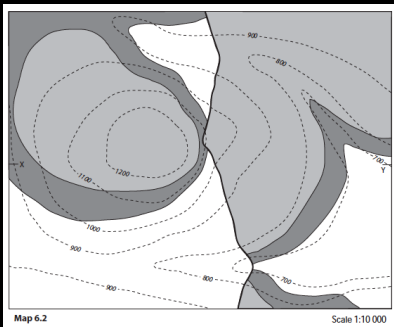
Exercise 4 – part a + b

Use stratum contours to calculate dip of beds and fault



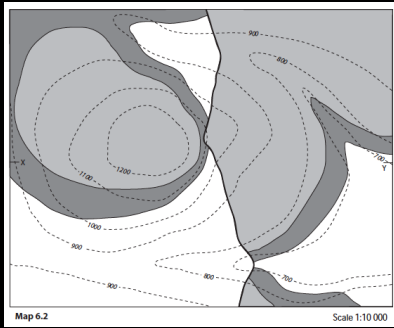
Exercise 4 – part e

What type of fault is it?

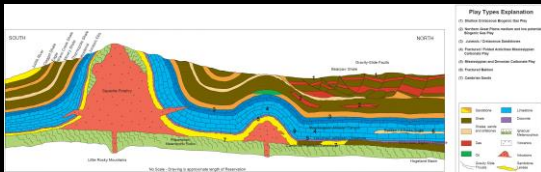


Exercise 4 – part f

Construct a cross-section for the line X-Y



Map cross-sections



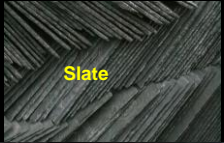
http://serc.carleton.edu/research_education/nativelands/tbelknap/geology.html

How and why?
What orientation?
What vertical scale?

Metamorphic rocks



Metamorphic rocks



Slate



Schist

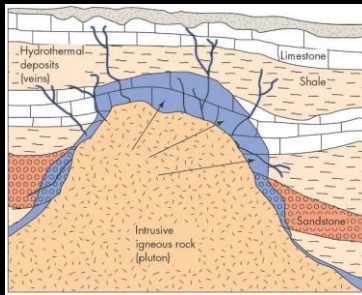


Marble



Gneiss

Thermal (contact) metamorphism



Igneous intrusion bakes surrounding rocks

Metamorphism by pressure

SLATE



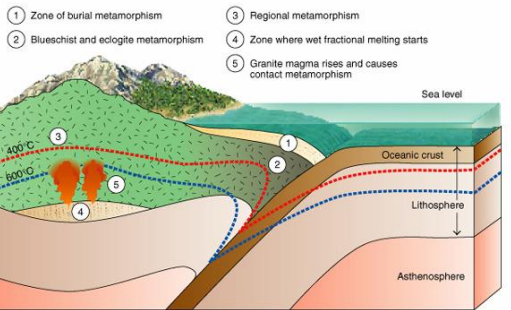
Original sedimentary bedding

Metamorphism by pressure

SLATE



Regional metamorphism



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Types of foliation

Sedimentary (primary) foliation

Bedding

Metamorphic (secondary) foliation

Cleavage & schistosity

Gneissose foliation



Bedding-cleavage relationships

Enable deduction of large-scale, regional structures

Silurian rocks in Esgaireira, nr Llanwrin, Powys



Metamorphic mapping

- inclined cleavage, dip in degrees
- horizontal cleavage
- vertical cleavage

Cleavage, schistosity, foliation

- metamorphic aureole

Rock types, minerals, aureoles

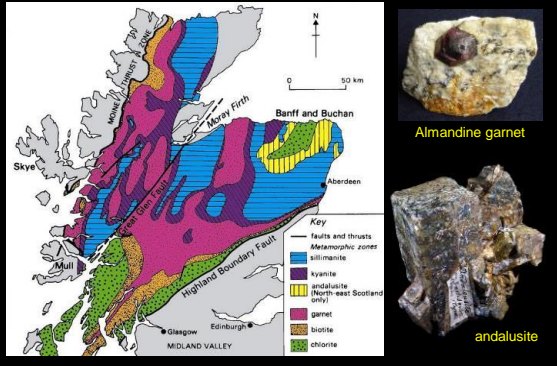
Builth Wells / Brecon

Low-grade pressure metamorphism of sedimentary rocks

Lots of cleavage measurements

- inclined cleavage, dip in degrees
- horizontal cleavage
- vertical cleavage

Barrow / Buchan Zones



Tay-Forth

Metamorphic facies – mineral assemblages formed under similar temperature/pressure

Garnet, biotite, staurolite, kyanite, sillimanite

Isograd – zone of equal metamorphic grade

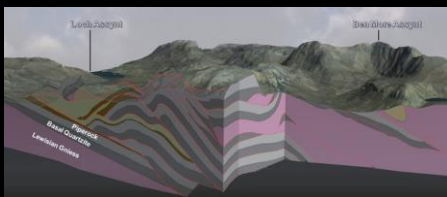
Assynt

Gneissose foliation

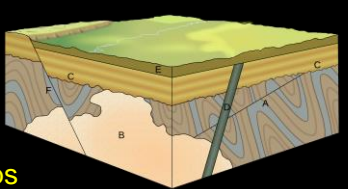
Schistose foliation

Foliation related to shearing/faulting

Thermal aureole



Final Week!



Geological maps
in 4D

Other types of
geological map
Geological time



Resources (www.fossilhub.org)

Cleavage vergence (Leeds):

<http://www.see.leeds.ac.uk/structure/folds/describing/cleavage/cleaverge.htm>

Title:

Link

Title:

Link
