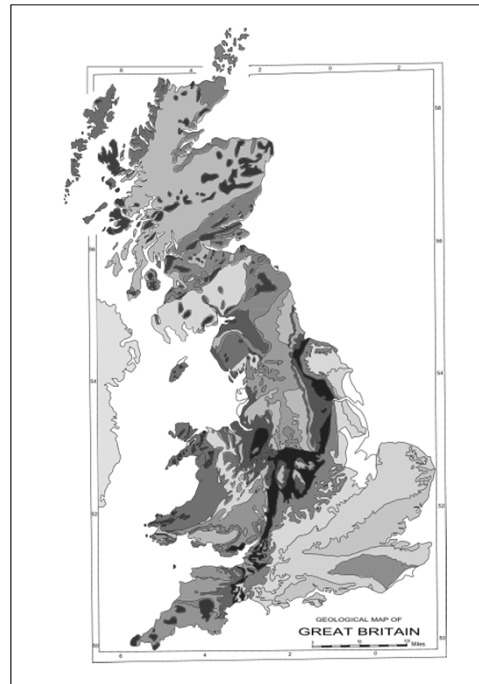


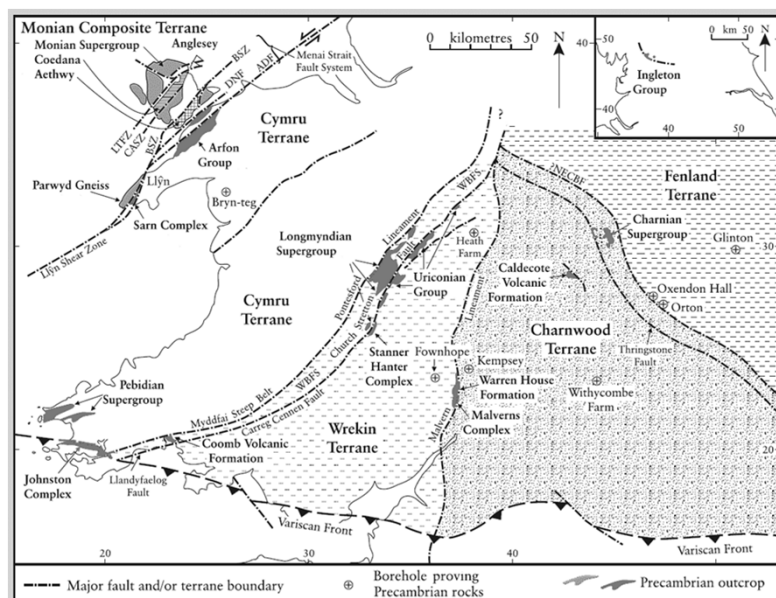
A Geological History of Britain

WEEK 4

Old Lost Sea: The Iapetus Ocean
The Cambrian and Ordovician of Britain



Last week



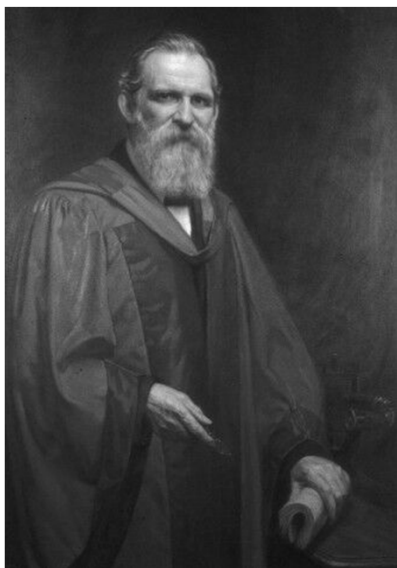
This week



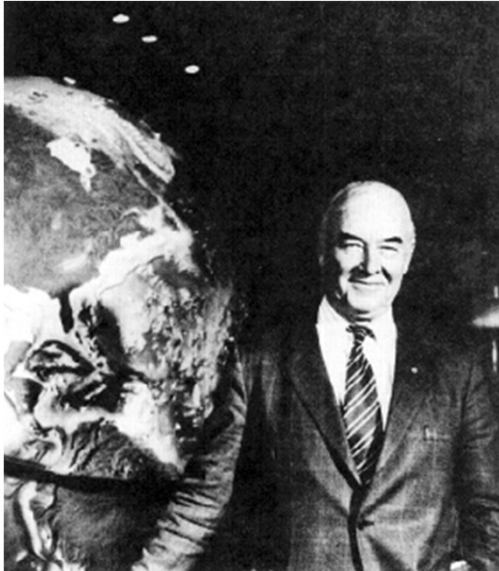
v



Followed by



Not to mention

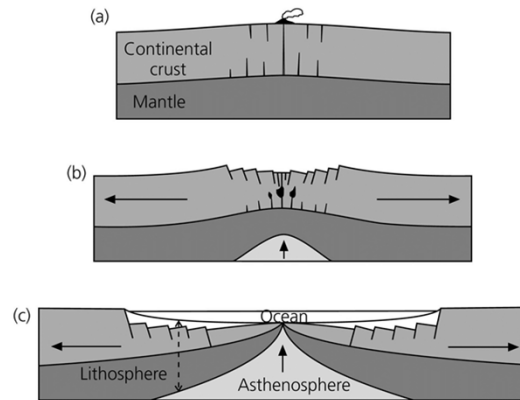


What is a Wilson Cycle?



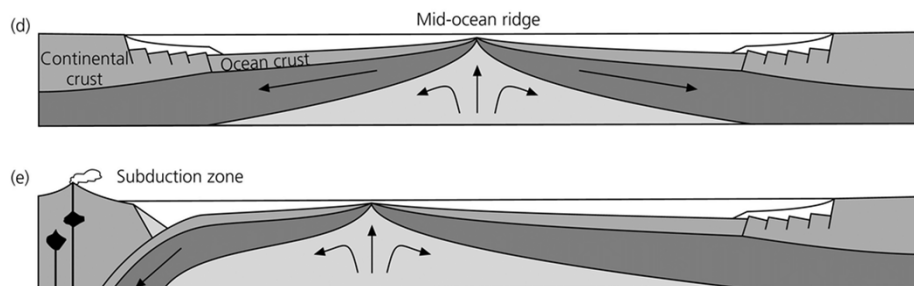
The cyclical plate tectonic system by which oceans are opened and closed

Start of a Wilson Cycle



Hot spot → rifting beneath continent

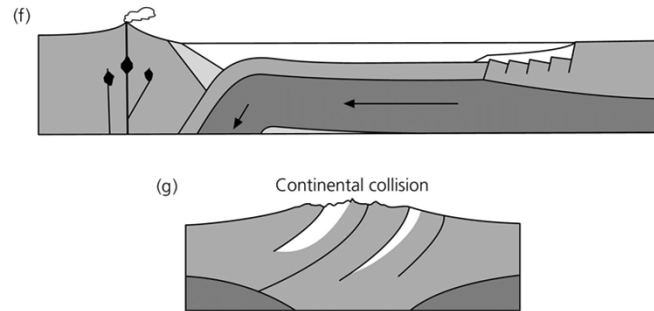
Middle of a Wilson Cycle



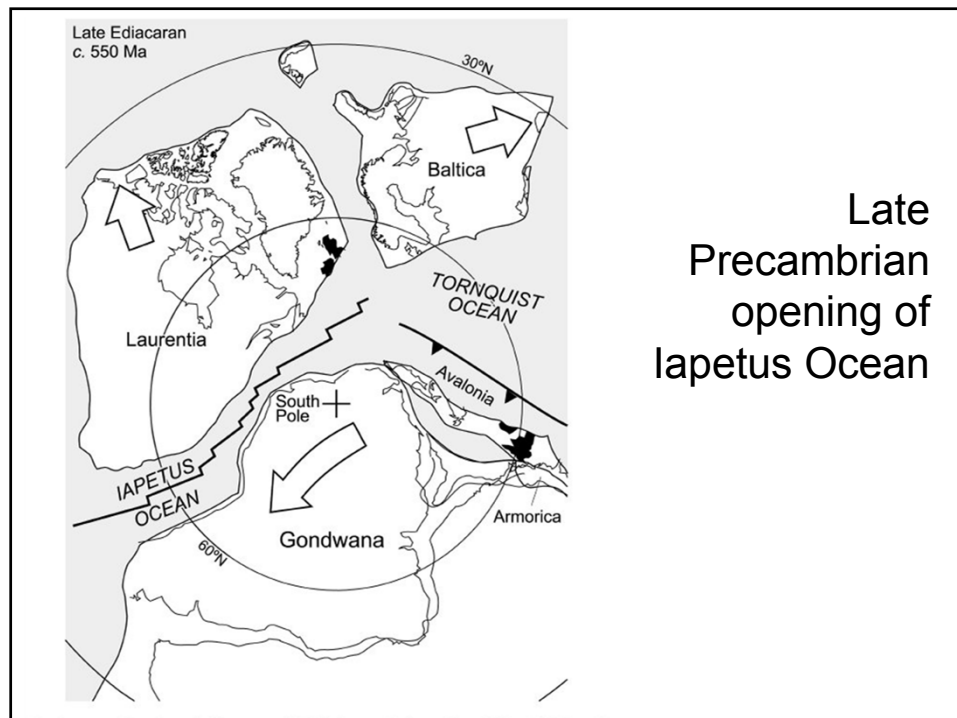
ACTIVE margin

PASSIVE margin

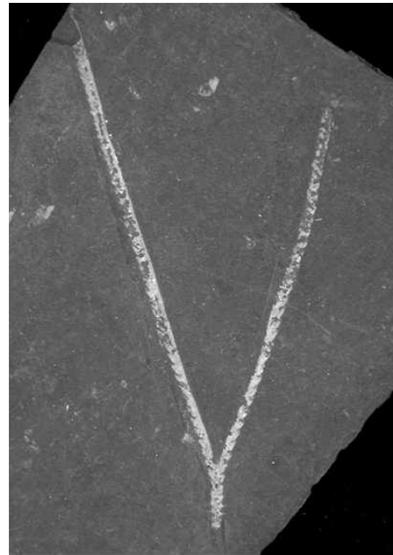
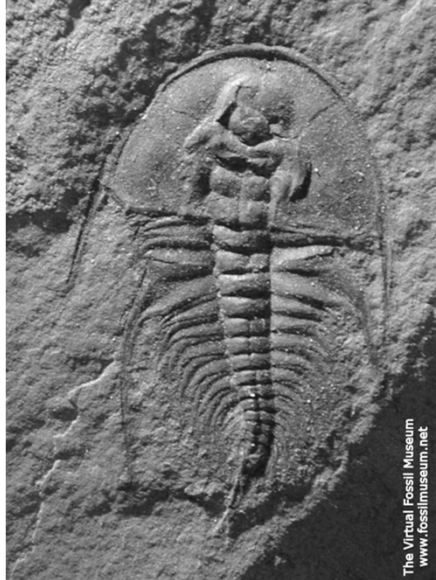
End of a Wilson Cycle



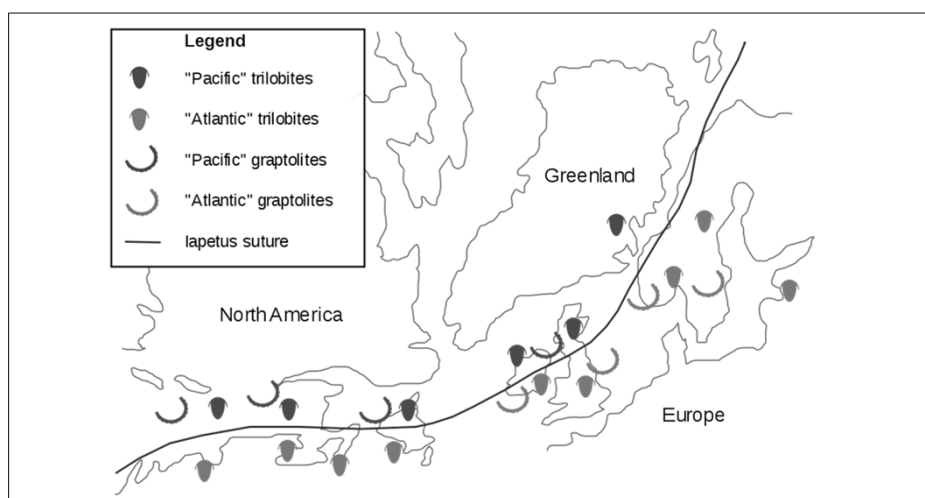
Subduction of ocean → continental collision



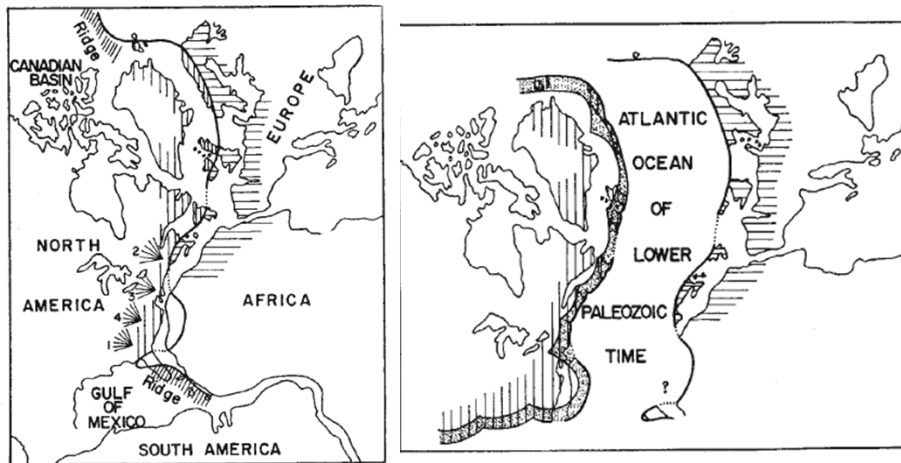
Walcott's Cambrian critters



Walcott's Cambrian critters



Wilson's wonderings



Did the Atlantic close then re-open?

Cocks & Fortey (1982)

Fossils = more precise timings

Cambrian: very different

Laurentia & Avalonia far apart

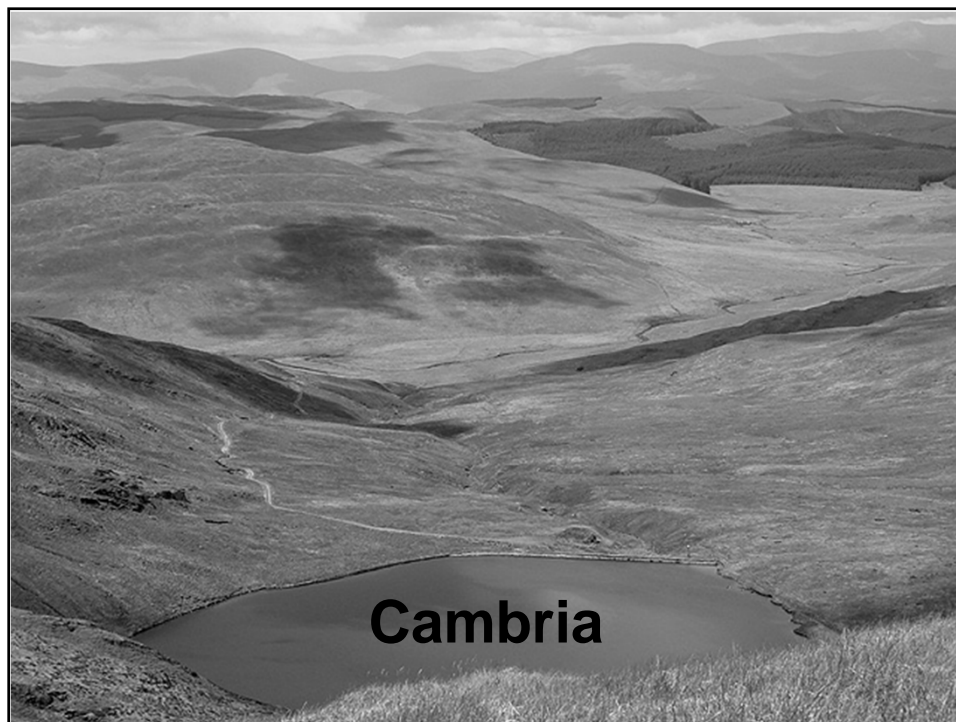
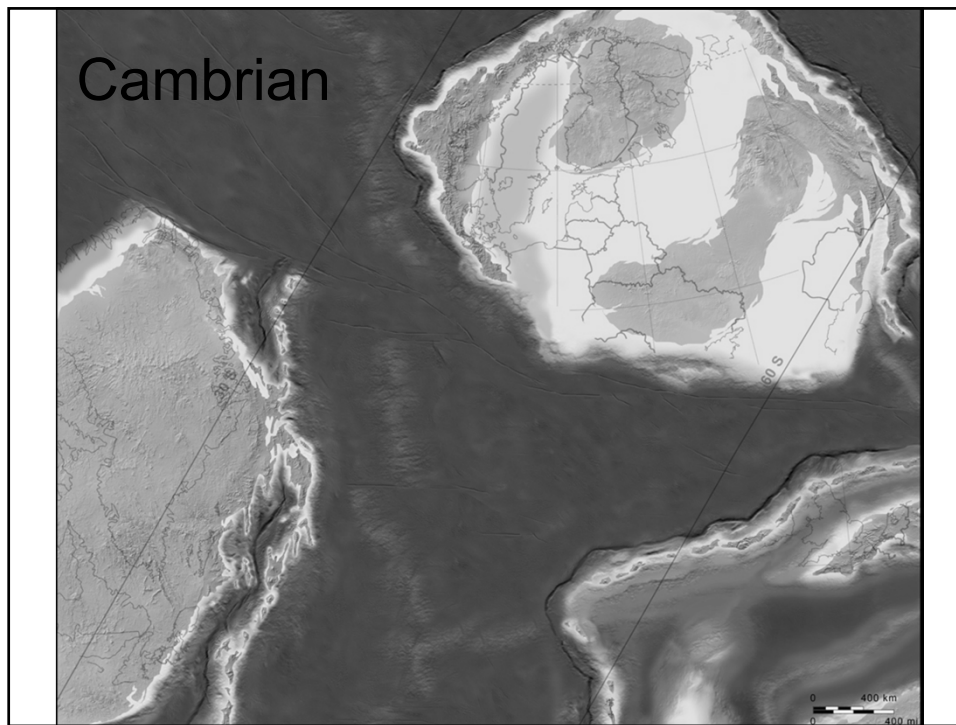
Ordovician = getting similar

L & A converging

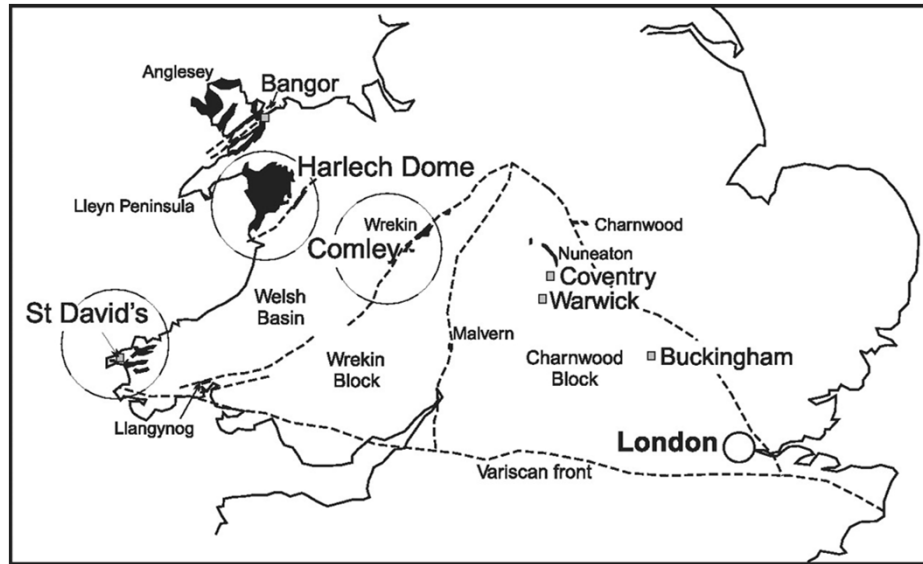
Silurian = very similar

L & A converged



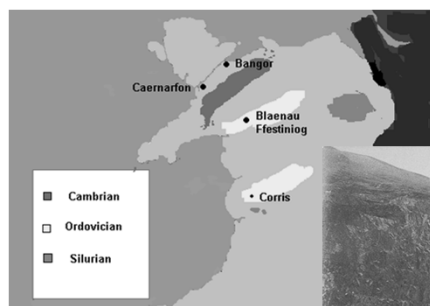


Cambrian outcrops



Harvey et al. (2011)

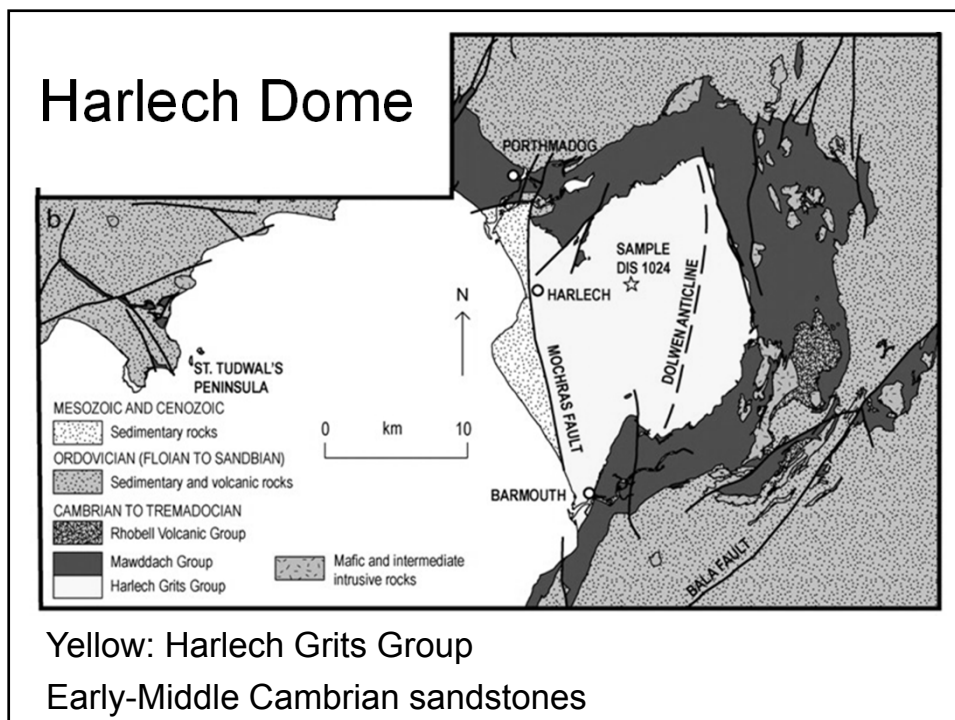
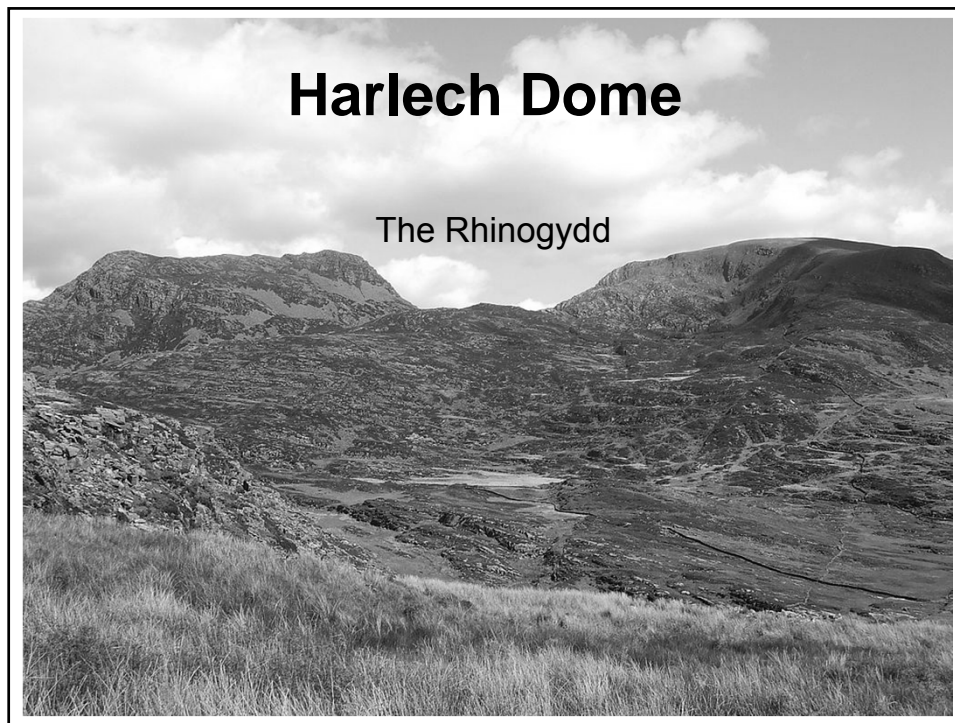
Llanberis Slate Formation



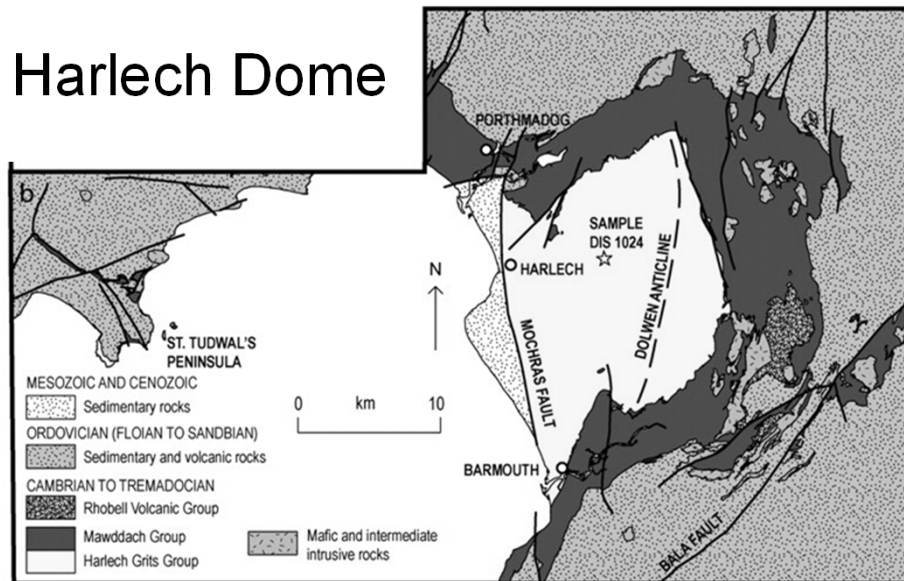
Trilobites @ top
= Early Cambrian

Penrhyn Quarry,
Bethesda





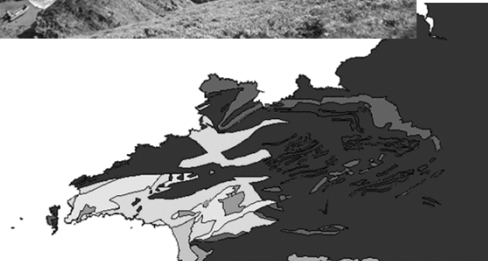
Harlech Dome



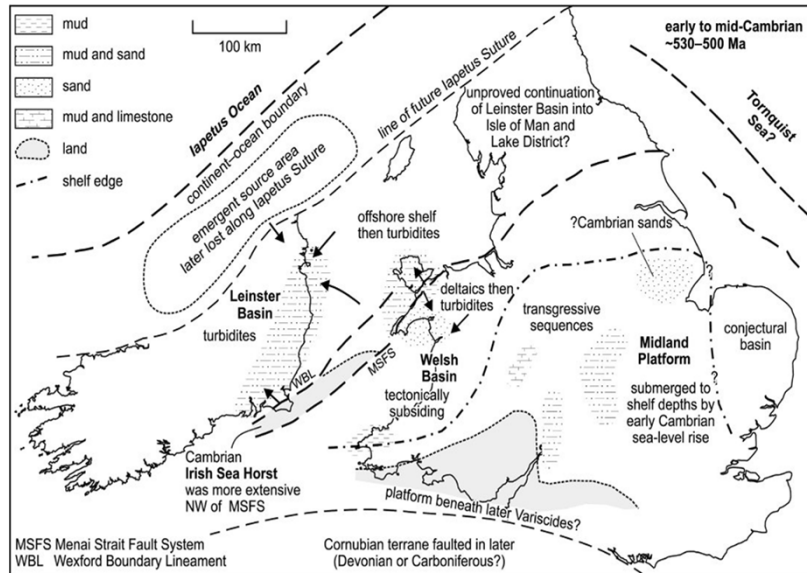
Blue: Mawddach Group

Middle-Late Cambrian mudstones

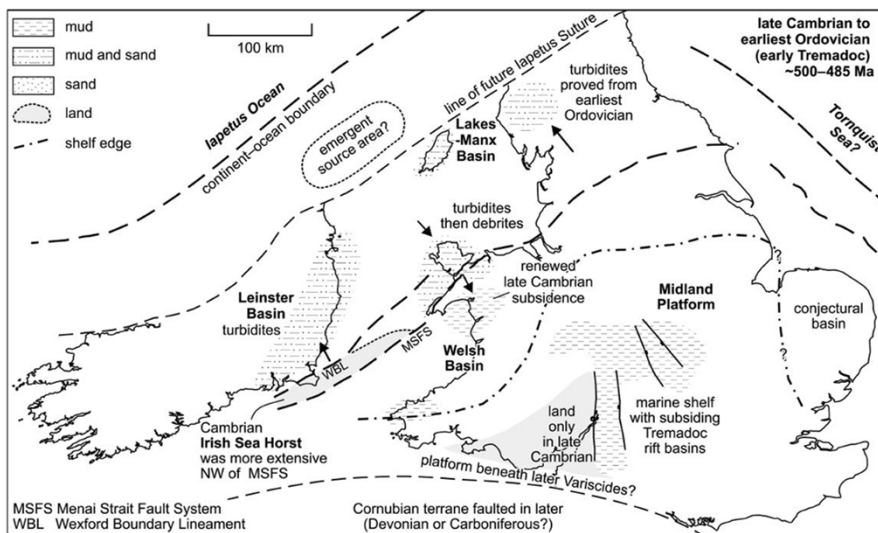
Northern Pembrokeshire



Early-Mid Cambrian



Cambro-Ordovician

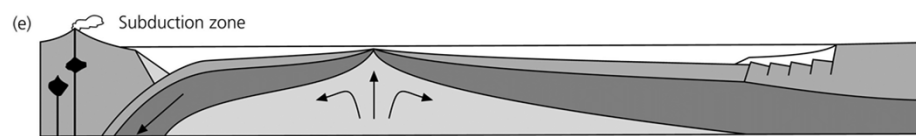
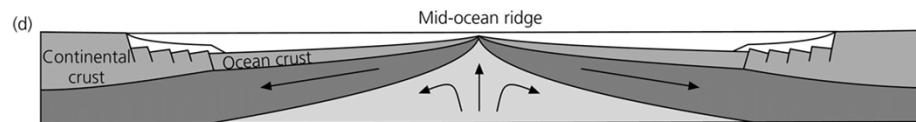


Middle of a Wilson Cycle

PASSIVE margin
Avalonia

Early Cambrian

PASSIVE margin
Laurentia



ACTIVE margin
Avalonia

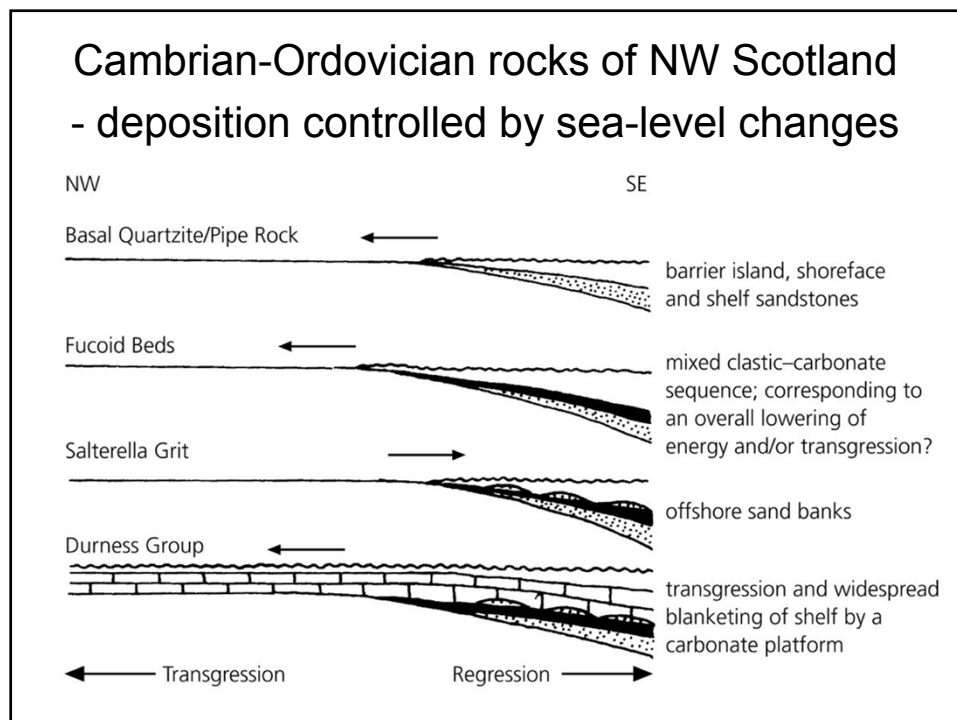
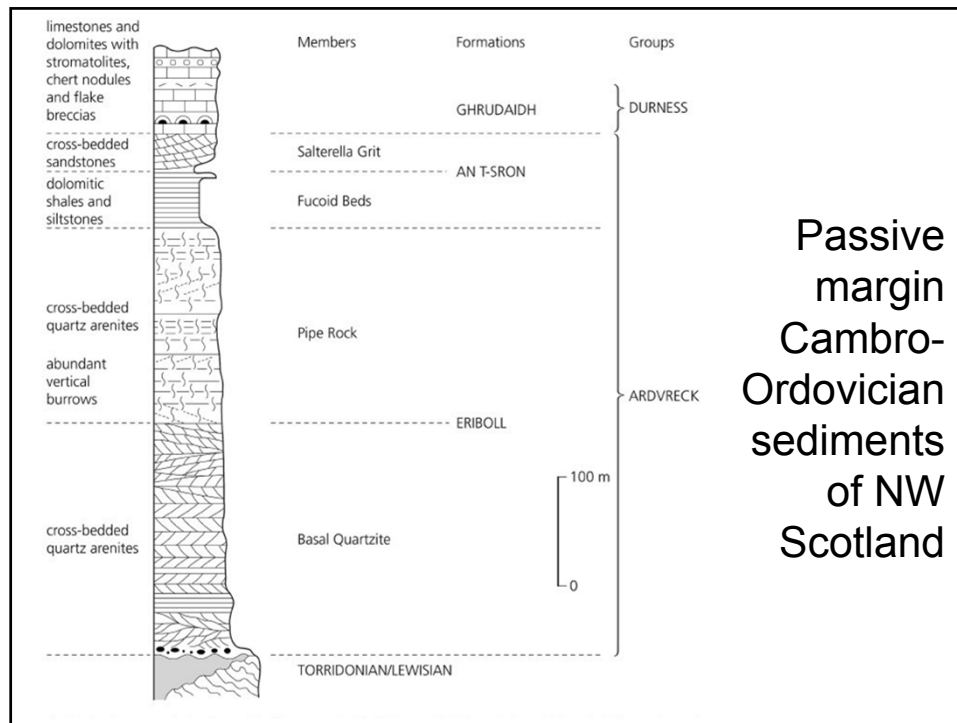
Late Cambrian

PASSIVE margin
Laurentia

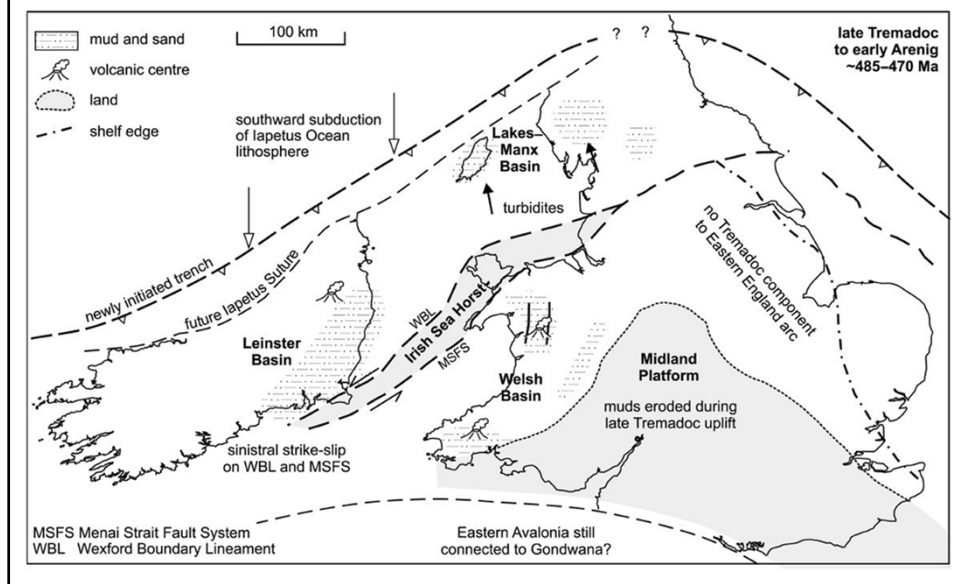
Hebridean Terrane



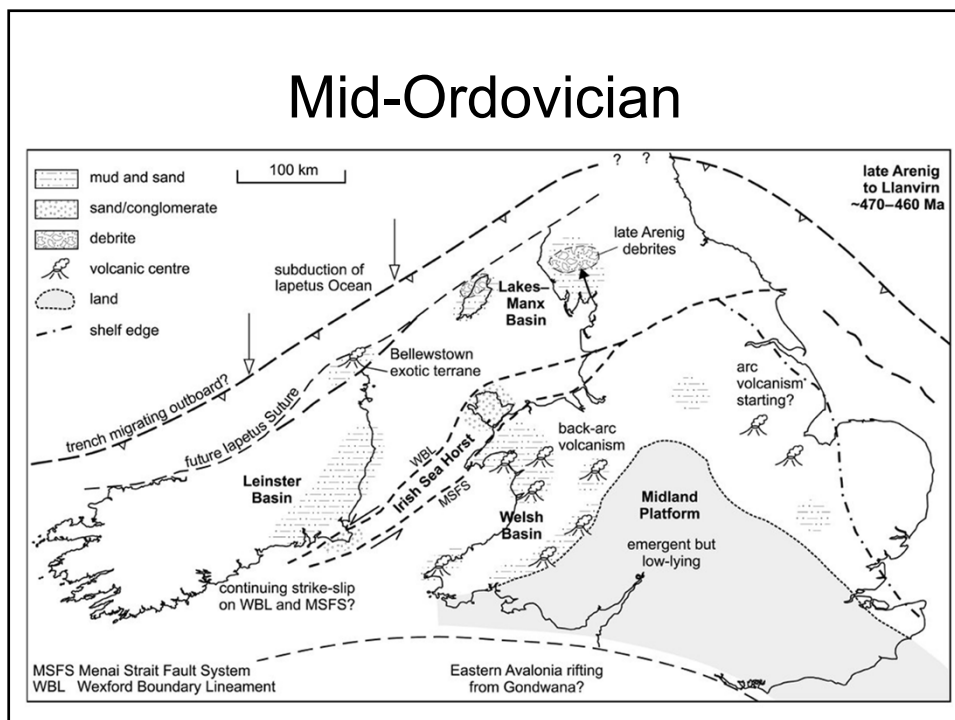
Cambrian-Ordovician rocks of NW Scotland



Early Ordovician



Mid-Ordovician

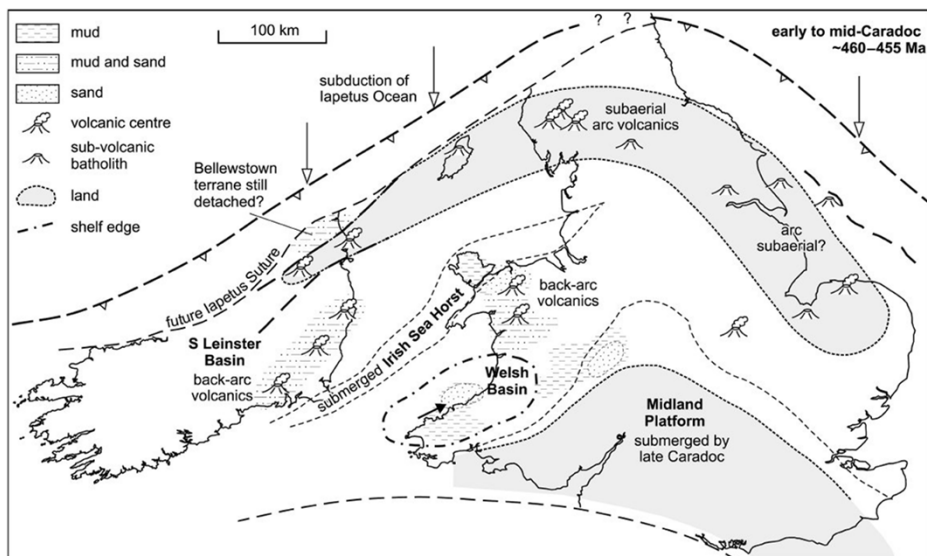


Fishguard Volcanic Group



jncc.defra.gov.uk/pdf/gcrdb/GCRsiteaccount282.pdf

Late Ordovician



Borrowdale Volcanic Group



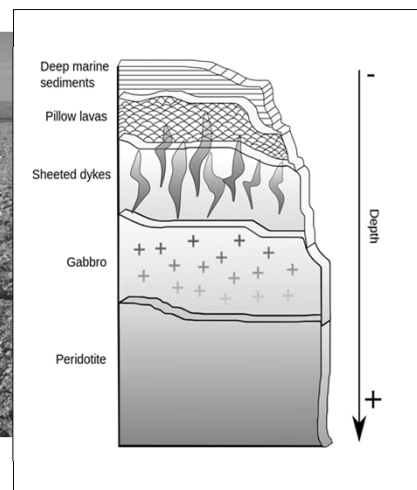
© BGS

Fiamme textures in ignimbrite, Great Paddy Crag, Buckbarrow

Ophiolites in Scotland



Keen of Hamar, Shetland



Also Ballantrae Complex & Highland Border Complex

Old Lost Sea in Newfoundland



Gros Morne – UNESCO World Heritage site

Next week

Building Britain: The Closure of the
Iapetus Ocean

Q. What was *Cooksonia*?

Links

Palaeogeographical maps of Europe:

<http://cpgeosystems.com/euromaps.html>

The Wilson Cycle:

<http://csmres.jmu.edu/geollab/fichter/Wilson/Wilson.html>

Simplified geology of Pembrokeshire:

<http://www.pembrokeshire-online.co.uk/geology2.htm>

Newfoundland's Old Lost Sea:

<http://theindependent.ca/2011/06/14/gros-mornes-old-lost-sea/>

Geo-nealogy

