

Permian, Triassic and Jurassic: deserts, rivers and shallow seas, introduction, Northern England

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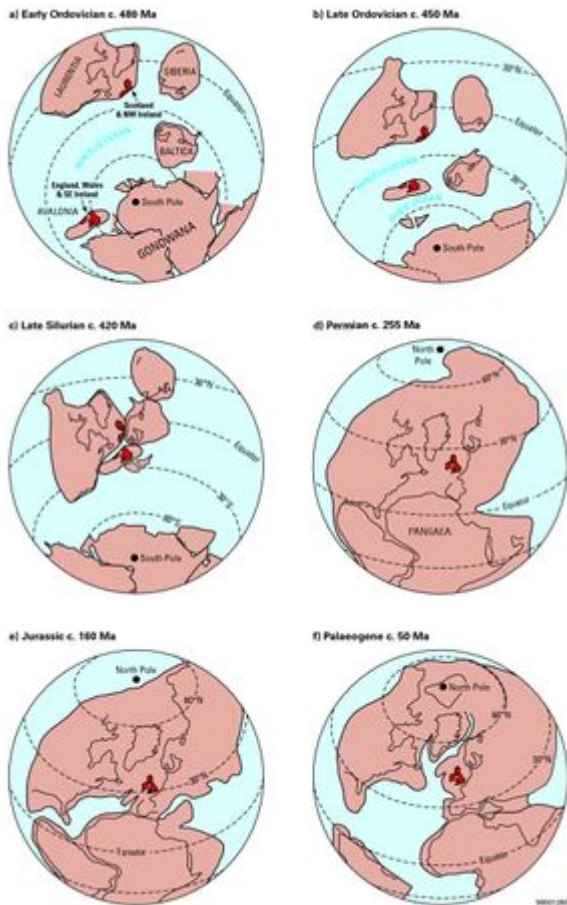
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Introduction



Series of palaeogeographical reconstructions showing continental movements from the Ordovician to the Palaeogene (after Woodcock and Strachan, 2000). P916033.

The major continental collision that drove the Variscan Orogeny during late Carboniferous and early Permian times created the Pangaeian supercontinent. Within this landmass, Britain lay in a tropical latitude, approximately 10° north of the equator, and drifted slowly northwards to subtropical latitudes of approximately 30° north by early Triassic times (P916033)d. The depositional environments included widespread deserts, tropical and evaporitic seas, fluvial outwash plains, ephemeral lakes and mudflats.

Erosion of the folded and uplifted Carboniferous strata had generated mature, gently rolling plains across which spread an early Permian desert. By late Permian times, continental extension had opened seaways, flooding low ground across large inland drainage basins. On the western edge of northern England, the Bakevella Sea developed, covering approximately the area of the present-day Irish Sea and its marginal areas. To the east, the Zechstein Sea covered approximately the area of the present-day North Sea and extended as far to the east as Lithuania and Poland. Early Triassic times saw continental deposition restored over northern England. Large river systems transported sands from the south and aeolian dune fields developed. Further marine transgression in mid to late Triassic times, the result of expansion of the Tethys Ocean from southern Europe, then brought coastal conditions to northern England; open marine conditions followed in Jurassic times.

Today, Permian strata are preserved in northern England to the north-west of the Pennines, around Carlisle, in the Vale of Eden and in west Cumbria, and to the east of the Pennines, over much of County Durham. Permian strata also occur at the north-east end of the Isle of Man but are there

entirely obscured by thick superficial deposits. Triassic strata have a similar though more restricted onshore outcrop. In northern England, Jurassic strata are only known from the vicinity of Carlisle; those that succeed the Triassic succession near Middlesbrough fall into another regional district — that of East Yorkshire and Lincolnshire. It is probable that Permian and Triassic rocks once partially covered the Carboniferous strata of the north Pennines, northern Cumbria and Northumberland, and that Jurassic rocks also had a much wider original distribution.

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