

Seismic profiles in the Fundy-Chignecto and Newark basins reveal expansion of the respective TS units toward the basin-bounding faults (Figure 6). In both basins, high amplitude, laterally continuous reflections are clearly visible in the respective TS III units. Note that similar, if not better defined reflections, are seen in the underlying TS II strata that are distal to the fluvial-dominated sediments observed in outcrop. In the Newark Basin, the Cabot KBI #1 well penetrated lacustrine sediments (and some deep water facies) at the top of the Stockton Formation (Olsen *et al.* 1996; Olsen 2010).

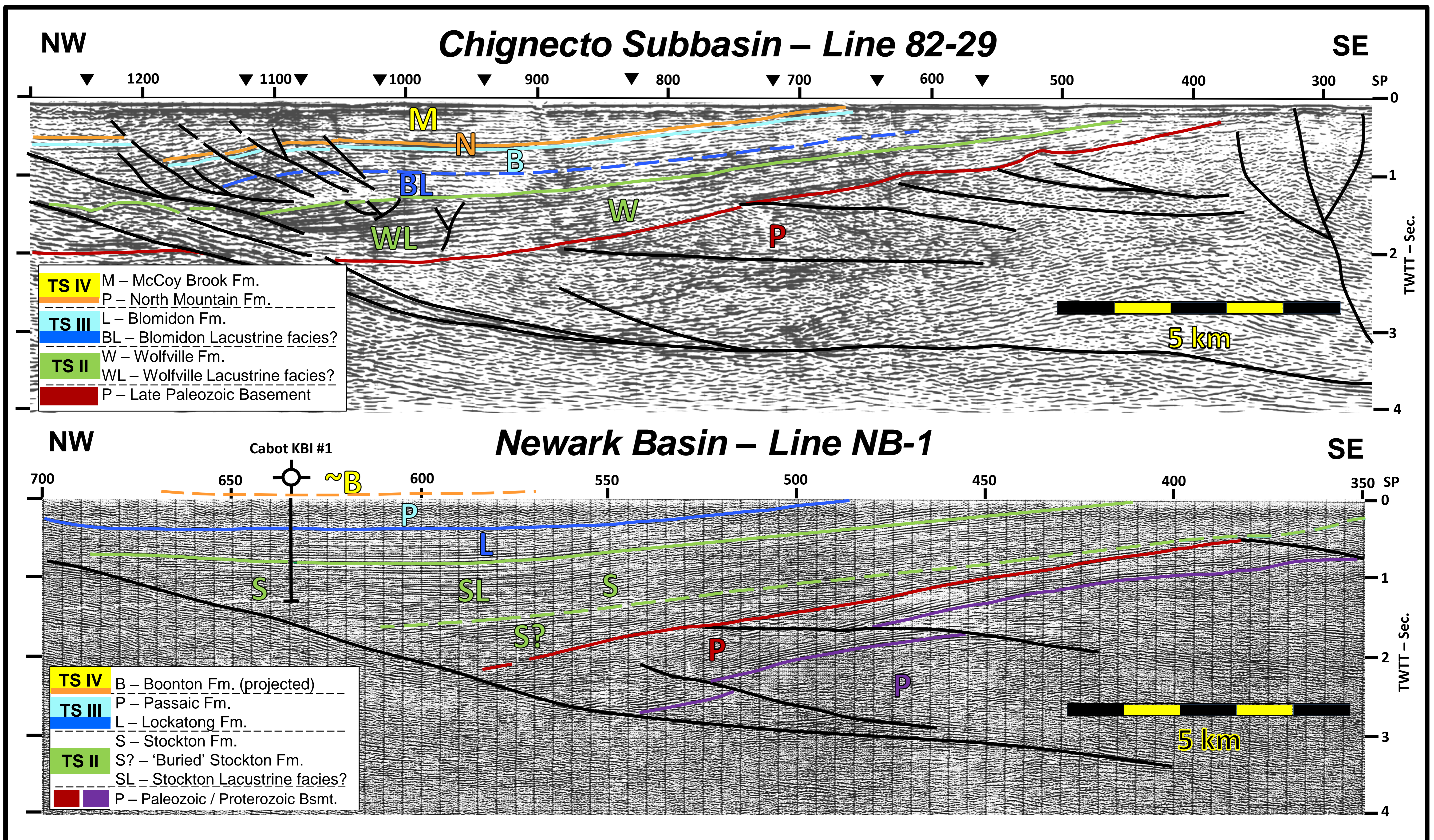


Figure 6: Seismic profiles across the Chignecto Subbasin and Newark Basin, with their locations shown in Figures 4 and 5 (red segments of NB-1 not shown). Correlative TS formations are coloured the same for each basin and in all related figures. The red horizon is the rift-onset unconformity. For simplification, the Boonton Formation includes other related Early Jurassic formations and tholeiitic volcanic units. Vertical and horizontal scales are identical. Interpretations for the NB line are slightly modified after Withjack *et al.* 2012.

During the Carnian, climate-sensitive lacustrine facies (Olsen & Kent 1996) and faunal distributions (Whiteside *et al.* 2011) infer a narrow equatorial humid belt about 6° wide centred on the paleoequator (Figure 7; green dashed lines). Geomagnetic modelling by Kent and Tauxe (2005) however suggest that this zone was broader and more comparable to today's humid belt. Increasingly arid climatic conditions dominated north of this region (5-20°) (Figures 7 & 8). During the Late Triassic, lacustrine sediments of the Carnian-Norian Lockatong Formation ('L') were deposited in semi-tropical conditions. Similar successions are proposed for the older (Anisian-Carnian) Wolfville Formation ('W') when the Fundy-Chignecto Basin occupied the same 6°-8°N paleolatitudinal position (i.e. reversing the ~10° northward drift over the Late Triassic). The Newark Basin would shift southwards into the equatorial humid zone and Stockton lacustrine successions presumably would be similar to Richmond-Newark and/or Richmond cycles defined by Olsen & Kent (2000) (see Figure 3).

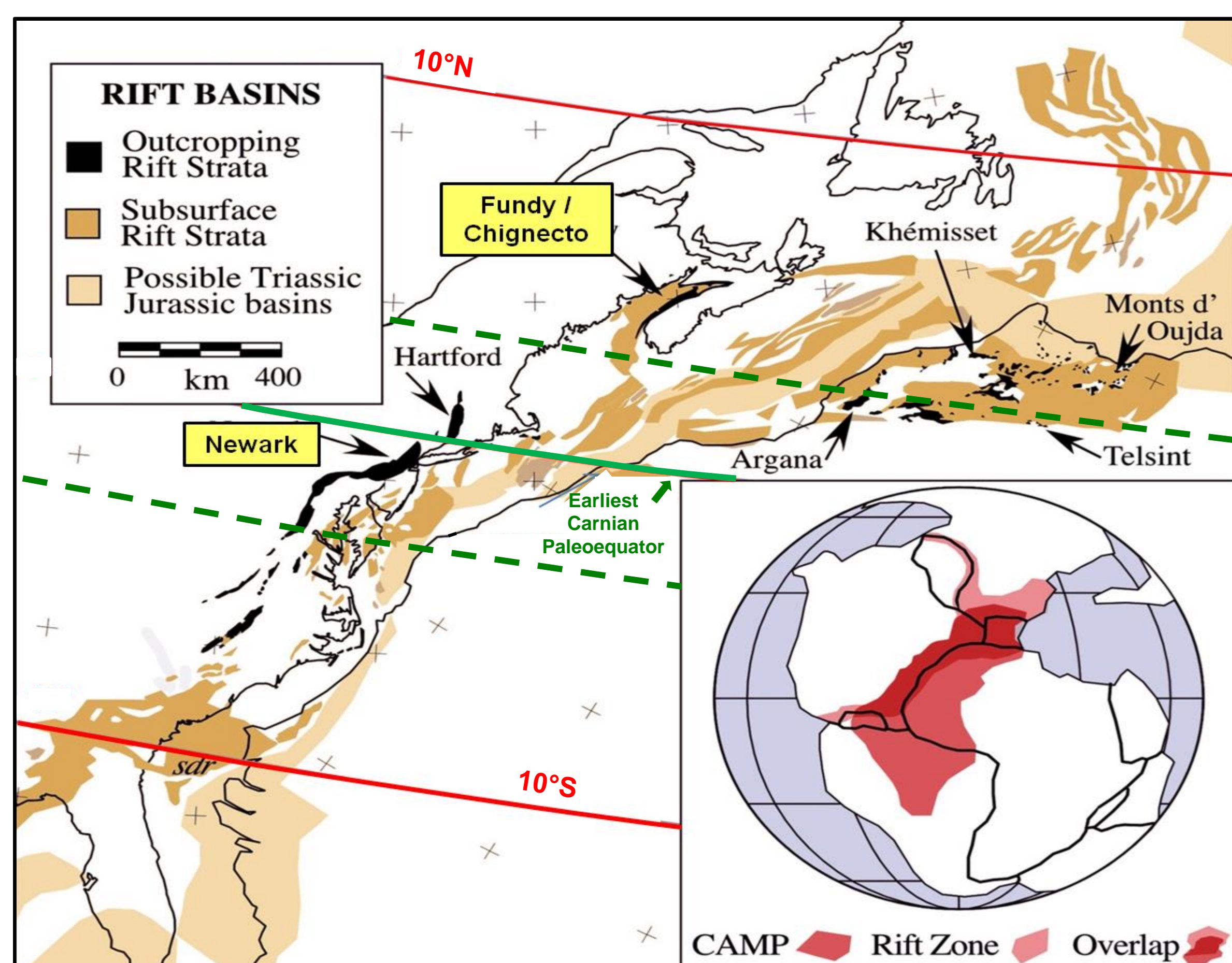


Figure 7: A reconstruction of the earliest Carnian paleoequator and 10° north and south latitude lines through reversal of the approximate 10° northward drift of Pangea from Middle Triassic to earliest Jurassic (pre-breakup / ~Sinemurian). Compare with Figure 1. Modified after Olsen & Et-Touhami (2008).

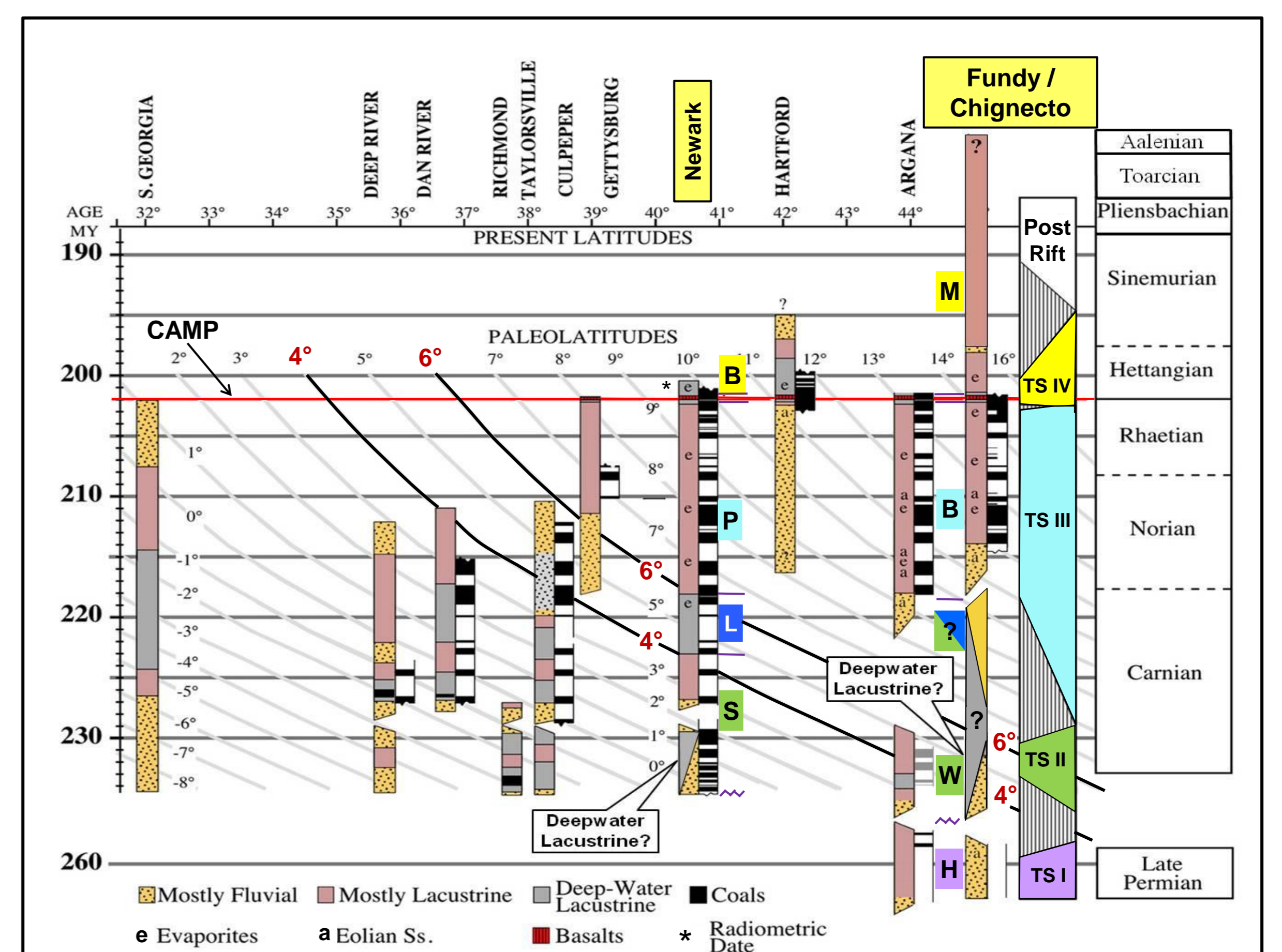


Figure 8: Nomogram of time and geography for the Newark Supergroup, eastern North America illustrating the response of sedimentation over climatic zones through time and northward plate movement (Olsen *et al.* 2010). Interpreted lacustrine successions for the fluvial-dominated Stockton and Wolfville formations are shown in grey. Note that lacustrine strata are also recognized in the equivalent TS-II succession of the proximal Argana Basin of Morocco. Formation abbreviations and colours are keyed to Figures 4, 5 & 6. Modified after Olsen *et al.* (2010).