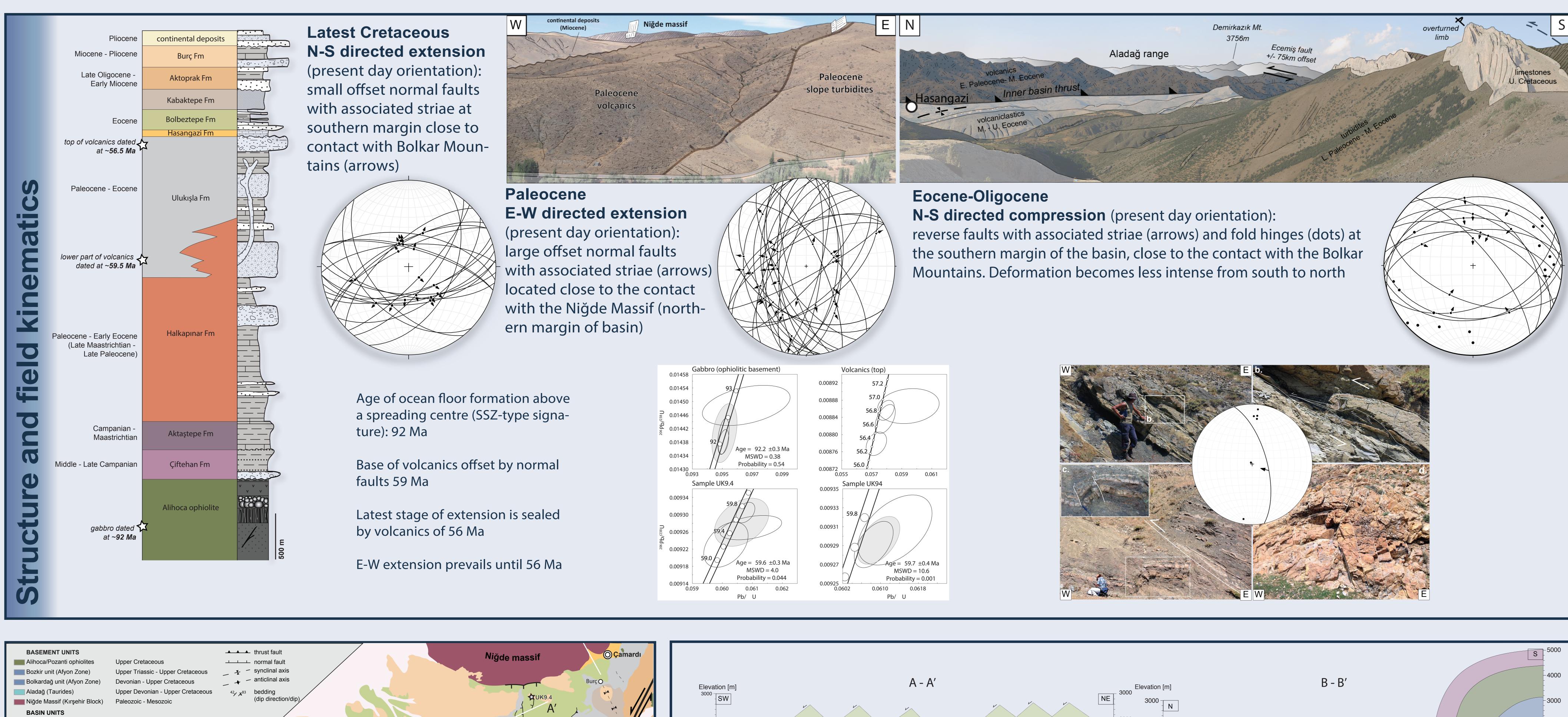
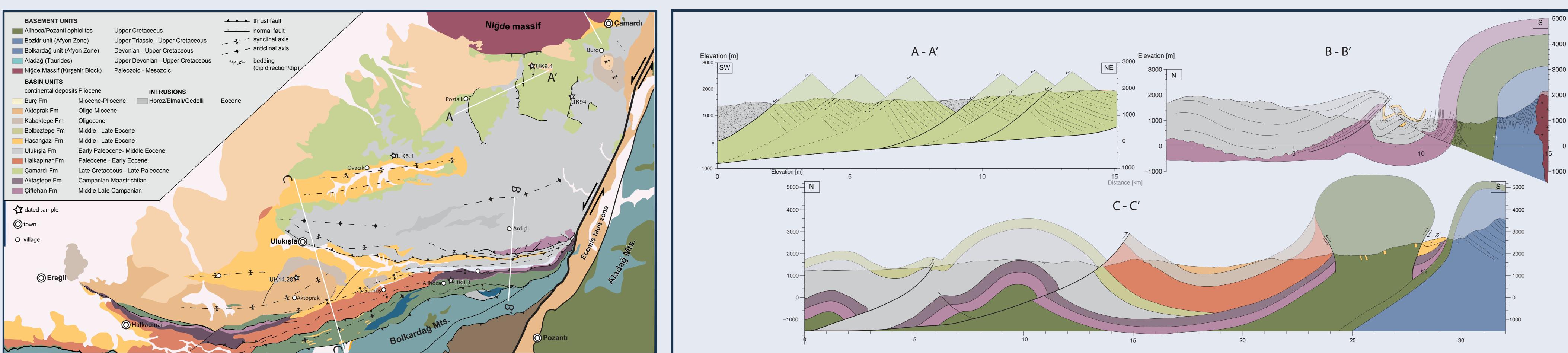
Subduction and accretion of crustal fragments during the closure of the Neotethys since the Mesozoic formed the Anatolian fold-and-thrust belt. Sedimentary basins overlying key locations between accreted domains of different metamorphic grade may help to quantitatively kinematically restore subduction evolution, and to identify timing, directions and amounts of post-accretionary extension, shortening and strike-slip faulting.

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The Ulukışla basin straddles and is sandwiched between the HT-LP Kırşehir Block (KB) to its north, and the — HP-LT Bolkardağ/Afyon zone (BD) to its south and lies on ophiolitic basement. At its southern margin a o series of small-offset faults consistent with an early phase of (late Cretaceous-Paleocene) N-S extension, may have been associated with extensional exhumation of BD. Close to the contact with KB, a series of large-offset listric normal faults compatible with E-W extension offsets sediments and the base of newly dated Paleocene volcanics, showing that E-W extension prevailed until beyond 56 Ma. This is likely genetically linked to regional extension in the KB and overlying basins. Subsequently, N-S directed contraction I to E-W striking folds and thrusts, to back-thrusting of the BD over the basin, probably in Oligocene time, and coeval left lateral strike-slip motion along the Ecemiş fault (EF) at the eastern basin margin.



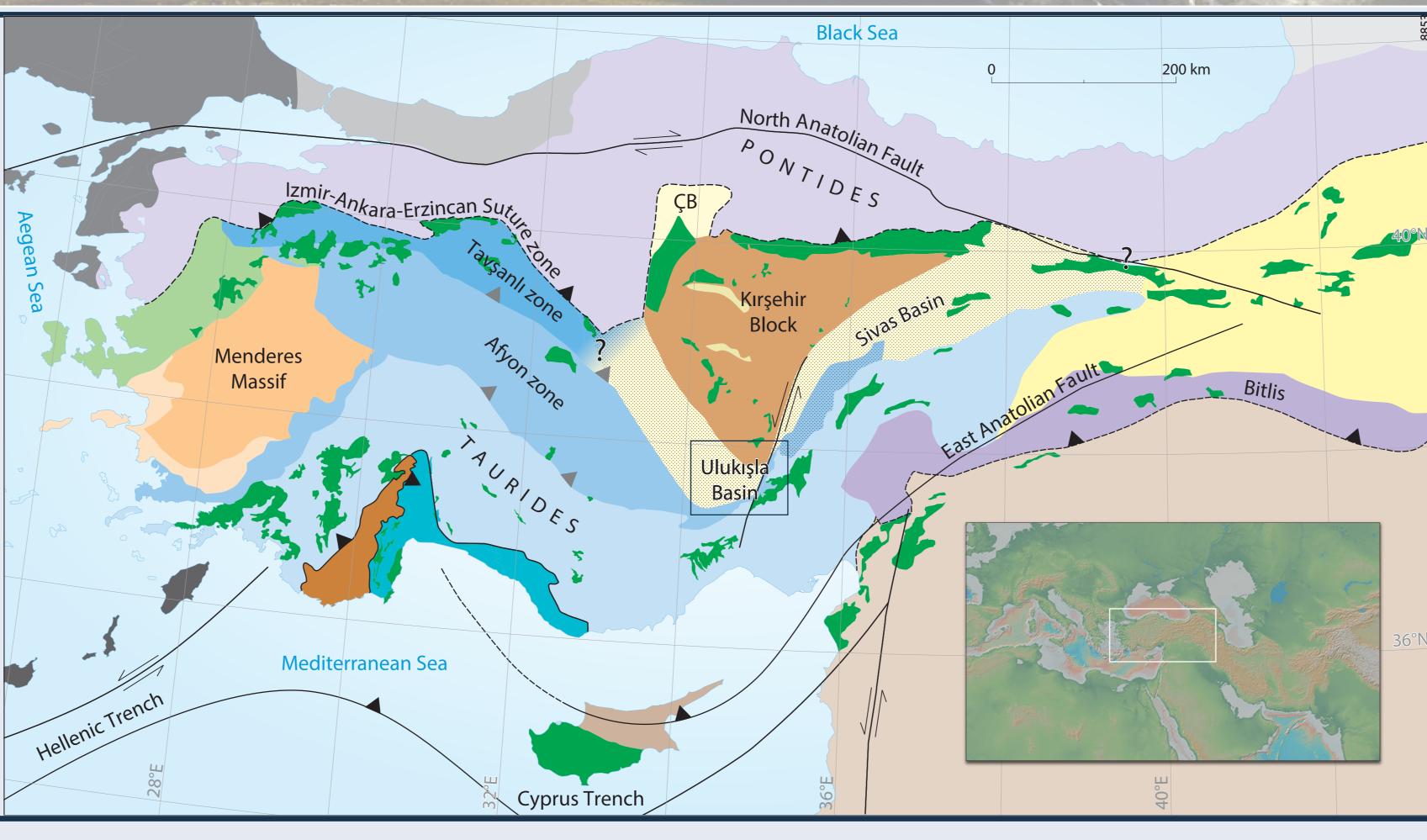


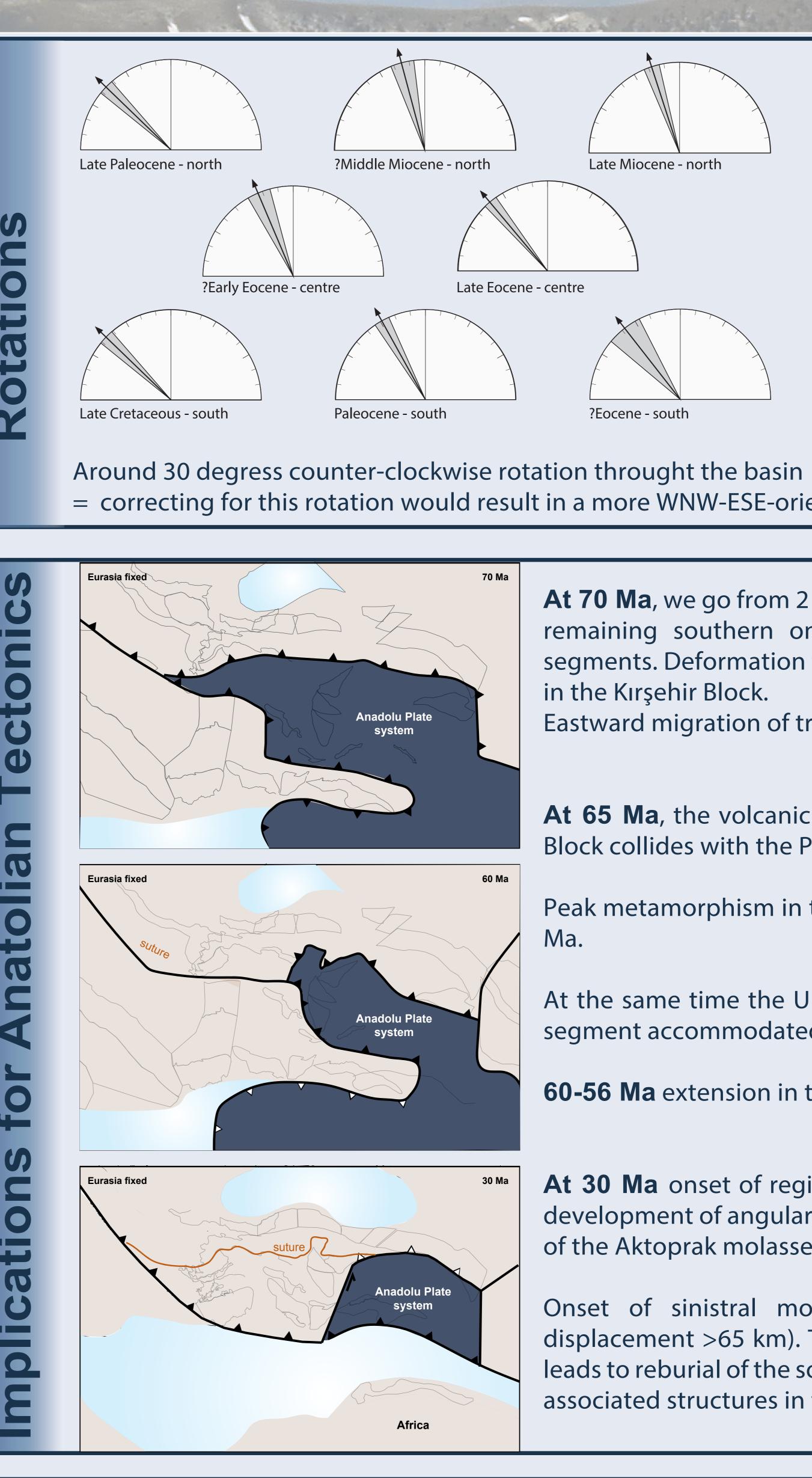
Subduction dynamics of Central and Eastern Anatolia since the Late Cretacous reconstructed from sedimentary basins in the Neotethyan suture zone

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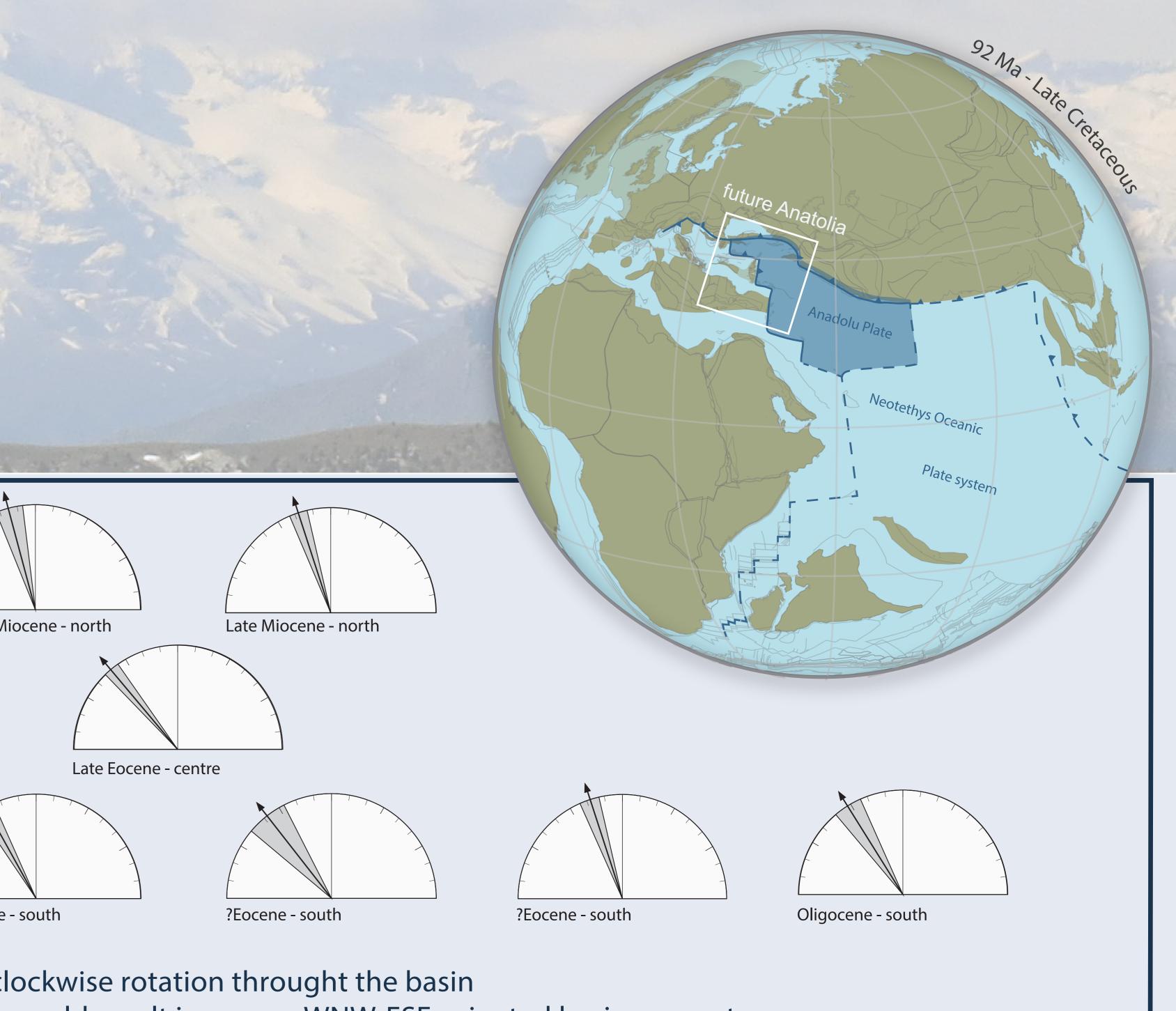




We provide kinematic and geochronological data from a relic forearc region in the Anatolian domain. It overlies an intra-oceanic subduction zone that initiated around 100 Ma. In the forearc sediments we find multidirectional extension that results from N-S and E-W striking segments of an initially kinked subduction zone that resulted from ridge and transform inversion, respectively.

1) Coeval N-S and E-W extension in the latest Cretaceous to Paleocene created accommodation space on the overriding plate. Eurasia 2) Extensional structures were reactivated during N-S directed thrusting and ultimately and M = mantle lead to continental subduction and accretion of material from downgoing to overrid-Stage 1 > 65 Ma (Late Cretaceous) extension ing plate. Stage 2 ~ 50-40 Ma (Eocene) tectonic quiescence 3) The geology of the region is the surface expression of two roughly parallel subduc-Stage 3 tion zones, one below the Pontides, and a $\sim 40-20$ Ma (Eocene-Oligocene) shortening single intra-oceanic subduction within the Stage 4 <20 Ma (Miocene) strike-slip Neotethyan domain to its south. T_c, M 4) We name the oceanic plate system in be-





= correcting for this rotation would result in a more WNW-ESE-oriented basin geometry

At 70 Ma, we go from 2 parallel north-dipping subduction zones to 1. The remaining southern one has a kinked geometry with N-S and E-W segments. Deformation focuses on the central segment, causing rotations in the Kırşehir Block.

Eastward migration of triple junction through time.

At 65 Ma, the volcanic arc in western Anatolia shuts down, the Kırşehir Block collides with the Pontides, leading to oroclinal bending.

Peak metamorphism in the of the passive margin of the Taurides at 70-65

At the same time the Ulukışla fore-arc basin forms north of the Taurides segment accommodated by N-S extension.

60-56 Ma extension in tlinked to the Kırşehir segment.

At 30 Ma onset of regional N-S shortnening, folding and thrusting, and development of angular unconformities in the Ulukışla bbasin. Deposition of the Aktoprak molasse basin.

Onset of sinistral movement along the Ecemiş Fault zone (total displacement >65 km). Transpressional deformation along the fault zone leads to reburial of the southern tip of the Kırşehir block (Niğde massif) and associated structures in the basin.