

Supplementary Figures:

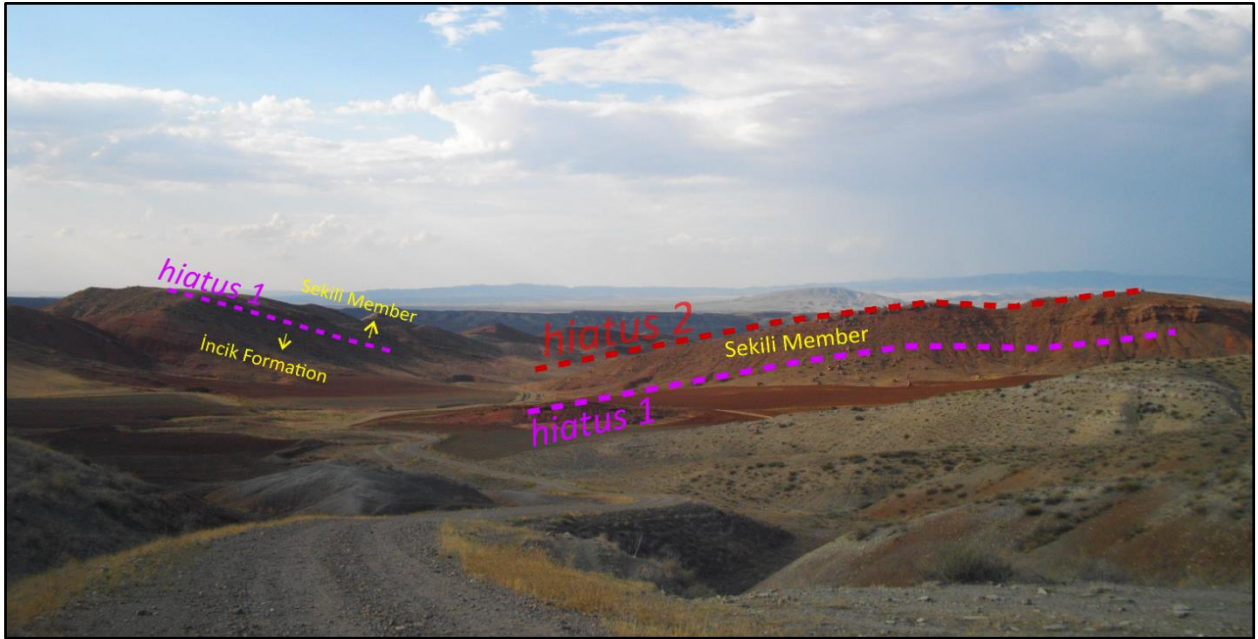


Figure S1. Overall picture of the Büyükteflek section, highlighting the different units and sedimentary hiatuses.

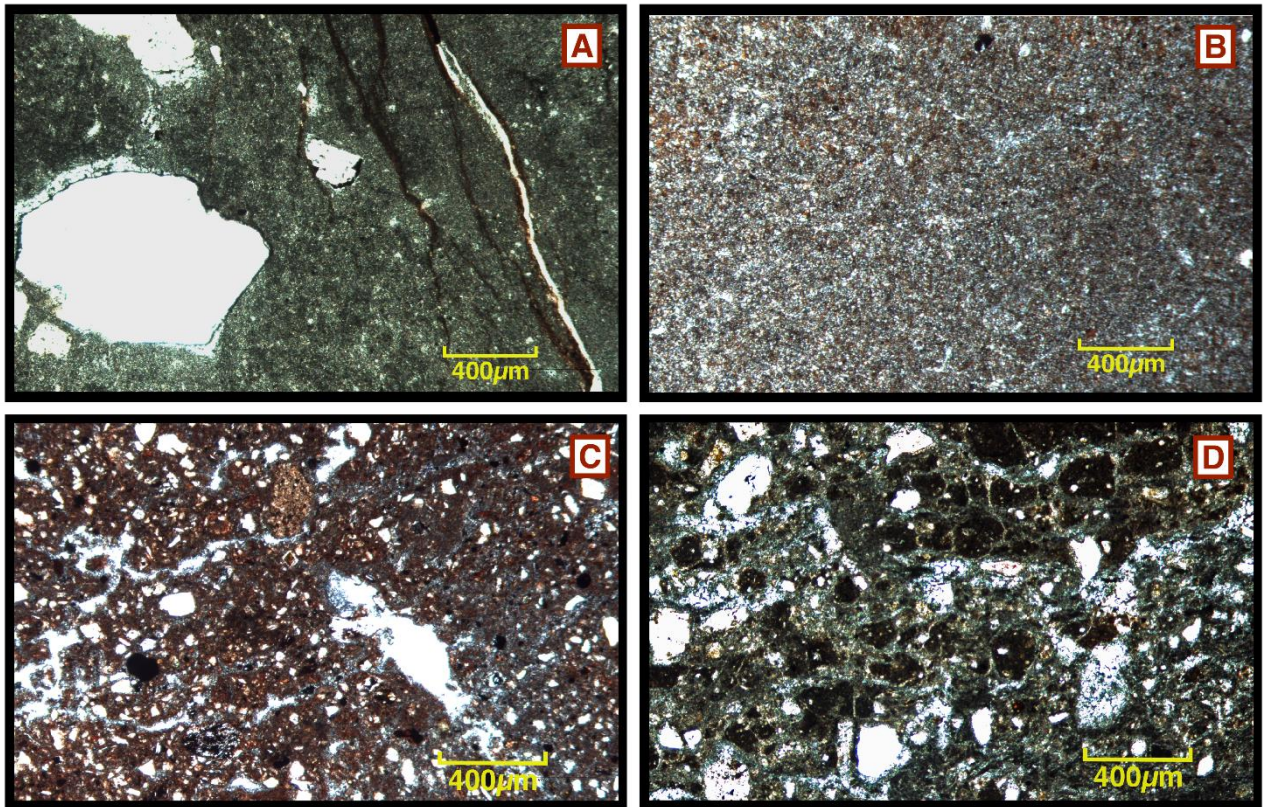


Figure S2. Photomicrographs of representative thin sections from the different carbonated facies found in the section. (A) Sample BTCARB08: diffuse calcite between sandstone grains within a thick caliche bed (facies Smp). Note the vertical veins filled up with silica and clays; (B) Sample BTCARB15: diffuse calcite developed within the matrix of a massive silty bed (facies Fmp); (C) Sample BTCARB19: diffuse dolomite developed within a massive, coarse sandstone (facies Smp); (D) Sample BTCARB13: diffuse calcite between coarse grains and clay aggregates of a conglomeratic bed (facies Gmm).

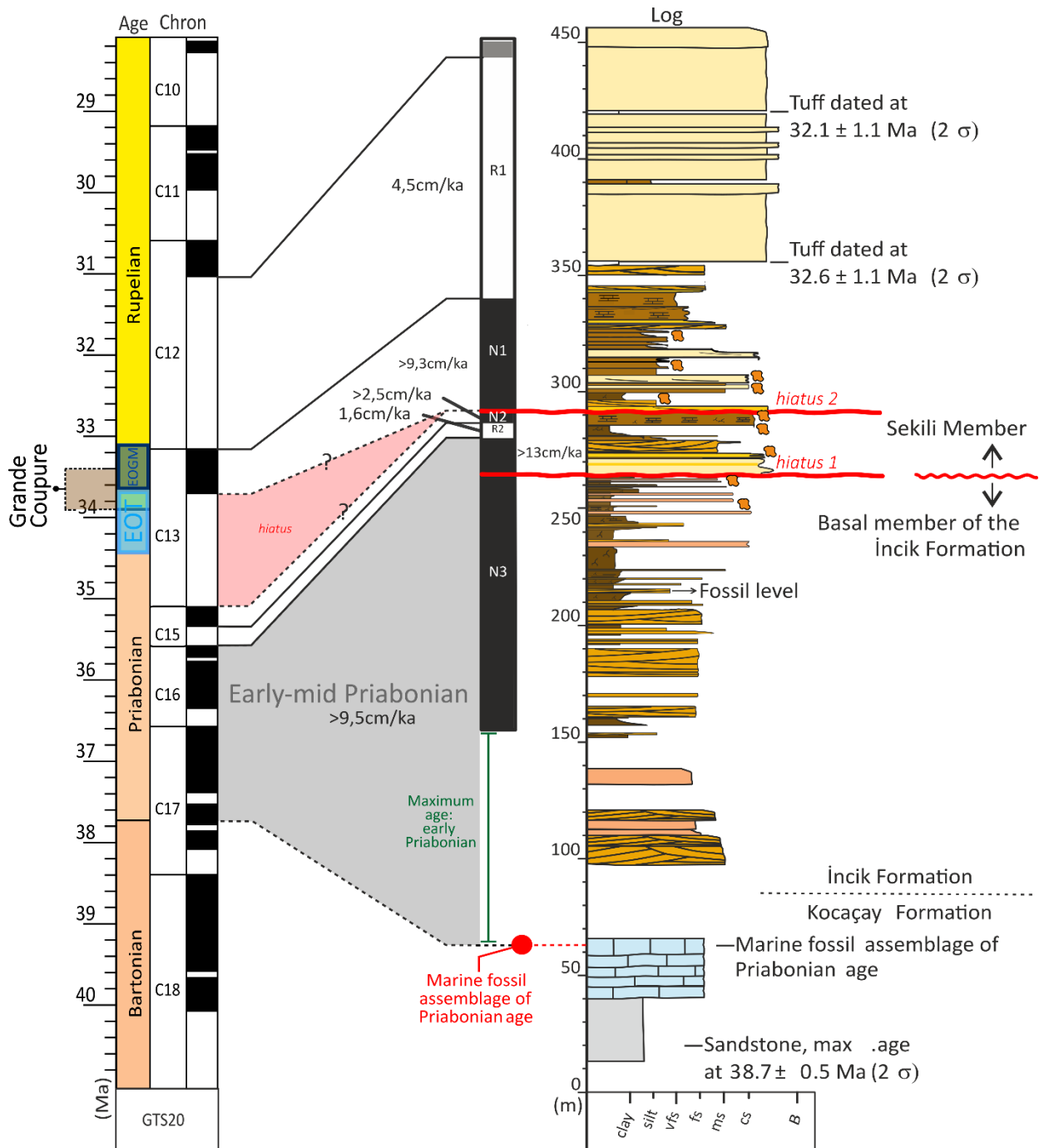


Figure S3. Stratigraphic log of the Büyükteflek section showing the second hypothesis of magnetostratigraphic correlation to the Geomagnetic timescale (Gradstein et al., 2020), with associated accumulation rates (for chrons R1;R2) and minimum accumulation rates (for chrons N1;N2;N3;N4).

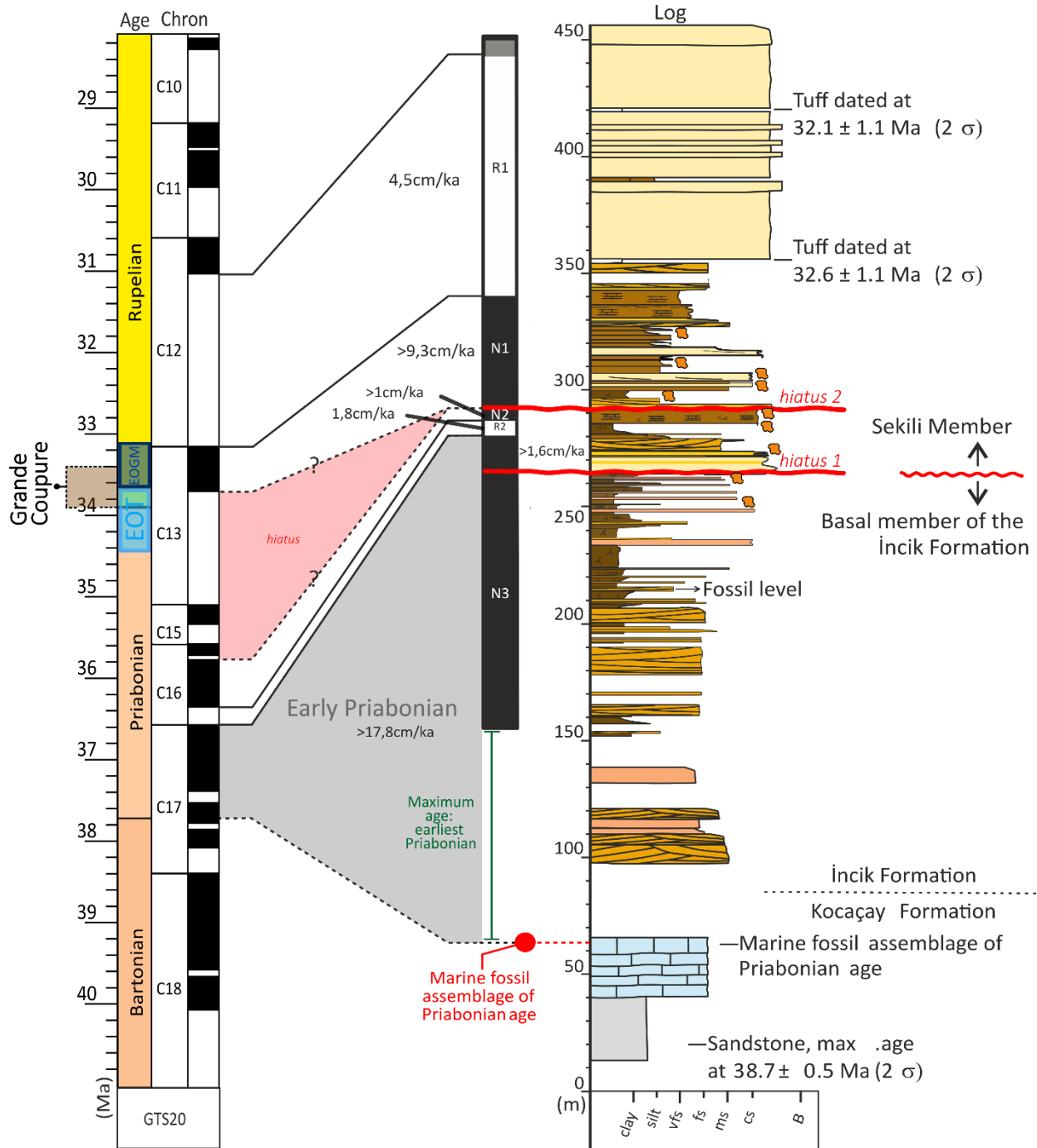


Figure S4. Stratigraphic log of the Büyükteflek section showing the third hypothesis of magnetostratigraphic correlation to the Geomagnetic timescale (Gradstein et al., 2020), with associated accumulation rates (for chrons R1;R2) and minimum accumulation rates (for chrons N1;N2;N3;N4).

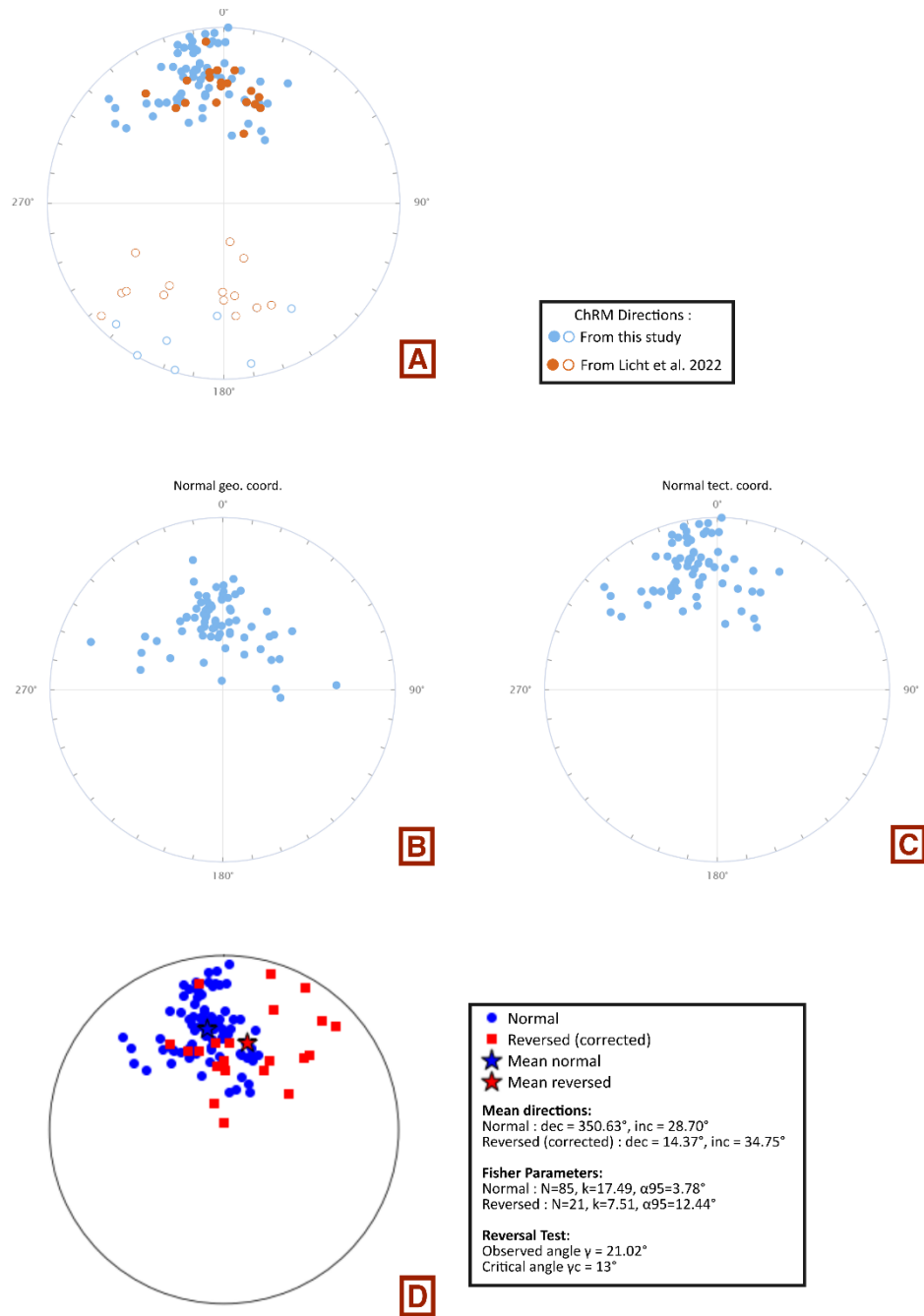


Figure S5. ChRM directions coordinates; (A): data from this study combined with the data from Licht et al. (2022) in tectonic coordinates; (B): Samples with normal polarity from this study in geographic coordinates; (C): Samples with normal polarity in tectonic coordinates; (D): Reversal test plot and associated statistics. Plots were done on paleomagnetism.org/statistics or performed on custom python scripts (According to the following references: Arason et al., 2010; Deenen et al., 2011; Helsop et al., 2023; McFadden et al., 2023; King 1955; Tauxe et al., 2010; Tauxe 2010; Tauxe & Watson 1994; Tauxe et al., 2008; Zijdeveld 1967)

References

- Arason, Þ. and Levi, S.: Maximum likelihood solution for inclination-only data in paleomagnetism, *Geophysical Journal International*, 182, 753–771, <https://doi.org/10.1111/j.1365-246X.2010.04671.x>, 2010.
- Deenen, M. H. L., Langereis, C. G., van Hinsbergen, D. J. J., and Biggin, A. J.: Geomagnetic secular variation and the statistics of paleomagnetic directions, *Geophysical Journal International*, 186, 509–520, 2011.
- Heslop, D., Scealy, J. L., Wood, A. T. A., Tauxe, L., and Roberts, A. P.: A bootstrap common mean direction test, *Journal of Geophysical Research: Solid Earth*, 128, e2023JB026983, <https://doi.org/10.1029/2023JB026983>, 2023.
- McFadden, P. L. and McElhinny, M. W.: Classification of the reversal test in palaeomagnetism, *Geophysical Journal International*, 103, 725–729, <https://doi.org/10.1111/j.1365-246X.1990.tb05683.x>, 1990.
- King, R. F.: The remanent magnetism of artificially deposited sediments, *Monthly Notices of the Royal Astronomical Society, Geophysical Supplement*, 7, 115–134, 1955.
- Tauxe, L., with contributions from Butler, R. F., Van der Voo, R., and Banerjee, S. K.: *Essentials of Paleomagnetism*, University of California Press, ISBN: 9780520260313, 2010.
- Tauxe, L. and Watson, G. S.: The fold test: an eigen analysis approach, *Earth and Planetary Science Letters*, 122, 331–341, 1994.
- Tauxe, L., Kodama, K., and Kent, D. V.: Testing corrections for paleomagnetic inclination error in sedimentary rocks: a comparative approach, *Physics of the Earth and Planetary Interiors*, 169, 152–165, 2008.
- Zijderveld, J. D. A.: A.C. demagnetization of rocks: analysis of results, in: *Methods in Paleomagnetism*, edited by: Collinson, D. W., Creer, K. M., and Runcorn, S. K., Elsevier, Amsterdam, 254–286, 1967.