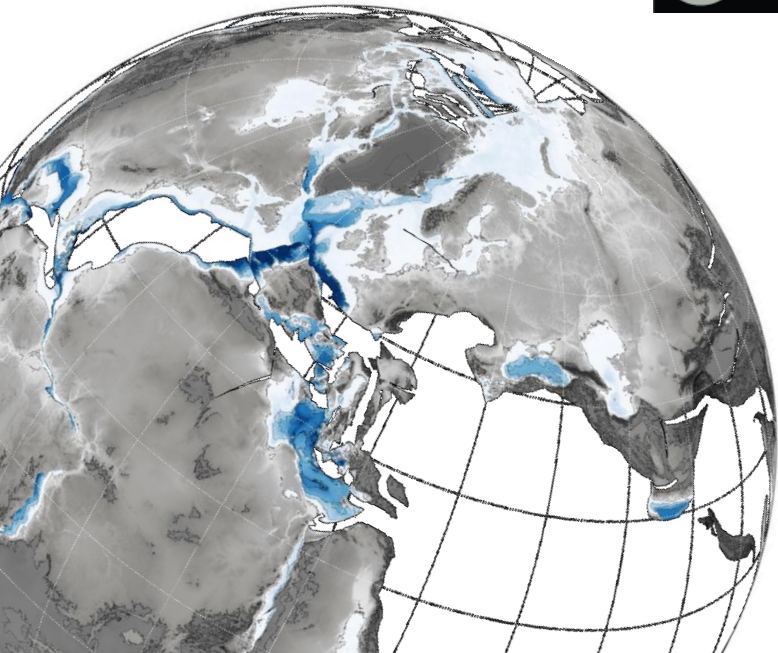


Testing the Mesozoic plate configuration of the Eastern Mediterranean domain



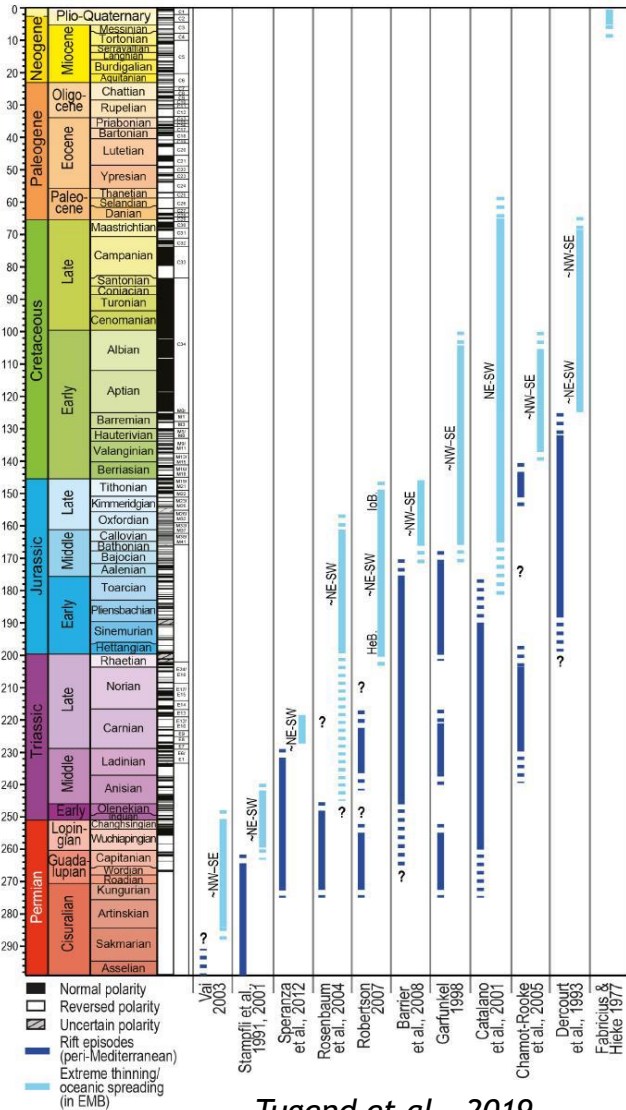
*Nirrengarten M., Mohn G., Sapin F., Teasdale J.,
Nielsen C, Tugend J., Frizon de Lamotte. D.*



Questions

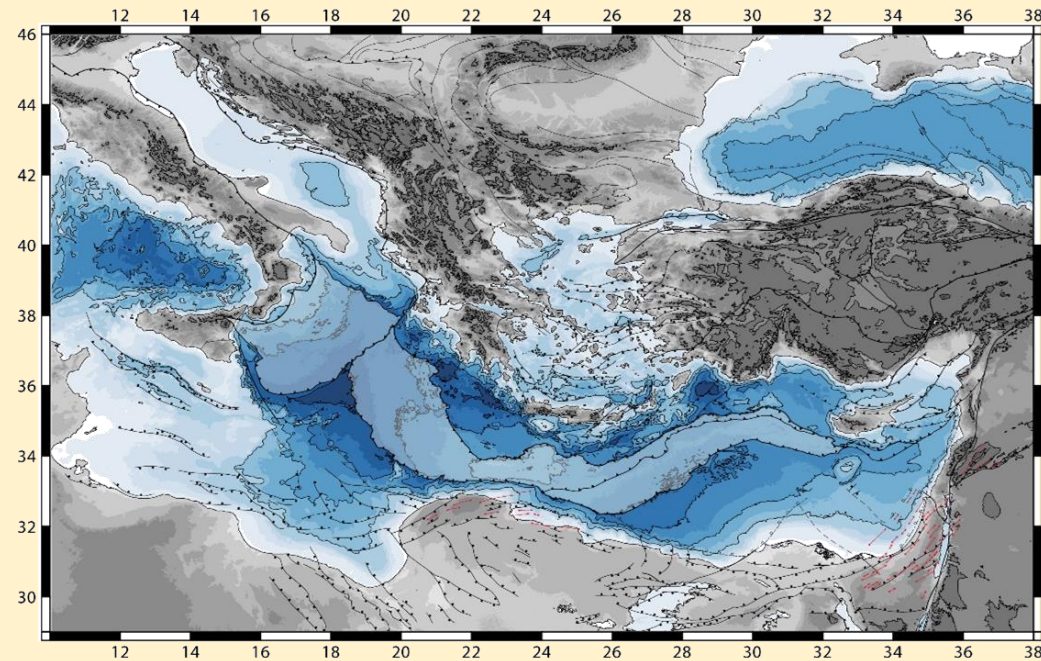


Proposed timing of opening of the Eastern Mediterranean Sea



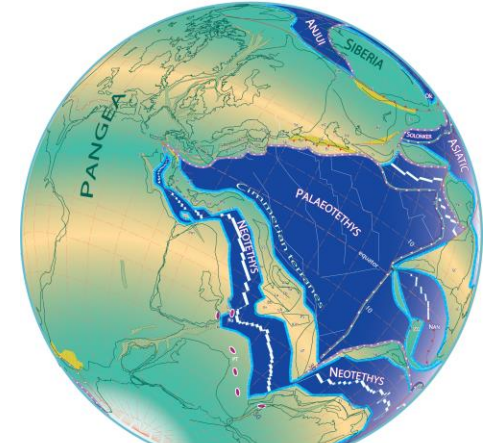
Tugend et al., 2019

How and when does the Eastern Mediterranean Sea open?



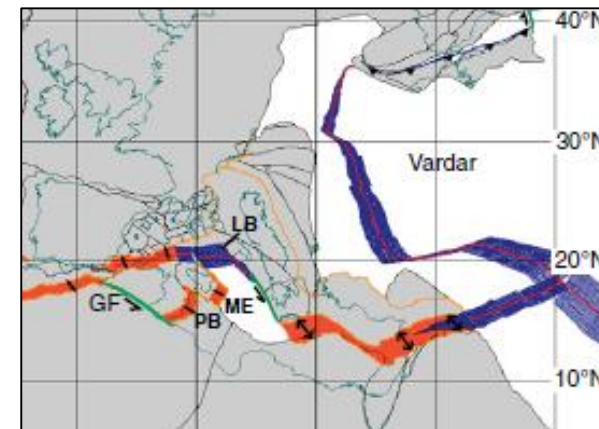
What could be the driving forces of this opening?

Mid-Late Permian 260 Ma NNE-SSW spreading



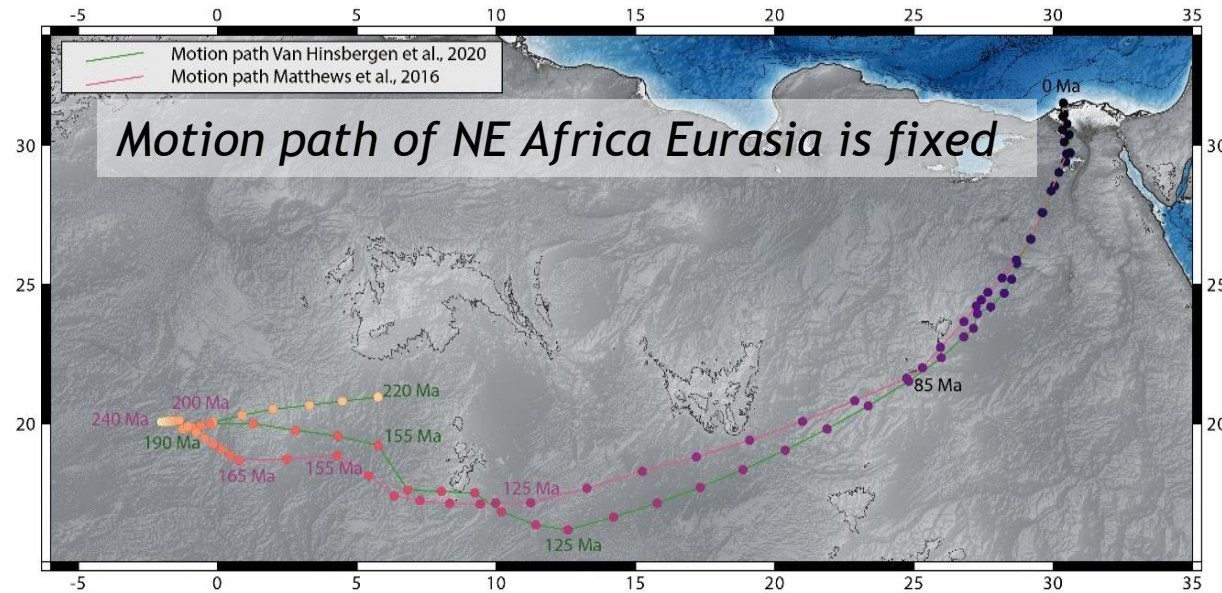
Stampfli & Borel 2004

Early Jurassic 200 Ma NW-SE spreading



Schettino & Turco, 2011

- Analyse the motion of Eurasia-America and Africa through Mesozoic to determine the driving forces controlling the opening of the Mediterranean Sea
- Plate models from Van Hinsbergen et al., 2020 and Matthews et al., 2016 are compared



- Describe stage by stage the differences in the plate motion and their origin
- Determine how global plate motion impacts the geodynamic of the Mediterranean domain controlled by the space between North Africa and South Eurasia

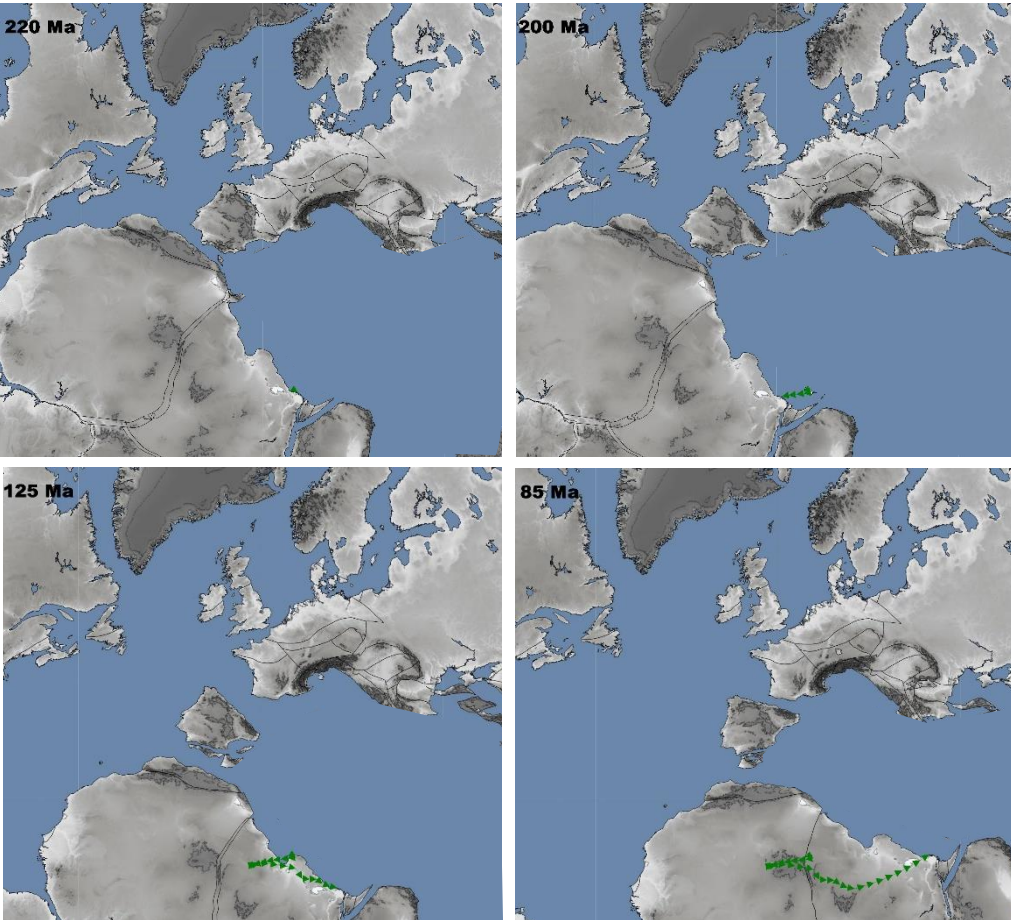
Analysis of NE Africa motion path



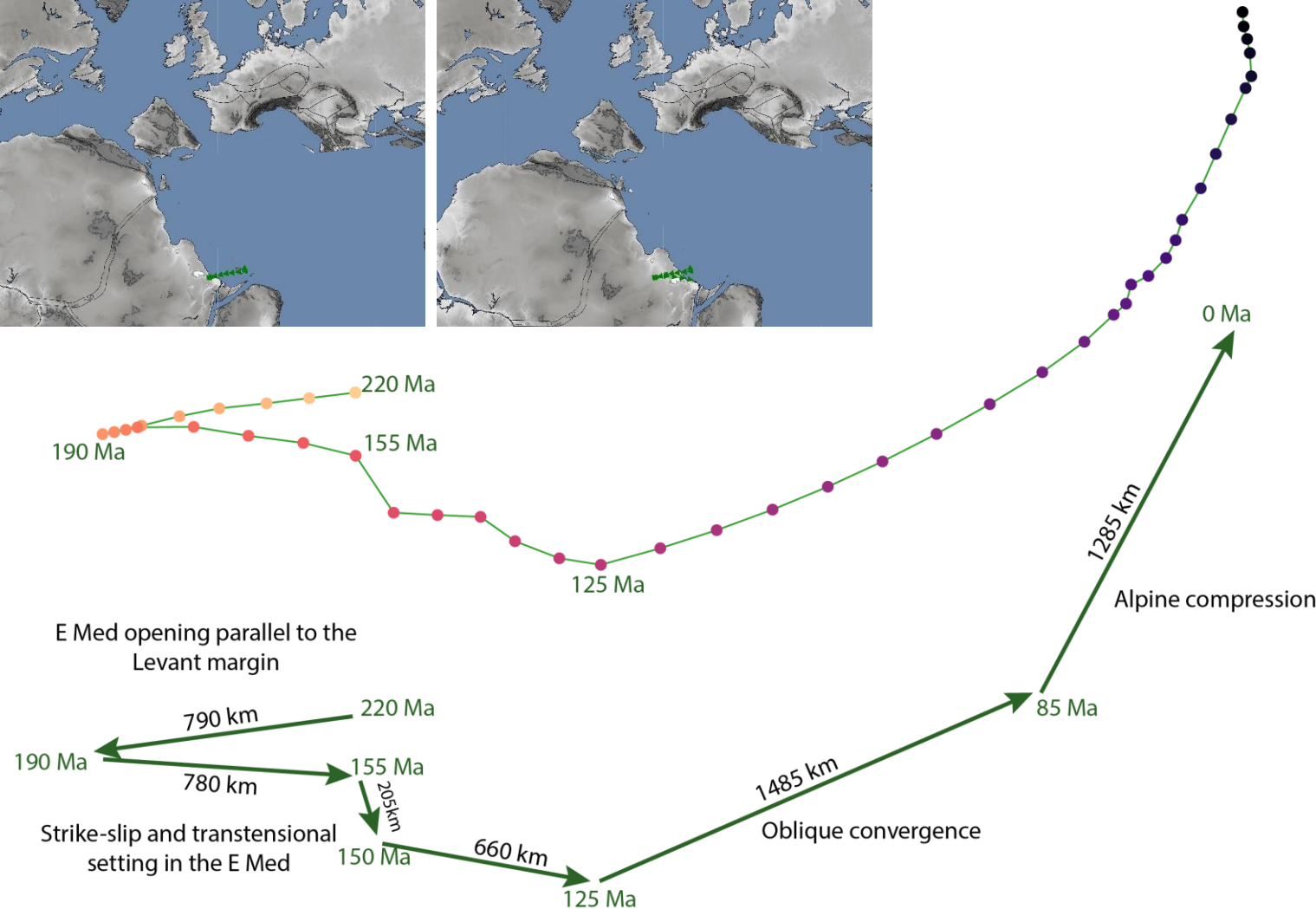
Van Hinsbergen et al., 2020

Continental blocks from Great Adria have been purposely removed

Motion path of NE Africa
Eurasia is fixed



- Triassic opening of E Med which induces a large extension on the Bay of Biscay
- Transform to transtensional regime during Jurassic and E Cretaceous linked to the Atlantic extension



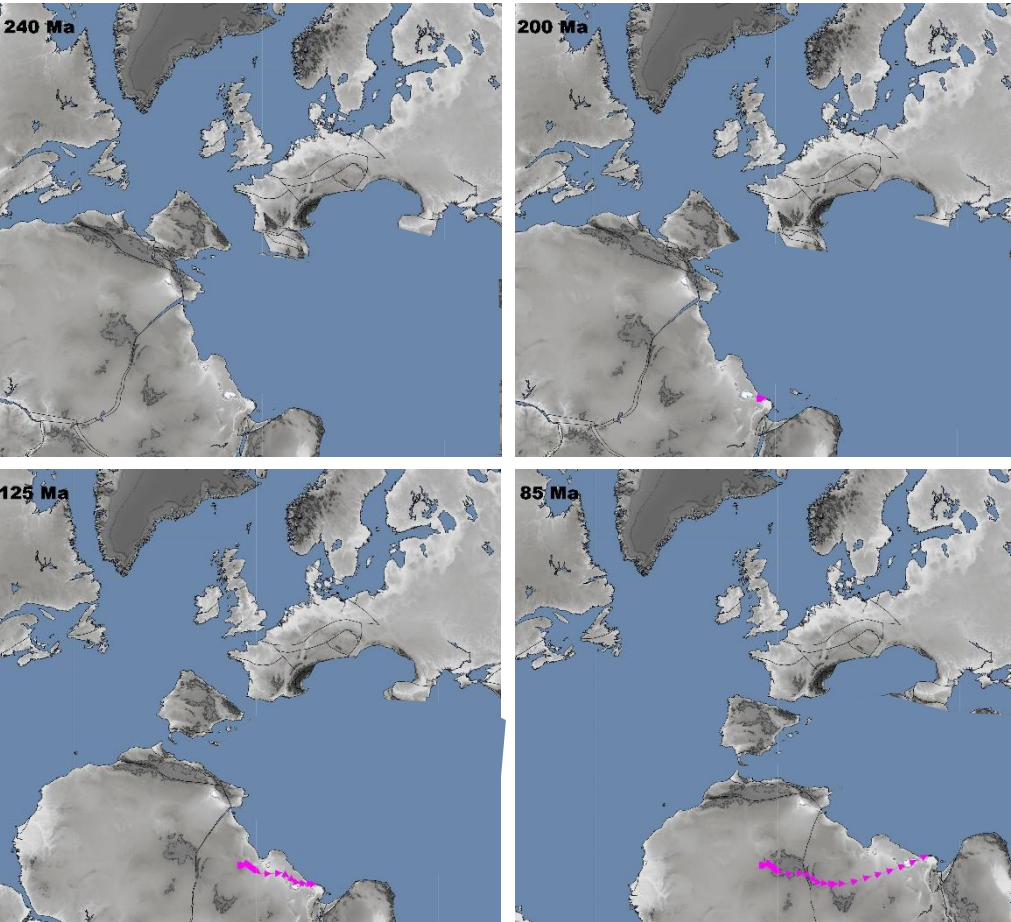
Analysis of NE Africa motion path



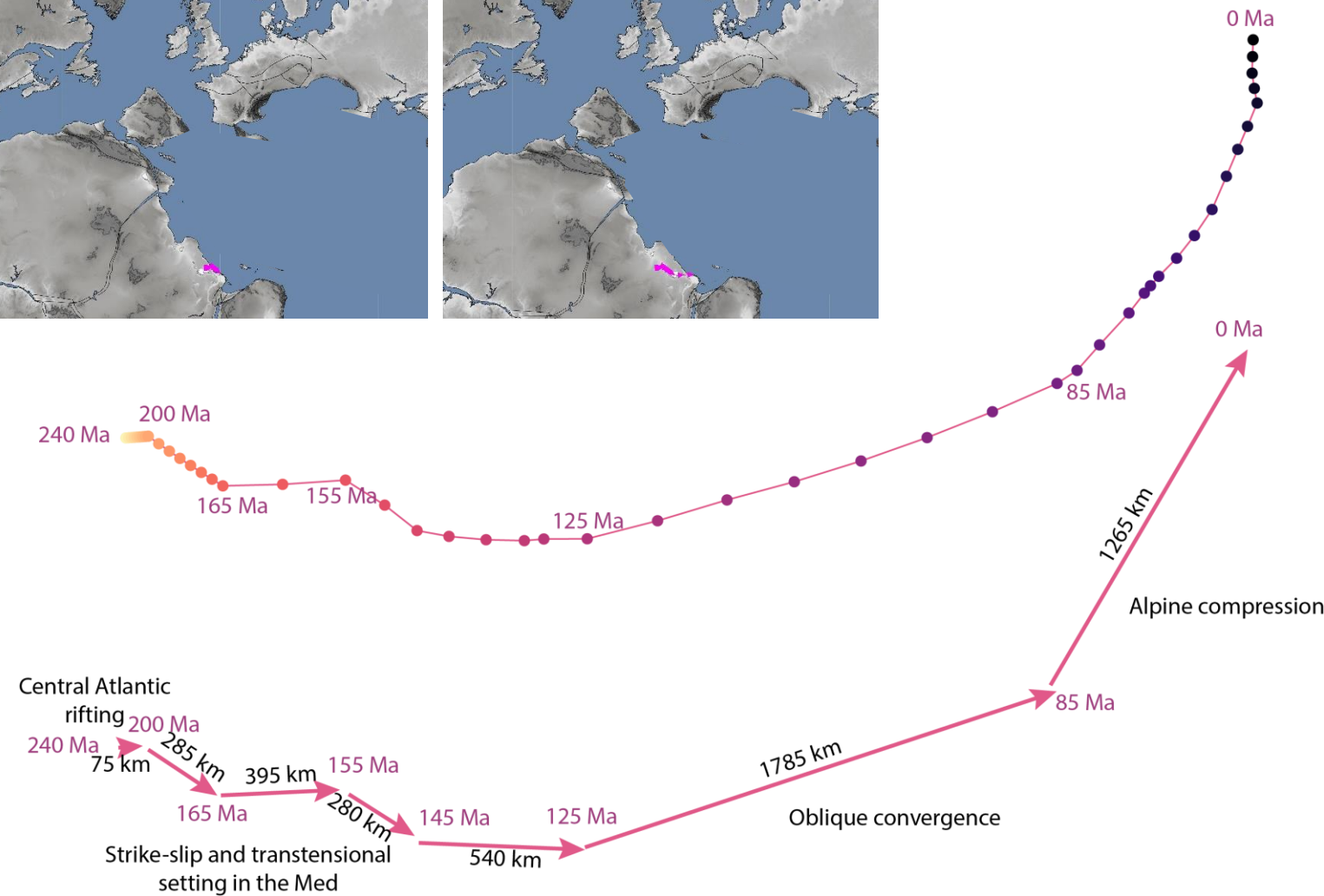
Matthews et al., 2016

Continental blocks from Great Adria have been purposely removed

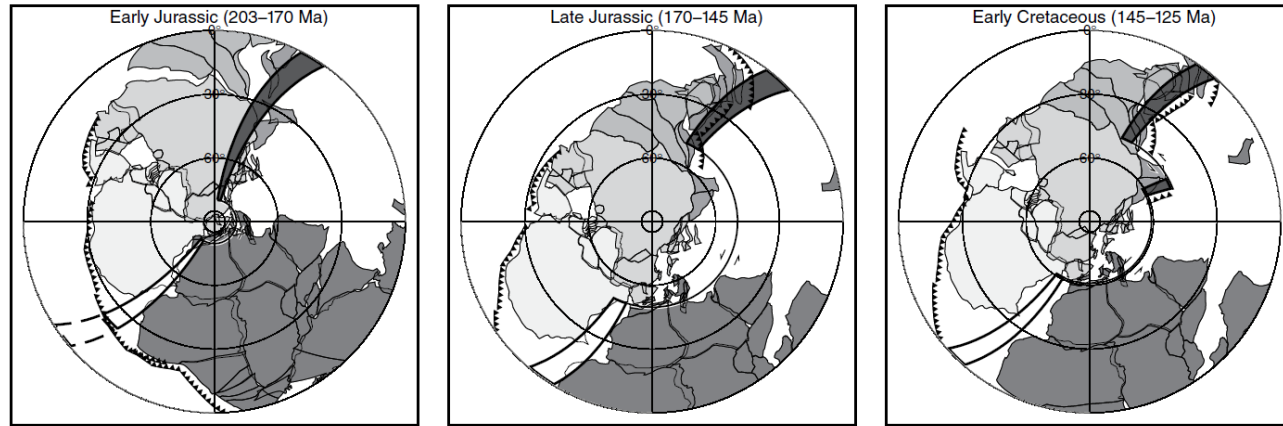
Motion path of NE Africa
Eurasia is fixed



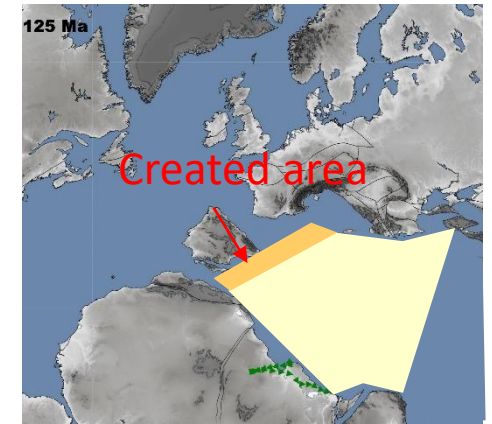
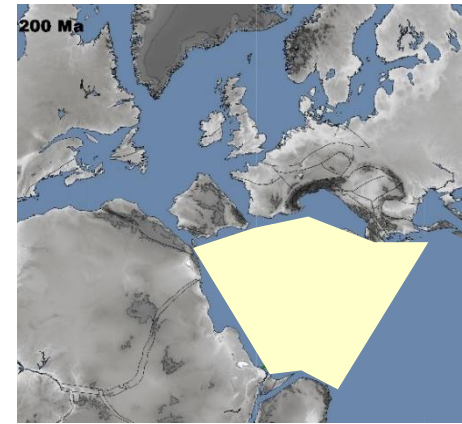
- Only transtension in the E Med domain
- The space in the W Tethys domain is almost constant until Aptian time
- The Central Atlantic opening controls the motion of Africa



Concluding remarks

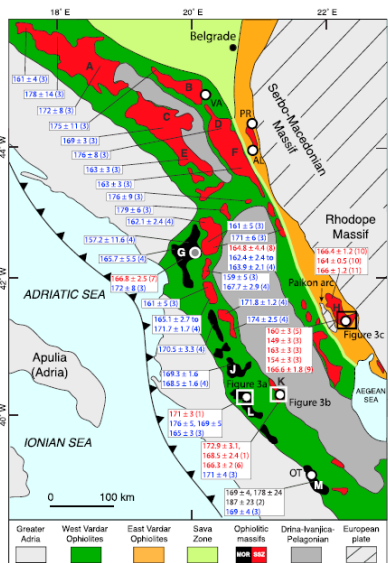


Keppie, 2015



- Based on large plate motion, from Early Jurassic to Aptian the Mediterranean domain is dominated by strike-slip motion

- The area between Eurasia and Africa does not change much from Early Jurassic to Aptian. This space is insufficient to resolve both the Ligurian Tethys and the East Mediterranean Sea.

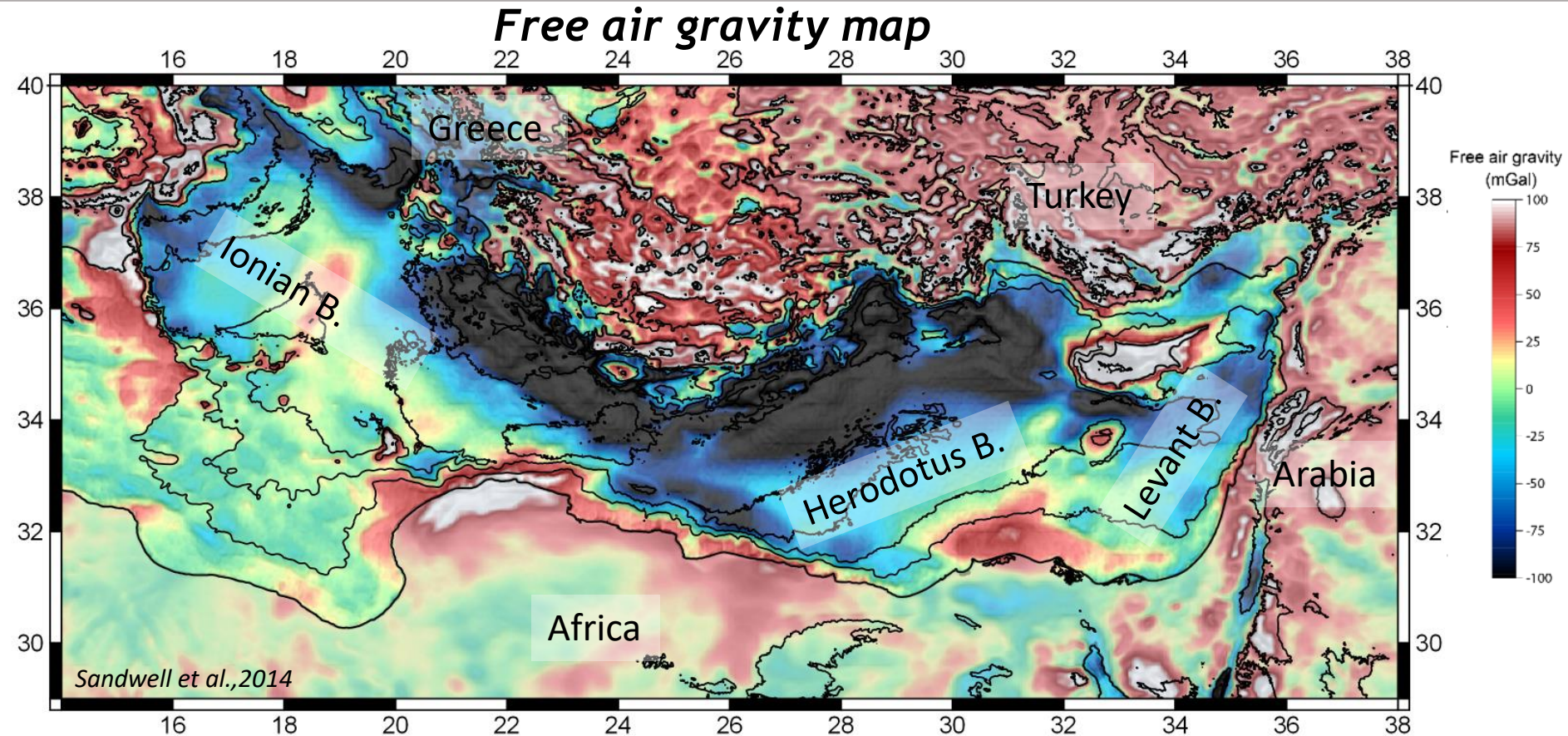


Maffione & Van Hinsbergen, 2018

- Compressional setting in the Balkanide with obduction of supra-subduction ophiolites during Mid Jurassic.



The Mesozoic geodynamic of the Eastern Mediterranean domain is controlled by oceanic subductions with small slabs and opening of marginal basins.



- Determine using industrial seismic surveys and potential field maps of the southern margin of the E Med, the direction of extension in the different rifted and oceanic basins
- Correlate the seismic horizons through the E Med to determine a chronology of opening
- Determine potential conjugate rifted margins based on onshore geology of the Hellenides-Taurides

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