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Incipient lithospheric collision throughout the East Mediterranean

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We propose that lithospheric collision of Africa and Eurasia is incipient throughout the entire East Mediterranean. Our evidence confirms the incipient continent-continent collision that has been recently proposed for the Cyprus Arc and showcases how collision is expressed at depth and across the Hellenic Arc. We provide evidence of basin-wide lithospheric-scale collision by coupling, at tectonic scale (1.5M km²), quantitative joint analysis of submarine and terrestrial relief, and the interpretation of a compilation of regional vintage multichannel seismic data (>46.000 km), reprocessed with modern techniques. No megathrust surface marking a subduction interplate contact is imaged in any seismic line, and the relief across sedimentary piles is not shaped as mechanically-accreted wedges. Instead, continent-continent collision is expressed across plates in two modes along longitude. In the offshore regions south of Cyprus and Crete, submarine thrust systems with no frontal structure nor imbrication, and lacking latitudinal continuation, record collision stacking basin sediments vertically. Onshore, concurrent uplift and extension are recorded by uplifting strandlines, hanging valleys, and normal faulting, in both continents, and neatly so in the African margin in front of Crete. Joint plate deformation at lithospheric scale is further inferred as wavelengths of relief coherent across both plates. Regions located latitudinally to these collisional sites extrude away obliquely, either rigidly along transpressional systems, as immediately east of Cyprus and Crete, or through flow and halokinesis of Messinian salts, as on the eastern and western sectors of the Mediterranean Ridge. Our evidence typifies incipient lithospheric collision as expressed throughout the East Mediterranean.