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Temptative assessment of tectonic blocks affinities to reconstruct the Philippine-Taiwan region

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The geological evolution of the Philippine-Taiwan region includes extensional, compressional and transform settings overlapping in space and time since the Late Cretaceous. The resulting tectonic blocks move along major reactivated and newly-formed fault systems shaping the conjugate Eurasia/Australia margins of the South China Sea or accommodating the oblique subduction of the Philippine Sea Plate below Eurasia. Large-scale kinematic models describe well the clockwise rotation of the Philippine Sea Plate since the Eocene. However, the detailed origin, geometry and motion of internal tectonic blocks involved along the Philippine Sea/Eurasia plates boundary are often hypothetical due to the lack of geological correlation both onshore and offshore. In the frame of the research project COLLISEA (ANR-22-CE49-0015), we investigate the regional kinematics from northern Taiwan to the south of the Philippines over the last 15-20 Myrs. Based on comprehensive geological and geophysical data, our models link onshore and offshore geological structures around the South China Sea and reconstruct the late evolution of the now-disappeared Proto-South China Sea. This works specifically aims to highlight the transition between subduction and collision along the Philippine Mobile Belt by proposing palaeogeographic reconstructions of various basement elements moving according to the Australian, Eurasian and Philippine Sea plates.