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Play Types and Hydrocarbon Potential of Deep-Water NW Egypt*

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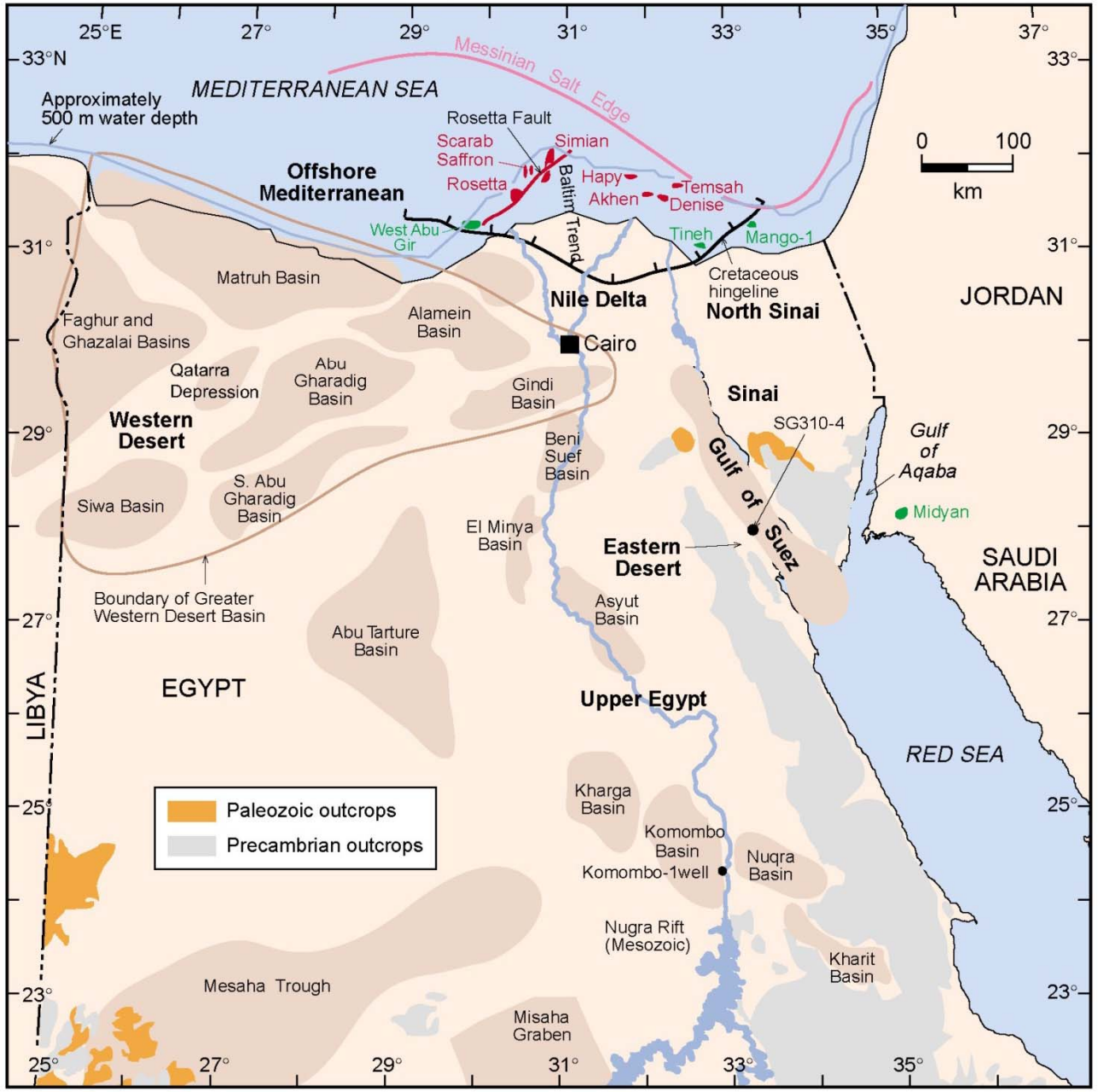
Abstract

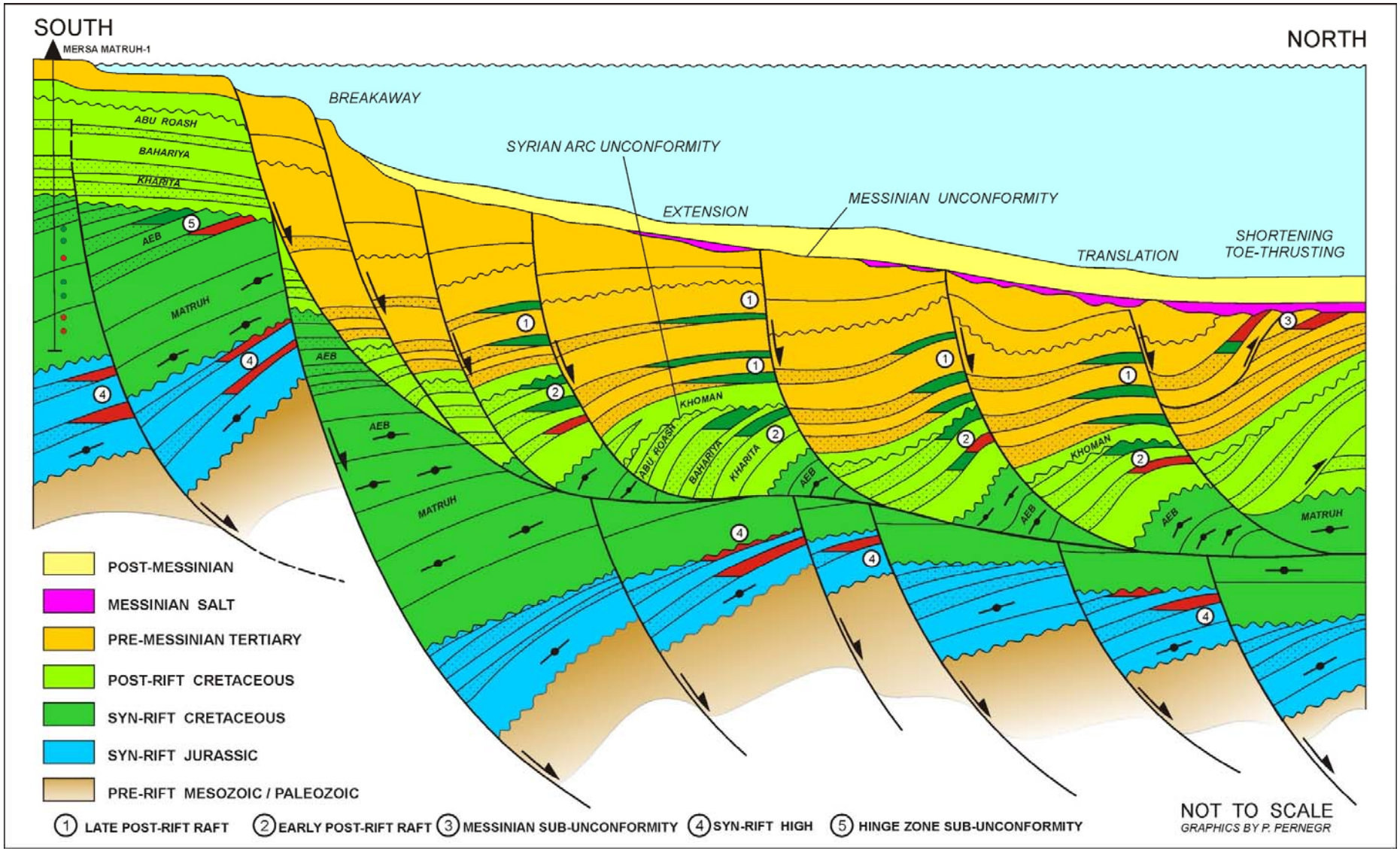
The offshore basins of NW Egypt represent a very underexplored region of the eastern Mediterranean Basin to date. The Matruh Trough is located along this segment of the Egyptian offshore covering an area of about 10,000 km2. This trough, trending almost perpendicularly to the coastline, is located west of the Nile Delta province and north of the Western Desert and its offshore part extends across a relatively narrow shelf into the deepwater.

The Obaiyed Offshore block, covering most of the Matruh Trough, is considered as a prospective undrilled deepwater block down dip from the numerous gas and oil fields of the Western Desert petroleum province. In fact, one of the plays in the block is the offshore extension of the onshore Western Desert Cretaceous play. The offshore play extension model is similar conceptually to the Sirte Basin in Libya where offshore plays are merely extensions of proven onshore concepts.

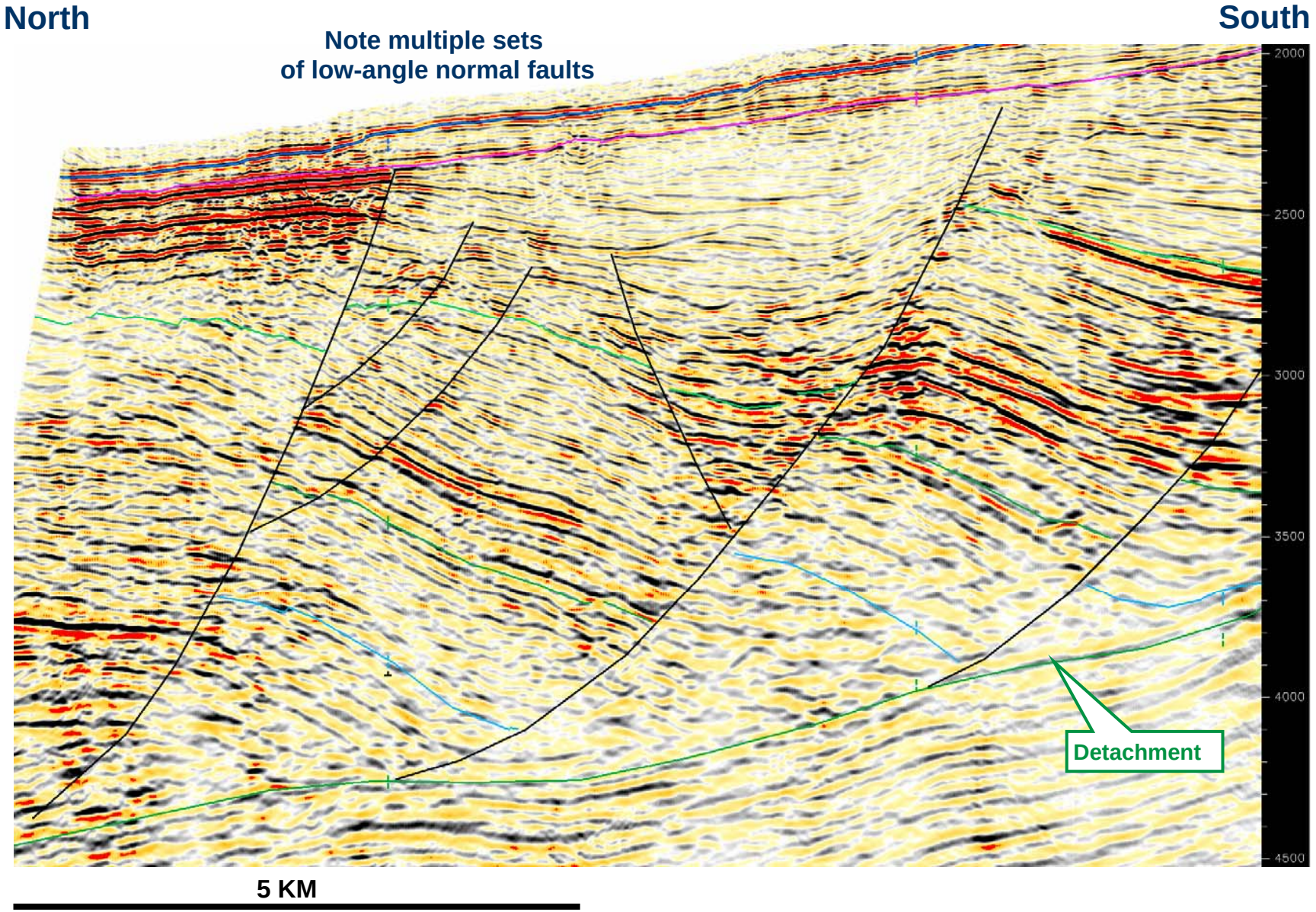
However, at least five other deepwater play types have been identified in the block. Most of them are related to a large shale detachment system and therefore are considered unique to the Matruh Trough. As to the prospectivity, just the numerous listric fault bounded supra-detachment structures, providing repeatability and low finding costs, have a combined unrisked resource potential in excess of 1 BBO or 5 TCF of gas. This particular play type is very similar to the classical raft play of the Lower Congo Basin providing a very useful analogue for the Obaiyed Offshore block. Significant oil and gas shows from the onshore Mersa Matruh-1 well, located near the coastline, support the offshore extension of the Matruh Trough with a working petroleum system.



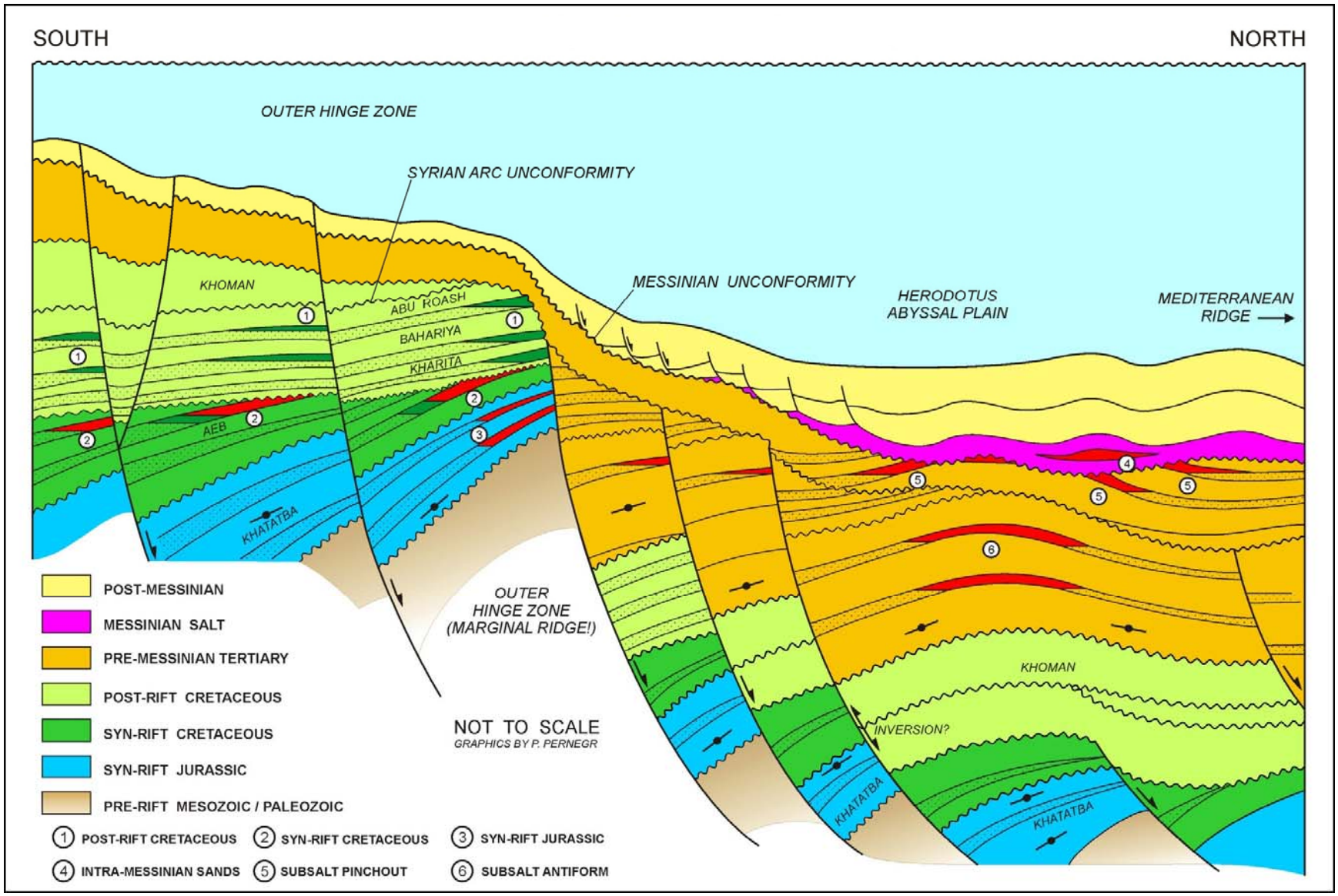
Sedimentary basins of Egypt (after Dolson et al., 2001).



Play types, shelf and upper slope, Offshore Obaiyed, Egypt. The Alpha Trend is associated with the supra-detachment “rafts.”



Multiple low-angle normal faults, Offshore,Obaiyed, Egypt.



Play types, lower slope and abyssal plain, Offshore Obaiyed, Egypt. The Omega Trend is associated with the “hinge zone” (or marginal ridge if it is indeed a transform margin). The Messinian salt-related play types remain unevaluated due to insufficient seismic data coverage.

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