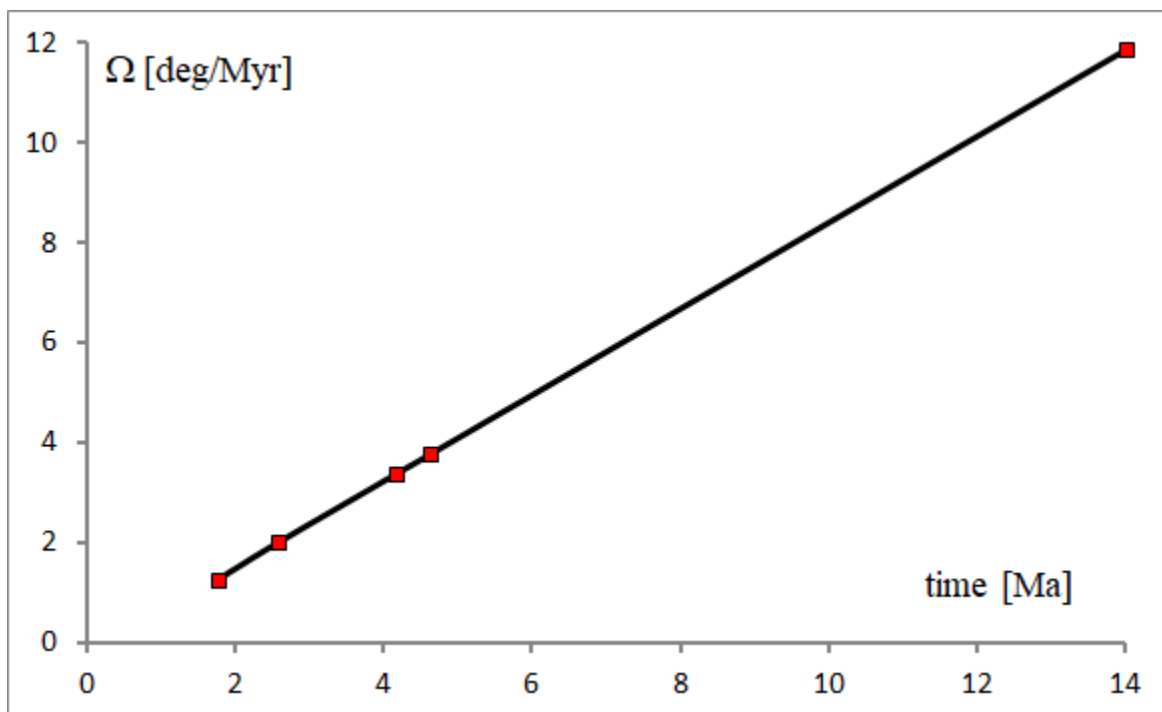


Further comments on *Rift and plume: a discussion on active and passive rifting mechanisms in the Afro-Arabian rift based on synthesis of geophysical data*, by Ran Issachar, Peter Haas, Nico Augustin, and Jörg Ebbing

Dear Ran, I appreciate that you are addressing my comments. Below please find some specifications.

1. Regarding the work of Bridges et al. (2012), I think that you have stretched their results writing “Two magnetic isochrons have been recognized in the Tendaho graben, indicating young oceanization in central Afar”. In reality Bridges’s et al. (2012) observations suggest that transitional crust in Afar has developed a significant amount of remanent magnetization in addition to the induced component. This result does not imply the presence of oceanic crust, it only indicates that the effusive and intrusive rocks of this area have been magnetized in a way that resembles what happens at oceanic spreading centers. Linear magnetic anomalies can form on oceanic crust, on serpentinized outcropping mantle (e.g., southern North Atlantic), and even on continental crust when it is intruded by dykes and characterized by pervasive volcanism.
2. I am confused when you claim that the “rapid propagation was halted in the last 2.6 Ma” or that “southward propagation [of the spreading center] is halted between isochrons 2 and 2A”. Below is a plot of the angular velocity of Danakil relative to Arabia since 14 Ma (according to my published calculations and magnetic modelling, of course). As you can see, the velocity decreased linearly between 14 Ma and C2y (1.77 Ma). If you extrapolate this plot to more recent times, you reach the conclusion that the relative motion between Danakil and Arabia did not stop until ~0.3 Ma.



3. Regarding the possibility of a rift jump from the southern Red Sea to the Afar area, this is an intriguing theory, which is supported by the plot shown above. I suggest to find strong geological evidence of a left-lateral strike-slip fault through Danakil to prove your assertion.

Best regards,

A. Schettino