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Magma influence on propagation of normal faults: Evidence from cumulative slip profiles along Dabbahu-Manda-Hararo rift segment (Afar, Ethiopia)

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1 **Magma influence on propagation of normal faults: Evidence from cumulative slip profiles along Dabbahu-**
2 **Manda-Hararo rift segment (Afar, Ethiopia)**

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22 Fault-slip profiles, normal faults, Afar, Manda-Hararo rift, magmato-tectonic interactions, fault growth

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24

25 **Abstract**

26 Measuring displacement-length profiles along normal faults provides crucial information on fault growth processes.

27 Here, based on satellite imagery and topography we analyze 357 normal faults distributed along the active rift of

28 Dabbahu-Manda-Hararo (DMH), Afar, which offers a unique opportunity to investigate the influence of magmatism on

29 fault growth processes. Our measurements reveal a large variety of slip profiles that are not consistent with elastic

30 deformation. Their analysis contributes towards a better understanding of the lateral propagation of faults, especially

31 when nucleation points and existence of barriers are included. Using the fault growth model of Manighetti et al. (2001),

32 we determine the preferred direction of lateral propagation for each fault. Our results suggest that lateral propagation of

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