

1 **Supplementary publication**

2
3 **Neoproterozoic evolution of the eastern Arabian basement**
4 **based on a refined geochronology of the Marbat region,**
5 **Sultanate of Oman**

6
7 **Nina E. Rantakokko^a, Martin J. Whitehouse^{a,b,*}, Victoria Pease^a and**
8 **Brian F. Windley^c**

9
10
11 Supplementary Figure 1. (a) Photo of hand-specimen of granitic gneiss, Sadh complex
12 (OM05-14), the scale is 2 cm long. (b) Photo of hand-specimen of biotite felsic gneiss,
13 Sadh complex (OM05-25). The scale is 3.5 cm long. Stromatic metatexite migmatite
14 separated into medium-grained, leucocratic felsic leucosome and fine-grained
15 melanosome. (c) Photo of hand-specimen of intermediate gneiss, Sadh complex
16 (OM05-39) and the scale is 3 cm long. Isoclinally folded stromatic metatexite migmatite
17 with medium-grained feldspar-rich pinkish leucosomes and black elongated amphibole
18 residua. (d) Fine-grained pale pinkish felsic vein; Sadh complex (OM05-38). The scale
19 is 8.5 cm long. Medium-grained late greyish quartz-rich leucosome follows the main
20 foliation, marked by mica and a black arrow. (e) Marbat granodiorite (OM05-33), which
21 is light to light pinkish, medium-grained and homogeneous. The scale is 6.5 cm long. (f)
22 Hornblende gabbro/diorite (OM05-26). The scale is 10 cm long. The black elongate
23 amphiboles are randomly distributed in the medium-grained part of the sample. The
24 light colour minerals are mainly plagioclase.

25

26 Supplementary Figure 2. Thin-section microphotographs in cross polarized light (x-
27 pols). (a) Granitic gneiss (OM05-14), Sadh complex. Width of view is 4.5 mm. The
28 subhedral to anhedral quartz (Qtz) shows sweeping undulose extinction, interlobate
29 grain boundaries and small quartz grains are interstitial. Plagioclase (Pl) often has
30 sericite alteration on the growth twins. Subhedral biotite (Bt) defines the main foliation.
31 Grey euhedral apatite (Ap) is situated in grain boundaries. (b) Biotite felsic gneiss
32 (OM05-25), Sadh complex. Field of view is 0.56 mm. Needle-like amphibole with
33 amphibole (Amp) in the core and biotite and chlorite (Chl) at its edge. The plagioclase
34 is heavily sericitized and saussuritized (the yellowish and brownish, very fine-grained
35 masses around the altered amphibole and epidote (Ep) grains). (c) Biotite felsic gneiss
36 (OM05-25), Sadh complex. Field of view is 0.56 mm. Plagioclase has growth twins,
37 epidote is altered to chlorite and biotite. Zircon (Zrn) is located in grain boundaries with
38 apatite, plagioclase and intergrowths of chlorite and biotite. (d) Felsic vein (OM05-38),
39 Sadh complex. Field of view is 4.5 mm. The feldspars are saussuritized (dark brown to
40 brownish) and sericitized (pale yellowish) -very fine-grained mass on the greyish
41 feldspar and plagioclase mother grains. The subhedral quartz shows sweeping undulose
42 extinction and some but not all of the small quartz grains show undulose extinction.
43 Biotite grains are altered to chlorite. Muscovite (Ms) grains are small and subhedral. (e)
44 Felsic vein (OM05-38). Field of view is 1.1 mm. Pyroxene (Px) is altered to amphibole
45 in turn altered to epidote and chlorite. (f) Intermediate gneiss (OM05-39), Sadh
46 complex. Field of view is 1.1 mm. Epidote and amphibole is occasionally altered to
47 chlorite and biotite. Apatite is located on grain boundaries. (g) Marbat granodiorite
48 (OM05-33) and field of view is 1.1 mm. In the centre of the image is a plagioclase with
49 myrmekite (ellipse around it). Below the bluish muscovite there are small light grey to

50 white quartz grains inside a larger plagioclase grain. (h) Hornblende gabbro/diorite
51 (OM05-26) and field of view is 4.5 mm. Gray plagioclase with an altered core of mainly
52 yellowish very fine-grained sericite and pale green-gray chlorite. Pale greenish and
53 brown /yellowish amphiboles and plagioclase have blackspotted cores of mainly
54 hematite. Small white anhedral quartz is also present in the plagioclase.

55

56 Supplementary Figure 3. Photo-montage of the crosscutting, homogeneous, light
57 reddish Marbat granodiorite (to the left of the line) and deformed, foliated grey Sadh
58 complex gneiss. The gneiss foliation at this site strikes SW and dips 30°W. The images
59 overlap (looking north).

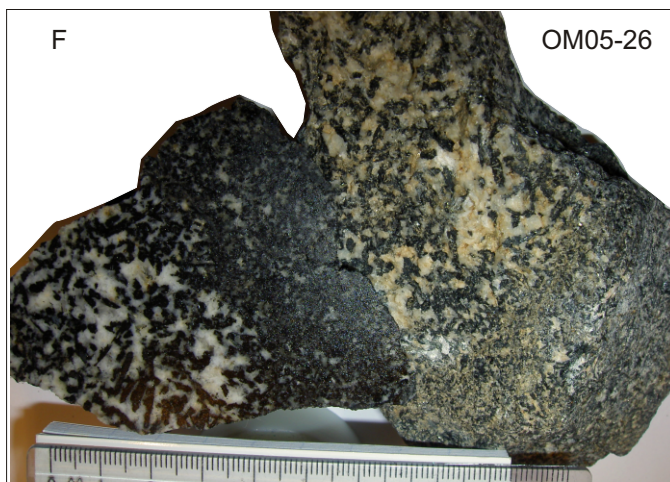
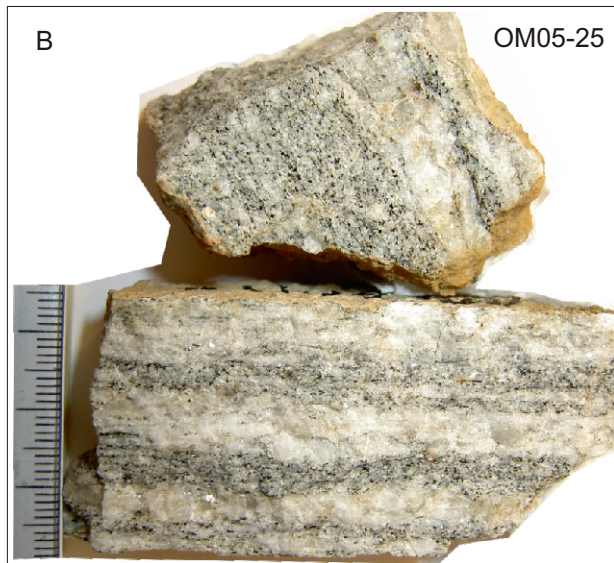
60

61 Supplementary Figure 4. Field sketches of the relationship between amphibolite dykes
62 (blue) and foliation in leucocratic and mafic Sadh complex gneisses close to the location
63 of samples OM05-38 and 39. Scale is approximate. Note the axial planar fabric fabric
64 developed in fold hinges of the amphibolites.

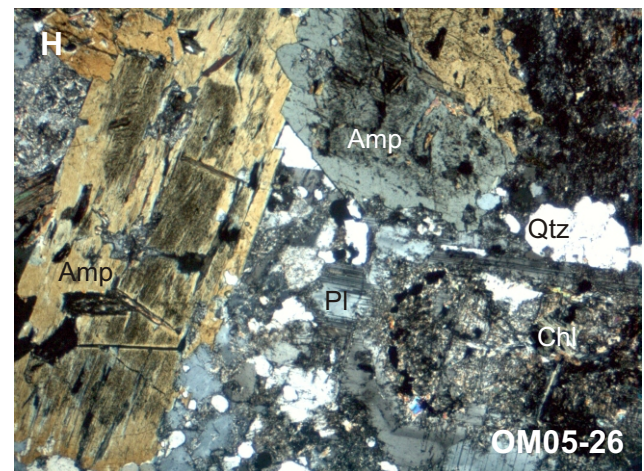
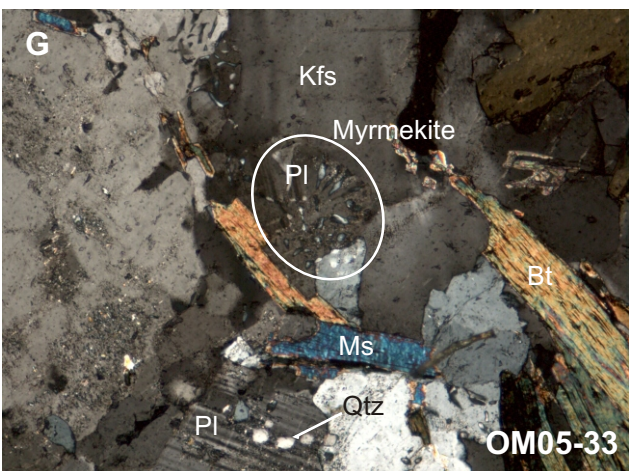
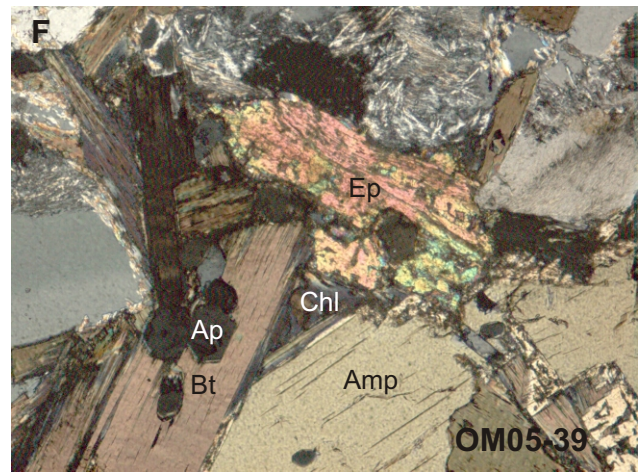
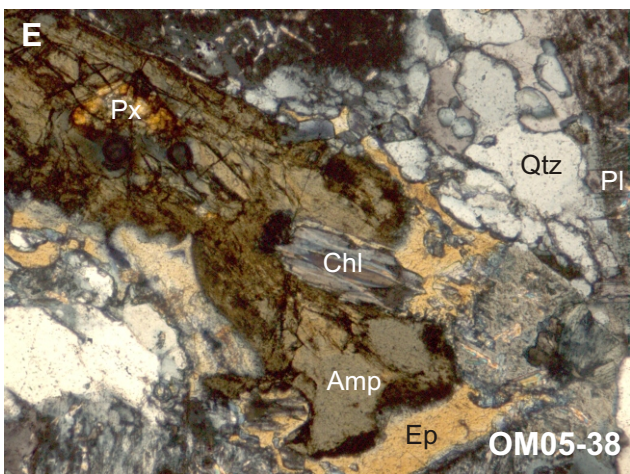
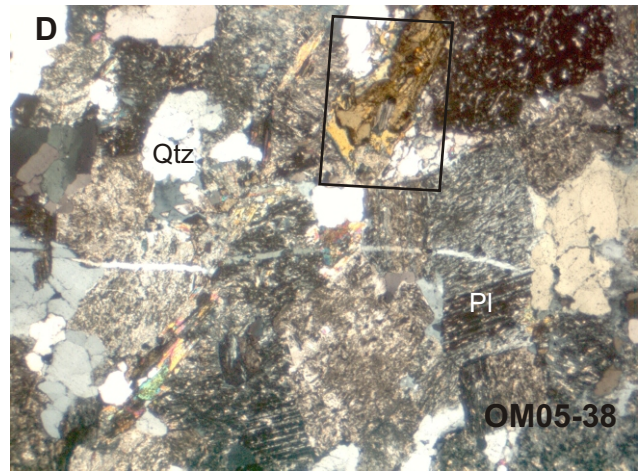
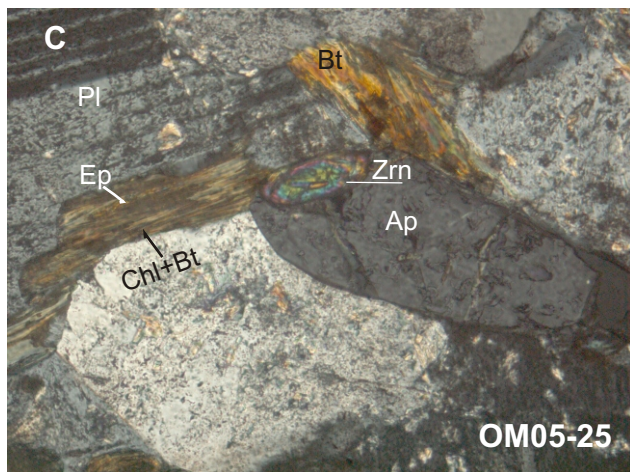
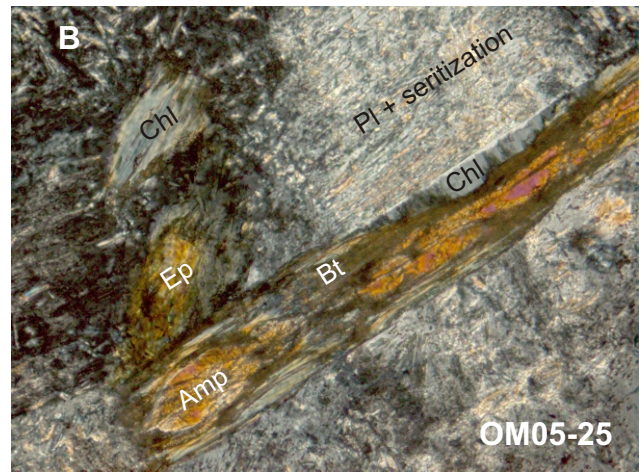
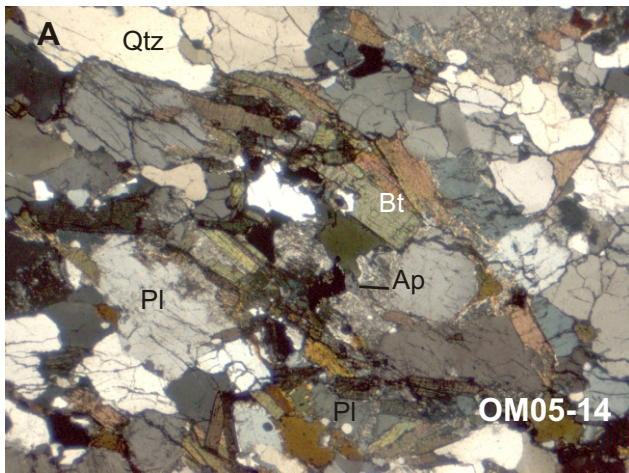
65

66

APPENDIX Figure 1.



APPENDIX Figure 2.



APPENDIX Figure 3

Marbat granodiorite



Contact

Sadh complex banded gneisses

Appendix Figure 4

