

**Supplementary material to:**

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**Palaeoenvironments and chronology of the Damvlei Later Stone Age site,  
Free State, South Africa**

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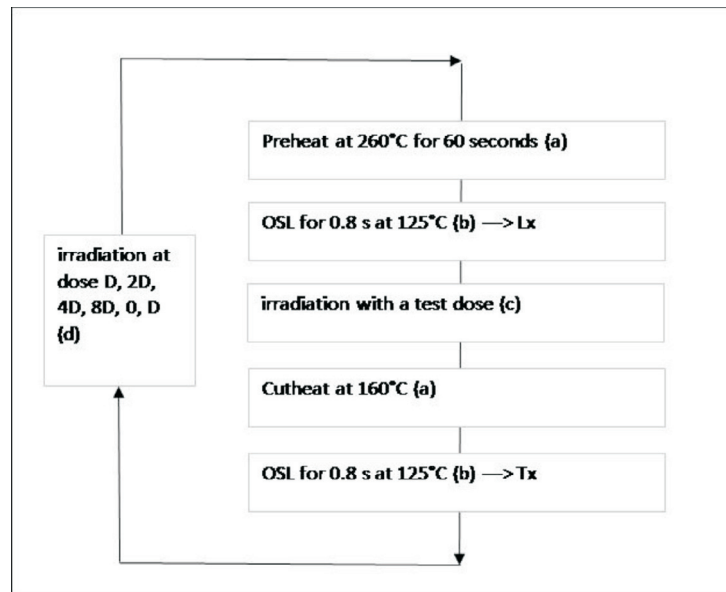
Supplementary Figs 1–10  
Supplementary Table 1



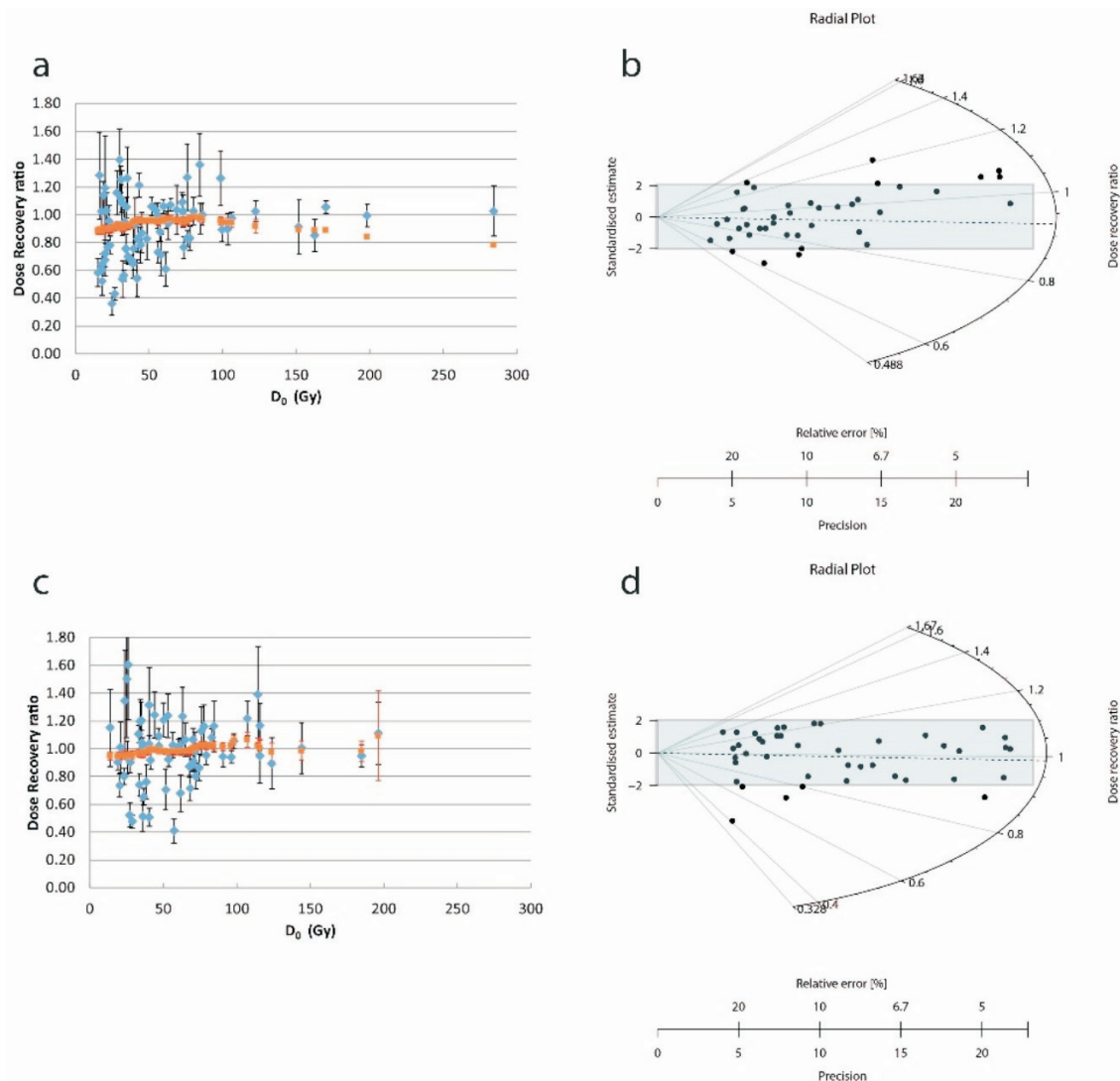
SUPPLEMENTARY FIG. 1. Red palaeosol located at a lower elevation in the donga (red arrows). The black arrow marks the location of Units 1–4.



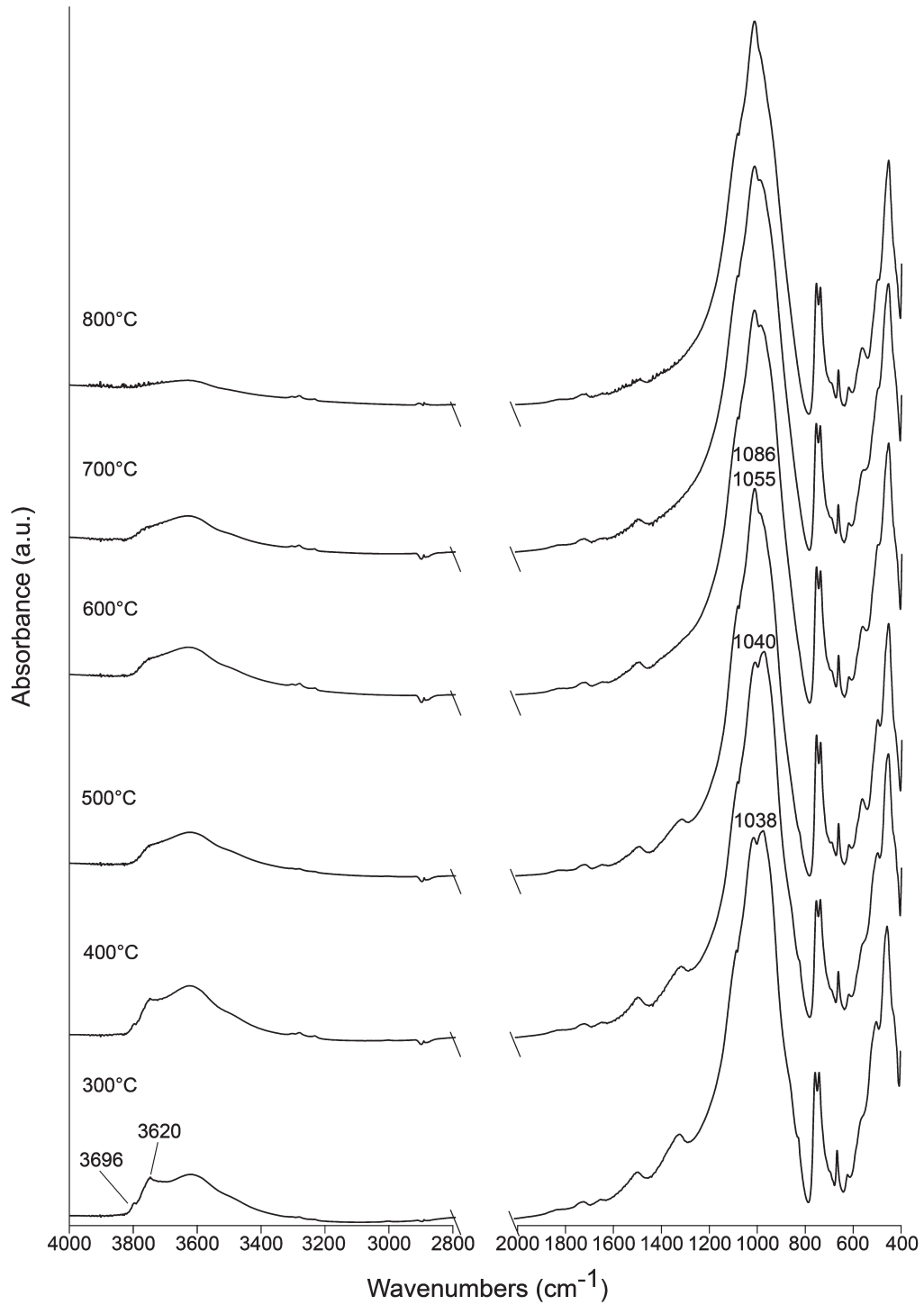
SUPPLEMENTARY FIG. 2. Termite mound burned during a veld fire at Florisbad in 2013 (pick = 30 cm).



**SUPPLEMENTARY FIG. 3.** SAR protocol tested and applied to DMV1 and DMV2; (a) temperature increase was 5°C/s; (b) the first 0.05 s and last 0.1 s were taken for signal and background, respectively; (c) test dose was 31 Gy; (d)  $D$  was 38 Gy for DMV1 and 16 Gy for DMV2.



**SUPPLEMENTARY FIG. 4.** Plots of the dose recovery test data. The grains were first bleached in a solar simulator for 1 minute, then, after a >10 000 s pause, at room temperature within the reader. A dose of 22 or 25 Gy was applied and the SAR protocol was run. (a) Dose recovery ratio (i.e. ratio of measured to expected dose) as function of the  $D_0$  value for DMV1. Blue dots = data for each grain. Orange dots = ratio of central dose (after the central age model) to the given dose for grains with  $D_0$  value above the indicated threshold value; (b) DMV1, radial plot for the dose recovery data. Only grains with  $D_0$  values > 40 Gy have been reported on this plot and been used to calculate the final dose recovery ratio; (c) and (d) same as a and b, respectively, for DMV2.



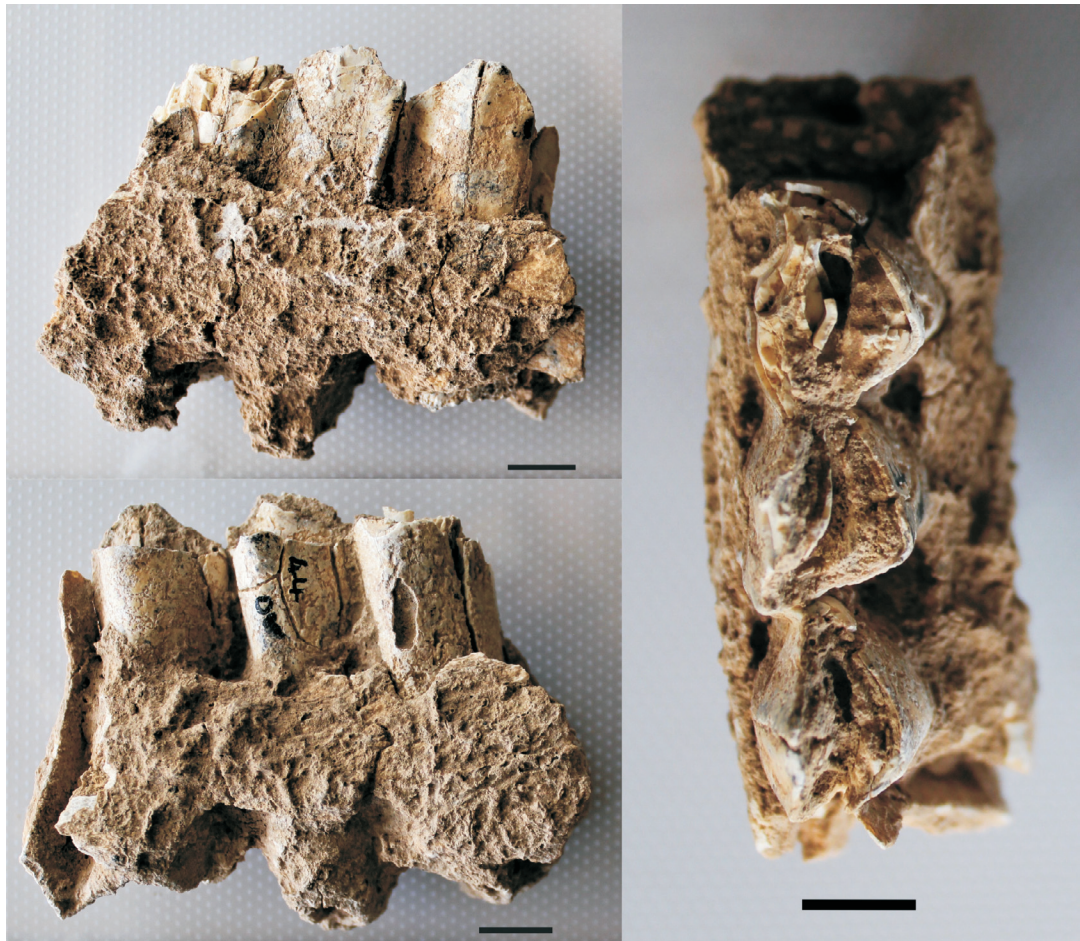
SUPPLEMENTARY FIG. 5. FTIR spectra of Florisbad topsoil heated to different temperatures (a.u. = arbitrary units).



**SUPPLEMENTARY FIG. 6.** Scan of thin section showing the wavy and sharp boundary between SU1 and SU2 (red arrows), marked by the higher clay content (short side of frame = 6 cm). Note channel pores in both sedimentary units.



**SUPPLEMENTARY FIG. 7.** Three juxtaposed teeth with a mandible fragment of *Equus capensis* (buccal view).



**SUPPLEMENTARY FIG. 8.** Mandible fragment with lower third molar of *Tragelaphus strepsiceros*. **Top left:** buccal view. **Bottom left:** lingual view. **Right:** occlusal view.



SUPPLEMENTARY FIG. 9. Mandible of *Alcelaphus buselaphus*. **Top left:** buccal view. **Bottom left:** lingual view. **Right:** occlusal view.



SUPPLEMENTARY FIG. 10. Mandible of *Connochaetes cf. taurinus*. **Top left:** buccal view. **Bottom left:** lingual view. **Right:** occlusal view.

**SUPPLEMENTARY TABLE 1.** Dose recovery data:  $N$  = number of measured grains;  $n1$  = number of grains that pass the sensitivity and recuperation criteria;  $n2$  = number of grains that pass the  $D_0$  threshold criteria;  $OD$  = overdispersion.

Sample	Given dose (Gy)	$N$	$n1$	$n2$	$D_0$ (Gy)	Dose recovery ratio	$OD$ (%)
DMV1	25	600	74	41	40	$0.96 \pm 0.02$	$10 \pm 2$
DMV2	22	600	64	42	40	$1.00 \pm 0.02$	$7 \pm 2$