

## Supplementary 1

Paleomagnetic stratigraphy of the deposit sequence of Trench 1, at outside of the Longyadong Cave (Fig. S1).

## Supplementary 2

$L_x/T_x$  vs. measurement cycle at a constant regeneration dose for three aliquots of LY-1 after separate bleaching treatments (Fig. S2). a) Bleached by sunlight for one day; b) and c) bleached by solar simulator for 3 hours and 215 hours respectively. (d) the  $L_x/T_x$  vs. measurement cycle without application of the regeneration dose after initial bleaching at room temperature by blue diodes in a luminescence reader twice for 300 s for three aliquots of LY-1.

## Supplementary 3

The procedure of single aliquot regenerative-dose thermally transferred optically stimulated luminescence (SAR TT-OSL)

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Dose

Preheat (260 °C, 10 s)

OSL (125 °C, 60 s)

Preheat (260 °C, 10 s)

TT-OSL (125 °C, 60 s) ( $L_x$ )

OSL (280 °C, 400 s)

Test dose

Preheat (260 °C, 10 s)

OSL (125 °C, 60 s)

Preheat (260 °C, 10 s)

TT-OSL (125 °C, 60 s) ( $T_x$ )

OSL (290 °C, 400 s)

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Figure S1

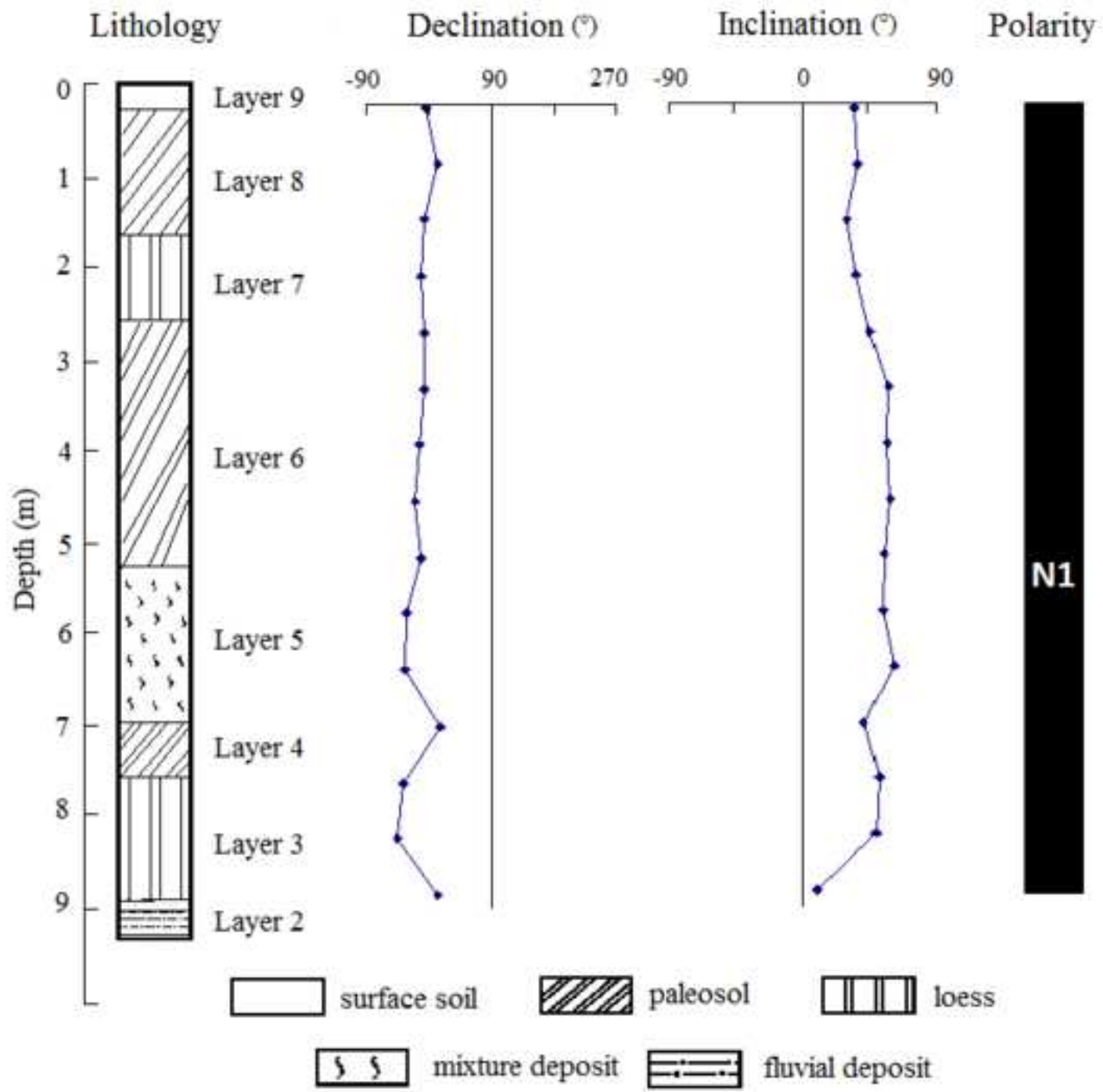


Figure S2

