Supporting Information

Weathering by tree root-associating fungi diminishes under simulated Cenozoic atmospheric CO_2 decline

J. Quirk, J. R. Leake, S. A. Banwart, L. L. Taylor and D. J. Beerling

This supplement includes:

Table S1

Table S2

Figure S1

Figure S2

Table S1. Mean ± s.d. diurnal conditions within each controlled environment chamber. Diurnal values are calculated from daily light and dark period measurements automatically recorded at five minute sampling intervals. PPFD is photosynthetic photon flux density.

	Temperature (°C)		Relative Humidity (%)		PPFD (μmol m^{-2} s^{-1})		$[CO_2]_a$ (ppm)	
$[CO_2]_a$	day (14 hr)	night (10 hr)	day	night	day	night	day	night
200 ppm	20.0 ± 0.001	18.0 ± 0.001	79.9 ± 0.54	80.3 ± 0.28	199.1 ± 0.35	1.9 ± 0.32	204.2 ± 5.74	201.0 ± 5.4
400 ppm	20.0 ± 0.001	18.0 ± 0.001	79.4 ± 1.76	79.4 ± 3.73	199.8 ± 0.30	1.5 ± 0.15	513.9 ± 41.8	498.8 ± 35.3
1500 ppm	20.0 ± 0.01	18.0 ± 0.001	80.0 ± 0.01	80.0 ± 0.02	199.8 ± 0.49	1.5 ± 0.02	1484 ± 15.1	1499.3 ± 1.6

Table S2. Total sapling fresh weight (g) (n = 3) prior to their introduction to specific growth $[CO_2]_a$ chambers. No attempts have been made to account for potential differences in dampness of roots.

	S. sempervirens	*A. campestre*	*B. pendula*
200 ppm	48.9 ± 8.1	13.1 ± 2.2	13.4 ± 2.1
500 ppm	50.2 ± 11.4	13.5 ± 2.0	11.3 ± 0.9
1500 ppm	38.0 ± 6.7	14.9 ± 0.6	9.4 ± 1.1
One-way	$F_{2, 13} = 0.62$	$F_{2, 15} = 0.30$	$F_{2, 15} = 1.90$
ANOVA	$P = 0.552$	$P = 0.745$	$P = 0.184$

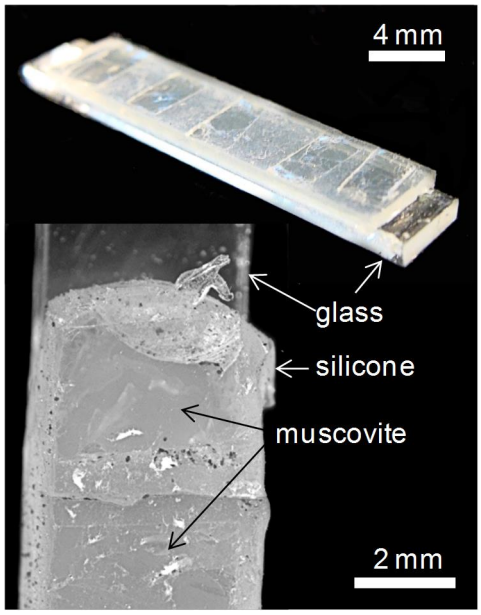

Fig. S1. Mineral pieces used for VSI metrology. Pieces of muscovite were embedded in silicone mounted on glass slides that fit securely into a bespoke stage platform allowing acquisition of stage coordinates for specific surface localities on the mineral surfaces.

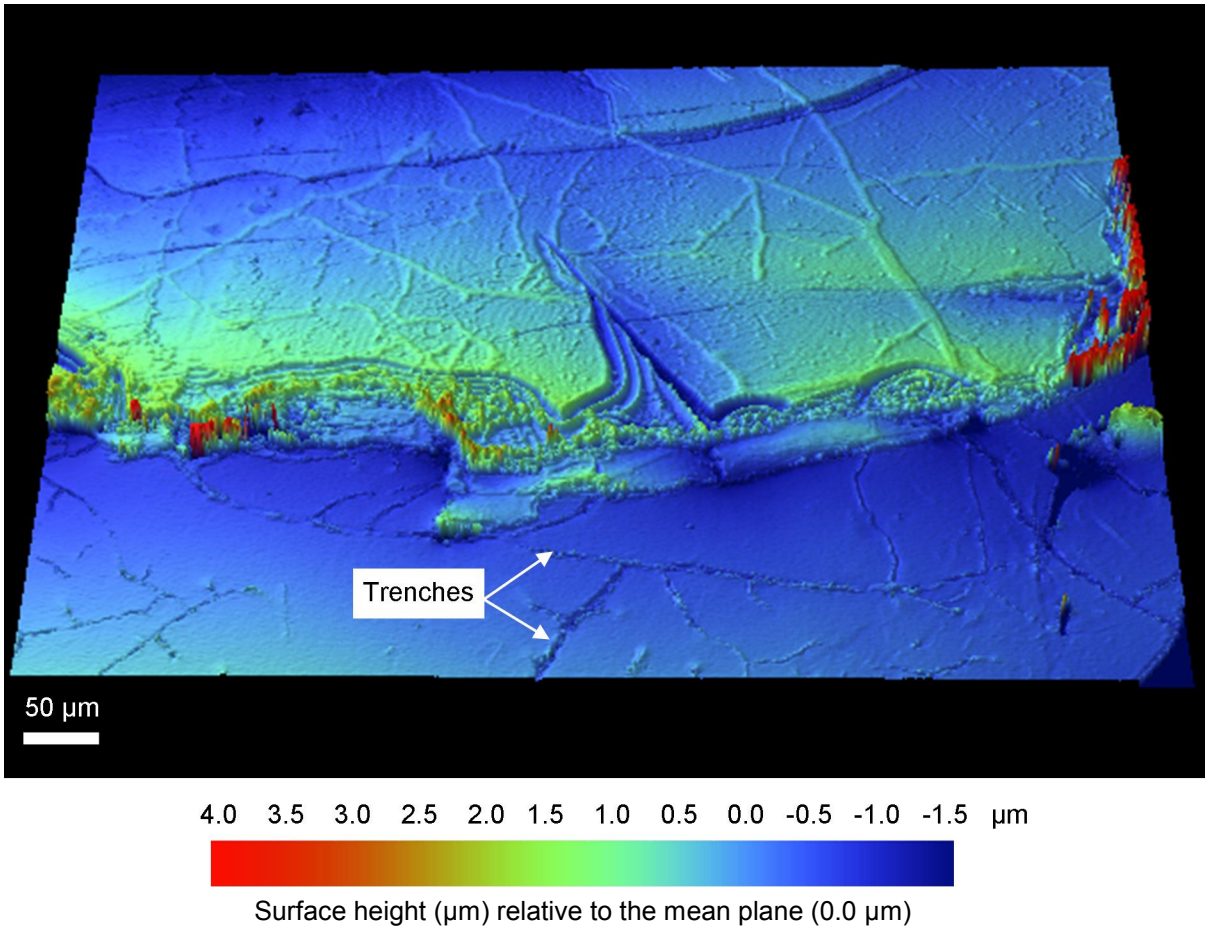

Fig. S2. Fungal hyphal growth and trenching between the repeating sheets of muscovite. Evidence of internal fungal trenching of muscovite incubated beneath an AM *Sequoia* sapling at 500 ppm $[CO_2]_a$. In the lower portion of the figure we removed the overlying mineral layers prior to imaging to reveal internal fungal trenching. The scale bar represents 50 µm at the midpoint of the *Y* axis.