

1 **Supplementary Material for:**

2 **Geomorphic control on the  $\delta^{15}\text{N}$  of mountain forest**

3 **R. G. Hilton<sup>1</sup>, A. Galy<sup>2</sup>, A. J. West<sup>3</sup>, N. Hovius<sup>2</sup> and G. G. Roberts<sup>4</sup>**

4 [1]{Department of Geography, Durham University, Durham, DH1 3LE, United Kingdom}

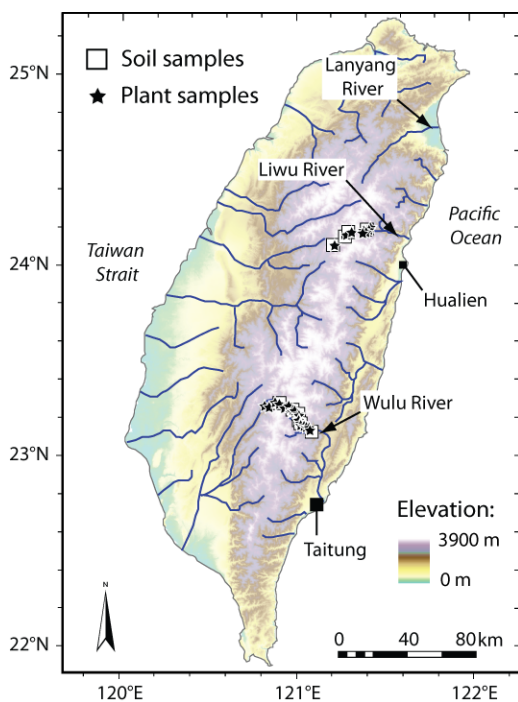
5 [2]{Department of Earth Sciences, University of Cambridge, Cambridge, CB2 3EQ, United  
6 Kingdom}

7 [3]{Department of Earth Sciences, University of Southern California, Los Angeles, CA  
8 90089, USA}

9 [4]{Bullard Laboratories, Department of Earth Sciences, University of Cambridge,  
10 Cambridge, CB3 0EZ, United Kingdom}

11 Correspondence to: R. G. Hilton ([r.g.hilton@durham.ac.uk](mailto:r.g.hilton@durham.ac.uk))

12



13

14 **Figure S1.** Soil and plant sample sites, Central Range, Taiwan and place names referred to in  
15 the text (Sec. 2). The major rivers are overlain on a 40x40m grid digital elevation model used  
16 to compute topographic slope at each sample site.

17

1 **Table S1.** Characteristics for the sample sites in the Central Range, Taiwan, numbered  
 2 sequentially by elevation. Shaded box indicates sample collection for soil (A-E horizon), pine  
 3 (*P. morrissonicola*) and grass (*Cymbopogon sp.*).

Lat.	Long.	Site #	Elevation (masl)	Hillslope angle (°)	MAP <sup>a</sup> (mm)	Soil	Pine	Grass
23.1344	121.0910	1	530	26	2060	■		
23.1414	121.0811	2	590	34	2120			■
23.1504	121.0765	3	660	32	2100		■	
23.1721	121.0344	4	730	7	2240		■	
23.1587	121.0488	5	760	34	2150		■	
23.1758	121.0321	6	900	50	2480	■	■	■
23.2659	120.8251	7	940	16	3100	■	■	
23.1922	121.0183	8	1130	39	2870	■	■	
24.2081	121.4307	9	1280	34	2520			■
23.1958	121.0208	10	1400	20	2960		■	■
24.1950	121.4222	11	1710	34	2510	■		■
23.2846	120.8830	12	1800	24	3380		■	
23.2244	121.0171	13	1850	33	2820	■	■	
23.2443	120.9976	14	2050	39	3080		■	■
24.1904	121.3884	15	2070	18	2530			■
23.2802	120.9100	16	2320	39	3470	■		
23.2472	120.9858	17	2340	20	3200	■	■	
24.1813	121.3232	18	2480	22	2930			■
24.1105	121.2132	19	2500	22	2700	2 <sup>b</sup>		
23.2598	120.9363	20	2510	37	3500		■	
24.1126	121.2258	21	2680	10	2790		■	
24.1782	121.3035	22	2680	31	2950	■		
23.2645	120.9618	23	2720	30	3480		■	■
24.1537	121.2828	24	3190	22	2990	3 <sup>b</sup>		

4 <sup>a</sup> Mean Annual Precipitation

5 <sup>b</sup> Repeated samples, with number.

1 **Table S2.** Plant (*Pinus morrisonicola* and *Cymbopogon sp.*) sample sites (in decimal degrees) with geomorphic, climatic and geochemical  
 2 characteristics as described in the main text. Mean and standard error (SE) of each variable are provided.

Lat.	Long.	Site #	Sample	Elevation (m)	Hillslope angle (°)	MAP (mm)	C <sub>org</sub> (%)	N%	δ <sup>13</sup> C (‰)	δ <sup>15</sup> N (‰)	Δδ <sup>15</sup> N <sub>s-p</sub> (‰) <sup>a</sup>
23.1504	121.0765	3	<i>Pinus morrisonicola</i>	660	32	2100	49.0	0.13	-28.7	-0.2	
23.1721	121.0344	4	<i>Pinus morrisonicola</i>	730	7	2240	49.4	0.17	-29.7	3.7	
23.1587	121.0488	5	<i>Pinus morrisonicola</i>	760	34	2150	48.8	0.09	-29.7	-2.0	
23.1758	121.0321	6	<i>Pinus morrisonicola</i>	900	50	2480	49.1	0.27	-29.6	-2.5	3.6
23.2659	120.8251	7	<i>Pinus morrisonicola</i>	940	16	3100	50.0	0.61	-28.4	3.6	
23.1922	121.0183	8	<i>Pinus morrisonicola</i>	1130	39	2870	48.9	0.21	-29.1	-0.3	4.7
23.1958	121.0208	10	<i>Pinus morrisonicola</i>	1400	20	2960	48.0	0.44	-27.8	-0.5	
23.2846	120.8830	12	<i>Pinus morrisonicola</i>	1800	24	3380	49.3	0.09	-27.0	-2.4	
23.2244	121.0171	13	<i>Pinus morrisonicola</i>	1850	33	2820	49.1	0.15	-28.0	-1.2	4.3
23.2443	120.9976	14	<i>Pinus morrisonicola</i>	2050	39	3080	49.3	0.13	-25.6	-3.7	
23.2472	120.9858	17	<i>Pinus morrisonicola</i>	2340	20	3200	48.7	0.36	-28.7	3.0	2.8
23.2598	120.9363	20	<i>Pinus morrisonicola</i>	2510	37	3500	49.4	0.22	-27.0	-3.8	
24.1126	121.2258	21	<i>Pinus morrisonicola</i>	2680	10	2790	48.4	0.39	-26.5	-0.4	
23.2645	120.9618	23	<i>Pinus morrisonicola</i>	2720	30	3480	56.3	0.37	-27.5	1.6	
23.1414	121.0811	2	<i>Cymbopogon sp.</i>	590	34	2120	44.9	0.12	-11.7	-3.3	
23.1758	121.0321	6	<i>Cymbopogon sp.</i>	900	50	2480	45.8	0.29	-12.2	-3.0	4.1
24.2081	121.4307	9	<i>Cymbopogon sp.</i>	1280	34	2520	46.0	0.19	-12.4	-2.1	
23.1958	121.0208	10	<i>Cymbopogon sp.</i>	1400	20	2963	42.4	0.48	-11.1	-2.2	
24.1950	121.4222	11	<i>Cymbopogon sp.</i>	1710	34	2510	45.8	0.24	-11.7	-1.9	4.9
23.2443	120.9976	14	<i>Cymbopogon sp.</i>	2050	39	3080	43.4	0.57	-11.7	-5.2	
24.1904	121.3884	15	<i>Cymbopogon sp.</i>	2070	18	2530	43.7	0.70	-12.8	-2.2	
24.1813	121.3232	18	<i>Cymbopogon sp.</i>	2480	22	2930	44.8	0.43	-11.3	1.2	
23.2645	120.9618	23	<i>Cymbopogon sp.</i>	2720	30	3480	44.7	0.35	-12.0	3.8	
			<i>mean</i>	1638	29	2816	47.6	0.30	-21.8	-0.9	4.1
			<i>SE</i>	152	2	93	0.6	0.04	1.7	0.5	0.3

3 δ<sup>15</sup>N difference between soil and plant organic matter at the same sample site (see Table A3).

1 **Table S3.** Soil sample sites as in Table A2, with radiocarbon age ( $^{14}\text{C}$  age, yr) where \* are reported as ‘modern’ and assigned a nominal age of  
 2 5 yr, and NERC publication code.

Lat.	Long.	Site #	Elevation (m)	Hillslope angle ( $^{\circ}$ )	MAP (mm)	$\text{C}_{\text{org}}$ (%)	N (%)	$\delta^{13}\text{C}$ (‰)	$\delta^{15}\text{N}$ (‰)	$^{14}\text{C}$ age (yr)	Publication code
23.1344	121.0910	1	530	26	2060	1.81	0.14	-26.8	0.7	713	SUERC-15290
23.1758	121.0321	6	900	50	2480	0.91	0.09	-21.5	1.2	5*	SUERC-15291
23.1922	121.0183	8	1130	39	2870	0.65	0.13	-21.5	4.4	1537	SUERC-15292
24.1950	121.4222	11	1710	34	2510	0.80	0.07	-24.1	3.0	400	SUERC-15289
23.2244	121.0171	13	1850	33	2820	1.39	0.17	-25.3	3.0	591	SUERC-15295
23.2802	120.9100	16	2320	39	3470	1.20	0.12	-26.3	3.2	10	SUERC-15300
23.2472	120.9858	17	2340	20	3200	5.22	0.37	-19.7	5.9	5*	SUERC-15299
24.1105	121.2132	19	2500	22	2700	5.09	0.39	-18.1	6.5	5*	SUERC-15302
24.1105	121.2132	19	2500	22	2700	0.77	0.14	-20.3	5.8	3082	SUERC-15303
24.1782	121.3035	22	2680	31	2950	5.24	0.39	-18.1	4.5	339	SUERC-15286
24.1537	121.2828	24	3190	22	2990	0.85	0.17	-22.4	3.9	1374	SUERC-15282
24.1537	121.2828	24	3190	22	2990	0.66	0.16	-22.4	4.9	2925	SUERC-15283
24.1537	121.2828	24	3190	22	2990	0.41	0.14	-22.9	4.9	4169	SUERC-15284
		<i>mean</i>	2156	29	2825	1.92	0.19	-22.3	4.0	1166	
		SE	245	3	98	0.53	0.03	0.8	0.5	385	

3