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Table DR1: Stomatal Density, Stomatal Index and Stomatal Number per Length of *Pseudofrenelopsis parceramosa* from Hauterivian - Barremian sediments of the Isle of Wight and Dorset, SW England. Palaeo-pCO₂ reconstruction produced using the Carboniferous and Recent standardisation and Generalised Frenelopsid NLE (SI = 10.5 ±1.5). RCO₂ is a ratio of palaeo-pCO₂ concentrations to a pre-industrial global atmospheric CO₂ concentration of 300 ppmV. ± indicates Standard Deviation as used in Fig. 3.

Sample No.	Composite Height (m)	Stomatal Density (mm ²)	Stomatal Index	Stomatal Number per Length (No. Stomata per mm)	Stomatal Ratio	Carboniferous Standardisation pCO ₂ (ppm)	Carboniferous Standardisation RCO ₂	Recent Standardisation pCO ₂ (ppm)	Recent Standardisation RCO ₂
scc1	13.4	80.0 ±26.1	5.3 ±1.1	10.6 ±2.1	2.0	1181.0 ±236.2	3.9 ±0.8	708.6 ±141.7	2.4 ±0.5
hpc106	7.25	130.6 ±33.5	5.4 ±1.1	13.2 ±2.6	1.9	1164.1 ±234.5	3.9 ±0.8	698.5 ±140.7	2.3 ±0.5
hpc105+hpc107	7.4	156.1 ±34.9	6.1 ±0.9	15.3 ±3.0	1.7	1037.9 ±158.8	3.5 ±0.5	622.8 ±95.3	2.1 ±0.3
wob607	-54.612	159.9 ±41.2	6.0 ±1.2	13.1 ±1.8	1.8	1055.0 ±221.3	3.5 ±0.7	633.0 ±132.8	2.1 ±0.4
hpc104	-97.3	105.6 ±21.1	6.6 ±1.3	11.8 ±2.4	1.6	945.8 ±189.2	3.2 ±0.6	567.5 ±113.5	1.9 ±0.4
gcc6	-147.6	101.9 ±20.4	6.5 ±1.3	10.0 ±2.0	1.6	959.9 ±192.0	3.2 ±0.6	576.0 ±115.2	1.9 ±0.4
gcc100	-154.3	85.3 ±24.4	5.4 ±1.2	9.8 ±1.8	1.9	1157.0 ±255.5	3.9 ±0.9	694.2 ±153.3	2.3 ±0.5
gcc101	-155.7	77.8 ±26.1	5.8 ±1.3	8.1 ±1.7	1.8	1080.8 ±242.4	3.6 ±0.8	648.5 ±145.5	2.2 ±0.5
wob501	-170.644	187.7 ±36.7	6.6 ±1.0	16.6 ±2.4	1.6	957.9 ±145.7	3.2 ±0.5	574.7 ±87.4	1.9 ±0.3
wob606	-182.78	111.1 ±28.0	6.8 ±1.1	11.4 ±1.8	1.6	930.2 ±156.2	3.1 ±0.5	558.1 ±93.7	1.9 ±0.3
wob604	-189.144	114.7 ±37.2	6.2 ±1.0	11.7 ±2.8	1.7	1014.6 ±161.6	3.4 ±0.5	608.8 ±96.9	2.0 ±0.3
wob500	-194.916	133.3 ±41.9	6.2 ±1.1	13.2 ±2.1	1.7	1013.5 ±172.5	3.4 ±0.6	608.1 ±103.5	2.0 ±0.3
wob603	-196.988	131.2 ±43.5	6.1 ±1.0	13.4 ±2.9	1.7	1034.9 ±175.4	3.4 ±0.6	620.9 ±105.2	2.1 ±0.4
wob601+602	-210.456	146.6 ±30.9	5.9 ±1.1	13.7 ±2.1	1.8	1069.4 ±201.5	3.6 ±0.7	641.6 ±120.9	2.1 ±0.4
WCU16	-253.524	174.3 ±50.8	6.4 ±1.3	19.3 ±3.4	1.6	983.8 ±198.3	3.3 ±0.7	590.3 ±119.0	2.0 ±0.4
WCU15	-260.924	165.0 ±56.3	6.6 ±1.6	15.6 ±3.4	1.6	951.3 ±226.9	3.2 ±0.8	570.8 ±136.1	1.9 ±0.5
WCU14	-266.844	111.1 ±37.4	5.4 ±1.3	12.4 ±2.8	1.9	1167.6 ±276.0	3.9 ±0.9	700.5 ±165.6	2.3 ±0.6
wob600	-272.764	87.3 ±35.7	5.7 ±1.3	10.3 ±1.9	1.8	1103.8 ±255.0	3.7 ±0.8	662.3 ±153.0	2.2 ±0.5
wcu1+wob503	-277.278	132.7 ±79.2	5.9 ±1.4	13.3 ±4.0	1.8	1072.9 ±256.7	3.6 ±0.9	643.7 ±154.0	2.1 ±0.5
WCU17	-302.364	84.8 ±37.3	4.9 ±1.1	12.9 ±4.2	2.1	1270.8 ±286.1	4.2 ±1.0	762.5 ±171.7	2.5 ±0.6
WCU18	-303.844	86.8 ±53.8	5.3 ±1.5	13.5 ±4.4	2.0	1179.8 ±335.1	3.9 ±1.1	707.9 ±201.0	2.4 ±0.7
WCU19	-312.724	146.8 ±31.4	6.8 ±1.3	16.3 ±4.0	1.5	929.7 ±174.4	3.1 ±0.6	557.8 ±104.6	1.9 ±0.3
wob506	-314.204	150.9 ±38.1	6.4 ±1.2	15.9 ±3.2	1.6	974.4 ±173.8	3.2 ±0.6	584.6 ±104.3	1.9 ±0.3
WCU20	-357.124	119.8 ±31.3	5.6 ±0.9	13.9 ±2.8	1.9	1114.5 ±187.1	3.7 ±0.6	668.7 ±112.3	2.2 ±0.4
wcu23+wob505	-412.254	128.2 ±31.4	5.3 ±1.0	13.0 ±2.3	2.0	1180.1 ±220.8	3.9 ±0.7	708.0 ±132.5	2.4 ±0.4

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Table DR2: Stomatal Density, Stomatal Index and Stomatal Number per Length of *Pseudofrenelopsis parceramosa* from Cretaceous (Hauterivian – Albian) sediments of the Isle of Wight, Dorset, SW England, and the Potomac Group of Virginia, USA. Palaeo-pCO₂ reconstruction produced using the Carboniferous and Recent standardisation and Generalised Frenelopsisid NLE (SI = 10.5 ± 1.5). RCO₂ is a ratio of palaeo-pCO₂ concentrations to a pre-industrial global atmospheric CO₂ concentration of 300 ppmV. ± indicates Standard Deviation as used in Fig. 3.

Locality	Stage	Stomatal Density (mm ²)	Stomatal Index	Stomatal Number per Length (No. Stomata per mm)	Stomatal Ratio	Carboniferous Standardisation pCO ₂ (ppm)	Carboniferous Standardisation RCO ₂	Recent Standardisation pCO ₂ (ppm)	Recent Standardisation RCO ₂
SW England	early Hauterivian	124.9 ± 41.5	5.8 ± 1.3	14.1 ± 3.3	1.8	1089.0 ± 238.2	3.6 ± 0.8	653.4 ± 142.9	2.2 ± 0.5
SW England	late Hauterivian	129.8 ± 56.3	6.0 ± 1.3	13.3 ± 3.6	1.8	1050.1 ± 227.1	3.5 ± 0.8	630.1 ± 136.3	2.1 ± 0.5
SW England	early Barremian	105.6 ± 21.1	6.6 ± 1.32	11.8 ± 2.4	1.6	945.8 ± 189.2	3.2 ± 0.6	567.5 ± 113.5	1.9 ± 0.4
SW England	late Barremian	145.2 ± 42.9	5.9 ± 1.0	14.2 ± 3.1	1.8	1067.8 ± 186.9	3.6 ± 0.6	640.7 ± 112.1	2.1 ± 0.4
Dutch Gap	early Aptian	107.8 ± 29.3	5.9 ± 1.1	11.9 ± 1.7	1.8	1062.3 ± 194.0	3.5 ± 0.6	637.4 ± 116.4	2.1 ± 0.4
West Walpen Chine	mid Aptian	76.4 ± 18.4	5.3 ± 0.9	9.6 ± 2.1	2.0	1175.0 ± 205.5	3.9 ± 0.7	705.0 ± 123.3	2.3 ± 0.4
Drewrys Bluff	mid-late Aptian	74.6 ± 18.3	5.4 ± 0.8	9.2 ± 1.7	1.9	1160.9 ± 170.3	3.9 ± 0.6	696.5 ± 102.2	2.3 ± 0.3
Puddledock	early-mid Albian	79.3 ± 22.8	5.2 ± 0.9	9.8 ± 1.9	2.0	1206.1 ± 200.7	4.0 ± 0.7	723.7 ± 120.4	2.4 ± 0.4
West Brothers	late Albian	84.4 ± 16.9	5.3 ± 1.1	9.4 ± 1.9	2.0	1195.7 ± 239.1	4.0 ± 0.8	717.4 ± 143.5	2.4 ± 0.5