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Emissions from prescribed fire in temperate forest in south-east Australia: implications for carbon accounting

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Supplementary Table 1. The carbon content of a range of fuel types before combustion in a mass-loss calorimeter and that of the subsequent ash. The fuel types were collected from four forest sites in East Gippsland, south-eastern Australia. Coarse woody debris was assumed to have the same values as for twigs. Values are means ± one standard deviation (n = 3).

Fuel type	Carbon content (% dry weight)			
	Oliver		Pettmans	
	Pre-burn	Ash	Pre-burn	Ash
Twigs	49.67 ± 0.15	46.41 ± 16.66	48.78 ± 0.88	63.35 ± 1.11
Decomposing matter	29.79 ± 6.04	17.78 ± 7.87	23.87 ± 7.05	17.21 ± 10.58
Ground layer	46.68 ± 0.08	13.60 ± 5.94	46.74 ± 1.36	15.26 ± 6.24
Leaf litter	56.80 ± 1.02	31.28 ± 5.16	52.35 ± 1.92	19.57 ± 16.04
Understorey	53.55 ± 0.36	45.55 ± 4.84	53.55 ± 0.36	45.55 ± 4.84
Overstorey	55.74 ± 1.00	51.65 ± 1.00	55.74 ± 1.00	51.65 ± 1.00
	South Boundary		Upper Tambo	
Twigs	49.59 ± 0.42	63.35 ± 1.11	49.14 ± 1.26	51.91 ± 17.79
Decomposing matter	32.13 ± 2.69	17.21 ± 10.58	35.42 ± 2.06	25.69 ± 6.55
Ground layer	47.72 ± 1.85	15.26 ± 6.24	47.57 ± 0.94	11.66 ± 4.61
Leaf litter	53.55 ± 2.45	19.57 ± 16.04	53.70 ± 1.69	42.31 ± 4.77
Understorey	53.55 ± 0.36	45.55 ± 4.84	53.55 ± 0.36	45.55 ± 4.84
Overstorey	55.74 ± 1.00	51.65 ± 1.00	55.74 ± 1.00	51.65 ± 1.00

Supplementary Table 2. The initial bulk density and residual mass fraction of fuel types from four forest sites in East Gippsland, south-eastern Australia, that were combusted in a mass-loss calorimeter. Values are means ± one standard deviation (n = 3).

Fuel type	Oliver		Pettmans	
	Initial bulk density (kg m^{-3})	Residual mass fraction (%)	Initial bulk density (kg m^{-3})	Residual mass fraction (%)
Twigs	86.16 ± 0.23	13.33 ± 2.84	87.33 ± 0.18	13.96 ± 2.92
Decomposing matter	80.44 ± 0.94	43.41 ± 7.21	95.64 ± 2.01	56.16 ± 9.35
Ground layer	17.22 ± 0.11	7.81 ± 1.75	26.59 ± 0.17	12.26 ± 1.13
Leaf litter	22.31 ± 0.22	7.88 ± 1.78	15.79 ± 0.14	6.56 ± 1.02
Understorey	31.83 ± 0.76	9.49 ± 1.22	31.83 ± 0.76	9.49 ± 1.22
Overstorey	21.96 ± 0.21	6.32 ± 1.50	21.96 ± 0.21	6.32 ± 1.50
	South Boundary		Upper Tambo	
Twigs	62.54 ± 0.06	12.28 ± 1.88	85.39 ± 0.23	13.55 ± 1.99
Decomposing matter	78.86 ± 3.07	47.74 ± 3.29	80.07 ± 0.50	51.18 ± 5.05
Ground layer	24.38 ± 1.11	13.64 ± 9.96	12.58 ± 5.54	5.58 ± 1.31
Leaf litter	31.16 ± 0.05	12.48 ± 1.14	26.85 ± 0.14	10.76 ± 1.18
Understorey	31.83 ± 0.76	9.49 ± 1.22	31.83 ± 0.76	9.49 ± 1.22
Overstorey	21.96 ± 0.21	6.32 ± 1.50	21.96 ± 0.21	6.32 ± 1.50

Supplementary Table 3. Ratio of excess CO, and pooled methane, non-methane and particulate matter concentrations to CO_2 concentrations for different fuel types from four forest sites in East Gippsland, south-eastern Australia, that were combusted in a mass-loss calorimeter. Coarse woody debris was assumed to have the same values as for twigs. Values are means ± one standard deviation (n = 3).

	Oliver		Pettmans	
Fuel type	$\Delta CO/\Delta CO_2$	$\Delta(\Sigma CH_4$, NMHC, PM)/ ΔCO_2	$\Delta CO/\Delta CO_2$	$\Delta(\Sigma CH_4$, NMHC, PM)/ ΔCO_2
Twigs	0.03 ± 0.01	0.49 ± 0.11	0.04 ± 0.01	0.39 ± 0.06
Decomposing matter	0.07 ± 0.02	0.06 ± 0.10	0.06 ± 0.02	0
Ground layer	0.05 ± 0.01	0.56 ± 0.05	0.05 ± 0.01	0.65 ± 0.13
Leaf litter	0.04 ± 0.01	0.80 ± 0.06	0.05 ± 0.01	0.72 ± 0.19
Understorey	0.03 ± 0.02	0.35 ± 0.27	0.03 ± 0.02	0.35 ± 0.27
Overstorey	0.03 ± 0.01	0.19 ± 0.09	0.03 ± 0.01	0.19 ± 0.09
	South Boundary		Upper Tambo	
Twigs	0.05 ± 0.01	0.76 ± 0.03	0.03 ± 0.01	0.21 ± 0.10
Decomposing matter	0.05 ± 0.01	0.10 ± 0.11	0.05 ± 0.01	0
Ground layer	0.05 ± 0.03	0.39 ± 0.30	0.07 ± 0.02	0.20 ± 0.17
Leaf litter	0.03 ± 0.01	0.46 ± 0.19	0.04 ± 0.01	0.33 ± 0.07
Understorey	0.03 ± 0.02	0.35 ± 0.27	0.03 ± 0.02	0.35 ± 0.27
Overstorey	0.03 ± 0.01	0.19 ± 0.09	0.03 ± 0.01	0.19 ± 0.09