Atmospheric
Chemistry
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Supplement of

Detecting long-term changes in point-source fossil CO_2 emissions with tree ring archives

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Table S1. Self-reported annual average emission rates of CO_2ff at Vector and Ballance plants.

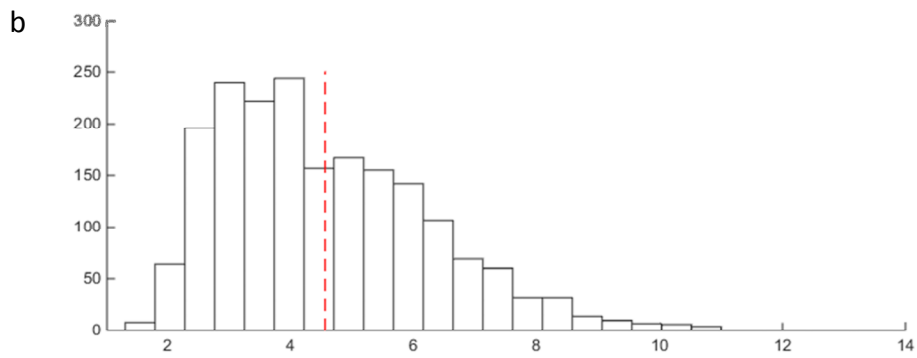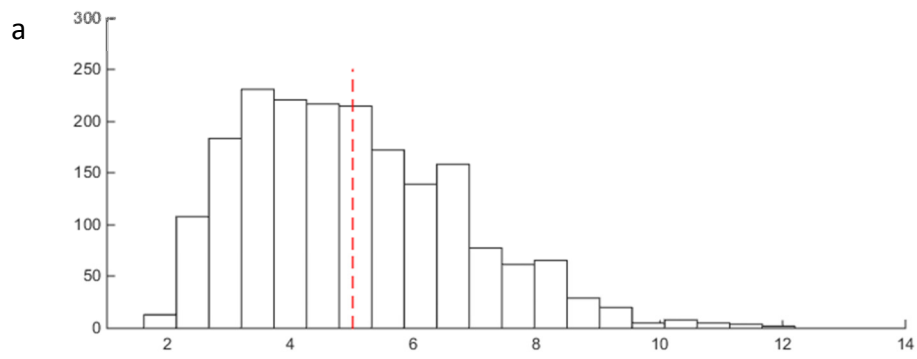| Year (Sept-Apr)	Vector (gC s^{-1})	Ballance (gC s^{-1})	Total (gC s^{-1})
2004	5328	1576	6904
2005	5711	1601	7312
2006	5714	1728	7441
2007	4611	1627	6238
2008	4968	1355	6323
2009	5654	1642	7296
2010	5436	1683	7119
2011	5300	884	6184
Mean	5340	1512	6852
Standard Deviation	388 (7.3%)	88 (18%)	525 (7.7%)

Figure S1. Histograms of daily mean wind speeds (m s^{-1}) at Hawera (a) and Kapuni (b) for the eight growing seasons 2004-2011 from the VCSN. Dashed red line shows the mean over the entire period (5.0 and 4.6 m s^{-1} for Hawera and Kapuni, respectively).
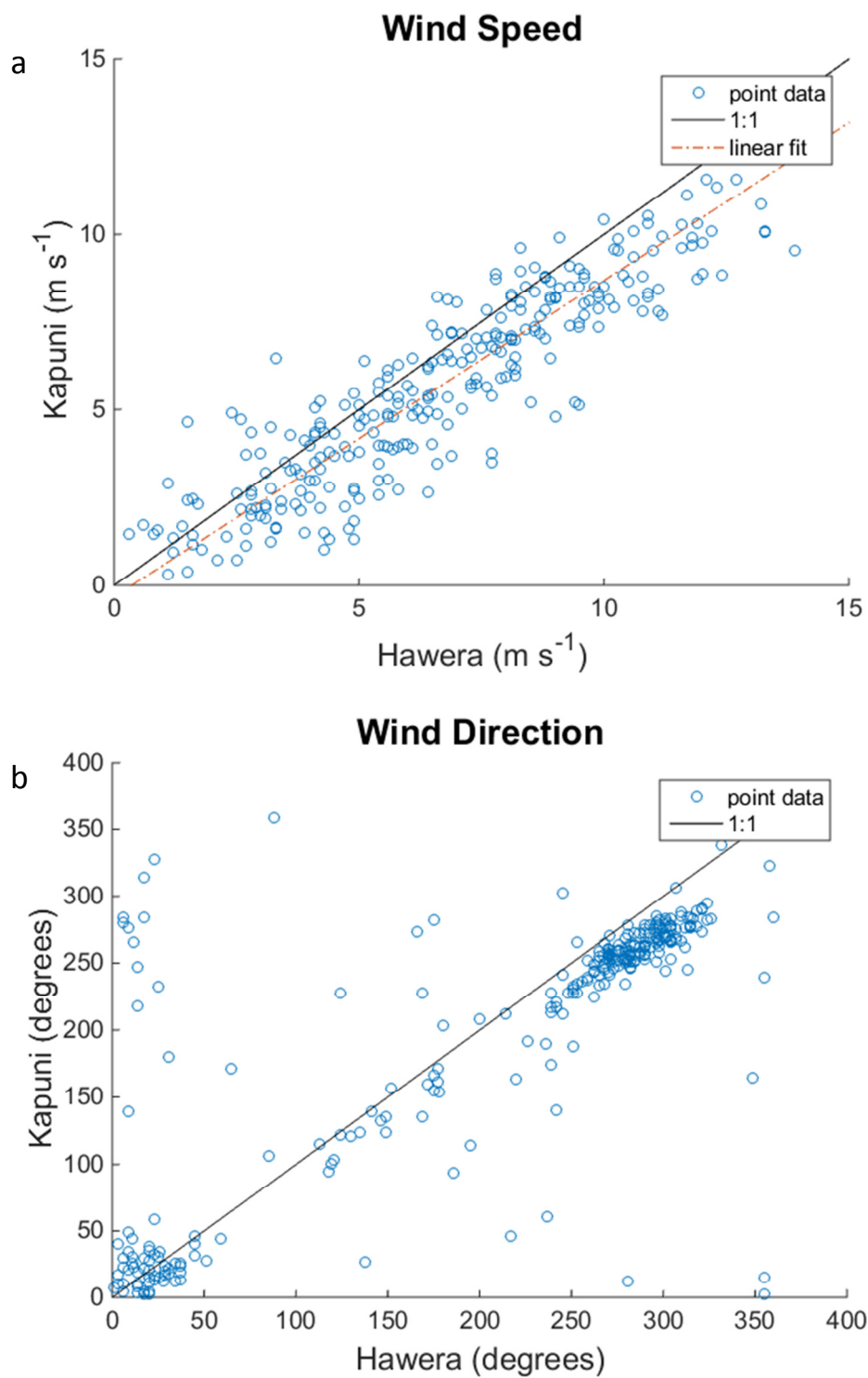
Figure S2. Wind speed in m s^{-1} (a) and wind direction in degrees (b) compared at each hourly time step at Kapuni and Hawera. Data from both sites spans daylight hours from 14 August - 26 October 2012. The 1:1 line is shown for reference. For wind speed, the linear fit of the data is also shown in red (computed with model II linear regression): *y = 0.90*x – 0.32*.
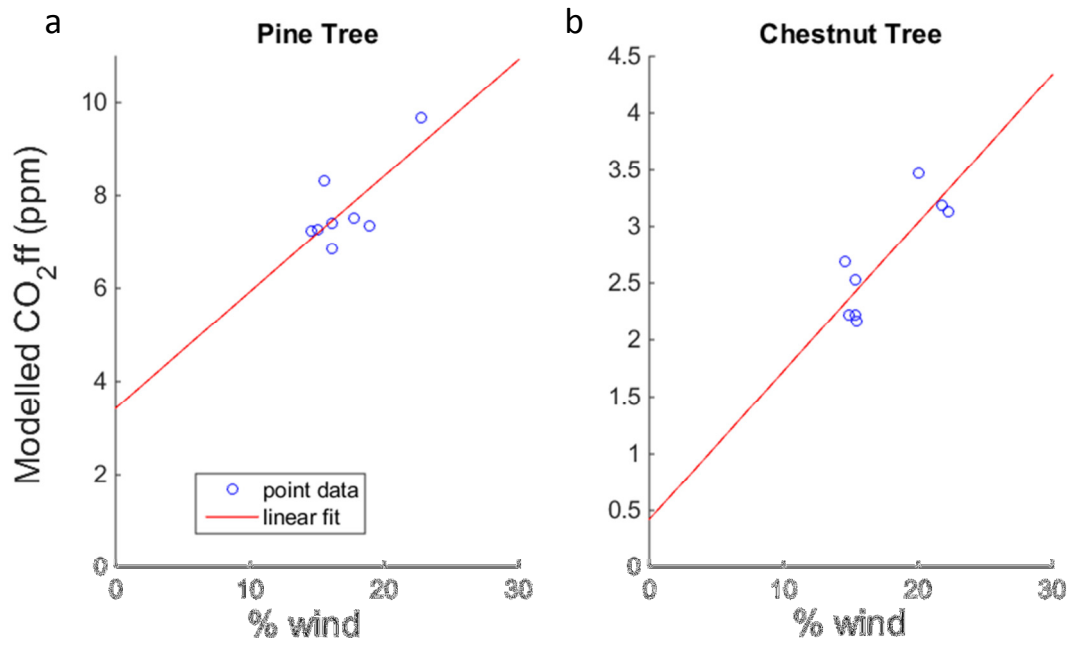
Figure S3. Correlation between % of wind from the north in each year and modelled annual CO_2ff (constant emissions) at the locations of the pine (a) and chestnut (b) trees. $R^2 = 0.56$ (pine) and 0.72 (chestnut). Red line is a linear regression fit of the data: $y = 0.25*x + 3.42$ (pine) and $y = 0.13*x + 0.42$ (chestnut).