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Supplement of

Particulate emissions from residential wood combustion in Europe – revised estimates and an evaluation

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Table S1. Point sources and area sources distinguished in the gridding of the emissions.

Point sources	Area sources
▪ Power plants (>20MW; coal, oil and gas-fired) ▪ Petroleum refineries ▪ Oil and gas production sites (including off-shore) ▪ Large surface and underground coal mines ▪ Coke ovens ▪ Primary and secondary iron and steel plants (Blast furnaces, Open hearth furnaces, Basic oxygen furnaces, Electric arc furnaces) ▪ Primary and secondary non-ferrous metal smelters (Copper, Aluminium, Lead, Nickel, Zinc/cadmium ▪ Cement factories ▪ Large chemical plants ▪ Fertilize manufacture ▪ Major airports ▪ Sea harbours	▪ Population, split into an urban and a rural part ▪ Land cover and land use, including arable land ▪ Road maps (location and traffic intensity) of larger roads ▪ Rail network ▪ Inland waterways ▪ Sea shipping routes and intensities ▪ Farm animal populations (pigs, poultry, cattle, sheep & goats, horses) ▪ A specific map for residential wood combustion (see section 2. 3)

Table S2. Types of devices usage assumed for specific countries.

	Central and Eastern Europe	Former Yugoslavia
Fire place	5%	5%
Traditional heating stove	83%	55%
Single house boiler manual	2%	20%
Single house boiler automatic	0%	5%
Medium boiler manual	10%	5%
Medium boiler automatic	1%	10%

Table S3. Evaluation of EMEP MSC-W model prediction results (with two different inventories for residential wood combustion emissions) to data from available observations in 2007–2009 (all seasons). N = number of measurements, Obsvd = Average Measured OC concentration, Model = Average modelled OC concentration (for the periods with measurements), R^2=coefficient of determination, MAE=Mean of Absolute Error. Unit for Obsvd, Model and MAE: µg(C) m^{-3}. The relative MAE (in %, within brackets) = MAE/Obsvd.

			EUCAARI emissions			TNO new RWC emissions		
Site	N	Obsvd	Model	R^2	MAE	Model	R^2	MAE
Hyytiälä (FI)[a]	248	1.06	0.86	0.54	0.36 (34%)	1.13	0.62	0.39 (37%)
Aspvreten (SE)[b]	277	1.75	1.01	0.37	0.82 (47%)	1.24	0.44	0.70 (40%)
Vavihill (SE)[c]	73	1.55	1.00	0.25	0.63 (41%)	1.20	0.38	0.50 (32%)
Melpitz (DE)[d]	1051	1.81	1.18	0.25	0.91 (50%)	1.58	0.41	0.75 (42%)
Overtoom (NL)[e]	140	2.12	1.05	0.44	1.16 (55%)	1.34	0.60	0.95 (45%)
Birkenes (NO)[f]	265	0.68	0.73	0.57	0.29 (43%)	0.72	0.58	0.30 (44%)

[a)] 20070214-20080218: Measured OC_1, Model $OC_{2.5}$, Aurela et al. (2011); [b)] 20080418-20091230: OC_{10}; [c)] 20080424-20091231: OC_{10}, Genberg et al. (2011); [d)] 20070101-20091231: $OC_{2.5}$; [e)] Note: Urban background station, Amsterdam (the station is not heavily influenced by RWC and OC concentrations are similar to surrounding rural background sites, Schaap and Denier van der Gon, 2007), 20070218-20081231: $OC_{2.5}$; [f)] 20070102-20091229: $OC_{2.5}$.

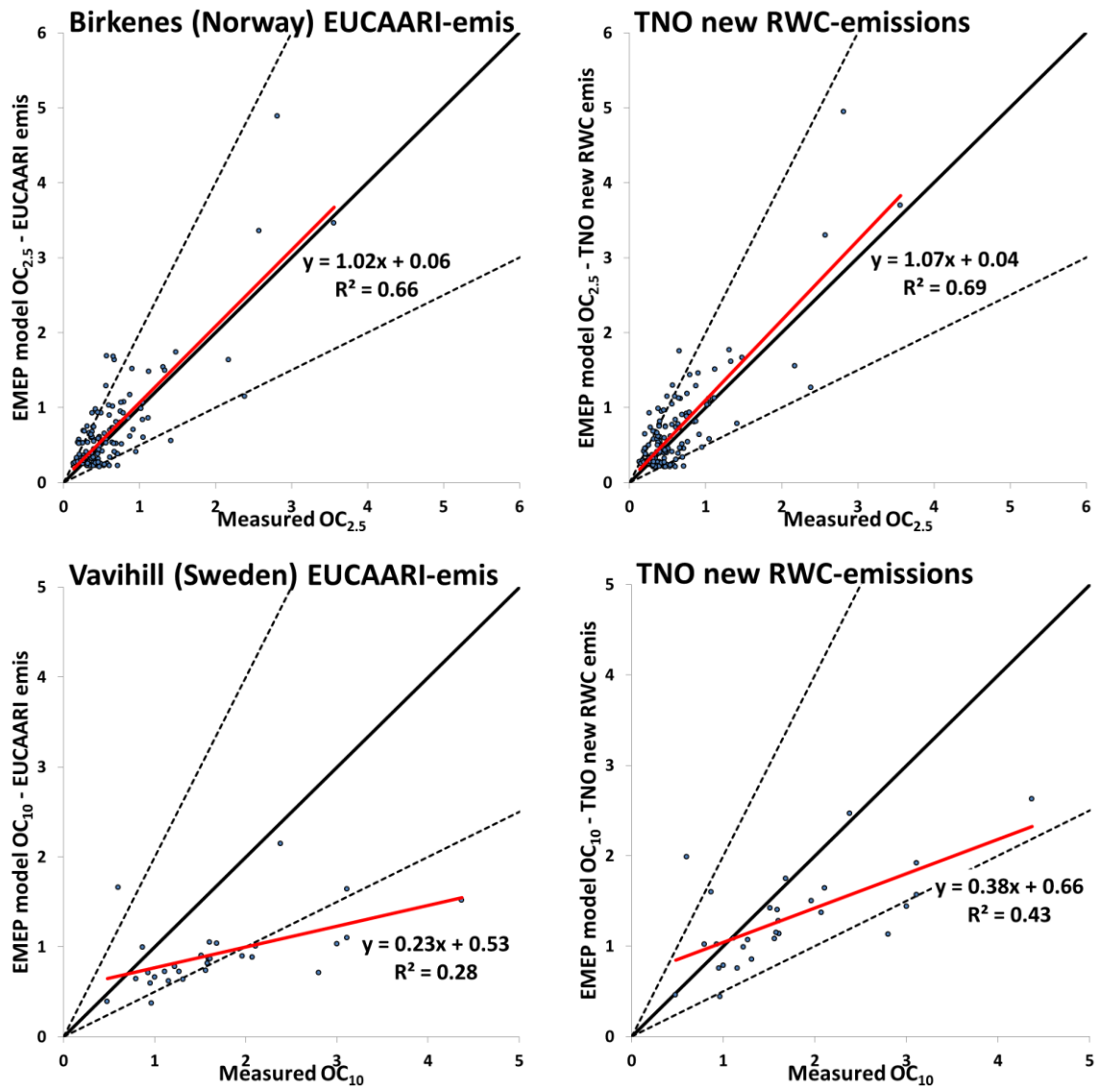

Figure S1. Measured and modelled OC concentrations at Birkenes (Norway) and Vavihill (Sweden) during winter half-year periods (November-April). The left-side plots show EMEP MSC-W model results using the EUCAARI emissions and the right-side plots results using the new residential wood combustion emissions. For Birkenes OC in $PM_{2.5}$ is shown and for Vavihill OC in PM_{10}. Unit: µg C m^{-3}. Further details see Table 4.