



Real-world elemental carbon (EC) emission factors of diesel vehicles in China

Xianbao Shen, Xinyue Cao

Beijing Technology and Business University

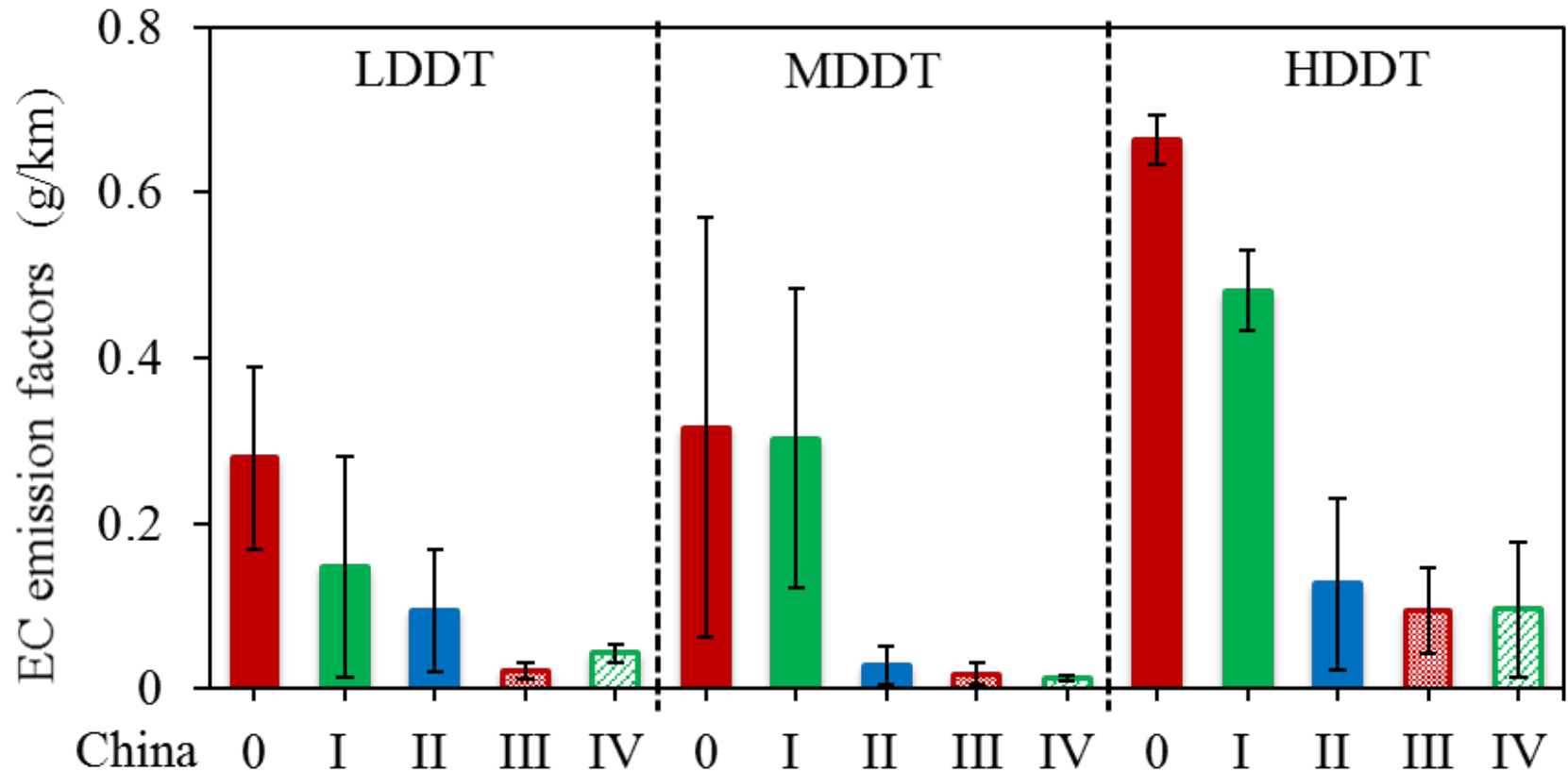


Test Vehicles

		Total	YC 2010	JN 2011	XM 2012	BJ 2012	BJ 2013	BJ 2014	GBD 2015
Diesel Vehicle	China 0	9	7	1	1				
	China I	31	21	3	7				
	China II	9	5	4					
	China III	33		12	3	9	8	1	
	China IV	11		2				9	
Rural Vehicle	3-RVs	9							10
	4-RVs	9							8
	Total	101	33	22	11	9	8	10	18

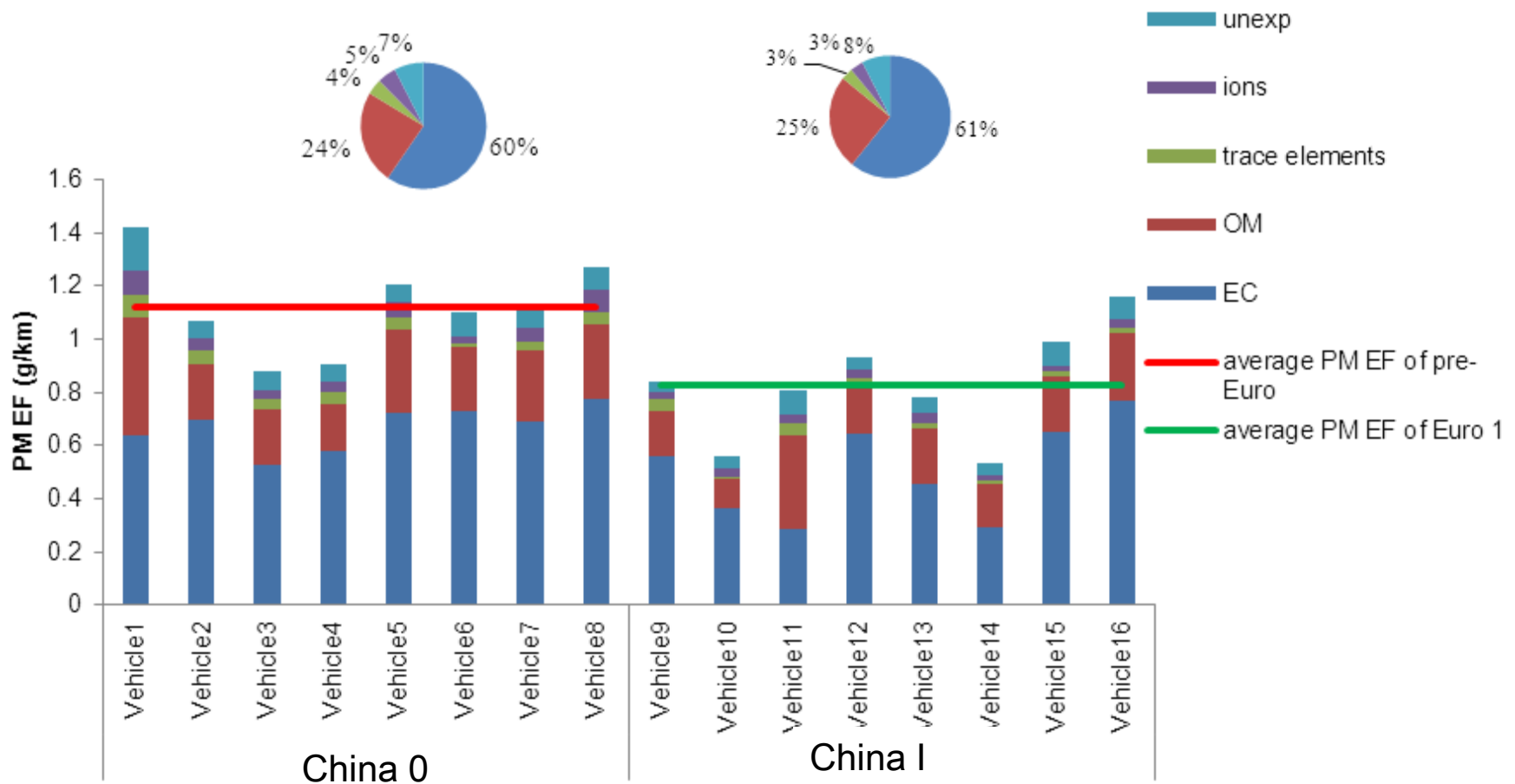
YC-Yichang; JN-Jinan; XM-Xiamen; BJ-Beijing; GBD-Gaobeidian

Result of diesel truck



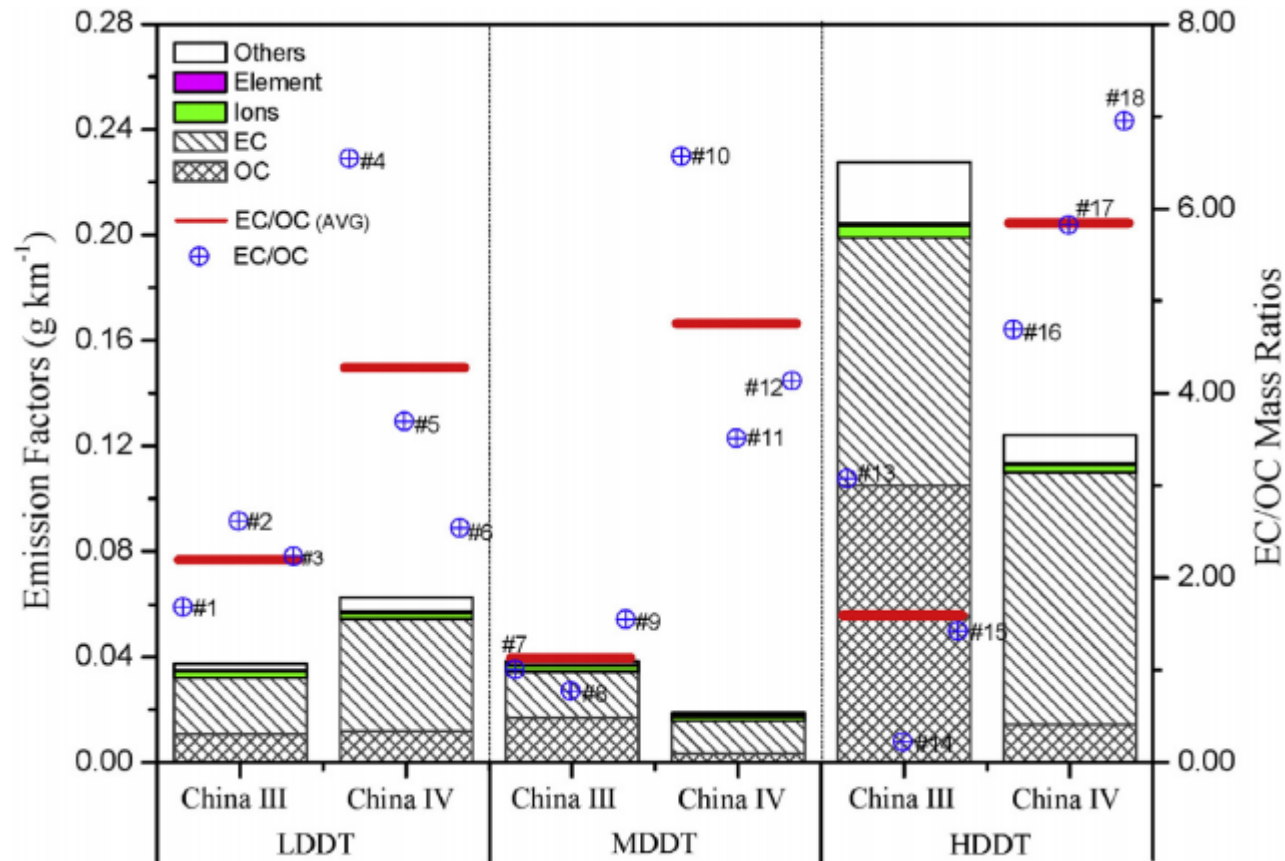
- The EC (element carbon) emissions factors were **significantly reduced** under more stringent emission standards;
- The emissions factors of EC varied widely;

Result of diesel truck



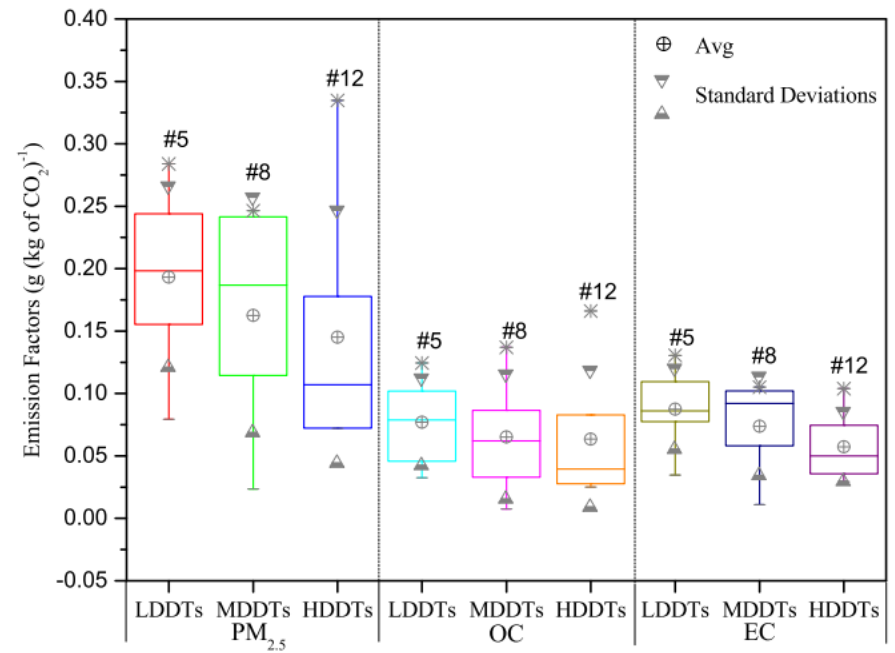
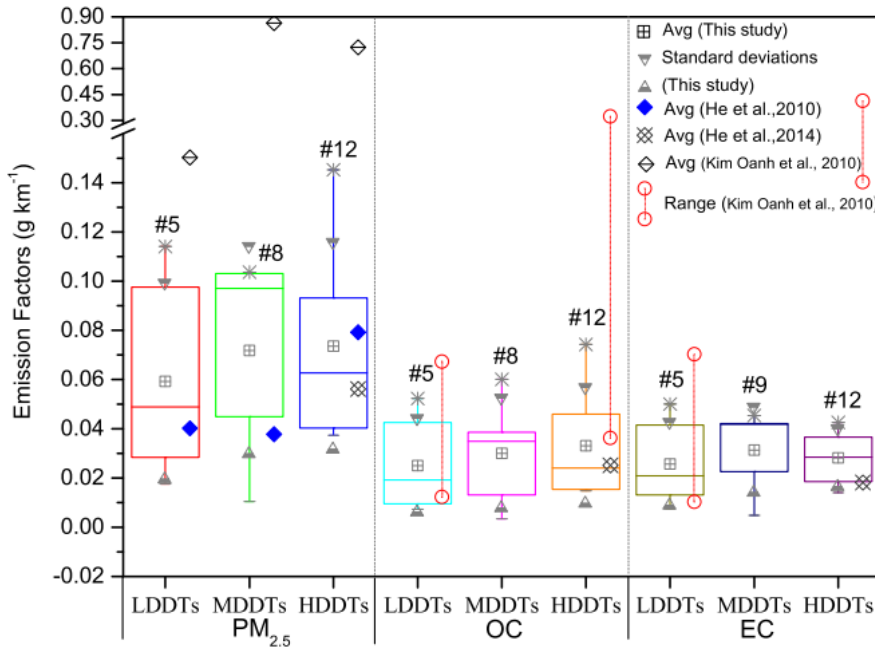
- The fraction of EC/PM_{2.5} ranged from 44.7 to 65.2% for China 0 and 35.6-69.2% for China I HDDTs;
- The EC is the significant constituent part of PM_{2.5} emitted from China 0 and China I HDDTs

Result of diesel truck)



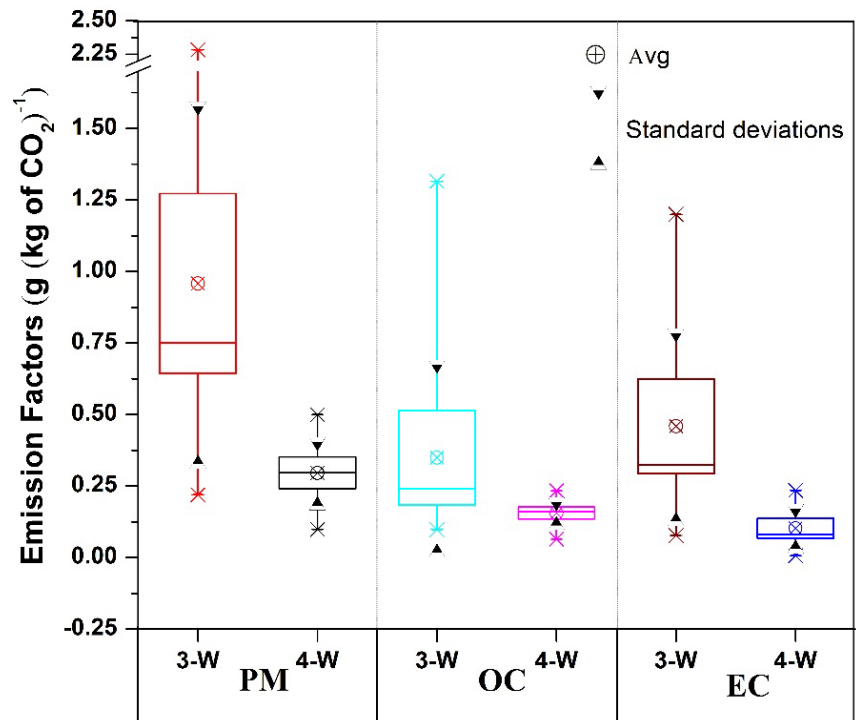
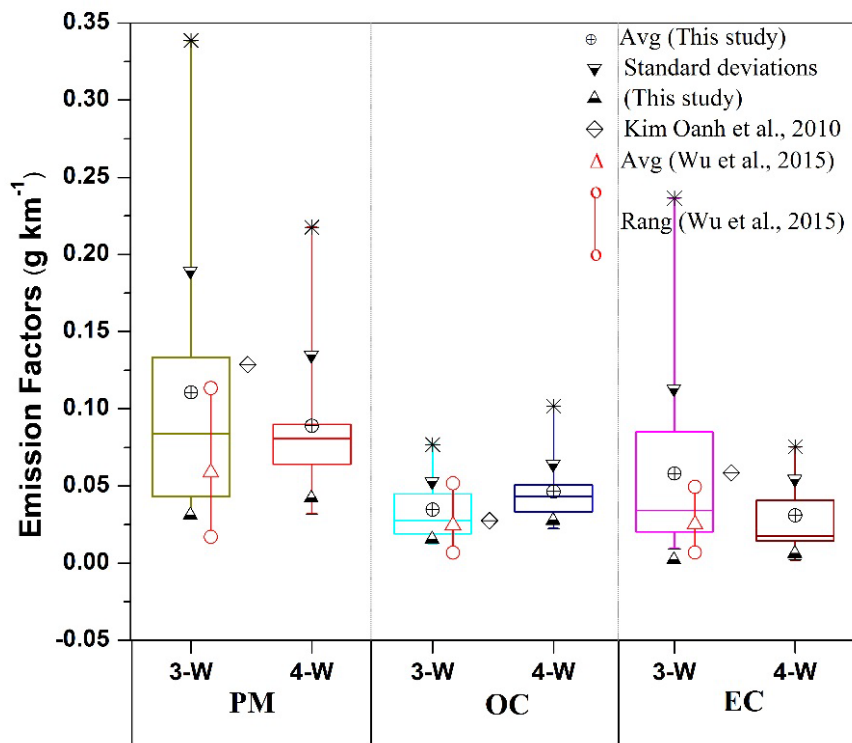
For the tested China III LDDTs, MDDTs, and HDDTs, the EC/PM_{2.5} mass ratios were 57%, 46%, and 41%, respectively;
 The EC/PM_{2.5} were 68%, 67%, 77% for the China IV LDDTs, MDDTs, HDDTs, respectively;

Result of diesel truck



- The distance-based average EC EFs of HDDTs were much higher than those of LDDTs and MDDTs because more fuel is consumed to power the larger engines.
- The LDDTs produced more EC than the HDDTs per unit of CO₂.

Result of Rural vehicle



- The EFs of EC for 3-W and 4-W RVs were $0.058 \pm 0.055 \text{ g km}^{-1}$ and $0.031 \pm 0.024 \text{ g km}^{-1}$, respectively; The EFs EC for 3-W RVs varied more widely than for 4-W RVs;
- The average EF of EC for 3-W RVs was higher than for 4-W RVs, and the EFs of EC for both 3-W RVs and 4-W RVs were higher than Euro III LDDTs;
- The engine condition of the 3-W RVs is worse than 4-W RVs, and worse than Euro III LDDTs;

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Thank you for your attention

谢谢！