

SUPPORTING MATERIAL

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Tables

Table S1. Database of NO_x emission factors of Chinese vehicles obtained through instrumental measurements.

Source	Location	Method (instrument)	Vehicle type	Control stage	Sampling Size	Original EF	Unit	Uncertainty ¹	EF (kg/t)
Chen et al. (2007)	Shanghai	On-road test (SEMTECH-D)	HDDV	Not stated	10	6.5	g/km	4.0-9.6	43.3 ²
Yao et al. (2007)	Seven cities in China	On-road test (AVL Five-Gas Analyzer)	LDGV	Carburetor	11	2.3	g/km	±1.8	35.0 ³
			LDGV	Electronic ejection	3	2.3	g/km	±1.4	35.0 ³
			LDGV	Stage I	25	1.3	g/km	±1.3	19.8 ³
			LDGV	Stage II	9	0.9	g/km	±0.7	13.7 ³
Oliver (2008)	Tianjin	On-road test (OBS-2200)	LDGV	Stage 0	12	2.3	g/km	±0.9	35.0 ³
			LDGV	Stage I	58	0.7	g/km	±0.5	10.9 ³
He et al. (2010)	Beijing Xi'an Shenzhen	On-road test (SEMTECH-DS)	LDGV	Stage 0	2	48.0	kg/t	±24.0	48.0
			LDGV	Stage I	5	23.5	kg/t	±26.5	23.5
			LDGV	Stage II	19	6.5	kg/t	±4.5	6.5
			LDGV	Stage III	9	3.5	kg/t	±5.5	3.5
			LDGV	Stage IV	5	1.0	kg/t	±0.5	1.0
			LDDT	Stage 0	1	28.5	kg/t	N/A	28.5
			LDDT	Stage I	5	40.0	kg/t	±13.0	40.0
			LDDT	Stage II	20	53.5	kg/t	±16.5	53.5
			LDDT	Stage III	3	65.0	kg/t	±15.0	65.0
			MDDT	Stage I	16	45.8	kg/t	±15.5	45.8
			MDDT	Stage II	14	42.5	kg/t	±16.8	42.5
			MDDT	Stage III	7	41.0	kg/t	±15.5	41.0
			HDDV	Stage I	6	41.0	kg/t	±11.5	41.0
			HDDV	Stage II	5	40.5	kg/t	±10.0	40.5
			HDDV	Stage III	15	46.3	kg/t	±11.5	46.3
			Yao et al. (2011)	Beijing	On-road test (SEMTECH-DS)	RV-3w ⁴	Not stated	10	55.3
RV-4w ⁵	Not stated	10				56.8	kg/t	±20.5	56.8
RV-3w	Before 2007	8				44.0	kg/t	±15.0	44.0
RV-3w	After 2007	2				70.0	kg/t	±5.0	70.0
			RV-4w	Before 2007	4	43.0	kg/t	±12.0	43.0
			RV-4w	After 2007	6	65.0	kg/t	±21.0	65.0

Table S1. Database of NO_x emission factors of Chinese vehicles obtained through instrumental measurements (continued).

Source	Location	Method (instrument)	Vehicle type	Control stage	Sampling Size	Original EF	Unit	Uncertainty ¹	EF (kg/t)
Guo et al. (2007)	Hangzhou	Remote Sensing	LDGV	Stage 0	2506	9.2	g/l	7.0-11.5	12.6
			LDGV	Stage I	10910	7.1	g/l	5.4-8.8	9.7
			LDGV	Stage II	10376	3.8	g/l	3.0-4.7	5.2
			LDGT	Stage 0	798	9.4	g/l	±1.2	12.9
			LDGT	Stage I	812	5.1	g/l	±0.8	6.9
			LDGT	Stage II	384	3.8	g/l	±0.9	5.2
			HDGV	Not stated	381	4.2	g/l	±1.1	5.8
			MC	Not stated	222	4.1	g/l	±1.0	5.6
Zhou et al. (2007)	Beijing	Remote Sensing	LDGV	Stage 0	Not stated	2.1	g/km	1.4-3.0	32.0 ³
			LDGV	Stage I	Not stated	1.2	g/km	0.8-2.2	18.3 ³
			LDGV	Stage II	Not stated	0.6	g/km	0.3-0.8	8.5 ³

¹ Uncertainties are given either in ranges or in standard errors, according to original studies; ² Converted based on a fuel economy of 18 L/100km provided by the original study; ³ Converted based on a fuel economy of 9 L/100km suggested by [Huo et al. \(2011b\)](#); ⁴ Three-wheel rural vehicle; ⁵ Four-wheel rural vehicle.

Table S2. Database of PM_{2.5} emission factors of Chinese vehicles obtained through instrumental measurements.

Source	Location	Method (instrument)	Vehicle type	Control stage	Sampling Size	Original EF	Unit	Uncertainty ¹	EF (kg/t)
He et al. (2010)	Beijing Xi'an Shenzhen	On-road test (SEMTECH-DS)	LDDT	Stage 0	1	7.5	kg/t	N/A	7.5
			LDDT	Stage I	5	3.4	kg/t	±2.3	3.4
			LDDT	Stage II	20	1.5	kg/t	±1.0	1.5
			LDDT	Stage III	3	0.5	kg/t	±0.3	0.5
			MDDT	Stage I	16	1.8	kg/t	±1.0	1.8
			MDDT	Stage II	14	1.3	kg/t	±1.0	1.3
			MDDT	Stage III	7	0.3	kg/t	±0.1	0.3
			HDDV	Stage I	6	3.6	kg/t	±1.6	3.6
			HDDV	Stage II	5	1.9	kg/t	±1.2	1.9
			HDDV	Stage III	15	0.5	kg/t	±0.4	0.5
			RV-3w ²	Not stated	10	4.2	kg/t	±1.8	4.2
			RV-4w ³	Not stated	10	2.7	kg/t	±1.3	2.7
Yao et al. (2011]	Beijing	On-road test (SEMTECH-DS)	RV-3w	Before 2007	8	4.3	kg/t	±0.2	4.3
			RV-3w	After 2007	2	3.7	kg/t	±0.3	3.7
			RV-4w	Before 2007	4	2.7	kg/t	±0.8	2.7
			RV-4w	After 2007	6	2.1	kg/t	±1.0	2.1
Wang et al. (2011)	Around Beijing	Carbon balance (Q-Trak Model 7565, TSI Inc)	HDDV	Stage II	18	0.7	kg/t	0.1-1.7	0.7
			HDDV	Stage III	14	0.4	kg/t	0.1-1.2	0.4
			HDDV	Stage IV	10	0.2	kg/t	0.1-0.6	0.2

¹ Uncertainties are given either in ranges or in standard errors, according to original studies; ² Three-wheel rural vehicle; ³ Four-wheel rural vehicle.

Figures

Figure S1

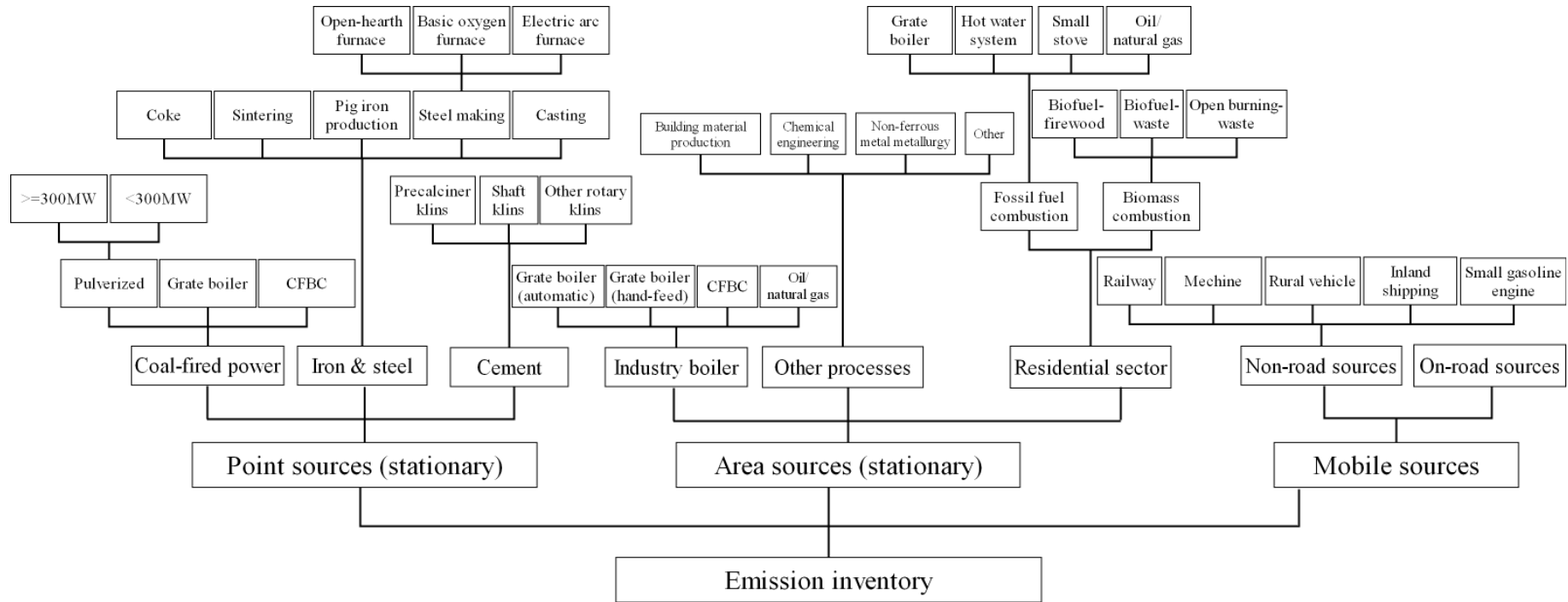


Figure S2.

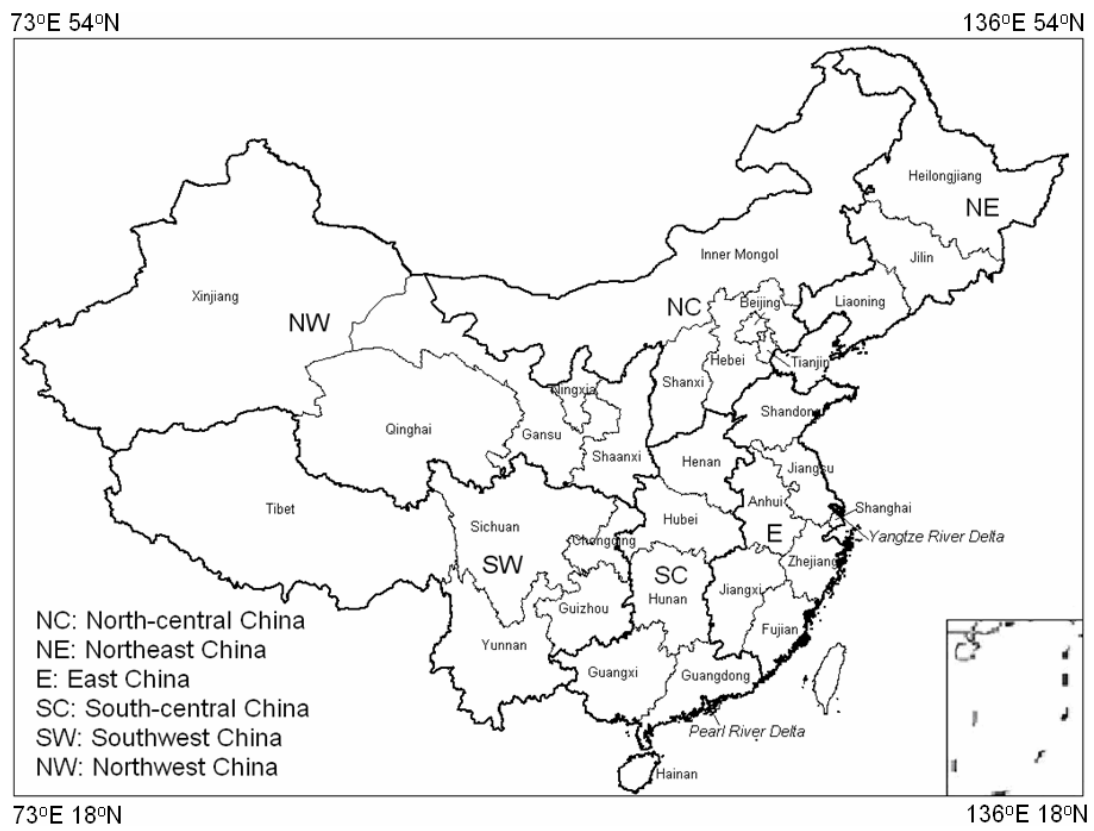
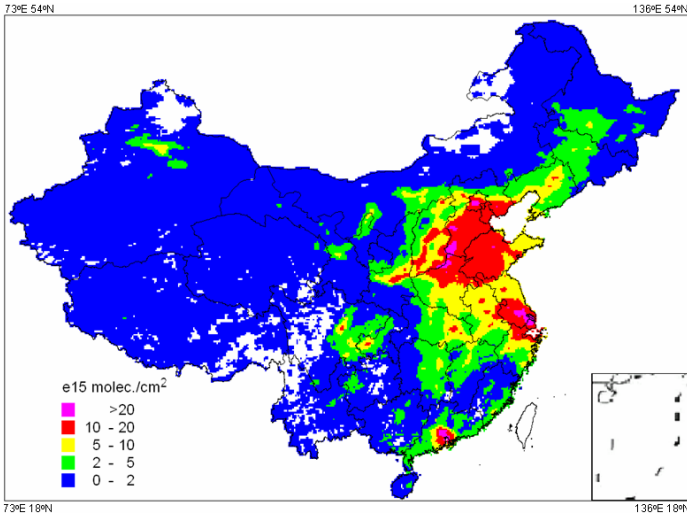
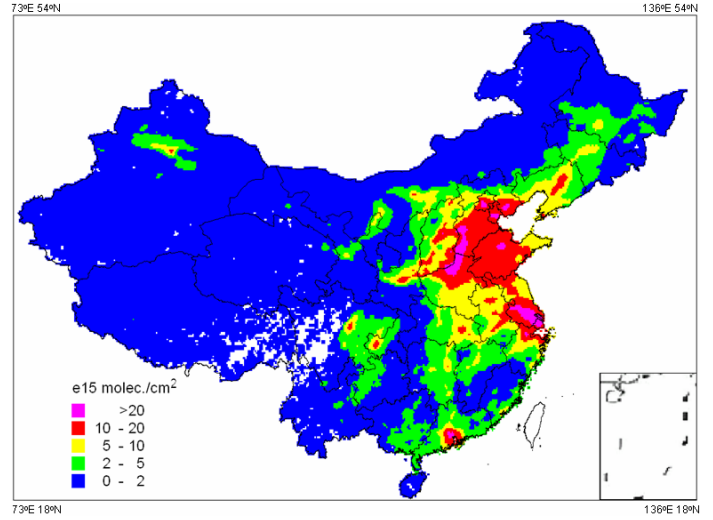


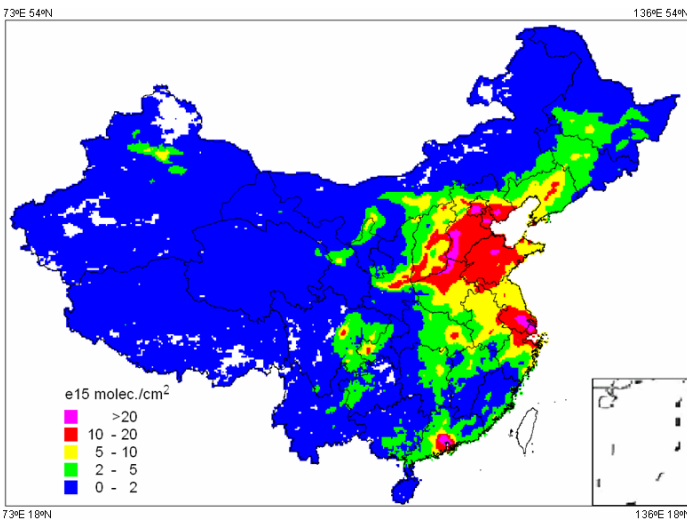
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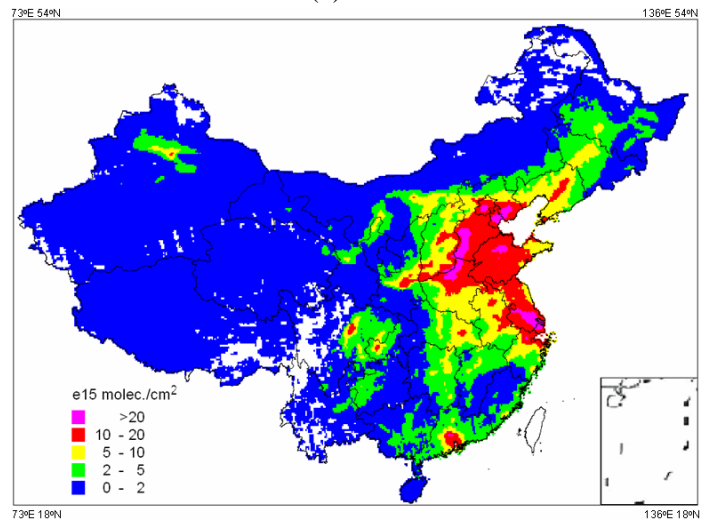
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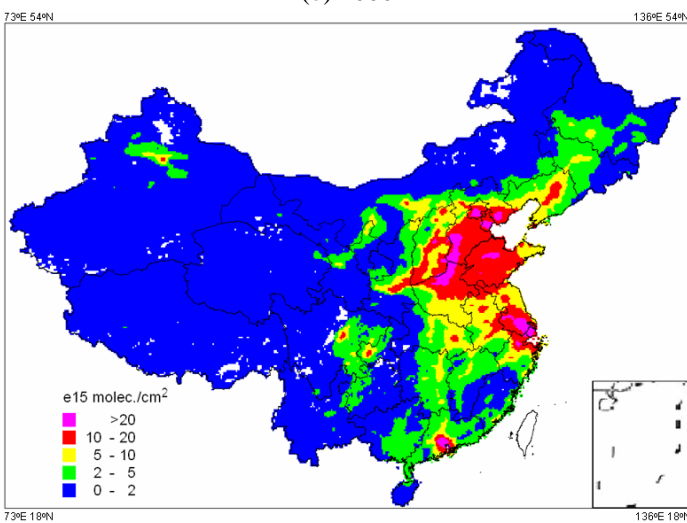
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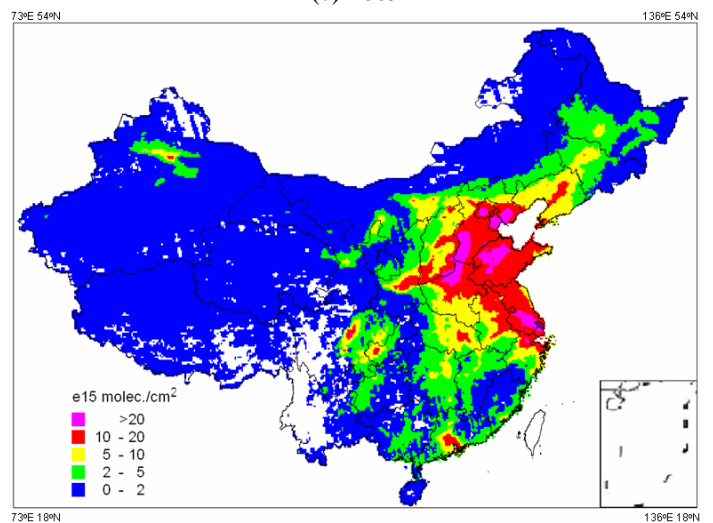
(b) 2006



(e) 2009

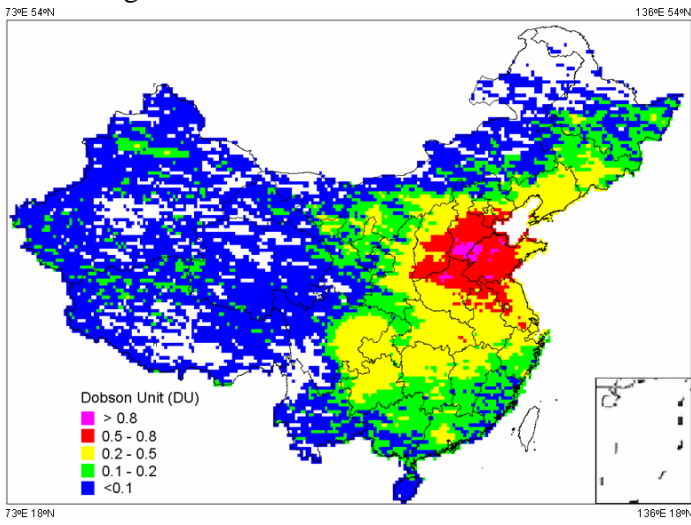


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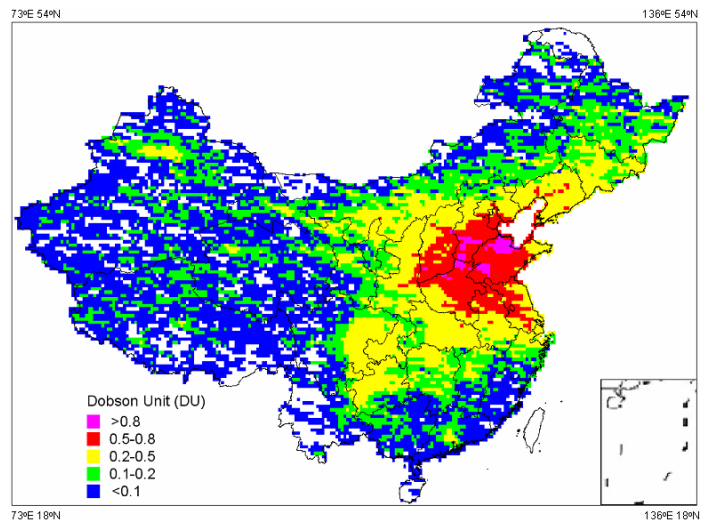


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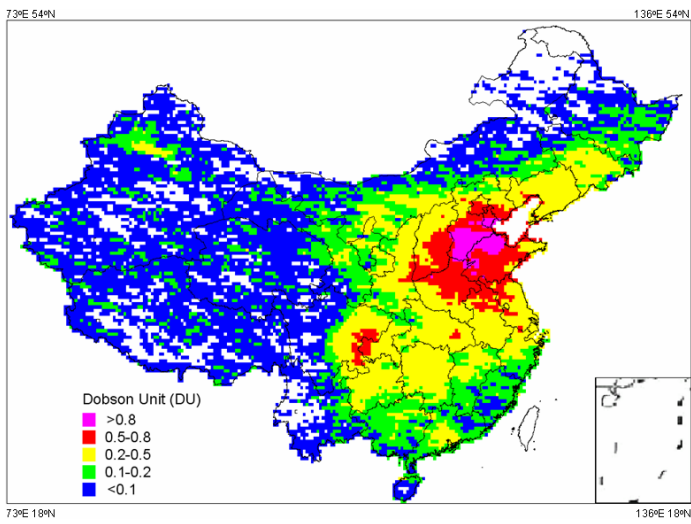
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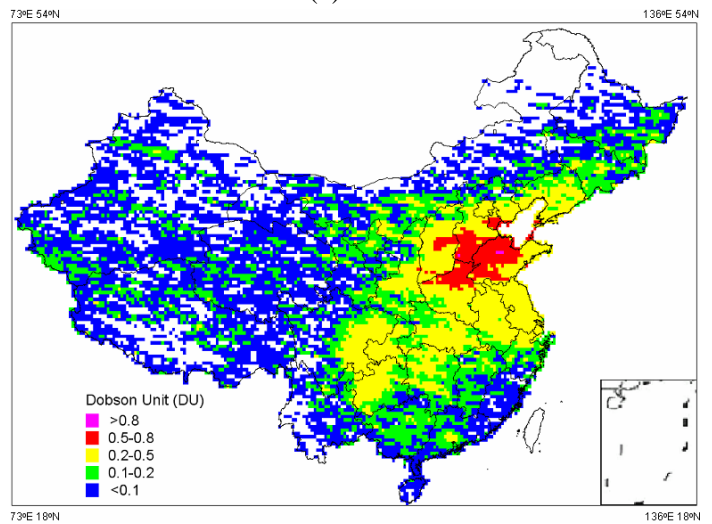
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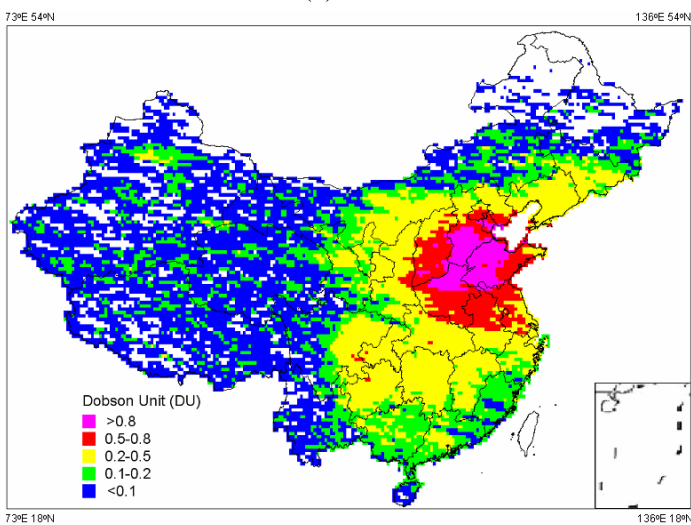
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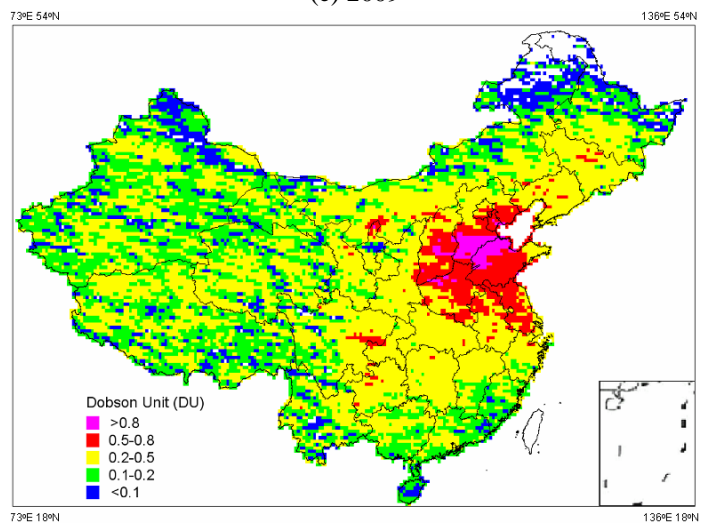
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(e) 2009



(c) 2007



(f) 2010

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