

Supplement of Biogeosciences, 11, 4115–4122, 2014
<http://www.biogeosciences.net/11/4115/2014/>
doi:10.5194/bg-11-4115-2014-supplement
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Supplement of

Increasing biomass carbon stocks in trees outside forests in China over the last three decades

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1 **Supplement**

2 **Table S1.** Biomass density of different shrubby types in China.

No	Community type	Shrubbery type ^a	Location	Biomass density (Mg ha ⁻¹)	Reference
1	<i>Avicennia marina</i>	1	Hainan	9.60	Liao <i>et al.</i> (1993)
2	<i>Berberis julianae</i>	2	Sichuan	11.00	Wang (2009)
3	<i>Berberis sp.</i>	2	Gansu	11.99	Zhu <i>et al.</i> (1993)
4	<i>Ceriops tagal</i>	1	Hainan	11.61	Liao <i>et al.</i> (1993)
5	<i>Coriaria nepalensis</i>	4	Sichuan	16.16	Wang (2009)
6	<i>Corylus heterophylla</i>	2	Shanxi	46.45	Chen <i>et al.</i> (2002)
7	<i>Cotinus coggygria</i>	5	Hubei	13.58	He <i>et al.</i> (1997)
8	<i>Cyclobalanopsis glauca</i> + <i>Casatanea sequinii</i>	5	Guizhou	15.67	Tu and Yang (1995)
9	<i>Itea ilicifolia</i> + <i>Itea yunnanensis</i>	6	Guizhou	42.26	Tu and Yang (1995)
10	<i>Lithocarpus dealbatus</i>	5	Yunnan	23.43	Peng <i>et al.</i> (1992)
11	<i>Loropetalum chinense</i>	5	Hubei	21.03	He <i>et al.</i> (1997)
12	<i>Lumnitzera racemosa</i>	1	Hainan	14.30	Liao <i>et al.</i> (1993)
13	<i>Myrica nana</i>	6	Yunnan	5.58	Gong <i>et al.</i> (2012)
14	<i>Myrsine africana</i>	5	Hubei	22.54	He <i>et al.</i> (1997)
15	<i>Nandina domestica</i> + <i>Sageretia theezans</i>	4	Guizhou	45.68	Tu and Yang (1995)
16	<i>Ostryopsis davidiana</i>	2	Shanxi	38.64	Chen <i>et al.</i> (2002)
17	<i>Potentilla fruticoso</i>	3	Gansu	7.47	Lei (2012)
17	<i>Potentilla fruticoso</i>	3	Gansu	6.29	Lei (2012)
17	<i>Potentilla fruticoso</i>	3	Gansu	15.10	Lei (2012)
17	<i>Potentilla fruticoso</i>	3	Gansu	18.06	Lei (2012)
17	<i>Potentilla fruticoso</i>	3	Gansu	20.82	Lei (2012)
17	<i>Potentilla fruticoso</i>	3	Gansu	36.89	Yu <i>et al.</i> (2000)
17	<i>Potentilla fruticoso</i>	3	Gansu	42.82	Yu <i>et al.</i> (2000)
17	<i>Potentilla fruticoso</i>	3	Gansu	35.50	Yu <i>et al.</i> (2000)
17	<i>Potentilla fruticoso</i>	3	Gansu	32.30	Yu <i>et al.</i> (2000)
17	<i>Potentilla fruticoso</i>	3	Qinhai	6.77	Zhao <i>et al.</i> (2013)
17	<i>Potentilla fruticoso</i>	3	Qinhai	37.10	Zhou <i>et al.</i> (2002)
17	<i>Potentilla fruticoso</i>	3	Gansu	9.60	Zhu <i>et al.</i> (1993)
18	<i>Pyracantha fortuneana</i> + <i>Platycarya longipes</i>	4	Guizhou	26.67	Tu and Yang (1995)
19	<i>Quercus longispica</i>	5	Yunnan	27.46	Ou and Zhang (1992)
20	<i>Rhododendron capitatum</i>	6	Shaanxi	13.99	Zhang <i>et al.</i> (1995)

20	<i>Rhododendron capitatum</i>	6	Shaanxi	22.16	Zhang <i>et al.</i> (1995)
20	<i>Rhododendron capitatum</i>	6	Shaanxi	9.17	Zhang <i>et al.</i> (1995)
20	<i>Rhododendron capitatum</i>	6	Shaanxi	29.31	Zhang <i>et al.</i> (1995)
20	<i>Rhododendron capitatum</i>	6	Shaanxi	15.59	Zhang <i>et al.</i> (1995)
21	<i>Rhododendron sp.</i>	6	Shaanxi	38.07	Zhang <i>et al.</i> (1995)
21	<i>Rhododendron sp.</i>	6	Gansu	29.15	Zhu <i>et al.</i> (1993)
22	<i>Rhodomyrtus tomentosa</i>	5	Hongkong	19.61	Guan (1998)
	<i>Rosa cymosa+</i>				
23	<i>Zanthoxylum planispinum</i>	4	Guizhou	30.77	Tu and Yang (1995)
24	<i>Rosa omeiensis</i>	3	Sichuan	9.67	Wang (2009)
25	<i>Rosa xanthina</i>	2	Shanxi	31.28	Chen <i>et al.</i> (2002)
25	<i>Rosa xanthina</i>	2	Shanxi	6.23	Zhang and Shangguan (1991)
26	<i>Salix cupularis</i>	3	Shaanxi	14.33	Zhang <i>et al.</i> (1995)
26	<i>Salix cupularis</i>	3	Shaanxi	20.20	Zhang <i>et al.</i> (1995)
26	<i>Salix cupularis</i>	3	Shaanxi	24.68	Zhang <i>et al.</i> (1995)
26	<i>Salix cupularis</i>	3	Shaanxi	38.40	Zhang <i>et al.</i> (1995)
26	<i>Salix cupularis</i>	3	Shaanxi	16.10	Zhang <i>et al.</i> (1995)
26	<i>Salix cupularis</i>	3	Shaanxi	29.72	Zhang <i>et al.</i> (1995)
26	<i>Salix cupularis</i>	3	Gansu	22.82	Zhu <i>et al.</i> (1993)
27	<i>Sibiraea angustate</i>	3	Sichuan	37.93	Wu (1998)
27	<i>Sibiraea angustate</i>	3	Sichuan	45.85	Wu (1998)
	<i>Viburnum chinshanensis+</i>				
28	<i>Coriaria sinica</i>	4	Guizhou	33.75	Tu and Yang (1995)
29	<i>Vitex negundo</i>	2	Hubei	16.90	He <i>et al.</i> (1997)
30	<i>Zanthoxylum tibetanum</i>	2	Sichuan	9.42	Wang (2009)

3 ^a: 1) Sclerophyllus evergreen broadleaf scrubs and dwarf forests on seashore in tropical zone; 2)
4 Deciduous scrubs and dwarf forests in temperate and subtropical zones; 3) Subalpine deciduous
5 scrubs in temperate and subtropical zones; 4) Evergreen and deciduous scrubs and dwarf forests
6 on calcareous soil in subtropical and tropical zones; 5) Broadleaf evergreen and deciduous scrubs
7 and dwarf forests on acid soil in subtropical and tropical zones; 6) Alpine and subalpine
8 sclerophylla evergreen scrubs and dwarf forests in subtropical zones.

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51 **Table S2.** The carbon density of shrubberies in each province in China.

Region	Province	Carbon density (Mg ha ⁻¹)
Northern China	Beijing	10.74
	Tianjin	10.74
	Hebei	10.74
	Shanxi	10.74
	Inner Mongolia	10.74
Northeastern China	Liaoning	10.74
	Jilin	10.74
	Heilongjiang	10.74
Eastern China	Shanghai	10.74
	Jiangsu	10.74
	Zhejiang	10.68
	Anhui	10.93
	Fujian	10.26
	Jiangxi	10.60
	Shandong	10.74
Southern China	Henan	10.74
	Hubei	11.10
	Hunan	11.67
	Guangdong	10.58
	Guangxi	13.20
	Hainan	10.41

	Sichuan	11.56
Southwestern China	Guizhou	11.85
	Yunnan	11.16
	Xizang	11.81
	Shannxi	10.73
Northwestern China	Gansu	10.82
	Qinghai	11.34
	Ningxia	10.74
	Xinjiang	10.74

54 **Table S3.** The magnitude and change of C stocks among six regions' TOF during 1977-2008.

Regions	Period	Carbon stock (Tg C)			
		Total	Woodlands	Shrubbery	Trees on non-forest lands
China	1977-1981	822.9	70.3	334.9	417.6
	1984-1988	959.9	74.2	350.3	535.5
	1989-1993	1114.3	68.7	373.9	671.7
	1994-1998	1194.9	108.1	426.8	659.9
	1999-2003	1233.3	96.6	511.9	624.8
	2004-2008	1338.9	82.5	605.2	651.2
	1977-2008	516.0	12.2	270.3	233.6
Northern China	1977-1981	80.7	8.5	25.3	46.9
	1984-1988	129.8	6.3	35.8	87.7
	1989-1993	189.2	6.0	36.2	147.0
	1994-1998	190.2	9.7	44.7	135.8
	1999-2003	206.8	12.1	67.6	127.1
	2004-2008	238.9	12.3	103.6	122.9
	1977-2008	158.2	3.8	78.4	76.0
Northeastern China	1977-1981	65.0	12.3	12.7	40.0
	1984-1988	109.3	8.9	8.1	92.4
	1989-1993	128.3	8.1	2.8	117.5
	1994-1998	131.8	10.2	3.4	118.1
	1999-2003	114.7	7.9	7.2	99.6
	2004-2008	118.0	5.0	8.7	104.3
	1977-2008	53.0	-7.3	-4.0	64.3
Eastern China	1977-1981	143.1	9.2	14.6	119.3
	1984-1988	142.8	10.5	8.1	124.1
	1989-1993	144.3	7.8	8.2	128.3
	1994-1998	151.0	11.3	13.7	126.0
	1999-2003	136.6	8.1	15.6	112.9
	2004-2008	128.5	4.0	12.5	112.0
	1977-2008	-14.6	-5.2	-2.1	-7.3
Southern China	1977-1981	108.4	9.8	34.3	64.4
	1984-1988	119.0	9.8	35.9	73.3
	1989-1993	149.3	7.7	41.5	100.1
	1994-1998	183.7	10.9	68.0	104.8
	1999-2003	181.8	9.6	77.2	95.0

	2004-2008	187.3	7.3	79.1	100.9
	1977-2008	78.8	-2.5	44.9	36.5
<hr/>					
	1977-1981	356.4	24.7	201.5	130.3
	1984-1988	373.4	31.8	212.2	129.3
	1989-1993	400.4	30.2	229.3	140.9
Southwestern China	1994-1998	416.0	47.7	231.8	136.6
	1999-2003	431.7	42.2	236.0	153.4
	2004-2008	462.2	34.5	253.8	173.8
	1977-2008	105.8	9.9	52.4	43.6
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