Assessment of satellite-estimated near-surface sulfate and nitrate concentrations and their precursor emissions over China from 2006-2014

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Table S1 Ground measurements collected from publications.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| City | lat | lon | () |  |  | Sample Period | Source |
| **PM2.5** | **SO42-** | **NH4+** |
| Akdala | 47.10 | 88.00 |  | 3.3 | 0.6 | Jul 2004 - Dec 2004,  Feb 2005 - Mar 2005 | (Qu et al.,2008,2009) |
| Baoding | 38.88 | 115.47 |  | 8.46 | 4.955 | Aug 2009 | ([Li et al. 2013a](#_ENREF_24)) |
| Baoding | 38.88 | 115.47 |  | 3.69 | 0.21 | Sep 2009 |
| Baoding | 38.88 | 115.47 |  | 6.835 | 2.15 | Oct 2009 |
| Baoding | 38.88 | 115.47 |  | 23.32 | 16.025 | Nov 2009 |
| Baoding | 38.88 | 115.47 |  | 36.53 | 19.57 | Dec 2009 |
| Baoding | 38.88 | 115.47 |  | 33.59 | 16.175 | Jan 2010 |
| Baoding | 38.88 | 115.47 |  | 8.285 | 14.87 | Feb 2010 |
| Baoding | 38.88 | 115.47 |  | 13.895 | 3.56 | Mar 2010 |
| Baoding | 38.88 | 115.47 |  | 7.785 | 2.82 | Apr 2010 |
| Baoding | 38.88 | 115.47 |  | 6.1 | 0.035 | May 2010 |
| Baoding | 38.88 | 115.47 |  | 16.225 | 6.205 | Jun 2010 |
| Baoding | 38.88 | 115.47 |  | 29.2 | 27.295 | Jul 2010 |
| Baoding | 38.88 | 115.47 |  | 23.215 | 9.37 | Aug 2010 |
| Baoding | 38.88 | 115.47 |  | 40.855 | 15.525 | Sep 2010 |
| Baoding | 38.88 | 115.47 |  | 26.805 | 14.72 | Oct 2010 |
| Baoding | 38.88 | 115.47 |  | 11.25 | 4.795 | Nov 2010 |
| Baoding | 38.88 | 115.47 |  | 18.2 | 8.4 | Dec 2010 |
| Baoding | 38.88 | 115.47 |  | 61.2 | 37.32 | Feb 2011 |
| Baoding | 38.88 | 115.47 |  | 6.355 | 4.21 | Mar 2011 |
| Baoding | 38.88 | 115.47 |  | 9.555 | 4.985 | Apr 2011 |
| Baoding | 38.88 | 115.47 |  | 12.325 | 6.825 | May 2011 |
| Baoding | 38.88 | 115.47 |  | 14.34 | 4.395 | Jun 2011 |
| Baoding | 38.88 | 115.47 |  | 33.905 | 15.485 | Jul 2011 |
| Baoding | 38.88 | 115.47 |  | 26.62 | 10.475 | Aug 2011 |
| Baolin | 39.56 | 116.17 | 70.6 |  |  | Mar 2004 - May 2004 | ([Zhao et al. 2009](#_ENREF_60)) |
| Baolin | 39.56 | 116.17 | 84.5 |  |  | Jun 2005 - Aug 2005 |
| Baolin | 39.56 | 116.17 | 122.3 |  |  | Sep 2005 - Nov 2005 |
| Baolin | 39.56 | 116.17 | 63.3 |  |  | Dec 2005 - Feb 2006 |
| Baolin | 39.56 | 116.17 | 99.7 |  |  | Mar 2006 - May 2006 |
| Baolin | 39.56 | 116.17 | 81.3 |  |  | Jun 2006 - Aug 2006 |
| Baolin | 39.56 | 116.17 | 81.1 |  |  | Sep 2006 - Nov 2006 |
| Baolin | 39.56 | 116.17 | 112 |  |  | Dec 2006 - Feb 2007 |
| Baolin | 39.56 | 116.17 | 74.2 |  |  | Mar 2007 - May 2007 |
| Baolin | 39.56 | 116.17 | 91.7 |  |  | Jun 2007 - Aug 2007 |
| Baolin | 39.56 | 116.17 | 74.2 |  |  | Sep 2007 - Nov 2007 |
| Baolin | 39.56 | 116.17 | 98 |  |  | Dec 2007 - Feb 2008 |
| Beijing | 40.32 | 116.32 | 118.5 | 15.8 | 7.3 | Mar 2005 - Feb 2006 | ([Yang et al. 2011](#_ENREF_47)) |
| Beijing | 39.93 | 116.28 | 65.6 | 50 |  | 2005 | ([Yu et al. 2011](#_ENREF_53)) |
| Beijing | 39.93 | 116.28 | 63.3 | 53 |  | 2006 |
| Beijing | 39.93 | 116.28 | 64.2 | 47 |  | 2007 |
| Beijing | 39.98 | 116.35 | 112.4 | 24.2 | 15.8 | 2009 | (Wang et al.,2015) |
| Beijing | 39.98 | 116.34 | 33.3 |  |  | 2009 - 2011 | (Xin et al.,2014) |
| Beijing | 39.99 | 116.30 | 55.4 |  |  | 2010 | ([Yu et al. 2013](#_ENREF_52)) |
| Beijing | 39.98 | 116.34 | 57.3 | 14 | 7.72 | Jul 2008 - Sep 2008 | ([Song et al. 2012](#_ENREF_33)) |
| Beijing | 39.98 | 116.34 | 142 | 12.7 | 8.55 | Sep 2009 - Dec 2009 |  |
| Beijing | 39.90 | 116.30 | 123.45 | 19.07 | 0.37 | Apr 2009,Jul 2009,Oct 2009,  Jun 2010 | ([Zhao et al. 2013](#_ENREF_59)) |
| Beijing | 39.99 | 116.30 | 135 | 13.6 | 6.9 | Apr 2009,Jul 2009,Oct 2009,  Jan 2010 | ([Zhang et al. 2013](#_ENREF_56)) |
| Beijing | 39.95 | 116.30 | 92.6 | 14.6 | 8.3 | Jun 2009, Sep 2009, Dec 2009, Mar 2010 | (Liu et al.,2014) |
| Beijing | 39.98 | 116.34 | 125 | 24.6 | 13.5 | Jul 2009 - Sep 2009 | ([Song et al. 2012](#_ENREF_33)) |
| Beijing | 39.98 | 116.34 | 138 | 12.1 | 8 | Sep 2009 - Dec 2009 |  |
| Beijing | 39.91 | 116.41 | 123.4 | 19.07 | 6.37 | 2009-2010 | ([Zhao et al. 2013](#_ENREF_59)) |
| Beijing | 39.91 | 116.41 | 127.6 | 16.42 | 6.77 | Apr 2009 |  |
| Beijing | 39.91 | 116.41 | 115.8 | 33.76 | 8.43 | Jul 2009 |  |
| Beijing | 39.91 | 116.41 | 124.3 | 11.53 | 5.01 | Oct 2009 |  |
| Beijing | 39.91 | 116.41 | 126.5 | 14.23 | 5.21 | Jan 2010 |  |
| Beijing | 39.96 | 116.36 |  | 22.69 | 6.25 | Sep 2009 | ([Li et al. 2013a](#_ENREF_24)) |
| Beijing | 39.96 | 116.36 |  | 4.75 | 0.91 | Oct 2009 |  |
| Beijing | 39.96 | 116.36 |  | 16.66 | 6.24 | Nov 2009 |  |
| Beijing | 39.96 | 116.36 |  | 15.18 | 2.63 | Dec 2009 |  |
| Beijing | 39.96 | 116.36 |  | 15.32 | 4.49 | Jan 2010 |  |
| Beijing | 39.96 | 116.36 |  | 5.84 | 2.6 | Feb 2010 |  |
| Beijing | 39.96 | 116.36 |  | 9.53 | 2.09 | Mar 2010 |  |
| Beijing | 39.96 | 116.36 |  | 10.07 | 4.19 | Apr 2010 |  |
| Beijing | 39.96 | 116.36 |  | 11.28 | 1.11 | May 2010 |  |
| Beijing | 39.96 | 116.36 |  | 15.31 | 2.82 | Jun 2010 |  |
| Beijing | 39.96 | 116.36 |  | 37.01 | 33.75 | Jul 2010 |  |
| Beijing | 39.96 | 116.36 |  | 13.98 | 8.39 | Aug 2010 |  |
| Beijing | 39.96 | 116.36 |  | 22.36 | 10.17 | Sep 2010 |  |
| Beijing | 39.96 | 116.36 |  | 12.87 | 12.965 | Oct 2010 |  |
| Beijing | 39.96 | 116.36 |  | 7.725 | 1.41 | Nov 2010 |  |
| Beijing | 39.96 | 116.36 |  | 14.94 | 4.395 | Dec 2010 |  |
| Beijing | 39.96 | 116.36 |  | 48.92 | 35.75 | Feb 2011 |  |
| Beijing | 39.96 | 116.36 |  | 7.86 | 3.343 | Mar 2011 |  |
| Beijing | 39.96 | 116.36 |  | 16.725 | 11.74 | Apr 2011 |  |
| Beijing | 39.96 | 116.36 |  | 17.665 | 9.045 | May 2011 |  |
| Beijing | 39.96 | 116.36 |  | 41.03 | 20.94 | Jun 2011 |  |
| Beijing | 39.96 | 116.36 |  | 48.01 | 6.74 | Jul 2011 |  |
| Beijing | 39.96 | 116.36 |  | 34.625 | 16.895 | Aug 2011 |  |
| Beijing | 39.91 | 116.41 |  | 32.774 | 24.400 | Feb 2011 | ([Qiao et al. 2014](#_ENREF_32)) |
| Beijing | 39.91 | 116.41 |  | 6.076 | 6.032 | Mar 2011 |  |
| Beijing | 39.91 | 116.41 |  | 10.736 | 7.729 | Apr 2011 |  |
| Beijing | 39.91 | 116.41 |  | 10.555 | 5.709 | May 2011 |  |
| Beijing | 39.91 | 116.41 |  | 39.431 | 20.837 | Jun 2011 |  |
| Beijing | 39.91 | 116.41 |  | 35.965 | 19.292 | Jul 2011 |  |
| Beijing | 39.91 | 116.41 |  | 24.992 | 13.013 | Aug 2011 |  |
| Beijing | 39.91 | 116.41 |  | 19.216 | 11.606 | Sep 2011 |  |
| Beijing | 39.91 | 116.41 |  | 18.526 | 15.103 | Oct 2011 |  |
| Beijing | 39.91 | 116.41 |  | 11.164 | 9.690 | Nov 2011 |  |
| Beijing | 39.91 | 116.41 |  | 9.108 | 6.764 | Dec 2011 |  |
| Beijing | 39.91 | 117.5 |  | 116.278 |  | 2011 |  |
| Beijing Beisihuan | 39.98 | 116.34 | 125 | 24.6 | 13.5 | Jun 2006,Jul 2006,Aug 2006 | (Song et al.,2012) |
| Beijing Heishanzhai | 40.36 | 116.31 |  | 18.23 | 9.7 | Jun 2006,Jul 2006,Aug 2006 | (Song et al.,2012) |
| Benxi | 41.90 | 123.47 | 78.2 |  |  | 2007 | ([Guo et al. 2009](#_ENREF_14)) |
| CAS | 39.98 | 116.39 | 273.2 | 15.2 | 2.9 | Mar 2006 - Apr 2006 | ([Zhou et al. 2012a](#_ENREF_61)) |
| CAS | 39.98 | 116.39 | 119 | 29.9 | 9.3 | Jul 2006 - Aug 2006 |  |
| CAS | 39.98 | 116.39 | 194.2 | 18.6 | 7.7 | Oct 2006 - Nov 2006 |  |
| CAS | 39.98 | 116.39 | 162.2 | 20.3 | 7.3 | Dec 2006 |  |
| CAS | 39.98 | 116.39 | 176.6 | 22.4 | 7.3 | 2006 |  |
| CAS | 39.98 | 116.39 |  | 21.3 | 12.5 | Sep 2006 - Aug 2007 | ([Li et al. 2013a](#_ENREF_24)) |
| CAS | 39.98 | 116.39 |  | 10.8 | 11.7 | Mar 2007 - May 2007 |  |
| CAS | 39.98 | 116.39 |  | 12.6 | 21.4 | Jun 2007 - Aug 2007 |  |
| CAS | 39.98 | 116.39 |  | 18.2 | 9.6 | Sep 2006 - Nov 2006 |  |
| CAS | 39.98 | 116.39 |  | 43.7 | 7.4 | Dec 2006 - Feb 2007 |  |
| Changsha | 28.16 | 112.95 | 92.3 |  |  | Jun 2009 - Oct 2009 | ([Yang et al. 2011](#_ENREF_47)) |
| Changsha | 39.98 | 116.39 | 72.3 |  |  | Jul 2006 - Aug 2006 | (Li et al.,2007) |
| Chengdu | 30.7 | 104 |  | 40.5 | 14 | 2006 - 2007 | (Zhang et al.,2012) |
| Chengdu | 30.61 | 104.04 | 133.2 | 15.5 | 4.6 | Apr 2009 - May 2009 | ([Yang et al. 2012b](#_ENREF_50)) |
| Chengdu | 30.66 | 104.00 | 165.1 | 32.8 | 10.4 | Apr 2009 - Jan 2010 | (李友平,2014) |
| Chengdu | 30.66 | 104.00 | 165 | 33 | 10.4 | Apr 2009,Jul 2009,  Oct 2009,Jan 2010 | ([Tao et al. 2013](#_ENREF_39)) |
| Chengdu | 30.65 | 104.03 | 119 | 25 | 11.6 | Apr 2011,Jun 2011,  Jul 2011,Oct 2011 | ([Tao et al. 2014](#_ENREF_38))  ( |
| Chengdu | 30.58 | 104.07 | 123 |  |  | Aug 2012 |
| Chengdu | 30.58 | 104.07 | 133.2 | 15.5 | 11.27 | Apr 2009,May 2009 | ([Yang et al. 2012b](#_ENREF_50)) |
| Chengdu | 30.58 | 104.07 | 113.5 |  |  | Jun 2009,Jul 2009,Aug 2009 | (Tao et al.,2013) |
| Chengdu | 30.58 | 104.07 | 188 |  |  | Sep 2009,Oct 2009,Nov 2009 | (Tao et al.,2013) |
| Chengdu | 30.58 | 104.07 | 225.5 |  |  | Dec 2009,Jan 2010 | (Tao et al.,2013) |
| Chinese Academy of Environmental Sciences | 40.05 | 116.42 |  | 20.74 | 10.85 | Aug 2008 | ([Gao et al. 2013](#_ENREF_11)) |
| Chongqing | 29.57 | 106.53 | 129.6 | 25.6 | 7.9 | Mar 2005 - Feb 2006 | ([Yang et al. 2011](#_ENREF_47)) |
| Chongqing | 29.57 | 106.56 | 215.3 | 50.47 | 22.8 | Dec 2007 | ([Huo et al. 2012](#_ENREF_21)) |
| Chongqing Dadukou | 29.5 | 106.5 |  | 23.4 | 7.7 | Mar 2005 - Feb 2006 | ([He et al. 2012](#_ENREF_16)) |
| CSV Guanghzou | 23.15 | 113.37 | 107.5 |  |  | Jul 2004 - Aug 2004 | ([Duan et al. 2007](#_ENREF_9)) |
| CSV Guanghzou | 23.15 | 113.37 | 129.9 |  |  | Nov 2004 - Jan 2005 | (Duan et al.,2007) |
| CSV Guanghzou | 23.15 | 113.37 | 81.7 | 5.6 | 4.7 | Dec 2008 - Feb 2009 | ([Yang et al. 2011](#_ENREF_47)) |
| Daihai | 39.86 | 111.27 | 64.5 |  |  | Aug 2005 - Sep 2005 | ([Han et al. 2008](#_ENREF_15)) |
| Daihai | 39.86 | 111.27 | 115 |  |  | Jan 2006 |  |
| Daihai | 39.86 | 111.27 | 50.7 |  |  | Jun 2006 - Jul 2006 |  |
| Daihai | 39.86 | 111.27 | 71.4 |  |  | Apr 2007 - May 2007 | 同上 |
| Dinghu | 23.16 | 112.57 | 30.8 | 10.24 | 3.04 | Aug 2008 | ([Li et al. 2010](#_ENREF_26)),([Wang et al. 2008](#_ENREF_40)) |
| Dunhuang | 40.2 | 94.7 |  | 6.6 | 0.4 | 2006 - 2007 | ([Zhang et al. 2012b](#_ENREF_57)) |
| Duolun | 42.20 | 116.52 | 64.1 |  |  | Mar 2007 - Apr 2007 | ([Deng et al. 2011](#_ENREF_6)) |
| Erdos | 39.62 | 109.79 | 51.8 | 1.07 |  | Sep 2005 | ([Wang et al. 2012b](#_ENREF_43)),([Zhang et al. 2010](#_ENREF_58)) |
| Gaolanshan | 36 | 105.9 |  | 16.7 | 6.5 | 2006 - 2007 | ([Zhang et al. 2012b](#_ENREF_57)) |
| Guangdong Longtang | 23.61 | 113.08 | 50.7 |  |  | Apr 2009 | ([Wei et al. 2011](#_ENREF_44)) |
| Guangdong Longtang | 23.61 | 113.08 | 115.6 |  |  | Jan - Feb 2010 | 同上 |
| Guangdong  Environment  Observatory | 23.11 | 113.34 | 102.9 | 27.8 | 12.1 | Oct - Nov 2004 | ([Andreae et al. 2008](#_ENREF_1)) |
| Guangdong University of Technology | 23.04 | 113.4 |  | 23.35 |  | Sep 2006 | ([Gao et al. 2011](#_ENREF_10)) |
| Guangdong University of Technology | 23.04 | 113.4 |  | 26.52 |  | Oct 2006 |  |
| Guangdong University of Technology | 23.04 | 113.4 |  | 24.72 |  | Jan 2007 | 同上 |
| Guangdong Wanqingsha | 22.71 | 112.50 | 55 | 13.1 | 4.8 | May 2005 | ([Pathak et al. 2009](#_ENREF_31)) |
| Guangdong Wanqingsha | 22.71 | 112.50 | 59 | 12.7 | 5 | May 2005 |  |
| Guangdong Wanqingsha | 22.71 | 112.50 | 80.2 |  |  | Aug - Sep 2008 | ([Ding et al. 2012](#_ENREF_7)) |
| Guangdong Wanqingsha | 22.71 | 112.50 | 103 |  |  | Nov - Dec 2008 | 同上 |
| Guangdong Wanqingsha | 22.71 | 112.50 | 70.8 | 13.45 | 5.95 | Nov - Dec 2010 | ([Wang et al. 2012a](#_ENREF_42)) |
| Guangdong Wanqingsha | 22.71 | 112.50 | 113 | 24.2 | 5.9 | Oct - Nov 2007 | ([Ding et al. 2011](#_ENREF_8)) |
| Guangzhou | 23.09 | 113.30 | 42.4 |  |  | Aug 2006 - Aug 2007 | (黄虹.,2010) |
| Guangzhou | 22.71 | 113.55 | 113 | 24.2 | 5.9 | Oct 2007 - Nov 2007 | (Ding et al.,2011) |
| Guangzhou | 22.71 | 113.53 | 91.6 |  |  | Aug 2008 - Dec 2008 | (Ding et al.,2012) |
| Guangzhou | 23.25 | 113.60 | 81.7 |  |  | Dec 2008 - Feb 2009 | ([Yang et al. 2011](#_ENREF_47)) |
| Guangzhou | 23.12 | 113.35 | 76.8 | 18.1 | 5.1 | Apr 2009,Jul 2009,  Oct 2009,Jan 2010 | ([Tao et al. 2014](#_ENREF_38)) |
| Guangzhou | 23.10 | 113.35 | 91.4 |  |  | Apr 2009,Jul 2009,  Oct 2009,Jan 2010 | ([Lin et al. 2013](#_ENREF_27)) |
| Guangzhou | 22.71 | 113.55 | 70.8 | 13.5 | 5.9 | Nov - Dec 2010- | ([Wang et al. 2012a](#_ENREF_42)) |
| Guangzhou | 23.7 | 113.21 | 53.7 | 14.2 | 3.2 | Jul 2008 | ([Tao et al. 2012](#_ENREF_36)) |
| Guangzhou  Dadaomingyue Road | 23.12 | 113.32 | 134.8 |  |  | Nov 2004 - Jan 2005 | ([Cao et al. 2012a](#_ENREF_2)) |
| Guangzhou  Haizhu District | 23.09 | 113.32 | 104.58 | 27 | 5.08 | Aug - Sep 2004 | ([Wang et al. 2006](#_ENREF_41)) |
| Guangzhou  Liwan District | 23.13 | 113.25 | 91.4 | 42.69 | 7.41 | Aug - Sep 2004 | 同上 |
| Guangzhou  Liwan District | 23.13 | 113.25 | 102.7 |  |  | Aug - Sep 2004 | ([Duan et al. 2007](#_ENREF_9)) |
| Guangzhou  Liwan District | 23.13 | 113.25 | 118.8 |  |  | Feb - Mar 2005 | (Duan et al.,2007) |
| Guangzhou Baiyun | 23.16 | 113.28 | 90.85 | 31.22 | 6.07 | Aug 2004 - Sep 2004 | (Wang et al.,2006) |
| Guangzhou Dadaomingyue Road | 23.12 | 113.32 | 69.5 |  |  | Jul - Aug 2004 | ([Cao et al. 2012a](#_ENREF_2)) |
| Guangzhou geochemical Institute | 23.12 | 113.25 | 94.7 | 8.27 | 3.4 | Dec 2007 - Jan 2008 | ([Tan et al. 2009](#_ENREF_35)) |
| Guangzhou Tianhe | 23.13 | 112.50 | 103.5 | 26.52 | 5.9 | Aug - Sep 2004 | (Wang et al., 2006) |
| Guangzhou Tianhe | 23.13 | 112.50 | 44.7 |  |  | Jul - Aug 2004 | ([Cao et al. 2012a](#_ENREF_2)) |
| Guangzhou Tianshou Road | 23.15 | 112.50 | 72.2 |  |  | Nov 2004 - Jan 2005 |  |
| Guangzhou XingangxiRoad | 23.10 | 113.31 | 88.6 |  |  | Jul - Aug 2004 |  |
| Guangzhou XingangxiRoad | 23.10 | 113.31 | 216 |  |  | Nov 2004 - Jan 2005 |  |
| Guangzhou Yayuan | 23.13 | 113.27 | 44.7 |  |  | Jul - Aug 2004 |  |
| Guangzhou Yayuan | 23.13 | 113.27 | 64 |  |  | Nov 2004 - Jan 2005 | 同上 |
| Gucheng | 39.13 | 115.80 | 86.6 |  |  | 2007 | ([Guo et al. 2009](#_ENREF_14)) |
| Gucheng | 39.13 | 115.80 |  | 35.5 | 14.4 | 2006 - 2007 | ([Zhang et al. 2012b](#_ENREF_57)) |
| Guilin | 25.32 | 110.30 | 66.9 |  |  | 2007 | (Guo et al.,2009) |
| Guiyang | 26.65 | 106.64 | 76 |  |  | Apr - May 2012 | ([Xu et al. 2012](#_ENREF_46)) |
| Hangzhou | 30.27 | 120.15 | 84.34 |  |  | Sep 2010 - Jul 2011 | ([Sun G. J. 2013](#_ENREF_34)) |
| Hangzhou | 30.27 | 120.15 | 69 |  |  | 2006 - 2008 | ([Hong et al. 2013](#_ENREF_17)) |
| Hangzhou | 30.24 | 120.12 | 77.5 | 12.815 | 5.323 | 2006 | (包贞,2010) |
| Hok Tsui | 22.2 | 114.3 |  | 11.9 | 3.1 | Nov 2004 - Oct 2005 | (Guo et al.,2007) |
| Hong kong | 22.33 | 114.10 | 30.5 | 10.2 | 2.9 | Aug - Sep 2009,  Jan - Feb 2010 | (Yau et al.,2013) |
| Huaian | 33.61 | 119.01 | 75 |  |  | 2008 | (蔡慧,2009) |
| Huaian | 33.62 | 119.02 | 98 |  |  | Mar - May2008 |  |
| Huaian | 33.62 | 119.02 | 67 |  |  | Jun - Aug 2008 |  |
| Huaian | 33.62 | 119.02 | 45 |  |  | Sep- Nov 2008 |  |
| Huaian | 33.62 | 119.02 | 90 |  |  | Dec - Feb 2008 | 同上 |
| HuananInstitute of Environmental Science | 23.13 | 113.37 | 79.2 | 21.6 | 7.3 | Apr 2007 | ([Tao et al. 2009](#_ENREF_37)) |
| HuananInstitute of Environmental Science | 23.13 | 113.37 | 103.3 | 17.8 | 6.5 | Jan 2010 | ([Tao et al. 2012](#_ENREF_36)) |
| HuananInstitute of Environmental Science | 23.13 | 113.37 | 79.7 |  |  | Nov 2010 | (Xu et al.,2013) |
| Huangpu  Xinweixin Villege | 23.19 | 113.49 | 111.2 |  |  | Jul - Aug 2004 | ([Cao et al. 2012b](#_ENREF_3)) |
| Huangpu  Xinweixin Villege | 23.19 | 113.49 | 111.2 |  |  | Nov 2004 - Jan 2005 | (Cao et al.,2012) |
| Huangpu Shihuayuan | 23.11 | 113.48 | 66 |  |  | Jul - Aug 2004 | (Cao et al.,2012) |
| Huangpu Shihuayuan | 23.11 | 113.48 | 83.5 |  |  | Nov 2004 - Jan 2005 | (Cao et al.,2012) |
| Jinan | 36.67 | 117.03 | 123.2 | 24.7 | 11 | Mar2006 - Feb 2007 | ([Yang et al. 2012a](#_ENREF_49)) |
| Jinan | 36.74 | 117.07 |  | 38.33 | 21.26 | Oct 2007 - Oct 2008 | ([Gao et al. 2011](#_ENREF_10)) |
| Jinan | 36.74 | 117.12 |  | 27.11 | 13.28 | Mar - May 2008 |  |
| Jinan | 36.74 | 117.12 |  | 64.27 | 28.01 | Jun - Jul 2008 |  |
| Jinan | 36.74 | 117.12 |  | 30.99 | 15.13 | Oct - Nov 2007,  Sep - Nov 2008 |  |
| Jinan | 36.74 | 117.12 |  | 42.84 | 29.19 | Dec 2007,Jan - Feb 2008 | 同上 |
| Jinan | 36.66 | 117.13 | 138 | 28.8 | 16.6 | Nov 2004 - Sep 2005 | ([Yang et al. 2007](#_ENREF_48)) |
| Jinan | 36.66 | 117.13 | 108 | 20.7 | 8.2 | Mar 2004 - May 2004 |  |
| Jinan | 36.66 | 117.13 | 116 | 29.9 | 13.3 | Jun 2004 - Aug 2004 |  |
| Jinan | 36.66 | 117.13 | 151 | 32 | 20.6 | Nov 2004,Sep 2005 |  |
| Jinan | 36.66 | 117.13 | 177 | 32.6 | 24.3 | Dev 2004 - Feb 2005 | 同上 |
| Jinan Forest Park | 36.67 | 116.94 | 97.59 |  |  | Mar 2006 - Feb 2007 | ([Yang et al. 2012a](#_ENREF_49)) |
| Jinan Forest Park | 36.67 | 116.94 | 93.46 |  |  | Mar - May 2006 |  |
| Jinan Forest Park | 36.67 | 116.94 | 69.56 |  |  | Jun - Aug 2006 |  |
| Jinan Forest Park | 36.67 | 116.94 | 93.21 |  |  | Sep - Nov 2006 |  |
| Jinan Forest Park | 36.67 | 116.94 | 146.8 |  |  | Dec 2006 - Feb 2007 | 同上 |
| Jinan University | 23.13 | 112.50 | 56.5 |  |  | Jul - Aug 2004 | (Cao et al.,2012) |
| Jinan University | 23.13 | 112.50 | 175 |  |  | Nov - Dec 2004,Jau 2005 | (Cao et al.,2012) |
| Jinsha | 29.63 | 114.20 | 48.7 | 13.2 | 5.6 | Mar 2012 - Mar 2013 | (Zhang et al.,2014) |
| Jinsha | 29.6 | 114.20 |  | 26.6 | 7.6 | 2006 - 2007 | ([Zhang et al. 2012a](#_ENREF_54)) |
| Jinyun | 29.8 | 106.4 |  | 24 | 7.3 | Mar 2005 - Feb 2006 | ([Yang et al. 2011](#_ENREF_47)) |
| Karamay | 43.89 | 87.56 | 73 |  |  | Jan - Feb 2012 | (Wu et al.,2012) |
| Lanzhou | 36.07 | 103.84 | 111 |  |  | Aug - Sep 2008 | (Qu et al.,2013) |
| Lanzhou | 36.07 | 103.84 | 208 |  |  | Nov 2008 - Feb 2009 | (Qu et al.,2013) |
| Lhasa | 29.7 | 91.1 |  | 2.9 | 0.2 | 2006 - 2007 | (Zhang et al.,2012a) |
| Linan | 30.3 | 119.7 |  | 21.7 | 6.8 | 2006 - 2007 | (Zhang et al.,2012a) |
| Linan | 30.30 | 119.73 | 93.3 |  |  | 2007 | (Guo et al.,2009) |
| Lushan | 29.57 | 115.99 | 43.4 |  |  | 2007 | (Guo et al.,2009) |
| Miyun | 40.38 | 116.85 | 71 | 11.2 | 5.2 | 2005 | (Wang et al.,2011) |
| Miyun | 40.38 | 116.85 | 72.5 | 6.9 | 4.1 | Mar - May 2005 |  |
| Miyun | 40.38 | 116.85 | 64.5 | 18.9 | 7.1 | Jun - Aug 2005 |  |
| Miyun | 40.38 | 116.85 | 69.9 | 13.7 | 6.5 | Sep - Nov 2005 |  |
| Miyun | 40.38 | 116.85 | 77.0 | 5.4 | 2.9 | Dec 2005,Jan - Feb 2005 | 同上 |
| Miyun | 40.5 | 116.8 |  | 13 | 6.1 | Mar 2005 - Feb 2006 | ([Yang et al. 2011](#_ENREF_47)) |
| Mong Kok | 22.3 | 114.1 |  | 12.8 | 4.4 | Nov 2004 - Oct 2005 | (Guo et al.,2007) |
| Mountain Changbai | 42.11 | 128.09 | 38.8 | 12.97 | 3.94 | Jul 2007 | ([Deng et al. 2011](#_ENREF_6)) |
| Mountain Longfeng | 44.73 | 127.60 | 37.8 |  |  | 2007 | (Guo et al.,2009) |
| Mountain Longfeng | 44.73 | 127.60 |  | 10 | 2.5 | 2006 - 2007 | (Zhang et al.,2012a) |
| Mountain Mangdang | 25.97 | 117.36 | 39.7 | 12.27 | 4.06 | Dec 2012 | ([Yin et al. 2012](#_ENREF_51)) |
| Mountain Qilian | 40.30 | 97.5 |  | 1.54 | 0.22 | Jul 2010 - Jul 2011 | (Wang et al.,2013) |
| Mountain Tai | 36.25 | 117.10 | 123.1 | 20.26 | 9.56 | Jun - Jul 2007 | ([Deng et al. 2011](#_ENREF_6)) |
| Mountain Tai | 36.25 | 117.10 | 46.6 | 2.72 | 0.88 | Mar - May 2007 |  |
| Mountain Tai | 36.25 | 117.10 | 70.1 | 2.72 | 0.88 | Mar - May 2006 | 同上 |
| Mountain Tai | 36.25 | 117.10 | 63 | 12.76 | 5.55 | Mar - Apr 2007 | ([Zhou et al. 2012b](#_ENREF_62)) |
| Mountain Tai | 36.25 | 117.10 | 59.3 | 22.92 | 8.03 | Jun - Jul 2007 | 同上 |
| Mountain Tai | 36.25 | 117.10 | 42.24 |  |  | Oct - Nov 2008 | (Li et al.,2010) |
| Mountain Tai | 36.27 | 117.10 | 61.2 |  |  | Mar - Jul 2007 | (Zhou et al.,2012b) |
| Nanchang | 28.69 | 115.87 |  | 2.8 | 4.85 | Jun 2006 | ([Huo et al. 2012](#_ENREF_21)) |
| Nanchang University | 28.66. | 15.81 | 83.4 |  |  | Jun 2006 | ([Huang et al. 2011](#_ENREF_18)) |
| Nanjing | 32.12 | 118.95 | 90 |  |  | Nov 2011- Mar 2012 | (Herrmann et al.,2013) |
| Nanjing | 22.82 | 108.35 | 42.8 |  |  | 2007 | (Guo et al.,2009) |
| Nanjing | 32.05 | 118.76 | 103.0 |  |  | Jun 2007 - May 2008 | (Yang et al.,2010) |
| Nanjing | 32.05 | 118.74 | 98.8 |  |  | Jun2007 - May 2008 | (陈魁.,2010) |
| Nanjing | 33.60 | 119.01 | 69.1 |  |  | Jun - Sep 2004 | ([Huang et al. 2006](#_ENREF_19)) |
| Nanjing | 33.60 | 119.01 | 139.5 |  |  | Jan 2005 | 同上 |
| Nanjing | 33.60 | 119.01 | 76.1 |  |  | Jan 2011 - Apr 2011 | (Zhuang et al.,2014) |
| Nanning | 22.8 | 108.4 |  | 21.6 | 5.8 | 2006 - 2007 | (Zhang et al.,2012a) |
| Panyu | 23 | 113.4 |  | 26.8 | 8.6 | Jan 2006 - Dec 2007 | (Zhang et al.,2012a) |
| Peking University | 39.99 | 116.32 | 135 | 13.6 | 6.9 | 2009-2010 | ([Zhang et al. 2013](#_ENREF_56)) |
| Peking University | 39.99 | 116.32 | 126 | 14.7 | 7.5 | Apr 2009 |  |
| Peking University | 39.99 | 116.32 | 138 | 23.5 | 11 | Jul 2009 |  |
| Peking University | 39.99 | 116.32 | 135 | 7.9 | 4.7 | Oct 2009 |  |
| Peking University | 39.99 | 116.32 | 139 | 8.5 | 4.5 | Jan 2010 | 同上 |
| Qingdao | 36.06 | 120.34 | 86.6 |  |  | Jun 2007 - May 2008 | (Li et al.,2012) |
| Qingdao | 36.61 | 120.35 | 163 |  |  | Oct - Nov 2011,Feb 2012,  May 2012,Aug 2012 | ([Wu et al. 2013](#_ENREF_45)) |
| Qingdao | 36.61 | 120.35 | 167 |  |  | May 2012 |  |
| Qingdao | 36.61 | 120.35 | 160 |  |  | Aug 2012 |  |
| Qingdao | 36.61 | 120.35 | 132 |  |  | Oct - Nov 2011 |  |
| Qingdao | 36.61 | 120.35 | 191 |  |  | Feb 2012 | 同上 |
| Qinghai Lake | 36.98 | 99.90 | 21.3 | 3.9 | 0.6 | Jun - Aug 2010 | ([Li et al. 2013a](#_ENREF_24)) |
| Qinghai Lake | 36.98 | 99.90 | 21.5 | 4.5 |  | Jun - Sep 2010 | 同上 |
| Qingyuan | 23.70 | 113.06 | 84.1 |  |  | Aug 2009 - Jan 2010 | ([Wei et al. 2011](#_ENREF_44)) |
| Qingyuan | 23.69 | 113.06 | 50.7 |  |  | Apr 2009 |  |
| Qingyuan | 23.69 | 113.06 | 119.6 |  |  | Jan - Feb 2010 | 同上 |
| Shandong University | 36.68 | 117.07 | 148.71 |  |  | Mar 2006 - Feb 2007 | ([Yang et al. 2012a](#_ENREF_49)) |
| Shandong University | 36.68 | 117.07 | 143.25 |  |  | Mar - May 2006 |  |
| Shandong University | 36.68 | 117.07 | 129.04 |  |  | Jun - Aug 2006 |  |
| Shandong University | 36.68 | 117.07 | 134.89 |  |  | Sep - Nov 2006 |  |
| Shandong University | 36.68 | 117.07 | 204.89 |  |  | Dec 2006 - Feb 2007 | 同上 |
| Shangdianzi | 40.65 | 117.12 | 71.8 | 13.8 | 4.5 | Apr 2009,Jul 2009,  Oct 2009,Jan 2010 | ([Zhao et al. 2013](#_ENREF_59)) |
| Shangdianzi | 40.65 | 117.12 | 87.1 | 15.73 | 5.67 | Apr 2009 |  |
| Shangdianzi | 40.65 | 117.12 | 70.6 | 24.17 | 6.28 | Jul 2009 |  |
| Shangdianzi | 40.65 | 117.12 | 73.1 | 8.68 | 3.23 | Oct 2009 |  |
| Shangdianzi | 40.65 | 117.12 | 56.3 | 6.64 | 2.83 | Jan 2010 | 同上 |
| Shangdianzi | 40.65 | 117.12 | 60.2 |  |  | 2007 | (Guo et al.,2013) |
| Shangdianzi | 40.65 | 117.12 | 51.9 |  |  | 2007 | ([Zhao et al. 2009](#_ENREF_60)) |
| Shangdianzi | 40.39 | 117.07 | 44.7 |  |  | Dec 2006 - Feb 2007 |  |
| Shangdianzi | 40.39 | 117.07 | 59.8 |  |  | Mar 2007 - May 2007 |  |
| Shangdianzi | 40.39 | 117.07 | 58.5 |  |  | Jun 2007- July 2007 |  |
| Shangdianzi | 40.39 | 117.07 | 45.1 |  |  | Sep 2007 - Nov 2007 |  |
| Shangdianzi | 40.39 | 117.07 | 44.3 |  |  | Dec 2007 - Feb 2008 |  |
| Shangdianzi | 40.39 | 117.07 | 64.7 |  |  | Jun 2005 - Aug 2005 |  |
| Shangdianzi | 40.39 | 117.07 | 47.9 |  |  | Sep 2005 - Nov 2005 |  |
| Shangdianzi | 40.39 | 117.07 | 31.4 |  |  | Dec 2005 - Feb 2006 |  |
| Shangdianzi | 40.39 | 117.07 | 101.2 |  |  | Mar 2006 - May 2006 | 同上 |
| Shangdong Mazhuangzhen | 36 | 117 |  | 46.33 | 22.35 | Jul 2007 | ([Huo et al. 2012](#_ENREF_21)) |
| Shangri-La,Zhuzhuang | 28 | 99.7 |  | 1.6 | 0.2 | Jul 2004 - Mar 2005 | (Qu et al.,2008,2009 ) |
| henyang | 41.73 | 123.41 | 75 |  |  | 2006 - 2008 | (Ma et al.,2011) |
| Shenzhen | 22.55 | 114.07 | 34.9 |  |  | Jun 2004 - Jul 2006 | ([Niu et al. 2006](#_ENREF_30)) |
| Shenzhen | 22.55 | 114.07 | 99 |  |  | Nov - Dec 2004 | 同上 |
| Shenzhen | 22.59 | 113.97 | 42.2 | 11.7 | 3.5 | 2009 | (Huang et al.,2014) |
| Shenzhen | 22.55 | 114.07 |  | 8.6 |  | Jun 2004 – Jul 2006 | (Niu et al.,2006) |
| Shenzhen | 22.55 | 114.07 |  | 23.90 |  | Nov - Dec 2007 | (Niu et al.,2006) |
| Shenzhen | 22.55 | 114.07 |  | 13.68 | 5.47 | Apr 2007 | ([Huo et al. 2012](#_ENREF_21)) |
| Shijiazhuang | 38.02 | 114.52 | 99.4 |  |  | Jun - Oct 2008 | (杜吴鹏,2010) |
| Shijiazhuang | 38.00 | 114.54 | 191.2 | 35.6 | 9.3 | Apr 2009,Jul 2009,  Oct 2009,Jan 2010 | ([Zhao et al. 2013](#_ENREF_59)) |
| Shijiazhuang | 38.02 | 114.54 | 66.0 |  |  | Jun - Jul 2012 | (Ning et al.,2012) |
| Taiyangshan | 29.2 | 111.7 |  | 28.8 | 7.9 | Jan 2006 - Dec 2007 | (Zhang et al.,2012a) |
| Taiyuan | 37.80 | 112.58 | 334.5 | 35.1 |  | Dec 2011 - Jan 2012 | (贾小花, 2013) |
| Taiyuan | 37.88 | 112.56 | 216.7 |  |  | Dec 2005 | ([Meng and Zhang 2007](#_ENREF_29)) |
| Taiyuan | 37.88 | 112.56 | 194.5 |  |  | Jan 2006 |  |
| Taiyuan | 37.88 | 112.56 | 82.4 |  |  | Feb 2006 | 同上 |
| Taizhou Luqiao | 32.16 | 120.01 | 37.5 |  |  | Jul 2007 | ([Gu et al. 2011](#_ENREF_13)) |
| Taizhou Luqiao | 32.16 | 120.01 | 108.91 |  |  | Jan 2007 |  |
| Tianjin | 39.10 | 117.50 | 109.8 |  |  | Apr 2008,Jul 2008,  Oct 2008,Jan 2009 | 同上 |
| Tianjin | 39.10 | 117.20 | 141.47 | 24.97 | 7.64 | Apr 2009,Jul 2009,  Oct 2009,Jun 2010 | ([Zhao et al. 2013](#_ENREF_59)) |
| Tianjin | 39.09 | 117.50 | 133.7 |  |  | Jan 2008 | (Gu et al.,2011) |
| Tianjin | 39.09 | 117.50 | 107.5 |  |  | Apr 2008 |  |
| Tianjin | 39.09 | 117.50 | 87 |  |  | Jul 2008 |  |
| Tianjin | 39.09 | 117.50 | 111 |  |  | Oct 2008 |  |
| Tianjin | 39.09 | 117.50 | 144.6 |  |  | Jan 2008 | 同上 |
| Tianjin | 39.09 | 117.50 | 163.2 |  |  | Nov 2011 - Dec 2012 | ([Liu et al. 2013](#_ENREF_28)) |
| Tianjin | 39.09 | 117.50 | 198 |  |  | Mar - May 2011 | 同上 |
| Tianjin | 39.08 | 117.21 |  | 10.785 | 9.575 | Aug 2009 | ([Li et al. 2013a](#_ENREF_24)) |
| Tianjin | 39.08 | 117.21 |  | 19.105 | 6.66 | Sep 2009 |  |
| Tianjin | 39.08 | 117.21 |  | 5.45 | 3.415 | Oct 2009 |  |
| Tianjin | 39.08 | 117.21 |  | 16.57 | 9.405 | Nov 2009 |  |
| Tianjin | 39.08 | 117.21 |  | 41.925 | 31.885 | Dec 2009 |  |
| Tianjin | 39.08 | 117.21 |  | 20.445 | 7.805 | Jan 2010 |  |
| Tianjin | 39.08 | 117.21 |  | 6.97 | 6.35 | Feb 2010 |  |
| Tianjin | 39.08 | 117.21 |  | 10.675 | 0.625 | Mar 2010 |  |
| Tianjin | 39.08 | 117.21 |  | 9 | 2.575 | Apr 2010 |  |
| Tianjin | 39.08 | 117.21 |  | 9.91 | 0.09 | May 2010 |  |
| Tianjin | 39.08 | 117.21 |  | 7.965 | 1.375 | Jun 2010 |  |
| Tianjin | 39.08 | 117.21 |  | 33.93 | 35.105 | Jul 2010 |  |
| Tianjin | 39.08 | 117.21 |  | 21.75 | 9.86 | Aug 2010 |  |
| Tianjin | 39.08 | 117.21 |  | 46.205 | 20.965 | Sep 2010 |  |
| Tianjin | 39.08 | 117.21 |  | 9.145 | 6.035 | Oct 2010 |  |
| Tianjin | 39.08 | 117.21 |  | 11.235 | 3.24 | Nov 2010 |  |
| Tianjin | 39.08 | 117.21 |  | 18.59 | 10.585 | Dec 2010 |  |
| Tianjin | 39.08 | 117.21 |  | 23.04 | 13.62 | Feb 2011 |  |
| Tianjin | 39.08 | 117.21 |  | 7.425 | 3.375 | Mar 2011 |  |
| Tianjin | 39.08 | 117.21 |  | 10.915 | 7.005 | Apr 2011 |  |
| Tianjin | 39.08 | 117.21 |  | 10.885 | 4.895 | May 2011 |  |
| Tianjin | 39.08 | 117.21 |  | 24.115 | 13.235 | Jun 2011 |  |
| Tianjin | 39.08 | 117.21 |  | 43.165 | 13.075 | Jul 2011 |  |
| Tianjin | 39.08 | 117.21 |  | 22.955 | 11.855 | Aug 2011 | 同上 |
| Tianjin Atmospheric boundary layer meteorological station | 39.08 | 117.22 |  | 21.98 | 8.18 | Aug - Dec 2006 | (Jiang et al.,2013) |
| Tianjin Atmospheric boundary layer meteorological station | 39.08 | 117.22 |  | 24.1 | 8.7 | Jan 2008 | (Gu et al.,2011) |
| Tianjin Atmospheric boundary layer meteorological station | 39.08 | 117.22 |  | 29 | 6.9 | Nov - Dec 2011 | (Gu et al.,2013) |
| Tianjin Atmospheric boundary layer meteorological station | 39.08 | 117.22 |  | 34.39 | 2.18 | Mar - May 2011 | (Liu et al.,2013) |
| Tianjin Economic-Technological Development Area | 39.08 | 117.22 |  | 3.17 | 0.29 | Jun - Jul 2007 | ([Kong et al. 2010](#_ENREF_22)) |
| Tianjin Economic-Technological Development Area | 39.08 | 117.22 |  | 1.73 | 0.28 | Oct 2007 |  |
| Tianjin Economic-Technological Development Area | 39.08 | 117.22 |  | 0.89 | 0.05 | Jan - Feb 2007 |  |
| Tianjin Economic-Technological Development Area | 39.07 | 117.50 | 115.9 |  |  | Jun - Jul 2007 |  |
| Tianjin Economic-Technological Development Area | 39.07 | 117.50 | 174.1 |  |  | Oct 2007 |  |
| Tianjin Economic-Technological Development Area | 39.07 | 117.50 | 70.9 |  |  | Jan - Feb 2008 | 同上 |
| Tsinghua | 40.01 | 116.33 | 124.9 | 13.4 | 6.8 | 2005 | (Wang et al.,2011) |
| Tsinghua | 40.01 | 116.33 | 125.6 | 8.7 | 4.9 | Mar - May 2005 | (Wang et al.,2011) |
| Tsinghua | 40.01 | 116.33 | 101.3 | 20.3 | 8.8 | Jun - Aug 2005 | (Wang et al.,2011) |
| Tsinghua | 40.01 | 116.33 | 115 | 13.4 | 7.5 | Sep - Nov 2005 | (Wang et al.,2011) |
| Tsinghua | 40.01 | 116.33 | 157.7 | 11.4 | 6.1 | Dec 2005,Jan - Feb 2005 | (Wang et al.,2011) |
| Tsinghua | 40.01 | 116.33 |  | 23.67 | 12.45 | Jun - Jul 2011 | ([Cheng et al. 2013](#_ENREF_5)) |
| Tsinghua | 40.01 | 116.33 |  | 15.72 | 8.88 | Dec 2011 - Jan 2012 | 同上 |
| Tsuen Wan | 22.4 | 114 |  | 13.2 | 4.1 | Nov 2004 - Oct 2005 | (Guo et al.,2007) |
| Urumqi | 43.83 | 87.62 | 63.6 |  |  | Jul - Aug 2007 | (Wang et al.,2012) |
| Urumqi | 43.83 | 87.62 | 157.6 |  |  | Oct - Nov 2007 | (Wang et al.,2012) |
| Urumqi | 43.83 | 87.62 | 253.2 |  |  | Dec 2007 - Jan 2008 | (Wang et al.,2012) |
| Urumqi | 43.83 | 87.62 | 108.5 |  |  | Apr - May 2008 | (Wang et al.,2012) |
| Urumqi | 43.83 | 87.62 | 145.7 |  |  | Jul - Aug 2007, Oct - Dec 2007,Jan 2008, Apr - May 2008 | (Wang et al.,2012) |
| Urumqi | 43.83 | 87.62 | 79.6 |  |  | Mar - May 2007 | ([Li et al. 2008](#_ENREF_23)) |
| Urumqi | 43.83 | 87.62 | 64.4 |  |  | Jun - Aug 2007 |  |
| Urumqi | 43.83 | 87.62 | 131.6 |  |  | Sep - Nov 2007 |  |
| Urumqi | 43.83 | 87.62 | 223.7 |  |  | Dec 2007,Jan - Feb 2007 |  |
| Urumqi | 43.83 | 87.62 | 187.8 |  |  | 2007 |  |
| Urumqi | 43.83 | 87.62 |  | 48.51 | 23.86 | 2004 - 2007 | 同上 |
| Wuhan university | 30.54 | 114.37 | 114 |  |  | Jul - Aug 2011 | ([Cheng et al. 2012](#_ENREF_4)) |
| Wuhan university | 30.54 | 114.37 | 133.5 |  |  | Sep - Nov 2011 |  |
| Wuhan university | 30.54 | 114.37 | 131 |  |  | Dec 2011,Jan - Feb 2012 |  |
| Wuhan university | 30.54 | 114.37 | 127 |  |  | Jul - Dec 2011, Jan - Feb 2012 | 同上 |
| Xiamen | 24.43 | 118.08 | 53.4 |  |  | 2008 - 2012 | ([Yin et al. 2012](#_ENREF_51)) |
| Xiamen | 24.61 | 118.06 | 32.7 |  |  | 2012 | (Niu et al.,2013) |
| Xiamen | 24.58 | 118.09 | 63.88 |  |  | Apr 2009,Jul 2009,  Oct 2009,Jan 2010 | ([Zhang et al. 2011](#_ENREF_55)) |
| Xiamen | 24.48 | 118.04 | 74.8 |  |  | Apr 2009,Jul 2009,  Oct 2009,Jan 2010 |  |
| Xiamen | 24.58 | 118.11 | 72.1 |  |  | Apr 2009,Jul 2009,  Oct 2009,Jan 2010 | 同上 |
| Xiamen | 24.43 | 118.08 | 53.4 |  |  | 2008 - 2011 | (Chen et al.,2011) |
| Xiamen | 32.06 | 118.80 |  | 14.8 | 5.2 | Jan 2005 | (Wang et al.,2003) |
| Xiamen | 32.06 | 118.80 |  | 6.8 | 2.7 | Jul 2005 | ( Wang et al.,2003) |
| Xiamen | 32.06 | 118.80 |  | 11.22 | 4.54 | Jun 2009 - May 2010 | (Zhuang et al.,2007) |
| Xiamen | 32.06 | 118.80 |  | 7.12 | 2.71 | Jun - Aug 2009 | (Zhuang et al.,2007) |
| Xiamen | 32.06 | 118.80 |  | 10.31 | 3.86 | Sep - Nov 2009 | (Zhuang et al.,2007) |
| Xiamen | 32.06 | 118.80 |  | 17.84 | 7.66 | Dec 2009,Jan - Feb 2010 | (Zhuang et al.,2007) |
| Xiamen | 32.06 | 118.80 |  | 9.61 | 3.91 | Mar - May 2010 | (Zhuang et al.,2007) |
| Xiamen Jimei | 24.58 | 117.50 | 89.72 |  |  | Mar - May 2010 | ([Zhang et al. 2012a](#_ENREF_54)) |
| Xiamen Jimei | 24.58 | 117.50 | 62.26 |  |  | Jun - Aug 2009 | (Zhang et al.,2012a) |
| Xiamen Jimei | 24.58 | 117.50 | 83.75 |  |  | Sep - Oct 2009 | (Zhang et al.,2012a) |
| Xiamen Jimei | 24.58 | 117.50 | 108.91 |  |  | Dec 2009,Jan - Feb 2010 | (Zhang et al.,2012a) |
| Xian | 34.31 | 108.95 | 176.7 |  |  | 2004 - 2008 | ([Huang et al. 2012](#_ENREF_20)) |
| Xian | 34.30 | 108.95 | 88.1 |  |  | 2007 | (Guo et al.,2009) |
| Xian | 34.4 | 109 |  | 46.7 | 14.4 | 2006 - 2007 | ([Zhang et al. 2012b](#_ENREF_57)) |
| Xian | 34.35 | 108.95 |  | 37.286 | 9.25 | Jan 2004 | (Qiao et al.,2014) |
| Xian | 34.35 | 108.95 |  | 23.474 | 4.53 | Feb 2004 |  |
| Xian | 34.35 | 108.95 |  | 38.683 | 13.825 | Mar 2004 |  |
| Xian | 34.35 | 108.95 |  | 20.188 | 3.493 | Apr 2004 |  |
| Xian | 34.35 | 108.95 |  | 16.127 | 2.131 | May 2004 |  |
| Xian | 34.35 | 108.95 |  | 16.529 | 1.355 | Jun 2004 |  |
| Xian | 34.35 | 108.95 |  | 22.038 | 2.635 | Jul 2004 |  |
| Xian | 34.35 | 108.95 |  | 41.665 | 6.595 | Aug 2004 |  |
| Xian | 34.35 | 108.95 |  | 27.508 | 3.835 | Sep 2004 |  |
| Xian | 34.35 | 108.95 |  | 33.03 | 8.146 | Oct 2004 |  |
| Xian | 34.35 | 108.95 |  | 46.386 | 1.695 | Nov 2004 |  |
| Xian | 34.35 | 108.95 |  | 49.273 | 12.65 | Dec 2004 |  |
| Xian | 34.35 | 108.95 |  | 52.449 | 0.788 | Jan 2005 |  |
| Xian | 34.35 | 108.95 |  | 40.325 | 0.833 | Feb 2005 |  |
| Xian | 34.35 | 108.95 |  | 25.994 | 0.77 | Mar 2005 |  |
| Xian | 34.35 | 108.95 |  | 22.641 | 0.779 | Apr 2005 |  |
| Xian | 34.35 | 108.95 |  | 34.497 | 0.917 | May 2005 |  |
| Xian | 34.35 | 108.95 |  | 20.637 | 0.665 | Jun 2005 |  |
| Xian | 34.35 | 108.95 |  | 27.261 | 0.575 | Jul 2005 |  |
| Xian | 34.35 | 108.95 |  | 34.726 | 0.925 | Aug 2005 |  |
| Xian | 34.35 | 108.95 |  | 33.933 | 0.758 | Sep 2005 |  |
| Xian | 34.35 | 108.95 |  | 27.613 | 0.688 | Oct 2005 |  |
| Xian | 34.35 | 108.95 |  | 43.015 | 0.773 | Nov 2005 |  |
| Xian | 34.35 | 108.95 |  | 39.38 | 0.713 | Dec 2005 |  |
| Xian | 34.35 | 108.95 |  | 59.308 | 18.67 | Jan 2006 |  |
| Xian | 34.35 | 108.95 |  | 30.237 | 8.531 | Feb 2006 |  |
| Xian | 34.35 | 108.95 |  | 29.986 | 6.84 | Mar 2006 |  |
| Xian | 34.35 | 108.95 |  | 24.127 | 5.589 | Apr 2006 |  |
| Xian | 34.35 | 108.95 |  | 21.7 | 5.247 | May 2006 |  |
| Xian | 34.35 | 108.95 |  | 24.815 | 6.67 | Jun 2006 |  |
| Xian | 34.35 | 108.95 |  | 46.406 | 12.453 | Jul 2006 |  |
| Xian | 34.35 | 108.95 |  | 45.311 | 12.411 | Aug 2006 |  |
| Xian | 34.35 | 108.95 |  | 39.716 | 11.234 | Sep 2006 |  |
| Xian | 34.35 | 108.95 |  | 50.392 | 16.16 | Oct 2006 |  |
| Xian | 34.35 | 108.95 |  | 35.959 | 11.847 | Nov 2006 |  |
| Xian | 34.35 | 108.95 |  | 47.737 | 17.574 | Dec 2006 |  |
| Xian | 34.35 | 108.95 |  | 33.308 | 13.23 | Jan 2007 |  |
| Xian | 34.35 | 108.95 |  | 37.213 | 15.715 | Feb 2007 |  |
| Xian | 34.35 | 108.95 |  | 21.67 | 1.551 | Mar 2007 |  |
| Xian | 34.35 | 108.95 |  | 14.19 | 1.399 | Apr 2007 |  |
| Xian | 34.35 | 108.95 |  | 16.955 | 1.565 | May 2007 |  |
| Xian | 34.35 | 108.95 |  | 28.521 | 5.862 | Jun 2007 |  |
| Xian | 34.35 | 108.95 |  | 28.335 | 8.498 | Jul 2007 |  |
| Xian | 34.35 | 108.95 |  | 43.597 | 12.89 | Aug 2007 |  |
| Xian | 34.35 | 108.95 |  | 21.658 | 5.998 | Sep 2007 |  |
| Xian | 34.35 | 108.95 |  | 23.56 | 9.224 | Oct 2007 |  |
| Xian | 34.35 | 108.95 |  | 32.083 | 13.27 | Nov 2007 |  |
| Xian | 34.35 | 108.95 |  | 62.204 | 18.599 | Dec 2007 |  |
| Xian | 34.35 | 108.95 |  | 51.304 | 0.77 | Jan 2008 |  |
| Xian | 34.35 | 108.95 |  | 34.214 | 0.463 | Feb 2008 |  |
| Xian | 34.35 | 108.95 |  | 26.902 | 1.325 | Mar 2008 |  |
| Xian | 34.35 | 108.95 |  | 29.078 | 0.787 | Apr 2008 |  |
| Xian | 34.35 | 108.95 |  | 19.012 | 0.518 | May 2008 |  |
| Xian | 34.35 | 108.95 |  | 22.726 | 0.716 | Jun 2008 |  |
| Xian | 34.35 | 108.95 |  | 24.799 | 0.449 | Jul 2008 |  |
| Xian | 34.35 | 108.95 |  | 11.542 | 0.723 | Aug 2008 |  |
| Xian | 34.35 | 108.95 |  | 17.488 | 0.581 | Sep 2008 |  |
| Xian | 34.35 | 108.95 |  | 23.615 | 0.59 | Oct 2008 |  |
| Xian | 34.35 | 108.95 |  | 14.444 | 0.388 | Nov 2008 |  |
| Xian | 34.35 | 108.95 |  | 16.958 | 0.842 | Dec 2008 |  |
| Xian | 34.35 | 108.95 |  | 166.77 |  | 2004 |  |
| Xian | 34.35 | 108.95 |  | 184.59 |  | 2005 |  |
| Xian | 34.35 | 108.95 |  | 188.75 |  | 2006 |  |
| Xian | 34.35 | 108.95 |  | 187.34 |  | 2007 |  |
| Xian | 34.35 | 108.95 |  | 139.4 |  | 2008 | 同上 |
| Xinglong | 40.38 | 117.57 |  | 8.365 | 10.09 | Sep 2009 | ([Li et al. 2013b](#_ENREF_25)) |
| Xinglong | 40.38 | 117.57 |  | 1.925 | 0.99 | Oct 2009 |  |
| Xinglong | 40.38 | 117.57 |  | 6.975 | 7.08 | Nov 2009 |  |
| Xinglong | 40.38 | 117.57 |  | 3.1175 | 0.07 | Dec 2009 |  |
| Xinglong | 40.38 | 117.57 |  | 8.39 | 4.012 | Jan 2010 |  |
| Xinglong | 40.38 | 117.57 |  | 1.7 | 0.145 | Feb 2010 |  |
| Xinglong | 40.38 | 117.57 |  | 5.665 | 2.1 | Mar 2010 |  |
| Xinglong | 40.38 | 117.57 |  | 11.22 | 5.58 | Apr 2010 |  |
| Xinglong | 40.38 | 117.57 |  | 8.0075 | 5.33 | May 2010 |  |
| Xinglong | 40.38 | 117.57 |  | 26.19 | 19.42 | Jun 2010 |  |
| Xinglong | 40.38 | 117.57 |  | 40.71 | 28.39 | Jul 2010 |  |
| Xinglong | 40.38 | 117.57 |  | 16.4025 | 12.6925 | Aug 2010 |  |
| Xinglong | 40.38 | 117.57 |  | 7.17 | 1.186 | Sep 2010 |  |
| Xinglong | 40.38 | 117.57 |  | 1.3825 | 0.025 | Oct 2010 |  |
| Xinglong | 40.38 | 117.57 |  | 2.4 | 0.02 | Nov 2010 |  |
| Xinglong | 40.38 | 117.57 |  | 0.825 | 0.0225 | Dec 2010 | 同上 |
| Yongan | 25.97 | 117.36 | 84.1 |  |  | Apr 2007 - Jun 2008 | (Yin et al.,2012) |
| Yulin | 38.29 | 109.74 | 83 |  |  | Mar - Apr 2007 | (Deng et al.,2011) |
| Zhengzhou | 34.78 | 113.68 | 110.2 |  | 16.5 | 2007 | (Guo et al.,2009) |
| Zhengzhou | 34.80 | 113.52 | 175 | 25.7 | 15.6 | 2010 | ([Geng et al. 2013](#_ENREF_12)) |
| Zhengzhou | 34.8 | 113.7 |  | 45 | 16.5 | 2006 - 2007 | (Zhang et al.,2012a) |
| Zhongshan University | 23.10 | 113.31 | 52.4 |  |  | Jul -Aug 2004 | (Cao et al.,2012) |
| Zhongshan University | 23.10 | 113.31 | 120.6 |  |  | Nov - Dec 2004,Jan 2005 | (Cao et al.,2012) |
| Zhusanjiao | 23.14 | 113.27 | 97 |  |  | Oct 2004 | ([Wang et al. 2008](#_ENREF_40)) |

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