



Supplement of

**Multi-year monitoring of atmospheric total gaseous mercury at
a remote high-altitude site (Nam Co, 4730 m a.s.l.)
in the inland Tibetan Plateau region**

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Table S1. Atmospheric mercury concentrations at remote and rural stations

Stations	TGM or GEM	Concentrations (ng m⁻³)	Type	Measurement period	Instruments	Reference
Alert NU	GEM	1.26	Remote	January 2002–December 2011	Tekran 2537+1130+1135	Cole et al., 2014
Alert, Nunavut	GEM	1.58±0.04	Remote	January 1995–December 2002	Tekran 2537A	Steffen et al., 2005
Amsterdam Island	GEM	1.025-1.028	Remote	2012-2013	Tekran 2537B+1130+1135	Slemr et al., 2015
Bratt's Lake SK	TGM	1.44 ± 0.25	Rural	May 2001–December 2010	Tekran 2537+1130+1135	Cole et al., 2014
Buoy ON	TGM	1.71 ± 0.20	Rural	July–September 2005	Tekran 2537+1130+1135	Cole et al., 2014
Burnt Island ON	TGM	1.55 ± 0.22	Remote	May 1998–December 2007	Tekran 2537+1130+1135	Cole et al., 2014
Cape Grim	GEM	0.848-0.959	Remote	2011-2013	Tekran 2537A	Slemr et al., 2015
Cape Point	GEM	0.923-1.052	Remote	2011-2013	Tekran 2537B	Slemr et al., 2015
Cape Verde	TGM	1.191 ± 0.128	Remote	December 2011–December 2015	Tekran 2537B	Read et al., 2017
Chengshantou	GEM	2.31 ± 0.74	Rural	July and October 2007, January and April 2009	Lumex RA-915+	Ci et al., 2011
Chongming	TGM	2.50	Rural	September–December 2009	Tekran 2537B	Dou et al., 2013
Churchill MB	GEM	1.52	Rural	March–August 2004	Tekran 2537+1130+1135	Cole et al., 2014
Devil's Lake	GEM	1.6 ± 0.3	Remote	April 2003-April 2004	Tekran 2537A+1130+1135	Manolopoulos et al., 2007
Dorset ON	GEM	1.38	Remote	July 2008–March 2010	Tekran 2537+1130+1135	Cole et al., 2014
Egbert ON	TGM	1.58 ± 0.29	Rural	December 1996–December 2010	Tekran 2537+1130+1135	Cole et al., 2014
ELA ON	GEM	1.39	Remote	May 2005–December 2010	Tekran 2537+1130+1135	Cole et al., 2014
Esther AB	TGM	1.65 ± 0.15	Rural	June 1998–April 2001	Tekran 2537+1130+1135	Cole et al., 2014

EvK2NCR Pyramid	TGM	1.2±0.2	Remote	November 2011 - April 2012	Tekran 2537A	Gratz et al., 2013
Experimental Lakes	GEM	1.57 ± 0.22	Remote	May 2005 - December 2006	Tekran 2537A+1130+1135	Cheng et al., 2012
Fort Chipewyan AB	TGM	1.36 ± 0.15	Rural	June 2000–July 2001	Tekran 2537+1130+1135	Cole et al., 2014
Genesee AB	GEM	1.4	Rural	January–September 2009	Tekran 2537+1130+1135	Cole et al., 2014
Huntington Wildlife Forest of Newcomb	GEM	1.4 ±0.4	Remote	June 2006-May 2007	Tekran 2537A+1130+1135	Choi et al., 2008
Kejimkujik NS	GEM	1.34	Remote	January 2009–December 2010	Tekran 2537+1130+1135	Cole et al., 2014
Kodaikanal, India	TGM	1.53 ± 0.21	Rural	November 2012- September 2013	Tekran 2537B	Karthik et al., 2017
Kuujjuarapik PQ	TGM	1.68 ± 0.46	Rural	August 1999–September 2009	Tekran 2537+1130+1135	Cole et al., 2014
Little Fox Lake YK	TGM	1.28 ± 0.17	Remote	June 2007–November 2011	Tekran 2537+1130+1135	Cole et al., 2014
Lulin	GEM	1.73	Remote	April 2006-December 2007	Tekran 2537A+1130+1135	Sheu et al., 2010
Mace Head, Ireland	TGM	1.75	Remote	September 1995 - December 2001	Tekran 2537A	Ebinghaus et al., 2002
Meadows AB	TGM	1.51 ± 0.21	Rural	May 2005–December 2008	Tekran 2537+1130+1135	Cole et al., 2014
Mingan PQ	TGM	1.57 ± 0.19	Rural	January 1997–December 2000	Tekran 2537+1130+1135	Cole et al., 2014
Miyun	GEM	3.22 ± 1.94	Rural	December 2008– November 2009	Tekran 2537B+1130+1135	Zhang et al., 2013
Mt. Ailao	TGM	2.09 ± 0.63	Remote	May 2011–May 2012	Tekran 2537A	Fu et al. 2015
Mt. Changbai	TGM	1.60 ± 0.51	Remote	October 2008–October 2010	Tekran 2537A	Fu et al., 2012b
Mt. Damei	TGM	3.31 ± 1.44	Rural	April 2011–April 2013	Tekran 2537B	Yu et al., 2015

Mt. Dinghu	TGM	5.07 ± 2.89	Rural	September 2009–April 2010	Tekran 2537B	Chen et al., 2013
Mt. Gongga	TGM	3.90 ± 1.20	Remote	April 2006 - June 2007	Tekran 2537A	Fu et al., 2009
Mt. Leigong	GEM	2.80 ± 1.51	Rural	May 2008–May 2009	Tekran 2537A	Fu et al., 2010
Mt. Waliguan	TGM	1.98 ± 0.98	Remote	September 2007–September 2008	Tekran 2537A	Fu et al., 2012a
Nam Co Station	TGM	1.33 ± 0.24	Remote	January 2012–October 2014	Tekran 2537B	this study
Nieuw Nickerie	TGM	1.4	Remote	March–July 2007	Tekran 2537A	Müller et al., 2012
Norwegian Antarctic Troll	GEM	0.970–1.052	Remote	2011–2013	Tekran 2537B	Slemr et al., 2015
Pic du Midi	GEM	1.86 ± 0.27	Remote	18 November 2011 – 17 November 2012	Tekran 2537+1130+1135	Fu et al., 2016
Point Petre ON	TGM	1.75 ± 0.33	Rural	November 1996–December 2007	Tekran 2537+1130+1135	Cole et al., 2014
Saturna BC	TGM	1.43 ± 0.20	Rural	March 2009–December 2010	Tekran 2537+1130+1135	Cole et al., 2014
Shangri-La	TGM	2.55 ± 2.73	Remote	November 2009–October 2010	Tekran 2537A	Zhang et al., 2015
Southampton PE	TGM	1.23 ± 0.19	Rural	January 2005–December 2006	Tekran 2537+1130+1135	Cole et al., 2014
St. Anicet PQ	GEM	1.52	Rural	January 2003–December 2010	Tekran 2537+1130+1135	Cole et al., 2014
St. Andrews NB	TGM	1.38 ± 0.24	Rural	January 1996–July 2007	Tekran 2537+1130+1135	Cole et al., 2014
St. Anicet PQ	TGM	1.60 ± 0.37	Rural	August 1994–December 2009	Tekran 2537+1130+1135	Cole et al., 2014
Wangqingsha	TGM	2.94	Rural	November and December 2009	Tekran 2537B	Li et al., 2011
Whistler BC	TGM	1.21 ± 0.20	Remote	August 2008–November 2011	Tekran 2537+1130+1135	Cole et al., 2014
Windsor ON	TGM	1.93 ± 0.80	Rural	January 2007–December 2008	Tekran 2537+1130+1135	Cole et al., 2014
Wuzhishan	GEM	1.58 ± 0.71	Remote	May 2011–May 2012	Tekran 2537B	Liu et al., 2016

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Table S2. The statistics of TGM and meteorological variables based on HYSPLIT clusters during the measurement period at the

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Nam Co Station.

Statistical parameter	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
Ratio (%)	15.11	17.28	29.33	4.70	11.76	21.83
Number	1205	1371	2327	377	940	1732
TGM (ng m ⁻³)	1.25	1.21	1.48	1.12	1.35	1.26
Ozone (ppb)	50.76	47.6	46.95	42.89	51.3	46.9
Temperature (°C)	5	3.47	8.71	2.72	6.72	5.83
Relative humidity (%)	46.46	45.47	63.19	38.72	56.53	48.24
Wind speed (m s ⁻¹)	3.19	3.53	3.13	3.31	2.64	3.49
PBLH (m)	1083.18	1188.49	839.54	1000.02	904.61	1000.74
SWD	552.3	542.09	437.74	547.37	459.52	487.25

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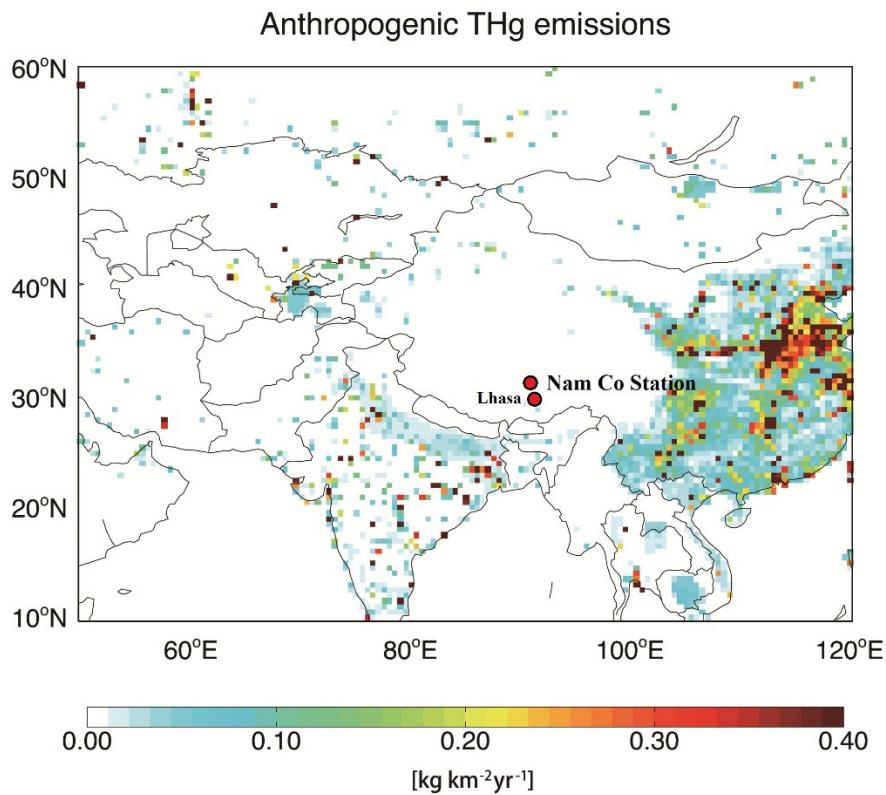
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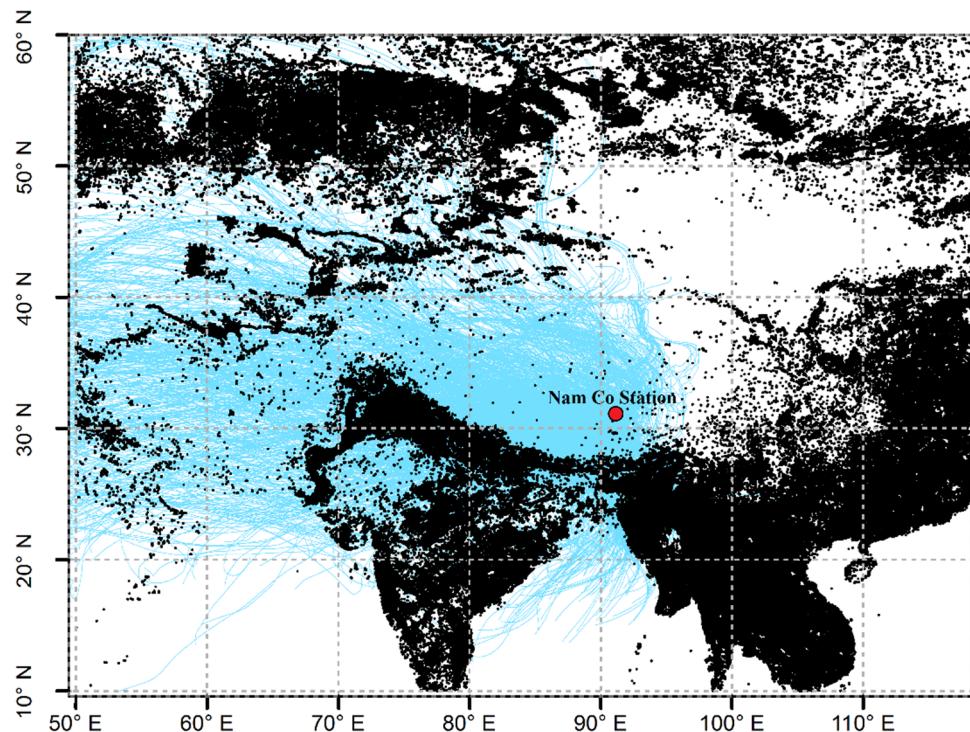
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Fig. S1. Annual anthropogenic mercury emission inventory in China and surrounding countries, see section 2.5 for data sources (inventories were for the year 2010 and had a horizontal resolution of $0.5^\circ \times 0.5^\circ$).



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Fig. S2. The distribution of MODIS fire hot spots (black dots) and HYSPLIT backward trajectories (blue lines) during measurement at the Nam Co Station.

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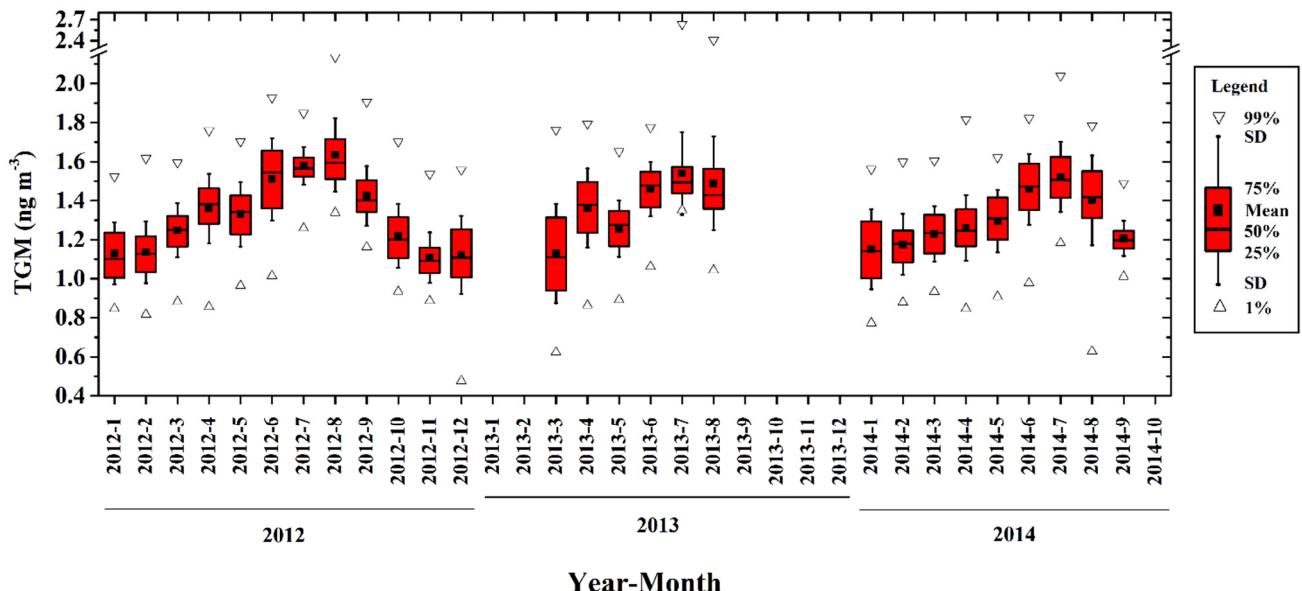


Fig. S3. Variation of monthly mean TGM at the Nam Co Station from January 2012 to October 2014.

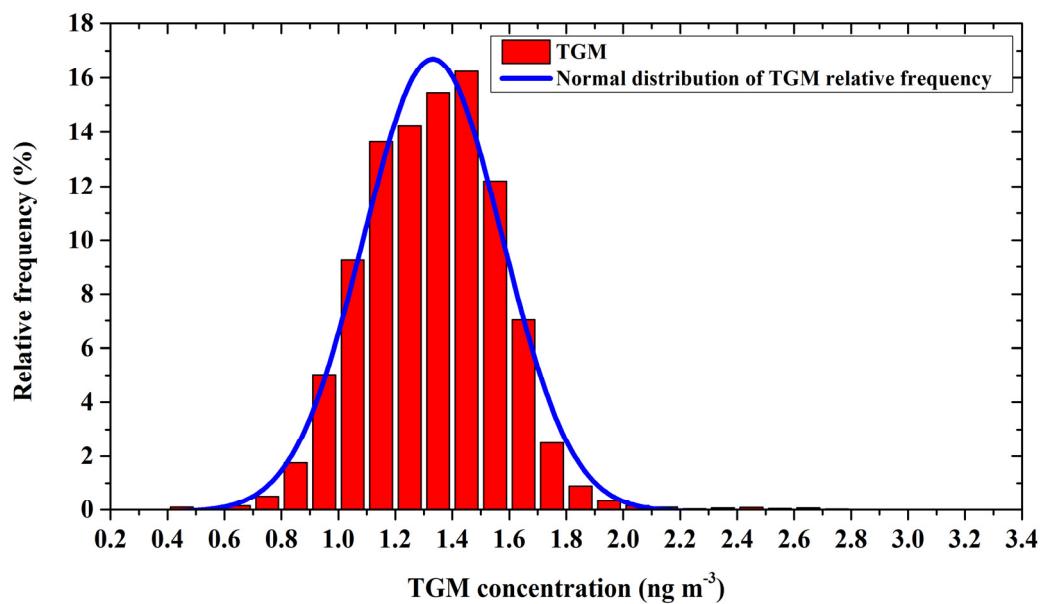
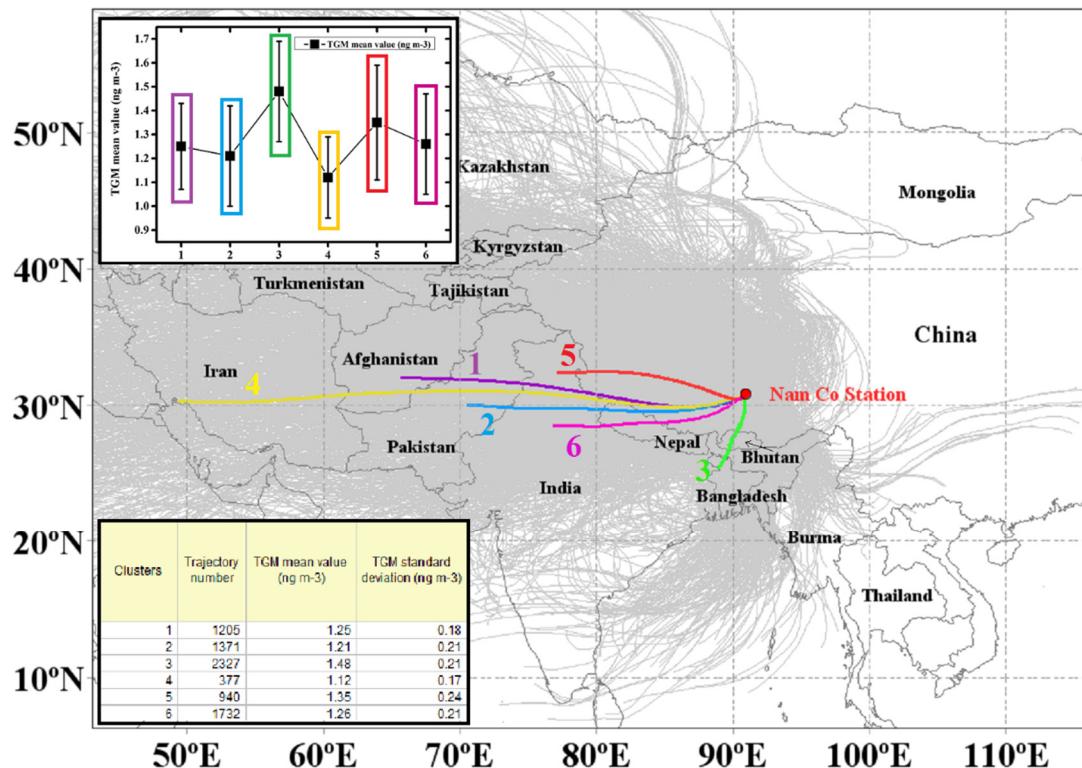


Fig. S4. Relative frequency plot of TGM distribution data measured at the Nam Co Station.



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Fig. S5. HYSPLIT backward trajectories (light-gray lines), clusters (color lines) and statistics of clusters (sub-figure and table) during the whole measurement period at the Nam Co Station.

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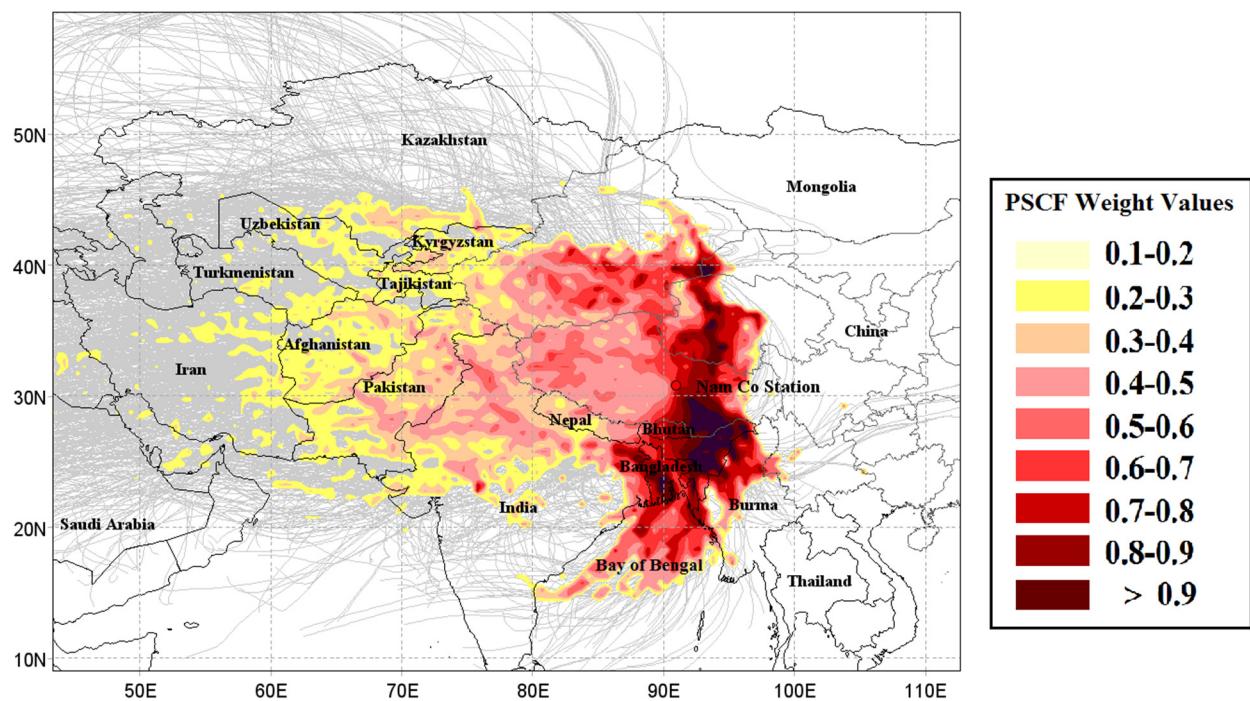
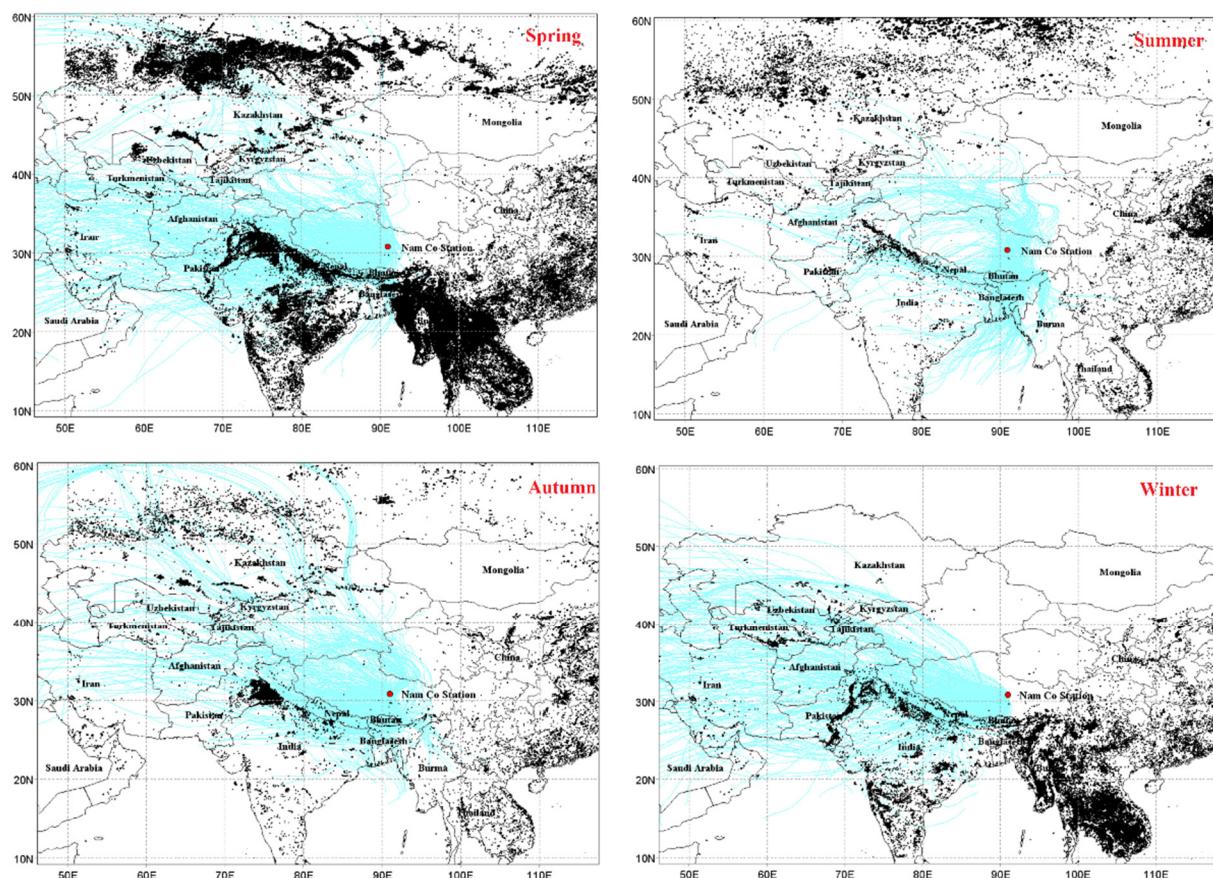


Fig. S6. Potential Source Contribution Function showing areas with possible emissions or air mass transport associated with higher TGM concentrations at the Nam Co Station during the whole measurement period.



175 **Fig. S7. The distribution of MODIS fire hot spots (black dots) and HYSPPLIT backward trajectories (blue lines) during the**
 176 **measurement period at the Nam Co Station by season.**

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