

Continuous Mercury Monitoring in Cape Hedo and Oga, Japan (2014Apr-2015Mar data)

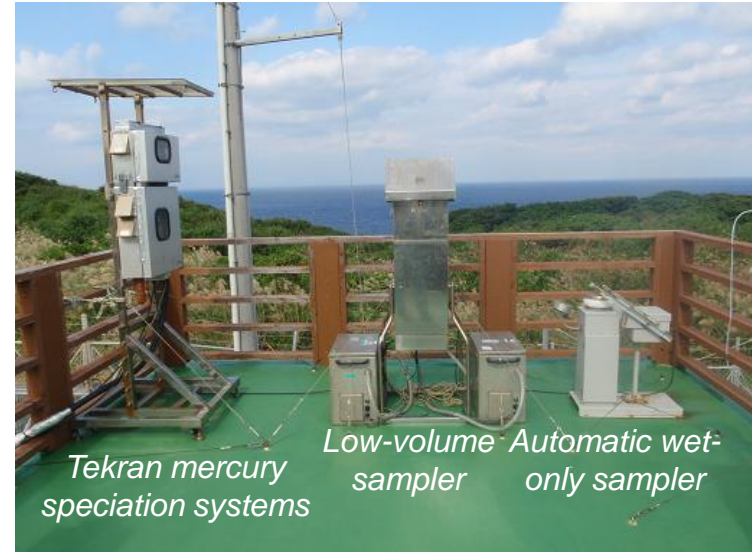
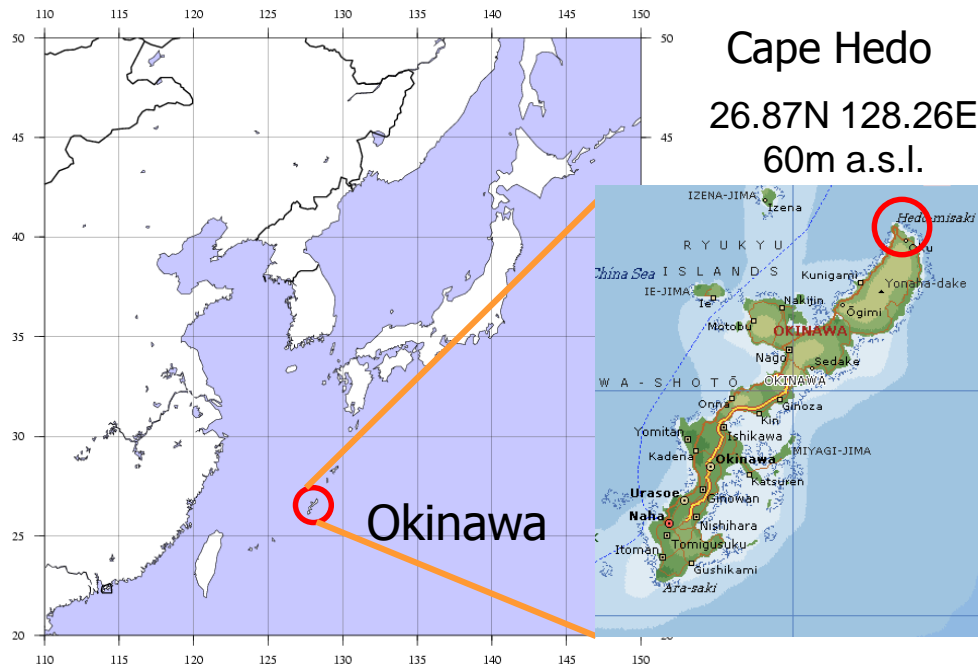
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Monitoring project for atmospheric mercury & other heavy metals in remote background area by Ministry of the Environment, Japan, 2007-2015

Objectives:

- Monitor current levels of mercury and other heavy metals in air, particles, and precipitation;
- Obtain useful information on the long-range transportation of trace elements in Asia-Pacific region;
- Develop monitoring methodologies;
- Contribute to the international efforts in atmospheric monitoring

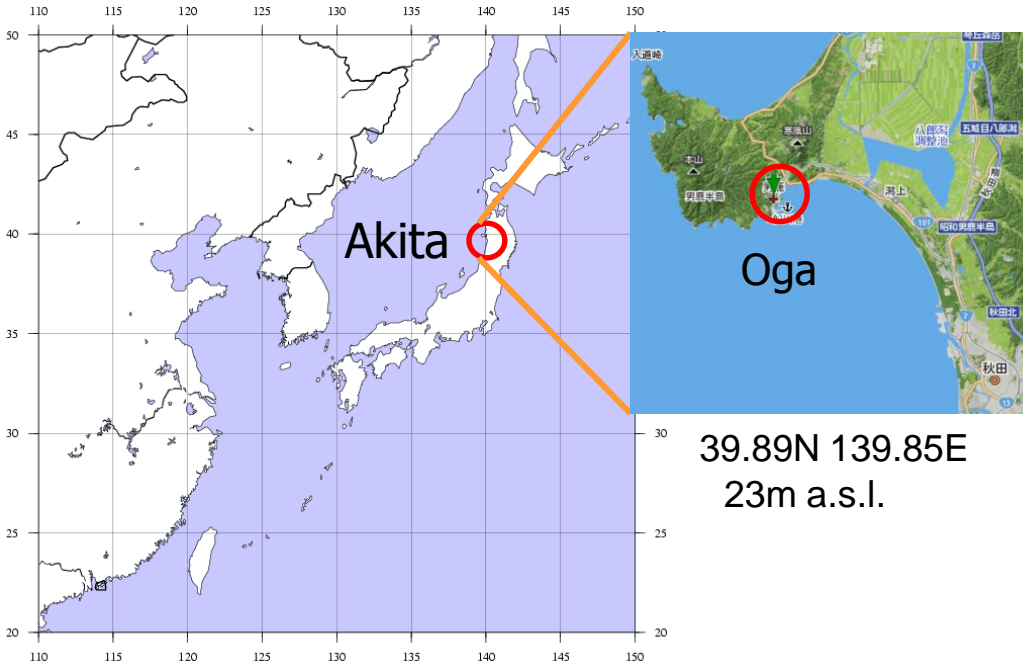
Cape Hedo Atmosphere and Aerosol Monitoring Station (CHAAMS)



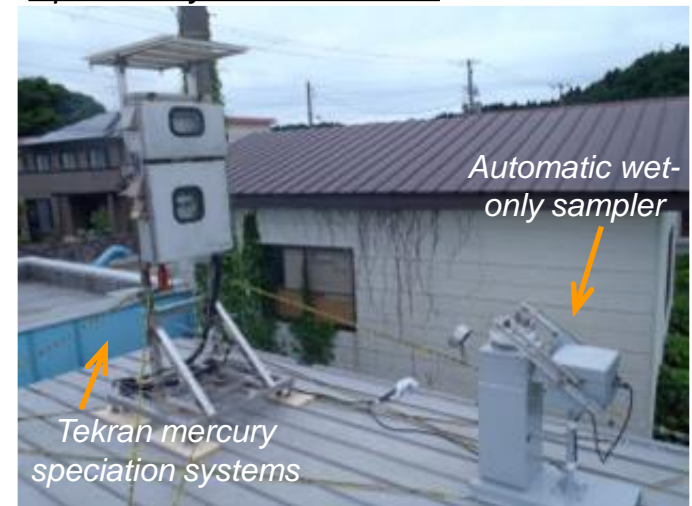
CHAAMS operated by National Institute for Environment Studies

Tekran mercury speciation analyzer and other heavy metals monitoring systems

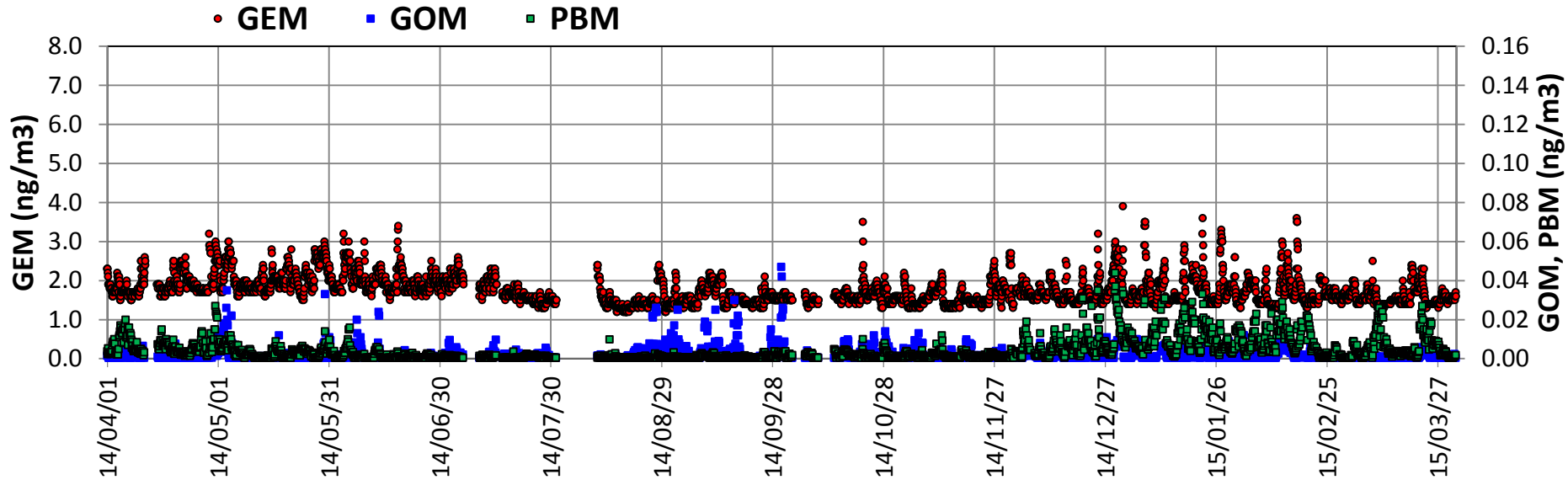
Mercury monitoring station in Oga, Japan



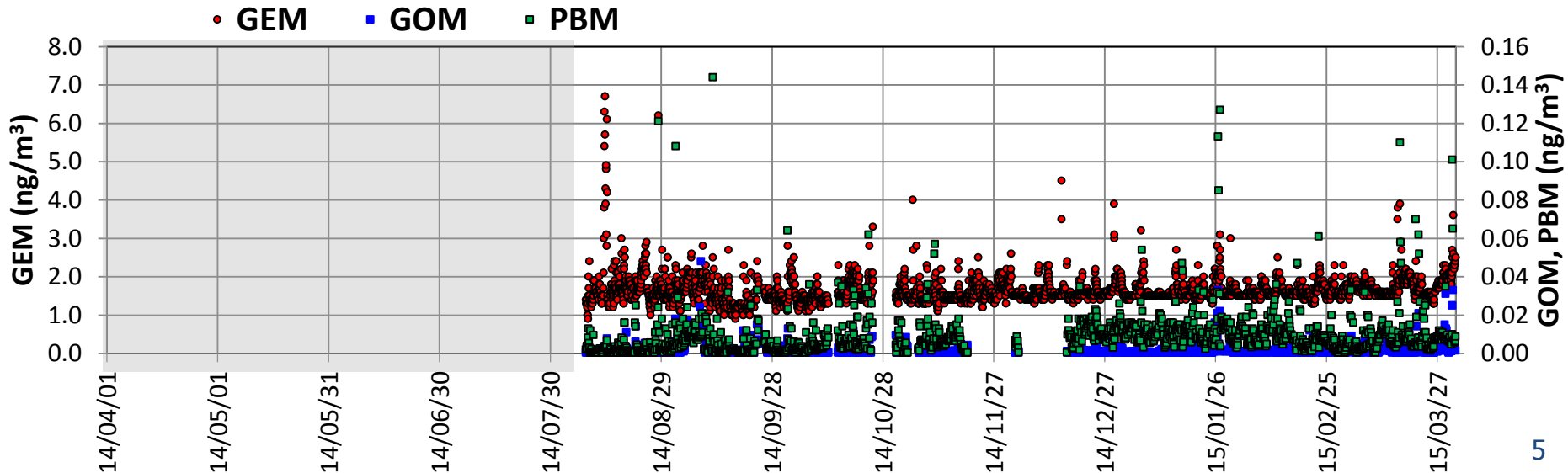
To strengthen the capacity of the mercury-observation network in Japan, a new observation site was set up at Oga city, Akita Prefecture, in September 2014.



Observations of mercury species Cape Hedo, FY2014 (Apr 2014-Mar 2015)



Oga, FY2014 (Aug 2014-Mar 2015)



Observations of mercury species

Annual variations of GEM

Statistics

Hourly Mean of GEM

Unit: ng/m³

Cape Hedo

	FY2010 (Apr 2010 - Mar 2011)	FY2011 (Apr 2011 - Mar 2012)	FY2012 (Apr 2012 - Mar 2013)	FY2013 (Apr 2013 - Mar 2014)	FY2014 (Apr 2014 - Mar 2015)
Mean	1.9	2.1	2.0	1.7	1.7
Median	1.8	2.0	1.9	1.6	1.7
Min	1.2	1.1	1.3	0.9	1.2
Max	6.0	4.7	7.3	4.8	3.9
Standard Deviation	0.5	0.5	0.5	0.3	0.3

Oga

FY2014 (Aug 2014 - Mar 2015)
1.6
1.6
0.9
6.7
0.4

Observations of mercury species
Monthly variations of GEM
Cape Hedo, FY2014 (Apr 2014-Mar 2015)

Unit: ng/m³

FY2014	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Mean	1.9	2.1	2.0	1.7	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.6
Median	1.8	2.0	1.9	1.7	1.4	1.5	1.6	1.5	1.6	1.6	1.6	1.5
Min	1.5	1.5	1.5	1.3	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Max	3.2	3.0	3.4	2.6	2.4	2.2	3.5	2.5	3.9	3.6	3.6	2.5
Standard Deviation	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.3	0.2
Samples (Hours)	416	478	464	387	314	463	363	463	468	478	431	475

Oga, FY2014 (Aug 2014-Mar 2015)

Unit: ng/m³

FY2014	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Mean					1.8	1.5	1.6	1.6	1.6	1.6	1.6	1.8
Median					1.6	1.5	1.5	1.5	1.5	1.5	1.6	1.7
Min					0.9	0.9	1.1	1.1	1.3	1.3	1.3	1.3
Max					6.7	2.8	3.3	4.0	4.5	3.2	2.5	3.9
Standard Deviation					0.7	0.3	0.3	0.3	0.3	0.2	0.2	0.3
Samples (Hours)					369	430	353	457	471	478	427	479

Observations of mercury species

Annual variations of GOM, PBM

Statistics

Hourly Mean

Unit: pg/m³

Cape Hedo

GOM					
	FY2010 (Apr 2010 - Mar 2011)	FY2011 (Apr 2011 - Mar 2012)	FY2012 (Apr 2012 - Mar 2013)	FY2013 (Apr 2013 - Mar 2014)	FY2014 (Apr 2014 - Mar 2015)
Mean	1.5	1.9	1.1	2.3	2.1
Min	< 1	< 1	< 1	< 1	< 1
Max	58	44	24	39	47

PBM					
	FY2010 (Apr 2010 - Mar 2011)	FY2011 (Apr 2011 - Mar 2012)	FY2012 (Apr 2012 - Mar 2013)	FY2013 (Apr 2013 - Mar 2014)	FY2014 (Apr 2014 - Mar 2015)
Mean	2.4	2.3	2.1	3.7	4.3
Min	< 1	< 1	< 1	< 1	< 1
Max	48	41	27	71	44

Oga

GOM
FY2014 (Aug 2014 - Mar 2015)
2.2
< 1
48

PBM
FY2014 (Aug 2014 - Mar 2015)
8.8
< 1
144

Observations of mercury species

Monthly variations of GOM and PBM

Cape Hedo, FY2014 (Apr 2014-Mar 2015) Unit: pg/m³

	FY2014	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
GOM	Mean	1.7	2.7	1.5	1.6	3.1	4.2	2.0	1.7	2.2	2.1	2.1	1.0
	Min	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	Max	14	35	24	10	26	47	14	13	12	10	12	8
PBM	Mean	6.8	3.4	1.6	0.9	0.8	1.0	1.7	1.5	7.7	10.5	8.7	5.8
	Min	1.3	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.1	< 1	< 1
	Max	27	14	16	3.7	9.8	3.8	10	12	44	33	29	27

Oga, FY2014 (Aug 2014-Mar 2015) Unit: pg/m³

	FY2014	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
GOM	Mean					1.2	4.3	1.8	1.1	1.5	2.1	1.8	2.9
	Min					< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	Max					14	48	13	8.5	9.5	33	14	33
PBM	Mean					3.7	6.8	7.3	7.8	11.2	13.2	9.4	10.0
	Min					< 1	< 1	< 1	< 1	< 1	2.3	< 1	< 1
	Max					121	144	64	57	35	127	61	110

Observations of precipitation Wet deposition of mercury

Cape Hedo, FY2014 (Apr 2014-Mar 2015)

Oga, FY2014 (Aug 2014-Mar 2015)

