Supporting Information to:

Investigation of Mercury Emission Sources Using Hg Isotopic Compositions of Atmospheric Mercury at the Cape Hedo Atmosphere and Aerosol Monitoring Station (CHAAMS), Japan

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Figure S1: A GEM sampling system. For avoiding breakthrough of GEM across the trap, the air flow rate was adjusted to 1.0 L/min per trap. In order to measure Hg isotopes with the required accuracy, >10 ng of GEM was necessary. Two Au traps were set parallel, and eight rows were prepared for the long term monitoring. The automatic switching valve was set to switch every 72 hours.
Figure SI 2. Air-mass back trajectories of 24-h duration
Backward trajectories ending at 0600 UTC 31 Dec 16
NOAA HYSPLIT MODEL
GFSG Meteorological Data

Backward trajectories ending at 0600 UTC 28 Dec 16
NOAA HYSPLIT MODEL
GFSG Meteorological Data

Backward trajectories ending at 0600 UTC 25 Dec 16
NOAA HYSPLIT MODEL
GFSG Meteorological Data

Backward trajectories ending at 0600 UTC 29 Dec 16
NOAA HYSPLIT MODEL
GFSG Meteorological Data

Backward trajectories ending at 0600 UTC 26 Dec 16
NOAA HYSPLIT MODEL
GFSG Meteorological Data

Backward trajectories ending at 0600 UTC 27 Dec 16
NOAA HYSPLIT MODEL
GFSG Meteorological Data

Backward trajectories ending at 0600 UTC 30 Dec 16
NOAA HYSPLIT MODEL
GFSG Meteorological Data

Backward trajectories ending at 0600 UTC 01 Jan 17
NOAA HYSPLIT MODEL
GFSG Meteorological Data

Backward trajectories ending at 0600 UTC 02 Jan 17
NOAA HYSPLIT MODEL
GFSG Meteorological Data

Figure SI 2. Air-mass back trajectories of 24-h duration (continue)
Source at 26.87 N 128.25 E Meters AGL

Backward trajectories ending at 0600 UTC 03 Jan 17

Meteorology: 0000Z 9 Jan 2017 - GDAS0.5
Vertical Motion Calculation Method: Model Vertical Velocity
Trajectory Direction: Backward      Duration: 24 hrs
Source 1 lat.: 26.866953  lon.: 128.248468  hgts: 0, 500, 1300 m AGL
Job ID: 188321                           Job Start: Tue Oct  2 00:19:59 UTC 2018

Backward trajectories ending at 0600 UTC 07 Jan 17

Meteorology: 0000Z 10 Jan 2017 - GDAS0.5
Trajectory Direction: Backward      Duration: 24 hrs
Source 1 lat.: 26.866953  lon.: 128.248468  hgts: 0, 500, 1300 m AGL
Job ID: 188220                           Job Start: Tue Oct  2 00:17:52 UTC 2018

Backward trajectories ending at 0600 UTC 11 Jan 17

Meteorology: 0000Z 11 Jan 2017 - GDAS0.5
Trajectory Direction: Backward      Duration: 24 hrs
Source 1 lat.: 26.866953  lon.: 128.248468  hgts: 0, 500, 1300 m AGL
Job ID: 188411                           Job Start: Tue Oct  2 00:22:30 UTC 2018

Figure SI 2. Air-mass back trajectories of 24-h duration (continue)
Figure SI 2. Air-mass back trajectories of 24-h duration (continue)
Figure SI 2. Air-mass back trajectories of 24-h duration (continue)
Figure SI 2. Air-mass back trajectories of 24-h duration (continue)
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Figure SI 2. Air-mass back trajectories of 24-h duration (continue)
Figure SI 2. Air-mass back trajectories of 24-h duration (continue)
Backward trajectories ending at 0600 UTC 04 Dec 17
GFSD Meteorological Data

Backward trajectories ending at 0600 UTC 29 Nov 17
GFSD Meteorological Data

Backward trajectories ending at 0600 UTC 05 Dec 17
GFSD Meteorological Data

Backward trajectories ending at 0600 UTC 02 Dec 17
GFSD Meteorological Data

Backward trajectories ending at 0600 UTC 30 Nov 17
GFSD Meteorological Data

Backward trajectories ending at 0600 UTC 03 Dec 17
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Backward trajectories ending at 0600 UTC 06 Dec 17
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Backward trajectories ending at 0600 UTC 01 Dec 17
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Backward trajectories ending at 0600 UTC 09 Dec 17
GFSD Meteorological Data

Backward trajectories ending at 0600 UTC 07 Dec 17
GFSD Meteorological Data

Figure SI 2. Air-mass back trajectories of 24-h duration (continue)
Backward trajectories ending at 0600 UTC 13 Dec 17
GFS5 Meteorological Data
Backward trajectories ending at 0600 UTC 12 Dec 17
GFS5 Meteorological Data
Backward trajectories ending at 0600 UTC 11 Dec 17
GFS5 Meteorological Data
Backward trajectories ending at 0600 UTC 10 Dec 17
GFS5 Meteorological Data
Backward trajectories ending at 0600 UTC 09 Dec 17
GFS5 Meteorological Data
Backward trajectories ending at 0600 UTC 08 Dec 17
GFS5 Meteorological Data
Backward trajectories ending at 0600 UTC 07 Dec 17
GFS5 Meteorological Data
Backward trajectories ending at 0600 UTC 06 Dec 17
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GFS5 Meteorological Data
Backward trajectories ending at 0600 UTC 02 Dec 17
GFS5 Meteorological Data
Backward trajectories ending at 0600 UTC 12 Dec 17
NOAA HYSPLIT MODEL
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NOAA HYSPLIT MODEL
Backward trajectories ending at 0600 UTC 12 Dec 17
NOAA HYSPLIT MODEL
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Backward trajectories ending at 0600 UTC 09 Dec 17
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NOAA HYSPLIT MODEL
Backward trajectories ending at 0600 UTC 12 Dec 17
GFS5 Meteorological Data
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GFS5 Meteorological Data
Backward trajectories ending at 0600 UTC 04 Dec 17
GFS5 Meteorological Data
Backward trajectories ending at 0600 UTC 03 Dec 17
GFS5 Meteorological Data
Figure SI 2. Air-mass back trajectories of 24-h duration (continue)
Table S1: Concentrations and isotopic compositions of GEM and wind directions during sampling periods at CHAAMS. Air-mass back trajectories of total run time of 24-hours were calculated for 3 days before sampling, and during sampling using the NOAA HYSPLIT model.

(N: North, S: South, W: West, E: East, NW: Northwest, NE: Northeast, SW: Southwest, SE: Southeast, MD*: Multiple directions)

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*When it is difficult to determine the direction of the trajectory, the result is written as MD.*
Figure S3. Ox concentrations at the monitoring stations (*preliminary results from http://soramame.taiki.go.jp). From late July to August (gray bars), the relatively small peaks indicate low $\delta^{202}$Hg values in the GEM samples.