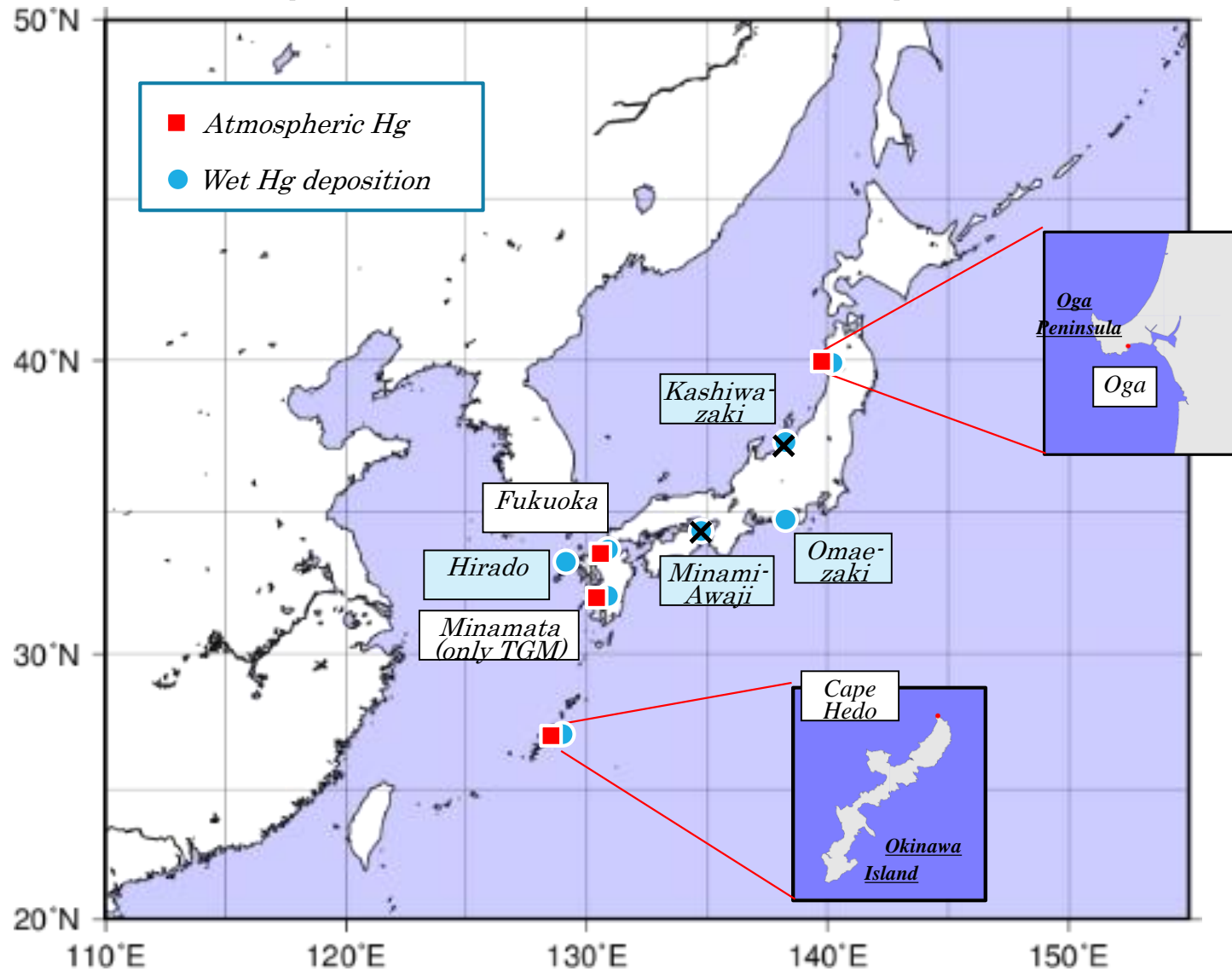


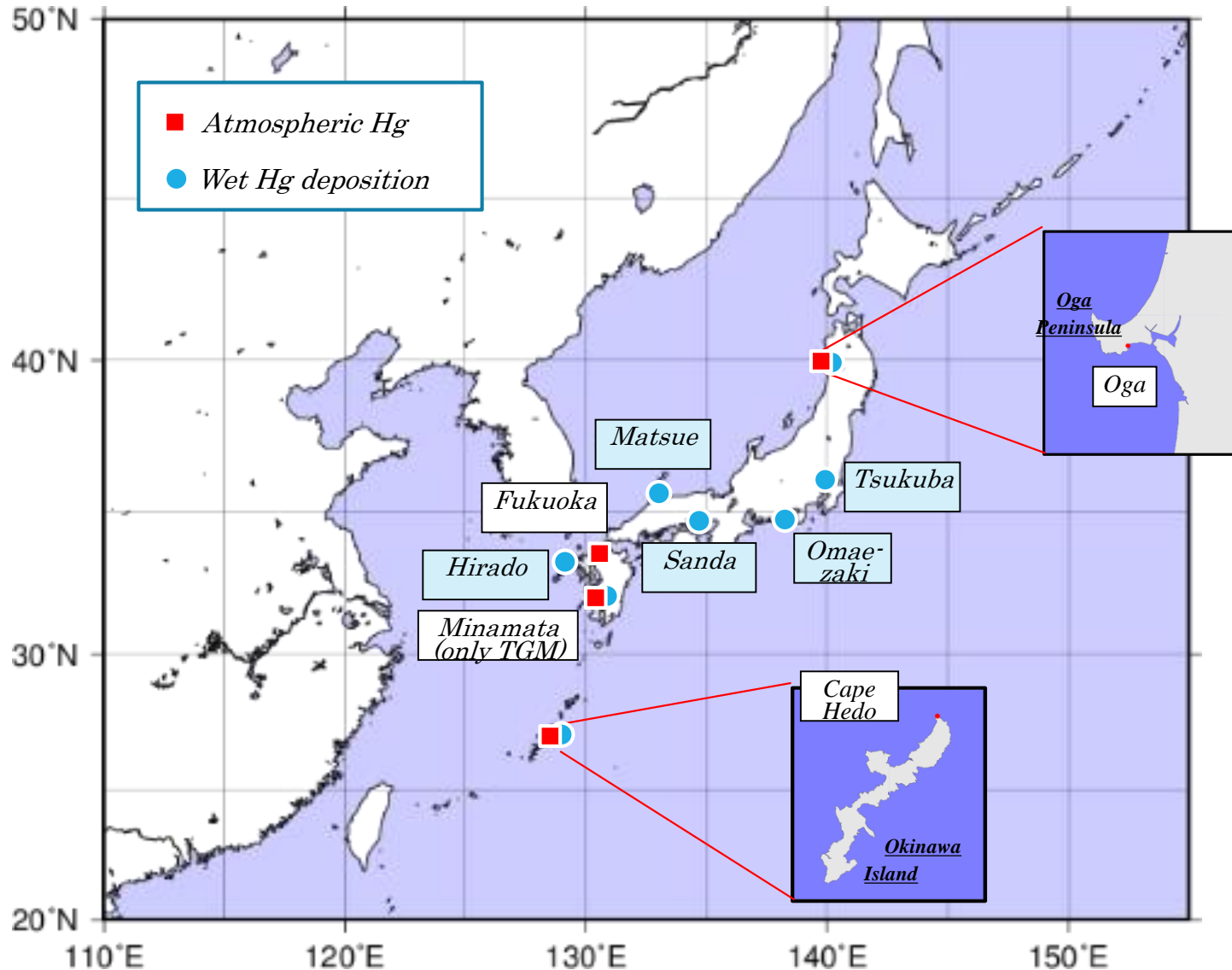
CONTINUOUS ATMOSPHERIC MONITORING ACTIVITIES IN JAPAN

Japanese Atmospheric Mercury Monitoring Network (Before 31 March 2020)



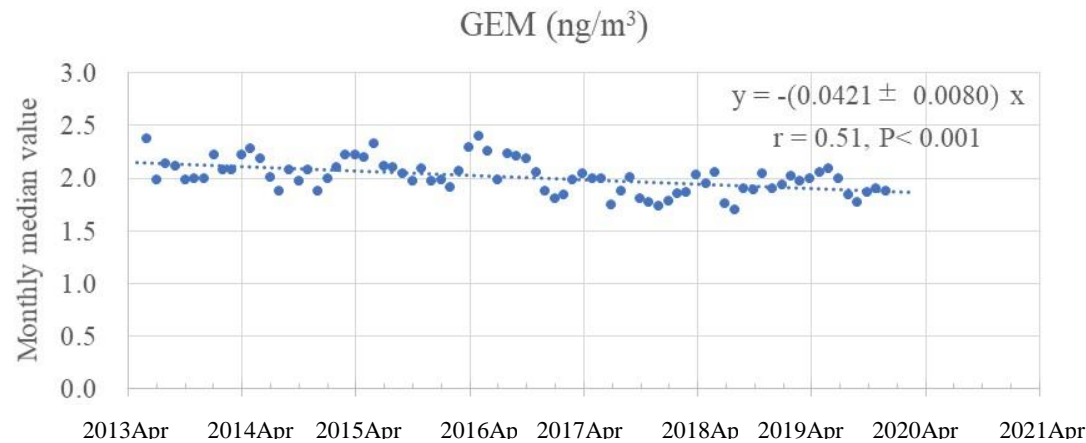
* TGM = GEM + GOM

Japanese Atmospheric Mercury Monitoring Network (Future plan \Rightarrow re-start from Jan. 2021)

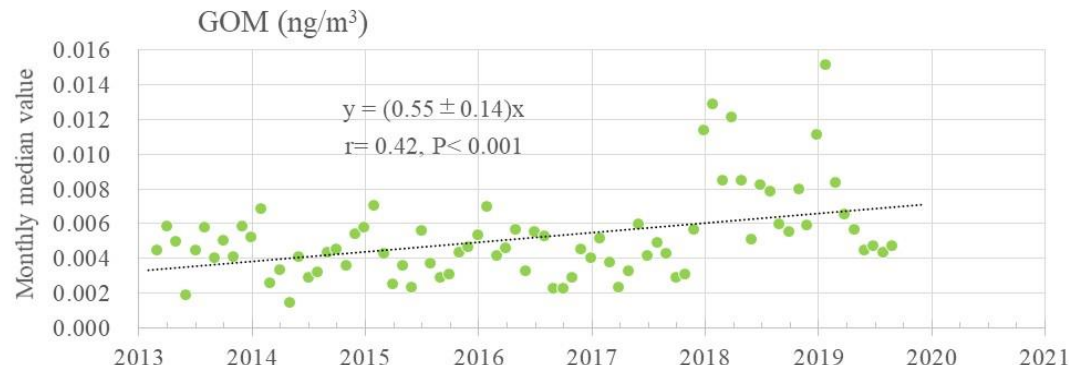


* TGM = GEM + GOM

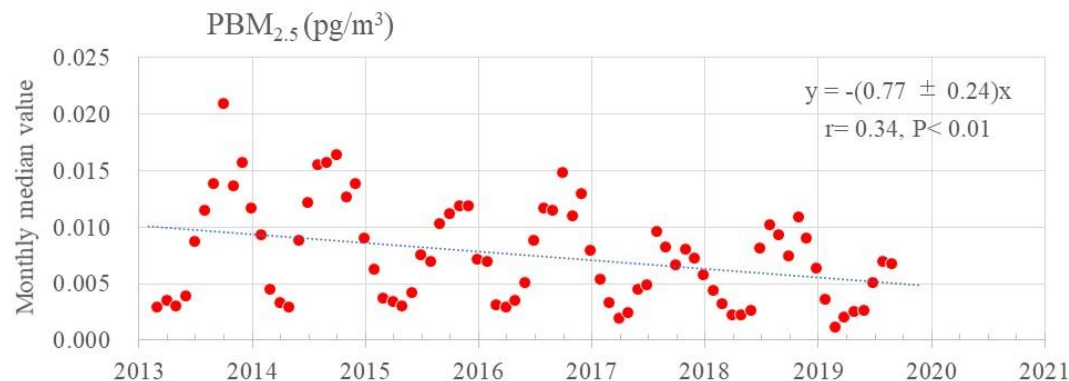
Observations of Mercury Species at Fukuoka



Site	Decreasing rate	Reference
Mt.Lulin	$1.5 \pm 1.2\% \text{ yr}^{-1}$	Nguyen et al. (2019)
Cape Hedo	$2.1 \pm 0.4\% \text{ yr}^{-1}$	Marumoto et al. (2019)
Minamata	$1.3 \pm 0.3\% \text{ yr}^{-1}$	
Fukuoka	$2.1 \pm 0.4\% \text{ yr}^{-1}$	



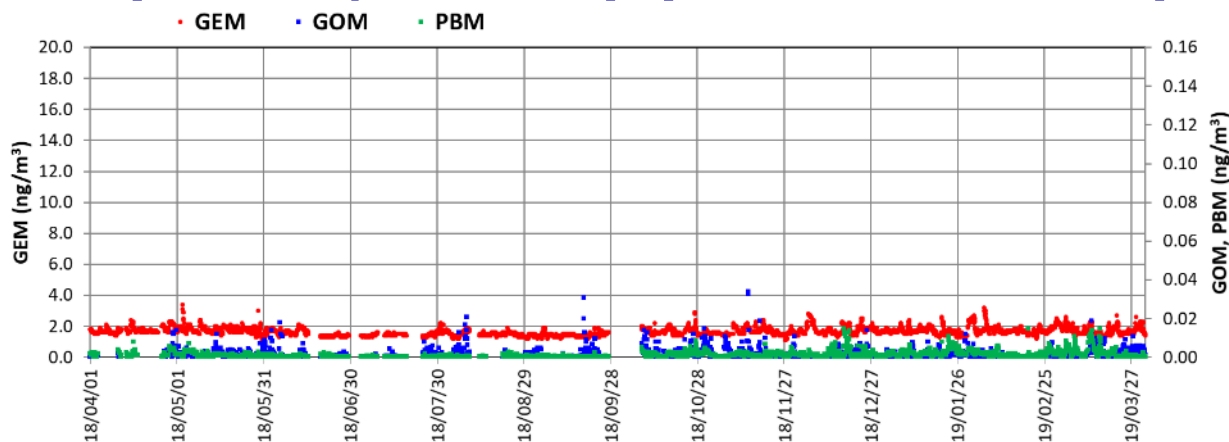
Increase in the FY2018 and 2019
(The reason is still under consideration.)



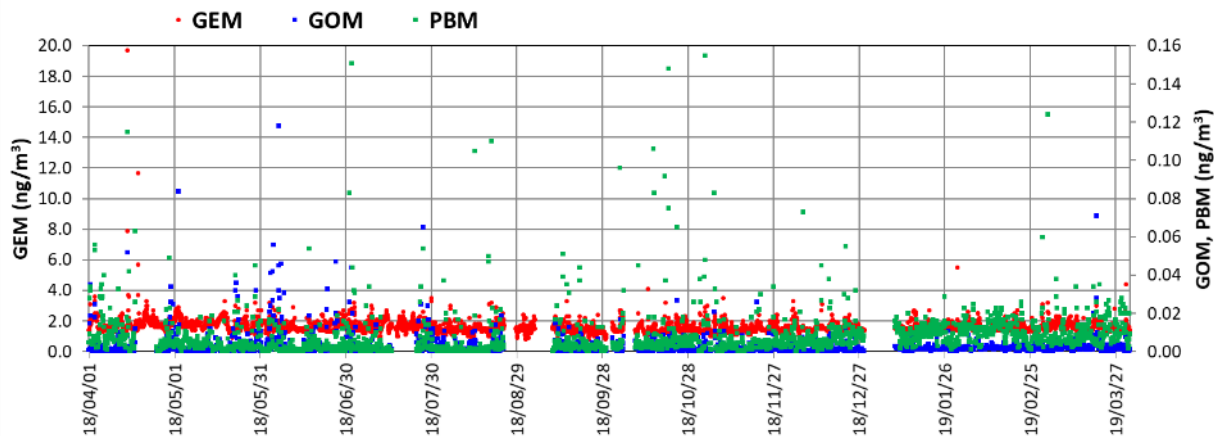
Decreasing trend as well as GEM

Observations of Mercury Species at Cape Hedo and Oga

Cape Hedo, FY2018 (Apr 2018-Mar 2019)



Oga, FY2018 (Apr 2018-Mar 2019)



Short-term events with high concentrations were sometimes observed in the Oga.
→ Influence from local emission sources ?

Search of Mercury Emission Source near Oga Station

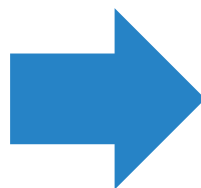
- To obtain the information for determine the emission source of high concentration events, following survey are conducted in addition to continuous atmospheric mercury monitoring
 - Daily sampling and analysis of other heavy metals than mercury in atmosphere (Pb, Cd, Cu, Zn, As, Cr, V, Ni, Se, Sb, Ba, Co, Mn, Sn, Te, Tl, Be, Al, Fe, Ca, Na, K, Mg) (2weeks in Aug, Sep, Nov 2020)
 - Carbon Monoxide (CO) monitoring (continuous)
 - Tracking ships sailing in the vicinity by time-lapse camera (continuous)



OTHER ACTIVITIES

- Continuous Atmospheric Mercury Monitoring in High Altitude (Mt. Norikura)
- Monitoring of Atmospheric Mercury in Large Particle Matter

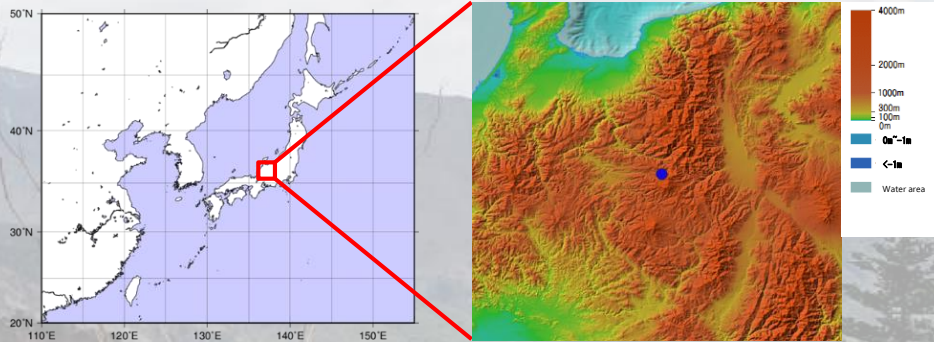
Monitoring of Mercury in Large Particle Matter of Atmosphere



PBM by Tekran 1135 indicates the particle smaller than $2.5\mu\text{m}$. To obtain the information of mercury in large particle ($>2.5\mu\text{m}$), sampling and analysis of particle matter using by quartz fiber filter is begun in continuous mercury monitoring site (Cape Hedo and Oga)

Atmospheric Mercury Monitoring on High-Altitude Site

- Norikura Monitoring Station (36.17 N, 137.52E, 1950m a.s.l.)



Source: Geospatial Information Authority of Japan (<https://maps.gsi.go.jp/development/ichiran.html>)

*: Data of sea area is edited by the documents of Hydrographic and Oceanographic Department, Japan Coast Guard

To obtain the information of the concentration of GOM in high altitude atmosphere, continuous mercury speciation monitoring is conducted in the mountain area in the middle of Japan Main Island, in summer of 2019 and 2020.



Monitoring in 2019
24 Jun 2019 – 1 Oct 2019

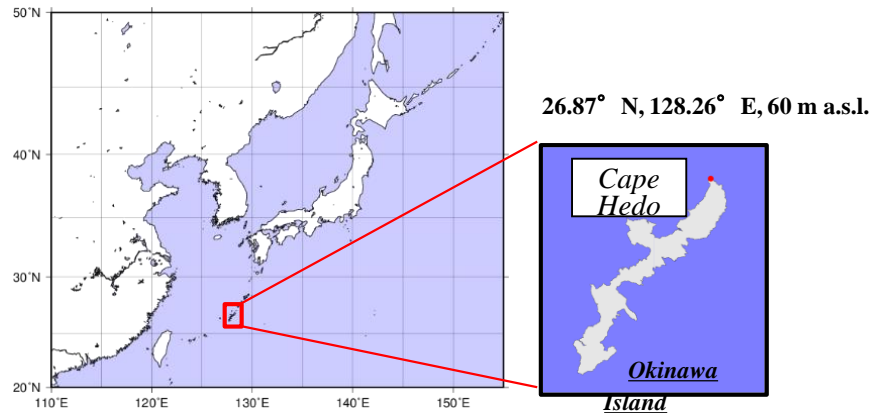
Monitoring in 2020
12 May 2020 - 8 Jul 2020

Blackout caused by heavy rain
→Suspended

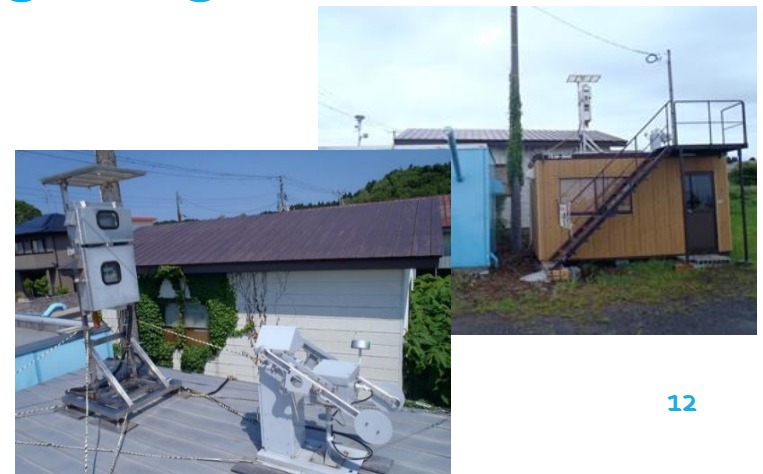
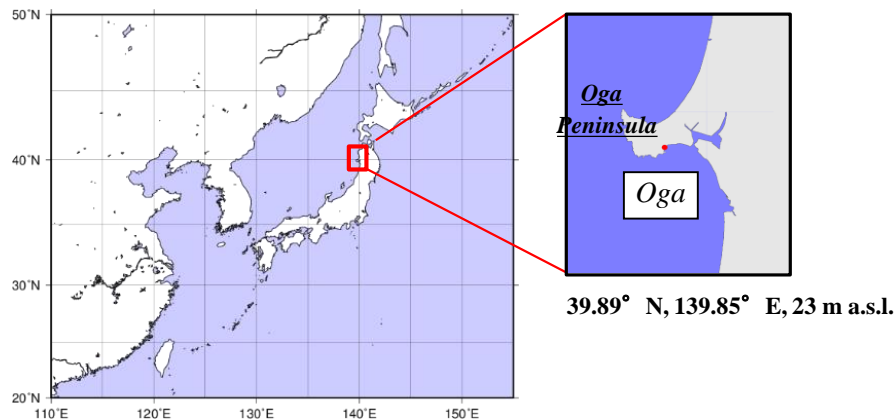
Thank you!

Appendix

Atmospheric Mercury Monitoring in Cape Hedo Atmosphere and Aerosol Monitoring Station (CHAAMS)

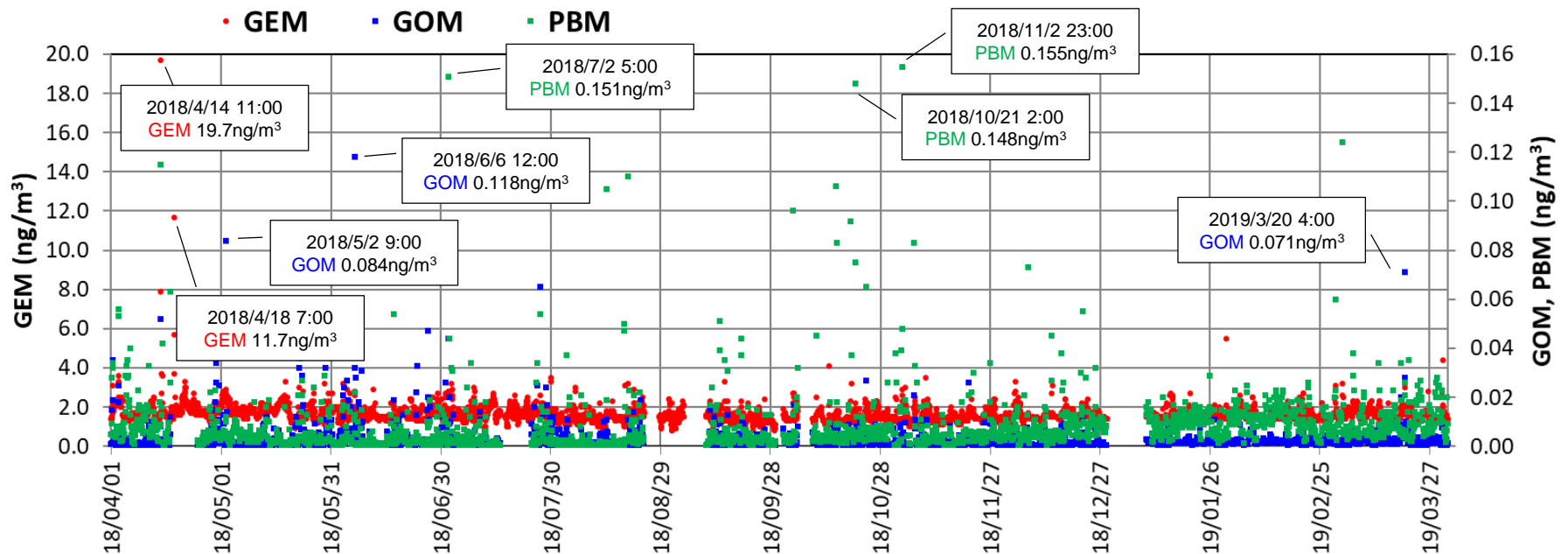


Atmospheric Mercury Monitoring in Oga Peninsula



High Concentration Events in Oga, FY2018

Oga, FY2018 (Apr 2018-Mar 2019)



Duration of high concentration events were short
→Emission source near ?