

The authors are to be commended for making this comprehensive mercury (Hg) dataset publicly available. This resource will undoubtedly foster collaborative research on climate-cryosphere-Hg feedbacks, both under current conditions and future warming scenarios. Overall, the paper is of good quality and contributes significantly to the field.

Suggestions for improvement:

1. Quality Assurance/Quality Control (QA/QC)

The paper would benefit from more detailed information on QA/QC procedures, including specifics on blanks, limits of detection, and analytical uncertainties. Clarifying these aspects would enhance the dataset's reliability and usability for future studies.

2. Temporal coverage and data summary

A table or figure summarizing the time coverage of sampling (e.g., which variables were monitored, when, and at what frequency) would greatly improve the readability and utility. For example, a visualization similar to Figure 3 in Magand et al. (2023) could effectively illustrate data coverage and the fraction of valid hourly measurements per month for TGM. This would help readers quickly assess whether the datasets are suitable for trend analysis.

3. Structural improvements

Consider merging Sections 2 and 3 for better flow and to avoid redundancy. In addition, please include information on site classifications (e.g., rural, urban, remote) in Table 1 to provide context for the sampling locations.

4. Minor correction

"Air" sampling is missing from Figure 1 and should be added for completeness.

5. Data accessibility

While reviewing the datasets, I noticed several issues that should be addressed to enhance accessibility and usability for the research community.

In the precipitation dataset (see Fig. 1), the headers are misaligned across two rows, and the first few rows do not align correctly with their respective columns. A similar misalignment issue is present in the glacier dataset (see Fig. 2).

Depth information is missing for most soil samples in APCC dataset I-5, which may limit the dataset's utility for certain analyses.

For APCC dataset I-6 (River), it would be helpful to separate the sampling time, concentration range, and average  $\pm$  standard deviation into distinct columns. The current formatting makes it challenging to efficiently reuse the data.

In APCC dataset I-7, the meaning of the following columns is unclear:  $\mu\text{g}/\text{m}^2\cdot\text{yr}$ ,  $\mu\text{g}\cdot\text{yr}^{-1}\cdot\text{m}^{-2}$ , and  $\text{ng}\cdot\text{g}^{-1}$ . Including a detailed description of all column headers in dedicated README files would clarify their purpose and improve usability.

Finally, there appears to be an issue with the column headers in APCC dataset I-8 (see Fig. 3).

Addressing these points would greatly enhance the clarity and usability of the datasets.  
 Thank you for your attention to these details!

Month	Sample ID	Sampling date	THg concentration (ng L-1)			abbreviation	region	Reference
		Wet THg flux	latitude	longitude	elevation			
January				0	0	27.167	100.167	2650 YL, YL, 2012
Tibetan Plateau Huang et al., 2022, Environmental Pollution								
February				0	0	27.167	100.167	2650 YL, YL, 2012
Tibetan Plateau Huang et al., 2022, Environmental Pollution								
March				0	0	27.167	100.167	2650 YL, YL, 2012
Tibetan Plateau Huang et al., 2022, Environmental Pollution								
April			34.1025	100.167	0.0341025	27.167	100.167	2650 YL, YL, 2012
Tibetan Plateau Huang et al., 2022, Environmental Pollution								
May			17.95466667	100.167	0.251365333	27.167	100.167	2650 YL, YL, 2012
Tibetan Plateau Huang et al., 2022, Environmental Pollution								
June			6.287055556	100.167	0.801599583	27.167	100.167	2650 YL, YL, 2012
Tibetan Plateau Huang et al., 2022, Environmental Pollution								
July			5.041736364	100.167	0.905495851	27.167	100.167	2650 YL, YL, 2012
Tibetan Plateau Huang et al., 2022, Environmental Pollution								
August			8.490461538	100.167	1.518094523	27.167	100.167	2650 YL, YL, 2012
Tibetan Plateau Huang et al., 2022, Environmental Pollution								
September			4.916896667	100.167	0.568884944	27.167	100.167	2650 YL, YL, 2012
Tibetan Plateau Huang et al., 2022, Environmental Pollution								
October			17.235	100.167	0.5911605	27.167	100.167	2650 YL, YL, 2012
Tibetan Plateau Huang et al., 2022, Environmental Pollution								
November				0	0	27.167	100.167	2650 YL, YL, 2012
Tibetan Plateau Huang et al., 2022, Environmental Pollution								
December				0	0	27.167	100.167	2650 YL, YL, 2012
Tibetan Plateau Huang et al., 2022, Environmental Pollution								
January			26.24	96.556	0.120918143	39.429	96.556	4230 LHG, LHG, 2012 Ti Huang et al., 2022, Environmental Pollution
February			55.61	96.556	0.055629176	39.429	96.556	4230 LHG, LHG, 2012 Ti Huang et al., 2022, Environmental Pollution
March			40.405	96.556	0.031460169	39.429	96.556	4230 LHG, LHG, 2012 Ti Huang et al., 2022, Environmental Pollution
April			28.55	96.556	0.112954629	39.429	96.556	4230 LHG, LHG, 2012 Ti Huang et al., 2022, Environmental Pollution
May			20.266	96.556	0.685942953	39.429	96.556	4230 LHG, LHG, 2012 Ti Huang et al., 2022, Environmental Pollution
June			4.7486125	96.556	0.322429233	39.429	96.556	4230 LHG, LHG, 2012 Ti Huang et al., 2022, Environmental Pollution
July			5.17531875	96.556	0.59972083	39.429	96.556	4230 LHG, LHG, 2012 Ti Huang et al., 2022, Environmental Pollution

Figure 1: APCC dataset I-3 Precipitation Hg data.

33	Surface snow 2010-10-3	28.019833	86.962983	6525 EV	East Rongbuk				
34	glacier* 2.707	28.019833	86.962983	6505 EV	East Rongbuk			Huang et al., 2012b, Atmospheric Environment	
35	Surface snow	28.019833	86.962983	6505 EV	East Rongbuk				
36	glacier* 2.913	28.019833	86.962983	6425 EV	East Rongbuk			Huang et al., 2012b, Atmospheric Environment	
37	Surface snow	28.019833	86.962983	6425 EV	East Rongbuk				
38	glacier* 2.458	28.019833	86.962983	6375 EV	East Rongbuk			Huang et al., 2012b, Atmospheric Environment	
39	Surface snow	28.019833	86.962983	6375 EV	East Rongbuk				
40	glacier* 1.854	28.019833	86.962983	6325 EV	East Rongbuk			Huang et al., 2012b, Atmospheric Environment	
41	Surface snow	28.019833	86.962983	6325 EV	East Rongbuk				
42	glacier* 2.514	28.019833	86.962983	6295 EV	East Rongbuk			Huang et al., 2012b, Atmospheric Environment	
43	Surface snow	28.019833	86.962983	6295 EV	East Rongbuk				
44	glacier* 1.533	28.019833	86.962983	6275 EV	East Rongbuk			Huang et al., 2012b, Atmospheric Environment	
45	Surface snow	28.019833	86.962983	6275 EV	East Rongbuk				
46	glacier* 1.58	28.019833	86.962983	6275 EV	East Rongbuk			Huang et al., 2012b, Atmospheric Environment	
47	Surface snow 2009-4-23	33.953783	91.283083	5235 TGL	Ganglongjama (Guoqu)			Huang et al., 2012b, Atmospheric Environment	
48	glacier* 2.612	33.953783	91.283083	5332 TGL	Ganglongjama (Guoqu)			Huang et al., 2012b, Atmospheric Environment	
49	Surface snow	33.953783	91.283083	5332 TGL	Ganglongjama (Guoqu)				
50	glacier* 2.484	33.953783	91.283083	5452 TGL	Ganglongjama (Guoqu)			Huang et al., 2012b, Atmospheric Environment	
51	Surface snow	33.953783	91.283083	5452 TGL	Ganglongjama (Guoqu)				
52	glacier* 3.038	33.953783	91.283083	5511 TGL	Ganglongjama (Guoqu)			Huang et al., 2012b, Atmospheric Environment	
53	Surface snow	33.953783	91.283083	5511 TGL	Ganglongjama (Guoqu)				
54	glacier* 3.798	33.953783	91.283083	5522 TGL	Ganglongjama (Guoqu)			Huang et al., 2012b, Atmospheric Environment	
55	Surface snow	33.953783	91.283083	5522 TGL	Ganglongjama (Guoqu)				
56	glacier* 2.746	33.953783	91.283083	5572 TGL	Ganglongjama (Guoqu)			Huang et al., 2012b, Atmospheric Environment	
57	Surface snow	33.953783	91.283083	5572 TGL	Ganglongjama (Guoqu)				
58	glacier* 5.682	33.953783	91.283083	5585 TGL	Ganglongjama (Guoqu)			Huang et al., 2012b, Atmospheric Environment	
59	Surface snow	33.953783	91.283083	5585 TGL	Ganglongjama (Guoqu)				
60	glacier* 4.105	33.953783	91.283083	5594 TGL	Ganglongjama (Guoqu)			Huang et al., 2012b, Atmospheric Environment	
61	Surface snow	33.953783	91.283083	5594 TGL	Ganglongjama (Guoqu)				
62	glacier* 4.531	33.953783	91.283083	5594 TGL	Ganglongjama (Guoqu)			Huang et al., 2012b, Atmospheric Environment	
63	Surface snow	30.779	90.991	4730 NMC	Nam Co 3.962				Huang et al., 2012b, Atmospheric Environment
64	Surface snow	30.779	90.991	4730 NMC	Nam Co 2.358			12/10/2010 10:00	Huang et al., 2012b, Atmospheric Environment
65	Surface snow	30.779	90.991	4730 NMC	Nam Co 5.4825			12/10/2010 12:00	Huang et al., 2012b, Atmospheric Environment
66	Surface snow	30.779	90.991	4730 NMC	Nam Co 4.787			12/10/2010 14:00	Huang et al., 2012b, Atmospheric Environment
67	Surface snow	30.779	90.991	4730 NMC	Nam Co 2.568			12/10/2010 17:00	Huang et al., 2012b, Atmospheric Environment
68	Surface snow	30.779	90.991	4730 NMC	Nam Co 1.6035			12/10/2010 19:00	Huang et al., 2012b, Atmospheric Environment
								12/10/2010 21:00	Huang et al., 2012b, Atmospheric Environment

Figure 2: APCC dataset I-4 Glacier.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	latitude	longitude	elevation	abbreviation	region	Measurement	Sampling date	Total Hg concentration							
2	(ng/g)"	$\delta^{202}\text{Hg}$ (‰)	$\delta^{199}\text{Hg}$ (‰)	Reference											
3	27.683	85.4	1314	BD	Bode, Kathm	BD-92	03/01/2018		-0.8	-0.14	Aerosol: Guo et al., 2021, Environmental Pollution				
4	27.683	85.4	1314	BD	Bode, Kathm	BD-98	09/03/2018		-1.15	-0.16	Aerosol: Guo et al., 2021, Environmental Pollution				
5	27.683	85.4	1314	BD	Bode, Kathm	BD-100	25/03/2018		-1.18	-0.22	Aerosol: Guo et al., 2021, Environmental Pollution				
6	27.683	85.4	1314	BD	Bode, Kathm	BD-110	24/04/2018		-1.05	-0.18	Aerosol: Guo et al., 2021, Environmental Pollution				
7	27.683	85.4	1314	BD	Bode, Kathm	BD-114	24/05/2018		-1.42	-0.22	Aerosol: Guo et al., 2021, Environmental Pollution				
8	27.683	85.4	1314	BD	Bode, Kathm	N128	03/01/2018		0.24	-0.18	Aerosol: Guo et al., 2021, Environmental Pollution				
9	27.683	85.4	1314	BD	Bode, Kathm	N134	19/03/2018		-0.85	-0.3	Aerosol: Guo et al., 2021, Environmental Pollution				
10	27.683	85.4	1314	BD	Bode, Kathm	N136	25/03/2018		-0.99	-0.25	Aerosol: Guo et al., 2021, Environmental Pollution				
11	27.683	85.4	1314	BD	Bode, Kathm	TSP-148	24/04/2018		-1.18	-0.26	Aerosol: Guo et al., 2021, Environmental Pollution				
12	27.683	85.4	1314	BD	Bode, Kathm	TSP-152	25/04/2018		0.28	-0.19	Aerosol: Guo et al., 2021, Environmental Pollution				
13	27.619	85.538	1514	DHK	Dhulikhel, Ka	P-110	03/01/2018		-1.1	-0.2	Aerosol: Guo et al., 2021, Environmental Pollution				
14	27.619	85.538	1514	DHK	Dhulikhel, Ka	P-116	19/03/2018		-0.63	-0.12	Aerosol: Guo et al., 2021, Environmental Pollution				
15	27.619	85.538	1514	DHK	Dhulikhel, Ka	P-128	24/04/2018		-1.18	-0.17	Aerosol: Guo et al., 2021, Environmental Pollution				
16	27.619	85.538	1514	DHK	Dhulikhel, Ka	P-138	24/05/2018		-0.49	-0.15	Aerosol: Guo et al., 2021, Environmental Pollution				
17	27.483	83.283	100	LMB	Lumbini (TSF	LB-1	2013-4-2 and 2013-4-9		-1.04	-0.09	Guo et al., 2023, Geoscience Frontiers				
18	27.483	83.283	100	LMB	Lumbini (TSF	LB-2	2013-4-17 and 2013-4-26		-0.87	-0.07	Guo et al., 2023, Geoscience Frontiers				
19	27.483	83.283	100	LMB	Lumbini (TSF	LB-2	2014-2-2 and 2014-2-9		-0.8	-0.27	Guo et al., 2023, Geoscience Frontiers				

Figure 3: APCC dataset I-8: isotope data.

## References

Magand, O., Angot, H., Bertrand, Y., Sonke, J. E., Laffont, L., Duperray, S., Collignon, L., Boulanger, D., and Dommergue, A.: Over a decade of atmospheric mercury monitoring at Amsterdam Island in the French Southern and Antarctic Lands, *Sci. Data*, 10, 836, <https://doi.org/10.1038/s41597-023-02740-9>, 2023.