General comment: This is a valuable and difficult-to-reproduce mercury dataset across multiple environmental compartments of the Third Pole. The breadth of the dataset is impressive and potentially well suited to ESSD. However, the manuscript still reads partly as a synthesis of previous Hg studies rather than as a data-description paper. I suggest that the authors more clearly refocus the manuscript on dataset structure, reuse, file-level metadata, and practical guidance for users.

Response: We sincerely appreciate the reviewer's rigorous, detailed, and constructive comments, which have greatly helped us standardize the dataset presentation, optimize manuscript structure, and improve the reusability and traceability of our Third Pole Hg dataset. All revisions have been marked in red in the revised manuscript. Below is our point-by-point response to each comment.

Lines 96–104 and Section 4: The stated aim is to provide an overview of previous studies and present an organized Hg dataset. This is appropriate, but Section 4 often emphasizes interpretation of previous findings rather than documenting the dataset itself. To improve ESSD suitability, each APCC subset could follow a more consistent data-description format: repository file, matrix, variables, sample number, temporal coverage, spatial coverage, method summary, descriptive statistics, limitations, and recommended use.

Response: Thank you for your constructive comment. We have revised Section 4 to follow the ESSD data-description format as closely as possible, focusing on objective description of the dataset rather than interpretation of previous findings. A minimal amount of interpretive text has been retained only where necessary to clarify the meaning and appropriate use of the data for future users. More detailed objective descriptions have also been added directly to the revised dataset files (e.g., README files and metadata sheets). Where feasible, we have incorporated your suggestions into the revised manuscript.

Lines 40–44 and 565–577 / Data availability: The manuscript states that the data are archived in standardized Excel format and provides a DOI, but the relationship between the manuscript, repository files, and data products remains unclear. Please add a concise repository overview table listing each APCC subset, file name, environmental matrix, number of records/samples, temporal coverage, spatial coverage, main variables, and associated publication. This would complement the more detailed file-format and accessibility issues noted by other reviewers.

Response: We thank the reviewer for pointing out the unclear relationship between the manuscript, the repository files, and the data products. To address this, we have added a new table (Table 4) to the revision. This table lists each APCC subset along with the corresponding repository file name, environmental matrix, number of records/samples, temporal coverage, spatial coverage, main variables, and the associated original publication(s). This makes it explicit which file corresponds to which subset and where to find the data described in the manuscript.

Lines 261–267 and 319–322 / Derived variables: HgP is calculated as HgT–HgD. Please clearly mark derived variables in the repository files and document the calculation method. Similar documentation is needed for deposition fluxes, accumulation rates, chronology-derived variables, spatial gradients, interpolated fields, etc.

Response: We thank the reviewer for the detailed suggestion. We have now marked all derived variables in the repository files and provided a description of the calculation method for each derived variable in the README file (please see the updated link for dataset information). For each derived variable, we provide the exact calculation formula, the input variables used, and any unit conversion factors.

Lines 390–416 / Precipitation Hg: Please state explicitly whether the repository contains event-level precipitation data, seasonal averages, annual fluxes, or only summary statistics. If fluxes are included, please document the equations and precipitation inputs used to calculate them.
Response: The repository contains event-level precipitation Hg concentrations, seasonal averages, and annual deposition fluxes, all of which have been included in the updated dataset I-3. The README file also provides a detailed description of the flux calculation, including the equations and precipitation inputs used.

Lines 500–518 / Ice core and lake sediment cores: Please provide more information on chronology and uncertainty. For sediment- and ice-core data, the repository should include or link to age-depth models, dating methods, dating uncertainties, accumulation-rate calculations, and whether Hg fluxes are measured or derived.
Response: Thank you for your comment. The details concerning age-depth models, dating methods, dating uncertainties, accumulation-rate calculations, and whether Hg fluxes are measured or derived have been thoroughly described in our previous publication (Kang et al., 2016, Environ. Sci. Technol., doi:10.1021/acs.est.5b04172) and its supporting information. Due to space constraints, we do not repeat these technical details in the present ESSD manuscript or the repository files. Instead, we have clearly indicated the relevant source in lines 528-533 in the revised manuscript and refer readers to Kang et al. (2016) for full information.

Lines 520–536 / Stable Hg isotopes: Other reviewers have raised important scientific questions about isotope interpretation and missing isotope matrices. In addition, from a data-reuse perspective, the manuscript should explicitly document what is included in the isotope files: δ^{202}Hg, Δ^{199}Hg, Δ^{200}Hg, Δ^{201}Hg, analytical uncertainty, replicate measurements, sample matrix, sampling date, site, associated Hg concentration, notation, and reference standard.
Response: We thank the reviewer for highlighting the importance of clearly documenting stable Hg isotope data for reuse. In response, we have fully revised the APCC I-9 isotope data file to explicitly include all the elements requested. Specifically, the isotope file now contains the following columns: δ^{202}Hg (‰), Δ^{199}Hg (‰), Δ^{200}Hg (‰), Δ^{201}Hg (‰), 2SD (‰) and reference material. Where certain isotope ratios or metadata were not measured or not applicable, we use the standardized codes NA.

Lines 537–564 / Dataset limitations and applications: Building on comments from other reviewers, this section would be more useful if it provided practical guidance for users. Please clarify which subsets are suitable for regional spatial comparisons, seasonal analysis, model evaluation, deposition-flux estimation, source attribution, or climate-change impact studies. Also

identify uses that are not recommended because of sparse coverage, non-synchronous sampling, method differences, or limited temporal resolution.
Response: Thank you for the suggestion. In the revision, we have now explicitly listed for each data subset both the recommended applications (regional spatial comparison, seasonal analysis, model evaluation, deposition-flux estimation, source attribution, and climate-change impact studies) and the not-recommended uses, along with the reasons (sparse coverage, non-synchronous sampling, method differences, or limited temporal resolution). This practical guidance for data application has been added in Section 5. This issue was also raised and highlighted by the third reviewer.

Lines 565–577 / Data availability: Please add repository title, dataset version, release date or access date, license, whether future updates are expected, and whether all data needed to reproduce the manuscript figures are included.
Response: We have revised the Data Availability section following ESSD's mandatory metadata requirements. Please refer to lines 585-592 in the revision.
"The APCC dataset (v1.0) is archived at the Cold and Arid Regions Science Data Center at Lanzhou, released on 03 December 2024 with the persistent DOI https://www.doi.org/10.12072/ncdc.qzkk.db6654.2024 (Kang et al., 2024). This dataset is available under the CC BY 4.0 International License and will be updated annually with newly acquired Hg concentration and deposition observations over the Third Pole. All raw field measurements, quality-controlled intermediate data, and summary statistics necessary to reproduce all manuscript figures and tables are fully deposited in the repository. No proprietary or restricted datasets were employed in this work, ensuring full reproducibility of all results."

General comment on figure/data traceability: Please improve traceability between the figures and archived data by stating which repository files and variables were used to generate each figure. If figures use processed or unpublished intermediate data, those data should also be archived or clearly documented.
Response: We have fully optimized the traceability of figures and archived data in the revision.

Comment on APCC dataset I-7 / ice and lake sediment cores: The core dataset should include depth information for both ice-core and lake-sediment-core records. At present, the table includes age-related fields such as "Ice age (year)" and "210Pb-inferred Year," plus Hg concentration and flux columns, but it does not provide core depth or depth intervals. Please add, at minimum, core depth top, core depth bottom, interval thickness/resolution, and units for each record. For sediment cores, depth intervals are necessary to evaluate the age-depth model, accumulation-rate calculations, and Hg concentration profiles. For the ice core, depth intervals are needed to link Hg concentrations and deposition fluxes to the chronology and sampling resolution.

Response: We fully agree that depth information is essential. We have now added the following columns to both ice-core and sediment-core records in the revised APCC I-7 dataset: Depth top (cm), Depth bottom (cm) and Interval thickness (cm) for sediment cores; Total length (cm), Min depth interval (cm) and Max depth interval (cm) for ice cor.

For each sample or depth interval, the top and bottom depths (in cm) are provided, along with the thickness and sampling resolution. The units (cm) are clearly indicated in the column headers and in the accompanying data dictionary.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	latitude	longitude	type	elevation	abbreviatic	region	Hg deposit	Total lengt	Min depth	Max depth	Ice age (ye	Hg Concer	Reference
2	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.945379	147	5	10	1982	3.6145	Kang et al., 2016, Environmental Science & Technology
3	33.58	91.18	ice core	6621	GQ	Guoqu Gla	1.190197	147	5	10	1981	2.709333	Kang et al., 2016, Environmental Science & Technology
4	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.492553	147	5	10	1980	1.9174	Kang et al., 2016, Environmental Science & Technology
5	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.555984	147	5	10	1979	2.675	Kang et al., 2016, Environmental Science & Technology
6	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.984452	147	5	10	1978	2.837917	Kang et al., 2016, Environmental Science & Technology
7	33.58	91.18	ice core	6621	GQ	Guoqu Gla	1.520503	147	5	10	1977	4.2515	Kang et al., 2016, Environmental Science & Technology
8	33.58	91.18	ice core	6621	GQ	Guoqu Gla	2.54893	147	5	10	1976	9.75112	Kang et al., 2016, Environmental Science & Technology
9	33.58	91.18	ice core	6621	GQ	Guoqu Gla	1.052832	147	5	10	1975	2.645275	Kang et al., 2016, Environmental Science & Technology
10	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.830345	147	5	10	1974	2.400786	Kang et al., 2016, Environmental Science & Technology
11	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.812014	147	5	10	1973	2.8547	Kang et al., 2016, Environmental Science & Technology
12	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.293689	147	5	10	1972	1.177725	Kang et al., 2016, Environmental Science & Technology
13	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.3175	147	5	10	1971	1.7795	Kang et al., 2016, Environmental Science & Technology
14	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.562113	147	5	10	1970	2.24765	Kang et al., 2016, Environmental Science & Technology
15	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.478636	147	5	10	1969	2.139917	Kang et al., 2016, Environmental Science & Technology
16	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.576927	147	5	10	1968	2.220241	Kang et al., 2016, Environmental Science & Technology
17	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.771084	147	5	10	1967	4.7725	Kang et al., 2016, Environmental Science & Technology
18	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.702229	147	5	10	1966	1.698888	Kang et al., 2016, Environmental Science & Technology
19	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.58503	147	5	10	1965	2.31875	Kang et al., 2016, Environmental Science & Technology
20	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.295698	147	5	10	1964	1.365	Kang et al., 2016, Environmental Science & Technology
21	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.438198	147	5	10	1963	1.31018	Kang et al., 2016, Environmental Science & Technology
22	33.58	91.18	ice core	6621	GQ	Guoqu Gla	1.383821	147	5	10	1962	3.224083	Kang et al., 2016, Environmental Science & Technology
23	33.58	91.18	ice core	6621	GQ	Guoqu Gla	1.73575	147	5	10	1961	4.5528	Kang et al., 2016, Environmental Science & Technology
24	33.58	91.18	ice core	6621	GQ	Guoqu Gla	1.183386	147	5	10	1960	3.2397	Kang et al., 2016, Environmental Science & Technology
25	33.58	91.18	ice core	6621	GQ	Guoqu Gla	1.049943	147	5	10	1959	2.5089	Kang et al., 2016, Environmental Science & Technology
26	33.58	91.18	ice core	6621	GQ	Guoqu Gla	0.839581	147	5	10	1958	1.951783	Kang et al., 2016, Environmental Science & Technology
27	33.58	91.18	ice core	6621	GQ	Guoqu Gla	1.042407	147	5	10	1957	2.6775	Kang et al., 2016, Environmental Science & Technology

Figure 1. APCC dataset I-7 Ice core Hg data

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	latitude	longitude	type	elevation	abbreviatic	region	210Pb-infe	Hg deposit	Hg Concer	Depth top	Depth bott	Interval thi	Reference
2	28.095	85.65	lake sedim	4390	PKR	Gosainkun	2010	24.63709	424.808	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
3	28.095	85.65	lake sedim	4390	PKR	Gosainkun	2001.648	28.03308	449.6214	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
4	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1992.751	29.97564	396.7455	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
5	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1984.526	23.5532	356.4764	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
6	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1976.615	28.59993	359.3154	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
7	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1969.423	43.98372	647.691	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
8	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1961.153	34.00796	331.1066	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
9	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1955.025	31.18257	247.3885	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
10	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1947.715	48.40608	246.8268	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
11	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1943.398	52.09905	433.9804	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
12	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1937.175	53.81175	493.5239	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
13	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1931.125	68.54952	578.1633	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
14	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1925.178	51.8009	326.5676	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
15	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1920.091	66.77731	301.3996	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
16	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1915.665	30.72736	294.7489	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
17	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1908.512	20.50628	235.8578	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
18	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1894.885	18.43443	207.7454	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
19	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1883.923	13.68265	202.3053	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
20	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1874.581	9.666597	110.3489	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
21	28.095	85.65	lake sedim	4390	PKR	Gosainkun	1854.181	5.199427	144.0385	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
22	28.151	80.255	lake sedim	793	PHE	Phewa	2007.674	130.4546	116.9937	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
23	28.151	80.255	lake sedim	793	PHE	Phewa	2006.347	121.2309	148.7889	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
24	28.151	80.255	lake sedim	793	PHE	Phewa	2005.021	65.92546	103.2888	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
25	28.151	80.255	lake sedim	793	PHE	Phewa	2003.695	67.23792	132.0285	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
26	28.151	80.255	lake sedim	793	PHE	Phewa	2002.369	85.81672	176.4275	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology
27	28.151	80.255	lake sedim	793	PHE	Phewa	2001.042	68.68248	120.5788	18.5	88	0.5	Kang et al., 2016, Environmental Science & Technology

Figure 2. APCC dataset I-8 Lake sediment cores Hg data

Comment on APCC dataset I-7 / mixed core structure: The current core table appears to combine ice-core and lake-sediment-core variables in the same rows and columns, including "Ice age (year)," "Hg Concentration (ng L^{-1})," "210Pb-inferred Year," "µg yr^{-1} m^{-2}," and "ng g^{-1}." This structure is difficult to interpret because ice-core concentrations are reported in ng L^{-1}, whereas sediment concentrations are reported in ng g^{-1}. Please separate ice-core and sediment-core records into distinct tables, or add a clear "archive type" column and ensure that non-applicable fields are blank and well documented.

Response: We thank the reviewer for highlighting this confusion. To resolve the issue, we have split the original combined table into two separate files in the revision: The APCC Dataset I-7 contains ice core mercury records with concentrations expressed as nanograms per liter (ng L^{-1}), whereas APCC Dataset I-8 compiles lake sediment core mercury data quantified in nanograms per gram (ng g^{-1}). Each file contains only the variables relevant to that archive type. The type column is retained in both files for clarity, and non-applicable fields have been removed. This separation eliminates any ambiguity in units and variable interpretation.

Comment on APCC dataset I-7 / ambiguous flux columns: The columns “ug/m2.yr” and “ug.yr-1.m-2” appear to represent fluxes, but their meanings are unclear and the two unit formats may refer to the same quantity. Please rename these fields using standard notation, for example “Hg deposition flux (μg m^{-2} yr^{-1}),” and specify what calculation method was used to derive these values.

Response: We have standardized the flux field naming and unit specification, and eliminated duplicate and ambiguous fields. The two columns “ug/m2.yr” and “ug.yr-1.m-2” were redundant and have been merged into a single column named Hg deposition flux (μg m^{-2} yr^{-1}). The calculation method is now explicitly described in the README file.

Comment on APCC dataset I-7 / missing site metadata: Many rows in the core table appear to lack region, abbreviation, elevation, or reference information. Please ensure that every record includes core/site name, archive type, latitude, longitude, elevation or lake altitude, reference, and chronology method. Repeating metadata in every row is acceptable and makes the table easier to reuse programmatically.

Response: We have ensured that every row in the revised I-7 files now includes complete site-level metadata. The following columns have been added and repeated for each record: core/site name, archive type, latitude, longitude, elevation (m a.s.l.) and reference. For any information that could not be retrieved or is genuinely missing, we use the following standardized codes: NA for missing value (data expected but not available), and NAp for field which does not apply to this sample type.

Comment on APCC dataset I-6 / summary statistics mixed with raw-style fields: The river and lake water table mixes sampling time, concentration ranges, average ± standard deviation values, sample counts, and water-type categories. For reuse, it would be better to split these into separate columns: mean, standard deviation, minimum, maximum, number of samples, sampling start date, sampling end date, and water type. Values such as “5.44+-6.16” and “0.64–32.96” should not be stored as combined text strings.

Response: We have completely restructured the I-6 dataset following the reviewer’s suggestion. The previously combined text strings (e.g., “5.44±6.16”, “0.64–32.96”) have been split into separate numeric columns: THg mean (ng L^{-1}), THg sd (ng L^{-1}), THg min (ng L^{-1}), and THg max (ng L^{-1}). The same column structure has been applied to dissolved mercury (DHg) and particulate mercury (PHg), with their respective mean, standard deviation, minimum, and maximum values reported in separate numeric columns. Sampling time is now provided as sampling start date and sampling end date. A water type column is also included. All values are stored as pure numbers, greatly improving machine readability.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	latitude	longitude	elevation	:breviation	region	ampling ID	bers(THg)	start date	g end date	ean(ng/L)	g_sd(ng/L)	_min(ng/L)	max(ng/L)	ean(ng/L)	g_sd(ng/L)	_min(ng/L)	max(ng/L)	ean(ng/L)	g_sd(ng/L)	_min(ng/L)	max(ng/L)	water type	Reference
2	26.75	87.25	NA	KR	Koshi river	NA	88	2017-2019	NA	5.44	6.16	0.64	32.96	1.47	0.78	0.15	3.5	2.98	3.54	0.29	23.3	non-glacie	Sun et al., 2020c, Science of the Total Environment
3	26.75	87.25	NA	KR	Koshi river	NA	33	2017	NA	8.79	7.32	3.34	32.96	1.94	0.7	0.95	3.5	4.86	4.45	0.98	23.3	non-glacie	Sun et al., 2020c, Science of the Total Environment
4	26.75	87.25	NA	KR	Koshi river	NA	34	2018	NA	2.18	1.29	0.64	6.28	1.27	0.86	0.15	3.19	1.39	1.03	0.29	4.06	non-glacie	Sun et al., 2020c, Science of the Total Environment
5	26.75	87.25	NA	KR	Koshi river	NA	21	2019	NA	6.31	7.3	0.66	27.29	1.06	0.37	0.33	1.73	5.67	5.43	0.12	17.22	non-glacie	Sun et al., 2020c, Science of the Total Environment
6	29	94	NA	NA	ng Zangbo	NA	17	2007	NA	2.79	1.05	1.46	4.99	0.77	0.16	NA	NA	2.01	1.05	NA	NA	non-glacie	Sun et al., 2020c, Science of the Total Environment
7	29.633	91.3	3642	LS	iangyong	NA	34	2016	NA	NA	NA	NA	NA	1.3	1.5	0.2	7.7	NA	NA	NA	NA	Glacier-fe	Sun et al., 2020c, Science of the Total Environment
8	29.633	91.3	3642	LS	iangyong	NA	84	2020	NA	0.99	0.46	0.38	2.58	0.46	0.18	0.1	1.03	0.53	0.41	0.04	1.87	Glacier-fe	Sun et al., 2020c, Science of the Total Environment
9	33.083	92.067	5000	TGL	ongkemadi	NA	32	2015	NA	18.59	17.83	6.63	92.51	NA	NA	NA	NA	NA	NA	NA	NA	Glacier-fe	Sun et al., 2020c, Science of the Total Environment
10	33.083	92.067	5000	TGL	ongkemadi	NA	21(diurnal)	NA	NA	18.9	6.67	7.71	37.32	NA	NA	NA	NA	NA	NA	NA	NA	Glacier-fe	Sun et al., 2020c, Science of the Total Environment
11	30.779	90.991	4730	NMC	Zhadang	NA	63	2011	NA	0.84	0.42	0.38	2.82	0.13	0.08	0.04	0.21	0.82	0.6	0.25	2.61	Glacier-fe	Sun et al., 2020c, Science of the Total Environment
12	30.779	90.991	4730	NMC	Zhadang	NA	34	2016	NA	2.51	1.46	0.82	6.98	0.57	0.15	0.36	0.92	1.91	1.42	0.34	20.21	Glacier-fe	Sun et al., 2020c, Science of the Total Environment
13	28	86.9	NA	NA	Rongbuk	NA	88	2019-2020	NA	NA	NA	0.41	6.23	NA	NA	0.12	2.05	NA	NA	0.08	4.18	Glacier-fe	Sun et al., 2020c, Science of the Total Environment
14	30.4	91.2	NA	NA	onggangri	NA	57	2020	NA	3.03	2.87	0.53	10.84	0.83	0.42	0.16	1.89	1.54	1.84	0.05	8.19	Glacier-fe	Sun et al., 2020c, Science of the Total Environment
15	39.4333	96.35	NA	NA	cier No.12	NA	24	2019	NA	26.6	25.1	0.7	112.6	1.4	2.1	0.14	7.37	25.3	25.6	0.4	112.3	Glacier-fe	Sun et al., 2020c, Science of the Total Environment
16	29.5333	102.0833	NA	NA	Hailuogou	NA	72	2019-2020	NA	8.72	6.45	6.96	10.78	1.77	0.83	1.53	2.42	6.94	6.26	4.54	9.14	Glacier-fe	Sun et al., 2020c, Science of the Total Environment
17	27.05	100.2	NA	YL	Yulong	NA	5	2015	NA	6.57	3.95	3.43	13.16	NA	NA	NA	NA	NA	NA	NA	NA	Glacier-fe	Sun et al., 2020c, Science of the Total Environment
18	28.4833	98.65	NA	MY	Mingyong	NA	354	2020-2021	NA	0.61	1.31	0.027	18.16	NA	NA	NA	NA	NA	NA	NA	NA	glacier-fe	Sun et al., 2020c, Science of the Total Environment
19	43.1	86.8	NA	NA	lacier No.1	NA	20	2021	NA	1.56	1.26	0.335	4.53	0.304	0.19	0.072	0.85	1.301	1.19	0.049	4.11	Glacier-fe	Sun et al., 2020c, Science of the Total Environment
20	29	94	NA	YZ	angbo rive	S1	NA	2007/6/15	2007/6/29	4.99	NA	NA	NA	0.77	NA	NA	NA	4.22	NA	NA	NA	NA	Zheng et al., 2010, Chinese Science Bulletin
21	29	94	NA	YZ	angbo rive	S2	NA	2007/6/15	2007/6/29	3.33	NA	NA	NA	1.14	NA	NA	NA	2.19	NA	NA	NA	NA	Zheng et al., 2010, Chinese Science Bulletin
22	29	94	NA	YZ	angbo rive	S3	NA	2007/6/15	2007/6/29	3.67	NA	NA	NA	0.64	NA	NA	NA	3.03	NA	NA	NA	NA	Zheng et al., 2010, Chinese Science Bulletin
23	29	94	NA	YZ	angbo rive	S4	NA	2007/6/15	2007/6/29	1.8	NA	NA	NA	0.93	NA	NA	NA	0.87	NA	NA	NA	NA	Zheng et al., 2010, Chinese Science Bulletin
24	29	94	NA	YZ	angbo rive	S5	NA	2007/6/15	2007/6/29	3.12	NA	NA	NA	0.79	NA	NA	NA	2.33	NA	NA	NA	NA	Zheng et al., 2010, Chinese Science Bulletin
25	29	94	NA	YZ	angbo rive	S6	NA	2007/6/15	2007/6/29	1.65	NA	NA	NA	0.76	NA	NA	NA	0.89	NA	NA	NA	NA	Zheng et al., 2010, Chinese Science Bulletin
26	29	94	NA	YZ	angbo rive	S7	NA	2007/6/15	2007/6/29	2.14	NA	NA	NA	0.83	NA	NA	NA	1.31	NA	NA	NA	NA	Zheng et al., 2010, Chinese Science Bulletin
27	29	94	NA	YZ	angbo rive	S8	NA	2007/6/15	2007/6/29	2.11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Zheng et al., 2010, Chinese Science Bulletin

Figure 3. APCC dataset I-6 River and lake water Hg data

Comment on APCC dataset I-4 / glacier data units and depths: The glacier table combines snowpits, surface snow, and cryoconite, but the concentration header is “Hg concentrations (ng/L).” This is appropriate for melted snow/ice samples but not for cryoconite, which is typically reported on a mass basis, such as ng g^{-1}. Please add a concentration-unit column or separate tables by sample type. For snowpit samples, the table should also clearly distinguish total pit depth, sample depth interval, and vertical resolution.

Response: We thank the reviewer for the thorough comments. We have now clearly distinguished the concentration headers for snowpits and surface snow from those for cryoconite. Specifically, the header Hg concentrations (ng L^{-1}) is used for snowpits and surface snow, while the corresponding cells for cryoconite are marked as NAp (not applicable). Conversely, the header Hg concentrations (ng g^{-1}) applies to cryoconite, and the cells for snowpits and surface snow are marked as NAp. In addition, for snowpit samples we have added three depth-related columns: Snowpit depth (cm), Depth (cm), and Resolution (cm). Where depth information could not be collected or measured, we have marked the cells as NA (missing value).

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	type	Sample ID	latitude	longitude	Elevation(r	abbreviatic	region	Hg concen	Hg concen	Minimum	Maximum	Median	Snowpit de	Mountain	Sampling Tin	Depth(cm)	Resolution(c	Samples	Reference
2	Snowpits	MSD	47.05222	85.55805	3605	MSD	Musidao G	9.9	NAp	1.8	19.8	9.4	NA	Altai	2010/8/27	120	5	Duplicate	Zhang et al., 2012, Environmental Science & Technology
3	Snowpits	TS	43.10512	86.80737	4063	TS	Urumqi Nc	14.7	NAp	7	43.6	12.7	NA	Tianshan	2008/10/20	220	10	Duplicate	Zhang et al., 2012, Environmental Science & Technology
4	Snowpits	LH	39.4278	96.55592	5026	LHG	Laohugou	10.8	NAp	4.9	19.9	10.8	NA	Qilian	2008/10/16	130	10	Duplicate	Zhang et al., 2012, Environmental Science & Technology
5	Snowpits	MS	38.29072	75.05487	5725	MZ	Muztag Gl	3.2	NAp	1.2	4.3	3.3	NA	Kunlun	2010/7/18	150	10	Duplicate	Zhang et al., 2012, Environmental Science & Technology
6	Snowpits	GL-2005-	33.60602	91.17423	5750	TGL	Guoqu Gla	3.9	NAp	1.2	7.3	3.5	NA	Tanggula	2005/10/28	90	10	Quadruplic	Zhang et al., 2012, Environmental Science & Technology
7	Snowpits	GL-2005-	33.95378	91.28308	5820	TGL	Guoqu Gla	3.5	NAp	1.9	8.3	2.4	NA	Tanggula	2005/11/5	90	10	Quadruplic	Zhang et al., 2012, Environmental Science & Technology
8	Snowpits	GL-2009	33.57727	91.17663	5765	TGL	Guoqu Gla	0.9	NAp	0.1	2	0.9	NA	Tanggula	2009/4/23	70	10	Duplicate	Zhang et al., 2012, Environmental Science & Technology
9	Snowpits	ZD-2006	30.46798	90.65068	5800	NMC	Zhadang G	7	NAp	2.3	43.2	4.9	NA	Nyainqênt	2006/6/17	110	5	Quadruplic	Zhang et al., 2012, Environmental Science & Technology
10	Snowpits	ZD-2008	30.46798	90.65058	5758	NMC	Zhadang G	8.1	NAp	0.8	38.2	6.3	NA	Nyainqênt	2008/9/13	200	10	Duplicate	Zhang et al., 2012, Environmental Science & Technology
11	Snowpits	ZD-2009	30.46798	90.65063	5797	NMC	Zhadang G	5.5	NAp	0.3	22.2	2.1	NA	Nyainqênt	2009/5/7	210	5	Duplicate	Zhang et al., 2012, Environmental Science & Technology
12	Snowpits	DML	29.36025	97.01767	5404	SET	Demula Gl	4.9	NAp	0.4	11	4.4	NA	Eastern Hi	2008/9/21	180	10	Duplicate	Zhang et al., 2012, Environmental Science & Technology
13	Snowpits	EV-2005	28.01983	86.96298	6536	EV	East Rongt	1.7	NAp	0.5	3	1.6	NA	Middle Hin	2005/5/21	190	15	Duplicate	Zhang et al., 2012, Environmental Science & Technology
14	Snowpits	EV-2009	28.01892	86.96325	6525	EV	East Rongt	1.1	NAp	0.1	6.5	0.7	NA	Middle Hin	2009/5/18	115	11	Duplicate	Zhang et al., 2012, Environmental Science & Technology
15	Snowpits	YL	27.10528	100.1956	4747	YL	Baishui No	3.5	NAp	1	7.5	3.3	NA	Hengduan	2009/5/20	295	20	Duplicate	Zhang et al., 2012, Environmental Science & Technology
16	Surface sn	2010-7-21	38.29072	75.05487	5410	MZ	Muztagh A	4.56	NAp	NA	NA	NA	NA	NA	NA	NA	NA	NA	Huang et al., 2012b, Atmospheric Environment
17	Surface sn	NA	38.29072	75.05487	5457	MZ	Muztagh A	6.967	NAp	NA	NA	NA	NA	NA	NA	NA	NA	NA	Huang et al., 2012b, Atmospheric Environment
18	Surface sn	NA	38.29072	75.05487	5508	MZ	Muztagh A	6.14	NAp	NA	NA	NA	NA	NA	NA	NA	NA	NA	Huang et al., 2012b, Atmospheric Environment
19	Surface sn	NA	38.29072	75.05487	5556	MZ	Muztagh A	5.969	NAp	NA	NA	NA	NA	NA	NA	NA	NA	NA	Huang et al., 2012b, Atmospheric Environment
20	Surface sn	NA	38.29072	75.05487	5605	MZ	Muztagh A	12.35	NAp	NA	NA	NA	NA	NA	NA	NA	NA	NA	Huang et al., 2012b, Atmospheric Environment
21	Surface sn	NA	38.29072	75.05487	5652	MZ	Muztagh A	11.85	NAp	NA	NA	NA	NA	NA	NA	NA	NA	NA	Huang et al., 2012b, Atmospheric Environment
22	Surface sn	NA	38.29072	75.05487	5704	MZ	Muztagh A	8.95	NAp	NA	NA	NA	NA	NA	NA	NA	NA	NA	Huang et al., 2012b, Atmospheric Environment
23	Surface sn	NA	38.29072	75.05487	5755	MZ	Muztagh A	11.72	NAp	NA	NA	NA	NA	NA	NA	NA	NA	NA	Huang et al., 2012b, Atmospheric Environment
24	Surface sn	2009-5-1:	30.46798	90.65068	5520	NMC	Zhadang g	0.6659	NAp	NA	NA	NA	NA	NA	NA	NA	NA	NA	Huang et al., 2012b, Atmospheric Environment
25	Surface sn	NA	30.46798	90.65068	5580	NMC	Zhadang g	0.9009	NAp	NA	NA	NA	NA	NA	NA	NA	NA	NA	Huang et al., 2012b, Atmospheric Environment
26	Surface sn	NA	30.46798	90.65068	5610	NMC	Zhadang g	0.46085	NAp	NA	NA	NA	NA	NA	NA	NA	NA	NA	Huang et al., 2012b, Atmospheric Environment
27	Surface sn	NA	30.46798	90.65068	5620	NMC	Zhadang g	0.9281	NAp	NA	NA	NA	NA	NA	NA	NA	NA	NA	Huang et al., 2012b, Atmospheric Environment

Figure 4. APCC dataset I-4 Glacier (snowpit, surface snow, cryoconite) Hg data

Comment on APCC dataset I-3 / zero versus missing values: The precipitation table contains zero values in concentration and flux fields for some months. Please clarify whether zero means no precipitation/no sample/no Hg detected, or whether these should be missing values. This distinction is important for calculating deposition fluxes and seasonal averages.

Response: We have clarified the meaning of zero values in the precipitation dataset. Previously, zero values were used to indicate months in which no sample was collected; these have now been replaced with NA to clearly denote missing data. In short, for missing or not-applicable data, we now consistently use NA.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Month	Sample ID	Sampling c	THg conce	Wet THg fl	latitude	longitude	elevation	abbreviatic	region	Reference			
2	January	NA	NA	NA	NA	27.167	100.167	2650	YL	YL, 2012 Ti	Huang et al., 2022, Environmental Pollution			
3	February	NA	NA	NA	NA	27.167	100.167	2650	YL	YL, 2012 Ti	Huang et al., 2022, Environmental Pollution			
4	March	NA	NA	NA	NA	27.167	100.167	2650	YL	YL, 2012 Ti	Huang et al., 2022, Environmental Pollution			
5	April	NA	NA	34.1025	0.034103	27.167	100.167	2650	YL	YL, 2012 Ti	Huang et al., 2022, Environmental Pollution			
6	May	NA	NA	17.95467	0.251365	27.167	100.167	2650	YL	YL, 2012 Ti	Huang et al., 2022, Environmental Pollution			
7	June	NA	NA	6.287056	0.8016	27.167	100.167	2650	YL	YL, 2012 Ti	Huang et al., 2022, Environmental Pollution			
8	July	NA	NA	5.041736	0.905496	27.167	100.167	2650	YL	YL, 2012 Ti	Huang et al., 2022, Environmental Pollution			
9	August	NA	NA	8.490462	1.518095	27.167	100.167	2650	YL	YL, 2012 Ti	Huang et al., 2022, Environmental Pollution			
10	Septembei	NA	NA	4.916897	0.568885	27.167	100.167	2650	YL	YL, 2012 Ti	Huang et al., 2022, Environmental Pollution			
11	October	NA	NA	17.235	0.591161	27.167	100.167	2650	YL	YL, 2012 Ti	Huang et al., 2022, Environmental Pollution			
12	November	NA	NA	NA	NA	27.167	100.167	2650	YL	YL, 2012 Ti	Huang et al., 2022, Environmental Pollution			
13	December	NA	NA	NA	NA	27.167	100.167	2650	YL	YL, 2012 Ti	Huang et al., 2022, Environmental Pollution			
14	February	NA	NA	55.61	0.055629	39.429	96.556	4230	LHG	LHG, 2012	Huang et al., 2022, Environmental Pollution			
15	March	NA	NA	40.405	0.03146	39.429	96.556	4230	LHG	LHG, 2012	Huang et al., 2022, Environmental Pollution			
16	April	NA	NA	28.55	0.112955	39.429	96.556	4230	LHG	LHG, 2012	Huang et al., 2022, Environmental Pollution			
17	May	NA	NA	20.266	0.685943	39.429	96.556	4230	LHG	LHG, 2012	Huang et al., 2022, Environmental Pollution			
18	June	NA	NA	4.748613	0.322429	39.429	96.556	4230	LHG	LHG, 2012	Huang et al., 2022, Environmental Pollution			
19	July	NA	NA	5.175319	0.599721	39.429	96.556	4230	LHG	LHG, 2012	Huang et al., 2022, Environmental Pollution			
20	August	NA	NA	5.355444	0.273115	39.429	96.556	4230	LHG	LHG, 2012	Huang et al., 2022, Environmental Pollution			
21	Septembei	NA	NA	6.919333	0.13359	39.429	96.556	4230	LHG	LHG, 2012	Huang et al., 2022, Environmental Pollution			
22	October	NA	NA	18.42	0.157106	39.429	96.556	4230	LHG	LHG, 2012	Huang et al., 2022, Environmental Pollution			
23	November	NA	NA	24.995	0.125443	39.429	96.556	4230	LHG	LHG, 2012	Huang et al., 2022, Environmental Pollution			
24	December	NA	NA	32.02333	0.317574	39.429	96.556	4230	LHG	LHG, 2012	Huang et al., 2022, Environmental Pollution			
25	January	NA	NA	2.9	0.045414	28.35	86.933	4276	EV	EV, 2011 T	Huang et al., 2022, Environmental Pollution			
26	February	NA	NA	4.9	0.070021	28.35	86.933	4276	EV	EV, 2011 T	Huang et al., 2022, Environmental Pollution			
27	March	NA	NA	3.5	0.049753	28.35	86.933	4276	EV	EV, 2011 T	Huang et al., 2022, Environmental Pollution			

Figure 5. APCC dataset I-3 Precipitation Hg data.

Comment on all APCC data tables: Please avoid storing numerical values as combined text strings. Ranges, means, standard deviations, sample counts, and units should be separated into machine-readable columns. For example, instead of reporting a value as “5.44 ± 6.16 ng L^{-1}” or “0.64–32.96 ng L^{-1},” please use separate columns such as THg_mean_units, THg_sd_units, THg_min_units, THg_max_units, and sample_count. Here, sample_count refers to the number of samples or observations used to calculate the summary statistics. This would greatly improve reusability and reduce ambiguity.

Response: We have systematically revised all APCC data tables (I-1 through I-9) to eliminate any combined text strings. Ranges, means, standard deviations, minima, maxima, and sample counts are now stored in separate, machine-readable numeric columns. Units are placed in the column names (e.g., THg concentration (ng L^{-1})).

Comment on blank cells/missing values: Blank cells should be avoided unless their meaning is clearly documented. Please distinguish among: missing but expected data, not-applicable fields, below-detection-limit values, and not-measured variables. These cases should not all appear as empty cells because they have different implications for reuse. A data dictionary could define standardized entries such as NA = missing value, not_applicable = field does not apply to this sample type, not_measured = variable was not analyzed, and a detection-limit flag such as below_detection_limit = yes/no. This would make the tables much easier to parse and interpret.

Response: We have removed all ambiguous blank cells and replaced them with standardized codes. The description of these standard codes for non-numeric cells has been placed in our README file. The codes are as follows:

NA: Missing but expected data

NAp: Field does not apply to the corresponding sample

All data files now use these codes consistently, and the meaning of each code is explained in the README file. Blank cells are no longer present in any of the uploaded tables. This makes the datasets much easier to parse and interpret correctly.