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SUPPLEMENTARY INFORMATION

For the manuscript: Synergistic effects of mining and urban effluents on the level and distribution of methylmercury in a shallow aquatic ecosystem of the Bolivian Altiplano

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chemical analysis of surface sediments (0 – 2 cm) of Lake Uru Uru, collected in the late dry season (October 2010) and wet season (may 2011).

3. **Supplementary information 3 (SI. 3): Complete data set for physico-chemical parameters, major and trace elements, Hg speciation in in surface water and sediments of Lake Uru Uru (late dry season: October 2010, wet season: May 2011).**

Table S5. Physico-chemical characteristics and filtered major elemental concentrations measured in surface water of Lake Uru-Uru, collected during the late dry (D) and wet (W) season (October 2010 and May 2011, respectively).

Table S6. Filtered trace elemental concentrations ($\mu g\ L^{-1}$) measured in surface water of Lake Uru-Uru, collected during a) the late dry (D: October 2010) and b) wet (W: May 2011) season.

Table S7. Mercury species (F and UNF refer to filtered and unfiltered analysis for total mercury (THg) and monomethylmercury (MMHg); DMHg and DGM refer to dimethylmercury and dissolved gaseous mercury, respectively) concentrations measured in surface water of Lake Uru-Uru, collected during the late dry (D: October 2010) and wet (W: May 2011) season.

Table S8. Mercury species (total mercury (THg), inorganic mercury (iHg), monomethylmercury (MMHg)), Total and organic carbon (TC and OC, respectively) and total sulfur (S) concentrations measured in surface sediment (0 – 2cm) of Lake Uru-Uru, collected during the late dry (D: October 2010) and wet (W: May 2011) season.

Table S9. Filtered mercury species (total mercury (THg), inorganic mercury (iHg), monomethylmercury (MMHg)) concentrations measured in surface sediment pore waters (0 – 2cm) of Lake Uru-Uru, collected during the late dry (D: October 2010) and wet (W: May 2011) season.

Table S10. Major and trace metal concentrations measured in surface sediment (0 – 2cm) of Lake Uru-Uru, collected during the late dry (D: October 2010) and wet (W: May 2011) season.

4. **Supplementary information 4 (SI. 4):**

Linear Regressions for surface sediment concentrations of THg versus W and Sb.

Supplementary information 1 (S.I. 1)

Sampling and Analytical protocols

Water sample processing

To determine the content of dissolved and total Hg species, 100 mL of filtered and unfiltered samples were stored in Teflon PFA flasks (Nalgene, USA) and acidified with HCl Ultrex (Baker) to 1% v/v. Some of the filtered samples were acidified with HNO_3 Ultrex (Baker) to 1% v/v in order to analyze heavy metals/cations, and others were treated with H_3PO_4 bi-distilled to 2% v/v to determine dissolved organic carbon (DOC) content. All samples were stored at 4°C for transportation and further analysis in the laboratory. A final set of the filtered samples was frozen for the analysis of anions.

To ensure that the samples were not contaminated, the materials used in the sampling and the conservation flasks were subjected to prior cleaning treatment. The PFA Teflon, Polypropylene and Pyrex glass flasks and PVDF filters were cleaned using successive acid baths and dried under a laminar flow hood, while the gold traps were burned at 600°C. Each of the clean materials was kept in three hermetically sealed ziplock bags until they were used in the field.

Gaseous species were collected *in situ* from bulk water samples immediately purged (generally within ~0.5 h after sampling) and collected on a gold–coated sand (Brooks Rand®) and activated Charcoal (Carbotrap®) traps, respectively.

Analytical protocols

Hg species analysis in water, sediment and biological substrates were performed by capillary gas chromatography connected to an inductively coupled plasma mass spectrometer (GC-ICPMS, Trace). Analytical set-up and methodology for the GC-ICPMS for Hg speciation analysis are described in detail in Monperrus et al., [1, 2]. The MMHg extraction from sediments was achieved with a focused microwave method (4 minutes, 80W, CEM) from 200 mg of sediment in 7 ml of a 6 N HNO_3 (HNO_3, 65%, Fluka) and remaining particles were removed by centrifugation. The extracts were analyzed by species-specific isotope dilution and capillary gas chromatography (Trace GC, ThermoFisher) hyphenated to inductively coupled plasma mass spectrometer (ICPMS, X Serie 2, ThermoFisher) to correct for species inter-conversion if necessary. Briefly, the extracts were buffered at pH 4 and isotopic enriched Hg species ^{199}IHg and ^{201}MMHg were then added. Species were then ethylated with sodium tetraethyl borate and recovered in iso-octane. Each sample was injected three times and blanks were checked to control for contamination. The measurement error was less than 10% and the accuracy of the MMHg measurements was checked by analyzing the certified reference materials (CRM) IAEA-405 and IAEA-433. Recoveries of MMHg to the CRMs were found to be 92% for each reference material and the precision error was lower than 5%. Recoveries of speciation analysis (i.e.,

IHg+MMHg) measured by GC-ICPMS has been previously verified in lacustrine sediments[7] versus analysis of THg measured by AMA-254 (total Hg analyzer) had a mean value of 94% (n = 39). Thus a quantitative evaluation of the total Hg concentration in sediments was obtained by addition of both species concentration (i.e., IHg+MMHg).

For water samples, Total Hg was calculated as (HgT=DGM+ Hg(II)T+MMHgT) assuming that other species were negligible. Simultaneous speciation analyses of MMHg and Hg(II) ID-GC–ICPMS as previously described [1,2]. Briefly, an aliquot of 100 ml of water was accurately weighted before analysis in a headspace glass flask, spiked with known amounts and concentrations of isotopically enriched standards ($MM^{201}Hg$ and $^{199}Hg(II)$). The solution was adjusted to pH 4 by adding 5 ml of sodium acetate-acetic acid 0.1 M buffer solution and about 1 mL of concentrated ammonium hydroxide; then 250 µl of iso-octane and 300 µl (1%) of sodium tetra-propyl borate solution (1% w/v) were added for species derivatization and extraction. The vials were caped and shaken for 5 min; then the iso-octane was recovered and analyzed in triplicate by GC-ICPMS. The method has been shown to provide good recoveries of HgT from spiked or natural waters[1,2] and reference coastal waters certified for total Hg (IRMM BCR-579, ca. 2ng/L HgT)[8].

The analysis of the gaseous Hg species (i.e. Hg° and DMHg) was carried out by thermal desorption of the traps (gold traps and carbotraps, respectively) cryogenic trapping gas chromatography connected to an inductively coupled plasma mass spectrometer (CT-GC-ICPMS) according to Bouchet et al. [3, 4].

Sediment digestion: analytical protocols and Quality assurance and quality control (QA/QC)

Solid samples (sediment, and suspended solids) were freeze-dried and crushed to obtain a size smaller than 63 µm for elemental analysis. Total particulate organic carbon ([TOC]) concentrations were determined from the dry combustion of solid powder sample aliquots using a C/S Horiba Jobin Yvon Emia-320v auto-analyzer.

Sediment digestion was performed using ~ 200 mg of freeze-dried sediment digested in a mixture of HCl (2 ml, Ultrex grade - Baker), HNO_3 (9 ml, Ultrex grade - Baker) and HF (3 ml, Ultrex grade - Baker) in a microwave system (CEM Mars System 5 model). Digestion solutions were then diluted and subsequently measured by ICP-MS (model 7500ce, Agilent Technologies) to assess the total amount of metals (Al, Ca, Mg, Fe, Cr, Cd, As, Cu, Mn, Ni, Pb, Se, and Zn) in each sediment samples. Accuracy was checked using a certified reference material, namely PACS-2 (National Research Council of Canada) for QA/QC (give replicates (N) and values are given in table SI.1.1).

Element	Certified reference values for CRM PACS-2		Analyzed PACS-2			
	mean concentration (mg kg^{-1})	SD (mg kg^{-1})	mean concentration (mg kg^{-1})	SD (mg kg^{-1})	N	Recovery (%)
Be	1.00	0.20	1.03	0.10	4	103
Na	34 500	1 700	33 925	2 023	4	98
Mg	14 700	1 300	14 111	3 300	4	96
Al	66 200	3 200	65 361	14 559	4	99
P	960	40	1 000	65	4	104
K	12 400	500	11 509	2 543	4	93
Ti	4 430	320	4 424	263	4	100
V	133	5	132	9	4	99
Cr	90.7	4.6	88	5	4	98
Mn	440	19	443	30	4	101
Fe	40 900	600	39 561	3 624	4	97
Co	11.5	0.3	11.4	0.8	4	99
Ni	39.5	2.3	39.6	2.5	4	100
Cu	310	12	309	16	4	100
Zn	364	23	380	28	4	104
As	26.2	1.5	25.9	1.3	4	99
Se	0.92	0.22	0.87	0.80	4	95
Sr	276	30	279	42	4	101
Mo	5.43	0.28	5.40	0.33	4	99
Ag	1.22	0.14	1.53	0.48	4	126
Cd	2.11	0.15	2.13	0.08	4	101
Sn	19.8	2.5	19.5	0.3	4	99
Sb	11.3	2.6	11.5	0.7	4	102
Pb	183	8	180	15	4	98
U	3		2.5	0.4	4	83

Table S1. Mean concentrations and standard deviation (SD) for the analyzed certified reference material PACS-2 with recoveries (%) related to the certified values (National Research Council of Canada).

Hg species analysis in sediments were also performed by GC-ICPMS and are described elsewhere [1]. Quantification of Hg species was carried out using species specific isotope dilution and by applying isotope pattern deconvolution for data treatment.

Total particulate Hg concentrations ([(THg)P]) was obtained by summing both MMHg and iHg. Concentrations obtained for repeated analyses of CRMs never exceeded the published range of concentrations (IAEA 405:818 ± 17 ng g^{-1} and 5.29 ± 0.24 ng g^{-1} for THg and MMHg, respectively). The detection limits, were 0.20 and 0.01 ng g^{-1}, for THg and MMHg, respectively.

Diffusive Hg fluxes calculation

Diffusive fluxes (Jsed) calculations are performed using the Fick's first law:

$$Jsed = -\phi Dsed(\partial C/\partial z),$$

where Dsed is the diffusion coefficient corrected for temperature and tortuosity, ϕ is porosity (= 71 and 93 % for the Norther and Southern part of the Lake, respectively [5]) assuming an average sediment density of 2.65 g cm^3 and measured water content, and $\partial C/\partial z$ is the linear concentration gradient across the water–sediment interface with ∂z taken as a constant value of 1cm (used across all sampling sites and seasons) being the midpoint of the sediment sample thickness (1cm) since the porewater is a composite of the top 2cm of sediment. Values for Dsed ($Dsed = D_0/\theta^2$ expressed in $cm^2\ s^{-1}$) were calculated on the basis of a dimensionless tortuosity (θ^2) and the diffusion coefficient in free solutions (D_0) being equal to 2.10^{-6} and 1.210^{-5} for Hg and MMHg, respectively[6].

The linear concentration gradient across the water–sediment interface ($\partial C/\partial z$) was calculated from the difference between PW and SW, based on the hypothesis that this shallow water column is well homogenized. Finally, positive Jsed indicate an upward-directed flux (efflux from the sediment into the overlying water column and negative Jsed indicate a downward-directed flux (influx from the water column into the sediment).

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Supplementary information 2 (SI.2) – Tables S2 to S4

Table S2. *Mean concentrations ± standard deviation (SD), data range concentrations presented as minimum (min.) and maximum (max.) concentrations, n = number of samples analyzed for physico-chemical analysis of surface water of Lake Uru Uru, collected in the late dry season (October 2010) and wet season (may 2011).*

Parameters	***Dry season***			***Wet season***			***Entire year***
Transect	North Lake (7.0-12.5) Km	South Lake (13.4-16.4) Km	***Uru Uru Lake (7.0-16.4) Km***	North Lake (7.0-9.9) Km	South Lake (14.3-16.4) Km	***Uru Uru Lake (7.0-16.4) Km***	***Uru Uru Lake (7.0-16.4) Km***
Temp. [°C]: Mean ± SD	16.7±1.4	17.3±1.2	***17.1± 1.3***	14.9±1.1	15.2±0.5	***15.0±0.8***	***16.1±1.5***
Range: min-max	15.3-18.2	15.2-18.2	***15.2-18.2***	14.2-16.2	14.8-15.9	***14.2-16.2***	***14.2-18.2***
n	3	5	***8***	3	4	***7***	***15***
pH Mean ± SD	7.9±0.4	8.1±0.6	***8.0± 0.5***	8.5±1.1	8.4±0.3	***8.4±0.6***	***8.2±0.6***
Range: min-max	7.6-8.5	7.6-8.9	***7.6 - 8.9***	7.4-9.5	8.1-8.7	***7.4-9.5***	***7.4-9.5***
n	4	4	***8***	3	4	***7***	***15***
Cond. [m*S* cm^{-1}] Mean ± SD	5.9±1.8	5.1±1.0	***5.5± 1.5***	4.9±3.5	2.6±0.5	***3.6±2.4***	***4.6±2.1***
Range: min - max	5.1-8.5	4.4-6.6	***4.4-8.5***	2.7-9.0	2.0-3.2	***2.0-9.0***	***2.0-9.0***
n	4	4	***8***	3	4	***7***	***15***
O_2 [mg L^{-1}] Mean ± SD	9.0±3.0	10.7±3.6	***9.9±3.3***	7.4±4.3	6.2±1.3	***6.8±2.7***	***8.5±3.3***
Range: min-max	5.8-12.3	5.8-15.0	***5.8-15.0***	3.0-11.5	5.3-8.1	***3.0-11.5***	***3.0-15.0***
n	4	5	***9***	3	4	***7***	***16***
DOC [mg L^{-1}] Mean ± SD	17.1±3.9	14.1±0.7	***15.4±2.9***	17.03±4.3	19.8±3.0	***18.4±3.7***	***16.6±3.4***
Range: min-max	13.9-22.6	12.9-14.5	***12.9-22.6***	14.1-22.0	16.4-22.0	***14.1-22.0***	***12.9-22.6***
n	4	5	***9***	3	4	***7***	***16***
SO_4^{2-} [g L^{-1}] Mean ± SD	8.6±2.8	6.1±0.6	***7.4±2.3***	5.0±4.4	2.3±0.7	***3.4±3.0***	***5.5±3.2***
Range: min-max	6.4-12.7	5.7-9.1	***5.7-12.7***	2.3-10.1	1.6-3.3	***1.6-10.1***	***1.6-12.7***
n	4	4	***8***	3	4	***7***	***15***
Ca [mg L^{-1}] Mean ± SD	193.7±45.8	148.3±4.4	***171.3±38.8***	140.4±96.2	95.0±11.5	***114.5±61.2***	***144.8±56.7***
Range: min-max	156.2-259.0	140.2-219.0	***140.2-259.0***	64.1-248.4	87.0-111.9	***64.1-248.4***	***64.1-259.0***
n	4	4	***8***	3	4	***7***	***15***
K [mg L^{-1}] Mean ± SD	49.0±14.8	37.1±1.4	***43.0±11.7***	31.4±21.7	15.2±3.8	***22.1±15.5***	***33.3±17.0***
Range: min-max	36.5-70.2	34.3-57.5	***34.3-70.2***	17.7-56.4	11.5-20.1	***11.5-56.4***	***11.5-70.2***
n	4	4	***8***	3	4	***7***	***15***
Li [mg L^{-1}] Mean ± SD	1.6±0.6	1.1±0.1	***1.4±0.5***	1.5±1.2	0.4±0.2	***0.8±0.8***	***1.1±0.7***
Range: min-max	1.1-2.6	1.0-1.6	***1.0-2.6***	0.6-2.4	0.2-0.6	***0.2-2.4***	***0.2-2.6***
n	4	4	***8***	2	4	***6***	***14***
Mg [mg L^{-1}] Mean ± SD	106.2±30.6	78.4±2.5	***92.3±25.1***	55.1±35.1	28.6±7.9	***40.0±25.4***	***67.9±36.3***
Range: min-max	82.9-150.3	74.5-116.6	***74.5-150.3***	31.3-95.4	20.5-38.8	***20.5-95.4***	***20.5-150.3***
n	4	4	***8***	3	4	***7***	***15***
Na [mg L^{-1}] Mean ± SD	1209.0±397.2	861.8±41.6	***1035.4±324.1***	669.8±457.6	299.7±88.3	***458.3±335.9***	***766.1±435.5***
Range: min-max	883.3-1780.1	805.4-1293.6	***805.4-1780.1***	399.4-1198.1	211.6-416.2	***211.6-1198.1***	***211.6-1780.1***
n	4	4	***8***	3	4	***7***	***15***
HCO^-_3 [mg L^{-1}] Mean ± SD	243.3±54.8	209.1±19.1	***228.6±46.9***	164.0±56.2	169.7±4.7	***167.3±32.8***	***197.9±50.2***
Range: min-max	165.2-293.4	227.8-301.2	***165.2-301.2***	102.0-211.6	165.1-176.1	***102.0-211.6***	***102.0-293.4***
n	4	3	***7***	3	4	***7***	***14***

Table S3. Mean concentrations ± standard deviation (SD), data range concentrations presented as minimum (min.) and maximum (max.) concentrations, n = number of samples analyzed for mercury speciation (F and UNF refer to filtered and unfiltered analysis for total mercury (THg) and monomethylmercury (MMHg); DMHg and DGM refer to dimethylmercury and dissolved gaseous mercury, respectively) analysis of surface water of Lake Uru Uru, collected in the late dry season (October 2010) and wet season (may 2011).

Parameters	***Dry season***			***Wet season***			***Entire year***
Transect	North Lake (7.0-12.5) Km	South lake (13.4-16.4) Km	***Lake (7.0-16.4) Km***	North Lake (7.0-9.9) Km	South Lake (14.3-16.4) Km	***Lake (7.0-16.4) Km***	***Lake (7.0-16.4) Km***
THg_{UNF} [ng L^{-1}] Mean ± SD	8.9±12.9	11.4±15.2	***10.3±13.4***	3.6±0.9	1.1±0.3	***2.2±1.4***	***6.8±10.7***
Range: min-max	1.7-28.3	3.7-38.5	***1.7-38.5***	2.9-4.6	0.9-1.5	***0.9-4.6***	***0.9-38.5***
n	4	5	***9***	3	4	***7***	***16***
$MMHg_{UNF}$ [ng L^{-1}] Mean ± SD	2.1±2.4	1.1±0.5	***1.5±1.6***	1.7±0.3	0.4±0.1	***0.9±0.8***	***1.3±1.3***
Range: min-max	0.8-5.7	0.7-1.94	***0.7-5.7***	1.5-2.0	0.2-0.5	***0.2-2.0***	***0.2-5.7***
n	4	5	***9***	3	4	***7***	***16***
THg_F [ng L^{-1}] Mean ± SD	0.4±0.6	1.3±0.9	***1.4±0.7***	2.8±0.7	0.6±0.1	***1.5.±1.2***	***1.4±1.0***
Range: min - max	0.9-2.2	0.4-2.5	***0.4-2.5***	2.2-3.5	0.4-0.7	***0.4-3.5***	***0.4-3.5***
n	4	5	***9***	3	4	***7***	***16***
$MMHg_F$ [ng L^{-1}] Mean ± SD	0.8±0.3	0.5±0.2	***0.6±0.2***	1.4±0.5	0.3±0.1	***0.8±0.7***	***0.69±0.47***
Range: min-max	0.5-1.1	0.3-0.7	***0.3-1.1***	1.1-2.0	0.2-0.4	***0.2-2.0***	***0.2-2.0***
n	4	5	***9***	3	4	***7***	***16***
$MMHg_F$ [%] Mean ± SD	53.8±12.2	39.7±12.9	***46.7±13.8***	50.5±6.6	52.0±8.8	***51.4±7.4***	***48.9±11.2***
Range: min-max	36.4-64.5	28.1-57.3	***28.1-64.5***	44.4-57.5	39.1-58.7	***39.1-58.7***	***28.1-64.5***
n	4	4	***8***	3	4	***7***	***15***
DMHg [pg L^{-1}] Mean ± SD	0.1±0.1	0.4±4E-02	***0.8±0.8***	0.7±0.8	0.1±4E-02	***0.4±0.6***	***0.6±0.7***
Range: min-max	0.5-2.8	0.3-0.4	***0.3-2.8***	0.2-1.6	0.1-0.2	***0.1-1.6***	***0.1-2.8***
n	4	4	***8***	3	4	***7***	***15***
DGM [pg L^{-1}] Mean ± SD	78.4±55.9	84.2±43.8	***81.8±44.8***	33.3±10.6	56.3±27.6	***46.4±23.9***	***64.1±39.1***
Range: min-max	21.2-132.9	35.7-132.2	***21.2-132.9***	21.2-41.1	27.7-89.4	***21.2-89.4***	***21.2-132.9***
n	4	4	***8***	3	4	***7***	

Table S4. Mean concentrations ± standard deviation (SD), data range concentrations presented as minimum (min.) and maximum (max.) concentrations, n = number of samples analyzed for chemical analysis (Total carbon (TC), Organic Carbon (OC), Total sulfur (S), Total mercury (THg), inorganic mercury (iHg) and monomethylmercury) of surface sediments (0 – 2 cm) of Lake Uru Uru, collected in the late dry season (October 2010) and wet season (may 2011).

Parameters	***Dry season***			***Wet season***			***Entire year***
Transect	North Lake (7.0-12.5) Km	South lake (13.4-16.4) Km	***Lake (7.0-16.4) Km***	North Lake (7.0-9.9) Km	South Lake (14.3-16.4) Km	***Lake (7.0-16.4) Km***	***Lake (7.0-16.4) Km***
TC [%] Mean ± SD	6.7±1.2	7.8±1.2	7.4±1.3	6.0±3.0	6.4±0.5	6.3±1.8	***7.0±1.5***
Range: min-max	5.3-8.4	6.4-10.0	5.3-10.0	2.7-8.7	6.0-6.9	2.7-8.7	***2.7-10.0***
n	5	7	12	3	4	7	***19***
OC [%] Mean ± SD	5.2±1.1	6.3±2.1	5.8±1.8	4.6±2.3	4.9±0.5	4.8±1.4	***5.4±1.7***
Range: min-max	3.7-6.4	2.9-9.6	2.9-9.6	1.9-6.2	4.5-5.6	1.9-6.2	***1.9-9.6***
n	5	7	12	3	4	7	***19***
S [%] Mean ± SD	1.2±0.3	1.6±0.5	1.4±0.5	0.9±0.2	1.6±0.3	1.3±0.5	***1.4±0.4***
Range: min-max	0.9-1.7	0.7-2.1	0.7-2.1	0.7-1.2	1.2-2.0	0.7-2.0	***0.7-2.1***
n	5	7	12	3	4	7	***19***
THg [ng g^{-1}] Mean ± SD	152.4±130.8	112.1±97.6	128.91±108.9	207.1±121.8	96.8±61.9	144.1±101.6	***134.5±101.7***
Range: min-max	76.2-385.3	29.5-327.5	29.5-385.3	97.9-338.4	53.9-187.1	53.9-338.4	***29.5-385.3***
n	5	7	12	3	4	7	***19***
iHg [ng L^{-1}] Mean ± SD	151.1±128.5	111.7±97.3	128.1±107.6	204.05±117.9	96.2±61.9	142.4±99.4	***133.4±102.1***
Range: min-max	75.9-379.9	29.5-327.5	29.5-379.9	97.3-330.5	53.4-186.6	53.4-330.5	***29.5-379.9***
n	5	7	12	3	4	7	***19***
MMHg [ng g^{-1}] Mean ± SD	1.3±2.3	0.4±0.3	0.8±1.5	3.0±4.2	0.6±0.1	1.7±2.7	***1.1±2.0***
Range: min-max	0.2-5.4	0.04-1.1	0.04-5.4	0.6-7.9	0.5-0.7	0.5-7.9	***0.04-7.9***
n	5	7	12	3	4	7	***19***
MMHg [%] Mean ± SD	0.5±0.5	0.4±0.2	0.4±0.3	1.1±1.1	0.8±0.4	0.9±0.7	***0.6±0.5***
Range: min-max	0.2-1.4	0.1-0.6	0.1-1.4	0.3-2.3	0.3-1.2	0.3-1.2	***0.1-2.3***
n	5	7	12	3	4	7	***19***

Supplementary information 3 (SI. 3)

Table S5. Physico-chemical characteristics and filtered major elemental concentrations measured in surface water of Lake Uru-Uru, collected during the late dry (D) and wet (W) season (October 2010 and May 2011, respectively).

		Sample	Distance [km]	Temp. [°C]	pH	Cond. [m*S* cm^{-1}]	O_2 [mg L^{-1}]	DOC [mg L^{-1}]	SO_4^{2-} [g L^{-1}]	Ca [mg L^{-1}]	K [mg L^{-1}]	Li [mg L^{-1}]	Mg [mg L^{-1}]	Na [mg L^{-1}]	HCO_3^- [mg L^{-1}]
Uru Uru lake Dry season	North	DUU12	7.05	18.2	7.9	8.50	5.8	22.6	12.69	258.5	70.2	2.55	150.3	1780	293.4
		DUU11	9.23	n.d	7.7	4.51	10.2	13.9	6.43	169.3	36.5	1.12	82.9	883.3	260.8
		DUU9	10.84	15.3	7.6	5.64	7.5	17.0	8.17	190.5	46.8	1.52	101.9	1161	253.8
		DUU8	12.51	16.6	8.5	5.08	12.3	14.9	7.19	156.4	42.5	1.36	89.6	1012	165.2
	South	DUU7	13.36	18.2	8.2	4.78	9.9	14.4	6.98	153.0	41.0	1.30	85.5	982.8	170.9
		DUU6	14.32	15.2	8.9	4.58	15.0	14.5	6.04	143.2	37.2	1.13	77.9	849.6	n.d
		DUU1	14.44	18.2	7.8	6.65	5.8	14.2	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	227.8
		DUU3	15.12	17.3	n.d	n.d	13.5	14.4	5.70	140.2	35.9	1.04	74.5	809.3	n.d
		DUU5	16.44	17.8	7.6	4.38	9.1	12.9	5.82	159.4	34.3	1.06	75.7	805.4	228.5
Confluence Uru Uru lake and mining rivers (Dry seasonn)		DHU3	19.97	18.2	8.3	12.00	12.2	24.4	9.13	219.1	57.5	1.61	116.6	1294	301.2
		DHU3-2	19.97	15.5	8.1	6.32	9.2	n.d.	8.68	217.1	53.2	1.53	111.4	1240	n.d
		DECPP	37.59	15.3	7.8	n.d	6.4	n.d.	8.22	201.7	50.9	1.54	105.9	1191	272.0
Uru Uru lake Wet season	North	WUU12	7.05	16.2	9.5	8.99	11.5	22.0	10.07	248.3	56.4	2.35	95.4	1198	102.0
		WUU11	9.23	14.2	7.4	2.68	3.0	14.1	2.27	64.1	17.7	n.d.	31.3	399.4	211.6
		WUU10	9.94	14.2	8.5	3.08	7.8	15.0	2.78	108.2	20.0	0.60	38.5	411.8	178.4
	South	WUU6	14.32	15.0	8.7	2.81	8.1	n.d	2.26	92.6	15.9	0.41	30.2	313.9	170.0
		WUU1	14.44	15.9	8.3	3.18	5.3	16.4	3.28	111.9	20.1	0.61	38.7	416.2	165.1
		WUU4	15.45	14.8	8.1	1.95	5.6	21.0	1.92	87.0	13.3	0.32	24.9	256.9	176.1
		WUU5	16.44	14.9	8.3	2.40	6.0	22.0	1.57	88.5	11.5	0.25	20.5	211.6	167.7
Confluence Uru Uru lake and mining rivers (Wet season)		WHU1	19.94	11.5	8.6	2.85	3.3	13.0	2.07	96.0	13.8	0.35	27.9	295.0	176.6
		WHU2	21.15	16.2	9.0	2.76	8.7	12.5	1.92	97.7	14.7	0.35	28.3	304.9	174.4
		WECPP2	37.42	16.0	8.8	2.78	8.5	18.0	1.87	77.6	12.1	0.33	27.9	294.6	161.7
		WECPP1	37.59	18.7	9.5	3.10	9.3	18.0	2.25	45.7	7.3	0.14	14.1	139.7	166.6

Table S6. Filtered trace elemental concentrations (µg L^{-1}) measured in surface water of Lake Uru-Uru, collected during a) the late dry (D – ***Table S6a***) and b) wet (W– ***Table S6b***) season (October 2010 and May 2011, respectively).

Table S6. a)

		ID	Distance	Be	B	Al	Si	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se
Uru Uru lake	North	DUU12	7.05	0.01	9911	4.26	668	54.0	1.58	8.19	492.6	36.1	0.41	1.84	0.00	0.00	7.66	0.12	46.4	0.00
		DUU11	9.23	0.00	5437	10.58	2063	28.2	1.51	3.89	43.7	85.2	0.06	0.61	0.00	0.11	1.36	0.03	64.4	0.00
		DUU9	10.84	0.01	6468	21.79	1085	2.97	1.48	0.00	175.6	78.7	0.12	1.05	0.00	0.57	3.20	0.07	61.2	0.39
		DUU8	12.51	0.01	5694	1.96	3593	1.52	0.90	0.00	62.2	14.3	0.07	0.52	0.15	0.00	1.07	0.09	86.1	1.41
	South	DUU7	13.36	0.01	5731	2.66	5330	2.11	1.15	0.00	53.6	7.9	0.02	0.48	0.07	2.57	1.81	0.05	86.4	0.00
		DUU6	14.32	0.01	5347	1.41	5062	1.73	1.49	0.00	23.4	15.9	0.09	0.50	0.00	0.00	0.43	0.05	91.1	0.98
		DUU1	14.44	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		DUU3	15.12	0.01	4795	4.32	50990	36.0	1.57	0.90	46.9	27.1	0.09	0.39	0.31	0.53	0.23	0.03	93.4	0.00
		DUU5	16.44	0.01	5180	3.45	49825	1.95	1.34	0.00	214.6	61.8	0.01	0.59	0.02	0.00	0.69	0.03	89.9	0.00
Confluence Uru Uru lake and mining rivers		DHU3	19.97	0.01	8321	35.67	223	37.4	0.32	0.00	1283	160.4	0.43	2.13	0.00	0.00	3.79	0.03	94.9	0.00
		DHU3-2	19.97	0.00	7929	20.47	673	35.9	0.37	0.00	1621	137.4	0.52	2.53	0.00	0.00	3.45	0.02	93.5	3.88
		DECPP	37.6	0.03	6881	9.72	1210	32.4	0.58	4.77	492.	21.6	0.86	4.12	0.58	11.30	5.09	0.05	12.7	0.72

Table S6. a) (continued)

		ID	Distance	Rb	Sr	Nb	Mo	Ag	Cd	In	Sn	Sb	Te	Cs	Ba	La	Ce	Pr	Nd	Eu
Uru Uru lake	North	DUU12	7.05	18.7	5475	0.00	12.3	0.00	0.00	14.1	0.00	19.5	0.08	1.25	175.8	0.005	0.002	0.00	0.01	0.05
		DUU11	9.23	10.1	3090	0.00	4.02	0.00	0.001	0.73	0.00	5.1	0.000	0.14	32.1	0.01	0.01	0.001	0.01	0.009
		DUU9	10.84	12.9	3761	0.00	6.54	0.00	0.01	2.07	0.00	10.4	0.00	0.30	74.5	0.01	0.01	0.004	0.01	0.03
		DUU8	12.51	11.3	3175	0.58	4.24	0.00	0.003	0.00	0.20	5.5	0.00	0.15	25.2	0.005	0.01	0.01	0.004	0.014
	South	DUU7	13.36	11.0	3154	0.00	3.81	0.00	0.01	0.96	0.00	4.51	0.01	0.11	38.8	0.004	0.01	0.003	0.00	0.016
		DUU6	14.32	10.1	2875	0.00	3.58	0.00	0.00	0.83	0.00	4.14	0.00	0.08	9.28	0.001	0.01	0.002	0.01	0.003
		DUU1	14.44	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		DUU3	15.12	9.58	2709	0.55	3.72	0.01	0.01	0.00	0.05	3.49	0.05	0.11	4.96	0.01	0.01	0.01	0.004	0.007
		DUU5	16.44	9.27	2878	0.00	3.21	0.00	0.00	0.01	0.00	3.61	0.00	0.06	14.9	0.005	0.03	0.003	0.01	0.012
Confluence Uru Uru lake and mining rivers		DHU3	19.97	23.0	4069	0.00	7.59	0.00	0.04	4.35	0.08	17.4	0.03	0.27	86.8	0.01	0.01	0.00	0.01	0.039
		DHU3-2	19.97	19.7	4016	0.00	7.01	0.00	0.01	9.8	0.17	19.0	0.00	0.20	78.7	0.01	0.02	0.002	0.01	0.02
		DECPP	37.6	12.9	3747	0.00	4.10	0.003	0.04	1.71	0.005	4.17	0.01	0.32	125.0	0.02	0.03	0.004	0.02	0.04

		ID	Distance	Sm	Gd	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Tl	Pb	Th	U
Uru Uru lake	North	DUU12	7.05	0.05	0.000	0.01	0.000	0.00	0.00	0.00	0.00	0.14	0.03	0.62	0.00	0.09	0.00	8.14
		DUU11	9.23	0.00	0.003	0.003	0.001	0.004	0.00	0.00	0.00	0.11	0.01	0.06	0.00	0.22	0.04	1.91
		DUU9	10.84	0.01	0.000	0.003	0.002	0.005	0.001	0.01	0.001	0.17	0.02	0.28	0.00	0.16	0.06	3.30
		DUU8	12.51	0.01	0.005	0.01	0.01	0.01	0.005	0.00	0.004	0.29	0.04	0.42	0.02	0.04	0.28	1.87
	South	DUU7	13.36	0.01	0.002	0.004	0.001	0.002	0.001	0.01	0.00	0.12	0.01	0.06	0.00	0.02	0.01	1.56
		DUU6	14.32	0.00	0.002	0.003	0.003	0.001	0.001	0.00	0.00	0.14	0.02	0.08	0.00	0.03	0.03	1.43
		DUU1	14.44	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		DUU3	15.12	0.00	0.003	0.01	0.003	0.00	0.004	0.00	0.002	0.23	0.0	0.34	0.01	0.05	0.18	1.38
		DUU5	16.44	0.00	0.002	0.01	0.002	0.001	0.001	0.001	0.000	0.14	0.02	0.00	0.00	0.03	0.05	1.36
Confluence Uru Uru lake and mining rivers		DHU3	19.97	0.02	0.003	0.02	0.00	0.00	0.00	0.00	0.00	0.27	0.08	0.78	0.00	1.37	0.09	5.40
		DHU3-2	19.97	0.01	0.01	0.01	0.00	0.00	0.00	0.005	0.00	0.26	0.04	1.12	0.00	1.30	0.05	4.67
		DECPP	37.6	0.03	0.01	0.01	0.004	0.002	0.003	0.01	0.001	0.24	0.03	0.10	0.00	0.23	0.10	2.88

Table S6.b

		ID	Distance	Be	B	Al	Si	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se
Uru Uru lake	North	WUU12	7.05	0.03	7730	0.00	6917	62.5	3.37	0.00	230	195	0.50	2.48	6.55	1.06	0.90	0.18	84.2	3.25
		WUU11	9.23	0.03	2108	13.4	1812	7.3	0.53	0.00	89	54	0.06	0.71	0.00	0.00	2.93	0.07	56.0	1.96
		WUU10	9.94	0.01	2720	18.7	1868	10.1	1.05	0.00	80	71	0.06	0.69	0.00	0.00	1.78	0.04	73.5	0.71
	South	WUU6	14.32	0.00	2191	0.00	6860	19.7	2.05	2.27	85	147	0.00	0.54	0.00	2.15	4.41	0.06	71.7	2.61
		WUU1	14.44	0.01	2731	18.0	2191	12.6	1.52	0.00	157	213	0.11	0.77	0.00	0.16	3.51	0.03	52.4	1.83
		WUU4	15.45	0.01	1581	13.0	7880	5.9	2.24	0.00	115	52	0.05	0.62	0.00	0.00	3.02	0.01	76.4	0.00
		WUU5	16.44	0.01	1833	4.5	5408	7.2	1.52	0.00	114	108	0.02	0.72	0.00	0.00	3.23	0.04	66.9	0.22
Confluence Uru Uru lake and mining rivers		WHU1	19.94	0.01	2025	0.00	9684	16.3	0.89	0.00	417	186	0.02	0.69	0.00	0.00	2.92	0.10	74.3	2.72
		WHU2	21.15	0.01	1830	0.00	6099	13.7	0.73	0.00	61	128	0.00	0.57	0.00	1.58	2.30	0.06	68.5	4.01
		WECP2	37.42	0.01	1852	20.5	635	5.9	0.36	0.00	2.7	18.4	0.03	0.60	3.69	0.00	1.74	0.01	28.0	0.99
		WECP1	37.59	0.01	1949	14.5	2326	6.9	0.07	0.00	6.6	24.4	0.08	1.32	7.24	14.11	1.55	0.02	6.63	1.51

		ID	Distance	Rb	Sr	Nb	Mo	Ag	Cd	In	Sn	Sb	Te	Cs	Ba	La	Ce	Pr	Nd	Eu
Uru Uru lake	North	WUU12	7.05	26.1	4726	0.64	10.8	0.09	0.04	0.00	0.22	7.82	0.00	7.66	21.2	0.03	0.03	0.01	0.02	0.02
		WUU11	9.23	6.03	1573	1.47	2.73	0.02	0.01	5.21	0.56	2.33	0.07	0.22	74.6	0.02	0.03	0.01	0.01	0.03
		WUU10	9.94	7.54	1974	0.03	3.29	0.01	0.01	4.30	0.01	3.30	0.00	0.19	44.3	0.01	0.04	0.003	0.01	0.011

Table S6. b) (continued)

	South	WUU6	14.32	5.93	1643	0.00	3.18	0.00	0.01	0.00	0.00	2.86	0.02	0.10	94.72	0.01	0.02	0.004	0.01	0.03
		WUU1	14.44	7.32	2053	0.04	3.75	0.00	0.00	0.00	0.05	3.91	0.00	0.10	81.6	0.02	0.03	0.004	0.03	0.02
		WUU4	15.45	4.72	1210	0.09	2.68	0.00	0.003	0.00	0.03	1.26	0.00	0.05	75.7	0.02	0.06	0.003	0.02	0.02
		WUU5	16.44	5.31	1392	0.04	2.95	0.00	0.01	0.00	0.05	2.09	0.00	0.05	85.4	0.01	0.02	0.003	0.02	0.02
Confluence Uru Uru lake and mining rivers			19.94	6.12	1612	0.23	3.03	0.04	0.02	0.00	0.05	1.84	0.00	0.17	66.8	0.01	0.02	0.01	0.01	0.02
			21.15	5.24	1452	0.00	2.53	0.08	0.00	6.28	0.00	1.42	0.00	0.12	54.4	0.003	0.01	0.00	0.02	0.02
		WECP P2	37.42	3.56	1333	0.52	1.80	0.01	0.05	0.44	0.16	0.78	0.00	0.04	44.1	0.02	0.05	0.01	0.03	0.020
		WECP P1	37.59	5.21	1424	0.84	2.01	0.02	0.39	0.00	0.31	1.69	0.00	0.16	37.6	0.01	0.01	0.01	0.02	0.016

		ID	Distance	Sm	Gd	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Tl	Pb	Th	U
Uru Uru lake	North	WUU12	7.05	0.01	0.02	0.01	0.01	0.00	0.012	0.01	0.01	0.11	0.02	2.54	0.06	0.00	0.06	2.44
		WUU11	9.23	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.31	0.06	0.78	0.05	0.00	0.43	0.91
		WUU10	9.94	0.01	0.00	0.00	0.001	0.000	0.002	0.000	0.00	0.077	0.00	0.083	0.00	0.00	0.03	1.07
	South	WUU6	14.32	0.02	0.01	0.00	0.001	0.000	0.002	0.002	0.002	0.000		0.11	0.00	0.00	0.00	0.92
		WUU1	14.44	0.02	0.00	0.006	0.00	0.000	0.00	0.002	0.001	0.073	0.00	0.135	0.00	0.25	0.04	1.25
		WUU4	15.45	0.01	0.00	0.008	0.00	0.000	0.00	0.00	0.001	0.055	0.00	0.030	0.00	0.000	0.04	0.97
		WUU5	16.44	0.02	0.00	0.000	0.00	0.001	0.000	0.00	0.001	0.053	0.00	0.052	0.00	0.00	0.03	0.98
Confluence Uru Uru lake and mining rivers		WHU1	19.94	0.02	0.00	0.013	0.00	0.004	0.005	0.004	0.006	0.02	0.00	0.490	0.05	0.00	0.00	0.80
		WHU2	21.15	0.02	0.00	0.00	0.001	0.002	0.002	0.001	0.002	0.007	0.00	0.156	0.01	0.00	0.00	0.72
		WECP P2	37.42	0.01	0.01	0.01	0.00	0.006	0.00	0.001	0.001	0.134	0.02	0.18	0.01	0.00	0.14	0.71
		WECP P1	37.59	0.02	0.01	0.00	0.00	0.005	0.00	0.006	0.00	0.181	0.04	0.38	0.09	0.00	0.23	1.02

Table S7. Filtered mercury species (F and UNF refer to filtered and unfiltered analysis for total mercury (THg) and monomethylmercury (MMHg); DMHg and DGM refer to dimethylmercury and dissolved gaseous mercury, respectively) concentrations measured in surface water of Lake Uru-Uru, collected during the late dry (D) and wet (W) season (October 2010 and May 2011, respectively).

		Sample	Distance [km]	THg_{UNF} [ng L^{-1}]	SD	$MMHg_{UNF}$ [ng L^{-1}]	SD	THg_F	SD	$MMHg_F$ [ng L^{-1}]	SD	$MMHg_F$ %	SD	DMeHg [pg L^{-1}]	SD	Hg° [pg L^{-1}]	SD
Uru Uru lake	North	DUU12	7.05	28.3	0.93	5.68	0.35	1.76	0.03	1.14	0.02	64.5	0.49	2.81	0.28	132.9	18.6
		DUU11	9.23	3.36	0.09	1.05	0.04	2.22	0.06	0.81	0.04	36.5	1.26	0.70	0.07	21.2	3.0
		DUU9	10.84	2.31	0.04	0.78	0.01	0.93	0.02	0.51	0.01	55.1	0.89	0.46	0.05	81.2	11.4
		DUU8	12.51	1.71	0.05	0.92	0.03	0.90	0.01	0.53	0.00	59.0	1.10	0.55	0.05	n.d	-
	South	DUU7	13.36	5.17	0.12	1.94	0.09	1.76	0.08	0.57	0.03	32.2	1.47	0.34	0.03	61.1	8.6
		DUU6	14.32	4.20	0.27	0.90	0.07	1.28	0.05	0.53	0.02	41.3	1.41	0.42	0.04	132.17	18.5
		DUU1	14.44	3.70	0.07	0.66	0.01	0.56	0.02	0.32	0.01	57.3	1.25	n.d	-	n.d	-
		DUU3	15.12	38.52	3.26	0.70	0.02	0.43	3.02	0.43	0.01	n.d	-	0.42	0.04	107.9	15.1
		DUU5	16.44	5.37	0.10	1.15	0.04	2.53	0.02	0.71	0.01	28.1	0.29	0.40	0.04	35.7	5.0
Confluence Uru Uru lake and mining rivers		DHU3	19.97	40.1	0.74	2.86	0.22	1.92	0.03	0.42	0.02	22.0	0.75	n.d	-	20.7	2.9
		DHU3-2	19.97	29.3	3.46	5.52	0.15	n.d.	n.d.	n.d	-	n.d	-	n.d	-	n.d	-
		DECPP	37.59	4.6	0.26	0.14	0.01	n.d.	n.d.	n.d.	-	n.d	-	0.24	0.02	7.5	1.1
Uru Uru lake	North	WUU12	7.05	4.6	0.21	2.04	0.17	3.49	0.19	2.01	0.03	57.5	2.68	1.64	0.16	37.7	5.3
		WUU11	9.23	2.9	0.09	1.50	0.03	2.64	0.25	1.17	0.08	44.4	3.34	0.20	0.02	21.2	3.0
		WUU10	9.94	3.2	0.17	1.56	0.11	2.18	0.06	1.08	0.05	49.7	1.14	0.35	0.03	41.0	5.7
	South	WUU6	14.32	1.5	0.07	0.52	0.03	0.71	0.03	0.41	0.02	58.7	1.63	0.15	0.02	89.4	12.5
		WUU1	14.44	1.23	0.21	0.19	0.17	0.38	0.03	0.15	0.002	39.1	3.21	0.07	0.01	40.4	5.7
		WUU4	15.45	0.91	0.05	0.38	0.04	0.64	0.04	0.36	0.01	56.3	3.39	0.12	0.01	67.6	9.5
		WUU5	16.44	0.91	0.04	0.31	0.01	0.56	0.04	0.30	0.01	54.0	3.40	0.13	0.01	27.7	3.9

Table S7 (continued)

Confluence Uru Uru lake and mining rivers	WHU1	19.94	3.53	0.14	1.16	0.06	2.1	0.06	1.11	0.02	51.62	1.16	0.45	0.04	98.9	13.8
	WHU2	21.15	2.69	0.12	0.73	0.02	2.0	0.07	0.59	0.02	30.02	1.03	0.28	0.03	22.5	3.2
	WECPP2	37.42	0.65	0.01	0.04	0.001	0.3	0.05	0.01	0.00	3.68	0.92	0.06	0.01	8.6	1.2
	WECPP1	37.59	1.18	0.05	0.02	0.001	0.3	0.03	0.004	0.00	1.41	0.71	0.15	0.01	66.8	9.4
Poopó lake	WPP2	110.4	2.83	0.11	0.19	0.01	0.73	0.02	0.09	0.00	12.3	0.37	n.d	-	57.6	8.1
	WPP1	110.4	3.33	0.10	0.24	0.01	0.52	0.01	0.10	0.01	18.4	0.90	n.d	-	n.d	-

Table S8. Mercury species (total mercury (THg), inorganic mercury (iHg), monomethylmercury (MMHg)), Total and organic carbon (TC and OC, respectively) and total sulfur (S) concentrations measured in surface sediment (0 – 2cm) of Lake Uru-Uru, collected during the late dry (D) and wet (W) season (October 2010 and May 2011, respectively).

Site		Sample	Distance [km]	THg [ng g^{-1}]	SD	IHg [ng g^{-1}]	SD	MMHg [ng g^{-1}]	SD	MMHg [%]	TC [%]	OC [%]	S [%]
Uru Uru lake	North	DUU12	7.0	385.3	9.79	379.9	9.70	5.42	0.08	1.4	6.4	6.0	1.0
		DUU11	9.2	98.4	0.89	98.0	0.85	0.36	0.04	0.4	5.3	3.7	0.9
		DUU10	9.9	111.2	1.99	110.8	1.94	0.37	0.05	0.3	8.4	6.4	1.1
		DUU9	10.8	76.2	0.31	75.9	0.27	0.25	0.04	0.3	7.5	5.4	1.1
		DUU8	12.5	91.0	5.11	90.9	5.06	0.16	0.05	0.2	6.0	4.3	1.7
	South	DUU7	13.4	29.5	0.15	29.5	0.11	0.04	0.04	0.1	6.8	2.9	0.7
		DUU6	14.3	95.5	1.34	95.2	1.29	0.34	0.05	0.4	7.7	5.4	1.7
		DUU1	14.4	327.5	8.12	326.4	8.07	1.07	0.05	0.3	6.4	6.0	1.1
		DUU2	14.7	70.8	1.50	70.4	1.45	0.41	0.05	0.6	7.9	5.7	1.5
		DUU3	15.1	87.4	0.33	87.2	0.32	0.17	0.01	0.2	7.3	6.9	1.9
		DUU4	15.4	78.7	1.32	78.3	1.30	0.36	0.02	0.5	8.3	7.9	2.1
		DUU5	16.4	95.4	2.61	95.0	2.60	0.43	0.01	0.5	10.0	9.6	1.8
Confluence Uru Uru lake and mining rivers		DECPP	37.6	159.9	1.57	159.8	1.52	0.19	0.05	0.1	3.4	3.3	1.5
Uru Uru lake	North	WUU12	7.0	338.4	2.8	330.5	2.6	7.87	0.19	2.3	6.6	5.7	0.9
		WUU11	9.2	185.0	7.0	184.4	7.0	0.62	0.05	0.3	2.7	1.9	0.7
		WUU10	9.9	97.9	4.0	97.3	4.0	0.66	0.04	0.7	8.7	6.2	1.2
	South	WUU6	14.3	86.9	0.7	86.2	0.7	0.71	0.05	0.8	6.9	4.8	1.6
		WUU1	14.4	187.1	1.4	186.6	1.3	0.54	0.04	0.3	6.8	5.6	1.2
		WUU4	15.5	53.9	1.7	53.4	1.6	0.50	0.05	0.9	6.0	4.7	2.0
		WUU5	16.4	59.5	3.1	58.8	3.0	0.74	0.06	1.2	6.1	4.5	1.8
Confluence Uru Uru lake and mining rivers		WHU1A	19.9	283.8	12.5	282.5	12.4	1.28	0.06	0.5	3.0	2.8	6.3
		WHU2B	21.2	491.6	29.7	486.1	29.5	5.58	0.22	1.1	4.0	4.0	1.0
		WECPP2	37.4	135.5	3.8	135.5	3.7		0.04		0.9	0.8	0.1
		WECPP1	37.6	264.6	10.2	264.2	10.1	0.41	0.04	0.2	4.1	3.8	0.3
Poopó lake		WPP2	110.4	78.3	0.9	78.1	0.9	0.23	0.04	0.3	2.9	2.7	7.3
		WPP1	110.4	77.1	2.3	76.9	2.2	0.21	0.04	0.3	3.0	2.8	6.6

Table S9. Filtered mercury species (total mercury (THg), inorganic mercury (iHg), monomethylmercury (MMHg)) concentrations measured in surface sediment pore waters (0 – 2cm) of Lake Uru-Uru, collected during the late dry (D) and wet (W) season (October 2010 and May 2011, respectively).

Site		Sample	Distance [km]	THg [ng L^{-1}]	SD	IHg [ng L^{-1}]	SD	MMHg [ng L^{-1}]	SD	MMHg [%]
Uru Uru lake	North	DUU12i	7.0	239.1	18.69	203.4	16.20	35.77	2.50	15.0
		DUU10i	9.9	206.3	14.15	186.7	12.81	19.53	1.34	9.5
		DUU9i	10.8	1.49	0.05	0.27	0.02	1.22	0.03	82.0
	South	DUU7i	13.4	198.0	14.09	40.26	2.92	157.8	11.17	79.7
		DUU6i	14.3	212.9	15.03	164.4	12.05	48.51	2.98	22.8
		DUU1i	14.4	5.65	0.29	2.60	0.07	3.05	0.21	53.9
		DUU2i	14.7	3.16	0.23	0.10	0.01	3.06	0.23	96.8
		DUU3i	15.1	3.82	0.20	0.09	0.02	3.73	0.18	97.7
		DUU4i	15.5	99.88	6.83	41.93	1.49	57.95	5.34	58.0
Uru Uru lake	North	WUU12i	7.0	3.17	0.05	2.90	0.05	0.27	0.001	8.5
		WUU11i	9.2	2.53	0.02	2.47	0.02	0.07	0.002	2.6
		WUU10i	9.9	6.33	0.14	6.21	0.13	0.12	0.01	1.9
	South	WUU6i	14.3	1.41	0.00	1.40	0.00	0.01	0.001	0.9
		WUU1i	14.4	9.04	0.23	7.58	0.12	1.46	0.11	16.2
		WUU4i	15.5	1.66	0.01	1.66	0.01	0.005	0.001	0.3
		WUU5i	16.4	0.77	0.01	0.76	0.01	0.01	0.00	1.5
Confluence Uru Uru lake and mining rivers		WHU1Ai	19.9	2.38	0.06	2.35	0.06	0.04	0.003	1.6
		WHU2Ai	21.2	3.56	0.02	3.42	0.01	0.14	0.01	3.9
		WECPP1i	37.6	16.75	0.87	16.53	0.86	0.23	0.01	1.3

Table S10. Major and trace metal (Be, B, Na, Mg, Al, Si, P, K, Ca, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Se, Rb, Sr, Zr, Nb, Mo, Ag, Cd, In, Sn, Sb, Te, Cs, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Dy, Ho, Er, Tm, Yb, Lu, Hf, Ta, W, Tl, Pb, Th and U) concentrations measured in surface sediment (0 – 2cm) of Lake Uru-Uru, collected during the late dry (D) and wet (W) season (October 2010 and May 2011, respectively).

Site		ID	Distance	Be	B	Na	Mg	Al	Si	P	K	Ca	Ti	V	Cr	Mn	Fe
Uru Uru lake	North	DUU12	7.05	2.52	138.9	8399.9	11676	79682	0.00	930	25370	25012	2880	95.1	45.9	460	30453
		DUU11	9.23	1.93	87.9	9748.3	10028	69297	0.00	769	20561	57101	2529	72.1	35.2	528	23644
		DUU10	9.94	2.14	162.1	6316.8	9497	55239	204.1	846	20513	55999	2182	80.5	35.3	777	23807
		DUU9	10.84	2.05	140.7	6238.6	9140	58099	1968	898	21031	59315	2104	78.4	35.0	938	24565
		DUU8	12.51	2.30	81.2	5167.8	11682	73621	269	682	24128	56705	2151	100.6	43.7	627	30532
	South	DUU7	13.36	1.24	61.6	7393.3	10915	36529	2128	628	14541	76766	1446	44.1	16.0	874	13751
		DUU6	14.32	2.10	146.2	5259.9	8915	56981	1133	753	20815	60612	1972	85.9	36.0	824	26524
		DUU1	14.44	2.25	164.8	8921.5	7505	61367	0.00	840	20964	26992	2774	83.8	38.5	780	27181
		DUU2	14.65	1.80	128.4	4165.1	8356	48942	318	696	17870	56199	1640.6	73.3	31.2	664	22012
		DUU3	15.12	2.36	169.9	4948.5	7233	57199	0.00	802	19794	24298	2203.5	93.2	43.7	613	30474
		DUU4	15.45	2.65	195.8	6338.5	9892	70835	0.00	999	24113	27384	2663.6	108.8	49.7	651	36482
		DUU5	16.44	2.33	192.4	6318.0	8301	63871	0.00	1286	21363	26829	2385.8	94.4	43.7	528	31162
Confluence Uru Uru lake and mining rivers		DECPP	37.59	3.38	207.79	8000.2	9618	75656	0.00	759	21865	14226	3218.99	90.5	42.6	1025	37621

Site		ID	Distance	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Rb	Sr	Zr	Nb	Mo	Ag
Uru Uru lake	North	DUU12	7.05	11.22	22.7	50.53	149.4	18.45	0.25	51.8	0.73	153.1	461.8	73.9	11.1	3.28	1.04
		DUU11	9.23	8.48	16.9	40.64	86.4	15.03	0.10	47.6	1.22	117.5	687.8	79.6	10.0	1.53	0.55
		DUU10	9.94	9.05	19.7	52.01	96.8	14.75	1.33	58.2	0.52	106.2	756.2	62.3	11.7	1.83	0.55
		DUU9	10.84	9.47	19.5	49.08	100.2	14.75	1.34	57.4	0.09	105.6	763.0	56.8	8.0	3.15	0.45
		DUU8	12.51	10.90	23.0	78.22	103.7	17.80	1.47	66.6	0.76	146.5	692.3	66.3	8.5	2.45	0.38
	South	DUU7	13.36	5.59	11.0	24.65	60.1	8.62	0.96	54.0	0.00	73.3	944.8	36.1	6.5	3.36	0.44
		DUU6	14.32	9.66	20.4	63.75	101.7	14.88	1.30	68.9	0.35	102.2	783.8	57.3	7.9	4.49	0.48
		DUU1	14.44	12.25	22.1	47.50	194.6	16.07	1.70	60.2	1.00	52.50	433.4	74.1	10.7	3.23	1.22
		DUU2	14.65	8.22	17.9	60.03	83.9	12.98	1.12	61.7	0.28	91.9	752.8	48.5	10.3	4.47	0.33
		DUU3	15.12	10.50	22.4	71.64	115.5	17.44	1.43	57.9	0.00	24.7	352.6	63.9	9.3	4.07	0.42
		DUU4	15.45	12.32	26.6	82.63	130.1	19.85	1.68	74.0	0.00	41.2	422.3	75.4	10.7	7.24	0.46
		DUU5	16.44	11.60	24.0	73.91	121.4	17.66	1.57	86.4	1.01	39.3	412.1	67.7	9.1	4.32	0.47
Confluence Uru Uru lake and mining rivers		DECPP	37.59	32.76	41.87	225.14	3687.1	18.36	0.12	192.5	0.97	122.1	321.8	81.1	11.2	1.97	3.41

Table S10 (continued)

Site		ID	Distance	Cd	In	Sn	Sb	Te	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd
Uru Uru lake	North	DUU12	7.05	0.86	0.00	23.25	24.9	0.11	51.66	581	36.02	72.2	8.49	30.8	5.89	1.28	4.86
		DUU11	9.23	0.15	3.18	7.60	9.36	0.09	27.21	607	28.64	56.0	6.76	24.7	4.96	1.17	4.14
		DUU10	9.94	0.34	2.39	11.27	12.2	0.11	18.46	504	24.31	50.9	5.57	20.3	4.05	0.88	3.41
		DUU9	10.84	0.34	2.27	7.96	6.52	0.09	18.33	500	23.74	49.3	5.48	19.9	3.85	0.87	3.29
		DUU8	12.51	0.37	0.76	5.98	6.56	0.07	28.64	470	30.66	61.4	7.22	26.1	5.04	1.06	4.30
	South	DUU7	13.36	0.21	0.00	4.95	2.95	0.05	12.11	490	16.19	32.1	3.78	13.5	2.69	0.66	2.32
		DUU6	14.32	0.50	0.00	9.38	7.84	0.10	15.34	474	24.41	51.0	5.66	20.4	3.98	0.86	3.42
		DUU1	14.44	0.81	0.43	19.08	19.4	0.06	23.25	547	22.37	47.1	5.64	20.9	4.42	1.02	3.99
		DUU2	14.65	0.33	0.00	7.38	5.32	0.15	15.88	402	21.73	44.7	5.03	18.2	3.58	0.77	3.03
		DUU3	15.12	0.50	0.00	9.03	7.15	0.07	18.80	348	21.13	46.1	5.59	20.9	4.32	0.91	3.71
		DUU4	15.5	0.47	0.52	10.63	7.65	0.04	22.61	410	26.3	55.39	6.79	25.01	4.93	1.07	4.27
		DUU5	16.4	0.49	0.00	12.86	8.27	0.08	20.68	764	22.95	47.79	5.91	21.87	4.64	1.07	3.91
Confluence Uru Uru lake and mining rivers		DECPP	37.6	49.9	0.82	40.92	26.71	0.06	27.39	481	31.16	65.75	7.99	30.40	6.63	1.53	6.23

Site		ID	Distance	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Tl	Pb	Th	U
Uru Uru lake	North	DUU12	7.05	2.96	0.53	1.57	0.22	1.49	0.23	2.29	1.49	2.16	0.99	77.38	11.96	4.23
		DUU11	9.23	2.67	0.48	1.41	0.20	1.30	0.21	2.50	1.50	1.54	0.73	40.85	9.25	3.40
		DUU10	9.94	2.10	0.38	1.07	0.16	1.06	0.16	2.62	2.11	1.97	0.81	39.30	8.44	4.58
		DUU9	10.84	1.95	0.34	0.98	0.14	0.94	0.15	1.82	1.74	1.26	0.80	33.19	7.57	3.50
		DUU8	12.51	2.60	0.47	1.35	0.20	1.29	0.20	2.20	2.19	1.15	0.87	32.87	10.03	3.68
	South	DUU7	13.36	1.48	0.27	0.76	0.12	0.73	0.11	1.29	1.52	0.69	0.46	17.14	3.64	2.35
		DUU6	14.32	2.04	0.36	1.00	0.15	0.99	0.15	1.92	1.75	1.33	0.79	35.64	8.15	4.47
		DUU1	14.44	2.60	0.48	1.41	0.20	1.40	0.21	2.50	1.84	2.06	0.83	95.48	8.16	4.47
		DUU2	14.65	1.75	0.32	0.93	0.13	0.84	0.14	2.38	2.08	1.97	0.72	26.19	7.70	3.59
		DUU3	15.12	2.32	0.43	1.24	0.18	1.17	0.19	2.22	1.70	1.68	0.88	33.02	7.57	3.38
		DUU4	15.45	2.69	0.49	1.42	0.21	1.35	0.22	2.51	1.98	1.89	0.96	35.71	9.09	4.56
		DUU5	16.44	2.42	0.44	1.30	0.19	1.24	0.19	2.19	1.68	1.69	0.88	35.91	8.31	3.62
Confluence Uru Uru lake and mining rivers		DECPP	37.59	4.20	0.75	2.09	0.29	1.88	0.28	2.40	1.37	3.33	1.60	135.18	10.52	3.29

Table S10 (continued)

		ID	Distance	Be	B	Na	Mg	Al	Si	P	K	Ca	Ti	V	Cr	Mn	Fe
Uru Uru lake	North	WUU12	7.05	1.89	141.7	6560	8878	62272	0.00	901	21316	27204	2564	88.22	41.65	497	28810
		WUU11	9.2	2.18	85.7	9595	10416	67278	0.00	669	22324	27154	2742	74.36	37.39	487	24651
		WUU10	9.9	1.76	102.1	5111	8387	51252	0.00	736	16998	58312	1791	63.53	29.90	539	20677
	South	WUU6	14.3	1.81	101.9	5569	10096	61142	0.00	671	19125	60263	1950	75.71	35.02	710	24837
		WUU1	14.4	2.07	129.0	8042	8449	62471	0.00	978	20550	42624	2777	76.75	36.50	868	27097
		WUU4	15.5	2.06	103.5	4186	10964	67832	0.00	736	20677	39625	2185	86.68	39.80	655	29648
		WUU5	16.4	2.20	100.7	4246	9835	65524	0.00	678	20916	39577	2099	90.21	40.56	681	29988
Confluence Uru Uru lake and mining rivers		WHU1A	19.9	2.14	1061.2	3258	4422	51294	0.00	837	17024	944	2775	81.64	59.86	170.6	47017
		WHU2B	21.2	2.30	599.8	6851	8235	78587	0.00	1702	24002	4323	3673	105.03	56.90	879.5	48116
		WECPP2	37.4	2.61	124.3	6807	15821	106940	0.00	709	30642	9750	3497	106.01	53.23	742.9	37601
		WECPP1	37.6	5.70	259.8	4935	10062	75045	0.00	809	19185	15106	2224	73.29	38.42	1170.7	33281
Poopó lake		WPP2	110.4	0.87	348.6	44125	12925	28638	10793	319	10899	46359	987	37.73	15.29	296.6	11680
		WPP1	110.4	0.68	271.6	30986	9046	21473	7205	277	9021	35302	830	31.78	12.99	254.9	9358
		ID	Distance	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Rb	Sr	Zr	Nb	Mo	Ag
Uru Uru lake	North	WUU12	7.05	10.48	20.8	47.7	152.6	16.8	0.67	50.7	0.00	38.13	439.8	65.92	10.02	2.11	1.07
		WUU11	9.2	8.83	17.2	34.6	90.2	16.2	0.09	41.2	0.00	104.9	451	78.56	10.77	0.96	0.73
		WUU10	9.9	7.40	15.5	41.7	85.0	12.2	0.08	56.1	0.00	89.77	665	49.93	7.91	1.76	0.49
	South	WUU6	14.3	8.78	18.0	56.6	96.8	14.4	0.10	60.6	0.10	115.3	696	57.64	11.25	4.59	0.57
		WUU1	14.4	9.99	18.9	41.2	149.8	15.5	1.23	62.4	0.70	120.3	607	80.91	11.75	1.56	1.09
		WUU4	15.5	9.70	20.5	70.9	97.8	16.0	0.39	64.8	0.33	133.3	533	62.60	8.08	2.88	0.36
		WUU5	16.4	9.99	20.6	66.1	99.0	16.1	0.56	60.7	1.19	117.9	510	62.58	7.71	1.96	0.39
Confluence Uru Uru lake and mining rivers		WHU1A	19.9	6.01	16.5	341	326	26.6	0.20	400	0.42	73.05	85.7	47.70	9.77	2.02	2.49
		WHU2B	21.2	12.51	24.7	259	720	25.3	1.35	418	0.00	148.9	235	81.02	13.05	1.09	3.46
		WECPP2	37.4	13.56	25.8	154	137	20.6	0.16	55.8	0.00	243.6	273	90.76	13.14	1.22	0.59
		WECPP1	37.6	38.71	54.7	435	4519	15.4	1.10	167	0.48	127.3	254	53.24	10.03	1.06	1.71
Poopó lake		WPP2	110.4	4.42	8.2	21.1	136	6.6	0.12	30.0	0.00	58.76	1295	23.73	4.36	2.65	0.20
		WPP1	110.4	3.76	7.17	17.9	117	5.45	0.11	27.3	0.00	43.12	1025	19.52	4.05	2.45	0.17
		ID	Distance	Cd	In	Sn	Sb	Te	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd
Uru Uru lake	North	WUU12	7.05	1.14	0.00	23.7	22.2	0.03	34.74	509	23.45	48.33	5.92	22.23	4.59	1.01	3.80
		WUU11	9.2	0.18	0.00	6.40	14.7	0.03	35.93	682	29.76	59.74	6.99	25.56	5.06	1.18	4.33
		WUU10	9.9	0.26	0.00	9.83	9.01	0.09	11.19	440	17.38	34.45	4.21	15.89	3.23	0.75	2.73
	South	WUU6	14.3	0.38	2.68	8.19	7.90	0.14	21.97	509	26.00	51.36	6.14	22.63	4.51	0.99	3.91
		WUU1	14.4	0.61	0.14	23.6	16.8	0.11	26.35	579	25.79	52.78	6.15	22.39	4.66	1.06	3.97
		WUU4	15.5	0.33	2.68	6.88	5.44	0.12	21.38	407	29.10	58.00	6.85	25.22	4.91	1.03	4.14
		WUU5	16.4	0.37	2.25	7.34	7.87	0.11	17.09	459	28.15	56.47	6.64	24.25	4.85	1.01	3.97
Confluence Uru Uru lake and mining rivers		WHU1A	19.9	2.51	0.00	274	45.0	0.04	9.80	156	8.90	22.06	2.87	11.19	2.56	0.59	2.12
		WHU2B	21.2	8.24	0.00	189	37.9	0.04	26.81	890	31.84	66.17	7.81	29.35	6.09	1.44	5.24
		WECPP2	37.4	1.25	0.00	5.25	5.7	0.07	35.23	632	58.30	123.8	13.42	49.08	9.36	1.95	8.18
		WECPP1	37.6	37.66	1.24	61.5	50.5	0.09	57.76	476	30.02	72.26	8.66	35.33	9.02	2.16	9.46
Poopó lake		WPP2	110.4	0.73	0.00	3.44	3.42	0.01	18.42	249	11.67	23.74	2.82	10.41	2.05	0.43	2.11
		WPP1	110	0.65	0.00	3.02	3.26	0.04	7.37	176.0	9.43	19.00	2.27	8.41	1.66	0.35	1.42

Table S10 (continued)

		ID	Distance	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Tl	Pb	Th	U
Uru Uru lake	North	WUU12	7.05	2.43	0.44	1.26	0.19	1.24	0.20	2.05	1.34	2.16	0.93	73.71	8.24	3.26
		WUU11	9.2	2.71	0.49	1.45	0.22	1.39	0.22	2.47	1.46	1.80	0.80	54.26	9.97	2.71
		WUU10	9.9	1.75	0.32	0.91	0.13	0.87	0.14	1.73	1.29	1.70	0.70	33.02	1.13	3.21
	South	WUU6	14.3	2.33	0.42	1.20	0.18	1.16	0.19	2.43	1.84	2.45	0.82	40.54	7.59	3.89
		WUU1	14.4	2.79	0.53	1.52	0.21	1.45	0.22	2.73	2.04	2.27	0.80	81.00	8.84	3.04
		WUU4	15.5	2.62	0.47	1.34	0.19	1.33	0.20	1.94	1.33	1.26	0.80	29.32	9.50	3.14
		WUU5	16.4	2.53	0.45	1.30	0.18	1.24	0.18	1.90	1.27	1.29	0.82	31.28	8.28	2.70
Confluence Uru Uru lake and mining rivers		WHU1A	19.9	1.37	0.25	0.72	0.11	0.71	0.12	1.43	1.00	17.43	3.09	191	6.75	3.48
		WHU2B	21.2	3.32	0.60	1.76	0.25	1.63	0.25	2.51	1.39	10.68	1.98	218	11.94	2.93
		WECPP2	37.4	5.18	0.93	2.68	0.38	2.59	0.40	2.79	1.92	1.97	1.00	49.5	18.94	2.63
		WECPP1	37.6	6.48	1.10	2.87	0.38	2.31	0.34	1.97	1.49	4.17	1.46	232	9.60	8.91
Poopó lake		WPP2	110	1.14	0.20	0.57	0.08	0.52	0.08	0.82	1.10	0.83	0.36	16.85	1.41	1.87
		WPP1	110	0.87	0.16	0.47	0.07	0.41	0.07	0.73	0.88	0.87	0.32	16.78	0.68	1.68

Supplementary information 4 (SI. 4)

Linear Regressions for surface sediment concentrations of THg versus W, and Sb.