Table

Table 1. Physical and chemical properties (Mean ± SD) of soils at various sites within each transect

Transect	Zone	Samples number	SMC10-V	SMC20-V	Soil C:N	TOC ($g \cdot kg^{-1}$)	BIO (g)	ρ_b	pH	EC (μs/cm)	SSM (%)
T1	Riparian	12	12.16 ± 7.55	12.88 ± 12.05	12.46 ± 0.91	30.16 ± 6.54	14.67 ± 5.44	1.28 ± 0.07	7.25 ± 0.62	154.71 ± 23.70	47.77 ± 7.04
	Hillslope	6	2.72 ± 0.91	5.05 ± 3.09	11.41 ± 0.09	10.77 ± 4.72	6.70 ± 1.48	1.45 ± 0.03	7.22 ± 0.40	82.02 ± 16.37	31.02 ± 1.32
T2	Riparian	12	26.75 ± 19.52	12.19 ± 7.82	11.70 ± 1.14	19.96 ± 5.71	24.76 ± 9.65	1.23 ± 0.05	8.95 ± 0.45	303.88 ± 102.16	51.21 ± 6.49
	Hillslope	9	5.85 ± 4.82	3.03 ± 1.43	9.77 ± 0.88	14.87 ± 11.21	6.10 ± 3.19	1.38 ± 0.13	8.10 ± 0.55	162.97 ± 128.18	35.09 ± 6.75
T3	Riparian	12	28.04 ± 22.95	14.53 ± 8.98	15.80 ± 4.16	22.40 ± 9.69	6.37 ± 2.95	1.35± 0.19	9.50 ± 0.67	1233.20 ± 829.83	47.56 ± 11.65
	L3	3	116.37 ± 56.91	113.36 ± 23.17	16.8 ± 0.58	36.1 ± 1.84	107.75 ±16.94	0.592 ± 0.02	8.5 ± 0.17	403 ± 57.21	>100
T4	Riparian	12	5.42 ± 3.34	4.07 ± 4.31	12.52 ± 2.06	9.96 ± 1.25	11.97 ± 4.50	1.30 ± 0.08	8.84 ± 0.22	461.72 ± 314.27	44.08 ± 7.07
	Hillslope	6	3.35 ± 2.06	4.27 ± 1.94	9.97 ± 0.50	9.65 ± 1.05	7.84 ± 2.48	1.30 ± 0.09	8.23 ± 0.14	118.5 ± 8.25	39.43 ± 5.55
T5	Dry lake bed	12	17.47 ± 15.08	14.49 ± 13.28	63.74 ± 12.93	31.41 ± 6.55	5.48 ± 2.35	1.16 ± 0.10	9.88 ± 0.18	7320.87 ± 4300.03	58.47 ± 7.16
	Lake shore	9	2.64 ± 1.48	2.82 ± 1.27	15.92 ± 4.71	6.35 ± 1.16	0	1.33 ± 0.09	9.41 ± 0.7	281.82 ± 162.73	37.52 ± 5.34

Note: Soil C:N - soil carbon-nitrogen ratio; TOC - total soil organic carbon; BIO - aboveground biomass; ρ_b - soil bulk density; pH - soil pH; EC - soil electrical conductivity; SMC10-V - average soil volumetric moisture content for the 0–10 cm soil depth in wet season and in dry season; SMC20-V - average soil volumetric moisture content for the 10–20 cm soil depth in wet season and in dry season; SSM - saturated soil moisture.

Table 3 Significant correlations between GHGs fluxes and two seasons (n-31)

GHG flux	FCO_2 in wet season-FCO_2 in dry season	FCH_4 in wet season-FCH_4 in dry season	FN_2O in wet season- FN_2O in dry season
significant correlations (P)	0.000	0.133	0.290

Note: $P<0.05$ denote significant correlations and $P > 0.05$ denote no significant correlations.

Table 4. Correlations between CO_2, CH_4, and N_2O emissions and impact factors (n = 62)

GHG flux	ST10	ST20	SMC10	SMC20	TOC	ρ_b	C:N	pH	EC	BIO
CO_2	0.634**	0.592**	0.307*	0.216	0.393	−0.463**	−0.289*	−0.350**	−0.251*	0.491*
CH_4	−0.029	−0.051	0.346**	0.353**	−0.02	−0.129	−0.156	−0.127	−0.107	0.607**
N_2O	0.127	0.118	0.304*	0.356**	0.493*	−0.194	0.311*	0.137	0.504**	0.251

Note: 1. **The analysis method used in the table is Pearson correlation analysis, and the numbers represent Pearson correlation coefficients.**

2. * and ** denote significant and highly significant correlations ($P < 0.01$ and $P < 0.05$), respectively.

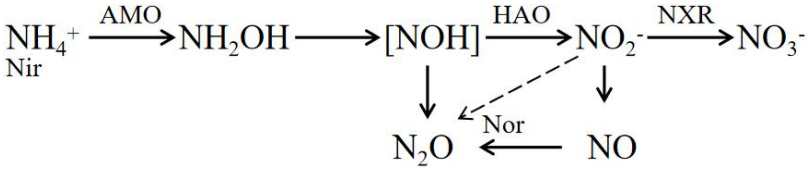
3. ST - soil temperature, SMC - soil moisture content, ρ_b - soil bulk density, soil C:N - soil carbon-nitrogen ratio, pH - soil pH, EC - soil electrical conductivity, BIO - aboveground biomass

Table 6 Cumulative annual emission fluxes and global warming potential of GHGs in riparian wetlands and grasslands

Sample plot	CO_2/kg/hm^2	CH_4/kg/hm^2	N_2O/kg/hm^2	GWP/CO_2 kg hm^2
Wetlands of upstream transects (T1, T2, and T3)	13092.8±5378.16	12.36±26.40	0.25±0.23	13474.91±5828.68
Wetlands of downstream transects (T4 and T5)	9093.47±4831.82	-1.68±3.23	-0.26±0.40	8974.12±4912.75
Hillslope grasslands of all transects	8412.26±1614.26	-2.55±3.12	0.01±0.20	8351.24±1648.22

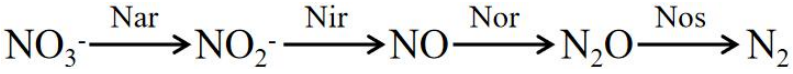
Formula

Nitrification:



(4)

Denitrification:



(5)

The enzymes involved in the formula include Ammonia monooxygenase (AMO), Hydroxylamine oxidase (HAO), Nitrite REDOX enzyme (HAO), nitrate reductase (Nar), nitrite reductase (Nir), Nitric oxide reductase (Nor) and Nitrous oxide reductase (Nos).

"The annual cumulative emissions were calculated using Eq. 2 (Whiting G and Chanton J., 2001)

$$M = \sum \frac{F_{i+1} + F_1}{2} \times (t_{i+1} - t_i) \times 24 \quad (2)$$

Where M denotes the total cumulative emissions of CO_2, CH_4, or N_2O ($kg \cdot hm^2$), F is the emission flux of CO_2, CH_4, or N_2O, i is the sampling frequency, t_{i+1}-t_i represents the interval between two adjacent measurement dates".

"In this study, a 100-year scale was selected to calculate the global warming potential (GWP) of soil CH_4 and N_2O emissions (Whiting G and Chanton J., 2001):

$$GWP = 1 \times [CO_2] + 25 \times [CH_4] + 298 \times [N_2O] \quad (3)$$

Where 25 and 298 are GWP multiples of CH_4 and N_2O relative to CO_2 on a 100-year time scale, respectively".