

Supplementary Materials: The following supporting information can be got as follows.

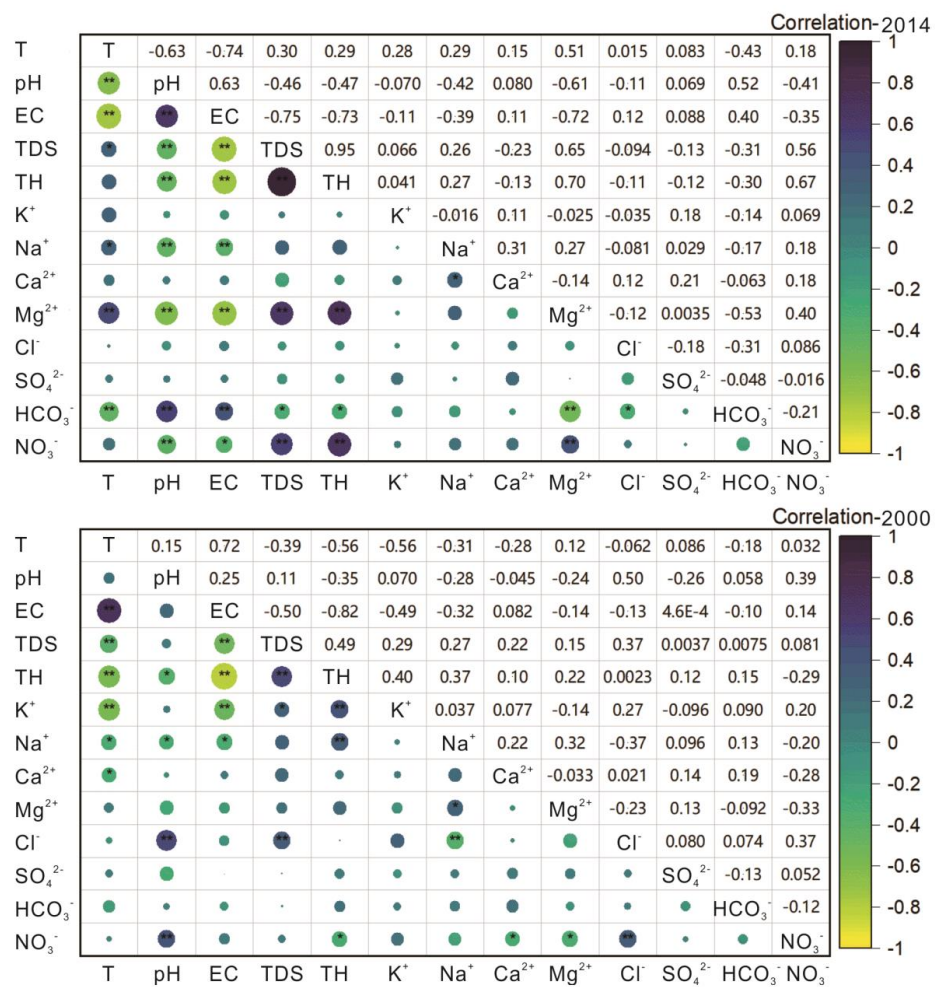


Figure S1. The correlation of groundwater quality index in the Lalin River Basin in 2014 and 2000 (* $p < 0.05$; ** $p < 0.01$)

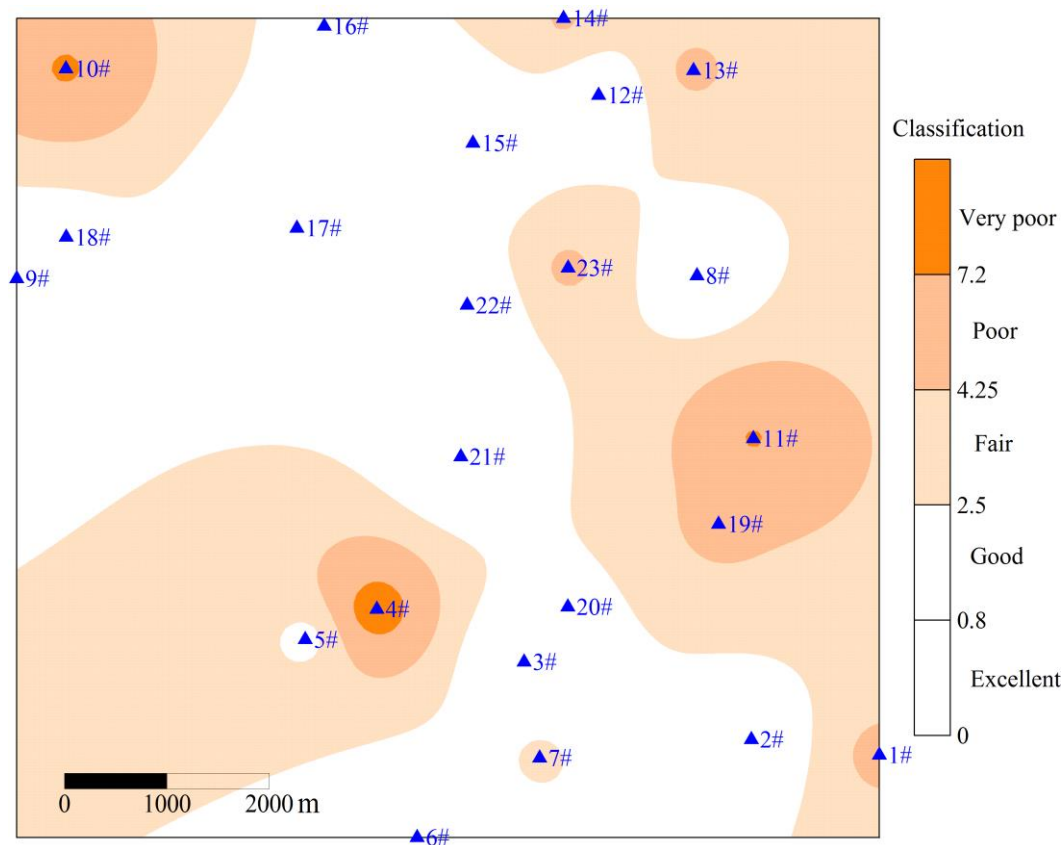


Figure S2. The diagram of the distribution of the groundwater quality in the Lalin River Basin in 2014.

Table S1. Groundwater quality standard of China (GB/T14848-93) for drinking water.

Class *	Unit	TH	TDS	SO ₄ ²⁻	Cl ⁻	NO ₃ ⁻
I	mg/L	≤150	≤300	≤50	≤50	≤2.0
II	mg/L	≤300	≤500	≤150	≤150	≤5.0
III	mg/L	≤450	≤1000	≤250	≤250	≤20
IV	mg/L	≤550	≤2000	≤350	≤350	≤30
V	mg/L	>550	>2000	>350	>350	>30

* The classes of I, II and III are suitable for drinking, but IV and V are unfit for drinking. Quality standard for groundwater of China (GB/T 14848-93), Republic of China 1993, 2006; Ministry of environmental protection of the People's Republic of China (2006).

Table S2. The evaluation score of each parameter

Classification	Value of Fi
I	0
II	1
III	3
IV	6
V	10

Table S3. The classification of the groundwater quality

Classification	Value range
Excellent	< 0.80
Good	0.80-2.50
Fair	2.50-4.25
Poor	4.25-7.20
Very good	> 7.20

Table S4. Statistics of major ions concentrations in the study area in 2014.

No.	Parameters	Unit	Minimum	Average	Maximum	Standard deviation
1	Temperature	°C	7.1	9.5	15.3	2.0
2	pH		6.5	7.4	8.1	0.4
3	EC	µs/cm	151.2	485.4	865.0	232.0
4	TDS	mg/L	117.0	407.8	1319.7	258.4
5	TH	mg/L	12.2	166.9	914.7	190.8
6	K ⁺	mg/L	0.9	6.4	27.1	7.4
7	Na ⁺	mg/L	7.5	36.2	180.7	37.8
8	Ca ²⁺	mg/L	12.3	50.8	149.7	32.3
9	Mg ²⁺	mg/L	2.2	11.7	44.9	8.9
10	Cl ⁻	mg/L	3.9	58.8	292.5	60.7
11	SO ₄ ²⁻	mg/L	3.8	66.2	197.0	42.3
12	HCO ₃ ⁻	mg/L	22.2	119.6	309.0	87.7
13	NO ₃ ⁻	mg/L	0.1	58.0	323.1	75.7