

Geochemical drivers of bacterial community diversity in watershed sediments of Heihe River (Zhangye City; Northern China)

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1. Results and Discussion

Table S1. Pearson co-correlation plot (2%) showing the response of bacterial taxonomy according to the concentrations and spreading of nutrients / pH/metals, but also taxa dynamics (inhibition or induction effects) induced by taxa themselves.

Metals/Nutrients/Taxa	Taxa	correlation	P value
N	<i>H16</i>	-0.58158751	0.014329716
N	<i>Bacteroides</i>	0.618336192	0.008150522
N	<i>Blvii28 wastewater-sludge group</i>	-0.51868385	0.032901842
N	<i>Sideroxydans</i>	-0.615467392	0.008538163
N	<i>Sulfuritalea</i>	-0.557535333	0.020054385
N	<i>Sulfuricurvum</i>	0.651708585	0.004589379
P	<i>H16</i>	-0.610082777	0.009305454
P	<i>Bacteroides</i>	0.653844395	0.004413716
P	<i>Ferritrophicum</i>	-0.508296369	0.037220288
P	<i>Sideroxydans</i>	-0.634041459	0.006270207
P	<i>Christensenellaceae R-7 group</i>	0.502156296	0.03996827
P	<i>Sulfuritalea</i>	-0.697276101	0.001863115
P	<i>Candidatus Accumulibacter</i>	-0.567137058	0.017587324
P	<i>Thiobacillus</i>	-0.483907072	0.049048214
P	<i>Sulfuricurvum</i>	0.598802011	0.011091173
pH	<i>Anaerolinea</i>	0.544921654	0.023696517
pH	<i>Opitutus</i>	0.537315767	0.026128485
Fe	<i>Gelria</i>	0.531778045	0.028017272

Fe	<i>Syntrophus</i>	0.526757377	0.029819108
Fe	<i>Ferritrophicum</i>	-0.545869756	0.023406125
Fe	<i>Erysipelothrix</i>	-0.597085957	0.011385142
Fe	<i>Sideroxydans</i>	-0.547311776	0.022969756
Fe	<i>Sulfuritalea</i>	-0.486389716	0.047729625
Al	<i>Rhodobacter</i>	-0.486456784	0.047694378
Al	<i>Gelria</i>	0.584179018	0.013799554
Al	<i>Syntrophus</i>	0.654081209	0.004394579
Al	<i>Ferritrophicum</i>	-0.540341247	0.025139022
Al	<i>Sideroxydans</i>	-0.605106227	0.01006256
Al	<i>Zoogloea</i>	-0.545385431	0.023554121
Al	<i>Sulfuritalea</i>	-0.612659184	0.008931747
Al	<i>Candidatus Accumulibacter</i>	-0.499851744	0.041038449
Mn	<i>H16</i>	0.540843845	0.024977499
Mn	<i>Bacteroides</i>	-0.66863805	0.003340667
Mn	<i>Sulfurimonas</i>	-0.531667136	0.028056146
Mn	<i>[Desulfobacterium] catecholicum group</i>	0.53671205	0.02632948
Mn	<i>vadinBC27 wastewater-sludge group</i>	-0.520283817	0.032272346
Mn	<i>Geobacter</i>	0.590033464	0.012658817
Mn	<i>Anaerolinea</i>	0.516530456	0.033763871
Mn	<i>Thermomonas</i>	-0.56696399	0.017629576
Mn	<i>Christensenellaceae R-7 group</i>	-0.641043274	0.005553215
Mn	<i>Trichococcus</i>	-0.715563017	0.001239037
Mn	<i>Desulfobacter</i>	-0.517024526	0.033564579
Mn	<i>Thauera</i>	-0.629941995	0.006723378
Cu	<i>Gelria</i>	0.612604219	0.008939593
Cu	<i>Syntrophus</i>	0.499274897	0.04130969
Cu	<i>Zoogloea</i>	-0.664294859	0.003630875
Cu	<i>Sulfuritalea</i>	-0.564440348	0.018254776
Cu	<i>Candidatus Accumulibacter</i>	-0.578592252	0.014962345

Cu	<i>Dechloromonas</i>	-0.529790121	0.028720377
Cu	<i>Flavobacterium</i>	-0.561995628	0.018876845
Zn	<i>Gelria</i>	0.516080546	0.033946137
Zn	<i>Microbacter</i>	-0.482498021	0.049808656
Zn	<i>Flavobacterium</i>	-0.556523981	0.020329188
Cr	<i>Lautropia</i>	0.574282562	0.015910963
Cr	<i>Syntrophus</i>	0.573988655	0.015977337
Cr	<i>Ferritrophicum</i>	-0.484199838	0.048891312
Cr	<i>Sideroxydans</i>	-0.691468733	0.002108124
Cr	<i>Anaerolinea</i>	-0.485402529	0.04825071
Cr	<i>Opitutus</i>	-0.683307898	0.002496437
Ni	<i>Lautropia</i>	0.563600248	0.018466705
Ni	<i>Syntrophus</i>	0.657630064	0.004115749
Ni	<i>Ferritrophicum</i>	-0.533373225	0.027462734
Ni	<i>Sideroxydans</i>	-0.603328052	0.010344667
Ni	<i>Sulfuritalea</i>	-0.496793753	0.042491866
Pb	<i>Microbacter</i>	-0.491925424	0.044885631
Pb	<i>Flavobacterium</i>	-0.624790641	0.007329731
Co	<i>Syntrophus</i>	0.534156142	0.027193683
Co	<i>Zoogloea</i>	-0.52442812	0.030684694
Hg	<i>Bacteroides</i>	0.548462451	0.022626105
Hg	<i>Treponema</i>	-0.579889636	0.014685679
Hg	<i>[Desulfobacterium] catecholicum group</i>	-0.688136382	0.002260225
Hg	<i>Erysipelothrix</i>	-0.524633926	0.030607445
Hg	<i>Propionivibrio</i>	-0.640967006	0.005560652
Hg	<i>Smithella</i>	0.486498033	0.047672709
Hg	<i>Desulfobulbus</i>	-0.668763284	0.003332588
Hg	<i>Sulfuricurvum</i>	0.688561079	0.002240355
Cd	<i>Microbacter</i>	-0.507447495	0.037591373
Cd	<i>Flavobacterium</i>	-0.570615063	0.016754907

As	<i>Gelria</i>	0.57909179	0.014855338
As	<i>Actibacter</i>	-0.502804642	0.039671046
As	<i>BD1-7 clade</i>	-0.589865653	0.01269044
As	<i>Zoogloea</i>	-0.657620678	0.004116467
As	<i>Candidatus Accumulibacter</i>	-0.539020401	0.025567363
As	<i>Dechloromonas</i>	-0.744792113	0.000603535
As	<i>Flavobacterium</i>	-0.533804315	0.027314336
<i>Cellvibrio</i>	<i>[Eubacterium] brachy group</i>	-0.532834121	0.027649188
<i>Cellvibrio</i>	<i>vadinBC27 wastewater-sludge group</i>	-0.665318089	0.003560727
<i>Cellvibrio</i>	<i>Desulfocapsa</i>	-0.541503906	0.024766595
<i>Cellvibrio</i>	<i>Smithella</i>	-0.522558735	0.031393238
<i>Cellvibrio</i>	<i>Desulfobacter</i>	-0.517367145	0.033426907
<i>Cellvibrio</i>	<i>Flavobacterium</i>	0.552308712	0.021506332
<i>Lautropia</i>	<i>Roseomonas</i>	0.554994923	0.020750229
<i>Lautropia</i>	<i>Syntrophus</i>	0.496508445	0.042629429
<i>Lautropia</i>	<i>Erysipelothrix</i>	-0.518150634	0.033113707
<i>Lautropia</i>	<i>Actibacter</i>	0.491262342	0.045219379
<i>[Eubacterium] brachy group</i>	<i>Sulfurovum</i>	0.504638203	0.03883956
<i>[Eubacterium] brachy group</i>	<i>Gelria</i>	0.531577722	0.028087517
<i>[Eubacterium] brachy group</i>	<i>Leptolinea</i>	0.566806903	0.017667996
<i>[Eubacterium] brachy group</i>	<i>BSV13</i>	0.546941055	0.023081331
<i>[Eubacterium] brachy group</i>	<i>Smithella</i>	0.500835566	0.040578961
<i>[Eubacterium] brachy group</i>	<i>Desulfobacter</i>	0.494929886	0.043396635
<i>Sulfurovum</i>	<i>Hydrogenophaga</i>	0.594274183	0.011880146
<i>Sulfurovum</i>	<i>Sulfurimonas</i>	0.527225253	0.029647526
<i>Sulfurovum</i>	<i>Anaerovorax</i>	0.620036556	0.007927493
<i>Sulfurovum</i>	<i>vadinBC27 wastewater-sludge group</i>	0.583239767	0.013989882
<i>Hydrogenophaga</i>	<i>Anaerovorax</i>	0.583201784	0.013997623
<i>Hydrogenophaga</i>	<i>Actibacter</i>	-0.519782141	0.032468725
<i>Hydrogenophaga</i>	<i>Altererythrobacter</i>	0.625252904	0.007273592

<i>Hydrogenophaga</i>	<i>Thermomonas</i>	0.535664361	0.026681119
<i>Hydrogenophaga</i>	<i>Christensenellaceae R-7 group</i>	0.5260686	0.030073087
<i>Hydrogenophaga</i>	<i>Pseudomonas</i>	0.485557512	0.048168621
<i>Hydrogenophaga</i>	<i>Arenimonas</i>	0.547459907	0.02292529
<i>Rhodobacter</i>	<i>Sulfurimonas</i>	0.717129262	0.001194811
<i>Rhodobacter</i>	<i>Ferritrophicum</i>	0.611972396	0.009030173
<i>Rhodobacter</i>	<i>Sideroxydans</i>	0.523323692	0.031101798
<i>Rhodobacter</i>	<i>Sulfuritalea</i>	0.589784018	0.012705846
<i>Rhodobacter</i>	<i>Arenimonas</i>	0.514584903	0.034557458
<i>Rhodobacter</i>	<i>Desulfobacter</i>	0.510065944	0.036455693
<i>Rhodobacter</i>	<i>Candidatus Accumulibacter</i>	0.569599527	0.016994697
<i>Gelria</i>	<i>Syntrophus</i>	0.643855382	0.005284558
<i>Gelria</i>	<i>Geobacter</i>	0.535472056	0.026746055
<i>Gelria</i>	<i>Leptolinea</i>	0.526953461	0.029747106
<i>Syntrophus</i>	<i>Zoogloea</i>	-0.530558799	0.028446912
<i>Syntrophus</i>	<i>Leptolinea</i>	0.540274462	0.025160545
<i>H16</i>	<i>Bacteroides</i>	-0.737634166	0.000725866
<i>H16</i>	<i>Treponema</i>	0.728870377	0.000902943
<i>H16</i>	<i>[Desulfobacterium] catecholicum group</i>	0.523550457	0.031015804
<i>H16</i>	<i>Massilia</i>	-0.524200054	0.030770472
<i>H16</i>	<i>Geobacter</i>	0.560640022	0.019228857
<i>H16</i>	<i>Thermomonas</i>	-0.597713367	0.011276955
<i>H16</i>	<i>Desulfobulbus</i>	0.494414305	0.043649463
<i>H16</i>	<i>Opitutus</i>	0.567494184	0.017500387
<i>H16</i>	<i>Sulfuricurvum</i>	-0.661622877	0.00381936
<i>Bacteroides</i>	<i>Treponema</i>	-0.736374124	0.000749391
<i>Bacteroides</i>	<i>[Desulfobacterium] catecholicum group</i>	-0.542829927	0.024347072
<i>Bacteroides</i>	<i>Longilinea</i>	0.505600595	0.038408468
<i>Bacteroides</i>	<i>Algoriphagus</i>	-0.507267222	0.037670541
<i>Bacteroides</i>	<i>Geobacter</i>	-0.530522448	0.028459799

<i>Bacteroides</i>	<i>Desulfocapsa</i>	0.583605185	0.01391559
<i>Bacteroides</i>	<i>Christensenellaceae R-7 group</i>	0.551289588	0.021798736
<i>Bacteroides</i>	<i>Smithella</i>	0.654842549	0.004333509
<i>Bacteroides</i>	<i>Trichococcus</i>	0.725140985	0.000988425
<i>Bacteroides</i>	<i>Desulfobacter</i>	0.48804904	0.046863304
<i>Bacteroides</i>	<i>Opitutus</i>	-0.643142832	0.005351618
<i>Bacteroides</i>	<i>Thauera</i>	0.48792089	0.046929785
<i>Bacteroides</i>	<i>Sulfuricurvum</i>	0.621401085	0.007752069
<i>Sulfurimonas</i>	<i>Pseudomonas</i>	0.486339589	0.047755982
<i>Sulfurimonas</i>	<i>Trichococcus</i>	0.526136452	0.030047994
<i>Sulfurimonas</i>	<i>Arenimonas</i>	0.772629409	0.00027726
<i>Sulfurimonas</i>	<i>Desulfobacter</i>	0.793119376	0.000145625
<i>Sulfurimonas</i>	<i>Thiobacillus</i>	0.524381469	0.030702225
<i>Sulfurimonas</i>	<i>Thauera</i>	0.771435668	0.000287281
<i>Treponema</i>	<i>[Desulfobacterium] catecholicum group</i>	0.542539025	0.024438632
<i>Treponema</i>	<i>Altererythrobacter</i>	0.567894811	0.017403262
<i>Treponema</i>	<i>Microbacter</i>	-0.483628781	0.049197707
<i>Treponema</i>	<i>Geobacter</i>	0.723514546	0.001027743
<i>Treponema</i>	<i>Propionivibrio</i>	0.501481692	0.040279322
<i>Treponema</i>	<i>Desulfocapsa</i>	-0.56636009	0.017777634
<i>Treponema</i>	<i>Smithella</i>	-0.510113382	0.036435362
<i>Treponema</i>	<i>Trichococcus</i>	-0.587812801	0.013082374
<i>Treponema</i>	<i>Desulfobulbus</i>	0.53773095	0.025990949
<i>Treponema</i>	<i>Sulfuricurvum</i>	-0.615260464	0.008566684
<i>[Desulfobacterium] catecholicum group</i>	<i>Algoriphagus</i>	0.496655344	0.042558559
<i>[Desulfobacterium] catecholicum group</i>	<i>Geobacter</i>	0.59437549	0.01186202
<i>[Desulfobacterium] catecholicum group</i>	<i>Desulfobulbus</i>	0.598848951	0.011083217
<i>Longilinea</i>	<i>vadinBC27 wastewater-sludge group</i>	0.547656917	0.022866256
<i>Longilinea</i>	<i>Smithella</i>	0.505515726	0.038446338
<i>Longilinea</i>	<i>Trichococcus</i>	0.523230101	0.031137343

<i>Longilinea</i>	<i>Flavobacterium</i>	-0.576927973	0.015323244
<i>Massilia</i>	<i>BD1-7 clade</i>	0.505603137	0.038407335
<i>Massilia</i>	<i>Dechloromonas</i>	0.569109277	0.017111414
<i>Massilia</i>	<i>Sulfuricurvum</i>	0.558242051	0.019864084
<i>Ferritrophicum</i>	<i>Sideroxydans</i>	0.778734351	0.000230457
<i>Ferritrophicum</i>	<i>Zoogloea</i>	0.483344354	0.04935085
<i>Ferritrophicum</i>	<i>Propionivibrio</i>	0.567726341	0.017444052
<i>Ferritrophicum</i>	<i>Sulfuritalea</i>	0.698415876	0.001817887
<i>Ferritrophicum</i>	<i>Candidatus Accumulibacter</i>	0.536598929	0.026367274
<i>Erysipelothrix</i>	<i>Anaerovorax</i>	0.495804128	0.04297046
<i>Erysipelothrix</i>	<i>Actibacter</i>	-0.603531341	0.010312101
<i>Erysipelothrix</i>	<i>Altererythrobacter</i>	0.492060083	0.04481808
<i>Erysipelothrix</i>	<i>Sulfuricurvum</i>	-0.528489241	0.029187786
<i>Anaerovorax</i>	<i>Actibacter</i>	-0.662662271	0.003745119
<i>Anaerovorax</i>	<i>Christensenellaceae R-7 group</i>	0.62725981	0.007033848
<i>Actibacter</i>	<i>Christensenellaceae R-7 group</i>	-0.610967888	0.00917569
<i>Sideroxydans</i>	<i>Sulfuritalea</i>	0.604927586	0.010090622
<i>Sideroxydans</i>	<i>Opitutus</i>	0.554540571	0.02087664
<i>Sideroxydans</i>	<i>Thiobacillus</i>	0.515038621	0.034371126
<i>Algoriphagus</i>	<i>Trichococcus</i>	-0.609955211	0.009324276
<i>Altererythrobacter</i>	<i>Geobacter</i>	0.511916435	0.035669003
<i>Microbacter</i>	<i>Paludibacter</i>	0.519859558	0.032438361
<i>Microbacter</i>	<i>BD1-7 clade</i>	0.5744336	0.015876938
<i>Microbacter</i>	<i>Thauera</i>	0.551678932	0.021686664
<i>Paludibacter</i>	<i>Christensenellaceae R-7 group</i>	0.509045237	0.036895243
<i>Paludibacter</i>	<i>Pseudomonas</i>	0.682026437	0.0025624
<i>Paludibacter</i>	<i>Arenimonas</i>	0.597647418	0.011288288
<i>Paludibacter</i>	<i>Desulfobacter</i>	0.517115608	0.033527938
<i>Paludibacter</i>	<i>Thauera</i>	0.670688704	0.003210361
<i>vadinBC27 wastewater-sludge group</i>	<i>Leptolinea</i>	0.676378261	0.002870329

<i>vadinBC27 wastewater-sludge group</i>	<i>Trichococcus</i>	0.618591647	0.008116698
<i>Brevundimonas</i>	<i>Pseudomonas</i>	0.483093486	0.049486221
<i>BD1-7 clade</i>	<i>Desulfocapsa</i>	0.534866279	0.026951407
<i>BD1-7 clade</i>	<i>Arenimonas</i>	0.570551516	0.016769833
<i>BD1-7 clade</i>	<i>Candidatus Accumulibacter</i>	0.646761587	0.005018032
<i>BD1-7 clade</i>	<i>Dechloromonas</i>	0.718804966	0.001148943
<i>Geobacter</i>	<i>Thermomonas</i>	-0.515142579	0.034328541
<i>Zoogloea</i>	<i>Anaerolinea</i>	-0.520602112	0.032148224
<i>Zoogloea</i>	<i>Sulfuritalea</i>	0.512390219	0.035469684
<i>Zoogloea</i>	<i>Candidatus Accumulibacter</i>	0.567678775	0.017455583
<i>Zoogloea</i>	<i>Dechloromonas</i>	0.726215672	0.000963134
<i>Propionivibrio</i>	<i>Desulfobulbus</i>	0.598289738	0.011178289
<i>Propionivibrio</i>	<i>Sulfuricurvum</i>	-0.712372456	0.00133331
<i>Anaerolinea</i>	<i>Thermomonas</i>	-0.491900095	0.044898345
<i>Anaerolinea</i>	<i>Flavobacterium</i>	-0.551409611	0.02176414
<i>Leptolinea</i>	<i>Smithella</i>	0.665744263	0.003531837
<i>Leptolinea</i>	<i>Desulfobacter</i>	0.492575597	0.044560187
<i>Leptolinea</i>	<i>Flavobacterium</i>	-0.630817728	0.006624428
<i>Desulfocapsa</i>	<i>Smithella</i>	0.643852259	0.00528485
<i>Desulfocapsa</i>	<i>Trichococcus</i>	0.515797506	0.034061186
<i>Desulfocapsa</i>	<i>Sulfuricurvum</i>	0.578870317	0.014902705
<i>Thermomonas</i>	<i>Christensenellaceae R-7 group</i>	0.487805643	0.046989633
<i>Thermomonas</i>	<i>Pseudomonas</i>	0.555983998	0.020477109
<i>Thermomonas</i>	<i>Arenimonas</i>	0.596892345	0.011418693
<i>Thermomonas</i>	<i>Desulfobulbus</i>	-0.512910604	0.035251741
<i>Thermomonas</i>	<i>Thauera</i>	0.587888072	0.013067836
<i>Thermomonas</i>	<i>Flavobacterium</i>	0.569148907	0.017101956
<i>Christensenellaceae R-7 group</i>	<i>Pseudomonas</i>	0.653462246	0.00444474
<i>Christensenellaceae R-7 group</i>	<i>Trichococcus</i>	0.729293343	0.000893647
<i>Christensenellaceae R-7 group</i>	<i>Desulfobacter</i>	0.618437014	0.008137159

<i>Christensenellaceae R-7 group</i>	<i>Thauera</i>	0.701714455	0.001692044
<i>Pseudomonas</i>	<i>Arenimonas</i>	0.776766757	0.000244758
<i>Pseudomonas</i>	<i>Thauera</i>	0.744499132	0.000608182
<i>Pseudomonas</i>	<i>Flavobacterium</i>	0.504225275	0.039025649
<i>Sulfuritalea</i>	<i>Opitutus</i>	0.677994815	0.002779271
<i>Sulfuritalea</i>	<i>Dechloromonas</i>	0.646869238	0.005008372
<i>Sulfuritalea</i>	<i>Thiobacillus</i>	0.799112874	0.000119017
<i>Smithella</i>	<i>Trichococcus</i>	0.689881397	0.002179495
<i>Smithella</i>	<i>Desulfobacter</i>	0.582978029	0.014043288
<i>Smithella</i>	<i>Thauera</i>	0.491248026	0.045226605
<i>Trichococcus</i>	<i>Desulfobacter</i>	0.779842829	0.000222713
<i>Trichococcus</i>	<i>Thauera</i>	0.723386161	0.001030901
<i>Arenimonas</i>	<i>Desulfobacter</i>	0.510130308	0.03642811
<i>Arenimonas</i>	<i>Candidatus Accumulibacter</i>	0.604722984	0.010122838
<i>Arenimonas</i>	<i>Dechloromonas</i>	0.518642948	0.032918057
<i>Arenimonas</i>	<i>Thiobacillus</i>	0.517572548	0.033344579
<i>Arenimonas</i>	<i>Thauera</i>	0.788796648	0.00016777
<i>Arenimonas</i>	<i>Flavobacterium</i>	0.667169429	0.003436607
<i>Desulfobulbus</i>	<i>Sulfuricurvum</i>	-0.61132065	0.009124376
<i>Candidatus Accumulibacter</i>	<i>Opitutus</i>	0.515787867	0.034065109
<i>Candidatus Accumulibacter</i>	<i>Thiobacillus</i>	0.692683829	0.002054793
<i>Candidatus Accumulibacter</i>	<i>Flavobacterium</i>	0.508702755	0.037043627
<i>Opitutus</i>	<i>Thiobacillus</i>	0.656090607	0.004234886
<i>Dechloromonas</i>	<i>Thiobacillus</i>	0.531166822	0.028232026

Table S2. Summary of the main outcomes.

Taxonomic group	Potential indicator service	Further readings	Main detected geochemical drivers
<i>R. Eutropha H16 spp.</i>	lithotropic soil and freshwater bacterium/ polyhydroxyalkanoates (PHA) producer	1, 2	N, P
<i>Sulfuricurvum spp.</i>	sulfur-related anthropogenic compounds/petroleum pollution and degradation	3,4, 5,6	N, P
<i>Sulfuritalea /Sulfurimonas spp.</i>	sulfur oxidizers bacteria	7	N, P, Hg, Mn, Cu
<i>Desulfobacter spp.</i>	sulfate reducing bacteria	8	Cu, Fe, Mn, Pb, Sb, Zn
<i>Synderoxidans spp.</i>	freshwater Fe-oxidizing bacteria (FeOB)	9	N, P
<i>Opitutus spp.</i>	<i>P. australis</i> rhixobacterial communities/ anaerobic nitrate reduction	10, 11	pH
<i>Flavobacterium spp.</i>	animals freshwater pathogen/ammonia, nitrite and metal removal	12, 13, 14	Cu, Zn, Pb, Cd, As
<i>Bacteroides spp.</i>	sewage/ fecal pollution	15,16,17	N, P, Hg, Mn
<i>Gelria spp.</i>	sewage pollution/synthropic acetate oxidation	18,19	Al, Fe, Zn, Cu, As
<i>Syntrophus spp.</i>	sewage and industrial pollution/methane production	20, 12	Al, Fe, Cr, Ni, Co
<i>Zooglea spp.</i>	sewage water/sediment pollution	12, 21	Al, Cu, Co, As
<i>Anaerolinea spp.</i>	sewage pollution/organic matter degradation	12, 22	pH

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Table S3. Mean relative abundance (frequencies of reads) and standard deviation per land use measured for the main 52 genera detected.

	Land use	Industrial		Agricultural		Natural Park		Urban	
		Average	Dev.St	Average	Dev.St	Average	Dev.St	Average	Dev.St
Genus	Cellvibrio (Proteobacteria)	0.04	±0.07	0.37	±0.82	0.02	±0.03	0	±0
	Lautropia (Proteobacteria)	0.09	±0.11	0.02	±0.05	0.05	±0.06	0.25	±0.19
	[Eubacterium] brachy group (Firmicutes)	0.07	±0.02	0.21	±0.16	0.12	±0.17	0.10	±0.09
	Sulfurovum (Proteobacteria)	0.07	±0.07	0.19	±0.17	0.04	±0.06	0.15	±0.19
	Hydrogenophaga (Proteobacteria)	0.16	±0.18	0.14	±0.14	0	±0	0.14	±0.22
	Rhodobacter (Proteobacteria)	0.10	±0.07	0.18	±0.21	0.05	±0.06	0.14	±0.15
	Roseomonas (Proteobacteria)	0.24	±0.22	0.06	±0.07	0.05	±0.06	0.16	±0.14
	Gelria (Firmicutes)	0.51	±0.55	0.02	±0.02	0.08	±0.11	0.04	±0.03
	Syntrophus (Proteobacteria)	0.21	±0.28	0.04	±0.09	0.22	±0.25	0.18	±0.28
	H16 (Proteobacteria)	0.19	±0.29	0.08	±0.11	0.67	±0.72	0.02	±0.04
	Bacteroides (Bacteroidetes)	0.24	±0.40	0.03	±0.04	0	±0	0.25	±0.13
	Sulfurimonas (Proteobacteria)	0.11	±0.07	0.30	±0.36	0	±0	0.19	±0.17
	Treponema (Spirochaete)	0.26	±0.26	0.12	±0.16	0.43	±0.10	0.10	±0.17
	[Desulfobacterium] catecholicum group (Proteobacteria)	0.27	±0.42	0.16	±0.15	0.44	±0.05	0.10	±0.10
	Longilinea (Chloroflexi)	0.36	±0.27	0.09	±0.11	0.04	±0	0.24	±0.30
	Massilia (Proteobacteria)	0.01	±0.02	0.31	±0.55	0.06	±0.08	0.31	±0.11
	Feritrophicum (Proteobacteria)	0.06	±0.09	0.52	±0.58	0.18	±0.14	0.11	±0.14
	Erysipelothrix (Firmicutes)	0.32	±0.24	0.41	±0.18	0.12	±0.11	0.08	±0.12
	Anaerovorax (Firmicutes)	0.38	±0.06	0.27	±0.22	0.08	±0.11	0.21	±0.26
	Blvii28 wastewater-sludge group (Bacteroidota)	0.26	±0.12	0.38	±0.32	0.39	±0.11	0.10	±0.09
	Actibacter (Bacteroidetes)	0	±0	0.02	±0.03	0.12	±0.05	0.68	±1.38
	Sideroxydans (Proteobacteria)	0.10	±0.15	0.52	±0.51	0.22	±0.20	0.19	±0.18
	Algoriphagus (Bacteroidetes)	0.23	±0.43	0.26	±0.29	0.13	±0.13	0.35	±0.75
	Altererythrobacter (Proteobacteria)	0.13	±0.12	0.49	±0.61	0.05	±0.06	0.27	±0.63
	Microbacter (Bacteroidetes)	0.08	±0.12	0.64	±0.57	0.02	±0.03	0.26	±0.19

Paludibacter (Bacteroidetes)	0.30	±0.03	0.41	±0.14	0.07	±0.10	0.37	±0.19
vadinBC27 wastewater-sludge group (Bacteroidetes)	0.32	±0.14	0.37	±0.27	0.19	±0.11	0.42	±0.24
Brevundimonas (Proteobacteria)	0.15	±0.13	0.46	±1.00	0.06	±0.08	0.51	±0.59
BD1-7 clade (Proteobacteria)	0.01	±0.02	0.27	±0.23	0.02	±0.03	0.83	±0.92
Geobacter (Proteobacteria)	0.49	±0.58	0.27	±0.24	0.55	±0.06	0.33	±0.48
Zoogloea (Proteobacteria)	0	±0	0.78	±0.68	0.14	±0.19	0.40	±0.58
Propionivibrio (Proteobacteria)	0.22	±0.08	0.49	±0.24	0.24	±0.11	0.47	±0.73
Anaerolinea (Chloroflexi)	1.04	±1.00	0.10	±0.11	0.77	±0.20	0.10	±0.13
Leptolinea (Chloroflexi)	0.80	±0.49	0.10	±0.06	0.44	±0.55	0.48	±0.31
Desulfocapsa (Proteobacteria)	0.05	±0.06	0.30	±0.22	0.08	±0.01	1.01	±1.18
Thermomonas (Proteobacteria)	0.04	±0.05	0.23	±0.29	0	±0	1.15	±1.40
Christensenellaceae R-7 group (Firmicutes)	1.08	±0.57	0.31	±0.23	0	±0	0.55	±0.75
Pseudomonas (Proteobacteria)	0.44	±0.27	1.49	±3.11	0	±0	0.25	±0.19
BSV13 (Proteobacteria)	0.21	±0.12	0.33	±0.16	0.06	±0.02	1.41	±2.94
Sulfuritalea (Proteobacteria)	0.22	±0.19	1.48	±1.13	0.61	±0.48	0.38	±0.35
Smithella (Proteobacteria)	0.36	±0.39	0.14	±0.17	0.16	±0.22	1.64	±2.49
Trichococcus (Proteobacteria)	1.42	±1.92	0.82	±0.72	0	±0	0.49	±0.41
Arenimonas (Proteobacteria)	0.30	±0.39	1.27	±0.75	0	±0	0.88	±0.58
Desulfobacter (Proteobacteria)	0.63	±0.34	1.42	±1.53	0	±0	0.68	±0.54
Desulfobulbus (Proteobacteria)	0.67	±0.28	1.37	±0.59	1.62	±0.82	0.64	±0.61
Candidatus Accumulibacter (Proteobacter)	0.13	±0.16	2.02	±0.93	0.29	±0.30	1.40	±1.95
Opitutus (Verrucomicrobia)	0.54	±0.41	2.01	±0.99	4.32	±1.77	0.17	±0.21
Dechloromonas (Proteobacteria)	0.21	±0.38	2.92	±1.33	0.44	±0.55	2.05	±1.63
Thiobacillus (Proteobacteria)	3.05	±3.09	1.17	±0.49	1.02	±0.10	2.62	±2.12
Thauera (Proteobacteria)	0.47	±0.50	2.85	±2.02	0	±0	3.50	±2.94
Flavobacterium (Bacteroidetes)	0.88	±1.10	4.86	±7.52	0.33	±0.09	1.95	±0.86
Sulfuricurvum (Proteobacteria)	0.35	±0.21	0.30	±0.26	0.23	±0.01	8.79	±12.53