## Abundance and biogeography of methanogenic and methanotrophic microorganisms across European streams

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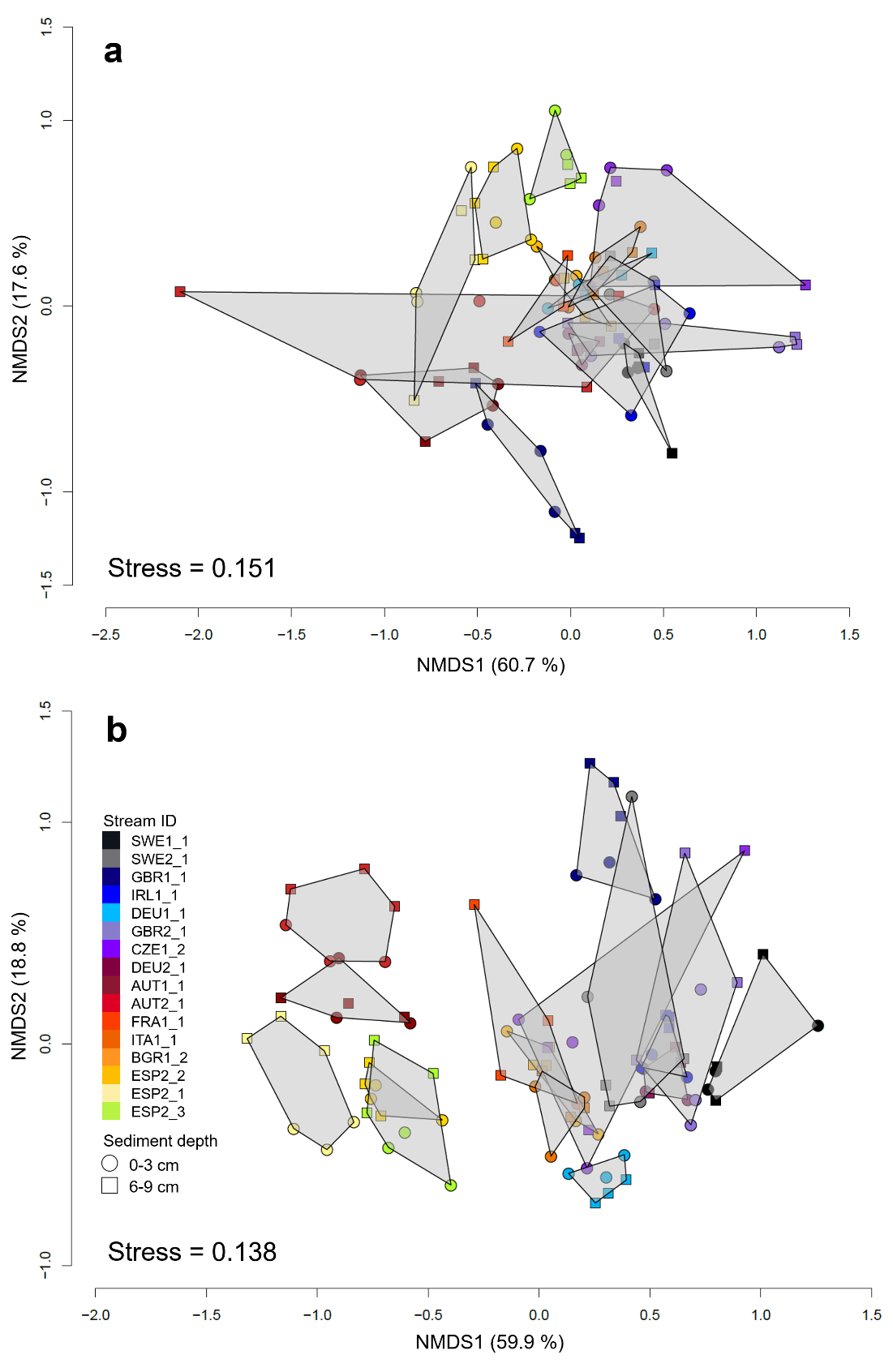
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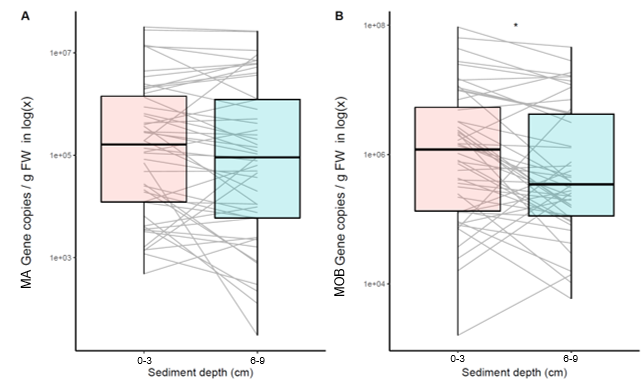
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# Supplementary Figures

**Figure S1:** Non-metric multidimentional scaling showing *β*-diversity by Bray-Curtis (dis)similarity of methanogenic (a) and methane-oxidizing (b) communities in 0-3 cm (circles) and 6-9 cm (squares) sediment depth sections of running freshwater across Europe. Sample sites are colored according to geographical latitude with SWE1\_1 representing the northernmost sampling point. The proportion of explained variance by each axis is given in brackets.

**Figure S2:** Conceptual figure of the two main habitats defined for communities of methanogenic archaea (MA, environment 1 and environment 2) and of the three main habitats defined for communities of methane oxidizing microorganisms (MOX, environment 1 - 3).



**Figure S3**: Pairwise comparison between quantified gene copy numbers in different sediment depths for methanogenic archaea (MA, A) and methanotrophic bacteria (MOB, B). Lines connect both depths of the same core. Stars (top) indicate significant pairwise differences (paired Student’s test for normally distributed data). Boxes show median values and first and second quartile, whiskers delimit all data.

# Supplementary Tables

**Table S1:** Stream-related environmental data. Chemistry

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Geography** | | | **Catchment** | | | | | | | |
| **Stream ID** | **Latitude** | **Longitude** | **Elevation** | **Strahler stream order** | **Catchment area\*1** | **Forest** | **Agri-culture** | **Urban** | **Peat-land** | **Mountain\*2** | **Grass-land** |
|  | [decimal °] | [decimal °] | [m.a.s.l.] | [km2] | [%] | [%] | [%] | [%] | [%] | [%] |
| ESP2\_3 | 42.09617 | 2.8162222 | 93 | 2 | 32.9 | 5 | 85 | 1 |  |  |  |
| ESP2\_2 | 42.21894 | 2.5627222 | 228 | 6 | 189.5 | 3 | 4 | 3 |  |  |  |
| ESP2\_1 | 42.31936 | 2.7812778 | 168 | 4 | 71.4 | 85 | 5 | 1 |  |  |  |
| BGR1\_2 | 42.41567 | 23.529111 | 838 | 5 | 397.5 | 55 | 42 | 3 |  |  |  |
| ITA1\_1\*3 | 44.72709 | 7.4292056 | 263 | 4 | 118.9 | 38 | 49 | 4 |  |  | 9 |
| FRA1\_1 | 45.92958 | 4.54935 | 261 | 3 | 222.6 | 56 | 43 | 2 |  |  |  |
| AUT2\_1 | 47.38256 | 11.742889 | 539 | 1 | 3.4 | 33 | 6 | 1 |  | 60 |  |
| AUT1\_1 | 47.86909 | 15.000731 | 648 | 3 | 11.1 | 83 | 17 |  |  |  |  |
| DEU2\_1 | 49.23749 | 7.90228 | 217 | 3 | 54.8 | 95 |  | 5 |  |  |  |
| CZE1\_2 | 49.64181 | 17.244536 | 235 | 4 | 447.8 | 32 | 64 | 4 |  |  |  |
| GBR2\_1 | 50.80203 | -1.6639444 | 54 | 2 | 8.4 | 100 |  |  |  |  |  |
| DEU1\_1 | 53.00317 | 12.903361 | 39 | 4 | 643.0 | 6 | 29 | 3 |  |  | 8 |
| IRL1\_1\*3 | 53.98211 | -9.5681389 | 25 | 3 | 4.6 | 32 |  |  | 68 |  |  |
| GBR1\_1 | 58.41719 | -3.8799722 | 74 | 3 | 81.0 | 23 | 1 |  |  |  | 77 |
| SWE2\_1 | 59.98307 | 19.599727 | 13 | 1 | 23.3 | 94 | 5 | 1 |  |  |  |
| SWE1\_1 | 63.92015 | 20.196972 | 67 | 4 | 104.2 | 68 | 16 | 1 |  |  | 15 |
| \*1 = Catchment area of downstream endpoint of investigated stream reach | | | | | |  |  |  |  |  |  |
| \*2 = Mountainous areas above the treeline | | | | |  |  |  |  |  |  |  |
| \*3 = unpublished data from EuroRun project (i.e. not to be found in Bravo et al 2018) | | | | | | |  |  |  |  |  |
|  | **Running water** | | | | **Hydrology/geomorphology** | | | | | | |
| **Stream ID** | **Water temp.** | **pH** | **Conductivity** | **Oxygen** | **Wetted width** | **Cross-sectional area** | **Mean stream depth** | **Total dis charge** | **Mean velocity** | **Stream area** | **Slope** |
|  | [°C] |  | [µS cm-1] | mg L-1 | [m] | [m2] | [m] | [m³ s-1] | [m s-1] | [m2] | [%] |
| ESP2\_3 | 19.3 | 8.0 | 1386.00 | 7.26 | 8.80 | 0.86 | 0.12 | 0.16 | 0.16 | 425.0 | 0.26 |
| ESP2\_2 | 18.2 | 8.1 | 872.00 | 6.02 | 22.50 | 9.95 | 0.52 | 0.16 | 0.28 | 1232.5 | 4.96 |
| ESP2\_1 | 17.8 | 8.2 | 564.00 | 8.53 | 10.70 | 5.23 | 0.49 | 0.17 | 0.03 | 551.0 | 0.04 |
| BGR1\_2 | 19.7 | 10.2 | 243.00 | 10.80 | 6.80 | 1.81 | 0.30 | 0.17 | 0.11 | 295.2 | 0.90 |
| ITA1\_1 | 11.6 | 6.8 | 273.00 | 10.50 | 13.60 | 4.92 | 0.41 | 0.74 | 0.13 | 687.5 | 1.22 |
| FRA1\_1 | 15.5 | 7.8 | 188.50 | 9.72 | 8.80 | 4.11 | 0.54 | 0.20 | 0.07 | 478.5 | 0.26 |
| AUT2\_1 | 10.9 | 7.7 | 596.00 | 6.63 | 6.58 | 3.69 | 0.56 | 0.57 | 0.19 | 336.8 | 0.10 |
| AUT1\_1 | 10.4 | 8.1 | 386.00 | 10.00 | 5.30 | 2.30 | 0.48 | 0.50 | 0.22 | 302.0 | 0.27 |
| DEU2\_1 | 10.5 | 6.7 | 63.00 | 10.76 | 4.52 | 0.83 | 0.20 | 0.34 | 0.51 | 206.3 | 0.58 |
| CZE1\_2 | 18.2 | 7.2 | 358.00 | 10.10 | 5.83 | 0.96 | 0.19 | 0.25 | 0.26 | 298.0 | 0.02 |
| GBR2\_1 | 14.4 | 7.8 | 122.20 | 8.85 | 3.19 | 1.13 | 0.37 | 0.22 | 0.27 | 158.7 | 0.03 |
| DEU1\_1 | 15.3 | 8.4 | 310.40 | 8.67 | 8.77 | 6.64 | 0.53 | 2.97 | 0.26 | 436.5 | 0.21 |
| IRL1\_1 | 12.5 | 7.4 | 0.12 | 9.28 | 3.35 | 0.57 | 0.22 | 0.10 | 0.20 | 201.5 | 0.67 |
| GBR1\_1 | 13.8 | 6.9 | 86.70 | 9.11 | 12.33 | 1.80 | 0.18 | 0.21 | 0.12 | 601.3 | 2.05 |
| SWE2\_1 | 12.7 | 8.0 | 338.00 | 10.38 | 1.17 | 0.13 | 0.09 | 0.00 | 0.02 | 62.2 | 0.36 |
| SWE1\_1 | 11.7 | 6.9 | 33.50 | 10.10 | 3.87 | 1.76 | 0.53 | 0.10 | 0.04 | 228.5 | 0.18 |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |

**Table S2**: List of devices and methods used for discharge and physical-chemical measurements

|  |  |  |  |
| --- | --- | --- | --- |
| **Team** | **Method** | **Discharge device** | **Physical and chemical measurement device** |
| AUT1 | Flowmeter | OTT MF pro, OTT Hydromet, Germany | Portable three channel multi meter 3430, WTW GmbH, Germany |
| AUT2 | Flowmeter | OTT MF pro, OTT Hydromet, Germany | Portable three channel multi meter 3430, WTW GmbH, Germany |
| BGR1 | Flowmeter | Model 2100, Swoffer instruments Inc, USA | Portable handheld meters series 330i, WTW GmbH, Germany |
| CZE1 | Flowmeter | Flo-mate model 2000, Marsh-McBirney Inc., USA | Conductivity: DiST 3 EC tester, Hanna Instruments, USA DO, temperature: HI 9147 dissolved oxygen meter, Hanna Instruments, USA |
| DEU1 | Flowmeter | OTTO, Germany | AquaTROLL 400, In-situ, USA |
| DEU2 | Flowmeter | OTT MF pro, OTT Hydromet, Germany | Portable three channel multi meter 3430 IDS, WTW GmbH, Germany |
| ESP1 | Flowmeter | Acoustic Doppler Velocimeter FlowTracker, SonTek, USA | pH, temperature and conductivity: Portable hand-held probes multiline 3310, WTW GmbH, Germany. DO: ProODO Handheld, YSI, USA |
| ESP2 | Flowmeter | Acoustic Doppler Velocimeter FlowTracker, SonTek, USA | pH, temperature and conductivity: Portable hand-held probes multiline 3310, WTW GmbH, Germany. DO: ProODO Handheld, YSI, USA |
| FRA1 | Flowmeter | Flo-mate model 2000, Marsh-McBirney Inc., USA | EC: Hach d40, Hach, USA pH, O2: Od14, Hach, USA |
| GBR1 | Manning's eq\* | Water level gauge | YSI 556 MPS - multi probe system (Model: Pro 2030), Environmental (Company), USA, |
| GBR2 | Flowmeter | Geopacks, UK | YSI 556 MPS - multi probe system (Model: Pro 2030), Environmental (Company), USA, |
| IRL1 | Flowmeter | OTT Sensa Z300 - Germany | Quanta – Hydrolab, Texas, USA |
| ITA1 | Flowmeter | Hydro-bios Kiel, Mod RHCM Idromar | Quanta – Hydrolab, Texas, USA |
| SWE1 | Flowmeter | Argonaut Acoustic Doppler Velocimeter, SonTek, USA | O2: OxyGuard Handy Delta Portable DO meter, OxyGuard International A/S, Denmark. pH: Mettler Toledo 1120, USA conductivity: Konduktometer CG 857, Schott Geräte GmbH, Germany |
| SWE2 | Bucket\*\* |  | O2, Temperature: YSI ProODO Handheld, YSI, USA. pH, conductivity: HI991300, Hanna Instruments, USA |

\* Calculated according to [1] and [2]

\*\* Bucket used because flowmeter did not show any readings due to low flow conditions

1. Manning R: **On the flow of water in open channels and pipes.** *Transactions of the Institution of Civil Engineers of Ireland* 1891, **20:**161-207.

2. Dingman SL, Sharma PK: **Statistical development and validation of discharge equations for natural channels.** *Journal of Hydrology* 1997, **199:**13-35.

**Table S3:** Real-time PCR conditions. MA = methanogenic archaea, MOB= methane oxidizing bacteria, min = minutes, s = seconds,

|  |  |  |  |
| --- | --- | --- | --- |
|  | **MA** | **Type Ia MOB** | **Type II MOB** |
| Initial denaturation | 95°C, 10 min | 95°C, 10 min | 95°C, 10 min |
| Denaturation | 95°C, 30 s | 95°C, 25 s | 95°C, 25 s |
| Annealing | 66°C, 30 s | 56°C, 20 s | 69°C, 20 s |
| Elongation | 72°C, 30 s | 72°C, 25 s | 72°C, 25 s |
| Melt curve | 65-99°C, 0.5°C/step | 65-99°C, 0.5°C/step | 65-99°C, 0.5°C/step |

**Table S4:** Sediment-related environmental data of each sampled stream represented as a mean (*n*= 4) and respective standard deviations (italics). DW = Dry weight

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stream ID** | **Sample**  **depth** | **Clay** | **Silt** | **Sand** | **Coarse** | **Sediment**  **surface area** | **Nitrogen** | **Carbon** | **C:N** |
|  | [cm] | [vol %] | [vol %] | [vol %] | [vol %] | [cm²/cm³] | [% of DW] | [% of DW] |  |
| ESP2\_3 | 0-3 | 5.0 | 12.3 | 58.5 | 24.2 | 3280 | 0.06 | 1.39 | 22.20 |
|  | *1.9* | *3.5* | *4.8* | *6.9* | *1219* | *0.02* | *0.81* | *6.97* |
| 6-9 | 5.7 | 16.9 | 49.1 | 28.4 | 3741 | 0.11 | 1.77 | 17.06 |
|  | *1.5* | *2.6* | *8.5* | *12.5* | *966* | *0.04* | *0.40* | *4.79* |
| ESP2\_2 | 0-3 | 3.1 | 13.3 | 48.3 | 35.3 | 2157 | 0.12 | 1.58 | 10.85 |
|  | *2.1* | *9.0* | *14.2* | *22.1* | *1429* | *0.06* | *1.19* | *4.66* |
| 6-9 | 2.2 | 8.5 | 41.3 | 48.0 | 1538 | 0.08 | 1.26 | 15.28 |
|  | *1.0* | *3.8* | *10.8* | *15.3* | *682* | *0.03* | *0.74* | *5.74* |
| ESP2\_1 | 0-3 | 2.3 | 7.9 | 63.9 | 25.9 | 1569 | 0.05 | 0.84 | 17.15 |
|  | *0.2* | *0.5* | *20.7* | *20.4* | *95* | *0.00* | *0.42* | *8.69* |
| 6-9 | 2.1 | 7.0 | 71.6 | 19.2 | 1441 | 0.05 | 0.88 | 18.06 |
|  | *0.4* | *1.7* | *20.6* | *22.8* | *307* | *0.00* | *0.68* | *13.90* |
| BGR1\_2 | 0-3 | 2.1 | 15.7 | 68.9 | 13.3 | 1604 | 0.49 | 1.93 | 4.21 |
|  | *2.3* | *12.8* | *5.7* | *9.4* | *1600* | *0.62* | *2.41* | *0.25* |
| 6-9 | 1.9 | 14.2 | 60.3 | 23.6 | 1437 | 0.09 | 0.76 | 6.79 |
|  | *2.3* | *13.7* | *8.8* | *19.0* | *1644* | *0.05* | *0.77* | *3.55* |
| ITA1\_1 | 0-3 | 1.1 | 9.3 | 55.7 | 33.8 | 898 | 0.15 | 1.45 | 7.26 |
|  | *0.6* | *4.0* | *27.2* | *31.8* | *447* | *0.13* | *1.67* | *3.01* |
| 6-9 | 1.1 | 8.0 | 61.6 | 29.2 | 844 | 0.07 | 0.77 | 10.48 |
|  | *0.8* | *6.6* | *18.4* | *25.8* | *638* | *0.03* | *0.35* | *0.96* |
| FRA1\_1 | 0-3 | 4.1 | 15.2 | 80.7 | 0.0 | 2815 | 0.07 | 0.56 | 7.28 |
|  | *3.2* | *11.9* | *15.0* | *0.0* | *2111* | *0.03* | *0.41* | *2.52* |
| 6-9 | 6.8 | 22.1 | 71.1 | 0.0 | 4538 | 0.06 | 0.45 | 6.48 |
|  | *5.4* | *17.6* | *23.0* | *0.0* | *3538* | *0.02* | *0.27* | *1.85* |
| AUT2\_1 | 0-3 | 3.0 | 28.7 | 65.0 | 3.3 | 2391 | 0.66 | 0.89 | 9.56 |
|  | *1.8* | *17.6* | *17.0* | *2.4* | *1395* | *0.83* | *0.39* | *6.71* |
| 6-9 | 3.2 | 26.3 | 63.4 | 7.0 | 2473 | 0.12 | 2.02 | 15.88 |
|  | *3.0* | *24.8* | *22.7* | *5.8* | *2243* | *0.09* | *1.72* | *3.69* |
| AUT1\_1 | 0-3 | 2.2 | 8.8 | 59.1 | 29.8 | 1535 | 0.05 | 0.69 | 13.23 |
|  | *0.4* | *0.7* | *17.8* | *18.6* | *229* | *0.00* | *0.35* | *7.49* |
| 6-9 | 2.2 | 8.8 | 56.0 | 33.0 | 1527 | 0.07 | 1.07 | 18.82 |
|  | *0.6* | *2.2* | *11.5* | *13.2* | *371* | *0.03* | *0.81* | *18.38* |
| DEU2\_1 | 0-3 | 1.9 | 10.7 | 87.4 | 0.0 | 1383 | 0.13 | 1.93 | 11.45 |
|  | *1.2* | *9.7* | *10.9* | *0.0* | *914* | *0.06* | *1.71* | *6.99* |
| 6-9 | 1.3 | 5.5 | 93.2 | 0.0 | 969 | 0.09 | 1.10 | 15.63 |
|  | *0.5* | *2.8* | *3.3* | *0.0* | *350* | *0.05* | *0.32* | *7.94* |
| CZE1\_2 | 0-3 | 5.6 | 35.4 | 29.5 | 29.6 | 4016 | 0.41 | 3.05 | 7.92 |
|  | *4.9* | *30.7* | *14.3* | *21.4* | *3477* | *0.41* | *3.09* | *1.28* |
| 6-9 | 6.4 | 42.6 | 24.2 | 26.8 | 4673 | 0.30 | 3.50 | 12.45 |
|  | *4.7* | *27.0* | *11.1* | *20.5* | *3281* | *0.25* | *2.28* | *7.14* |
| GBR2\_1 | 0-3 | 4.0 | 15.8 | 49.2 | 31.0 | 2715 | 0.08 | 1.02 | 13.63 |
|  | *4.3* | *18.1* | *16.7* | *8.4* | *2918* | *0.03* | *0.45* | *4.80* |
| 6-9 | 5.3 | 24.5 | 36.3 | 33.9 | 3662 | 0.09 | 1.33 | 15.33 |
|  | *4.2* | *23.7* | *16.3* | *13.8* | *2951* | *0.03* | *0.40* | *2.68* |
| DEU1\_1 | 0-3 | 1.3 | 5.9 | 92.8 | 0.0 | 941 | 0.14 | 1.77 | 9.48 |
|  | *0.9* | *5.3* | *6.2* | *0.0* | *634* | *0.12* | *2.04* | *4.37* |
| 6-9 | 0.9 | 4.4 | 94.7 | 0.0 | 663 | 0.11 | 1.40 | 8.53 |
|  | *0.9* | *4.3* | *5.3* | *0.0* | *634* | *0.08* | *1.66* | *5.56* |
| IRL1\_1 | 0-3 | 0.8 | 4.9 | 61.5 | 32.8 | 614 | 0.05 | 0.28 | 6.36 |
|  | *0.2* | *1.9* | *14.8* | *17.0* | *184* | *0.00* | *0.06* | *2.00* |
| 6-9 | 0.9 | 5.4 | 63.5 | 30.2 | 699 | 0.04 | 0.38 | 9.08 |
|  | *0.4* | *2.4* | *18.2* | *19.1* | *282* | *0.01* | *0.14* | *4.48* |
| GBR1\_1 | 0-3 | 0.5 | 2.7 | 89.3 | 7.6 | 411 | 0.05 | 0.23 | 4.33 |
|  | *0.2* | *1.9* | *4.3* | *5.3* | *119* | *0.00* | *0.01* | *0.06* |
| 6-9 | 0.2 | 1.4 | 84.9 | 13.6 | 206 | 0.05 | 0.23 | 4.43 |
|  | *0.2* | *1.5* | *3.5* | *5.2* | *168* | *0.00* | *0.01* | *0.21* |
| SWE2\_1 | 0-3 | 18.9 | 54.8 | 26.3 | 0.0 | 12381 | 0.08 | 1.37 | 16.25 |
|  | *6.1* | *7.5* | *13.6* | *0.0* | *3775* | *0.03* | *0.55* | *1.12* |
| 6-9 | 17.7 | 53.0 | 29.3 | 0.0 | 11634 | 0.10 | 1.61 | 16.10 |
|  | *3.7* | *5.2* | *8.4* | *0.0* | *2316* | *0.04* | *0.40* | *2.29* |
| SWE1\_1 | 0-3 | 11.7 | 75.7 | 12.6 | 0.0 | 8454 | 0.09 | 1.08 | 11.36 |
|  | *0.5* | *0.1* | *0.4* | *0.0* | *273* | *0.04* | *0.61* | *6.45* |
| 6-9 | 12.7 | 75.5 | 11.8 | 0.0 | 8999 | 0.09 | 0.57 | 6.01 |
|  | *0.5* | *0.1* | *0.4* | *0.0* | *273* | *0.05* | *0.44* | *1.14* |

**Table S5:** Gene abundances, PMO and PMP rates and sequencing results represented as a mean (*n* = 3) and respective standard deviations (italics). FW = fresh weight, div. = diversity, rich. = richness, MA = methanogenic archaea, MOB = methane oxidizing bacteria, MOX = methane oxidizing microorganisms, OTU = operational taxonomic unit, PMO = potential methane oxidation, PMP = potential methane production

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Gene abundances** | | | | **Rates** | | **Sequencing** | | | |
| **Stream ID** | **Depth** | **MA** | **Type Ia MOB** | **Type II MOB** | **Sum MOB** | **PMP** | **PMO** | **MA rich.** | **MA div.** | **MOX rich.** | **MOX div.** |
| [cm] | [gene copies gFW-1] | [gene copies gFW-1] | [gene copies gFW-1] | [gene copies gFW-1] | [g CH4 m-3d-1] | [% CH4 d-1] | [Nr. of OTUs] | Shannon index | [Nr. of OTUs] | Shannon index |
| ESP2\_3 | 0-3 | 1.60 x 10^5 | 2.27 x 10^5 | 1.67 x 10^4 | 2.43 x 10^5 | 0.682 | 0.151 | 50.0 | 2.7 | 38.3 | 3.0 |
|  | *1.19 x 10^5* | *2.38 x 10^5* | *1.16 x 10^4* | *2.32 x 10^5* | *0.745* | *0.100* | *14.2* | *0.0* | *10.5* | *0.1* |
| 6-9 | 3.18 x 10^6 | 3.49 x 10^5 | 2.23 x 10^5 | 5.72 x 10^5 | 0.117 |  | 62.7 | 2.7 | 31.7 | 2.7 |
|  | *4.29 x 10^6* | *2.06 x 10^5* | *2.74 x 10^5* | *2.13 x 10^5* | *0.151* |  | *3.3* | *0.2* | *5.8* | *0.2* |
| ESP2\_2 | 0-3 | 3.11 x 10^5 | 1.33 x 10^6 | 4.62 x 10^4 | 1.37 x 10^6 | 1.928 | 0.022 | 27.3 | 2.3 | 45.7 | 3.2 |
|  | *2.23 x 10^5* | *1.29 x 10^6* | *4.15 x 10^4* | *1.33 x 10^6* | *0.671* | *0.002* | *3.3* | *0.2* | *5.7* | *0.1* |
| 6-9 | 9.10 x 10^4 | 2.91 x 10^5 | 1.93 x 10^4 | 3.11 x 10^5 | 0.708 |  | 20.0 | 2.0 | 39.3 | 3.1 |
|  | *2.99 x 10^4* | *1.46 x 10^5* | *4.87 x 10^3* | *1.46 x 10^5* | *0.074* |  | *3.6* | *0.2* | *6.8* | *0.2* |
| ESP2\_1 | 0-3 | 5.78 x 10^3 | 5.48 x 10^4 | 5.57 x 10^3 | 6.04 x 10^4 | 0.932 | 0.079 | 16.7 | 2.1 | 26.3 | 2.8 |
|  | *4.66 x 10^3* | *2.81 x 10^4* | *3.85 x 10^3* | *3.15 x 10^4* | *0.486* | *0.000* | *6.1* | *0.3* | *1.2* | *0.1* |
| 6-9 | 5.28 x 10^4 | 1.60 x 10^5 | 7.05 x 10^3 | 1.67 x 10^5 | 0.015 |  | 32.0 | 2.2 | 25.7 | 2.6 |
|  | *3.77 x 10^4* | *8.62 x 10^4* | *4.30 x 10^3* | *9.05 x 10^4* | *0.011* |  | *15.6* | *0.5* | *5.6* | *0.3* |
| BGR1\_2 | 0-3 | 1.08 x 10^7 | 2.12 x 10^6 | 2.29 x 10^6 | 4.41 x 10^6 | 1.875 | 0.073 | 32.7 | 2.4 | 51.7 | 2.5 |
|  | *1.49 x 10^7* | *2.12 x 10^6* | *2.51 x 10^6* | *4.62 x 10^6* | *2.253* | *0.064* | *8.2* | *0.3* | *10.3* | *0.2* |
| 6-9 | 8.81 x 10^6 | 4.51 x 10^5 | 9.57 x 10^5 | 1.41 x 10^6 | 0.857 |  | 41.3 | 2.5 | 42.3 | 2.0 |
|  | *1.25 x 10^7* | *6.23 x 10^5* | *1.34 x 10^6* | *1.96 x 10^6* | *1.212* |  | *12.0* | *0.3* | *3.7* | *0.2* |
| ITA1\_1 | 0-3 | 9.52 x 10^5 | 4.06 x 10^6 | 1.51 x 10^5 | 4.21 x 10^6 | 5.181 | 0.095 | 32.7 | 2.2 | 58.3 | 2.8 |
|  | *9.17 x 10^5* | *3.91 x 10^6* | *1.29 x 10^5* | *4.04 x 10^6* | *2.800* | *0.102* | *4.2* | *0.3* | *5.8* | *0.1* |
| 6-9 | 1.42 x 10^6 | 1.41 x 10^6 | 1.12 x 10^5 | 1.52 x 10^6 | 0.727 |  | 58.0 | 2.5 | 59.7 | 2.9 |
|  | *1.86 x 10^6* | *1.81 x 10^6* | *1.50 x 10^5* | *1.96 x 10^6* | *0.651* |  | *9.4* | *0.3* | *1.7* | *0.1* |
| FRA1\_1 | 0-3 | 5.47 x 10^5 | 3.30 x 10^5 | 1.69 x 10^6 | 2.02 x 10^6 | 0.989 | 0.073 | 45.0 | 2.4 | 55.0 | 2.8 |
|  | *7.45 x 10^5* | *3.33 x 10^5* | *1.70 x 10^6* | *2.03 x 10^6* | *0.930* | *0.040* | *0.0* | *0.0* | *0.0* | *0.0* |
| 6-9 | 1.76 x 10^6 | 4.47 x 10^5 | 2.01 x 10^6 | 2.46 x 10^6 | 0.395 |  | 33.3 | 2.6 | 35.0 | 2.8 |
|  | *2.49 x 10^6* | *6.10 x 10^5* | *2.64 x 10^6* | *3.25 x 10^6* | *0.558* |  | *9.5* | *0.5* | *8.0* | *0.3* |
| AUT2\_1 | 0-3 | 3.98 x 10^4 | 1.02 x 10^5 | 4.19 x 10^5 | 5.22 x 10^5 | 0.338 | 0.076 | 17.0 | 2.1 | 26.7 | 1.6 |
|  | *4.95 x 10^4* | *1.28 x 10^5* | *5.43 x 10^5* | *6.70 x 10^5* | *0.383* | *0.033* | *6.5* | *0.6* | *6.8* | *0.3* |
| 6-9 | 3.04 x 10^4 | 2.23 x 10^5 | 3.15 x 10^5 | 5.38 x 10^5 | 0.018 |  | 22.3 | 1.8 | 18.0 | 1.1 |
|  | *4.17 x 10^4* | *2.11 x 10^5* | *3.27 x 10^5* | *5.37 x 10^5* | *0.024* |  | *8.1* | *0.4* | *5.7* | *0.2* |
| AUT1\_1 | 0-3 | 5.64 x 10^3 | 3.59 x 10^4 | 1.12 x 10^5 | 1.48 x 10^5 | 0.917 | 0.057 | 9.0 | 1.7 | 32.3 | 3.0 |
|  | *4.54 x 10^3* | *3.43 x 10^4* | *9.54 x 10^4* | *1.29 x 10^5* | *0.172* | *0.050* | *1.6* | *0.2* | *6.5* | *0.2* |
| 6-9 | 4.79 x 10^3 | 5.28 x 10^4 | 2.04 x 10^5 | 2.57 x 10^5 | 0.028 |  | 12.3 | 1.6 | 30.7 | 2.4 |
|  | *1.64 x 10^3* | *3.87 x 10^4* | *1.90 x 10^5* | *2.28 x 10^5* | *0.034* |  | *0.9* | *0.3* | *6.2* | *0.1* |
| DEU2\_1 | 0-3 | 5.99 x 10^6 | 1.49 x 10^7 | 3.41 x 10^7 | 4.90 x 10^7 | 3.353 | 0.065 | 28.0 | 2.2 | 52.3 | 2.1 |
|  | *5.42 x 10^6* | *9.35 x 10^6* | *2.52 x 10^7* | *3.42 x 10^7* | *3.239* | *0.033* | *5.4* | *0.2* | *4.2* | *0.4* |
| 6-9 | 5.82 x 10^6 | 4.87 x 10^6 | 9.94 x 10^6 | 1.48 x 10^7 | 0.761 |  | 39.0 | 2.3 | 46.0 | 2.1 |
|  | *4.48 x 10^6* | *2.60 x 10^6* | *7.47 x 10^6* | *9.86 x 10^6* | *0.391* |  | *7.9* | *0.2* | *7.9* | *0.2* |
| CZE1\_2 | 0-3 | 2.03 x 10^6 | 7.78 x 10^6 | 5.16 x 10^6 | 1.29 x 10^7 | 4.782 | 0.146 | 42.7 | 2.8 | 37.3 | 1.8 |
|  | *1.35 x 10^6* | *4.86 x 10^6* | *4.53 x 10^6* | *9.22 x 10^6* | *3.807* | *0.058* | *15.8* | *0.2* | *5.4* | *0.1* |
| 6-9 | 2.27 x 10^6 | 1.96 x 10^6 | 2.76 x 10^6 | 4.72 x 10^6 | 2.417 |  | 53.7 | 2.6 | 28.3 | 1.7 |
|  | *2.66 x 10^6* | *2.56 x 10^6* | *3.79 x 10^6* | *6.34 x 10^6* | *3.408* |  | *20.2* | *0.2* | *11.3* | *0.1* |
| GBR2\_1 | 0-3 | 4.73 x 10^5 | 7.15 x 10^5 | 3.29 x 10^5 | 1.04 x 10^6 | 0.122 | 0.059 | 41.3 | 2.8 | 47.0 | 2.2 |
|  | *3.13 x 10^5* | *1.45 x 10^5* | *1.37 x 10^5* | *2.62 x 10^5* | *0.094* | *0.030* | *11.1* | *0.4* | *7.8* | *0.1* |
| 6-9 | 4.14 x 10^5 | 7.36 x 10^4 | 1.84 x 10^5 | 2.58 x 10^5 | 0.041 |  | 46.7 | 2.7 | 20.3 | 2.0 |
|  | *8.28 x 10^4* | *3.21 x 10^4* | *1.66 x 10^5* | *1.59 x 10^5* | *0.021* |  | *15.2* | *0.5* | *5.6* | *0.4* |
| DEU1\_1 | 0-3 | 1.06 x 10^7 | 1.47 x 10^7 | 2.04 x 10^7 | 3.51 x 10^7 | 1.826 | 0.131 | 59.3 | 2.7 | 58.7 | 1.8 |
|  | *1.22 x 10^7* | *3.79 x 10^6* | *1.75 x 10^7* | *2.10 x 10^7* | *1.431* | *0.057* | *11.0* | *0.2* | *3.9* | *0.4* |
| 6-9 | 1.22 x 10^7 | 1.05 x 10^7 | 1.55 x 10^7 | 2.60 x 10^7 | 1.233 |  | 85.0 | 3.0 | 43.3 | 1.6 |
|  | *9.71 x 10^6* | *2.18 x 10^6* | *1.26 x 10^7* | *1.39 x 10^7* | *0.706* |  | *11.3* | *0.1* | *3.4* | *0.2* |
| IRL1\_1 | 0-3 | 3.34 x 10^4 | 5.49 x 10^5 | 3.05 x 10^5 | 8.54 x 10^5 | 0.090 | 0.210 | 29.3 | 2.4 | 65.7 | 2.8 |
|  | *2.79 x 10^4* | *5.00 x 10^5* | *3.18 x 10^5* | *8.17 x 10^5* | *0.120* | *0.108* | *5.2* | *0.3* | *1.9* | *0.1* |
| 6-9 | 5.79 x 10^3 | 5.93 x 10^4 | 4.54 x 10^4 | 1.05 x 10^5 | 0.009 |  | 40.0 | 2.7 | 52.3 | 2.8 |
|  | *4.17 x 10^3* | *5.28 x 10^3* | *3.53 x 10^4* | *3.52 x 10^4* | *0.007* |  | *5.1* | *0.1* | *4.2* | *0.1* |
| GBR1\_1 | 0-3 | 1.91 x 10^3 | 3.00 x 10^5 | 1.07 x 10^6 | 1.37 x 10^6 | 0.006 | 0.193 | 12.3 | 2.3 | 25.3 | 2.4 |
|  | *1.54 x 10^3* | *2.05 x 10^5* | *5.56 x 10^5* | *7.51 x 10^5* | *0.003* | *0.057* | *1.2* | *0.1* | *1.9* | *0.0* |
| 6-9 | 9.52 x 10^2 | 5.19 x 10^4 | 2.23 x 10^5 | 2.75 x 10^5 | 0.001 |  | 13.0 | 2.4 | 14.7 | 1.7 |
|  | *9.80 x 10^2* | *2.19 x 10^4* | *5.95 x 10^4* | *8.11 x 10^4* | *0.001* |  | *0.8* | *0.0* | *1.7* | *0.1* |
| SWE2\_1 | 0-3 | 9.45 x 10^6 | 2.68 x 10^6 | 2.43 x 10^5 | 2.92 x 10^6 | 1.449 | 0.011 | 64.0 | 2.6 | 36.3 | 2.0 |
|  | *6.40 x 10^6* | *2.85 x 10^6* | *1.69 x 10^5* | *2.98 x 10^6* | *1.696* | *0.003* | *21.5* | *0.3* | *18.0* | *0.2* |
| 6-9 | 3.18 x 10^6 | 1.11 x 10^7 | 4.60 x 10^5 | 1.16 x 10^7 | 1.428 |  | 43.7 | 2.5 | 56.3 | 1.9 |
|  | *2.75 x 10^6* | *5.32 x 10^6* | *2.37 x 10^5* | *5.50 x 10^6* | *1.204* |  | *8.1* | *0.2* | *8.7* | *0.2* |
| SWE1\_1 | 0-3 | 5.28 x 10^5 | 3.57 x 10^6 | 2.52 x 10^6 | 6.09 x 10^6 | 1.107 | 0.115 | 29.3 | 1.9 | 35.0 | 1.9 |
|  | *5.91 x 10^5* | *3.33 x 10^6* | *3.11 x 10^6* | *6.39 x 10^6* | *1.103* | *0.118* | *1.2* | *0.6* | *14.2* | *0.1* |
| 6-9 | 9.14 x 10^4 | 1.35 x 10^6 | 1.32 x 10^5 | 1.49 x 10^6 | 0.001 |  | 29.0 | 1.4 | 28.7 | 1.7 |
|  | *5.13 x 10^4* | *1.18 x 10^6* | *9.75 x 10^4* | *1.27 x 10^6* | *0.001* |  | *5.7* | *0.3* | *16.2* | *0.1* |