

Title: Geochemistry shapes bacterial communities and their metabolic potentials in tertiary coalbed

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Table S1: Composition of culture media

Culture media	Ingredients (Gms / Litre)
Zobell Marine Agar	Peptone 5.000 Yeast extract 1.000 Ferric citrate 0.100 Sodium chloride 19.450 Magnesium chloride 8.800 Sodium sulphate 3.240 Calcium chloride 1.800 Potassium chloride 0.550 Sodium bicarbonate 0.160 Potassium bromide 0.080 Strontium chloride 0.034 Boric acid 0.022 Sodium silicate 0.004 Sodium fluorate 0.0024 Ammonium nitrate 0.0016 Disodium phosphate 0.008 Agar 15.000 Final pH (at 25°C) 7.6±0.2
Nutrient Agar	Peptone 5.000 Sodium chloride 5.000 HM peptone B# 1.500 Yeast extract 1.500 Agar 15.000 Final pH (at 25°C) 7.4±0.2
Luria Agar	Casein enzymic hydrolysate 10.000 Yeast extract 5.000 Sodium chloride 5.000 Agar 15.000 Final pH (at 25°C) 7.0±0.2
Actinomycete Isolation Agar	Sodium caseinate 2.000 L-Asparagine 0.100 Sodium propionate 4.000 Dipotassium phosphate 0.500 Magnesium sulphate 0.100 Ferrous sulphate 0.001 Agar 15.000 Final pH (at 25°C) 8.1±0.2
Iron Sulphite Agar	Casein enzymic hydrolysate 10.000 Sodium sulphite 0.500 Iron (III) citrate 0.500 Agar 15.000 Final pH (at 25°C) 7.1±0.2
Iron Oxidizing agar	Part A – Ammonium sulphate 3.000 Potassium chloride 0.100 Dipotassium phosphate 0.500 Magnesium sulphate. heptahydrate 0.500

	Calcium nitrate 0.010 Part B - Ferrous sulphate. heptahydrate 44.220 Final pH (at 25°C) 3.3±0.3
Sulphate Reducing agar	Yeast extract 1.000 Magnesium sulphate 0.200 Dipotassium phosphate 0.010 Ferrous ammonium sulphate 0.100 Sodium chloride 10.000 Final pH (at 25°C) 7.8±0.2

Table S2: Elements of Alpha diversity. The table illustrates estimates of alpha diversity and sequencing depth for surface sediment (CM1) and coalbed (CM2).

	Raw reads	Combined reads	Assigned reds	Chao1	Goods coverage	Observed OTUs	Shannon
CM1	1827563	1403048	656883	4373.29	0.99	3447	6.4
CM2	1128316	1016598	773869	3503.98	0.99	2639	5.54

Fig. S1: Map representing primary coal production across the globe. Source: U.S. energy information; demonstrates top coal producing countries (as per 2015 report) viz. China, United States, India, Australia, Indonesia, etc. The size of bubble corresponds to the production of the coal.

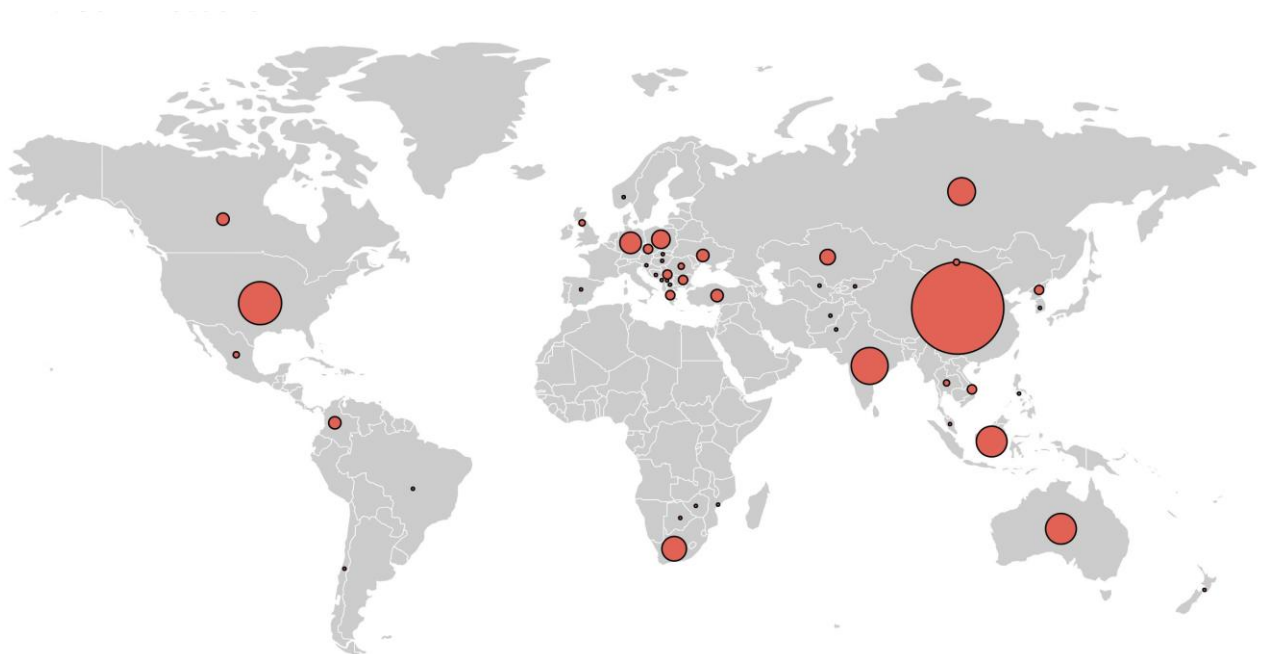


Fig. S2: Distribution of bacterial taxa in surface sediment (CM1) and coal bed (CM2) deciphered using cultivable approach. Inner segment of graph represents the Phyla distribution and an outer segment represents the distribution of bacterial families.

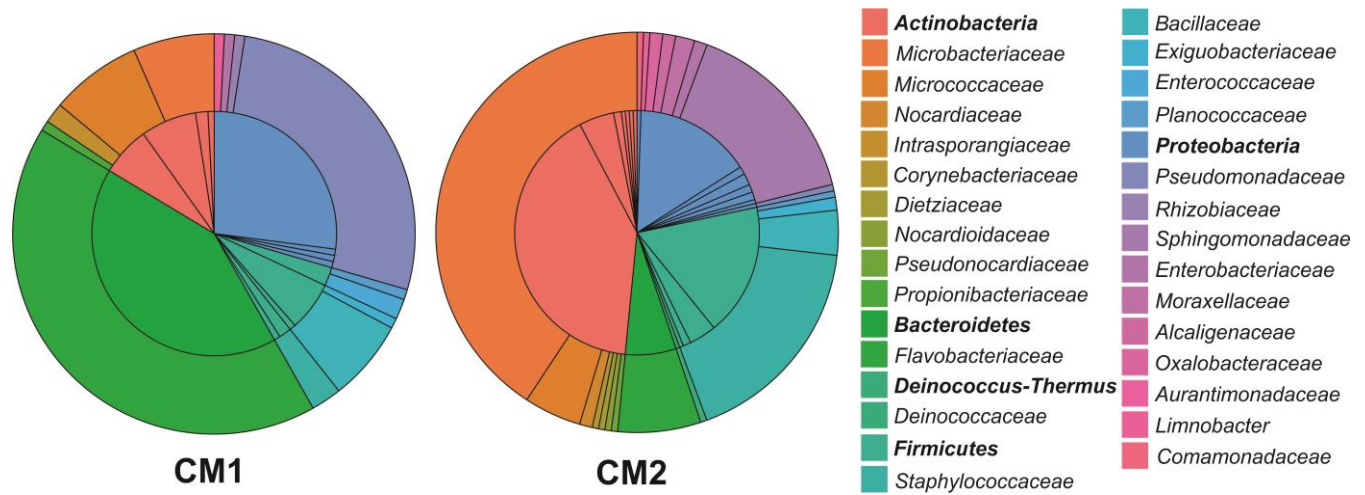


Fig. S3: Distribution of bacterial genera (relative abundance $\geq 1\%$) found during the uncultivable analysis of surface sediment (CM1) and coalbed (CM2).

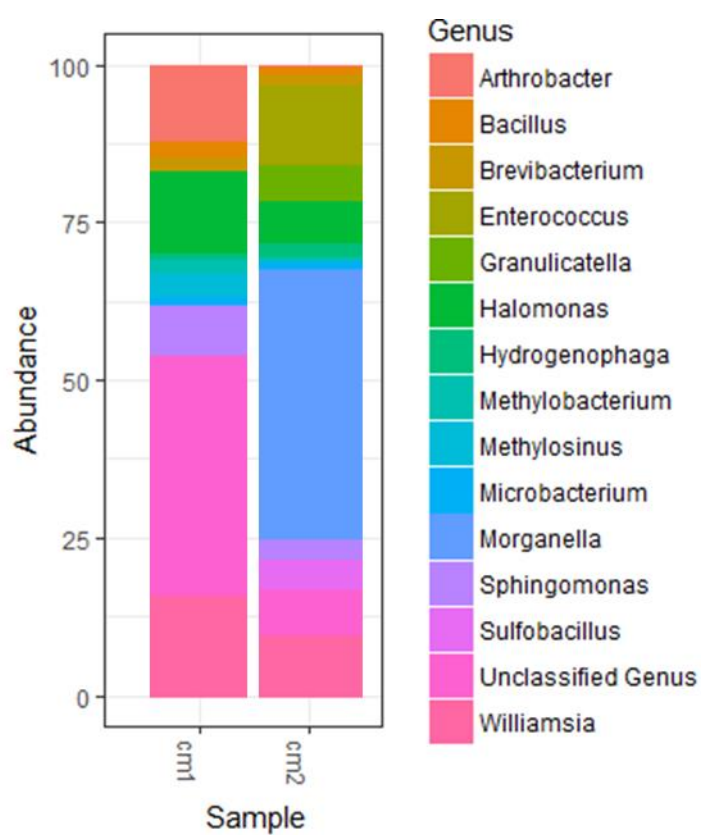


Fig. S4: Imputed metagenome depicting methane metabolism in CM1 and CM2 samples



Fig. S5: Imputed metagenome depicting sulfur metabolism in CM1 and CM2 samples

