

Table S1. Phylogenetic affiliation of the enrichment cultures and isolates.

Depth Interval (cm) ^a	Enrichment Type	Phylogenetic affiliation
0-5	CO ₂ -reducing	<i>Methanogenium</i> sp.
5-10	CO ₂ -reducing	<i>Methanogenium</i> sp.
	Methylotrophic	<i>Methanococcoides</i> sp.
10-15	CO ₂ -reducing	<i>Methanogenium</i> sp.
19-24	CO ₂ -reducing	<i>Methanogenium</i> sp.
25-30	CO ₂ -reducing	<i>Methanogenium</i> sp.
	Methylotrophic	<i>Methanococcoides</i> sp.
33.5-38.5	CO ₂ -reducing	<i>Methanogenium</i> sp.
	Methylotrophic	<i>Methanococcoides</i> sp.
	Aceticlastic	<i>Methanosarcina</i> sp.
40.5-45.5	CO ₂ -reducing	<i>Methanogenium</i> sp.
	Methylotrophic	<i>Methanosarcina</i> sp.
49-53.5	CO ₂ -reducing	<i>Methanogenium</i> sp.
	Methylotrophic	<i>Methanococcoides</i> sp.
56-61	CO ₂ -reducing	<i>Methanogenium</i> sp.
63-69	CO ₂ -reducing	<i>Methanogenium</i> sp.

^aDepth interval is the distance from the sediment-water interface.