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Factors influencing prokaryotes in an intertidal mudflat and the resulting depth gradients

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1 Factors influencing prokaryotes in an intertidal mudflat 2 and the resulting depth gradients

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16 Running title: Prokaryote drivers in mudflats

17 Highlights

- 18 ▪ Strong stratification of microbial densities and activities in the first 10 cm of the
19 sediment
- 20 ▪ Bottom-up-control of the prokaryotic community revealed by the variation partitioning
21 analysis

22 Abstract

23 Intertidal mudflats are rich and fluctuating systems in which the upper 20 cm support a high
24 diversity and density of microorganisms that ensure diversified roles. The depth profiles of
25 microbial abundances and activities were measured in an intertidal mudflat (Marennes-Oléron
26 Bay, SW France) at centimeter-scale resolution (0-10 cm below the sediment surface). The
27 aim of the study was to detect microbial stratification patterns within the sediments and the
28 way in which this stratification is shaped by environmental drivers. Two sampling dates, *i.e.*
29 one in summer and another in winter, were compared. The highest activities of the microbial
30 communities were observed in July in the surface layers (0-1 cm), with a strong decrease of

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