1 *Supporting Information*

2 # Effect of Cathode Material and its Size on the
3 # Abundance of Nitrogen Removal Functional Genes
4 # in Microcosms of Integrated Bioelectrochemical-
5 # Wetland Systems

6 **Sharvari S. Gadegaonkar [1], Timothé Philippon [2], Joanna M. Rogińska [3], Ülo Mander [1], Martin**
7 **Maddison [1], Mathieu Etienne [3], Frédéric Barrière [2], Kuno Kasak [1], Rauno Lust[1], and Mikk**
8 **Espenberg [1,*]**

9 [1] University of Tartu, Institute of Ecology and Earth Sciences, Department of Geography, Vanemuise 46,
10 51003 Tartu, Estonia; sharvari@ut.ee; ulo.mander@ut.ee; martin.maddison@ut.ee; kuno.kasak@ut.ee
11 [2] Université de Rennes, CNRS, ISCR (Institut des Sciences Chimiques de Rennes), Campus de Beaulieu,
12 35000 Rennes, France; timothe.philippon@univ-rennes1.fr; frederic.barriere@univ-rennes1.fr
13 [3] Université de Lorraine, CNRS, LCPME, F-54000 Nancy, France; joanna.roginska@univ-lorraine.fr;
14 mathieu.etienne@univ-lorraine.fr
15 * Correspondence: mikk.espenberg@ut.ee
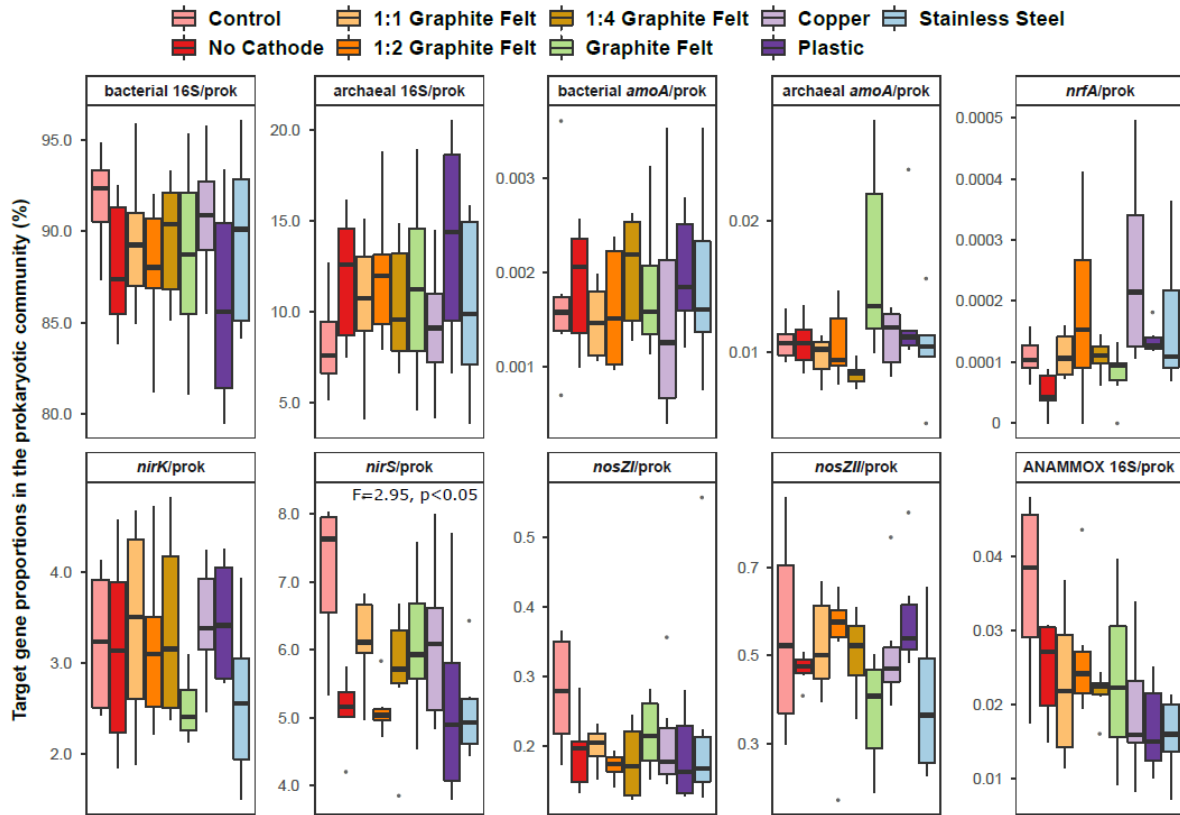
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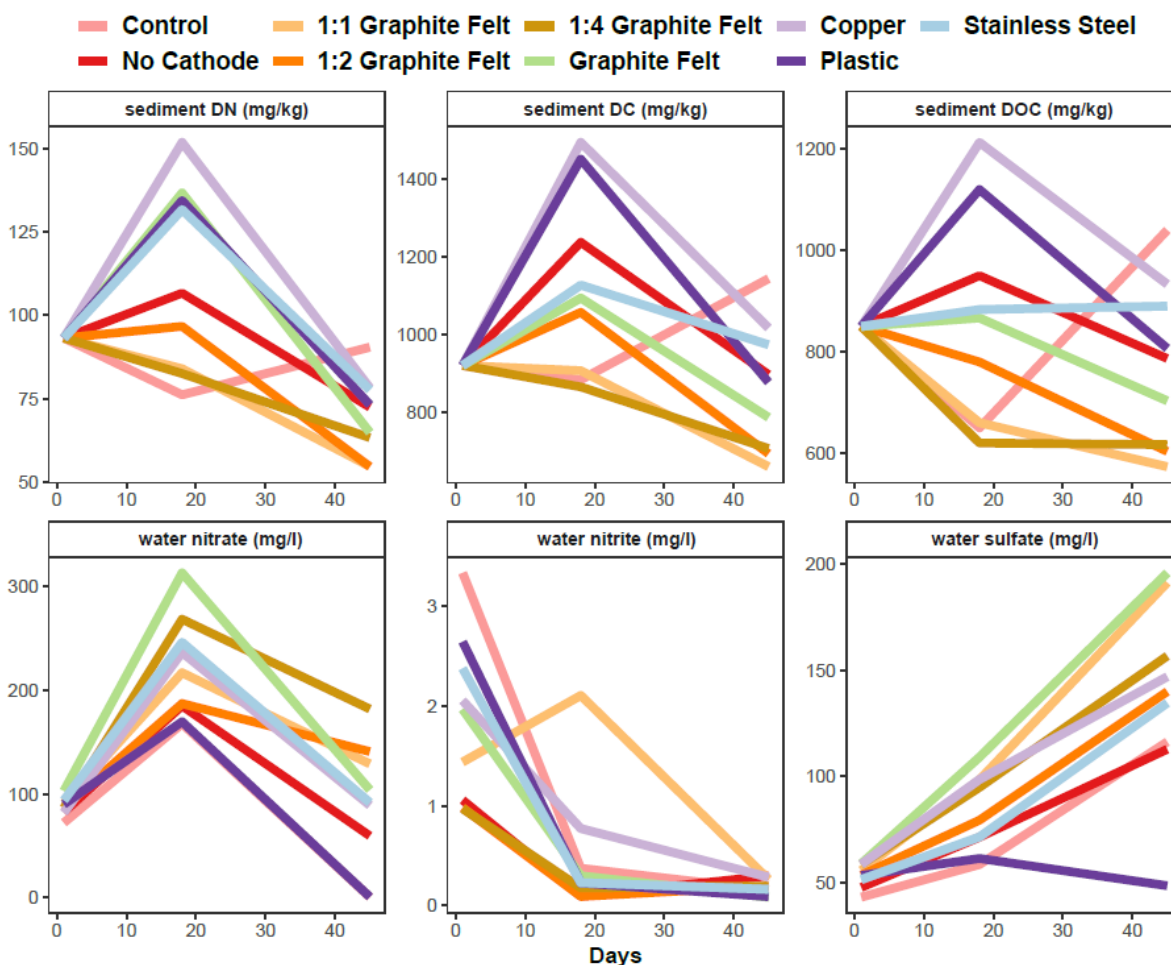
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18   **Figure S1.** Temporal dynamics of different sediment and water parameters during the experiment
19   (each n=3). Abbreviations: DN – dissolved nitrogen, DC – dissolved carbon, DOC – dissolved organic
20   carbon.

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23   **Figure S2.** Box plots of target gene copy numbers proportion in the prokaryotic community in nine
24   studied treatments (each n=6). Statistically significant differences between groups considering
25   different genes are shown with F and p values determined by multivariate analysis. The central line
26   is the median, the edges of the box are the 25th and 75th percentiles, the whiskers represent the 95%
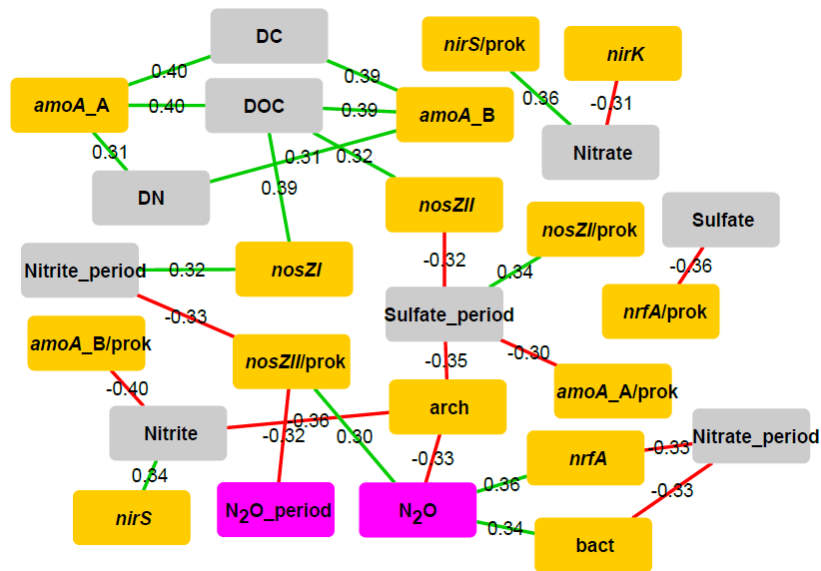27   confidence interval, and grey dots indicate outliers.

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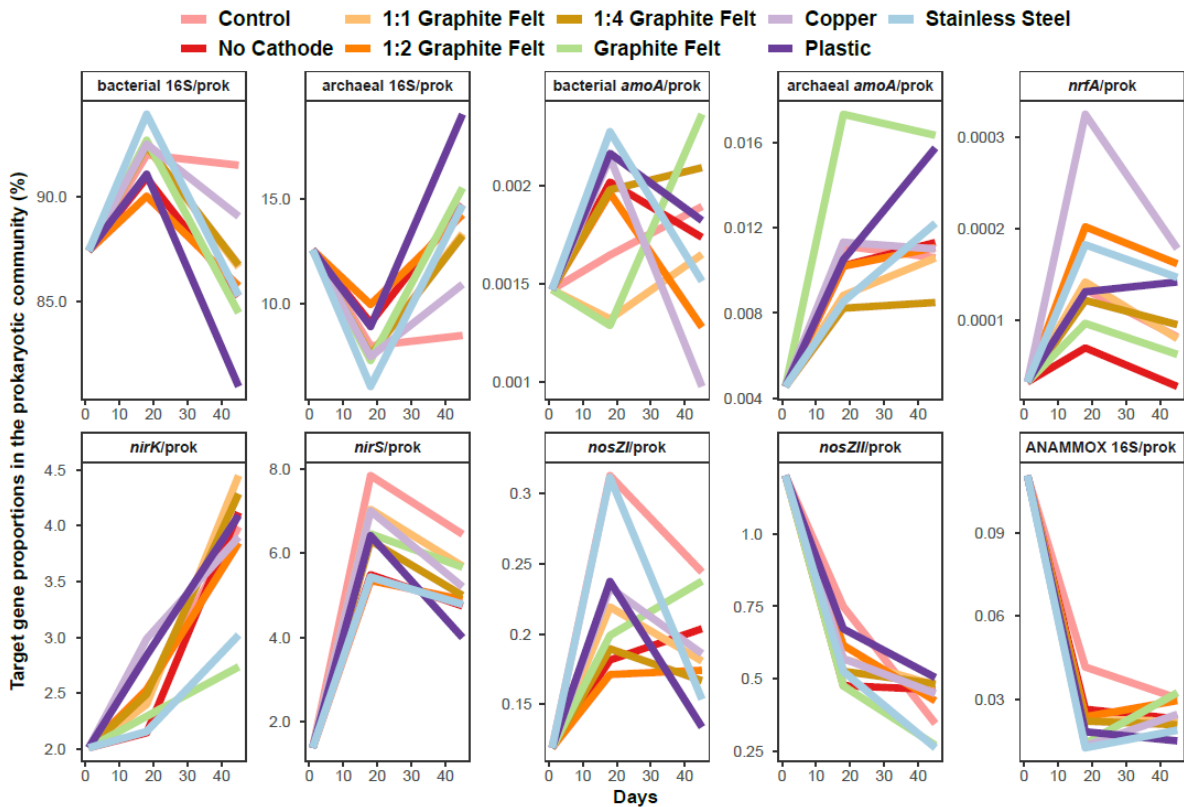
31 **Figure S3.** Temporal dynamics of different gene proportions in the prokaryotic community during
32 the whole experiment (for each n=3).

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35 **Figure S4.** Spearman correlation network (p<0.05) for each target gene parameter and environmental
36 factor pair (n=42) which were left out after the Benjamini-Hochberg correction. Green is used to
37 represent positive relationships, and red indicates negative relationships (exact R values are shown
38 on the graph); yellow stands for gene abundances, grey for soil physicochemical variables and pink
39 for gaseous parameters. Abbreviations: DN – dissolved nitrogen, DC – dissolved carbon, DOC –
40 dissolved organic carbon, period – average values throughout the experiment, bact – bacterial 16S
41 rRNA gene abundance, arch – archaeal 16S rRNA gene abundance, prok – prokaryotic community

42   (total bacterial and archaeal 16S rRNA gene proportion), *amoA*_B – bacterial *amoA* gene abundance,
43   *amoA*_A – archaeal *amoA* gene abundance, N₂O – N₂O emission.

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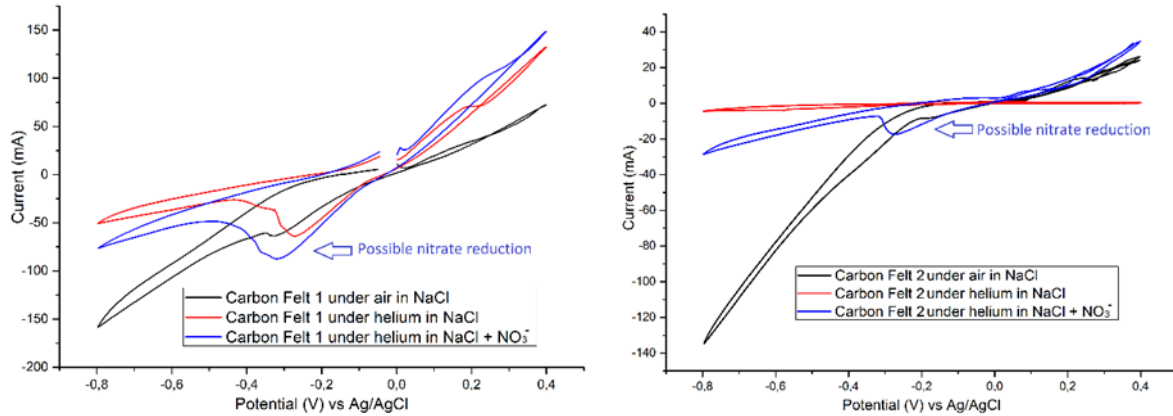
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46   **Figure S5.** Different cyclic voltammograms of carbon felt i.e. graphite felt before and after Sodium
47   Nitrate addition in the electrolyte under helium saturation and ambient air. Possible nitrate reduction
48   is showed by blue arrows.

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50   **Material composition and specifications:**

51   <u>**Graphite Felt:**</u> Product ID RVG 4000 bought from Le Carbone Lorraine, Specific surface (including
52   pores): 0.7 m2/gr, Density: 0.088

53   <u>**Stainless steel:**</u> X5CrNiMo18-10 1.4401 plate, 0.5 mm thickness

54   <u>**Copper:**</u> BS EN 12164 CW 004A, 0.3 mm thickness, 99% pure

55   <u>**Plastic:**</u> PVC, 0.5 mm thickness

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