

Supplementary information:

Effects of graphene oxide and graphite on soil bacterial and fungal diversity

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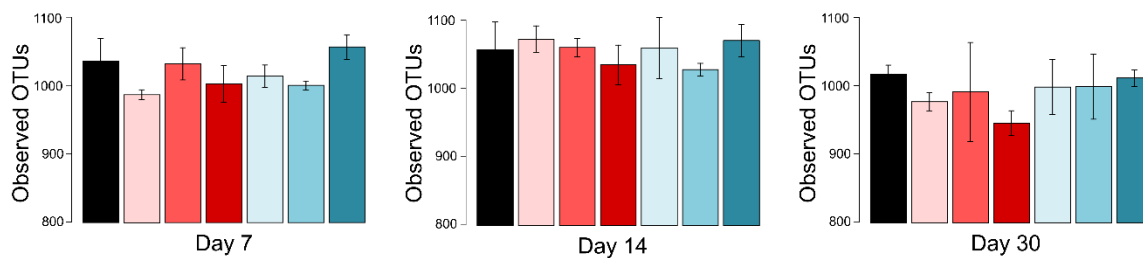
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Bacteria



Fungi

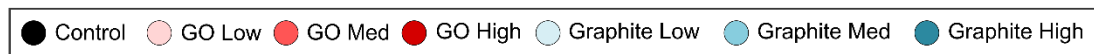
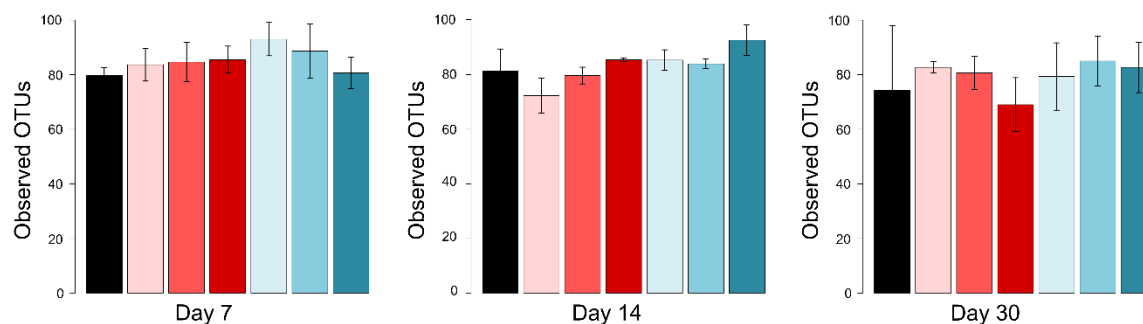
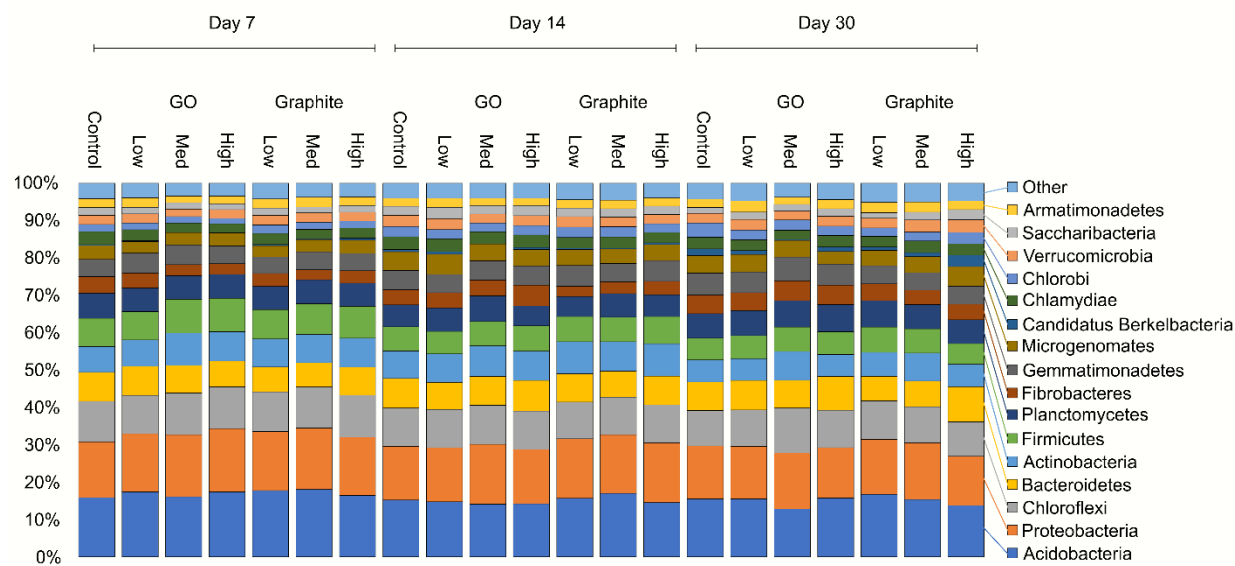


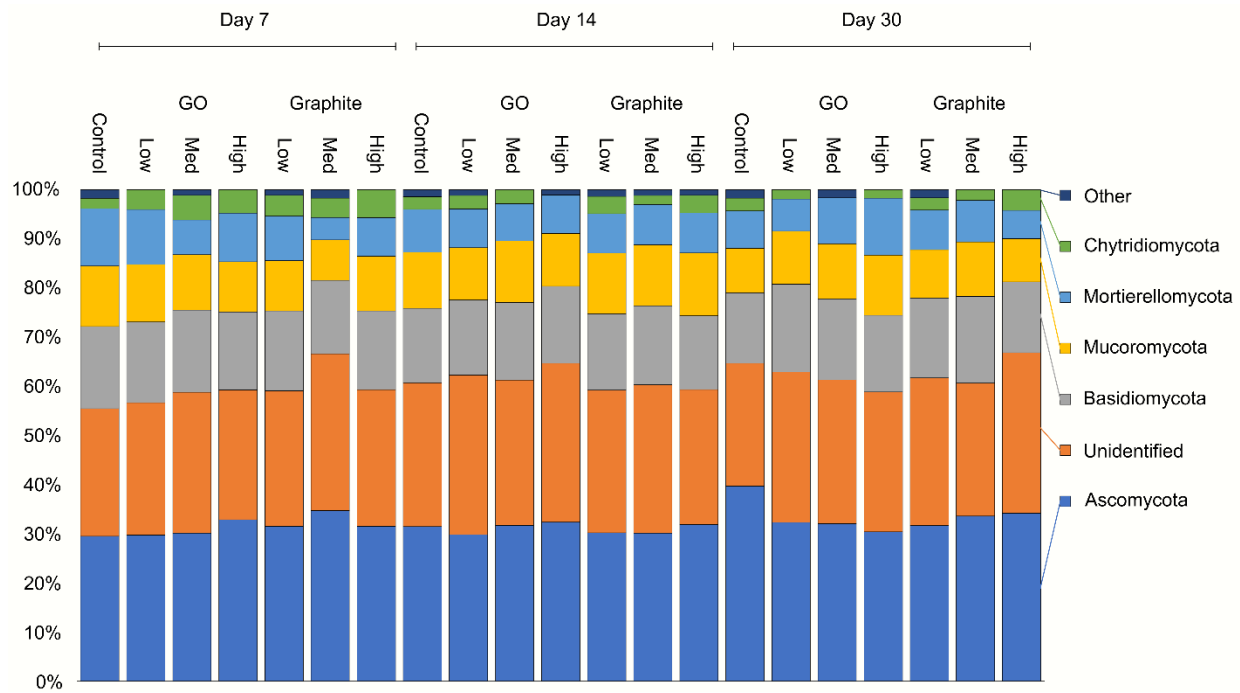
Fig. S1 The numbers of observed bacterial and fungal OTUs (Sobs) after 7, 14 and 30 days by treatment. The error bars represent standard deviations. None of the treatments differed significantly from the controls. GO and graphite doses correspond to 1 ng, 1 μg and 1 mg kg^{-1}

25 soil.



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Fig. S2 The relative abundances of bacteria phyla in control, and GO and graphite amended soils over time. All phyla representing <1% relative abundance are combined as “Other”. GO and graphite doses correspond to 1 ng, 1 μg and 1 mg kg^{-1} soil.



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Fig. S3 The relative abundances of fungal phyla in control, and GO and graphite amended soils over time. All phyla representing <1% relative abundance are combined as “Other”. GO and graphite doses correspond to 1 ng, 1 μg and 1 mg kg^{-1} soil.

Table S1 Summary of multivariate GLM post-hoc results computed using mvabund highlighting

40 differences in bacterial community composition between difference doses of the same material over time.

Day	Material	Dose 1	Dose 2	<i>P</i> value
7	Graphite	Low	Medium	0.001 **
7	Graphite	Low	High	<0.001 ***
7	Graphite	Medium	High	<0.001 ***
7	GO	Low	Medium	<0.001 ***
7	GO	Low	High	<0.001 ***
7	GO	Medium	High	<0.001 ***
14	Graphite	Low	Medium	0.012 *
14	Graphite	Low	High	<0.001 ***
14	Graphite	Medium	High	<0.001 ***
14	GO	Low	Medium	0.004 **
14	GO	Low	High	0.702
14	GO	Medium	High	0.006 **
30	Graphite	Low	Medium	0.079
30	Graphite	Low	High	<0.001 ***
30	Graphite	Medium	High	<0.001 ***
30	GO	Low	Medium	<0.001 ***
30	GO	Low	High	0.030 *
30	GO	Medium	High	0.009 **

Table S2 Summary of multivariate GLM post-hoc results computed using mvabund highlighting

45 differences in bacterial community composition between GO and graphite at the same dose.

Day	Dose	Material 1	Material 2	P value
7	Low	Graphite	GO	<0.001 ***
7	Medium	Graphite	GO	<0.001 ***
7	High	Graphite	GO	0.007 **
14	Low	Graphite	GO	0.003 **
14	Medium	Graphite	GO	<0.001 ***
14	High	Graphite	GO	0.035 *
30	Low	Graphite	GO	0.009 **
30	Medium	Graphite	GO	<0.001 ***
30	High	Graphite	GO	0.021 *

50 **Table S3** Summary of multivariate GLM post-hoc results computed using mvabund highlighting differences in fungal community composition between difference doses of the same material.

Treatment 1	Treatment 2	<i>P</i> value
Graphite Low	Graphite Medium	0.117
Graphite Low	Graphite High	0.017*
Graphite Medium	Graphite High	0.016*
GO Low	GO Medium	0.005**
GO Low	GO High	0.013*
GO Medium	GO High	0.186

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Table S4 Summary of multivariate GLM post-hoc results computed using mvabund highlighting differences in fungal community composition between GO and graphite at the same dose.

Dose	Material 1	Material 2	<i>P</i> value
Low	Graphite	GO	0.011 *
Medium	Graphite	GO	0.011 *
High	Graphite	GO	0.027 *