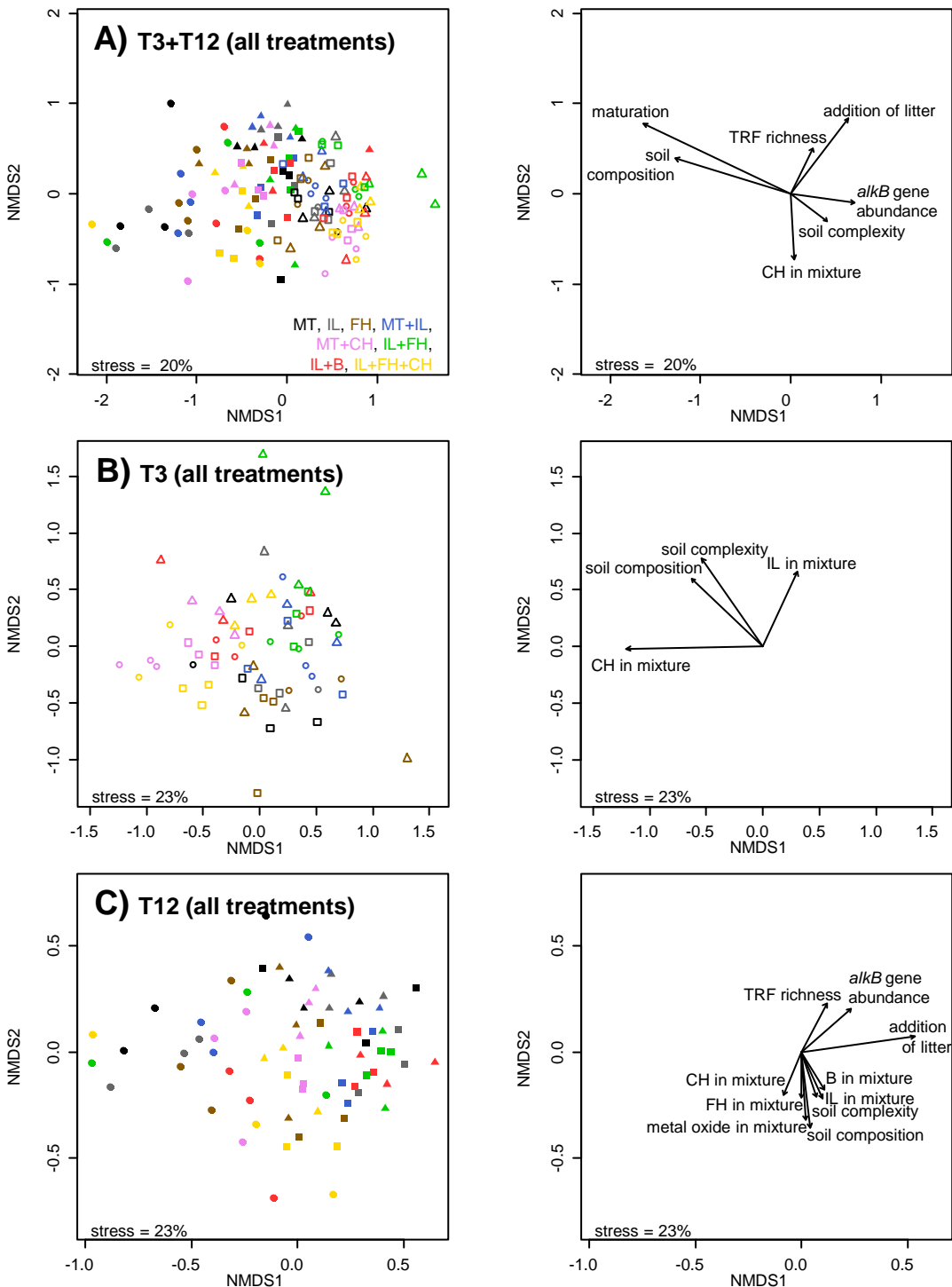


**S4. *AlkB* community structures in three and twelve months artificial soils** [montmorillonite (MT): black, illite (IL): grey, ferrihydrite (FH): brown, montmorillonite-illite (MT+IL): blue, montmorillonite-charcoal (MT+CH): pink, illite-ferrihydrite (IL+FH): green, illite-boehmite (IL+B): red, illite-ferrihydrite-charcoal (IL+FH+CH): yellow] illustrated by non-metric multidimensional scaling (NMDS). Open and closed symbols represent samples taken at T3 and T12, respectively ( $\circ$  = matured soil,  $\Delta$  = litter-soil interface,  $\square$  = litter-incubated bulk soil). Three biological replicates of each soil are analysed (only one replicate for matured MT and IL; only two replicates for matured FH). The data group “all treatments” includes matured soil, litter-soil interface and litter incubated bulk soil for three months matured soil (T3 + T3-I + T3-B) or twelve months matured soil (T12 + T12-I + T12-B), respectively. Vectors indicate environmental factors significantly correlating with the differences in community structure ( $P < \text{at least } 0.05$ ).

A) *alkB* community structure and correlation to environmental factors in all soils and treatments (T3 + T3-I + T3-B + T12 + T12-I + T12-B). B) and C) show NMDS-plots for all treatments of T3 or T12, respectively. D) correlation of environmental factors to changes of *alkB* harbouring bacterial communities over time for the data sets shown in this figure, as well as Figure 2A.



data set	maturation	addition of litter	soil composition	soil complexity (1 vs. 2 or 3 additional parental materials)	MT in mixture	IL in mixture	CH in mixture	metal oxide in mixture	FH in mixture	B in mixture	T-RF richness	<i>alkB</i> gene abundance
Fig. 2A) <sup>a</sup>	***	-	***	*	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	*	***
T3+T12 (all treatments)	***	***	***	*	n.s.	n.s.	***	n.s.	n.s.	n.s.	*	***
T3 (all treatments)	-	n.s.	***	***	n.s.	**	***	n.s.	n.s.	n.s.	n.s.	n.s.
T12 (all treatments)	-	***	***	*	n.s.	*	*	***	*	*	**	**

significance codes:  $P < 0.001$  \*\*\*;  $P < 0.01$  \*\*;  $P < 0.05$  \*;  $P > 0.05$  n.s. = not significant; - = not applicable

<sup>a</sup>data set: T3 and T12 after maturation but without litter addition (shown in Figure 2A)