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Bacterial necromass is more responsive to global change than fungal necromass

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As an important component of soil organic matter (SOM), soil microbial necromass largely determines the dynamics of SOM under global change. However, the response of soil microbial necromass to global change is not well understood. Hence, this study conducted a meta-analysis to assess the global response of soil microbial necromass to warming, altered precipitation, nutrient addition, and elevated CO₂. Results showed that global change had no significant effects on total necromass carbon (TNC) and fungal necromass carbon (FNC). However, we found that bacterial necromass carbon (BNC) was significantly responsive to warming (+9.70%), increased precipitation (+10.15%), and nitrogen (N) addition (+8.62%). Furthermore, the response of BNC could be regulated by ecosystem types, climate factors, soil properties, and experimental conditions, but the influencing factors under different global change factors could be different. Correlation analysis suggested that the response of BNC was associated with the change of soil pH under warming, while it had a positive correlation with the response of soil microbial biomass carbon under N addition. Overall, this study contributes to the understanding of how soil microbial necromass responds to global change on a global scale, and emphasizes the important role of BNC in SOC dynamics under global change.