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## Temperature response of wheat decomposition is more complex than the common approaches of most multi-pool models

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In this study we analysed measured  $CO_2$  concentrations from wheat decomposition experiments under six different temperatures (5°C, 9°C, 15°C, 25°C, 35°C, and 45°C). Data were interpreted by assuming that litter could be sub-divided into two pools, a labile and a more recalcitrant one, that would each decay exponentially. We found that the observed patterns of carbon loss were poorly described if we followed the common approach for the temperature dependence of carbon decomposition assuming the same chemical recalcitrance (expressed by the same ratio of labile and recalcitrant pool sizes) at all temperatures and the same relative temperature response for both pools. Therefore, we tested two hypothesises which are still being discussed. The first hypothesis is that the relative decomposition rates of labile and more recalcitrant carbon pools correspond differently to temperature. Another hypothesis is that temperature interacts with the chemical recalcitrance of litter. Data prediction could be significantly improved by either hypothesis. However, the present dataset was best predicted by the assumption of a temperature dependent initial pool ratio.