

# Supplementary material to manuscript: Humans and the Missing C-Sink: Erosion and burial of soil carbon through time

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## Methods and data for the Figure 1

Lakes and impoundments: Lake data are from Finland (Pahunen, 2000), and impoundment data from Iowa (Downing et al., 2008). Both have their C sink life expectancy calculated as water depth divided by the sediment accumulation rate. The C accumulation rates are normalised to catchment area.

Floodplain deposit: Floodplain data are from overbank deposits within the German part of the Rhine basin (Hoffmann et al. 2009). The life expectancy is based on accommodation space divided by current accumulation rate. In accordance to maximum floodplain thicknesses along the Rhine and its tributaries, the accommodation space is assumed to be 5 m.

Peat bog: Data are from (Clymo, 1984), (Yu et al., 2003), (Belyea and Malmer, 2004), and (Yu, 2011). The rates are present day sink rate, and the life expectancy of the sink is the expected

time in years until the sink rate falls to 10% of its present day value based on quoted fitting parameters for the decay models of (Yu et al., 2003) and (Clymo, 1984). The C flux data for (Clymo, 1984) assumes that C comprises 50% of the dry peat mass.

Forest: Data are from (Fahey et al., 2005), (Goodale et al., 2002) and (Keeton et al., 2011). The C sink rate is taken as the initial value following establishment of the forest. The life expectancy of the C sink is the expected time in years until the sink rate falls to 10% of its initial value based on fitting a saturation exponential representation of the (Bormann and Likens, 1979) conceptual model (by which an asymptote is reached within 300 years).

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