

Document: Supplemental File 3 – Cumulative values and missing data

Article Title: Maize and prairie root contributions to soil CO₂ emissions in the field

Journal: Crop Science

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Cumulative sums are affected by missing data. There were two instances in which we had missing data from a block (P block 4 on September 6 2013, and PF block 4 on August 1 2013). In these instances, we took the mean fluxes of the other 3 blocks and used these values as surrogates for the missing data. The total root-derived CO₂ and soil organic matter (SOM)-derived as a percentage of each season's cumulative soil CO₂ emissions was calculated using **Eqn. SF3.1**.

Eqn. SF3.1 Calculating percentage of total soil CO₂ emissions derived from roots

$$(\%_{\text{root-derived}})_{y,c,b} = \frac{\sum_{t=1}^{t=N} (\text{flux}_{\text{root-derived}})_{y,c,b,t}}{\sum_{t=1}^{t=N} (\text{flux}_{\text{Total}})_{y,c,b,t}} \times 100$$

where

$(\%_{\text{root-derived}})_{y,c,b}$ = Percentage of the cumulative total CO₂ flux that is root-derived in year **y** from crop **c** in block **b** from sampling period **t=1** through **t=N**, where **N** is the total number of sampling periods in year **y**

$(\text{flux}_{\text{root-derived}})_{y,c,b,t}$ = Root-derived CO₂ flux in year **y** from crop **c** in block **b** at sampling period **t**

$(\text{flux}_{\text{Total}})_{y,c,b,t}$ = Total CO₂ flux in year **y** from crop **c** in block **b** at sampling period **t**

The total SOM-derived CO₂ proportion was calculated in a like manner.