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Supplement of

DRIFTS band areas as measured pool size proxy to reduce parameter uncertainty in soil organic matter models

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11 Additional Figures S

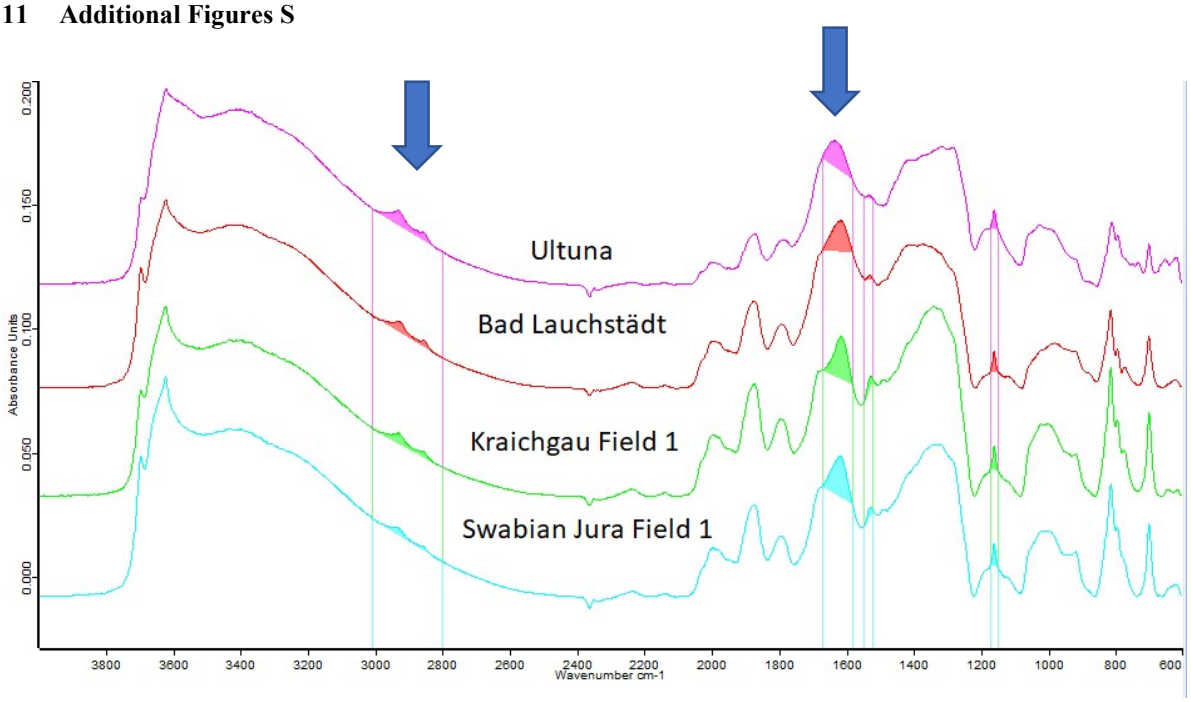

Figure S 1 Example of DRIFTS spectra with integrated specific band areas of the 2930 cm^{-1} aliphatic carbon band and the 1620 cm^{-1} aromatic-carboxylate carbon band (limits: 3010 – 2800 cm^{-1} and 1660 – 1580 cm^{-1}). The spectra were baseline corrected and vector normalized prior integration. The absorption band areas are highlighted by the blue arrows, the integrated band area is the colored area below each band, corresponding only to the top of the band.

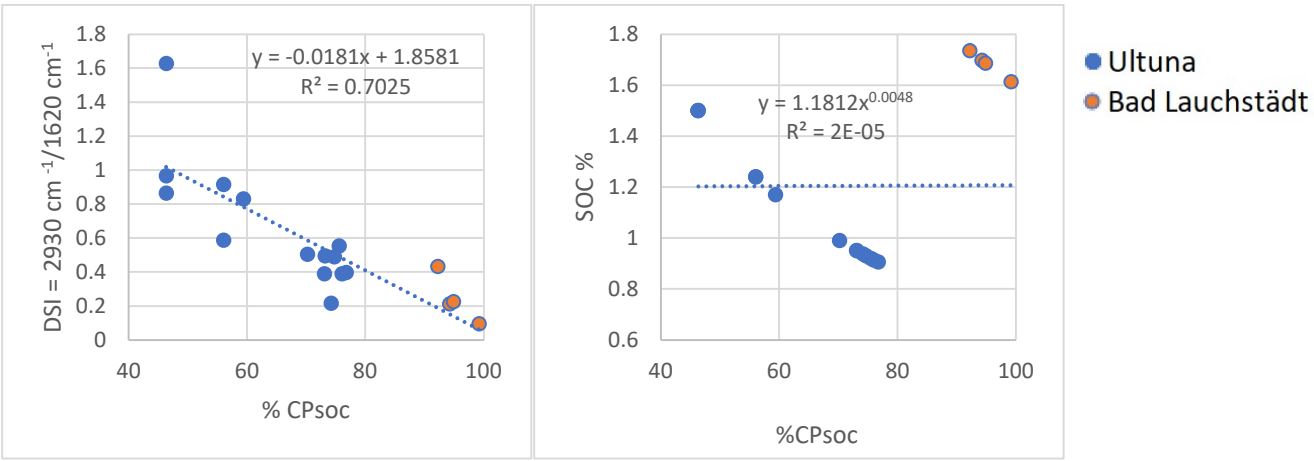

Figure S 2 Correlation between the DRIFTS stability index for the samples of this study (only Ultuna and Bad Lauchstädt) and centennially persistent SOC (CPsoc) as well as SOC and CPsoc. The CPsoc of 0.695 %SOC for Ultuna and 1.6 % SOC for Bad Lauchstädt were taken from Cécillon et al.(2018) and Franko and Merbach (2017).

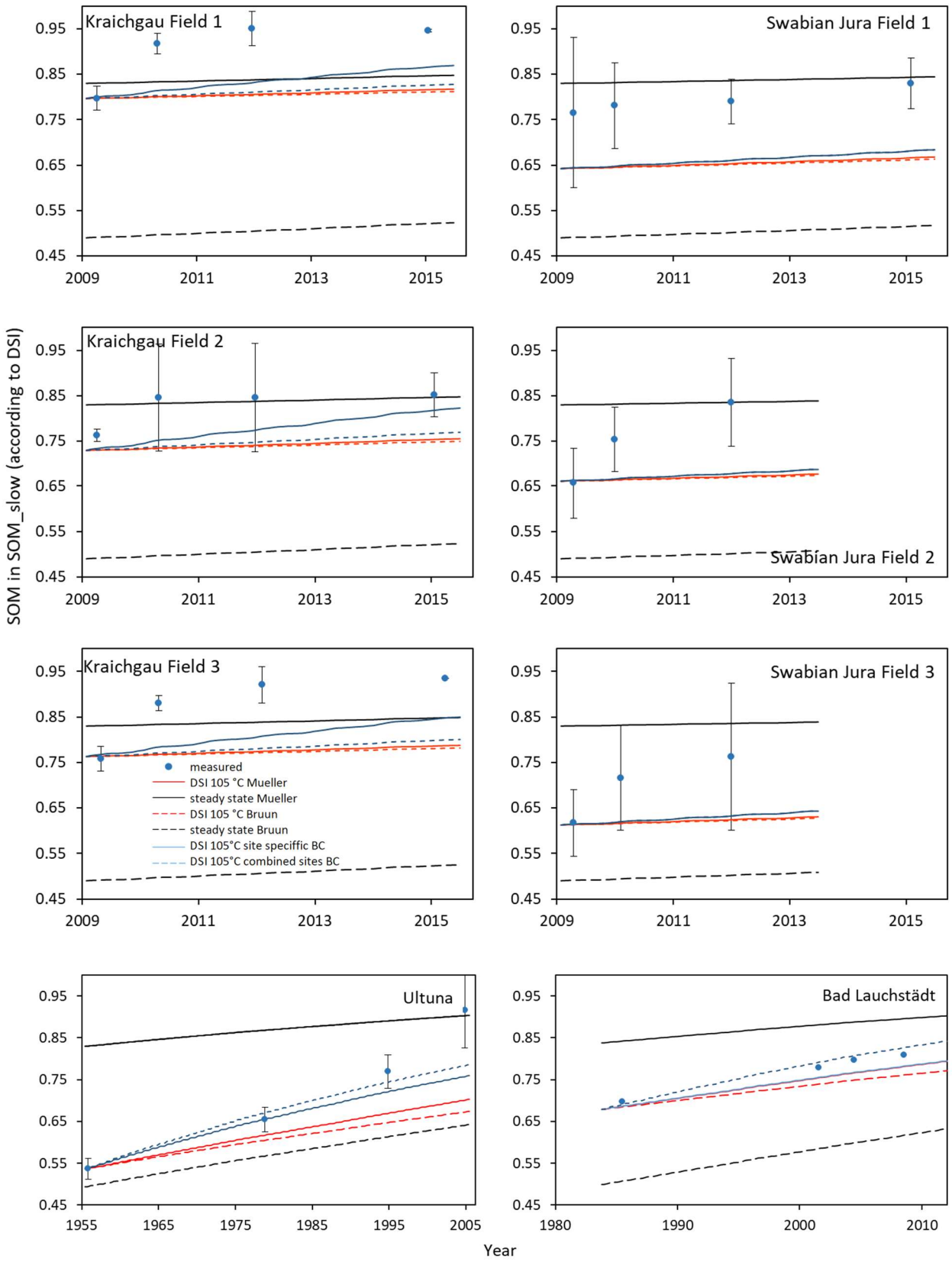

Figure S 3 Development of simulated vs observed SOM in the slow pool, according to the DSI division throughout the simulation period (for brevity only for 105 °C). Bars indicate standard deviation of all plots per field.

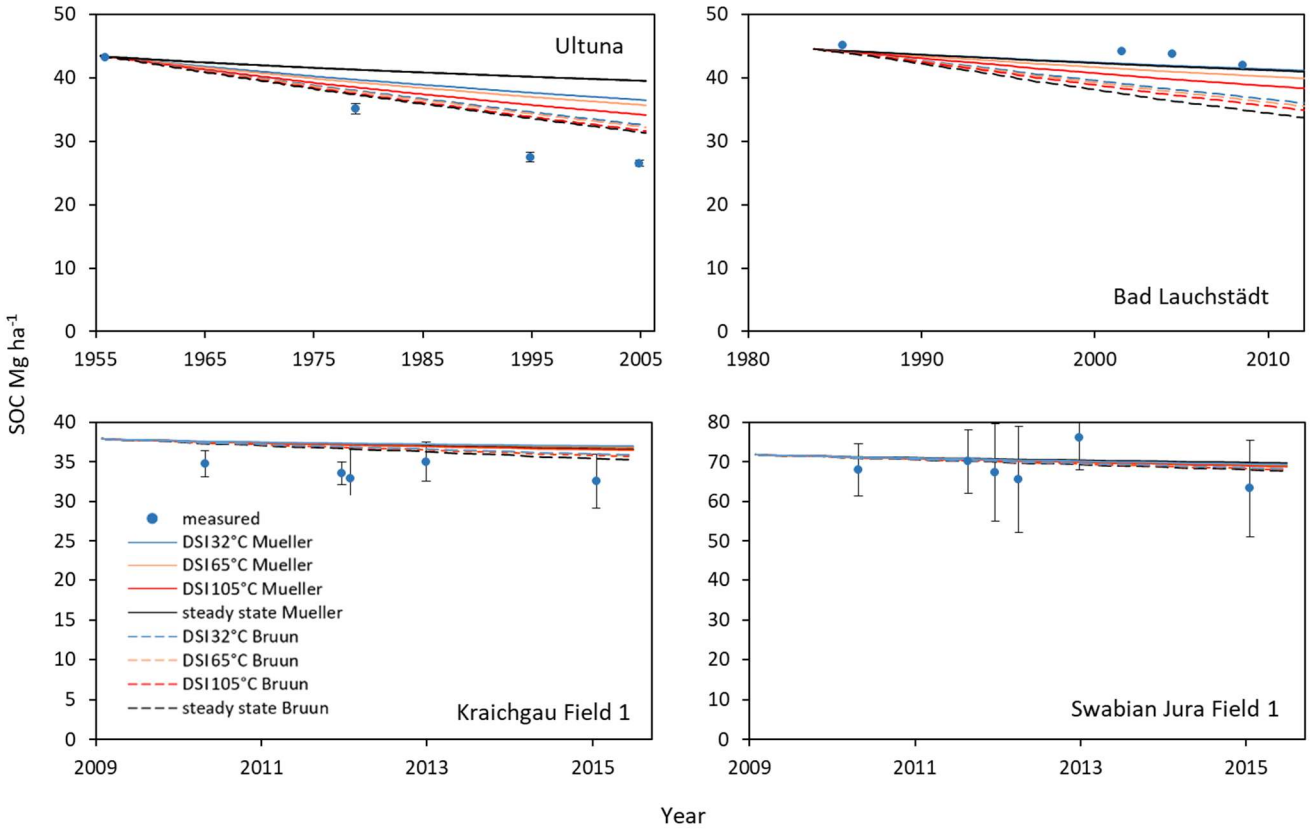

Figure S 4 Simulations for Ultuna (top left), Bad Lauchstädt (top right), Kraichgau field 1 (bottom left) and Swabian Jura Field 1 (bottom right). Initializations were done (i) assuming steady state using the formula of Bruun and Jensen (2002) with turnover rates of Mueller et al. (1997) and Bruun et al. (2003) and (ii) by the DRIFTS stability index (DSI) at different drying temperatures using both turnover rates for simulations. Bars indicate standard deviation of all plots per field.

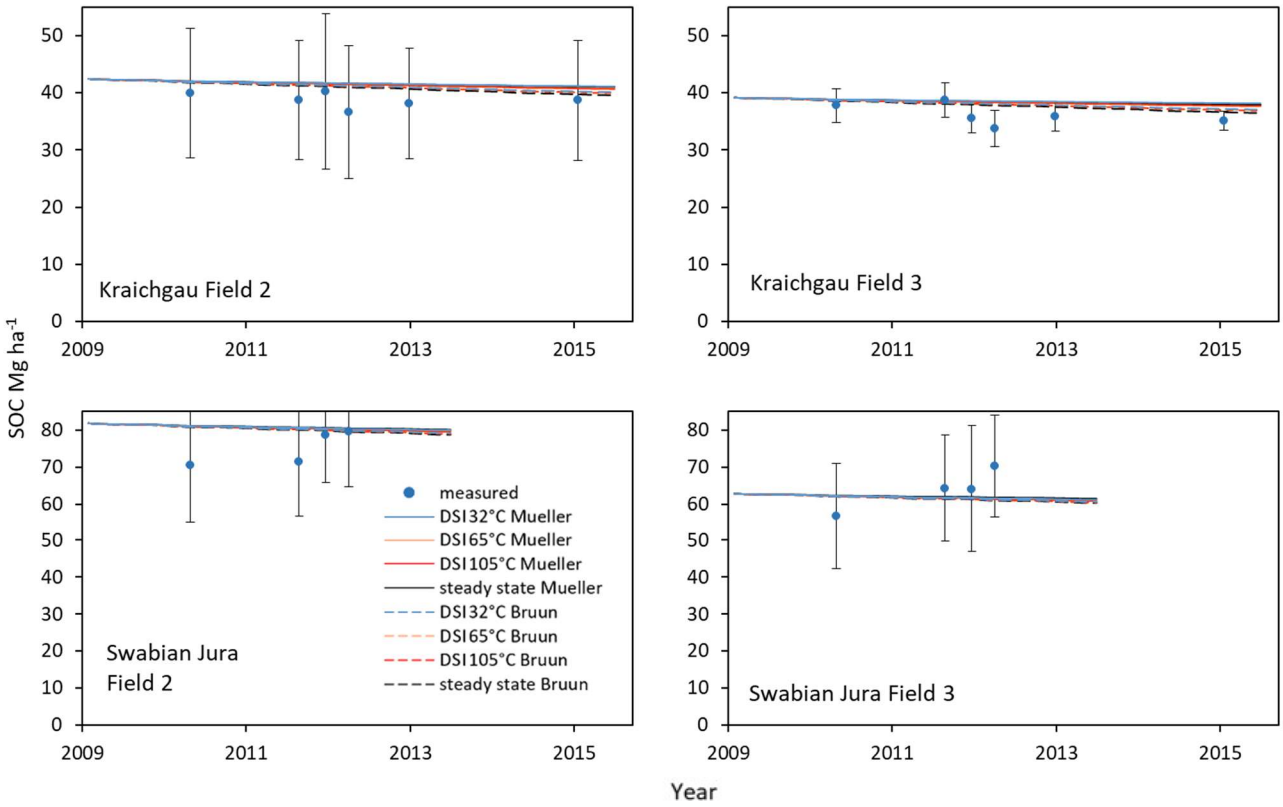

Figure S 5 SOC simulations for Kraichgau field 2 (top left) and field 3 (top right) as well as for Swabian Jura field 2 (bottom left) and field 3 (bottom right). Initializations were done (i) assuming steady state using the formula of Bruun and Jensen (2002) with turnover rates of Mueller et al. (1997) and Bruun et al. (2003) and (ii) by the DRIFTS stability index (DSI) at different drying temperatures using both turnover rates for simulations. Bars indicate standard deviation of all plots per field.

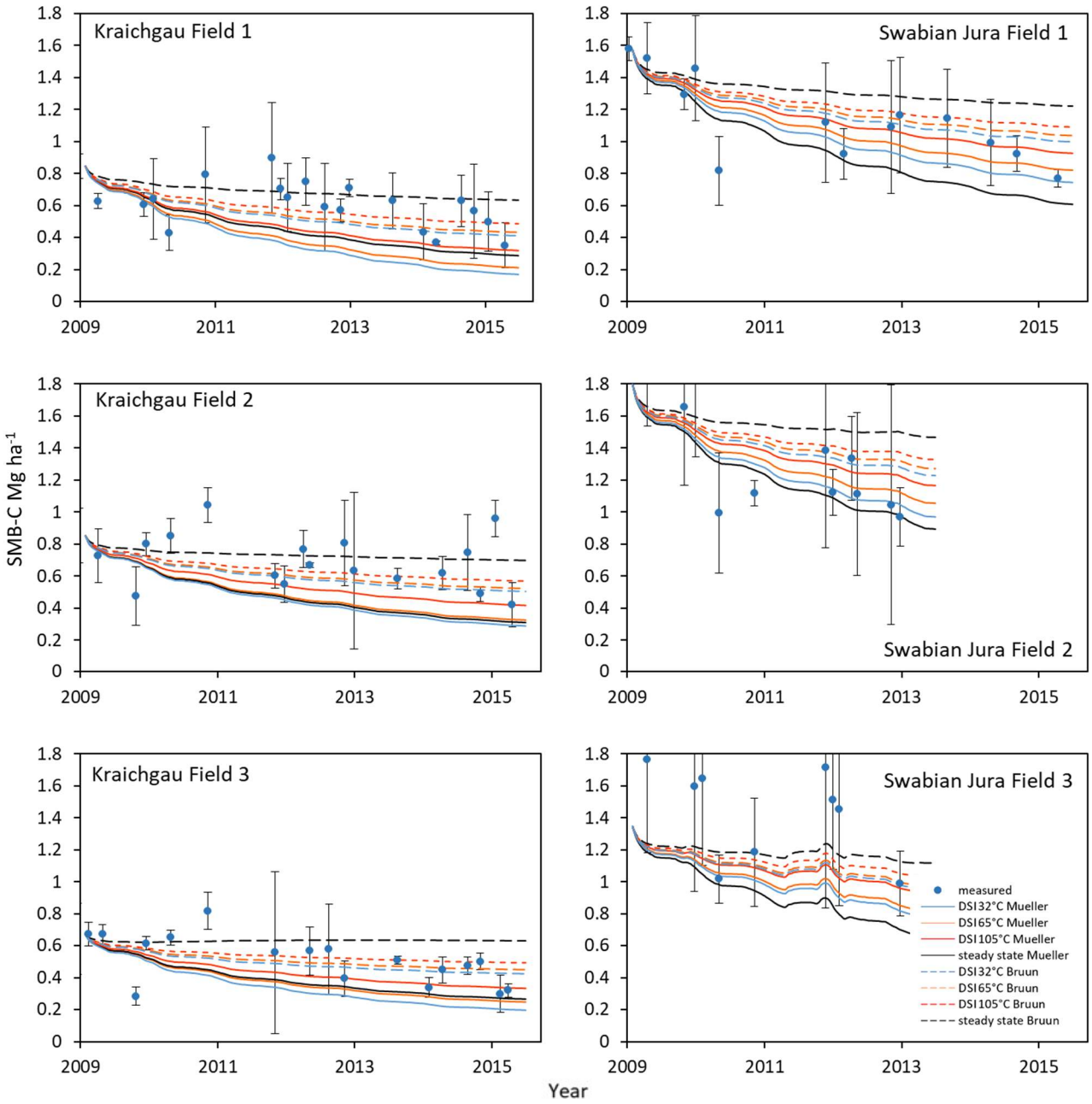

Figure S 6 SMB-C simulations for Kraichgau field 1, 2 and 3 as well as for Swabian Jura field 1, 2 and 3. Initializations were done (i) assuming steady state using the formula of Bruun and Jensen, (2002) with turnover rates of Mueller et al. (1997) and Bruun et al. (2003) and (ii) by the DRIFTS stability index (DSI) spectra at different drying temperatures using both turnover rates for simulations. Bars indicate standard deviation of all plots per field.

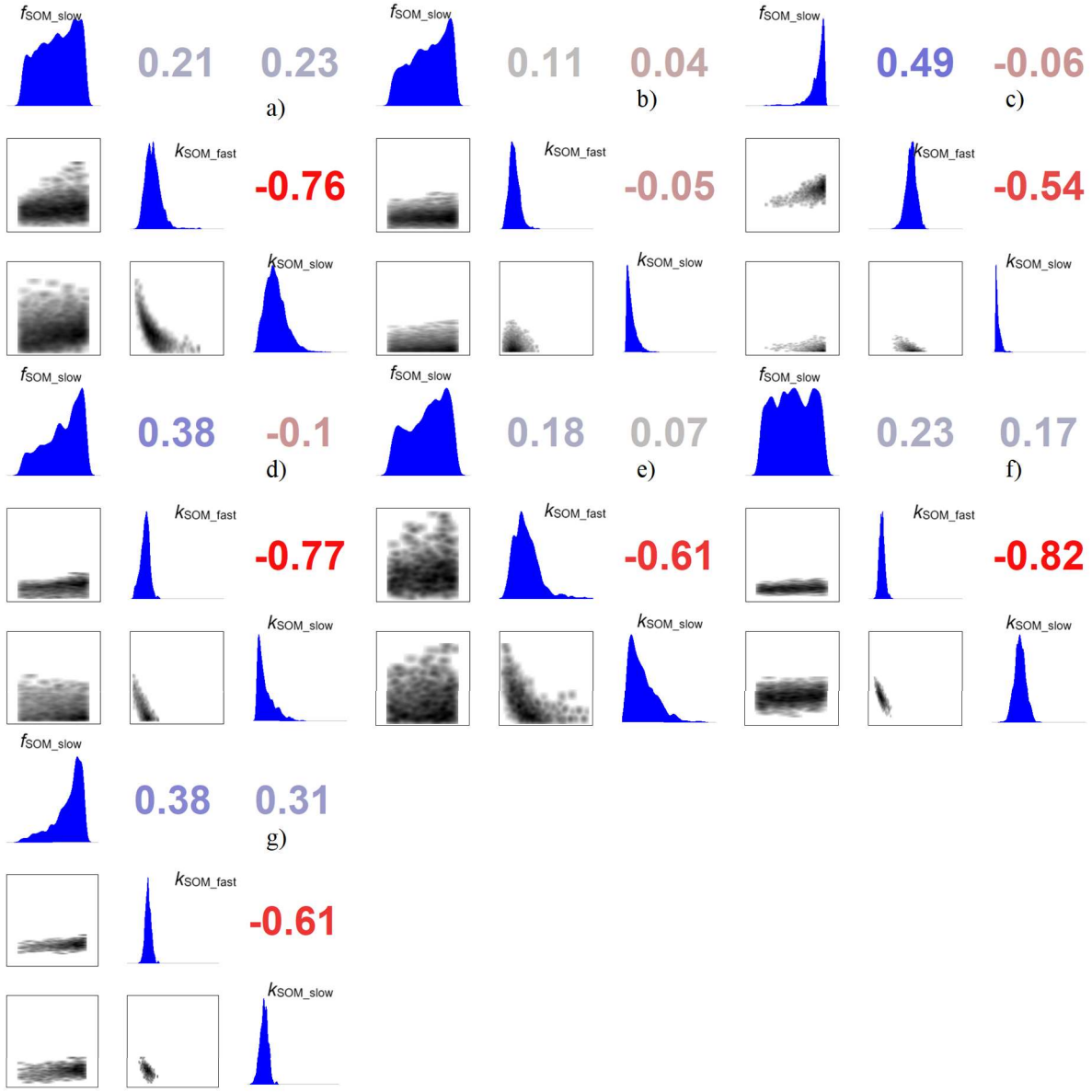

Figure S 7 Correlation matrices of the posterior distributions of different simulations from top left to bottom right: a) Ultuna (1), b) Bad Lauchstädt (2), c) Kraichgau(3), d) Swabian Jura(4), e) equal weight calibration for all sites combined using the DSI (5), f) original weight calibration for all sites combined without using the DSI (6), and g) original weight calibration for all sites combined using the DSI (7).

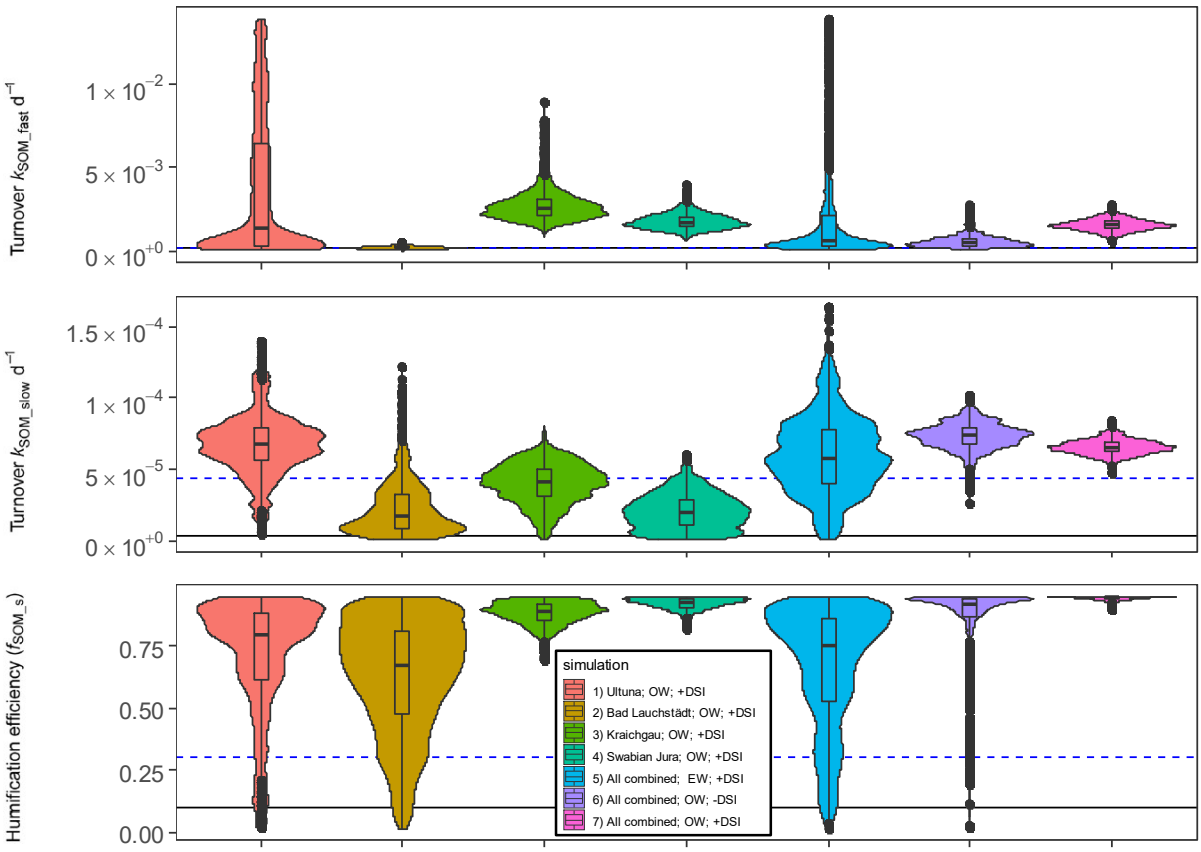

Figure S 8 Violin plots of the Daisy model parameters obtained by the Bayesian calibration when f_{SOM_slow} was constrained to 95 %. Used were the individual sites (1-4) and all sites combined (5-7) with different weighing schemes (OW = original weight, EW = equal weight calibration; ± DSI indicates, whether the DSI data was used for calibration). The black line corresponds to the parameters of Mueller et al. (1997), the blue dashed line to the parameters of Bruun et al. (2003). Note that the turnover k_{SOM_fast} parameter (top of the figure) is the same in both Mueller et al. (1997) and Bruun et al. (2003).

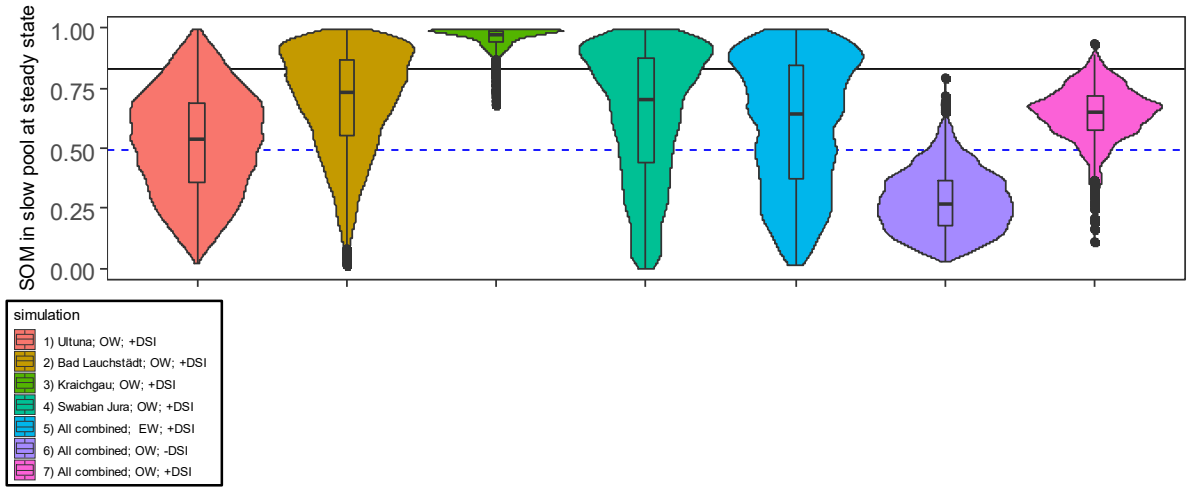

Figure S 9 Violin plots of the fraction of SOM that would be in the slow pool of the Daisy model at steady state for different Bayesian calibrations. The black line corresponds to the parameters of Mueller et al. (1997), the blue dashed line to the value of Bruun et al. (2003).

12 Supplementary Material:

12.1 SAS code of models used in for analysis of the model error

```
TITLE " final TOC for KR SJ) Temporal covariance structure sph";
ods graphics on;
proc glimmix data=Errors plots=residualpanel(conditional marginal);
ods output covparms FitStatistics diffs=diffs lsmeans=lsmeans;
class initialization turnover field days_passed_class;
model       E_TOC_root=       initialization       turnover       days_passed
initialization*turnover    turnover*days_passed    initialization*days_passed
initialization*days_passed*turnover /ddfm=KR;
random days_passed_class /sub=field type=sp(sph)(days_passed) ;
random       days_passed_class       /sub=field*       initialization*turnover
type=sp(sph)(days_passed)residual;
run;
ods graphics off;

TITLE " final full Cmic KR SJ) Temporal covariance structure POW";
ods graphics on;
proc glimmix data=Errors plots=residualpanel(conditional marginal);
ods output covparms FitStatistics diffs=diffs lsmeans=lsmeans;
class initialization turnover field days_passed_class;
model       E_Cmic_abs=       initialization       turnover       days_passed
initialization*turnover    turnover*days_passed    initialization*days_passed
initialization*days_passed*turnover /ddfm=KR;
random days_passed_class /sub=field type=sp(pow)(days_passed) ;
random       days_passed_class       /sub=field*       initialization*turnover
type=sp(pow)(days_passed)residual;
run;
ods graphics off;

TITLE " final SOC for Ultuna) Simple random effect";
ods graphics on;
proc glimmix data=Errors plots=residualpanel(conditional marginal);
ods output covparms FitStatistics diffs=diffs lsmeans=lsmeans normal;
class initialization turnover days_passed_class;
model       E_TOC_abs=       initialization       turnover       years_passed
initialization*turnover   turnover*years_passed   initialization*years_passed
initialization*years_passed*turnover /ddfm=KR;
random days_passed_class;
run;
ods graphics off;

TITLE " final SOC for Bad Lauchstädt) Temporal covariance structure Sph";
ods graphics on;
proc glimmix data=Errors plots=residualpanel(conditional marginal);
ods output covparms FitStatistics diffs=diffs lsmeans=lsmeans;
class initialization turnover days_passed_class;
model       E_TOC_sqr=       initialization       turnover       years_passed
initialization*turnover   turnover*years_passed   initialization*years_passed
initialization*years_passed*turnover /ddfm=KR;
random         days_passed_class         /sub=         initialization*turnover
type=sp(Sph)(years_passed) residual;
run;
ods graphics off;
```

12.2 Selection of parameters subject to Bayesian calibration based on their importance within our model simulations

Here we explain, why only k_{SOM_slow}, k_{SOM_fast} and the humification efficiency (f_{SOM_slow}) were considered to be important parameters for Bayesian calibration of bare fallow plots within this study. We give a calculation example of internal recycling from SOM going to SMB and back to SOM.
The fraction of remaining SOM as one part SOM cycles through SMB one time and then is stabilized as SOM again is defined as:

$$SOM_{rec} = CUE * \frac{d_m}{m_m + d_m} * f_{\mathrm{SOM\_fast}} \quad (9)$$

Where SOM_{rec} is the percentage of recycled native SOM after one cycle of microbial use, CUE is the carbon use efficiency, d_m is the microbial death rate, m_m is the microbial maintenance respiration rate, and f_{SOM_fast} is the fraction of dead microbial biomass going back to the fast SOM pool as microbes die. The results using the parameters of both parameter sets are identical here: 50% × 9% × 40% = 1.8% for the fast SOM pool, and 40% × 9% × 40% = 1.44% for the slow SOM. From this very low recycling rates, it follows that without carbon inputs, the recycling parameters are irrelevant for simulation of SOM content and only the speed of decomposition and humification determine how much is left at a certain point in time.

12.3 Brief test of the suggested new structure of Daisy

We briefly want to demonstrate the results of the new structure of Daisy, that was implemented to the code in the meantime. As can be seen from the figure S 9 below the new structure indeed changes the turnover times of SOM slow to a minor degree (because SOM slow is no longer fed by SOM fast). What is of higher importance is that the coupling between humification efficiency and the turnover of SOM slow is eliminated with the new structure and the strong tendency of the humification efficiency to run into the upper boundary removed. It is not surprising that the new humification efficiency parameter cannot be clearly identified by the bare fallow dataset, as no new carbon comes into the system.

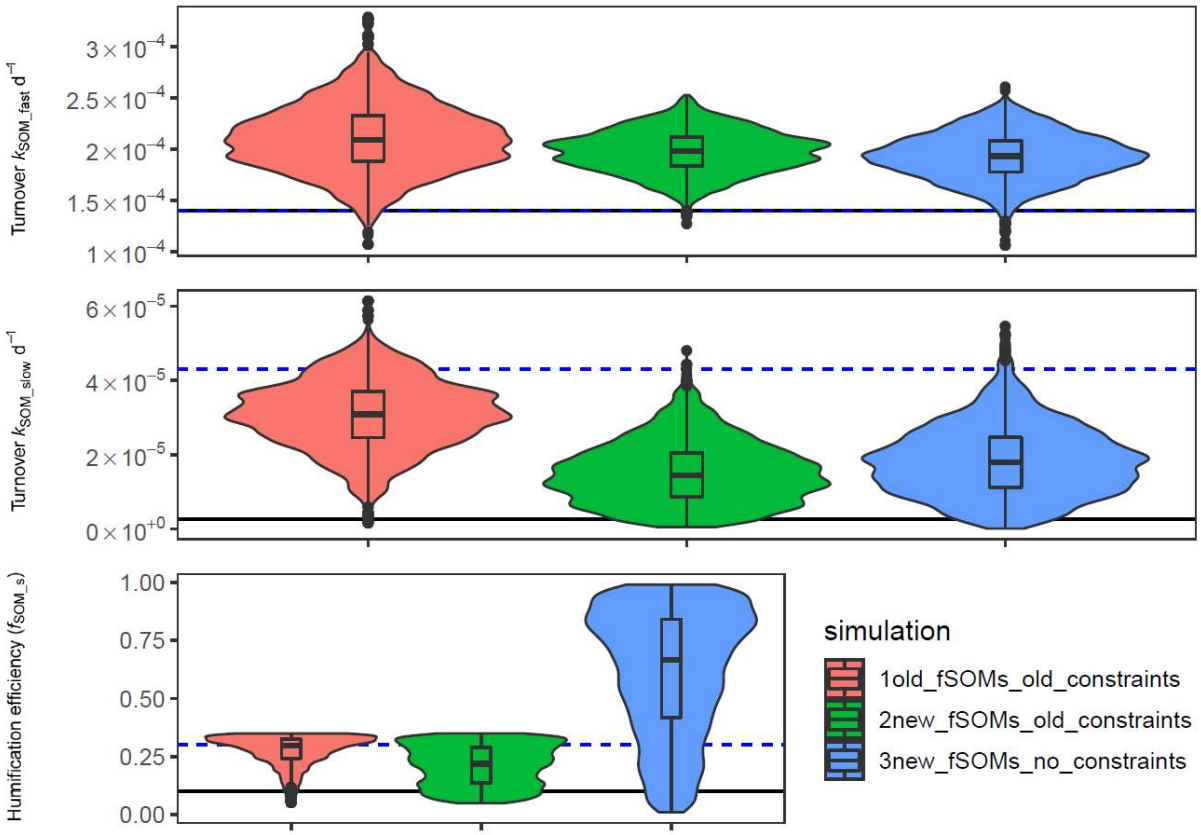

Figure S 10 Violin plots of the parameters, obtained by the Bayesian calibration using the new suggested model structure (old constraints of f_{SOM_s} are 0.05 and 0.35, no constraints means 0.01 and 0.99) for all sites combined with equal weight and using the DSI (7). The black line corresponds to the parameters of Mueller et al. (1997), the blue dashed line to the parameters of Bruun et al. (2003). Note that the turnover k_{SOM_fast} parameter (top of the figure) is the same in both Mueller et al. (1997) and Bruun et al. (2003).

12.4 Raw data

Experiment	Sampling depth	Sampling date	Subplot ID	SOC t ha^{-1}	SMB-C t ha^{-1}	Area below 2930 cm^{-1}	Area below 1620 cm^{-1}	SOM in slow pool
Ultuna	0 - 20 cm	1956-06-01	1	43.20		0.428	0.448	51.1%
Ultuna	0 - 20 cm	1956-06-01	22	43.22				
Ultuna	0 - 20 cm	1956-06-01	44	43.23		0.394	0.461	53.9%
Ultuna	0 - 20 cm	1956-06-01	55	43.25		0.369	0.471	56.0%
Ultuna	0 - 20 cm	1979-06-01	1	35.76		0.263	0.508	65.9%
Ultuna	0 - 20 cm	1979-06-01	22	35.77		0.290	0.479	62.3%
Ultuna	0 - 20 cm	1979-06-01	44	33.77		0.245	0.526	68.2%
Ultuna	0 - 20 cm	1979-06-01	55	35.22				
Ultuna	0 - 20 cm	1995-06-01	1	27.51		0.144	0.528	78.5%
Ultuna	0 - 20 cm	1995-06-01	22	28.68		0.178	0.514	74.3%
Ultuna	0 - 20 cm	1995-06-01	44	26.66		0.192	0.525	73.2%
Ultuna	0 - 20 cm	1995-06-01	55	26.96		0.115	0.516	81.8%
Ultuna	0 - 20 cm	2005-06-01	1	26.80		0.008	0.511	98.5%
Ultuna	0 - 20 cm	2005-06-01	22	27.20		0.134	0.498	78.8%
Ultuna	0 - 20 cm	2005-06-01	44	25.90		0.015	0.534	97.2%
Ultuna	0 - 20 cm	2005-06-01	55	26.15		0.046	0.516	91.9%
Bad Lauchstädt	0 - 20 cm	1985-09-01		45.08		0.226	0.522	69.8%
Bad Lauchstädt	0 - 20 cm	2001-10-01		44.12		0.149	0.515	77.6%
Bad Lauchstädt	0 - 20 cm	2004-09-01		43.83		0.127	0.501	79.8%
Bad Lauchstädt	0 - 20 cm	2008-10-01		41.91		0.129	0.490	79.2%
Kraichgau 1	0 - 30 cm	2009-05-25	1	35.23	0.944			
Kraichgau 1	0 - 30 cm	2009-05-25	2	39.75	1.080			
Kraichgau 1	0 - 30 cm	2009-05-25	3	36.32	0.943			
Kraichgau 2	0 - 30 cm	2009-05-20	6	54.32	0.330			
Kraichgau 2	0 - 30 cm	2009-05-20	7	36.70	0.466			
Kraichgau 2	0 - 30 cm	2009-05-20	8	33.80	0.301			
Kraichgau 3	0 - 30 cm	2009-06-22	11	41.12	0.890			
Kraichgau 3	0 - 30 cm	2009-06-22	12	37.93	0.462			
Kraichgau 3	0 - 30 cm	2009-06-22	13	36.46	0.570			
Swabian Jura 1	0 - 30 cm	2009-06-17	16	71.89	1.342			
Swabian Jura 1	0 - 30 cm	2009-06-17	17	56.48	0.988			
Swabian Jura 1	0 - 30 cm	2009-06-17	20	82.61	1.499			
Swabian Jura 2	0 - 30 cm	2009-06-17	22	76.66	1.495			
Swabian Jura 2	0 - 30 cm	2009-06-17	23	76.84	1.868			
Swabian Jura 2	0 - 30 cm	2009-06-17	24	83.34	2.618			
Swabian Jura 2	0 - 30 cm	2009-06-17	24	89.06	2.388			
Swabian Jura 2	0 - 30 cm	2009-06-17	24	88.17	2.311			
Swabian Jura 3	0 - 30 cm	2009-06-18	26	61.00	2.494			

Experiment	Sampling depth	Sampling date	Subplot ID	SOC t ha^{-1}	SMB-C t ha^{-1}	Area below 2930 cm^{-1}	Area below 1620 cm^{-1}	SOM in slow pool
Swabian Jura 3	0 - 30 cm	2009-06-18	27	59.13	1.108			
Swabian Jura 3	0 - 30 cm	2009-06-18	27	54.56	1.043			
Swabian Jura 3	0 - 30 cm	2009-06-18	27	52.35	0.887			
Swabian Jura 3	0 - 30 cm	2009-06-18	30	68.26	2.058			
Kraichgau 1	0 - 30 cm	2009-06-30	1		0.930			
Kraichgau 1	0 - 30 cm	2009-06-30	2		0.778			
Kraichgau 1	0 - 30 cm	2009-06-30	3		0.833			
Kraichgau 2	0 - 30 cm	2009-06-30	6		1.031			
Kraichgau 2	0 - 30 cm	2009-06-30	7		0.843			
Kraichgau 2	0 - 30 cm	2009-06-30	8		0.688			
Kraichgau 3	0 - 30 cm	2009-08-18	11		0.706			
Kraichgau 3	0 - 30 cm	2009-08-18	12		0.588			
Kraichgau 3	0 - 30 cm	2009-08-18	13		0.724			
Swabian Jura 1	0 - 30 cm	2009-07-13	16		1.655			
Swabian Jura 1	0 - 30 cm	2009-07-13	17		1.508			
Swabian Jura 1	0 - 30 cm	2009-07-13	20		1.569			
Swabian Jura 2	0 - 30 cm	2009-07-13	22		1.484			
Swabian Jura 2	0 - 30 cm	2009-07-13	23		1.849			
Swabian Jura 2	0 - 30 cm	2009-07-17	24		2.405			
Swabian Jura 2	0 - 30 cm	2009-07-17	24		1.897			
Swabian Jura 2	0 - 30 cm	2009-07-17	24		1.950			
Swabian Jura 3	0 - 30 cm	2009-07-17	26	78.14	1.378			
Swabian Jura 3	0 - 30 cm	2009-07-17	27		0.873			
Swabian Jura 3	0 - 30 cm	2009-07-17	27		0.649			
Swabian Jura 3	0 - 30 cm	2009-07-17	27		0.901			
Swabian Jura 3	0 - 30 cm	2009-07-17	30		1.865			
Kraichgau 1	0 - 30 cm	2009-10-09	1		0.574	0.146	0.695	82.7%
Kraichgau 1	0 - 30 cm	2009-10-09	2		0.667	0.182	0.690	79.1%
Kraichgau 1	0 - 30 cm	2009-10-09	3		0.638	0.209	0.716	77.4%
Kraichgau 2	0 - 30 cm	2009-10-09	6		0.896			
Kraichgau 2	0 - 30 cm	2009-10-09	7		0.561	0.207	0.704	77.3%
Kraichgau 2	0 - 30 cm	2009-10-09	8		0.721	0.236	0.720	75.3%
Kraichgau 3	0 - 30 cm	2009-10-31	11		0.629	0.261	0.697	72.8%
Kraichgau 3	0 - 30 cm	2009-10-31	12		0.643	0.201	0.702	77.8%
Kraichgau 3	0 - 30 cm	2009-10-31	13		0.742	0.208	0.700	77.1%
Swabian Jura 1	0 - 30 cm	2009-10-21	16		1.427	0.046	0.690	93.7%
Swabian Jura 1	0 - 30 cm	2009-10-21	17		1.355	0.198	0.596	75.0%
Swabian Jura 1	0 - 30 cm	2009-10-21	20		1.772	0.324	0.505	60.9%
Swabian Jura 2	0 - 30 cm	2009-10-21	22		1.493	0.206	0.600	74.5%
Swabian Jura 2	0 - 30 cm	2009-10-21	23		2.072	0.385	0.574	59.8%
Swabian Jura 2	0 - 30 cm	2009-10-21	24	87.00	2.324	0.293	0.494	62.8%
Swabian Jura 3	0 - 30 cm	2009-10-21	26	61.00	2.054	0.304	0.478	61.2%

Experiment	Sampling depth	Sampling date	Subplot ID	SOC t ha^{-1}	SMB-C t ha^{-1}	Area below 2930 cm^{-1}	Area below 1620 cm^{-1}	SOM in slow pool
Swabian Jura 3	0 - 30 cm	2009-10-21	27	55.35	1.092	0.272	0.615	69.3%
Swabian Jura 3	0 - 30 cm	2009-10-21	30		2.152	0.375	0.451	54.6%
Kraichgau 1	0 - 30 cm	2010-06-15	1		0.631			
Kraichgau 1	0 - 30 cm	2010-06-15	2		0.522			
Kraichgau 1	0 - 30 cm	2010-06-15	3		0.662			
Kraichgau 2	0 - 30 cm	2010-04-28	6		0.685			
Kraichgau 2	0 - 30 cm	2010-04-28	7		0.398			
Kraichgau 2	0 - 30 cm	2010-04-28	8		0.347			
Kraichgau 3	0 - 30 cm	2010-04-28	11		0.286			
Kraichgau 3	0 - 30 cm	2010-04-28	12		0.226			
Kraichgau 3	0 - 30 cm	2010-04-28	13		0.339			
Swabian Jura 1	0 - 30 cm	2010-05-05	16		1.254			
Swabian Jura 1	0 - 30 cm	2010-05-05	17		1.224			
Swabian Jura 1	0 - 30 cm	2010-05-05	20		1.403			
Swabian Jura 2	0 - 30 cm	2010-05-05	22		1.360			
Swabian Jura 2	0 - 30 cm	2010-05-05	23		1.388			
Swabian Jura 2	0 - 30 cm	2010-05-05	24		2.226			
Swabian Jura 3	0 - 30 cm	2010-06-28	26		1.735			
Swabian Jura 3	0 - 30 cm	2010-06-28	27		0.881			
Swabian Jura 3	0 - 30 cm	2010-06-28	30		2.173			
Kraichgau 1	0 - 30 cm	2010-08-06	1		0.548			
Kraichgau 1	0 - 30 cm	2010-08-06	2		0.925			
Kraichgau 1	0 - 30 cm	2010-08-06	3		0.445			
Kraichgau 2	0 - 30 cm	2010-06-21	6		0.878			
Kraichgau 2	0 - 30 cm	2010-06-21	7		0.736			
Kraichgau 2	0 - 30 cm	2010-06-21	8		0.786			
Kraichgau 3	0 - 30 cm	2010-06-21	11		0.659			
Kraichgau 3	0 - 30 cm	2010-06-21	12		0.577			
Kraichgau 3	0 - 30 cm	2010-06-21	13		0.604			
Swabian Jura 1	0 - 30 cm	2010-07-05	16		1.810	0.225	0.533	70.3%
Swabian Jura 1	0 - 30 cm	2010-07-05	17		1.155	0.069	0.535	88.6%
Swabian Jura 1	0 - 30 cm	2010-07-05	20		1.407	0.146	0.446	75.3%
Swabian Jura 2	0 - 30 cm	2010-07-05	22		1.570	0.129	0.541	80.8%
Swabian Jura 2	0 - 30 cm	2010-07-05	23		1.506	0.147	0.523	78.1%
Swabian Jura 2	0 - 30 cm	2010-07-05	24		2.328	0.230	0.471	67.2%
Swabian Jura 3	0 - 30 cm	2010-08-10	26		2.114	0.238	0.445	65.2%
Swabian Jura 3	0 - 30 cm	2010-08-10	27		1.049	0.095	0.538	85.1%
Swabian Jura 3	0 - 30 cm	2010-08-10	30		1.768	0.223	0.409	64.7%
Kraichgau 1	0 - 30 cm	2010-10-30	1	35.13	0.351	0.066	0.673	91.1%
Kraichgau 1	0 - 30 cm	2010-10-30	2	36.23	0.384	0.037	0.618	94.3%
Kraichgau 1	0 - 30 cm	2010-10-30	3	32.99	0.554	0.079	0.691	89.8%
Kraichgau 2	0 - 30 cm	2010-10-30	6	52.79	0.877	0.239	0.631	72.5%

Experiment	Sampling depth	Sampling date	Subplot ID	SOC t ha^{-1}	SMB-C t ha^{-1}	Area below 2930 cm^{-1}	Area below 1620 cm^{-1}	SOM in slow pool
Kraichgau 2	0 - 30 cm	2010-10-30	7	31.60	0.944	0.028	0.661	95.9%
Kraichgau 2	0 - 30 cm	2010-10-30	8	35.44	0.735	0.119	0.697	85.4%
Kraichgau 3	0 - 30 cm	2010-10-30	11	41.02	0.704	0.110	0.709	86.6%
Kraichgau 3	0 - 30 cm	2010-10-30	12	36.90	0.634	0.078	0.693	89.9%
Kraichgau 3	0 - 30 cm	2010-10-30	13	35.33	0.614	0.098	0.700	87.7%
Swabian Jura 1	0 - 30 cm	2010-11-06	16	70.75	0.782			
Swabian Jura 1	0 - 30 cm	2010-11-06	17	60.44	0.623			
Swabian Jura 1	0 - 30 cm	2010-11-06	20	72.89	1.047			
Swabian Jura 2	0 - 30 cm	2010-11-06	22	70.82	0.832			
Swabian Jura 2	0 - 30 cm	2010-11-06	23	56.81	0.729			
Swabian Jura 2	0 - 30 cm	2010-11-06	24	87.22	1.425			
Swabian Jura 3	0 - 30 cm	2010-11-06	26	50.15	0.958			
Swabian Jura 3	0 - 30 cm	2010-11-06	27	57.69	0.903			
Swabian Jura 3	0 - 30 cm	2010-11-06	30	76.54	1.188			
Kraichgau 1	0 - 30 cm	2011-05-15	1		1.070			
Kraichgau 1	0 - 30 cm	2011-05-15	2		0.479			
Kraichgau 1	0 - 30 cm	2011-05-15	3		0.824			
Kraichgau 2	0 - 30 cm	2011-05-15	6		1.166			
Kraichgau 2	0 - 30 cm	2011-05-15	7		0.963			
Kraichgau 2	0 - 30 cm	2011-05-15	8		1.000			
Kraichgau 3	0 - 30 cm	2011-05-15	11		0.927			
Kraichgau 3	0 - 30 cm	2011-05-15	12		0.829			
Kraichgau 3	0 - 30 cm	2011-05-15	13		0.695			
Swabian Jura 1	0 - 30 cm	2011-05-13	16		0.962			
Swabian Jura 1	0 - 30 cm	2011-05-13	17		1.379			
Swabian Jura 1	0 - 30 cm	2011-05-13	20		1.950			
Swabian Jura 2	0 - 30 cm	2011-05-13	22		1.195			
Swabian Jura 2	0 - 30 cm	2011-05-13	23		1.039			
Swabian Jura 2	0 - 30 cm	2011-05-13	24		1.120			
Swabian Jura 3	0 - 30 cm	2011-05-13	26		1.345			
Swabian Jura 3	0 - 30 cm	2011-05-13	27		0.795			
Swabian Jura 3	0 - 30 cm	2011-05-13	30		1.413			
Kraichgau 1	0 - 30 cm	2012-02-26	1	32.80				
Kraichgau 1	0 - 30 cm	2012-02-26	2	32.35				
Kraichgau 2	0 - 30 cm	2012-02-26	6	50.39				
Kraichgau 2	0 - 30 cm	2012-02-26	7	30.20				
Kraichgau 2	0 - 30 cm	2012-02-26	8	35.55				
Kraichgau 3	0 - 30 cm	2012-02-26	11	42.13				
Kraichgau 3	0 - 30 cm	2012-02-26	12	37.07				
Kraichgau 3	0 - 30 cm	2012-02-26	13	36.95				
Swabian Jura 1	0 - 30 cm	2012-03-15	16	72.06				
Swabian Jura 1	0 - 30 cm	2012-03-15	17	61.29				

Experiment	Sampling depth	Sampling date	Subplot ID	SOC t ha^{-1}	SMB-C t ha^{-1}	Area below 2930 cm^{-1}	Area below 1620 cm^{-1}	SOM in slow pool
Swabian Jura 1	0 - 30 cm	2012-03-15	20	77.04				
Swabian Jura 2	0 - 30 cm	2012-03-15	22	67.32				
Swabian Jura 2	0 - 30 cm	2012-03-15	23	57.01				
Swabian Jura 2	0 - 30 cm	2012-03-15	24	87.15				
Swabian Jura 3	0 - 30 cm	2012-02-27	26	46.05				
Swabian Jura 3	0 - 30 cm	2012-02-27	27	50.87				
Swabian Jura 3	0 - 30 cm	2012-02-27	30	73.01				
Kraichgau 1	0 - 30 cm	2012-05-07	1		1.117			
Kraichgau 1	0 - 30 cm	2012-05-07	2		1.072			
Kraichgau 1	0 - 30 cm	2012-05-07	3		0.499			
Kraichgau 2	0 - 30 cm	2012-05-07	6		0.649			
Kraichgau 2	0 - 30 cm	2012-05-07	7		0.512			
Kraichgau 2	0 - 30 cm	2012-05-07	8		0.645			
Kraichgau 3	0 - 30 cm	2012-05-07	11		0.680			
Kraichgau 3	0 - 30 cm	2012-05-07	12		0.989			
Kraichgau 3	0 - 30 cm	2012-05-07	13					
Swabian Jura 1	0 - 30 cm	2012-05-25	16		1.172			
Swabian Jura 1	0 - 30 cm	2012-05-25	17		0.720			
Swabian Jura 1	0 - 30 cm	2012-05-25	20		1.459			
Swabian Jura 2	0 - 30 cm	2012-05-25	22		0.806			
Swabian Jura 2	0 - 30 cm	2012-05-25	23		1.330			
Swabian Jura 2	0 - 30 cm	2012-05-25	24		2.015			
Swabian Jura 3	0 - 30 cm	2012-05-25	26		1.602			
Swabian Jura 3	0 - 30 cm	2012-05-25	27		0.897			
Swabian Jura 3	0 - 30 cm	2012-05-25	30		2.644			
Kraichgau 1	0 - 30 cm	2012-06-24	1	33.58	0.629	0.017	0.708	97.7%
Kraichgau 1	0 - 30 cm	2012-06-24	2	34.98	0.758	-0.078	0.660	113.4%
Kraichgau 1	0 - 30 cm	2012-06-24	3	32.18	0.720	0.057	0.696	92.4%
Kraichgau 2	0 - 30 cm	2012-06-24	6	55.58	0.659	0.200	0.618	75.5%
Kraichgau 2	0 - 30 cm	2012-06-24	7	29.49	0.555	0.013	0.680	98.1%
Kraichgau 2	0 - 30 cm	2012-06-24	8	35.67	0.436	0.176	0.713	80.2%
Kraichgau 3	0 - 30 cm	2012-06-24	11	38.14	0.548			
Kraichgau 3	0 - 30 cm	2012-06-24	12	33.21	0.368			
Kraichgau 3	0 - 30 cm	2012-06-24	13	35.22	0.486			
Swabian Jura 1	0 - 30 cm	2012-07-05	16	65.69	1.057	0.135	0.529	79.7%
Swabian Jura 1	0 - 30 cm	2012-07-05	17	55.79	1.038	0.112	0.565	83.5%
Swabian Jura 1	0 - 30 cm	2012-07-05	20	80.25	1.244	0.170	0.477	73.8%
Swabian Jura 2	0 - 30 cm	2012-07-05	22	64.21	1.056	0.041	0.525	92.7%
Swabian Jura 2	0 - 30 cm	2012-07-05	23	61.81	1.026	0.100	0.544	84.4%
Swabian Jura 2	0 - 30 cm	2012-07-05	24	88.51	1.290	0.164	0.454	73.5%
Swabian Jura 3	0 - 30 cm	2012-07-05	26	55.69	1.822	0.190	0.448	70.3%
Swabian Jura 3	0 - 30 cm	2012-07-05	27	56.16	1.018	0.032	0.559	94.5%

Experiment	Sampling depth	Sampling date	Subplot ID	SOC t ha^{-1}	SMB-C t ha^{-1}	Area below 2930 cm^{-1}	Area below 1620 cm^{-1}	SOM in slow pool
Swabian Jura 3	0 - 30 cm	2012-07-05	30	80.93	1.694	0.248	0.441	64.0%
Kraichgau 1	0 - 30 cm	2012-07-31	1	32.14	0.535			
Kraichgau 1	0 - 30 cm	2012-07-31	2	37.07	0.897			
Kraichgau 1	0 - 30 cm	2012-07-31	3	29.51	0.523			
Kraichgau 2	0 - 30 cm	2012-10-05	6	49.95	0.861			
Kraichgau 2	0 - 30 cm	2012-10-05	7	28.65	0.637			
Kraichgau 2	0 - 30 cm	2012-10-05	8	31.28	0.806			
Kraichgau 3	0 - 30 cm	2012-08-07	11	36.25	0.590	0.078	0.704	90.0%
Kraichgau 3	0 - 30 cm	2012-08-07	12	30.25	0.470	0.024	0.707	96.7%
Kraichgau 3	0 - 30 cm	2012-08-07	13	34.77	0.654	0.084	0.713	89.5%
Swabian Jura 1	0 - 30 cm	2012-08-30	16	61.61	0.780			
Swabian Jura 1	0 - 30 cm	2012-08-30	17	54.65	0.899			
Swabian Jura 1	0 - 30 cm	2012-08-30	20	80.41	1.093			
Swabian Jura 2	0 - 30 cm	2012-10-11	22	74.15	1.068			
Swabian Jura 2	0 - 30 cm	2012-10-11	23	68.64	1.349			
Swabian Jura 2	0 - 30 cm	2012-10-11	24	93.19	1.592			
Swabian Jura 3	0 - 30 cm	2012-08-06	26	57.19	1.620			
Swabian Jura 3	0 - 30 cm	2012-08-06	27	51.44	0.785			
Swabian Jura 3	0 - 30 cm	2012-08-06	30	83.65	1.955			
Kraichgau 1	0 - 30 cm	2012-11-07	1		0.829			
Kraichgau 1	0 - 30 cm	2012-11-07	2	39.66	0.835			
Kraichgau 1	0 - 30 cm	2012-11-07	3		0.576			
Kraichgau 2	0 - 30 cm	2012-11-07	6		0.652			
Kraichgau 2	0 - 30 cm	2012-11-07	7		0.680			
Kraichgau 2	0 - 30 cm	2012-11-07	8		0.668			
Kraichgau 3	0 - 30 cm	2012-11-07	11		0.701			
Kraichgau 3	0 - 30 cm	2012-11-07	12		0.596			
Kraichgau 3	0 - 30 cm	2012-11-07	13		0.404			
Swabian Jura 1	0 - 30 cm	2012-11-10	16		0.739			
Swabian Jura 1	0 - 30 cm	2012-11-10	17		0.649			
Swabian Jura 1	0 - 30 cm	2012-11-10	20		0.523			
Swabian Jura 2	0 - 30 cm	2012-11-10	22		1.695			
Swabian Jura 2	0 - 30 cm	2012-11-10	23		0.755			
Swabian Jura 2	0 - 30 cm	2012-11-10	24		0.888			
Swabian Jura 3	0 - 30 cm	2012-11-10	26		0.861			
Swabian Jura 3	0 - 30 cm	2012-11-10	27		0.585			
Swabian Jura 3	0 - 30 cm	2012-11-10	30		1.864			
Kraichgau 1	0 - 30 cm	2013-02-18	1		0.831			
Kraichgau 1	0 - 30 cm	2013-02-18	2		0.291			
Kraichgau 1	0 - 30 cm	2013-02-18	3		0.646			
Kraichgau 2	0 - 30 cm	2013-02-18	6		0.773			
Kraichgau 2	0 - 30 cm	2013-02-18	7		0.881			

Experiment	Sampling depth	Sampling date	Subplot ID	SOC t ha^{-1}	SMB-C t ha^{-1}	Area below 2930 cm^{-1}	Area below 1620 cm^{-1}	SOM in slow pool
Kraichgau 2	0 - 30 cm	2013-02-18	8		0.713			
Kraichgau 3	0 - 30 cm	2013-02-18	11		0.772			
Kraichgau 3	0 - 30 cm	2013-02-18	12		0.251			
Kraichgau 3	0 - 30 cm	2013-02-18	13		0.710			
Swabian Jura 1	0 - 30 cm	2013-05-10	16		0.695			
Swabian Jura 1	0 - 30 cm	2013-05-10	17		1.523			
Swabian Jura 1	0 - 30 cm	2013-05-10	20		1.054			
Swabian Jura 2	0 - 30 cm	2013-05-10	22		1.488			
Swabian Jura 2	0 - 30 cm	2013-05-10	23		0.183			
Swabian Jura 2	0 - 30 cm	2013-05-10	24		1.466			
Swabian Jura 3	0 - 30 cm	2013-05-10	26		0.621			
Kraichgau 1	0 - 30 cm	2013-05-13	1		0.546			
Kraichgau 1	0 - 30 cm	2013-05-13	2		0.648			
Kraichgau 1	0 - 30 cm	2013-05-13	3		0.514			
Kraichgau 2	0 - 30 cm	2013-05-13	6		1.065			
Kraichgau 2	0 - 30 cm	2013-05-13	7		0.825			
Kraichgau 2	0 - 30 cm	2013-05-13	8		0.531			
Kraichgau 3	0 - 30 cm	2013-05-13	11		0.395			
Kraichgau 3	0 - 30 cm	2013-05-13	12		0.506			
Kraichgau 3	0 - 30 cm	2013-05-13	13		0.281			
Swabian Jura 1	0 - 30 cm	2013-06-27	16	72.81	0.887			
Swabian Jura 1	0 - 30 cm	2013-06-27	17	70.08	1.031			
Swabian Jura 1	0 - 30 cm	2013-06-27	20	85.15	1.569			
Swabian Jura 2	0 - 30 cm	2013-06-27	22	77.54	0.871			
Swabian Jura 2	0 - 30 cm	2013-06-27	23	65.91	0.857			
Swabian Jura 2	0 - 30 cm	2013-06-27	24	95.39	1.179			
Swabian Jura 3	0 - 30 cm	2013-06-27	26	67.44	1.165			
Swabian Jura 3	0 - 30 cm	2013-06-27	27	58.08	0.769			
Swabian Jura 3	0 - 30 cm	2013-06-27	30	85.36	1.038			
Kraichgau 1	0 - 30 cm	2013-07-01	1	34.77	0.652			
Kraichgau 1	0 - 30 cm	2013-07-01	2	37.57	0.761			
Kraichgau 1	0 - 30 cm	2013-07-01	3	32.67	0.716			
Kraichgau 2	0 - 30 cm	2013-07-01	6	49.28	1.136			
Kraichgau 2	0 - 30 cm	2013-07-01	7	32.76	0.156			
Kraichgau 2	0 - 30 cm	2013-07-01	8	32.44	0.611			
Kraichgau 3	0 - 30 cm	2013-07-01	11	38.63	3.182			
Kraichgau 3	0 - 30 cm	2013-07-01	12	33.87	0.470			
Kraichgau 3	0 - 30 cm	2013-07-01	13	34.94	0.713			
Kraichgau 1	0 - 30 cm	2014-02-19	1		0.555			
Kraichgau 1	0 - 30 cm	2014-02-19	2		0.829			
Kraichgau 1	0 - 30 cm	2014-02-19	3		0.503			
Kraichgau 2	0 - 30 cm	2014-02-19	6		0.660			

Experiment	Sampling depth	Sampling date	Subplot ID	SOC t ha^{-1}	SMB-C t ha^{-1}	Area below 2930 cm^{-1}	Area below 1620 cm^{-1}	SOM in slow pool
Kraichgau 2	0 - 30 cm	2014-02-19	7		0.539			
Kraichgau 2	0 - 30 cm	2014-02-19	8		0.554			
Kraichgau 3	0 - 30 cm	2014-02-19	11		0.501			
Kraichgau 3	0 - 30 cm	2014-02-19	12		0.490			
Kraichgau 3	0 - 30 cm	2014-02-19	13		0.537			
Swabian Jura 1	0 - 30 cm	2014-03-04	16		1.127			
Swabian Jura 1	0 - 30 cm	2014-03-04	17		0.848			
Swabian Jura 1	0 - 30 cm	2014-03-04	20		1.457			
Kraichgau 1	0 - 30 cm	2014-08-04	1		0.339			
Kraichgau 1	0 - 30 cm	2014-08-04	2		0.638			
Kraichgau 1	0 - 30 cm	2014-08-04	3		0.327			
Kraichgau 3	0 - 30 cm	2014-08-04	11		0.320			
Kraichgau 3	0 - 30 cm	2014-08-04	12		0.291			
Kraichgau 3	0 - 30 cm	2014-08-04	13		0.405			
Kraichgau 1	0 - 30 cm	2014-10-15	1		0.376			
Kraichgau 1	0 - 30 cm	2014-10-15	2		0.351			
Kraichgau 1	0 - 30 cm	2014-10-15	3		0.372			
Kraichgau 2	0 - 30 cm	2014-10-15	6		0.738			
Kraichgau 2	0 - 30 cm	2014-10-15	7		0.561			
Kraichgau 2	0 - 30 cm	2014-10-15	8		0.553			
Kraichgau 3	0 - 30 cm	2014-10-15	11		0.385			
Kraichgau 3	0 - 30 cm	2014-10-15	12		0.419			
Kraichgau 3	0 - 30 cm	2014-10-15	13		0.539			
Swabian Jura 1	0 - 30 cm	2014-10-21	16		1.226			
Swabian Jura 1	0 - 30 cm	2014-10-21	17		0.699			
Swabian Jura 1	0 - 30 cm	2014-10-21	20		1.051			
Kraichgau 1	0 - 30 cm	2015-02-25	1		0.702			
Kraichgau 1	0 - 30 cm	2015-02-25	2		0.739			
Kraichgau 1	0 - 30 cm	2015-02-25	3		0.445			
Kraichgau 2	0 - 30 cm	2015-02-25	6		0.990			
Kraichgau 2	0 - 30 cm	2015-02-25	7		0.513			
Kraichgau 2	0 - 30 cm	2015-02-25	8		0.739			
Kraichgau 3	0 - 30 cm	2015-02-25	11		0.533			
Kraichgau 3	0 - 30 cm	2015-02-25	12		0.458			
Kraichgau 3	0 - 30 cm	2015-02-25	13		0.429			
Swabian Jura 1	0 - 30 cm	2015-03-09	16		0.942			
Swabian Jura 1	0 - 30 cm	2015-03-09	17		0.805			
Swabian Jura 1	0 - 30 cm	2015-03-09	20		1.022			
Kraichgau 1	0 - 30 cm	2015-05-04	1		0.654			
Kraichgau 1	0 - 30 cm	2015-05-04	2		0.802			
Kraichgau 1	0 - 30 cm	2015-05-04	3		0.235			
Kraichgau 2	0 - 30 cm	2015-05-04	6		0.500			

Experiment	Sampling depth	Sampling date	Subplot ID	SOC t ha^{-1}	SMB-C t ha^{-1}	Area below 2930 cm^{-1}	Area below 1620 cm^{-1}	SOM in slow pool
Kraichgau 2	0 - 30 cm	2015-05-04	7		0.438			
Kraichgau 2	0 - 30 cm	2015-05-04	8		0.531			
Kraichgau 3	0 - 30 cm	2015-05-04	11		0.560			
Kraichgau 3	0 - 30 cm	2015-05-04	12		0.480			
Kraichgau 3	0 - 30 cm	2015-05-04	13		0.465			
Kraichgau 1	0 - 30 cm	2015-07-22	1	30.93	0.447	-0.024	0.699	103.6%
Kraichgau 1	0 - 30 cm	2015-07-22	2	36.48	0.705	0.037	0.671	94.8%
Kraichgau 1	0 - 30 cm	2015-07-22	3	30.37	0.343	0.043	0.720	94.4%
Kraichgau 2	0 - 30 cm	2015-07-22	6	50.67	1.047	0.151	0.675	81.8%
Kraichgau 2	0 - 30 cm	2015-07-22	7	31.45	0.830	-0.051	0.673	108.1%
Kraichgau 2	0 - 30 cm	2015-07-22	8	33.85	1.001	0.093	0.726	88.6%
Kraichgau 3	0 - 30 cm	2015-08-20	11		0.357			
Kraichgau 3	0 - 30 cm	2015-08-20	12		0.164			
Kraichgau 3	0 - 30 cm	2015-08-20	13		0.371			
Swabian Jura 1	0 - 30 cm	2015-08-05	16	65.29		0.163	0.605	78.7%
Swabian Jura 1	0 - 30 cm	2015-08-05	17	50.20		0.068	0.572	89.4%
Swabian Jura 1	0 - 30 cm	2015-08-05	20	74.39		0.115	0.488	80.9%
Kraichgau 3	0 - 30 cm	2015-09-30	11	36.70	0.298	-0.001	0.697	100.2%
Kraichgau 3	0 - 30 cm	2015-09-30	12	35.05	0.369	-0.016	0.703	102.4%
Kraichgau 3	0 - 30 cm	2015-09-30	13	33.43	0.293	0.045	0.648	93.5%
Kraichgau 1	0 - 30 cm	2015-10-21	1		0.508			
Kraichgau 1	0 - 30 cm	2015-10-21	2		0.245			
Kraichgau 1	0 - 30 cm	2015-10-21	3		0.300			
Kraichgau 2	0 - 30 cm	2015-10-21	6		0.402			
Kraichgau 2	0 - 30 cm	2015-10-21	7		0.568			
Kraichgau 2	0 - 30 cm	2015-10-21	8		0.296			
Swabian Jura 1	0 - 30 cm	2015-10-14	16		0.707			
Swabian Jura 1	0 - 30 cm	2015-10-14	17		0.805			
Swabian Jura 1	0 - 30 cm	2015-10-14	20		0.795			
Kraichgau 2	0 - 30 cm	2016-05-09	6		0.559			
Kraichgau 2	0 - 30 cm	2016-05-09	7		0.490			
Kraichgau 2	0 - 30 cm	2016-05-09	8		0.532			
Kraichgau 3	0 - 30 cm	2016-05-09	11		0.412			
Kraichgau 3	0 - 30 cm	2016-05-09	12		0.339			
Kraichgau 3	0 - 30 cm	2016-05-09	13		0.685			
Swabian Jura 1	0 - 30 cm	2016-05-17	16		0.861			
Swabian Jura 1	0 - 30 cm	2016-05-17	17		0.875			
Swabian Jura 1	0 - 30 cm	2016-05-17	20		0.586			
Kraichgau 1	0 - 30 cm	2016-07-06	1		0.462			
Kraichgau 1	0 - 30 cm	2016-07-06	2		0.339			
Kraichgau 1	0 - 30 cm	2016-07-06	3		0.424			
Kraichgau 2	0 - 30 cm	2016-07-06	6		0.344			

Experiment	Sampling depth	Sampling date	Subplot ID	SOC t ha^{-1}	SMB-C t ha^{-1}	Area below 2930 cm^{-1}	Area below 1620 cm^{-1}	SOM in slow pool
Kraichgau 2	0 - 30 cm	2016-07-06	7		0.319			
Kraichgau 2	0 - 30 cm	2016-07-06	8		0.282			
Kraichgau 3	0 - 30 cm	2016-07-06	11		0.215			
Kraichgau 3	0 - 30 cm	2016-07-06	12		0.286			
Kraichgau 3	0 - 30 cm	2016-07-06	13		0.283			
Swabian Jura 1	0 - 30 cm	2016-07-20	16		0.509			
Swabian Jura 1	0 - 30 cm	2016-07-20	17		0.551			
Swabian Jura 1	0 - 30 cm	2016-07-20	20		0.904			