Functional test of pedotransfer functions to predict water flow and solute transport with the dual-permeability model MACRO.

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Supplementary Material:

We present here a table (Table S1) with a selection of simulated components of the water balance, and time series (Figures S1 to S16) representing uncalibrated modelled versus simulated water and solute flow rates, and cumulated percolation, for all the soil profiles included in our study. Water flow rate is given in pore volumes percolated per day. Solute flow rate is given in fraction of applied mass drained per day. Accumulated water percolation is given in pore volumes.Accumulated solute drainage is given in fraction of applied mass. The total accumulated water percolation *measured* during the experiment, expressed in millimeters, is also given on the graph, as a reference. The term “pore volume” is defined here as the sum of the products of horizon’s porosities and thicknesses. The modelled hourly water and solute flow have been up-scaled so their time steps match those of the measurements.

*Notice that Table S1 presents the final accumulated **simulated** percolation, while figures S1 to S16 presents the final accumulated **measured** percolation (both in millimetres).*

Table S1: Measurements duration and selected water balance components (rainfall, actual evapotranspiration and percolation) of each **simulation** presented in the study.

Profile name	Start date[1]	End date[1]	Number of days[1] [-]	Rainfall + Irrigation [mm]	Actual evapo-transpiration [mm]	Percolation [mm]
Ekebo	2007-10-12	2008-08-18	311	514	335	154
Fjärdingslöv	2007-10-12	2008-08-18	311	514	331	158
Högåsa	2007-10-12	2008-12-19	434	742	417	232
Kungsängen	2007-10-12	2008-12-19	434	742	402	257
Vreta	2007-10-12	2008-08-18	311	514	327	161
Mellby	1990-06-01	1991-04-04	307	565	330	225
Lanna	2006-09-15	2008-08-26	711	1173	710	434
Nåntuna	2006-09-15	2008-08-26	711	1173	689	460
Villamblain 1	1996-01-29	1998-09-30	975	1571	1554	147
Villamblain 2	1996-01-29	1998-09-30	975	1571	1563	138
Cuckney	1994-11-18	1996-04-30	529	824	527	306
Sonning	1994-11-18	1996-04-30	529	824	526	309
Ludford	1994-11-18	1996-04-30	529	824	526	307
Enborne	1994-11-18	1996-04-30	529	824	531	303
Isleham	1994-11-18	1996-04-30	529	824	663	181
Brimstone	1994-12-16	1995-01-23	38	114	52	63

[1] Dates range and the number of simulation days correspond to the period where measurements were made. The entire simulation period (not on the table) does include a warm-up period. The starting date is also the solute application date.

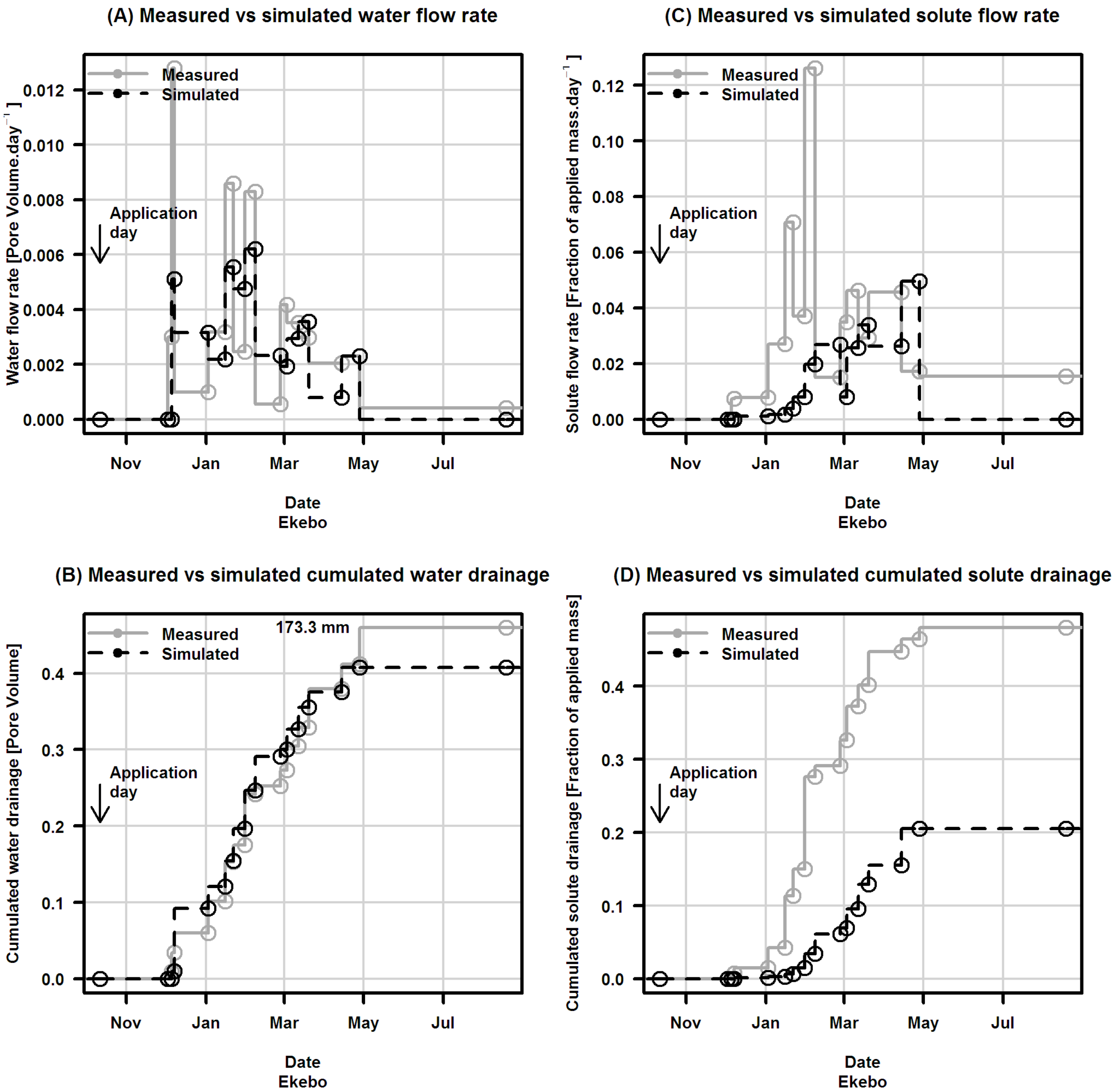

Figure S1. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Ekebo soil.

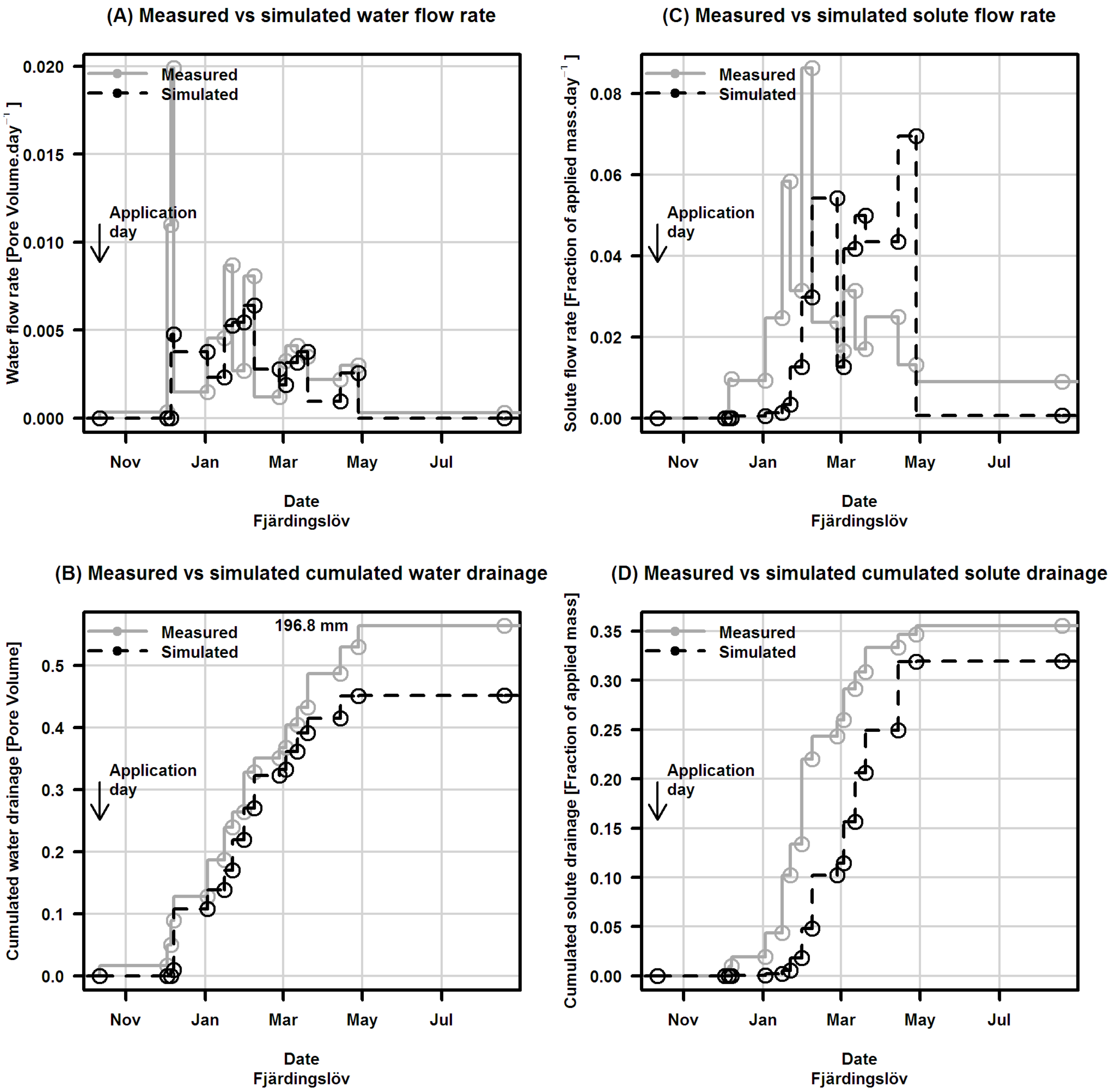

Figure S2. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Fjärdingslöv soil.

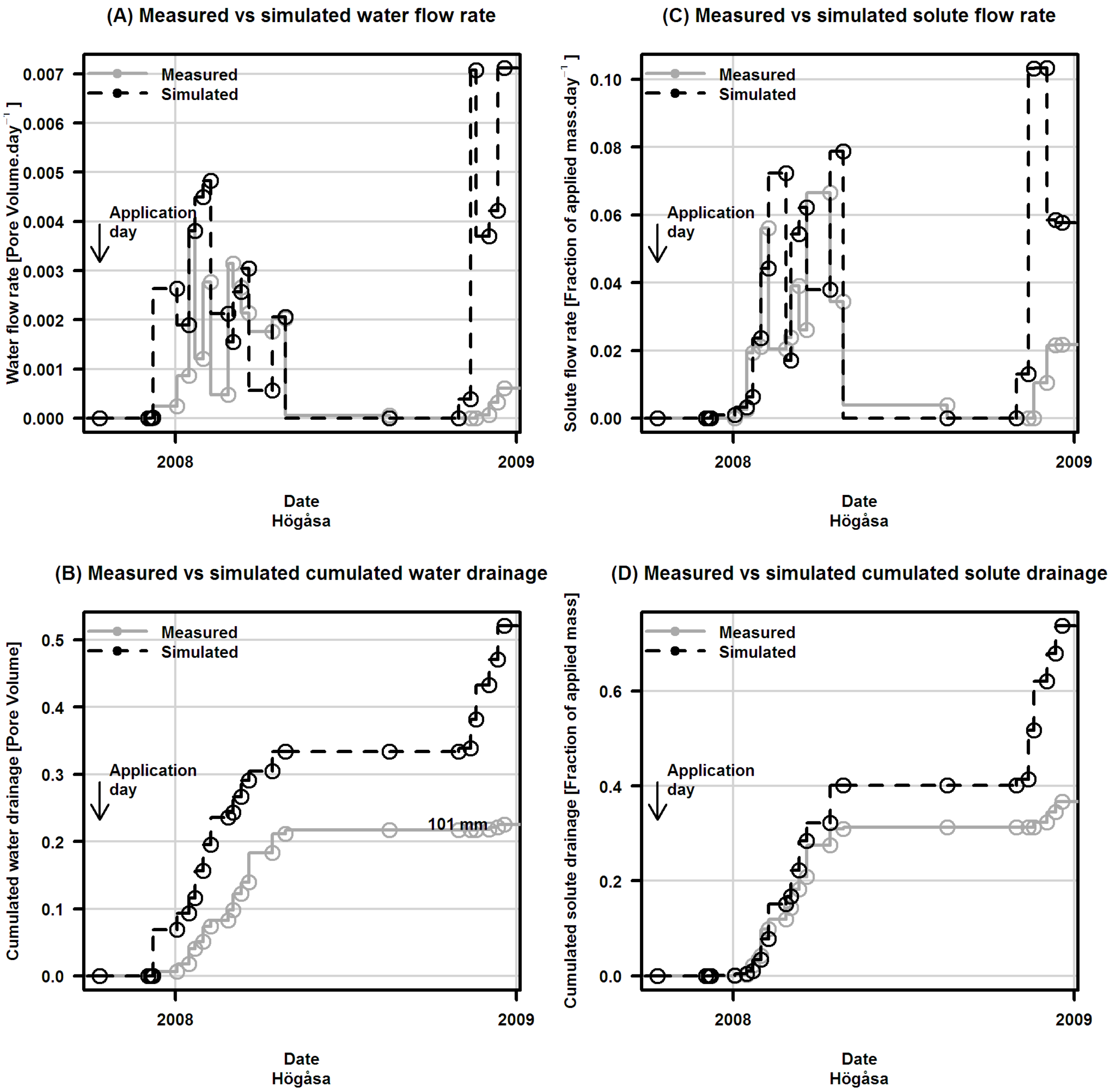

Figure S3. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Högåsa soil.

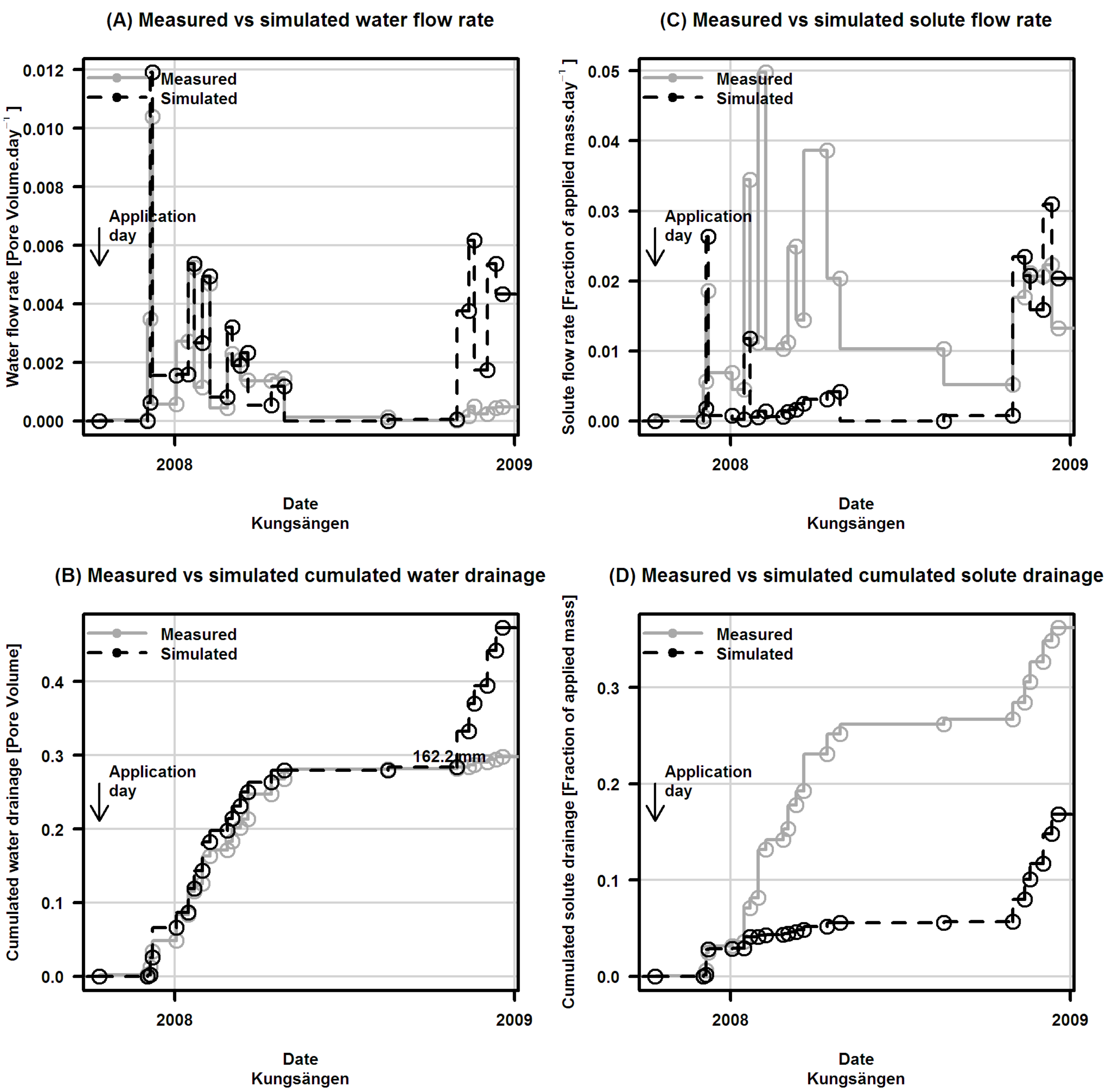

Figure S4. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Kungsängen soil.

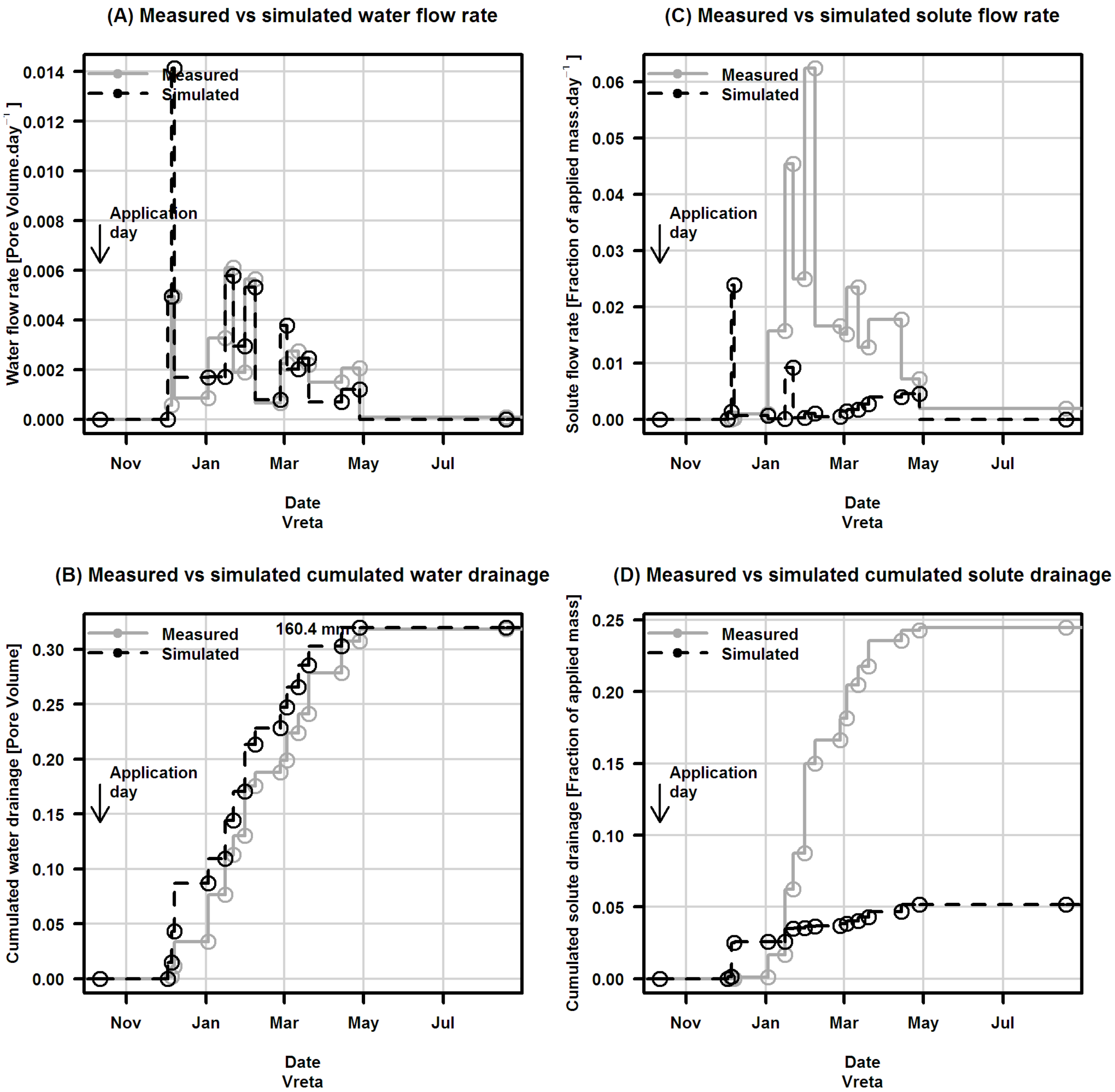

Figure S5. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Vreta soil.

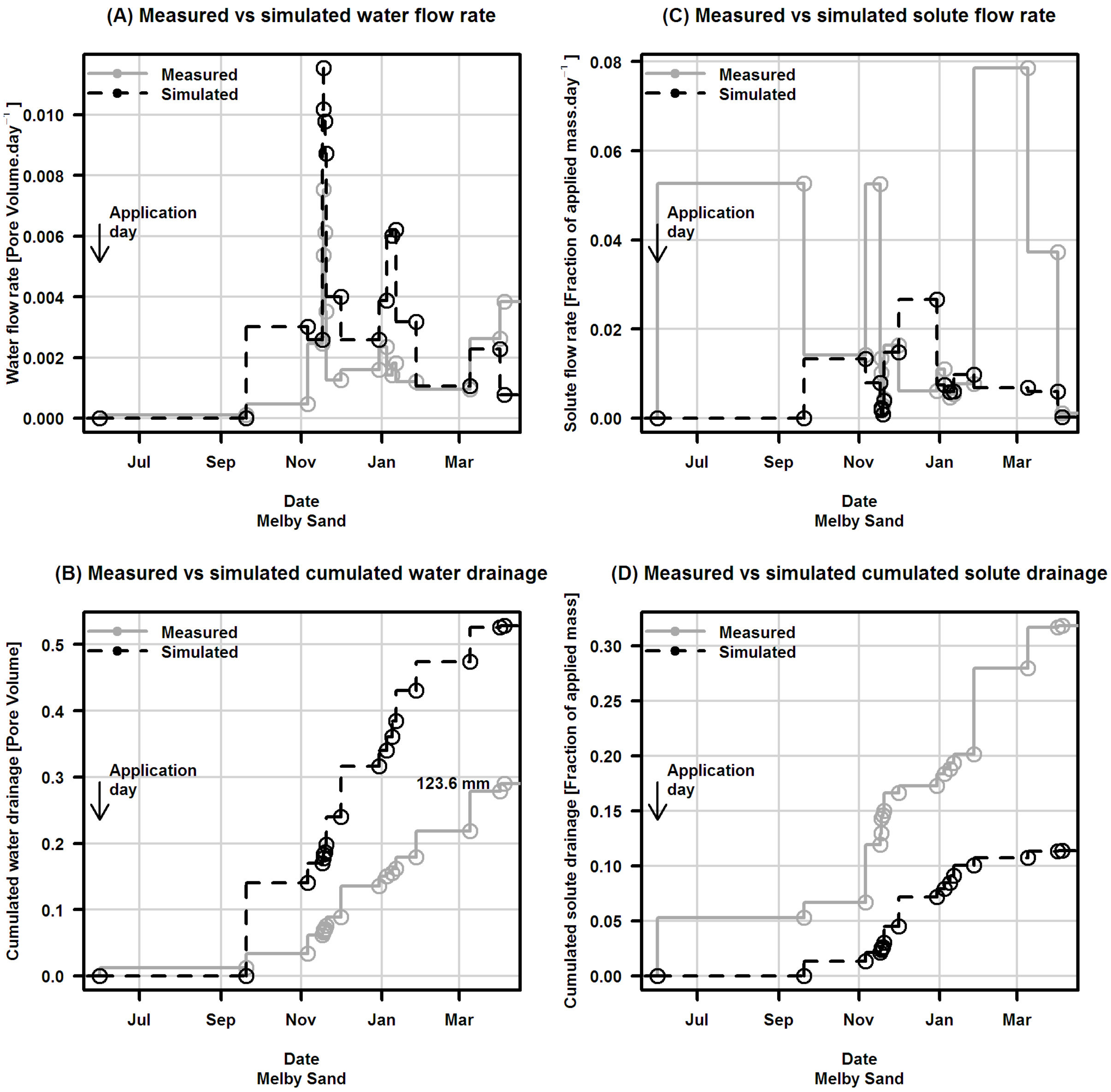

Figure S6. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Mellby soil.

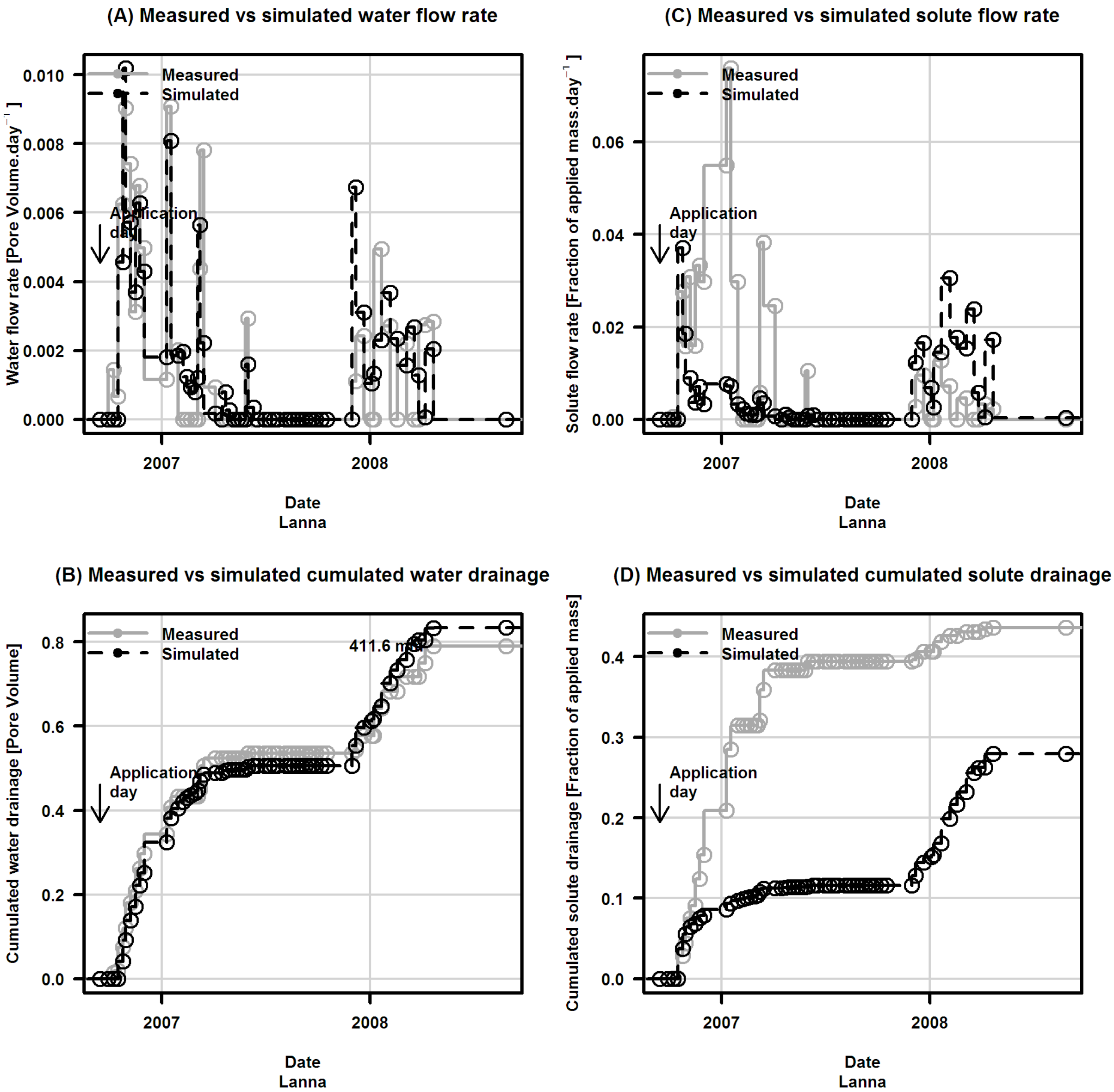

Figure S7. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Lanna soil.

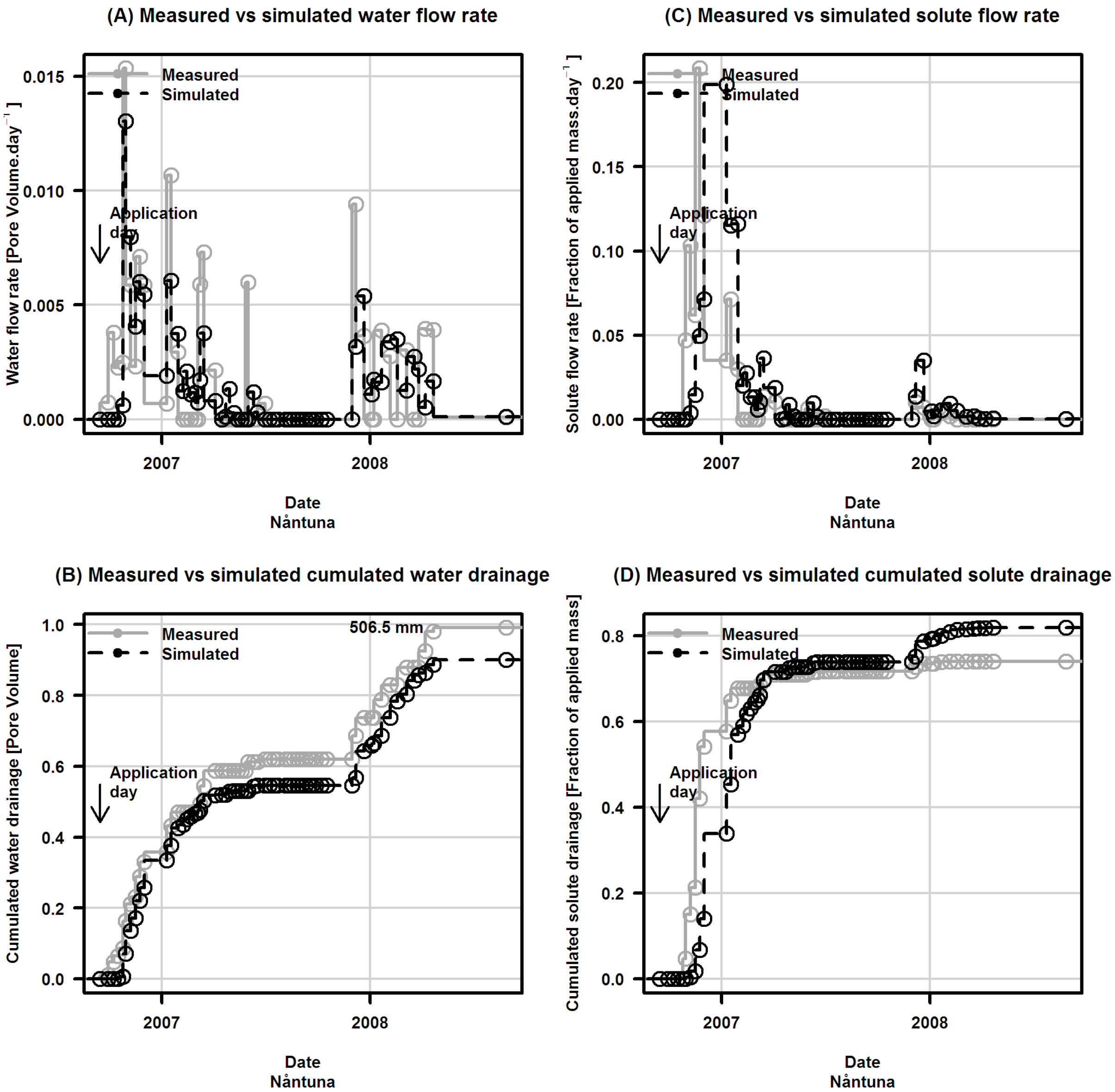

Figure S8. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Nåntuna soil.

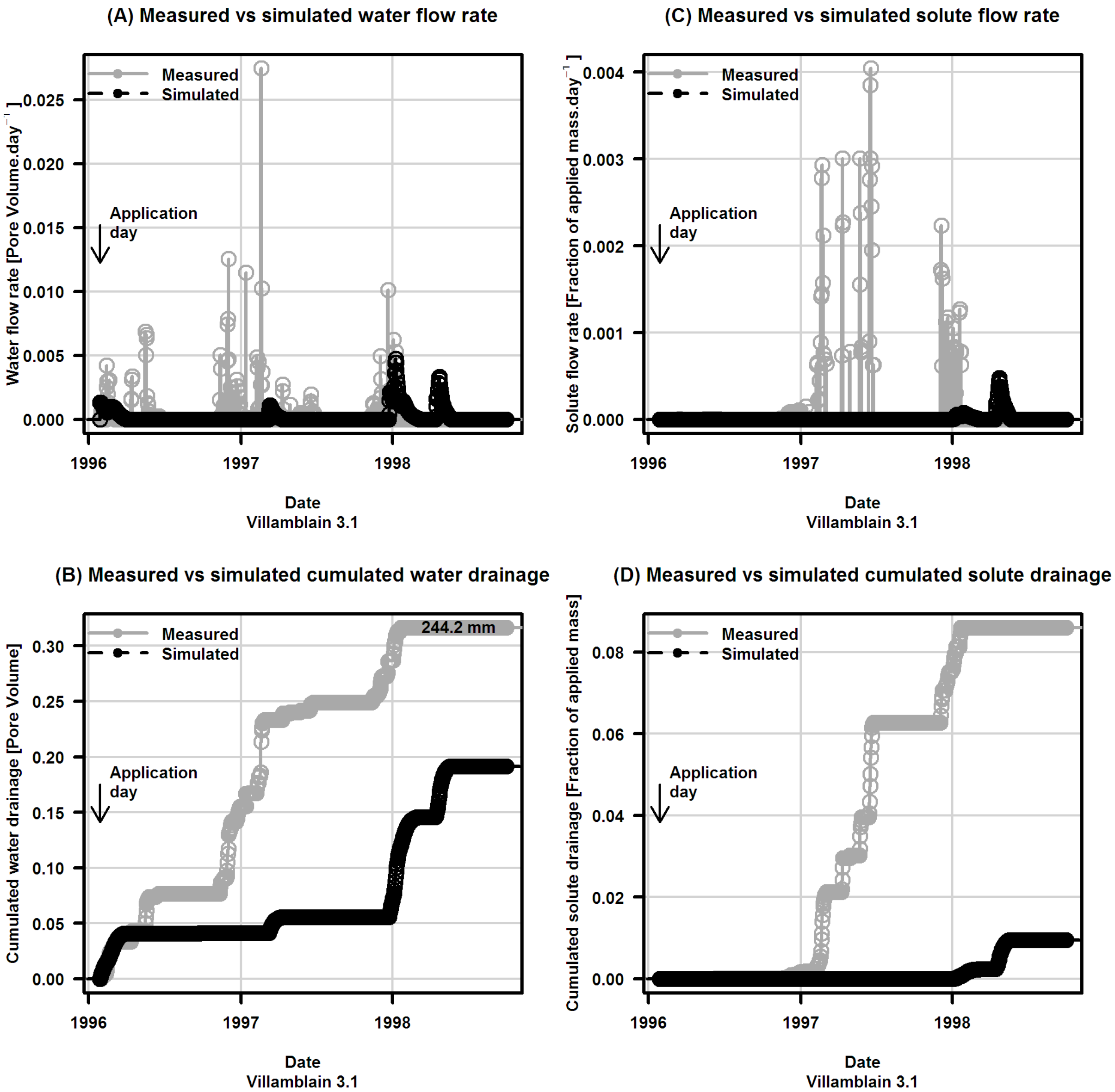

Figure S9. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Villamblain 3.1 soil.

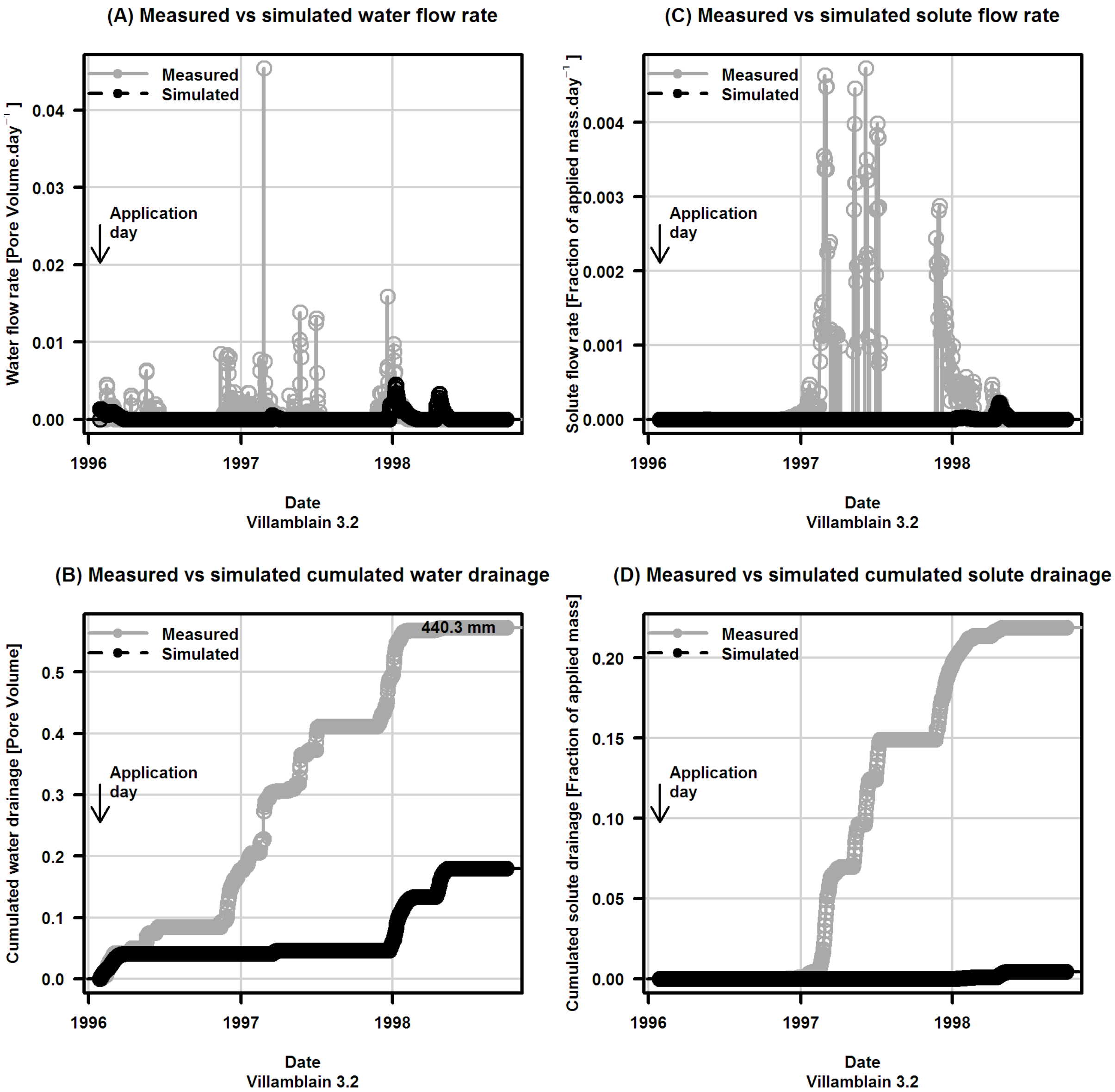

Figure S10. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Villamblain 3.2 soil.

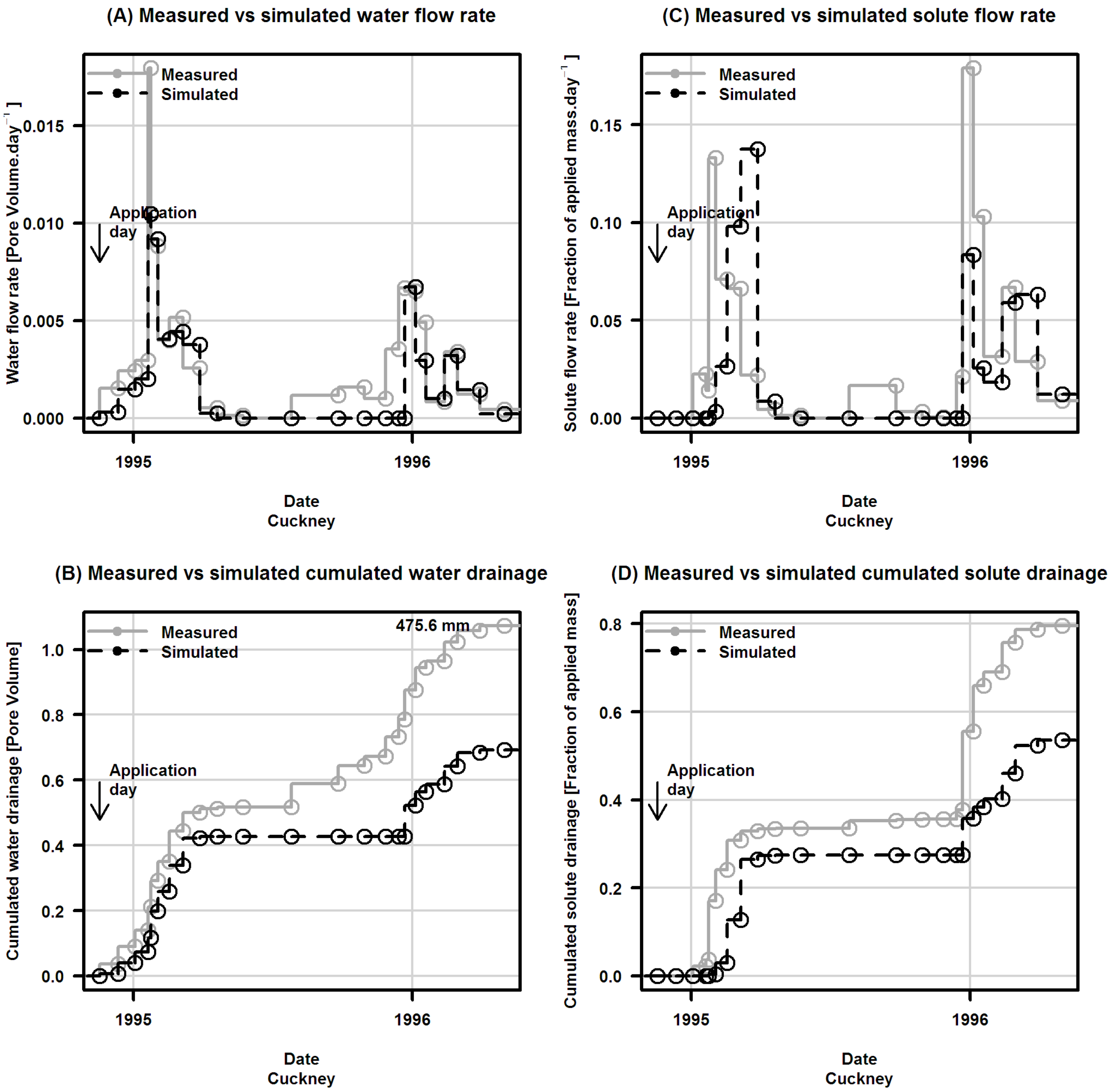

Figure S11. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Cuckney soil.

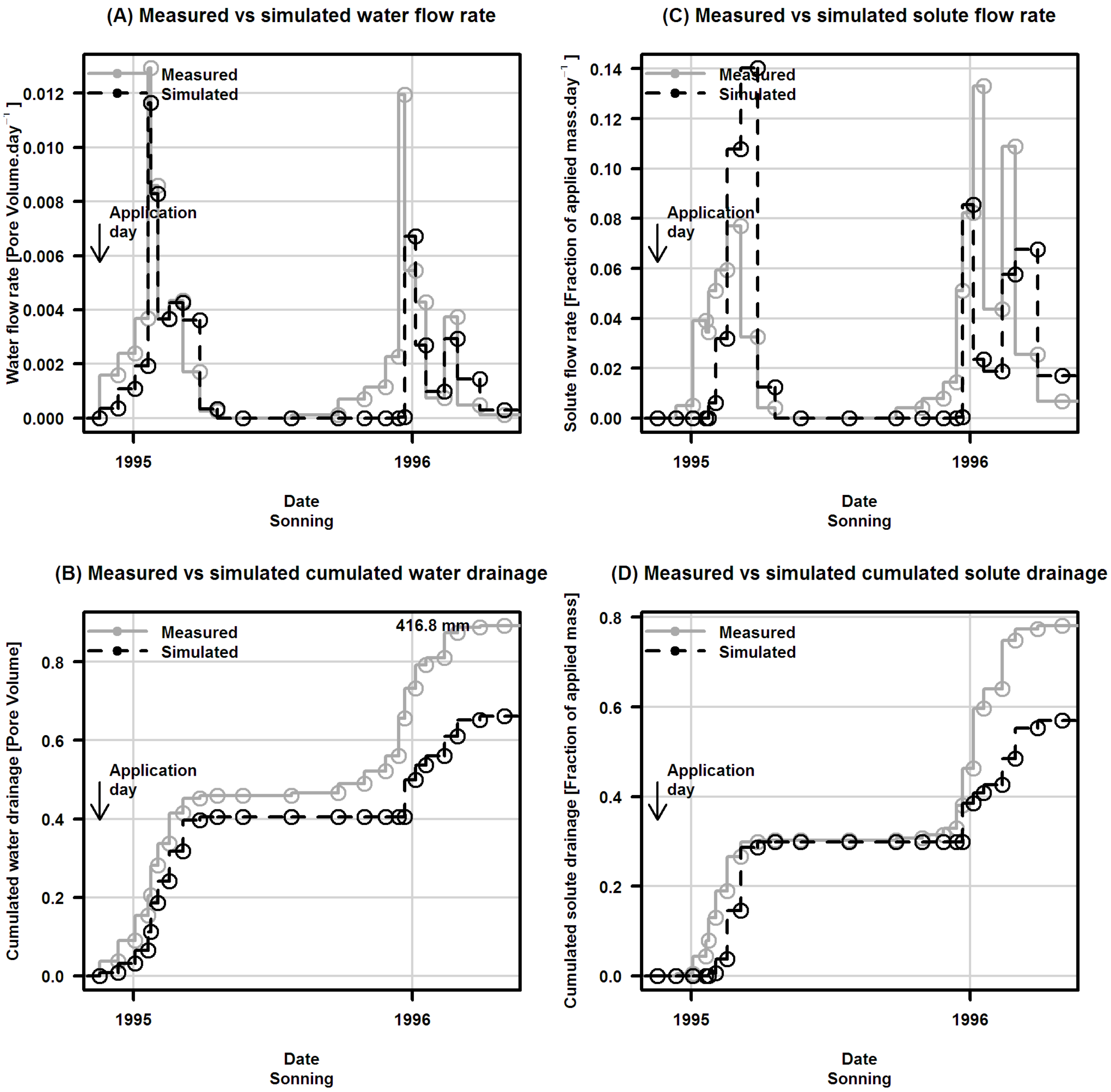

Figure S12. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Sonning soil.

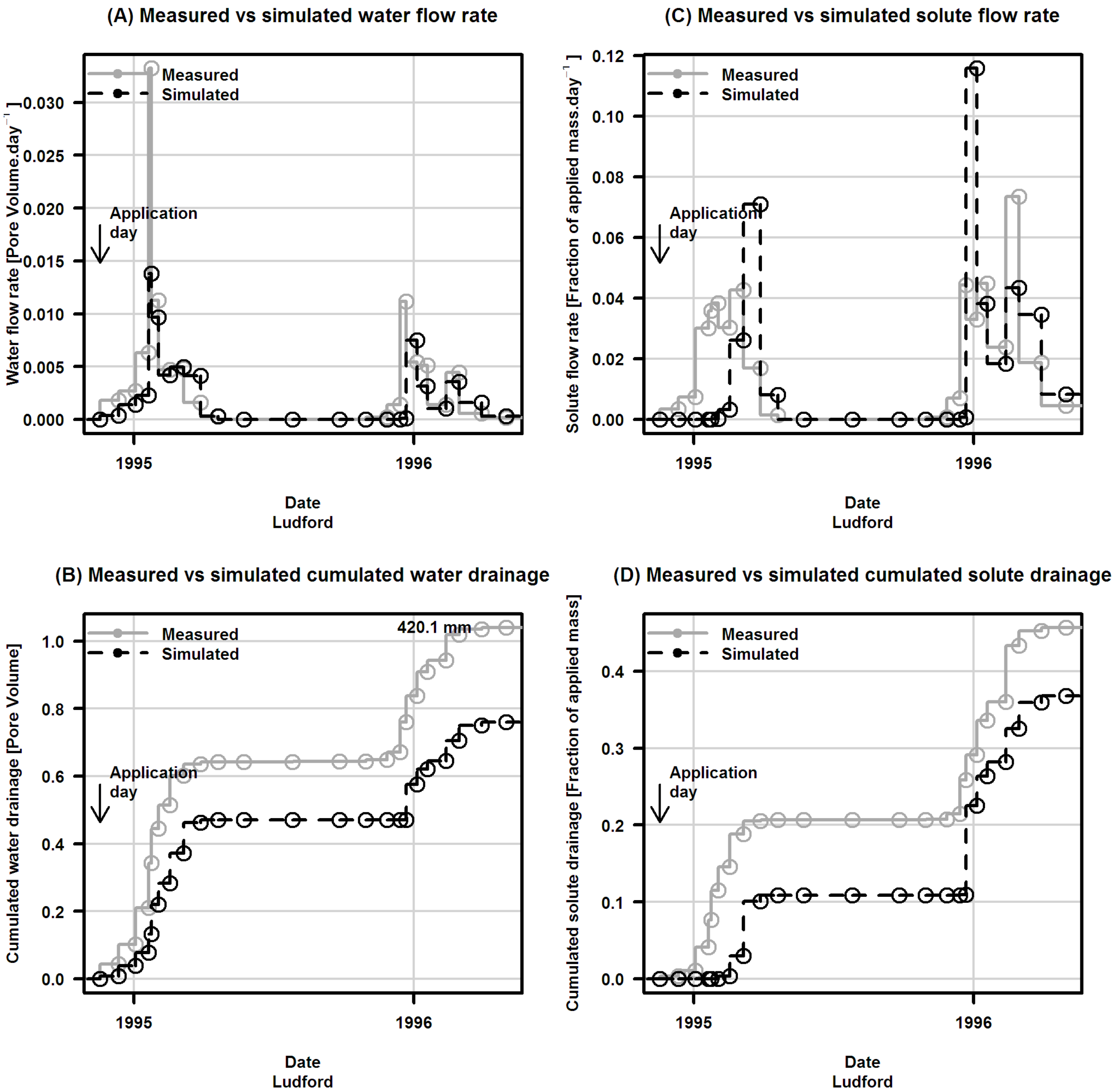

Figure S13. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Ludford soil.

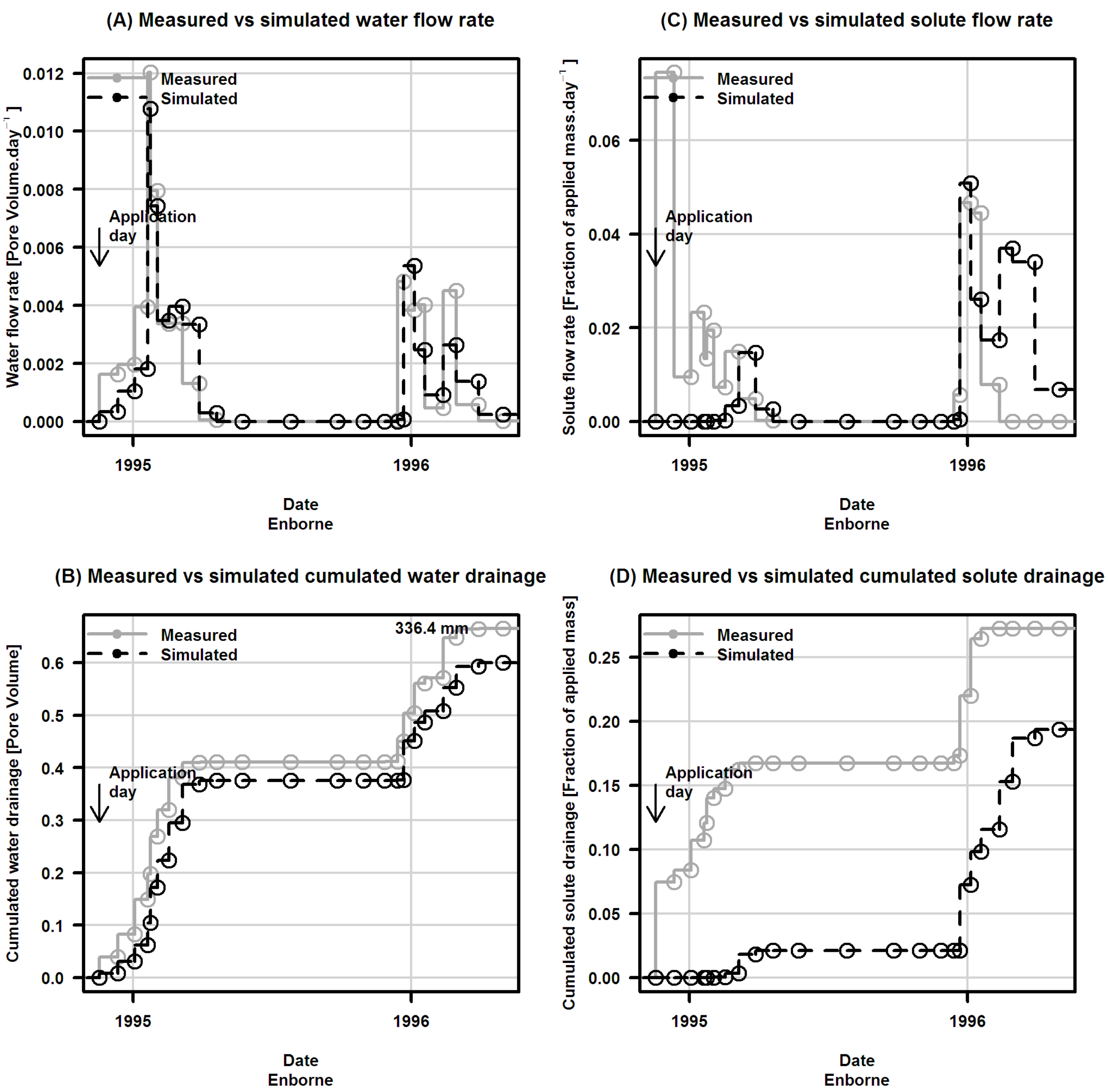

Figure S14. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Enborne soil.

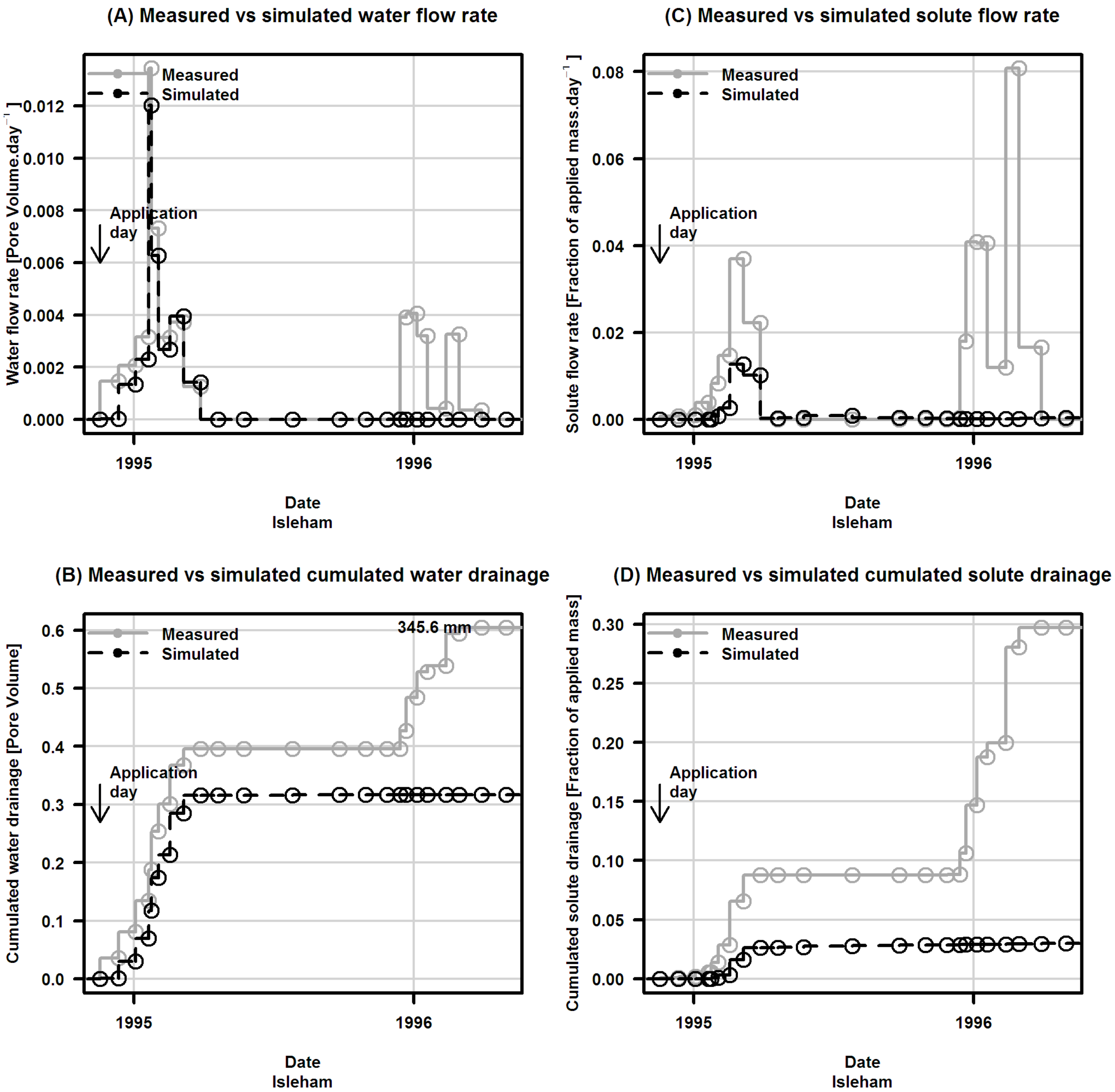

Figure S15. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Isleham soil.

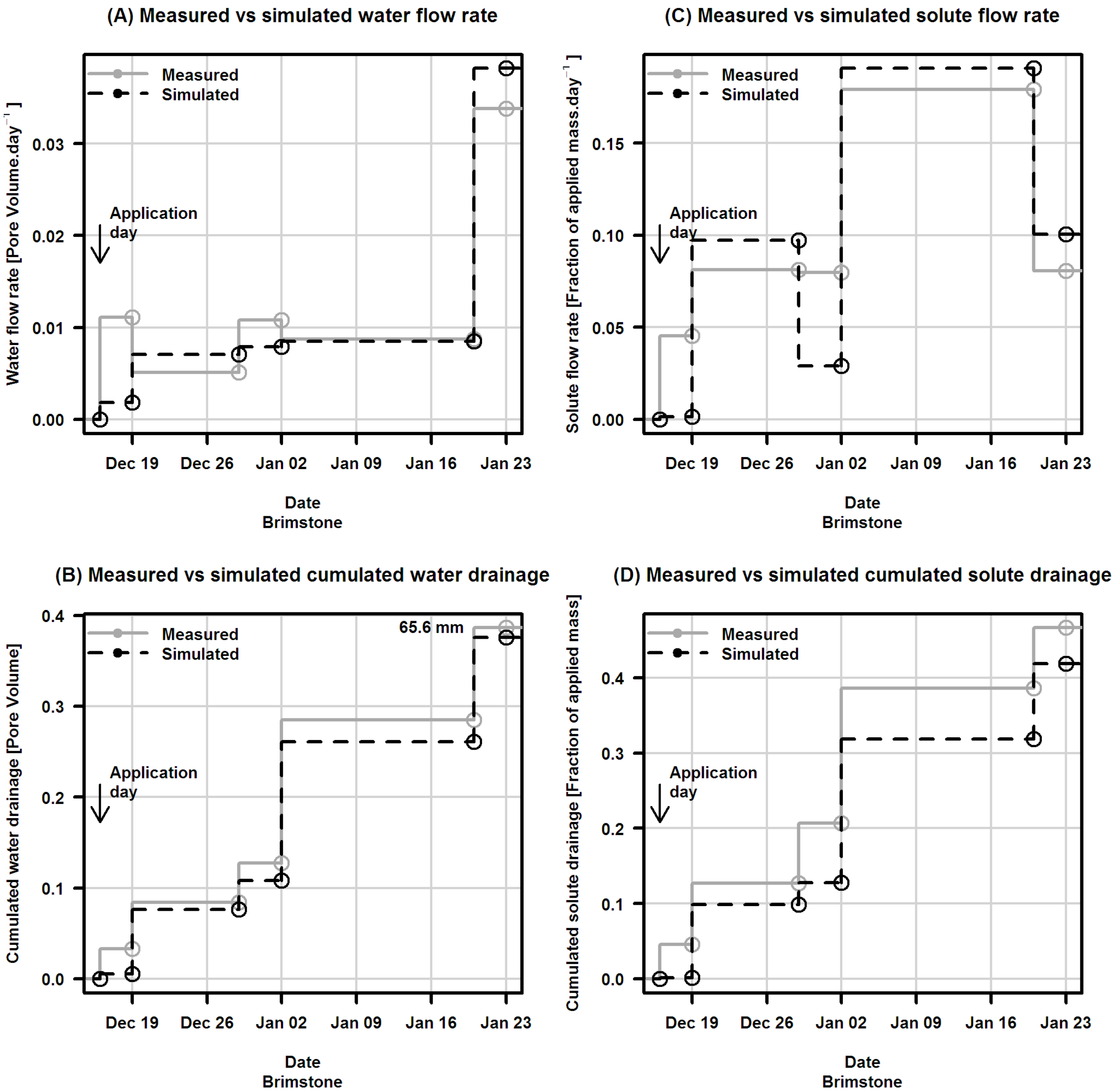

Figure S16. Time series of measured versus simulated water (left) and solute (right) flow rate (up) and accumulated percolation (down) for Brimstone soil.