Supplement of Hydrol. Earth Syst. Sci., 22, 5847–5865, 2018
https://doi.org/10.5194/hess-22-5847-2018-supplement

Hydrology and Earth System Sciences
Open Access
EGU

Supplement of

Studying catchment storm response using event- and pre-event-water volumes as fractions of precipitation rather than discharge

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Table S 1: Results of the hydrograph separation analysis based on $\delta^{18}O$. Columns are total discharge (Q), total precipitation (P), the runoff coefficient (Q/P), event and pre-event discharge as whole-storm totals (Q_e and Q_{pe}), the maximum instantaneous event water fraction $q_{e,i}/q_i$ and its value at peak flow, the event water fractions of discharge and precipitation (Q_e/Q and Q_e/P), and pre-event discharge as a fraction of precipitation (Q_{pe}/P).

Event	Q (mm)	P (mm)	Q/P (-)	$Q_e \pm SE$ (mm)	$Q_{pe} \pm SE$ (mm)	$\max(q_{e,i}/q_i) \pm SE$ (-)	$q_{e,i}/q_i$ at peak flow $\pm SE$ (-)	$Q_e/Q \pm SE$ (-)	$Q_e/P \pm SE$ (-)	$Q_{pe}/P \pm SE$ (-)
17Sep2016	0.8	9.2	0.08	- [a)]	-	-	-	-	-	-
02Oct2016	4.8	21.6	0.22	1.16±0.07	3.63±0.07	0.324±0.036	0.323±0.035	0.243±0.015	0.054±0.003	0.168±0.003
09Oct2016	0.4	12.6	0.03	0.03±0.00	0.41±0.00	0.096±0.018	0.059±0.018	0.066±0.003	0.002±0.000	0.033±0.000
13May2017	9.5	20.8	0.46	1.47±0.21	7.09±0.21	0.321±0.079	0.226±0.076	0.172±0.024	0.071±0.010	0.341±0.010
19May2017	5.3	17.6	0.30	0.12±0.03	3.02±0.03	0.090±0.044	0.049±0.033	0.039±0.009	0.007±0.002	0.171±0.002
01Jun2017	7.5	28.5	0.26	1.77±0.15	5.56±0.15	0.438±0.053	0.287±0.049	0.241±0.021	0.062±0.005	0.195±0.005
04Jun2017	17.4	33.7	0.52	2.65±0.32	13.96±0.32	0.189±0.059	0.166±0.054	0.159±0.020	0.079±0.010	0.414±0.010
07Jun2017	8.0	11.2	0.72	0.37±0.04	7.68±0.04	0.105±0.028	0.068±0.028	0.046±0.005	0.033±0.004	0.685±0.004
16Jun2017	17.1	46.0	0.37	7.03±0.75	10.04±0.75	0.765±0.165	0.453±0.078	0.412±0.044	0.153±0.016	0.218±0.016
25Jun2017	1.7	21.2	0.08	0.27±0.01	1.45±0.01	0.205±0.024	0.205±0.024	0.159±0.007	0.013±0.001	0.068±0.001
10Jul2017	7.0	25.4	0.28	3.83±0.40	2.99±0.40	0.645±0.103	0.643±0.094	0.562±0.059	0.151±0.016	0.118±0.016
19Jul2017	4.0	20.2	0.20	1.07±0.04	2.99±0.04	0.333±0.031	0.331±0.030	0.263±0.010	0.053±0.002	0.148±0.002
27Jul2017	7.7	12.9	0.59	0.62±0.03	7.05±0.03	0.134±0.022	0.108±0.020	0.081±0.004	0.048±0.002	0.547±0.002
05Aug2017	2.7	17.1	0.16	0.51±0.03	2.15±0.03	0.246±0.046	0.227±0.047	0.193±0.012	0.030±0.002	0.126±0.002
06Aug2017	4.8	11.2	0.43	0.54±0.04	4.24±0.04	0.170±0.034	0.149±0.034	0.112±0.008	0.048±0.003	0.379±0.003
15Aug2017	2.3	8.2	0.28	0.09±0.01	1.91±0.01	0.073±0.021	0.057±0.022	0.047±0.003	0.011±0.001	0.233±0.001
18Aug2017	25.6	56.3	0.45	16.39±1.16	9.55±1.16	0.697±0.078	0.682±0.067	0.632±0.045	0.291±0.021	0.170±0.021
12Sep2017	9.2	19.7	0.46	0.30±0.07	8.86±0.07	0.140±0.039	0.013±0.047	0.032±0.007	0.015±0.003	0.450±0.003
25Sep2017	3.5	15.2	0.23	0.62±0.04	2.92±0.04	0.331±0.034	0.227±0.036	0.175±0.011	0.041±0.003	0.192±0.003
02Oct2017	20.9	39.1	0.53	4.99±0.69	15.79±0.69	0.286±0.076	0.274±0.063	0.240±0.033	0.128±0.018	0.404±0.018
05Oct2017	20.5	33.5	0.61	5.33±0.26	15.34±0.26	0.332±0.035	0.314±0.033	0.258±0.012	0.159±0.008	0.458±0.008
22Oct2017	25.5	63.2	0.40	12.60±0.89	12.62±0.89	0.737±0.063	0.683±0.064	0.499±0.035	0.199±0.014	0.200±0.014
26Oct2017	4.3	12.5	0.34	0.62±0.07	3.21±0.07	0.212±0.054	0.187±0.054	0.161±0.018	0.049±0.005	0.257±0.005
29Oct2017	25.7	44.8	0.57	8.02±0.36	17.57±0.36	0.376±0.036	0.365±0.036	0.313±0.014	0.179±0.008	0.392±0.008

[a)] Unrealistic results were obtained for storm event 17Sep2017 when $\delta^{18}O$ was used as a tracer.

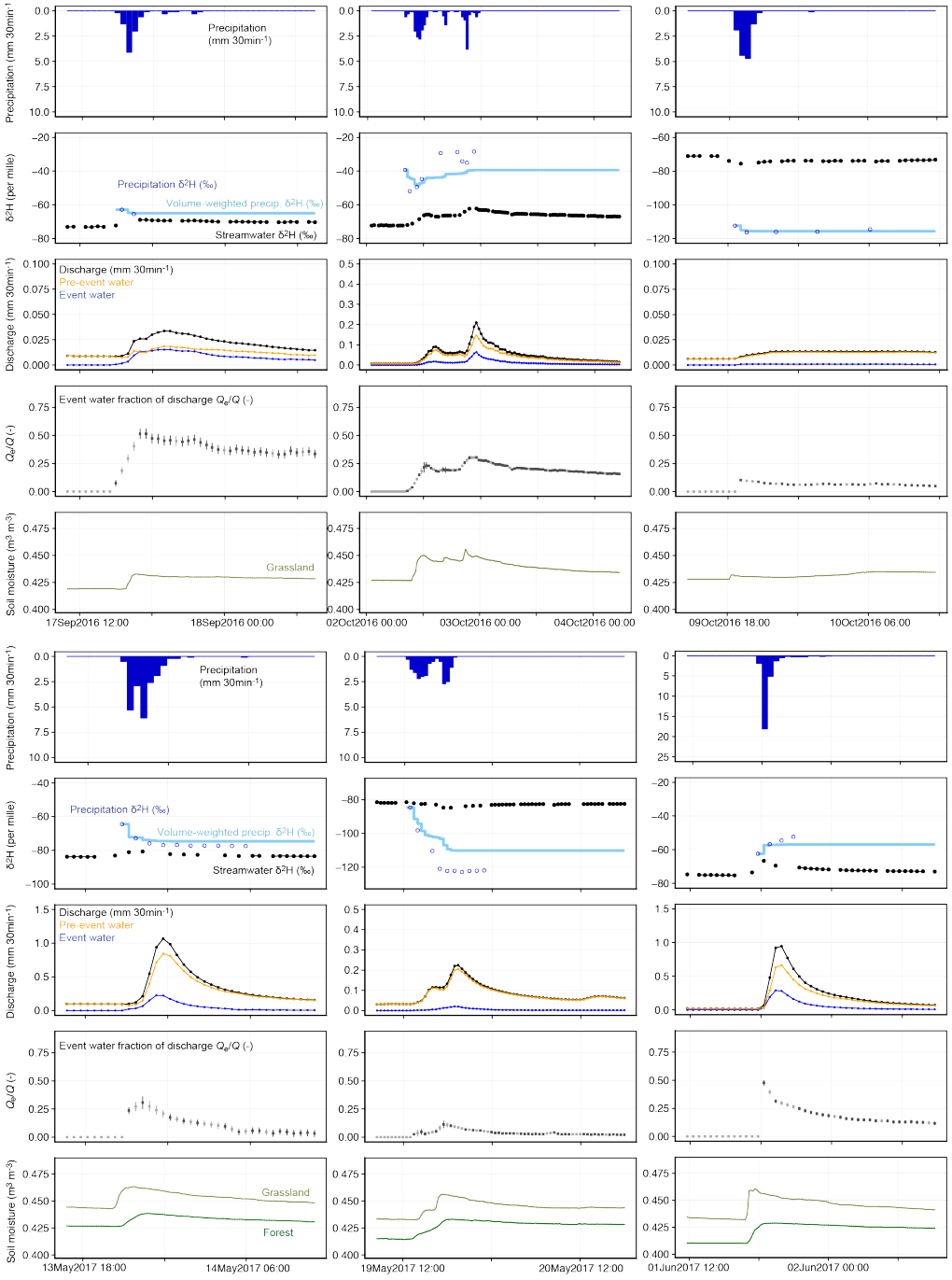

Figure S 1: Time series of storm events between 17Sep2016 and 01Jun2017, showing precipitation hyetographs (top panel), deuterium abundance (δ^2H) in precipitation (with individual measurements in dark blue and incremental weighted means in light blue), and deuterium streamwater (black, second panel from top), discharge hydrograph separated into event and pre-event water (third panel from the top), event water fraction of discharge (error bars indicate ±1*SE*, light grey circles indicate linearly interpolated event water fractions when discharge isotope measurements are missing (second panel from the bottom), as well as soil moisture at the grassland site (light green) and forest site (dark green, no data in 2016; bottom panel).

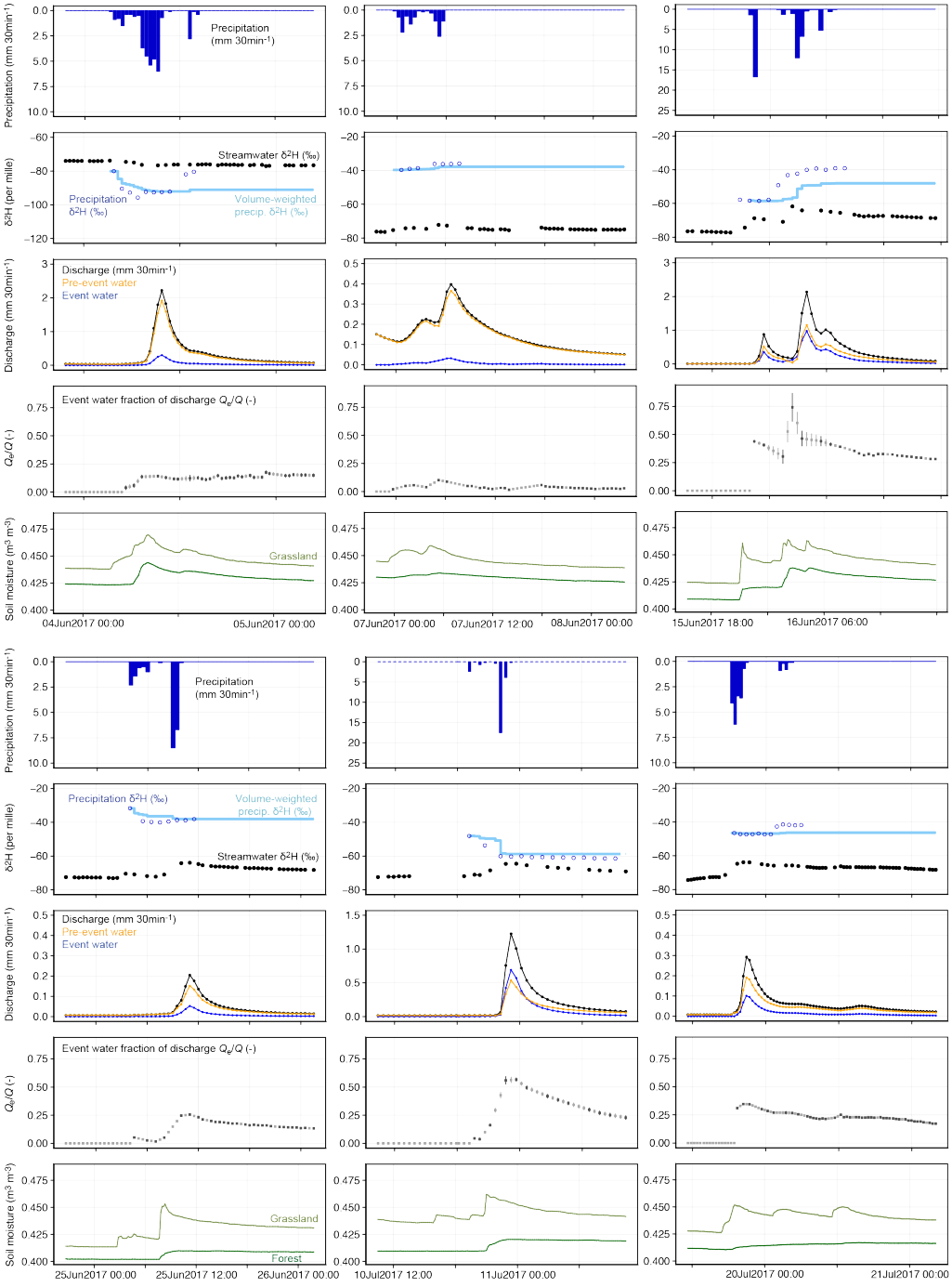

Figure S 2: Time series of storm events between 04Jun2017and 20Jul2017, showing precipitation hyetographs (top panel), deuterium abundance (δ^2H) in precipitation (with individual measurements in dark blue and incremental weighted means in light blue), and deuterium streamwater (black, second panel from top), discharge hydrograph separated into event and pre-event water (third panel from the top), event water fraction of discharge (error bars indicate ±1*SE*, light grey circles indicate linearly interpolated event water fractions when discharge isotope measurements are missing (second panel from the bottom), as well as soil moisture at the grassland site (light green) and forest site (dark green, bottom panel).

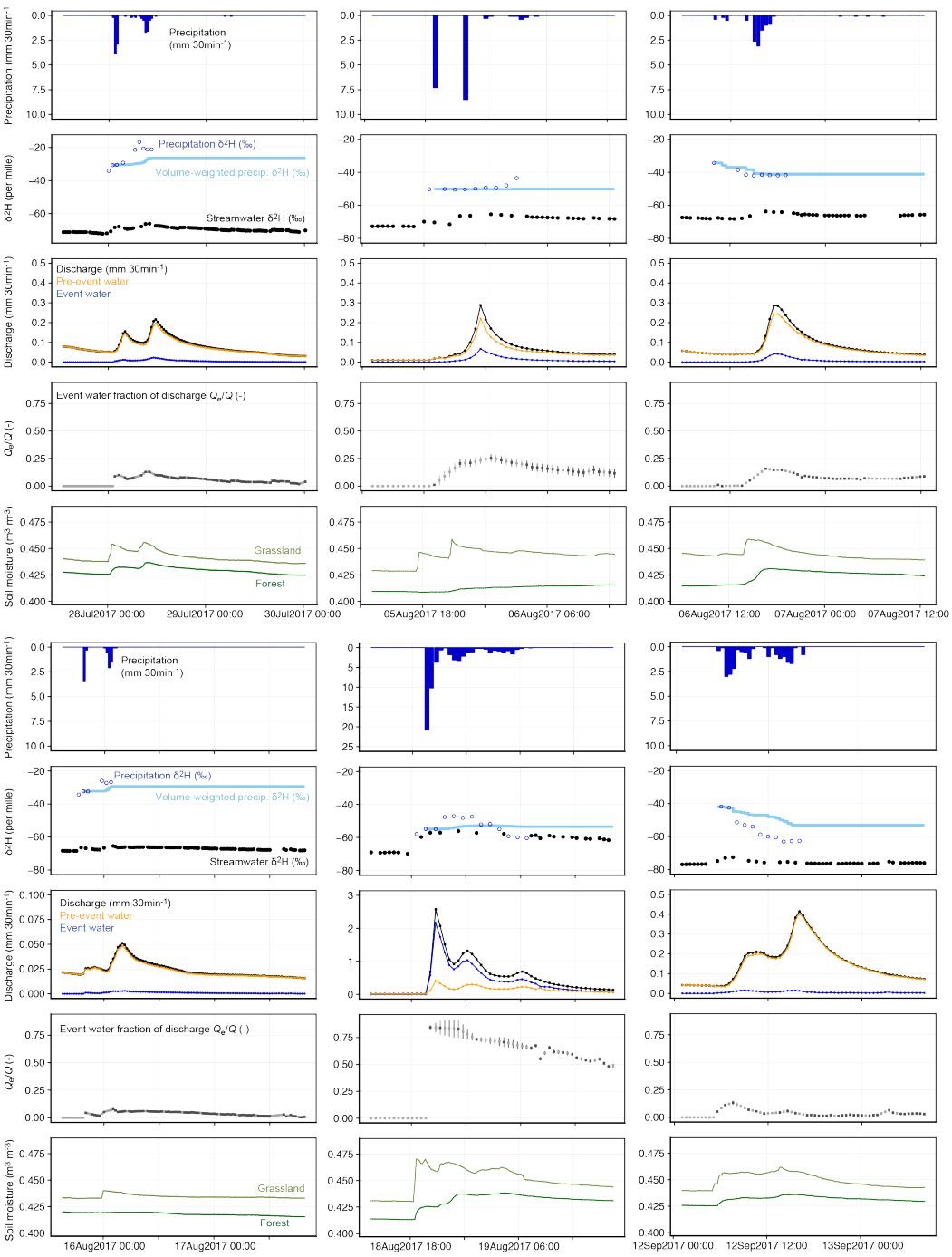

Figure S 3: Time series of storm events between 28Jul2017and 12Sep2017, showing precipitation hyetographs (top panel), deuterium abundance (δ^2H) in precipitation (with individual measurements in dark blue and incremental weighted means in light blue), and deuterium streamwater (black, second panel from top), discharge hydrograph separated into event and pre-event water (third panel from the top), event water fraction of discharge (error bars indicate ±1*SE*, light grey circles indicate linearly interpolated event water fractions when discharge isotope measurements are missing (second panel from the bottom), as well as soil moisture at the grassland site (light green) and forest site (dark green, bottom panel).

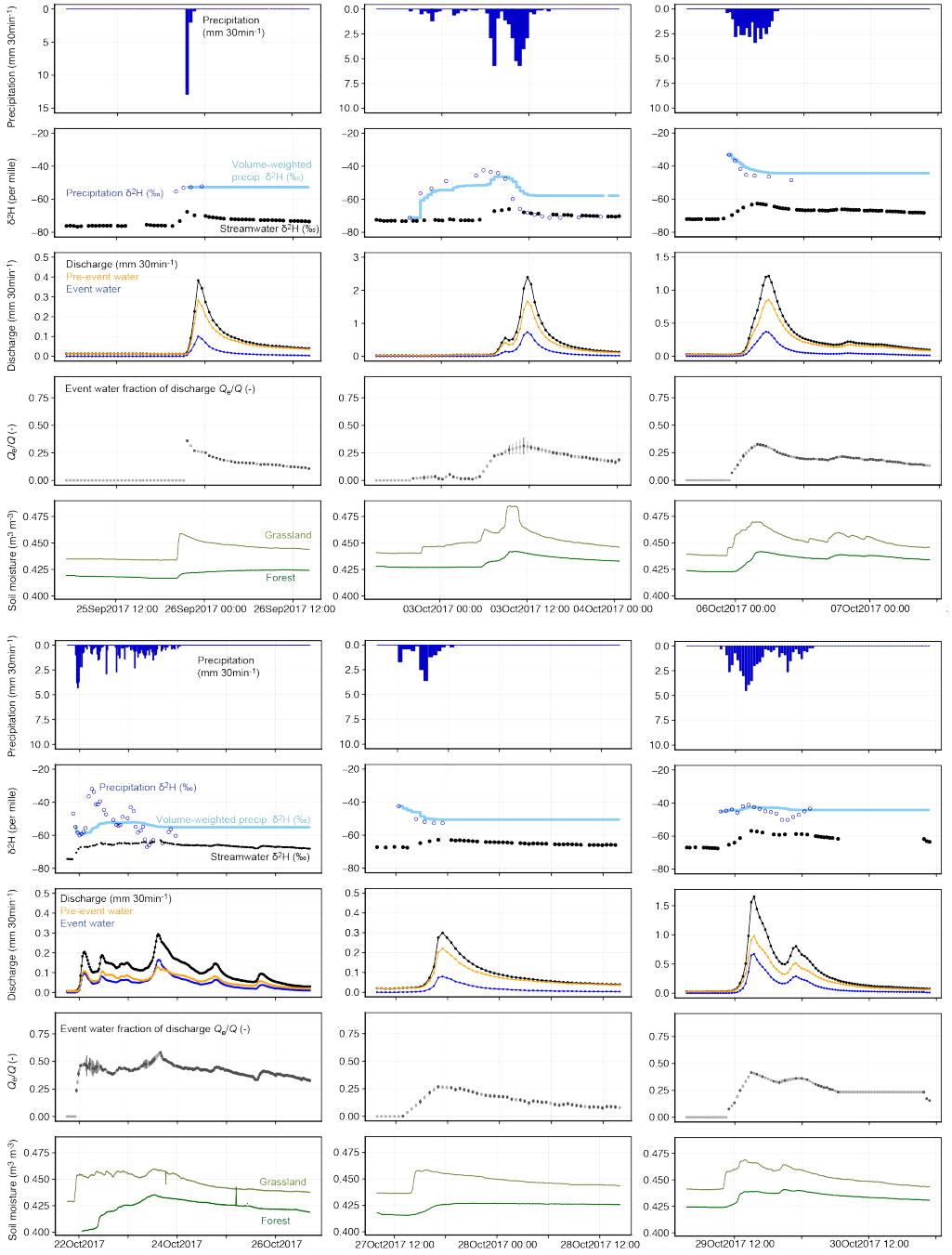

Figure S 4: Time series of storm events between 25Sep2017and 29Oct2017, showing precipitation hyetographs (top panel), deuterium abundance (δ^2H) in precipitation (with individual measurements in dark blue and incremental weighted means in light blue), and deuterium streamwater (black, second panel from top), discharge hydrograph separated into event and pre-event water (third panel from the top), event water fraction of discharge (error bars indicate ±1*SE*, light grey circles indicate linearly interpolated event water fractions when discharge isotope measurements are missing (second panel from the bottom), as well as soil moisture at the grassland site (light green) and forest site (dark green, bottom panel).