Global Biogeochemical Cycles

Supporting Information for

Terrestrial pyrogenic carbon export to fluvial ecosystems: lessons learned from the White Nile watershed of East Africa

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Table S1. Location (UTM coordinates of the weir) and characteristics of the studied headwaters.

Catchment	Duration of cropping (years)	UTM coordinates of the weir	Size (ha)
FA	n/a	36 N 722299 17517	12.8
FB	n/a	36N 722965 16476	8.0
10A	10	36 N 722299 17517	6.2
10B	10	36 N 722299 17517	5.7
16A	16	36 N 722620 18664	7.9
16B	16	36 N 722074 18671	1.4
62A	62	36 N 723507 19015	3.7
62B	62	36 N 723764 19236	4.6

Table S2. Geographic coordinates of the sampling locations (UTM) of the rivers sampled in the Lake Victoria Basin.

Site	UTM coordinates
R. Yala	35M 9279493 681364
R. Nzoia	36N 7205070 681364
R. Nyando	35M 9279493 681364
R. Awach	36M 9961390 682457
R. Sondu-Miriu	36M 9999807 627069
R. Gucha	36M 9898924 629047
R. Kibuon	36M 9279493 681364
R. Simiyu	36M 9961390 682457
R. Kagera	36M 9961390 682457
R. Mara	36M 9831078 608453
R. Nile at Jinja	36N 1689220 608453

Table S3. Field saturated infiltrability across the Kapchorwa catchments measured by the Cornell Sprinkle Infiltrometers. Simulated rainfall rates of the infiltrometers was 300 mm hr^{-1}. No letters are shown since pairwise comparisons were not significant (Tukey's HSD, $P<0.05$, $n=8$). FA-CH represents the charcoal production sites located in forest catchment FA, FB-PyC_{exp} represents the researcher applied charcoal plots located in forest catchment FB.

Catchment	Field-saturated infiltrability (mm hr^{-1})
FA	168
FA-CH	208
FB	168
FB-PyC_{exp}	148
10A	210
10B	115
16A	77
16B	75
62A	97
62B	111
P-value	0.0432

Table S4. Field saturated infiltrability across slope units within the Kapchorwa catchments measured by the Cornell Sprinkle Infiltrometers. Simulated rainfall rates of the infiltrometers was 300 mm hr^{-1}. Different letters indicate significant differences (Tukey's HSD, $P<0.05$, $n=8$). CH represents the charcoal production sites located in catchment FA.

Catchment	Field-saturated infiltrability (mm hr^{-1})
CH	208 A
1% <	60 B
1-3%	108 AB
3-5%	118 AB
5-10%	148 AB
10-20%	83 AB
20-30%	159 AB
30% >	108 AB
P-value	0.0130

Table S5. Field saturated infiltrability by land-use within the Kapchorwa catchments measured by the Cornell Sprinkle Infiltrometers. Simulated rainfall rates of the infiltrometers was 300 mm hr^{-1}. Different letters indicate significant differences (Tukey's HSD, $P<0.05$, $n=8$).

Land use	Field-saturated infiltrability (mm hr^{-1})
Beans	222 ABC
Sweet potato	222 ABC
Sugarcane	186 ABC
Forest	172 A
Ploughed bare fields	171 ABC
Napier grass	154 ABC
Maize	153 AB
Unploughed soil	150 ABC
Fallow	110 ABC
Tea	102 ABC
Homestead – bare soil	72 ABC
Kale	63 ABC
Eucalyptus	52 BC
Playground –bare	39 ABC
Pasture	39 C
Road	22 BC
Riverine vegetation	21 C
Arrow root	6 ABC
Homestead – grass	6 ABC
Playground - grass	6 ABC
P-value	<0.0001

Figure S1. Photo of one of the locations in the forest catchment FA where charcoal was produced (July 2012). This practice led to 14 spots of concentrated accumulation of PyC in an area of about 12 m^2 (labeled "CH" in Table 1 and Figure 4 in the main manuscript).

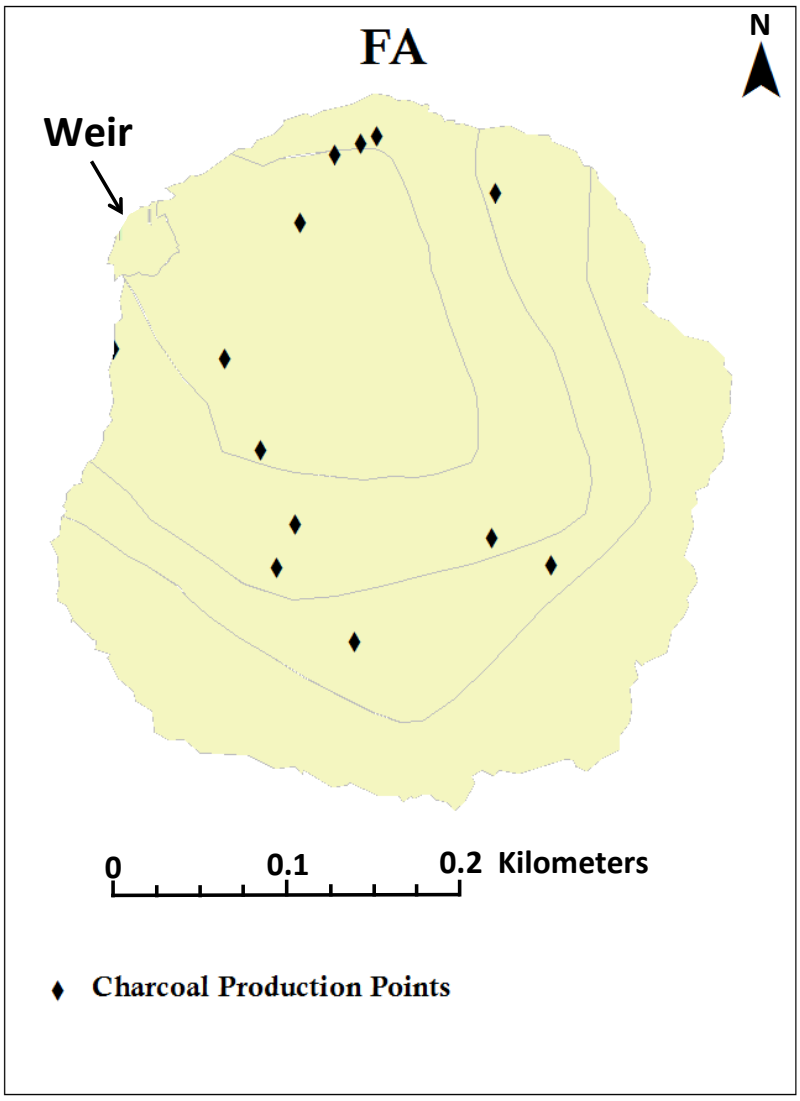

Figure S2. Map of locations of the PyC accumulation from charcoal making in forest catchment FA (assessed May 2013).

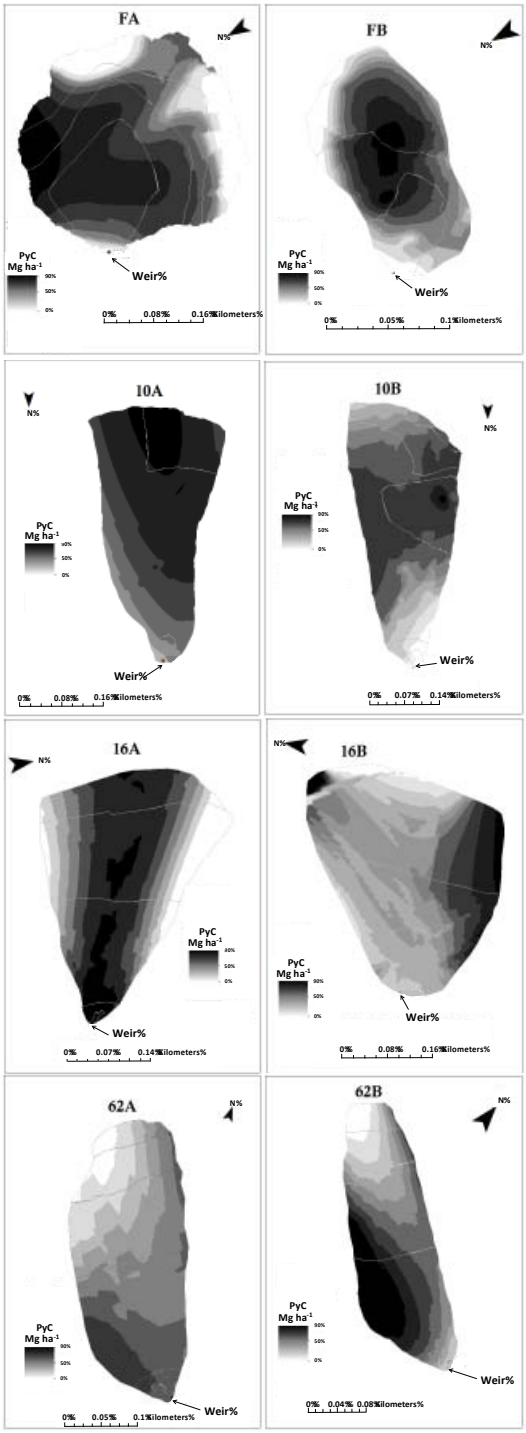

Figure S3. Kriging map of the distribution of topsoil (0-0.15 m) PyC stocks in the Kapchorwa catchments. All catchments are oriented with the weir at the bottom of each map to facilitate comparison of the PyC distribution as a function of slope position.

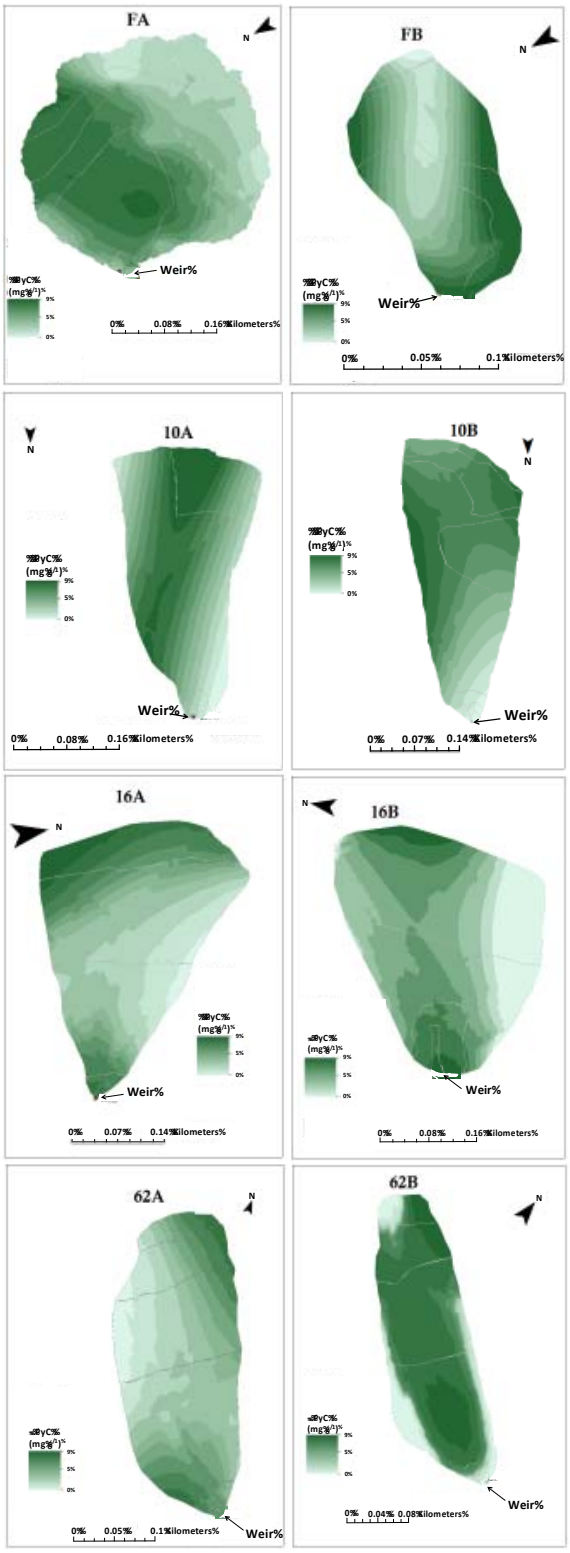

Figure S4. Kriging map of the distribution of topsoil (0-0.15 m) PyC concentrations in the Kapchorwa catchments. All catchments are oriented with the weir at the bottom of each map to facilitate comparison of the PyC distribution as a function of slope position.

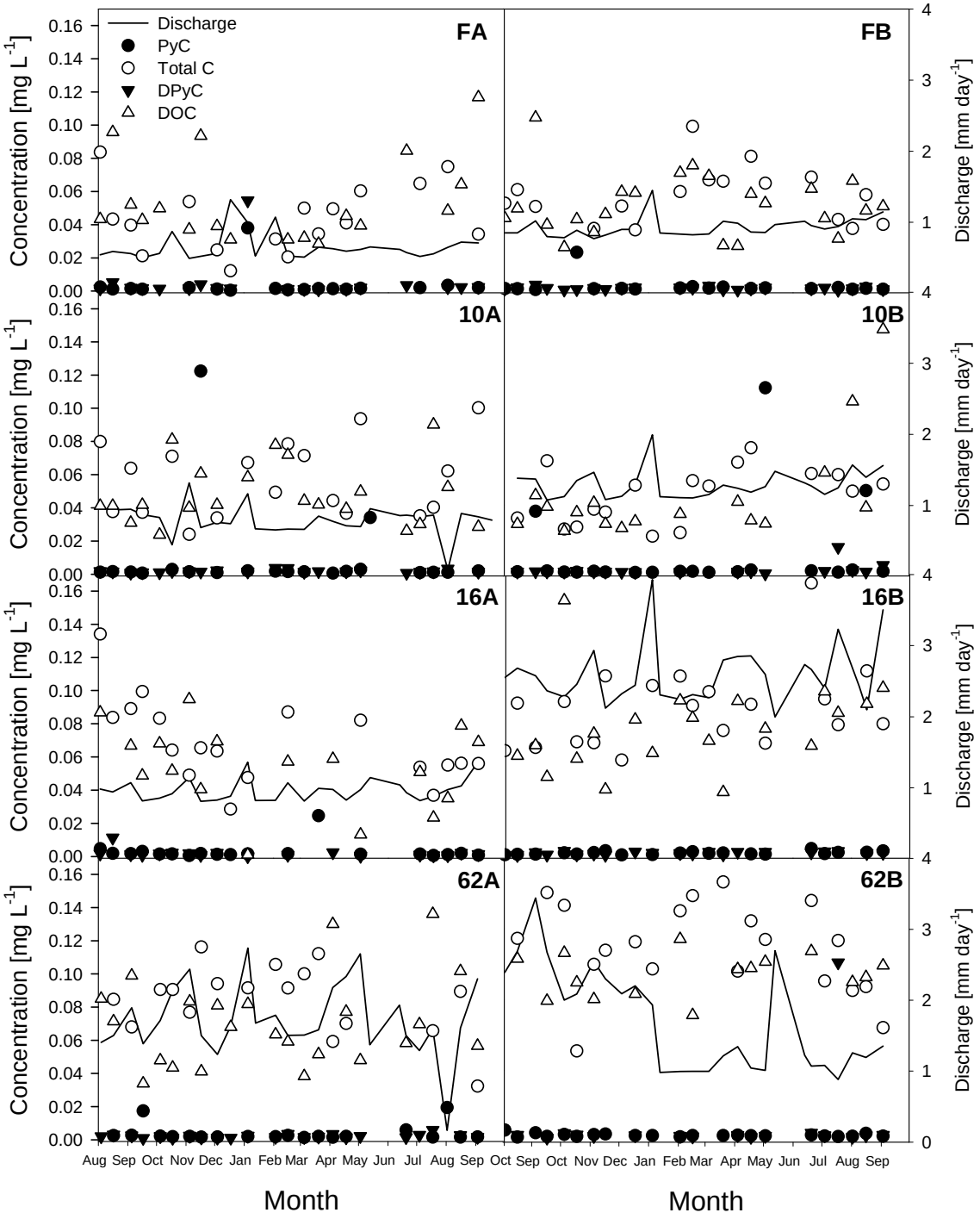

Figure S5. Bi-weekly discharge and stream water concentrations of TOC and PyC in natural and agricultural headwater catchments of the Yala River, Kenya. Discharge in catchment 16B was divided by a factor of three to allow for uniform axes scales. Due to much smaller PyC concentrations, these are shown separately in Figure S6.

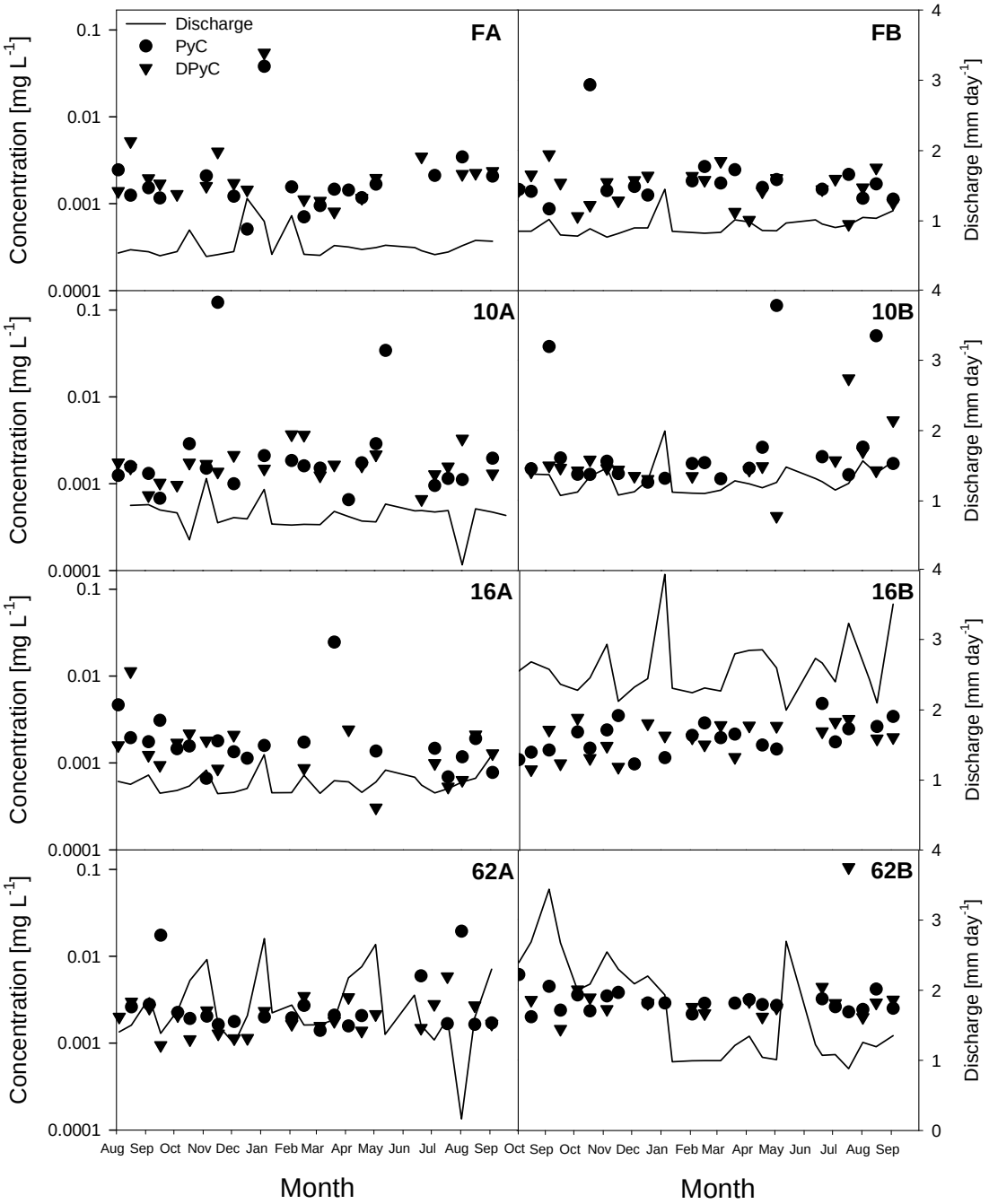

Figure S6. Bi-weekly discharge and stream water concentrations of total PyC and DPyC in natural and agricultural headwater catchments of the Yala River, Kenya. Discharge in catchment 16B was divided by a factor of three to allow for uniform axes scales (note logarithmic scale of concentration).

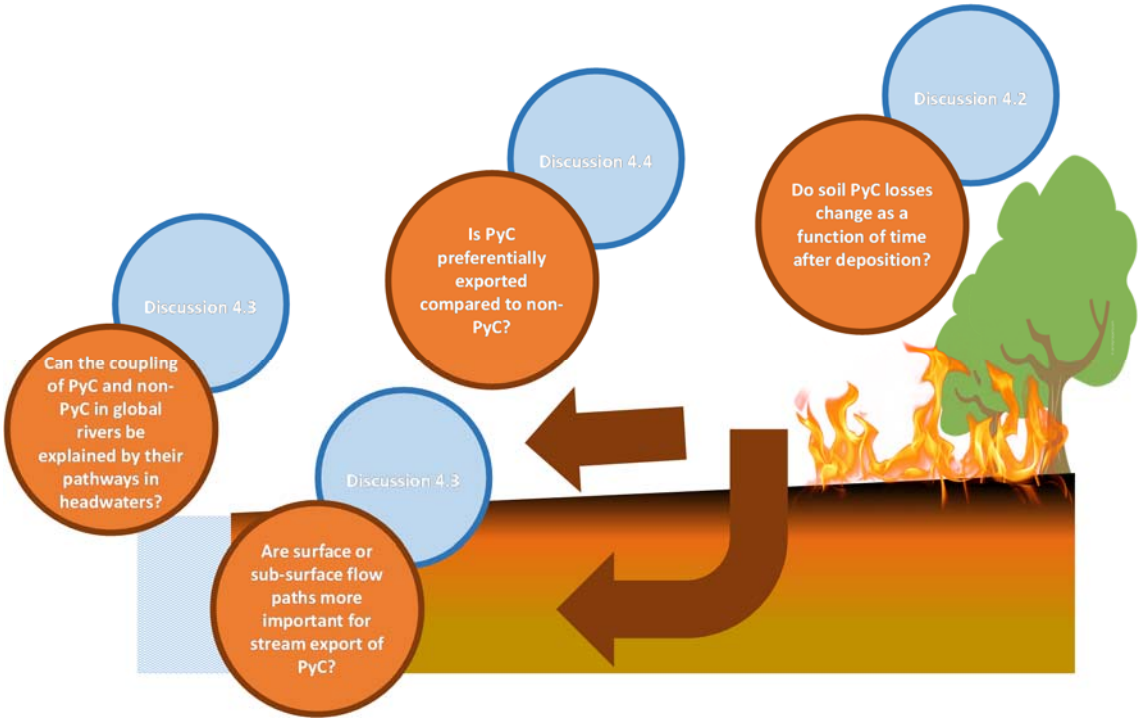

Figure S8. Conceptual sketch of the main questions of this study and corresponding sections in the Discussion.