1	Characteristics of dissolved organic matter from a trans-boundary Himalayan
2	watershed: relationships with land use, elevation, and hydrology
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18	Supporting information (7 pages): Table S1-S2 and Fig. S1-S2

19 Supporting information:

Indicators associated with dissolved organic matter (DOM) optical properties. Slope ratio (S_R, a proxy of CDOM molecular weight), fluorescence index (FI, an index of sources of fulvic acids), biological index (BIX, an index of recent biological and autochthonous contribution), and humification index (HIX, a proxy of humification degree) were calculated accordingly¹⁻⁴. Bio-degradation experiment for surface waters from upstream Himalayan-Tibetan Plateau (HTP) rivers. A 6-month bioincubation experiment was carried out for surface water samples from upstream rivers in the HTP⁵. Sample bottles with large headspaces were wrapped with aluminum foil and incubated in room temperature (~22 °C). Bottles were also opened regularly to aerate to ensure enough oxygen for microbial respiration. Bio-humification was observed after bio-incubation (Fig.S1).

- 34 Table S1. Linear correlation coefficients of water chemistry parameters and DOM optical properties with agricultural and natural
- 35 vegetation land uses (p < 0.01).

	pН	EC	TDS	C _{270/298}	C _{280/305}	C<265(308))/445	HIX
Land uses (%)		µS cm⁻¹	mg L ⁻¹	RU	RU	%	
Paddy field	0.9	0.5	0.5	0.7	0.7	-0.6	-0.6
Arid agricultural lands	0.9	0.5	0.5	0.7	0.7	-0.6	-0.6
Grassland	-0.9	-0.5	-0.5	-0.7	-0.7	0.6	0.6
Forest	-0.9	-0.5	-0.5	-0.7	-0.7	0.6	0.6
Jungle	-0.9	-0.5	-0.5	-0.7	-0.7	0.6	0.6

	DOC	a 254	a 350	FI	BIX	HIX	C<260/315	$C_{300/344}$	$C_{265/440}$
	mg L ⁻¹	m^{-1}	m^{-1}				RU	RU	RU
Upstream:									
Pum Qu River*	0.98 ± 0.76	6.9 ± 7.1	4.2 ± 5.8	1.6 ± 0.1	1.1 ± 0.6	2.2 ± 1.6	0.03 ± 0.01	0.08 ± 0.10	0.05 ± 0.01
							$C_{<260/332}$	$C_{<260(308)/390}$	$C_{273(344)/460}$
Post-bioincubation	n/a	2.2 ± 0.2	0.6 ± 0.3	1.3 ± 0.1	1.0 ± 0.2	2.7 ± 0.4	0.04 ± 0.01	0.09 ± 0.01	0.08 ± 0.02
*Data from Chen et	al. ⁵ .								

46 Table S2. Comparison of DOM optical properties in upstream Pum Qu River before and after six-month bioincubation.





59 (a) and after (b) 6-month bio-incubation, suggesting the high-abundance of protein-like fluorescence was produced downstream in situ.



61 Fig. S2 Split-half validation of three EEM-PARAFAC components for the Kosi River watershed.

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