

Figure S1. Map of land use/land cover distribution in the upper Lancang-Mekong River Basin. Note: BSVG: barren or sparsely vegetated; CRDY: dryland, cropland, and pasture; CRGR: cropland/grassland; CRIR: irrigated cropland and pasture; CRWO: cropland/woodland; FODB: deciduous broadleaf forest; FODN: deciduous needleleaf forest; FOEB: evergreen broadleaf forest; FOEN: evergreen needleleaf forest; FOMI: mixed forest; GRAS: grassland; MIGS: mixed shrubland/grassland; SAVA: savanna; SHRB: shrubland; TUWO: wooded tundra; URMD: urban and built-up land; WATR: snow or ice; WEWO: wooded wetland.

Table S1. Dominant land cover classes in the upper Lancang-Mekong River Basin.

Abbreviation	Land Cover Type	Area (% of the basin)
GRAS	Grassland	38.34%
FOMI	Mixed forest	20.70%
FOEB	Evergreen broadleaf forest	15.33%
SHRB	Shrubland	11.36%
FODB	Deciduous broadleaf forest	8.71%
SAVA	Savanna	2.42%
TUWO	Wooded tundra	1.80%
CRIR	Irrigated cropland and pasture	1.35%

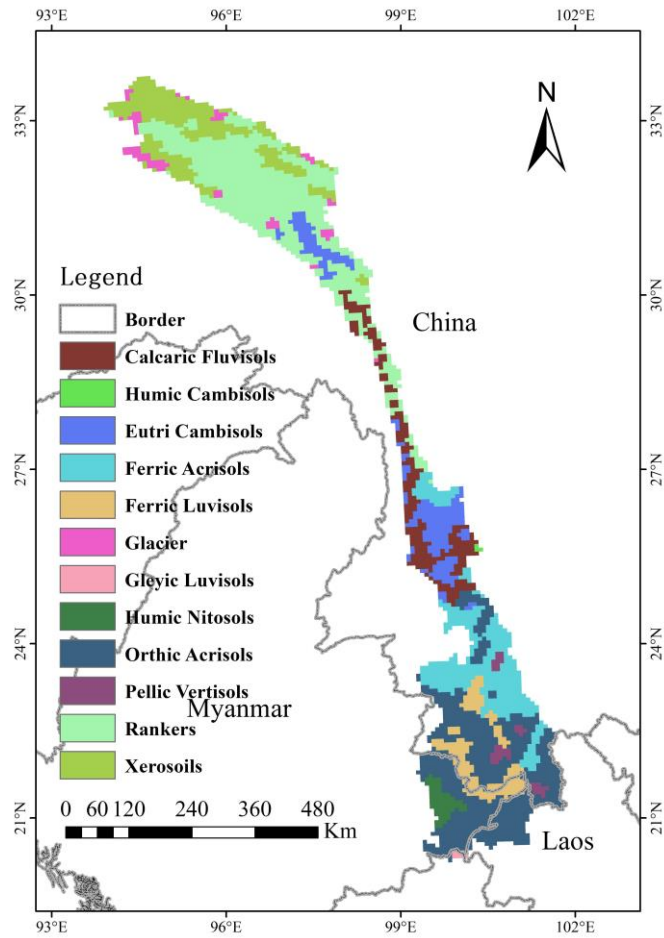


Figure S2. Map of soil type distribution in the upper Lancang-Mekong River Basin [37].

Table S2. Major soil types in the upper Lancang-Mekong River Basin.

FAO Soil Name	Area (% of the Basin)	Texture	Hydrologic Soil Group *	Moist Bulk Density (g/cm ³)	Saturated Hydraulic Conductivity (mm/hr)	Available Water Holding Capacity (mm H ₂ O/mm Soil)
Rankers	25.07%	LOAM	C	1.2	14.38	0.06
Orthic Acrisols	23.94%	SANDY_CLAY_ LOAM	C	1.3	7.27	0.06
Ferric Luvisols	12.98%	SANDY_CLAY_ LOAM	C	1.2	14.66	0.03
Xerosols	11.11%	LOAM	D	1.4	6.24	0.07
Calcaric Fluvisols	7.95%	LOAM	D	1.4	5.21	0.17
Eutri Cambisols	7.89%	LOAM	D	1.3	7.99	0.08
Ferric Luvisols	5.41%	CLAY	C	1.3	9.16	0.07
Glacier	2.34%	UWB	D	2.5	99	0.01
Humic Nitosols	1.83%	CLAY_LOAM	C	1.2	12.6	0.17
Pellic Vertisols	1.39%	CLAY	C	1.1	23.2	0.12
Humic Cambisols	0.09%	LOAM	C	1.0	33.91	0.06

* Note—The hydrologic soil group was divided into the following four subgroups (Neitsch et al., 2011, [40]): A (low runoff potential)—these soils have a high infiltration rate even when thoroughly wetted; they chiefly consist

of deep, well-drained to excessively drained sands or gravels; and they have a high rate of water transmission. B—these soils have a moderate infiltration rate when thoroughly wetted; they are mostly moderately deep to deep and moderately well-drained to well-drained soils that have moderately fine to moderately coarse textures; and they have a moderate rate of water transmission. C—these soils have a slow infiltration rate when thoroughly wetted; they chiefly have a layer that impedes the downward movement of water or have a moderately fine to fine texture; and they have a slow rate of water transmission. D (high runoff potential)—these soils have a very slow infiltration rate when thoroughly wetted; they chiefly consist of clay soils that have a high swelling potential, soils that have a permanent water table, soils that have a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material; and they have a very slow rate of water transmission.

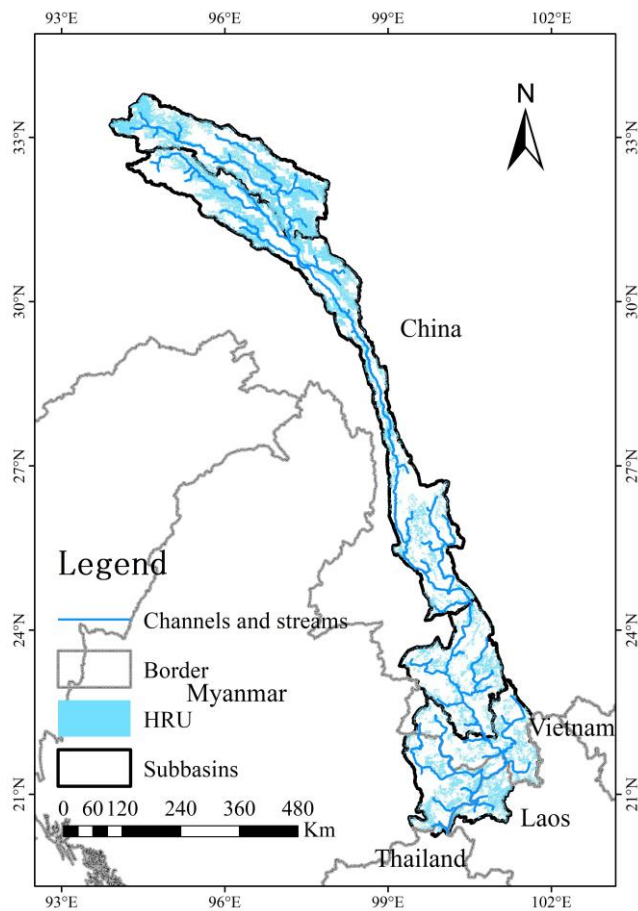


Figure S3. The channels and streams in the upper Lancang-Mekong River Basin.