remote sensing

Supplementary Materials

Land suitability evaluation based on the suitability function

The suitability order of land suitability follows Yao's methods [1]. Based on modern land coverage types in the Tibetan Plateau, we extracted cultivated land and grassland, respectively. Subsequently, the land suitability rasters were masked by corresponding modern land coverage types. The suitable order is then divided into three classes using Jenks classification: highly, moderately, and marginally suitable. The Jenks classification aims to reduce intra-class variance and maximize inter-class variance, making it a widely used data clustering method [2]. The remaining areas are defined in terms of unsuitability.

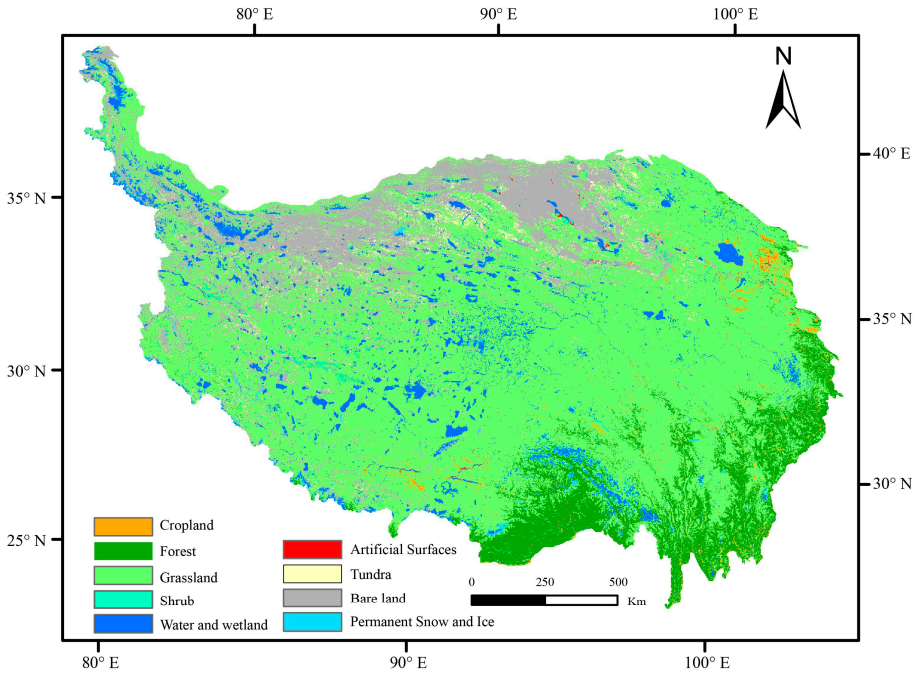

Figure S1. Modern land coverage types in the Tibetan Plateau [3].

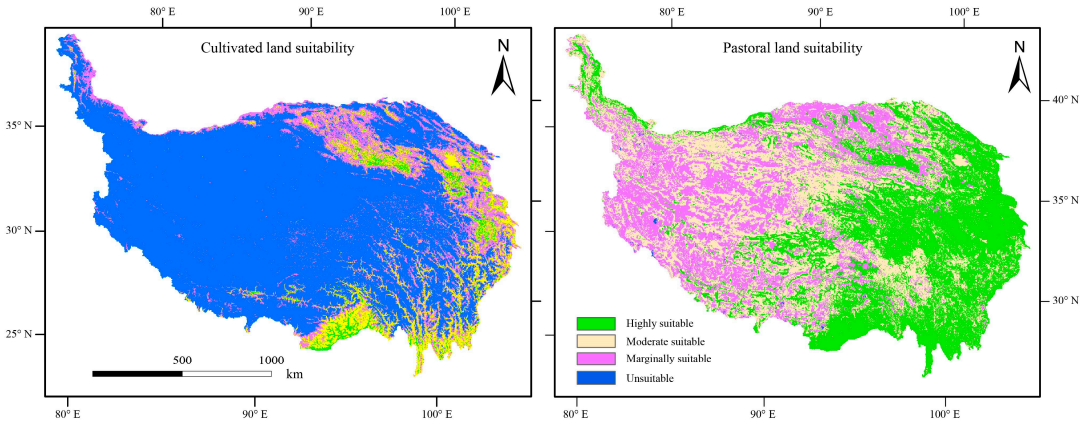

Figure S2. Suitability ordered class and distribution of cultivated and pastoral land in the modern Tibetan Plateau.

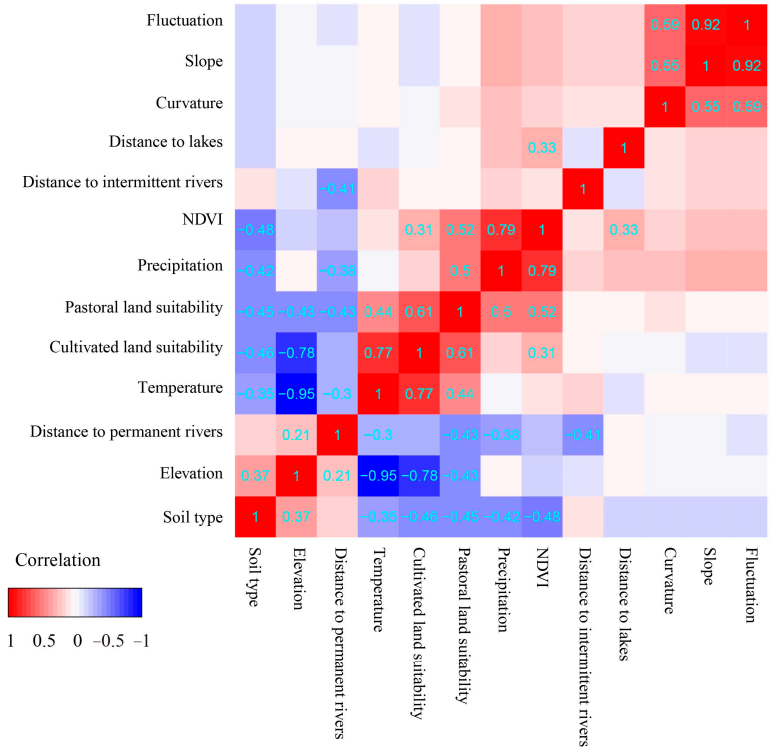

Figure S3. Dependent variables Pearson correlation heat map.

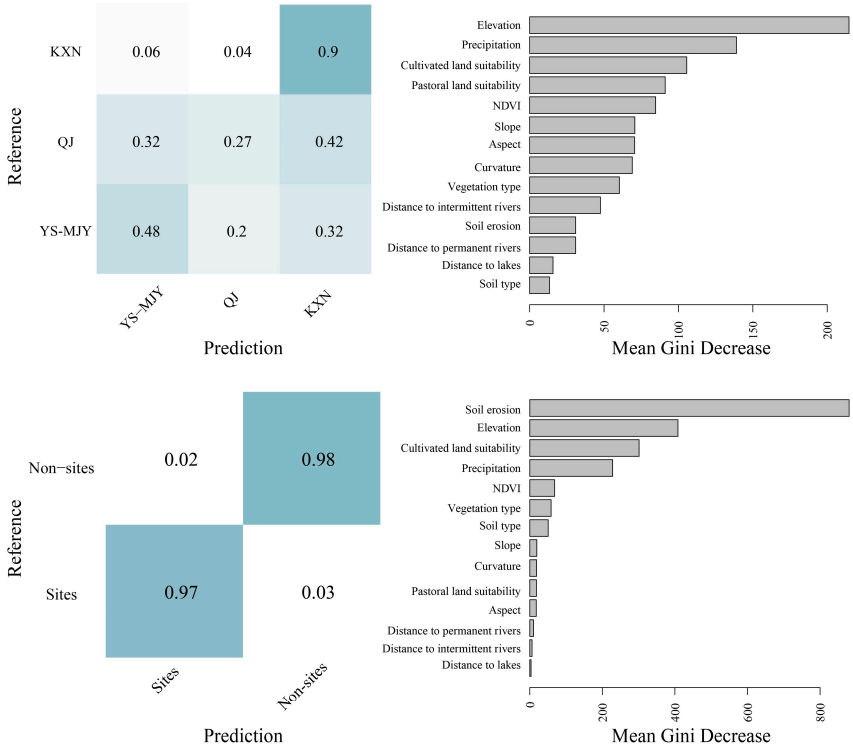

Figure S4. The importance rankings and OOB confusion matrix for the three-classification model (YS-MJY, QJ, and KXN cultures) and the binary classification model (sites and non-sites).

Table S1. The whole results of 10-fold CV, repeated 5 times.

Iter		Error Rate	Accuracy	Kappa	Multiclass AUC
rep.1	1	0.249462	0.750538	0.646932	0.908292
	2	0.251073	0.748927	0.640297	0.894004
	3	0.26824	0.73176	0.618038	0.891936
	4	0.249462	0.750538	0.643275	0.890704
	5	0.253763	0.746237	0.637793	0.891831
	6	0.267666	0.732334	0.620676	0.892774
	7	0.255914	0.744086	0.634311	0.889269
	8	0.233906	0.766094	0.665811	0.911004
	9	0.259657	0.740343	0.626805	0.898945
	10	0.276231	0.723769	0.604279	0.882917
rep.2	11	0.261803	0.738197	0.626173	0.897804
	12	0.251073	0.748927	0.642879	0.903144
	13	0.260215	0.739785	0.628393	0.895233
	14	0.298283	0.701717	0.575261	0.871944
	15	0.24197	0.75803	0.654513	0.901771
	16	0.262366	0.737634	0.626506	0.898988
	17	0.252677	0.747323	0.638903	0.904666
	18	0.23176	0.76824	0.668461	0.906084
	19	0.249462	0.750538	0.644671	0.902769
	20	0.301075	0.698925	0.569615	0.864247
rep.3	21	0.267666	0.732334	0.617977	0.886842
	22	0.236052	0.763948	0.664423	0.907603
	23	0.252677	0.747323	0.637585	0.888495
	24	0.262931	0.737069	0.62636	0.886193
	25	0.266094	0.733906	0.621644	0.901211
	26	0.288172	0.711828	0.5889	0.883023
	27	0.246781	0.753219	0.649188	0.90697
	28	0.23176	0.76824	0.669649	0.905383
	29	0.251073	0.748927	0.641109	0.897326
	30	0.258065	0.741935	0.630828	0.886485
rep.4	31	0.24086	0.75914	0.655631	0.899925
	32	0.233906	0.766094	0.664896	0.906411
	33	0.26824	0.73176	0.615725	0.9004
	34	0.253219	0.746781	0.638418	0.891807
	35	0.266094	0.733906	0.620683	0.898863
	36	0.258065	0.741935	0.633064	0.895253
	37	0.27409	0.72591	0.609282	0.882406
	38	0.277419	0.722581	0.607356	0.893783
	39	0.270386	0.729614	0.611641	0.89078
	40	0.23176	0.76824	0.671037	0.90064
rep.5	41	0.246781	0.753219	0.648156	0.900888
	42	0.258065	0.741935	0.631515	0.879503
	43	0.251073	0.748927	0.640135	0.899623
	44	0.246781	0.753219	0.650401	0.905836
	45	0.276824	0.723176	0.605743	0.887536
	46	0.253219	0.746781	0.637455	0.908483
	47	0.276824	0.723176	0.605642	0.885906
	48	0.248927	0.751073	0.644174	0.901049

49	0.26824	0.73176	0.616832	0.888682
50	0.258065	0.741935	0.632919	0.894297
Average	0.257923	0.742077	0.632919	0.895199

References

1. Yao, M.; Shao, D.; Lv, C.; An, R.; Gu, W.; Zhou, C. Evaluation of arable land suitability based on the suitability function - A case study of the Qinghai-Tibet Plateau. *Sci. Total Environ.* **2021**, *787*, 147414. doi:10.1016/j.scitotenv.2021.147414.
2. Jenks, G.F. The data model concept in statistical mapping. Int. yearb. Cartogr. 1967, 7, 186-190.
3. [dataset] Xu, E. 2019. Land use of the Tibet Plateau in 2015 (Version 1.0). National Tibetan Plateau / Third Pole Environment Data Center. https://doi.org/10.11888/Geogra.tpdc.270198.