

Supplementary materials

S1: Total number of training and validation points

LULC class	Year			
	1985	2000	2010	2019
Forest	187	217	293	410
Shrubland	343	270	300	383
Grassland	337	643	960	663
cultivated land	750	973	1107	1063
Settlement	167	157	250	410

S2: Confusion matrix

S2a: Confusion matrix for 1985

LULC class	Forest	Shrubland	Grassland	cultivated land	Settlement	Row total (RT)	User accuracy (UA) (%)	RT/Total
Forest	53	13	0	1	0	67	79.10	0.1252
Shrubland	1	88	0	4	0	93	94.62	0.1738
Grassland	2	0	100	3	0	105	95.24	0.1963
cultivated land	0	2	1	216	2	221	97.74	0.4131
Settlement	0	0	0	1	48	49	97.96	0.0916
Column total (CT)	56	103	101	225	50	535		
Producer accuracy (PA) (%)	94.64	85.44	99.01	96.00	96.00			
CT/Total	0.1047	0.1925	0.1888	0.4206	0.0935			
Sum of (CT/Total)*(RT/Total)	0.2659							
Overall accuracy (OA)	0.9439				94.39			
Kappa (K)	0.9236							

S2b: Confusion matrix for 2000

LULC class	Forest	Shrubland	Grassland	cultivated land	Settlement	Row total (RT)	User accuracy (UA) (%)	RT/Total
Forest	65	0	0	0	0	65	100.00	0.0959
Shrubland	0	79	0	6	0	85	92.94	0.1254
Grassland	0	1	182	13	0	196	92.86	0.2891
cultivated land	0	1	11	270	0	282	95.74	0.4159
Settlement	0	0	0	3	47	50	94.00	0.0737
Column total (CT)	65	81	193	292	47	678		
Producer accuracy (PA) (%)	100.00	97.53	94.30	92.47	100.00			
CT/Total	0.0959	0.1195	0.2847	0.4307	0.0693			
Sum of (CT/Total)*(RT/Total)	0.2907							
Overall accuracy (OA)	0.9484	Overall accuracy (OA) (%)			94.84			
Kappa coefficient (K)	0.9400							

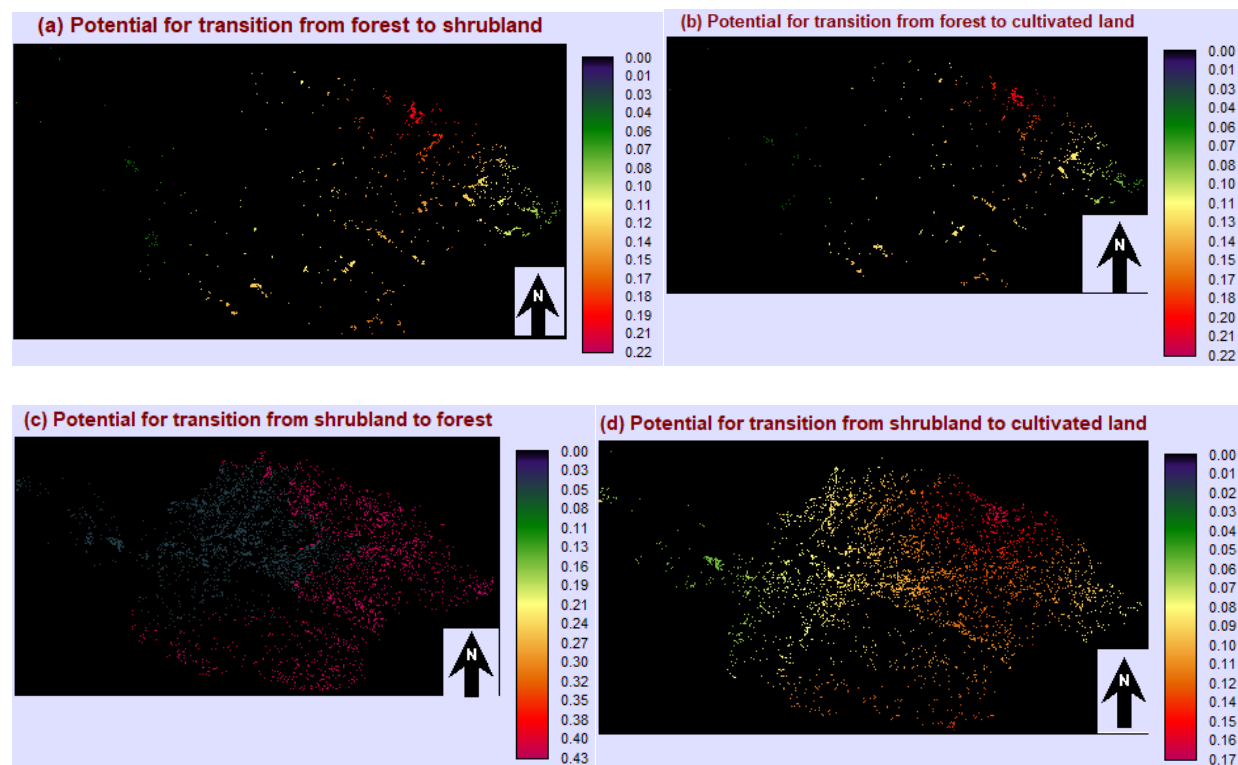
S2c: Confusion matrix for 2010

LULC class	Forest	Shrubland	Grassland	cultivated land	Settlement	Row total (RT)	User accuracy (UA) (%)	RT/Total
Forest	88	0	0	0	0	88	100.00	0.1008
Shrubland	0	89	0	10	0	99	89.90	0.1134
Grassland	0	0	277	32	0	309	89.64	0.3540
cultivated land	0	1	11	285	1	298	95.64	0.3414
Settlement	0	0	0	5	74	79	93.67	0.0905
Column total (CT)	88	90	288	332	75	873		
Producer accuracy (PA) (%)	100.00	98.89	96.18	85.84	98.67			
CT/Total	0.1008	0.1031	0.3299	0.3803	0.0859			
Sum of (CT/Total)*(RT/Total)	0.2762							
Overall accuracy (OA)	0.9313	Overall accuracy (OA) (%)			93.13			
Kappa coefficient (K)	0.9050							

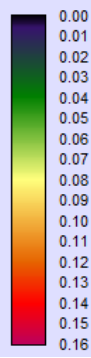
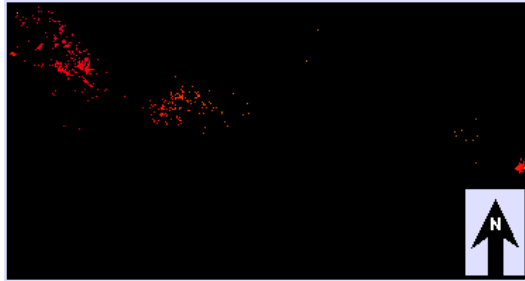
S2d: Confusion matrix for 2019

LULC class	Forest	Shrubland	Grassland	cultivated land	Settlement	Row total (RT)	User accuracy (UA) (%)	RT/Total
Forest	119	15	0	0	0	134	88.81	0.1524
Shrubland	4	97	0	10	0	111	87.39	0.1263
Grassland	0	1	168	2	0	171	98.25	0.1945
cultivated land	0	2	30	297	3	332	89.46	0.3777
Settlement	0	0	1	10	120	131	91.60	0.1490
Column total (CT)	123	115	199	319	123	879		
Producer accuracy (PA) (%)	96.75	84.35	84.42	93.10	97.56			
CT/Total	0.1399	0.1308	0.2264	0.3629	0.1399			
Sum of (CT/Total)*(RT/Total)	0.2398							
Overall accuracy (OA)	0.9113	Overall accuracy (OA) (%)			91.13			
Kappa coefficient (K)	0.8833							

S3: Transition potential maps (2010-2019)



(e) Potential for transition from grassland to cultivated land



(f) Potential for transition from cultivated land to settlement

