

Supplementary

Figure 1. Landslide affecting factors: (a) altitude; (b) profile curvature; (c) plan curvature; (d) aspect; (e) slope; (f) stream power index (SPI); (g) topographic wetness index (TWI); (h) Sediment Transport Index (STI); (i) distance to rivers; (j) distance to roads; (k) lithology; (l) soil; (m) land-use; (n) normalized difference vegetation index (NDVI).

Figure 2. Comparison maps: (a) SF-NB; (b) SF-RBFN.

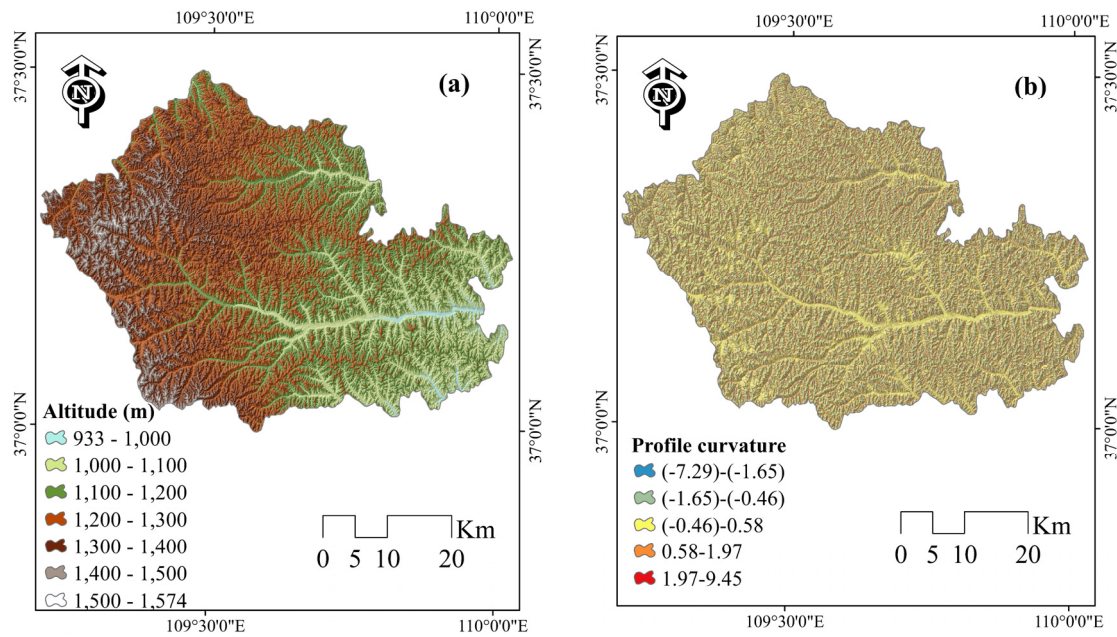
Figure 3. Spatial location of underestimations, in relationship with the imbalanced classes.

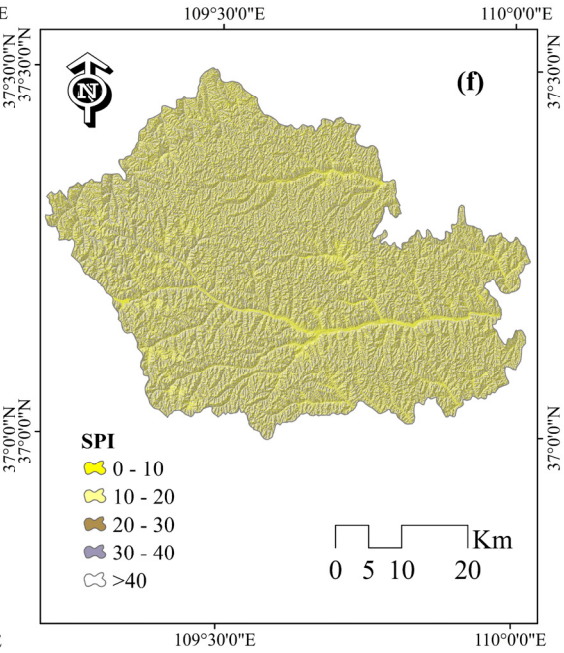
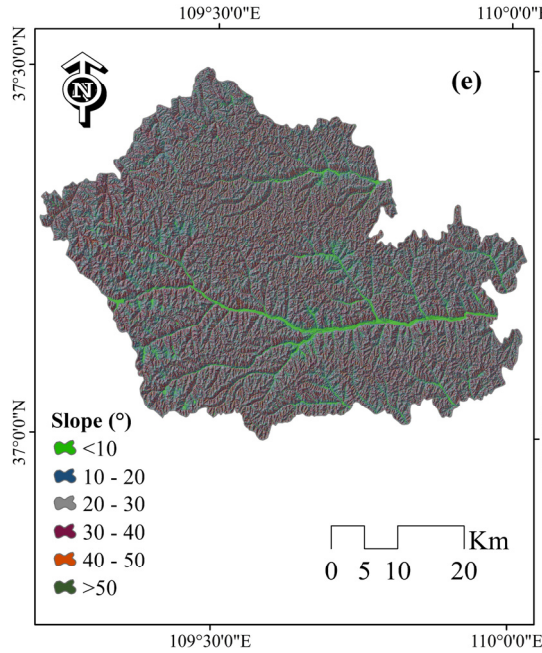
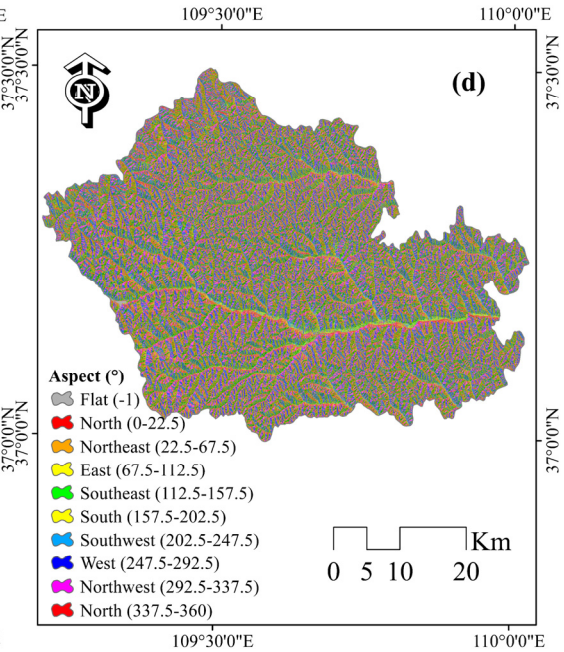
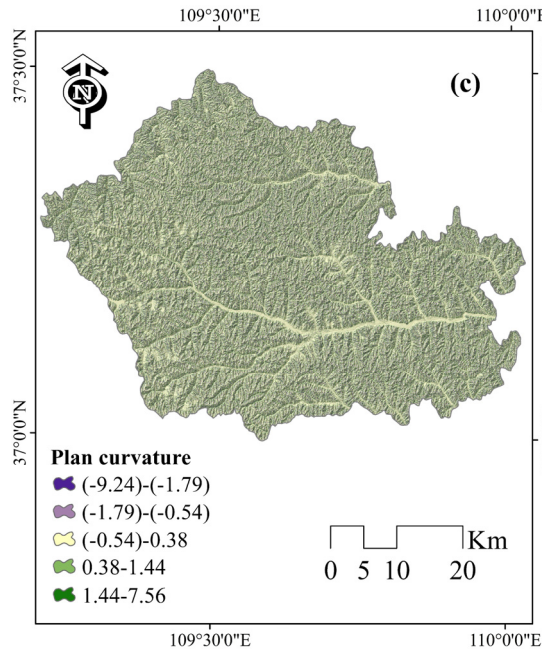
Figure 4. Spatial location of overestimations, in relationship with the imbalanced classes.

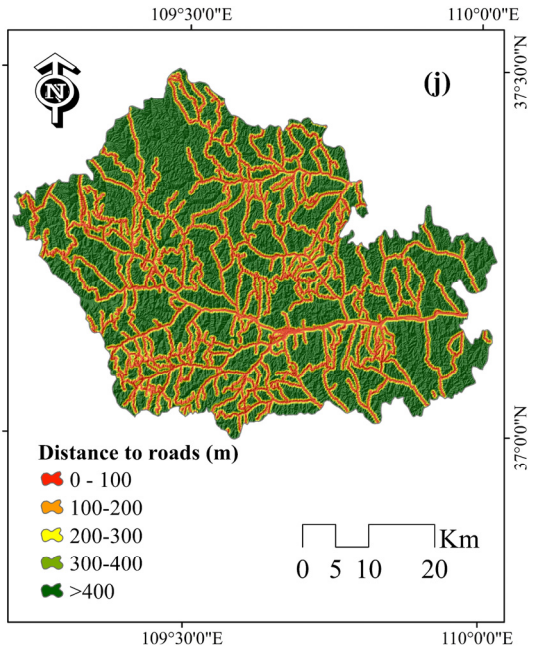
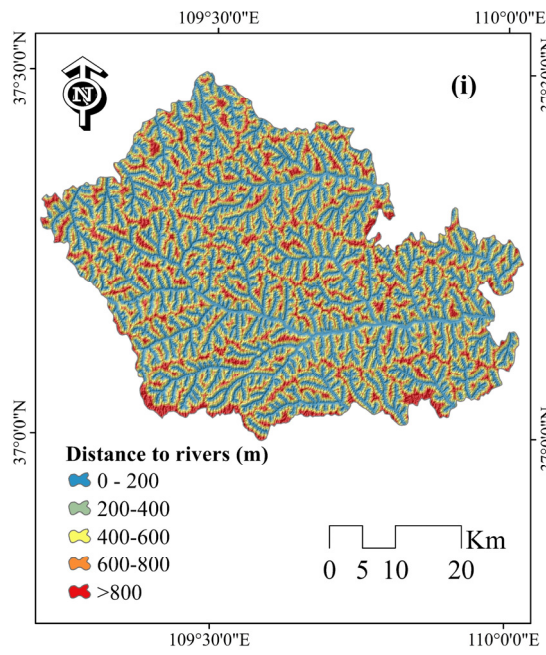
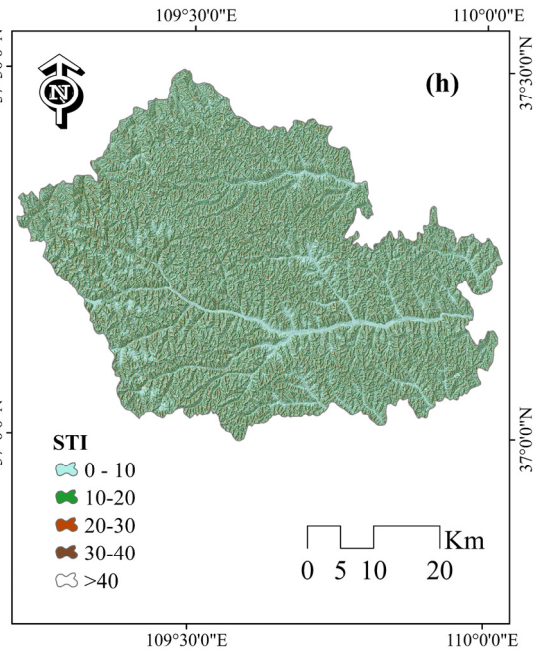
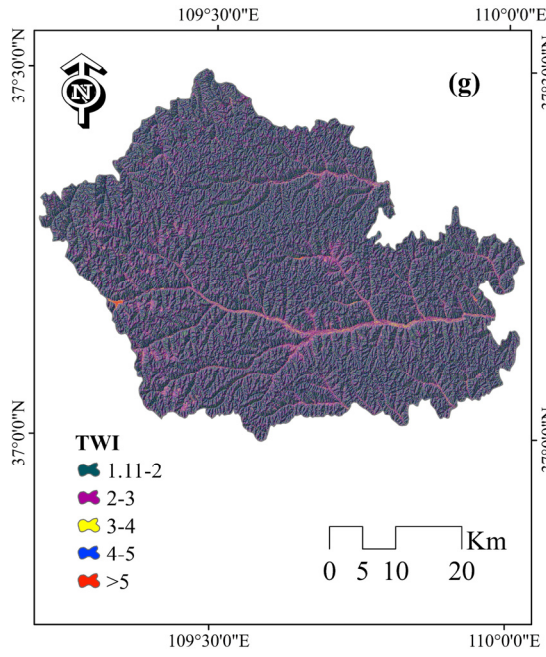
Table 1. Classification of comparison maps.

Table 2. Underestimated pixels and overestimated pixels between SF-NB

Table 3. Underestimated pixels and overestimated pixels between SF-RBFN.







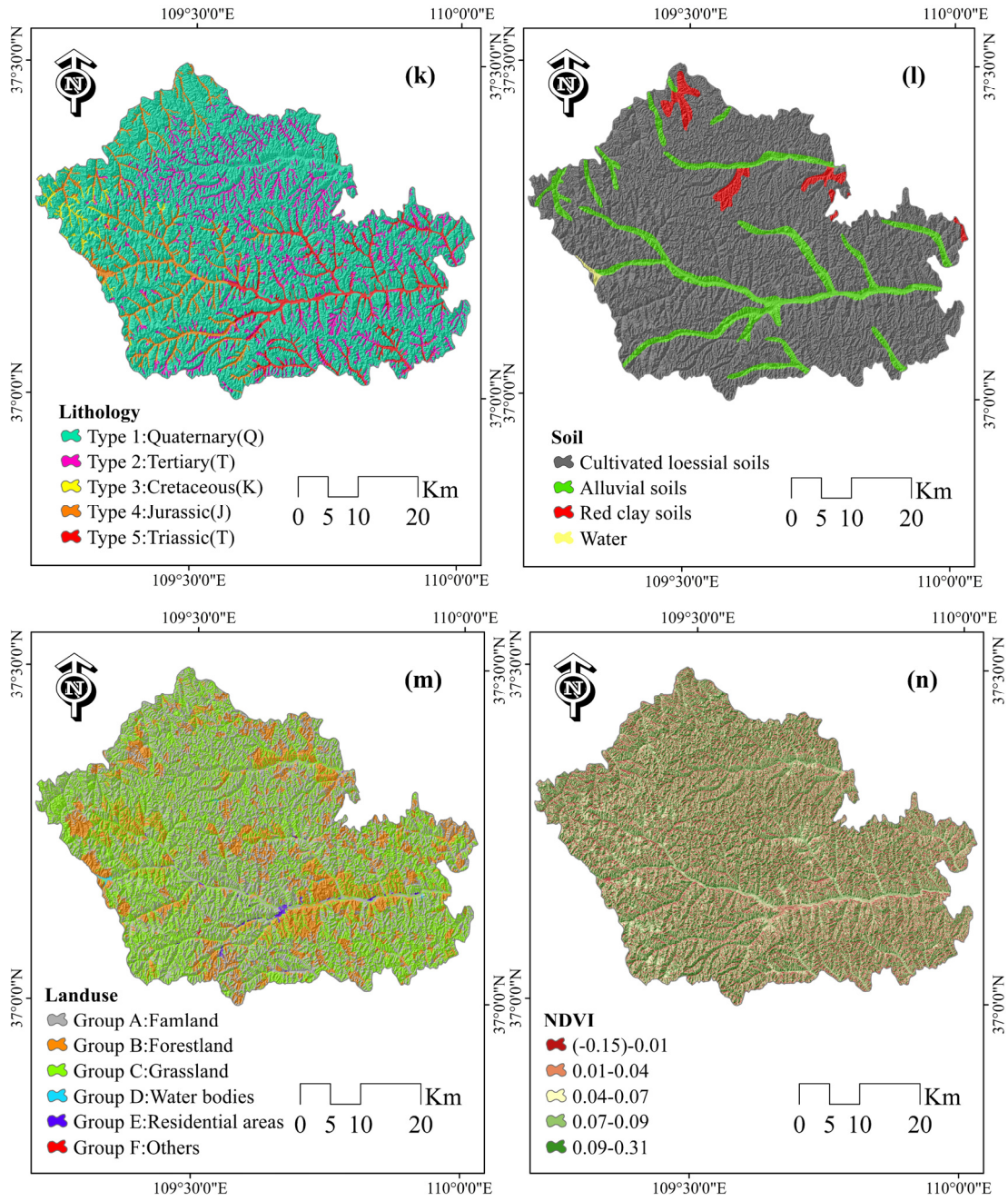


Figure 1. Landslide affecting factors: (a) altitude; (b) profile curvature; (c) plan curvature; (d) aspect; (e) slope; (f) stream power index (SPI); (g) topographic wetness index (TWI); (h) Sediment Transport Index (STI); (i) distance to rivers; (j) distance to roads; (k) lithology; (l) soil; (m) land-use; (n) normalized difference vegetation index (NDVI).

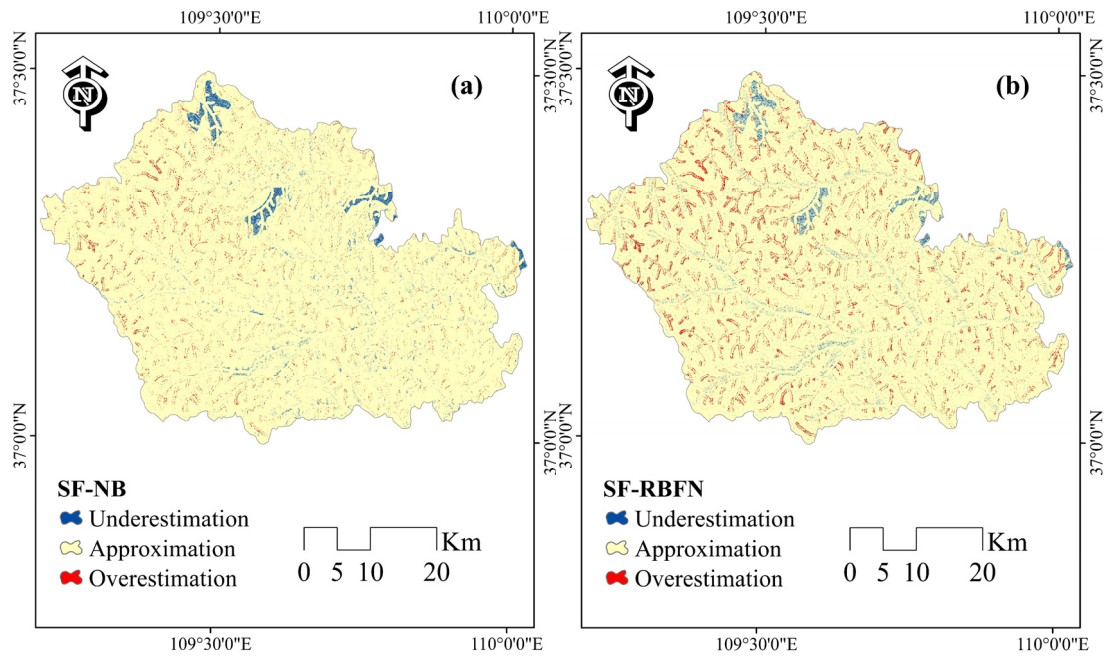


Figure 2. Comparison maps: (a) SF-NB; (b) SF-RBFN.

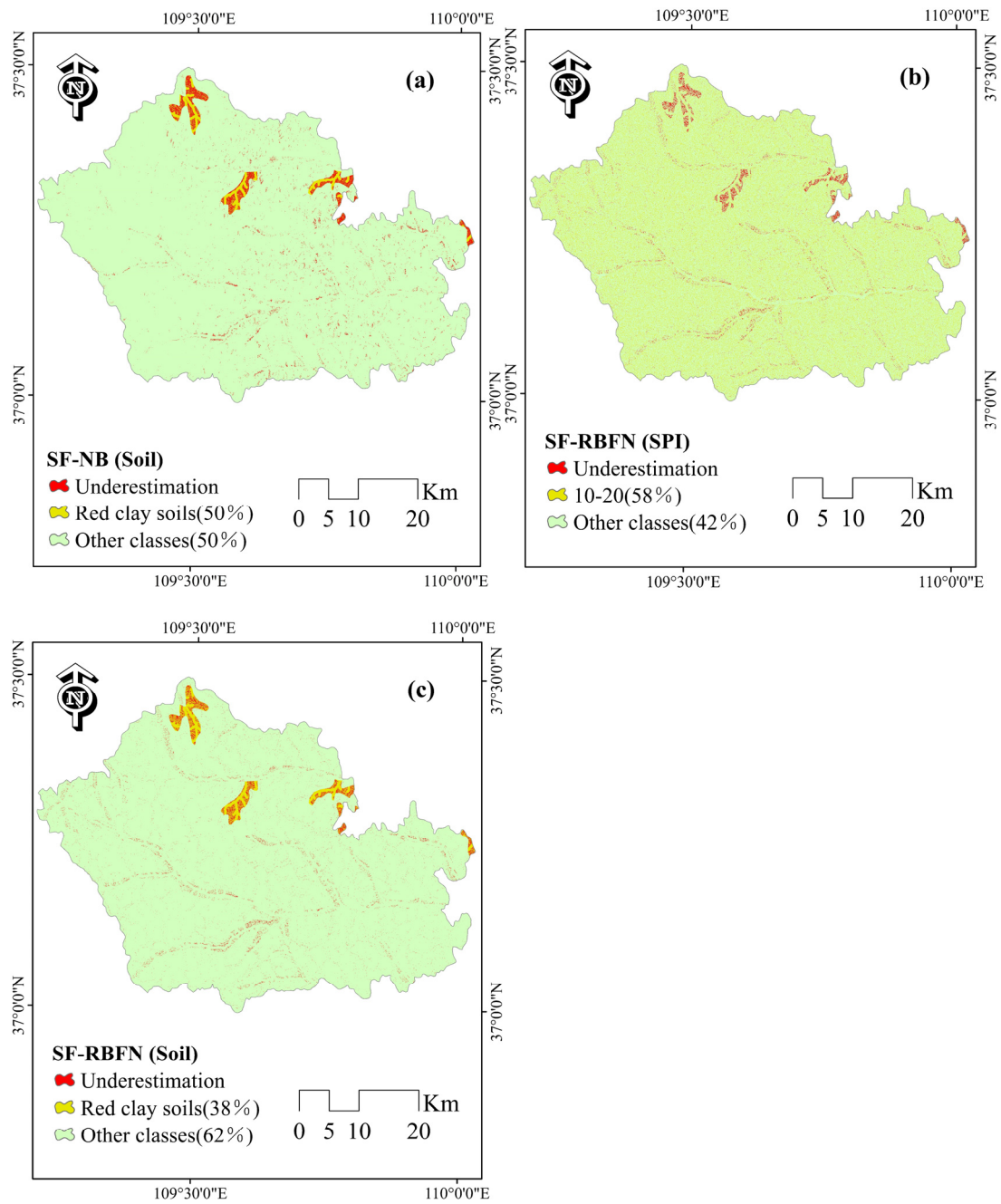


Figure 3. Spatial location of underestimations, in relationship with the imbalanced classes.

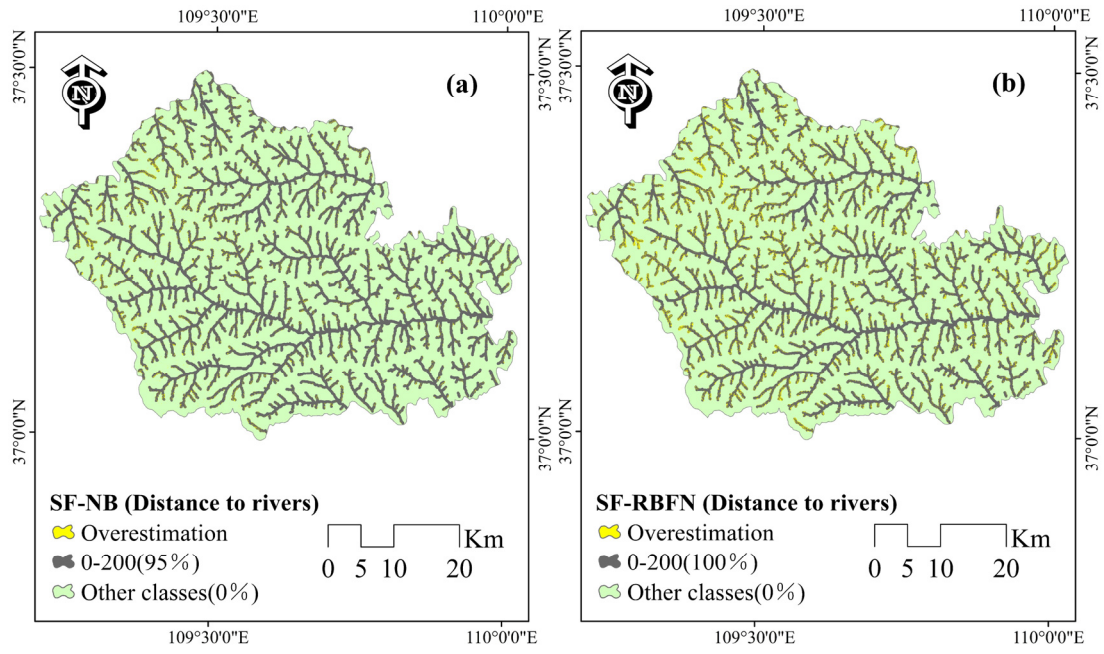


Figure 4. Spatial location of overestimations, in relationship with the imbalanced classes.

Table 1. Classification of comparison maps.

Comparison	Value	Classification		Percentage
SF-NB	-0.92-0.93	Underestimation	-0.92-(-0.5)	0.02
		Approximation	-0.5-0.5	0.96
		Overestimation	0.5-0.93	0.02
SF-RBFN	-0.83-0.78	Underestimation	-0.83-(-0.5)	0.02
		Approximation	-0.5-0.5	0.93
		Overestimation	0.5-0.78	0.05

Table 2. Underestimated pixels and overestimated pixels between SF-NB

Factors	Classes	A(%)	Underestimation		Overestimation	
			SF-NB B(%)	B-A%	SF-NB B(%)	B-A%
Altitude (m)	933-1000	0.01	0.00	-0.01	0.00	-0.01
	1000-1100	0.13	0.15	0.01	0.11	-0.03
	1100-1200	0.28	0.36	0.08	0.21	-0.07
	1200-1300	0.31	0.43	0.12	0.28	-0.03
	1300-1400	0.20	0.05	-0.15	0.38	0.18
	1400-1500	0.06	0.01	-0.05	0.02	-0.04
	1500-1574	0.00	0.00	0.00	0.00	0.00
Profile curvature (100/m)	(-7.29)-(-1.65)	0.08	0.13	0.05	0.08	0.00
	(-1.65)-(-0.46)	0.24	0.15	-0.09	0.50	0.26
	(-0.46)-(0.58)	0.39	0.43	0.04	0.28	-0.11
	(0.58)-(1.97)	0.21	0.24	0.03	0.08	-0.13
	(1.97)-(9.45)	0.07	0.05	-0.02	0.05	-0.02
Plan curvature (100/m)	(-9.24)-(-1.79)	0.05	0.05	-0.01	0.02	-0.03
	(-1.79)-(-0.54)	0.18	0.17	-0.01	0.09	-0.09
	(-0.54)-0.38	0.42	0.39	-0.03	0.28	-0.14
	0.38-1.44	0.26	0.28	0.01	0.44	0.18
	1.44-7.56	0.08	0.12	0.04	0.16	0.08
Aspect (°)	F	0.00	0.00	0.00	0.00	0.00
	N	0.09	0.08	-0.02	0.08	-0.02
	NE	0.13	0.07	-0.06	0.28	0.15
	E	0.16	0.22	0.06	0.04	-0.13
	SE	0.11	0.14	0.03	0.05	-0.06
	S	0.10	0.11	0.01	0.05	-0.05
	SW	0.13	0.15	0.02	0.07	-0.06
	W	0.15	0.19	0.04	0.09	-0.06
Slope (°)	NW	0.12	0.04	-0.08	0.35	0.23
	<10	0.10	0.00	-0.10	0.00	-0.10
	10-20	0.26	0.23	-0.03	0.31	0.05
	20-30	0.35	0.39	0.04	0.40	0.05
	30-40	0.24	0.29	0.05	0.24	0.00
40-50	0.04	0.08	0.04	0.04	0.00	

	>50	0.00	0.00	0.00	0.00	0.00
SPI	(0-10)	0.32	0.24	-0.08	0.55	0.23
	(10-20)	0.20	0.34	0.14	0.17	-0.03
	(20-30)	0.14	0.10	-0.03	0.09	-0.04
	(30-40)	0.08	0.07	-0.01	0.05	-0.03
	>40	0.26	0.24	-0.02	0.13	-0.13
TWI	(1.11-2)	0.56	0.72	0.16	0.85	0.29
	(2-3)	0.33	0.23	-0.11	0.11	-0.22
	(3-4)	0.07	0.04	-0.03	0.04	-0.04
	(4-5)	0.03	0.01	-0.02	0.00	-0.02
	>5	0.00	0.00	0.00	0.00	0.00
STI	(0-10)	0.48	0.45	-0.03	0.67	0.19
	(10-20)	0.31	0.34	0.03	0.21	-0.10
	(20-30)	0.11	0.14	0.03	0.07	-0.05
	(30-40)	0.04	0.03	-0.01	0.02	-0.02
	>40	0.05	0.04	-0.01	0.03	-0.02
Distance to rivers (m)	0-200	0.29	0.00	-0.29	0.95	0.67
	200-400	0.25	0.52	0.27	0.01	-0.24
	400-600	0.22	0.23	0.01	0.02	-0.21
	600-800	0.16	0.17	0.02	0.01	-0.14
	>800	0.08	0.07	-0.01	0.00	-0.08
Distance to roads (m)	0-100	0.15	0.14	-0.01	0.05	-0.11
	100-200	0.11	0.13	0.02	0.11	0.00
	200-300	0.11	0.17	0.06	0.12	0.00
	300-400	0.09	0.12	0.03	0.07	-0.02
	>400	0.53	0.44	-0.09	0.66	0.13
Lithology	Type 1	0.75	0.56	-0.20	0.75	0.00
	Type 2	0.12	0.39	0.27	0.07	-0.05
	Type 3	0.01	0.00	-0.01	0.03	0.02
	Type 4	0.07	0.03	-0.03	0.10	0.03
	Type 5	0.05	0.02	-0.03	0.05	0.00
Soil	Cultivated					
	loessial soils	0.86	0.29	-0.56	0.97	0.11
	Alluvial soils	0.12	0.20	0.08	0.03	-0.09
	Red clay soils	0.02	0.50	0.48	0.00	-0.02
Land use	Water	0.00	0.00	0.00	0.00	0.00
	Group A	0.37	0.38	0.01	0.59	0.22
	Group B	0.19	0.24	0.05	0.25	0.06
	Group C	0.44	0.38	-0.06	0.16	-0.28
	Group D	0.00	0.00	0.00	0.00	0.00
	Group E	0.00	0.00	0.00	0.00	0.00
	Group F	0.00	0.00	0.00	0.00	0.00
NDVI	(-0.15)-0.01	0.14	0.08	-0.06	0.13	-0.01
	(0.01-0.04)	0.17	0.20	0.03	0.25	0.08

(0.04-0.07)	0.22	0.25	0.02	0.31	0.09
(0.07-0.09)	0.27	0.26	-0.02	0.15	-0.12
(0.09-0.31)	0.19	0.21	0.02	0.15	-0.04

Table 3. Underestimated pixels and overestimated pixels between SF-RBFN.

Factors	Classes	Underestimation			Overestimation	
		A(%)	SF-RBFN B(%)	B-A%	SF-RBFN B(%)	B-A%
Altitude (m)	933-1000	0.01	0.00	-0.01	0.00	-0.01
	1000-1100	0.13	0.11	-0.03	0.15	0.01
	1100-1200	0.28	0.30	0.02	0.24	-0.04
	1200-1300	0.31	0.41	0.10	0.35	0.04
	1300-1400	0.20	0.13	-0.07	0.25	0.04
	1400-1500	0.06	0.05	-0.01	0.01	-0.04
	1500-1574	0.00	0.00	0.00	0.00	0.00
Profile curvature (100/m)	(-7.29)-(-1.65)	0.08	0.14	0.06	0.08	0.00
	(-1.65)-(-0.46)	0.24	0.23	-0.01	0.34	0.10
	(-0.46)-(0.58)	0.39	0.36	-0.04	0.34	-0.05
	(0.58)-(1.97)	0.21	0.20	-0.01	0.18	-0.03
	(1.97)-(9.45)	0.07	0.08	0.00	0.06	-0.01
Plan curvature (100/m)	(-9.24)-(-1.79)	0.05	0.06	0.01	0.02	-0.03
	(-1.79)-(-0.54)	0.18	0.18	0.00	0.14	-0.04
	(-0.54)-0.38	0.42	0.37	-0.05	0.36	-0.06
	0.38-1.44	0.26	0.29	0.03	0.35	0.09
Aspect (°)	1.44-7.56	0.08	0.10	0.02	0.12	0.04
	F	0.00	0.00	0.00	0.00	0.00
	N	0.09	0.07	-0.02	0.08	-0.01
	NE	0.13	0.08	-0.05	0.19	0.06
	E	0.16	0.21	0.04	0.07	-0.09
	SE	0.11	0.12	0.00	0.10	-0.01
	S	0.10	0.12	0.02	0.08	-0.02
	SW	0.13	0.17	0.05	0.11	-0.02
	W	0.15	0.18	0.03	0.16	0.01
Slope (°)	NW	0.12	0.04	-0.07	0.20	0.09
	<10	0.10	0.00	-0.10	0.00	-0.10
	10-20	0.26	0.16	-0.10	0.21	-0.05
	20-30	0.35	0.32	-0.04	0.44	0.09
	30-40	0.24	0.47	0.23	0.28	0.04
	40-50	0.04	0.05	0.01	0.07	0.03
SPI	>50	0.00	0.00	0.00	0.00	0.00
	(0-10)	0.32	0.05	-0.27	0.35	0.03
	(10-20)	0.20	0.58	0.38	0.14	-0.05
	(20-30)	0.14	0.07	-0.07	0.21	0.07

	(30-40)	0.08	0.04	-0.04	0.14	0.06
	>40	0.26	0.26	0.00	0.16	-0.11
TWI	(1.11-2)	0.56	0.70	0.13	0.75	0.19
	(2-3)	0.33	0.20	-0.13	0.23	-0.10
	(3-4)	0.07	0.08	0.01	0.01	-0.06
	(4-5)	0.03	0.02	-0.01	0.00	-0.03
	>5	0.00	0.00	0.00	0.00	0.00
STI	(0-10)	0.48	0.53	0.05	0.42	-0.07
	(10-20)	0.31	0.24	-0.07	0.46	0.15
	(20-30)	0.11	0.11	0.00	0.11	0.00
	(30-40)	0.04	0.05	0.00	0.01	-0.03
	>40	0.05	0.08	0.02	0.01	-0.05
Distance to rivers (m)	0-200	0.29	0.00	-0.29	1.00	0.71
	200-400	0.25	0.44	0.18	0.00	-0.25
	400-600	0.22	0.18	-0.04	0.00	-0.22
	600-800	0.16	0.32	0.16	0.00	-0.16
	>800	0.08	0.06	-0.02	0.00	-0.08
Distance to roads (m)	0-100	0.15	0.12	-0.04	0.08	-0.08
	100-200	0.11	0.12	0.00	0.11	0.00
	200-300	0.11	0.14	0.03	0.09	-0.02
	300-400	0.09	0.12	0.03	0.06	-0.03
	>400	0.53	0.50	-0.03	0.66	0.13
Lithology	Type 1	0.75	0.82	0.07	0.75	0.00
	Type 2	0.12	0.13	0.01	0.10	-0.03
	Type 3	0.01	0.00	-0.01	0.03	0.02
	Type 4	0.07	0.03	-0.04	0.08	0.02
	Type 5	0.05	0.02	-0.03	0.04	-0.01
Soil	Cultivated loessial soils	0.86	0.27	-0.58	0.97	0.11
	Alluvial soils	0.12	0.35	0.23	0.03	-0.09
	Red clay soils	0.02	0.38	0.36	0.00	-0.02
	Water	0.00	0.00	0.00	0.00	0.00
Land use	Group A	0.37	0.40	0.04	0.46	0.09
	Group B	0.19	0.22	0.04	0.26	0.07
	Group C	0.44	0.37	-0.07	0.27	-0.16
	Group D	0.00	0.00	0.00	0.00	0.00
	Group E	0.00	0.00	0.00	0.00	0.00
	Group F	0.00	0.00	0.00	0.00	0.00
NDVI	(-0.15)-0.01	0.14	0.07	-0.07	0.13	-0.01
	(0.01-0.04)	0.17	0.20	0.03	0.24	0.08
	(0.04-0.07)	0.22	0.24	0.02	0.27	0.05
	(0.07-0.09)	0.27	0.30	0.03	0.16	-0.11
	(0.09-0.31)	0.19	0.19	0.00	0.18	-0.01