

Table S 1. Accuracy assessment report land cover 2000 (assessment based ground and high resolution satellite images)

Land cover	Forest	Agriculture area	Grassland	Shrubland	Barren area	Built-up area	Water body	Snow/glacier	Total	User's Accuracy (%)
Forest	132	5	1						138	96
Agriculture area	18	130	2	1			1		152	86
Grassland	4	2	28		2				36	78
Shrubland	3	3	2	6		1			15	40
Barren area	1		4		33			3	41	80
Built-up area		1				8			9	89
Water body		1			1		13	1	16	81
Snow/glacier			3					40	43	93
Total	158	142	40	7	36	9	14	44	450	
Producer's Accuracy (%)	84	92	70	86	92	89	93	91		

Total number of samples	450
No. of accurate samples	390
Overall Accuracy (%)	86.67
Kappa	0.82
Standard error kappa	0.0211
95% confidence interval	0.78-0.86
Maximum possible un-weighted kappa	0.93

Table S 2. Accuracy assessment report land cover 2010 (assessment based ground and high resolution satellite images)

Land Cover	Forest	Agriculture	Grassland	Shrubland	Barren area	Built-up area	Water body	Snow and glacier	Total	User's Accuracy (%)
Forest	231	15	2						248	93
Agriculture area	45	250	3	1	4	1			304	82
Grassland	5	1	42						48	88
Shrubland	3	3		15					21	71
Barren area	1	1			32		1	1	36	89
Built-up area		7				13			20	65
Water body		2	1		4		15	1	23	65
Snow/glacier			1		1		2	46	50	92
Total	285	279	49	16	41	14	18	48	750	
Producer's Accuracy (%)	81	90	86	94	78	93	83	96		

Table S 5. Proportion of 2000 land cover in each physiographic region

Physiographic regions	Forest	Shrubland	Grassland	Agriculture area	Barren area	Waterbody	Snow/glacier	Built-up area
High Mountain	2.79	26.55	59.08	0.11	87.00	7.49	99.34	0.00
Hill	37.50	15.94	5.26	43.52	1.05	22.12	0.00	43.18
Middle Mountain	30.33	48.83	30.03	12.59	2.86	9.40	0.66	0.22
Siwalik	22.50	4.71	2.80	9.20	4.09	22.11	0.00	13.35
Tarai	6.88	3.98	2.83	34.58	5.01	38.89	0.00	43.24
Total	100	100	100	100	100	100	100	100

Table S 6. Proportion of 2010 land cover in each physiographic region

Physiographic regions	Forest	Shrubland	Grassland	Agriculture area	Barren area	Waterbody	Snow/glacier	Built-up area
High Mountain	2.83	28.68	55.29	0.07	85.29	8.96	99.19	0.19
Hill	37.88	15.21	7.66	42.35	1.41	20.95	0.00	44.30
Middle Mountain	30.43	47.98	32.89	12.26	3.02	9.04	0.81	0.47
Siwalik	22.21	2.57	2.38	10.39	3.08	23.32	0.00	13.49
Tarai	6.65	5.55	1.78	34.93	7.20	37.73	0.00	41.55
Total	100	100	100	100	100	100	100	100

Table S 7. List of priority district for conservation

Name of province	Name of district	Priority level for erosion control
Provinces 5	Gulmi	1st priority level
Provinces 4	Parbat	1st priority level
Provinces 4	Syangja	1st priority level
Provinces 4	Tanahu	1st priority level
Provinces 3	Nuwakot	2nd priority level
Provinces 3	Ramechhap	2nd priority level
Provinces 6	Dolpa	3rd priority level
Provinces 4	Mustang	3rd priority level
Provinces 2	Bara	4th priority level
Provinces 2	Dhanusa	4th priority level
Provinces 5	Kapilbastu	4th priority level

Provinces 2	Mahottari	4th priority level
Provinces 1	Morang	4th priority level
Provinces 2	Rautahat	4th priority level
Provinces 5	Rupandehi	4th priority level
Provinces 2	Sarlahi	4th priority level
Provinces 2	Siraha	4th priority level
Provinces 1	Sunsari	4th priority level
Provinces 1	Jhapa	5th priority level
Provinces 2	Saptari	5th priority level
Provinces 1	Okhaldhunga	6th priority level
Provinces 5	Palpa	6th priority level
Provinces 1	Panchthar	6th priority level
Provinces 7	Darchaula	7th priority level
Provinces 6	Humla	7th priority level
Provinces 6	Mugu	7th priority level

Table S 8. Review of surface erosion rates reported from runoff plot studies

Sn	Location and Plot Data	Land Use	Erosion Rate	Source
1	Siwaliks: Chatra, east Nepali: south aspect, sandstone, period of measurement and number of plots not given.	Various, forest to grazing	7.0-36.8 t ha ⁻¹ year ⁻¹	Chatra Research Centre in Laban 1978
2	Siwaliks: Gagretal, near Surkhet, west Nepal; south aspect, sandstone, average slope 60%; period of measurement and number of plots not given.	Severely degraded heavily grazed forest on intensively gullied badlands.	200 t ha ⁻¹ year ⁻¹	Sakya, pers. Comm.. in Laban 1978
3	Middle Mountains: Banpale, Phewa watershed, near Pokhara, Central Nepal, south aspect, elevation 1405 m; grey phyllitic schist; soils 40-70 cm clay loam, moderately well drained; one 10 m ² bounded plot on each land use type; four individual measurements 29 June – 5 July 1978.	Fenced pasture, Unfenced grazing land.	9 – 4 t ha ⁻¹ year ⁻¹ 34.7 t ha ⁻¹ year ⁻¹	Hulder 1978
4	Middle Mountains: identical location to Mulder 1978; two 10 m ² bounded plots each land use type; x – value* of surface soil given as 0.35; daily measurements 11 June – 15 Oct. 1979.	Protected pasture mixed with forest. ** Overgrazed land.	t ha ⁻¹ June-Oct. 9.85 t ha ⁻¹ June-Oct.	Impat 1981
5	Middle Mountains: Tamagi, Phewa watershed, near Pokhara; northeast aspect, elevation 1800 m; one 10 m ² bounded plot; well drained clay loam derived from grey schist and quartzite schist; 11 composite measurements 01 July – 07 Oct. 1979.	Dense forest.	0.43 t ha ⁻¹ July-Oct.	Impat 1981
6	High Mountains: Namche Bazaar to Dingboche, Sagarmatha National Park; 35 unbounded plots with 0.5 m long collection troughs; elevations 3440-4412 m; weekly measurements Mar-Oct. 1984.	Heavily grazed pasture Utilized forest (litter/moss layer intact).	10.5-715.4 g/trough Mar-Oct. 0-16.2 g/trough Mar-Oct.	Byers 1986

Table S 9: Review of soil erosion filed plot measurement

Sn.	Places	Annual precipitation (mm)	Altitude (m)	Plot level: Agriculture	Pasture	Degraded forest/shrubland	Forest	Micro-watershed
1	High Himal Khumbu (Byers, 1987)	807-1071	3300-4415		2.22-16.93		0.25-4.87 (0.6)	
2	Langtang (Watanabe, 1994)		3000-4900		0.43-2.95			
3	High mountain Bamt-Bhandara (Ries, 1993)	1000-2200	1995-2453	0.2-12.7 (5.8)	0.4	1.4	1.4	2.08-29.85
4	Dandapakhar (Schaffner, 1987)	3125	1730		0.4-18.7			
5	Bonch (Schaffner, 1987)	3661			3.7-66.6			
6	Middle mountains Pakribas (Sherchan & Chand, 1991)	1261		16.9-36.7 (32.9)				
7	Jhikhu Khola (Carver & Nakarmi, 1995)	1393	1230-1260	0.1-42 (12.3)				
8	Chyandanda (Maskey & Joshi, 1991)	2104	1385	53.9-104.8				
9	Chisapani (Maskey & Joshi, 1991)	2047	1940	0.2-0.6 (0.6)				
10	Kathmandu (Laban, 1978)						8	
11	Kulekhani (Upadhaya et al., 1991 and DSC, 1995a)	1387	1620-1800	0.3-3.98				0.2-0.3
12	Phewa (Mulder, 1978 and DSC, 1996)	3700			9-35		0.34	15.2-15.4
13	Dailekh (Carson, 1985)			2.7	20	15	5	
14	Churia							
15	Chatra (Laban, 1978)				36.8	7.8		
16	Lothar (Laban, 1978)				31.5-420			
17	Surkhet (DSC, 1995b)	923	720	1.06-2.74 (1.87)				
18	Nepal(LRMP,)							
19	Likhu Khola(Shrestha 1997)			2.7-8.2 11 (under no cultivation)	0.05			
20	Kavre watershed(Maskey and Joshi 1991)							14.39
21	Kulkhani watershed(Upadhyaya et al 1991)							3.01

Table S 10. Review of Model based soil erosion estimation

Sn.	Place	RF	L	Erosion t/ha/annual	Model	References
1	Kalchi kola watershed	1534	Ag-forest	3 (Ag)	MMF Model(1984)	Manoj and Poudel,2010
2	Pokhare Khola	1370	forest-ag	8.6(with out terracing)	LISEM model	Quincey et al,2007
3	Mahadevkola sw		forest-ag	6.1-56.2(rainfed crops) 1.6-19.8(rangeland) 0.1-8.6(deg f) 0.-0.4(dense f) 0.1-0.8(irrigated rice)	MMF Model(1984)	
4	Dhalairiver basin,Tripura	2100-2800	Dense- Deg forest	< 50 and >250	USLE MODEL	Ghosh et al
5	Lidder catchment,India	1100-1500	forest-ag	1-36(Max 64)	USLE Model	Ashak et al,2011
6	Bagmati basin,Nepal		Ag-forest	1-10(Forest) 10-100(Ag) 10-100(Shrub)	RSULE model	Jha(2002)
7	Trijuga watershed,Nepal				USLE model	Saha(1996)
8	Kulekhani Watershed ,Nepal				RMMF model	(Kharel 1999)
9	Pakhribas watershed,Nepal					Sherchan et al. 1991
10	Hamsingha Khola Watershed					Dhungana 2002
11	Himalayan watershed		forest -ag	1-10(Forest) 58(AG)	USLE/Morgan models	Jain et al 2002

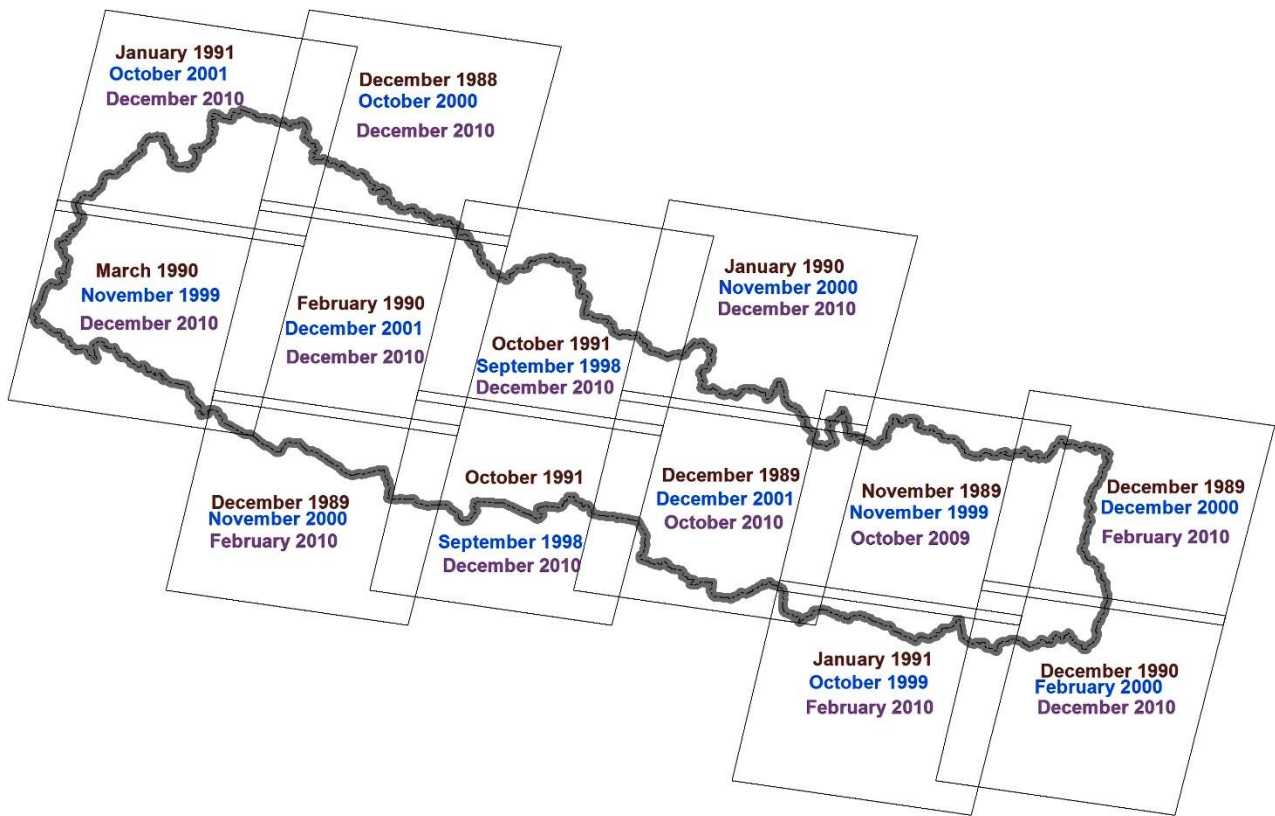


Figure S 1. List of used Landsat satellite images for land cover mapping

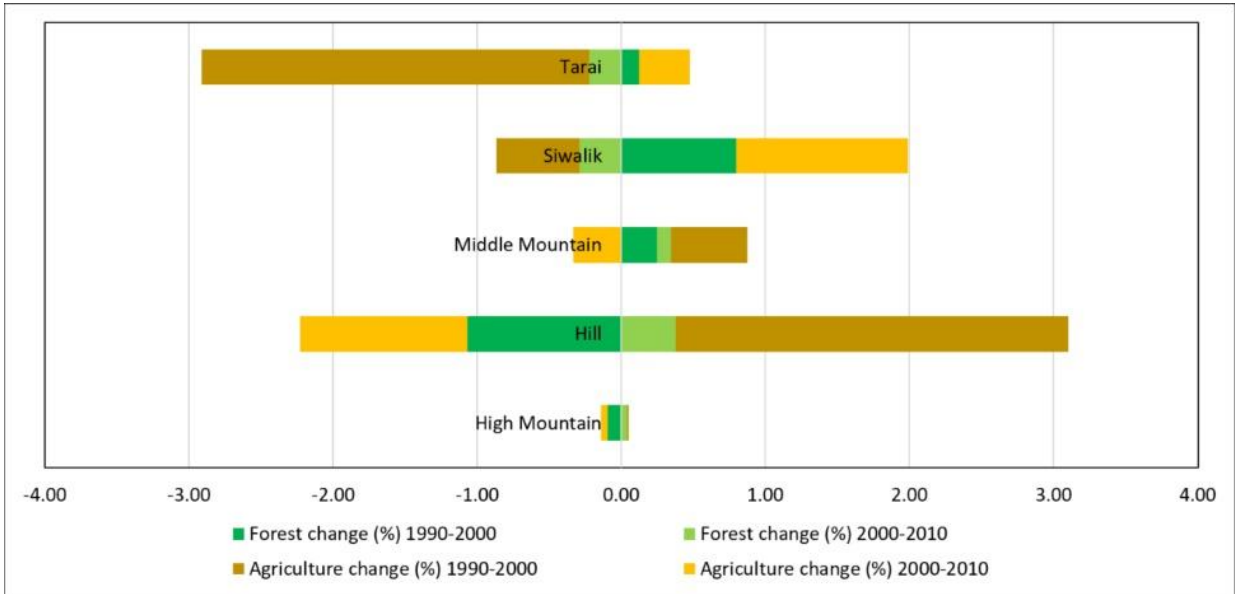


Figure S 2. Proportion of physiographic region wise forest and agriculture land cover change in Nepal.