CHAPTER IV

GLACIAL GEOMORPHIC INVENTORY

GLACIAL GEOMORPHIC INVENTORY

IV. 1. INTRODUCTION

As glaciers are constantly changing with time and their current recessional trend has become a prime concern for every human being. It is important to know the past and present trend of mountain glacier. A striking feature of modern glacier is that they follow the same pattern of growth and wastage the world over and serve as indicator of widespread climatic changes. During fluctuation of glacier it tries to leave some imprint in the form of erosional and depositional landforms. These geomorphic features act as an indicator for important glacial processess and facilitate inferences about nature of glaciation.

The earlier work was restricted to the mass balance studies, monitoring of snout, morphometry, glacier melt studies, glacier depth assessment, lichenometry, snow assessment and geophysical studies in Baspa valley (Raina and Sangewar, 2007; Jangpang and Vohra,1962, Kulkarni and Alex, 2003;Kulkarni and Bahuguna,2001; Kurien and Munshi,1972). Very limited work is carried out with respect to remote sensing in geomorphic studies in this area. Hence, the present study emphasizes the role of remote sensing and GIS in glacial geomorphic studies of the Baspa valley. Accordingly, a detailed glacier geomorphic inventory has been generated for 35 glaciers using Remote Sensing and GIS techniques.

IV. 2. GLACIAL GEOMORPHIC INVENTORY - TABLES

Saro Glacier

Topographic map No. - 53 I/7 **Glacier No. –** 1

Location – Latitude - 31°26'01" N to 31°28'42" N **Table No. 4.1**

Longitude - 78°20'09" E to 78°23'55" E

Glacier Characteristics
Compound basin with broad U-shape, Comprises cirque basin. Crevasses are present at the junction of accumulation and ablation zone, and also in moraine covered ablation zone.

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	1.85	4600
2.	Exposed Ablation zone	0.63	9600
3.	Moraine covered Ablation zone	6.75	3550
4.	Hanging glacier	0.62	----
5.	Glacierete	----	----
6.	Permanent Snowfields	1.32	----
7.	Deglaciated valley	1.38	1250
8.	Hanging valley	----	----
9.	Lakes	0.02	----

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	SW-NE	Two		
2.	Medial moraine	SW-NE	----		
3.	Terminal moraine	NWW-SEE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4444	----	----
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4637	4444
Longitude: 78° 21' 41" E	78° 21' 07" E
Latitude: 31° 26' 31" N	31° 26' 01" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	9.85	11.38	1.53
Length (meters)	4970	6220	1250

Gor Garang Glacier

Topographic map No. - 53 I/7 **Glacier No.** – 2

Location – Latitude - 31° 24' 09"N to 31° 27' 20" N **Table No. 4.2**

Longitude - 78° 22' 43" E to 78° 25' 06" E

Glacier Characteristics
Simple basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	1.28	1180
2.	Exposed Ablation zone	0.24	410
3.	Moraine covered Ablation zone	3.42	2890
4.	Hanging glacier	0.42	200
5.	Glacierete	0.66	530
6.	Two Permanent Snowfields	0.14	----
7.	Deglaciated valley	0.50	800
8.	Hanging valley	----	-----
9.	Lakes	----	-----

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	Two		
2.	Medial moraine	--	--		
3.	Terminal moraine	NW-SE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4561	----	----
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4757	4561
Longitude: 78°23'15" E	78°22'50" E
Latitude: 31°25'15" N	31°24'59" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	6.02	6.52	0.50
Length (meters)	5280	5810	530

Mangsa Garang Glacier

Topographic map No. - 53 I/7 **Glacier No.** – 3a

Location – Latitude - 31° 24' 09"N to 31° 27' 20" N **Table No. 4.3**

Longitude - 78° 22' 43" E to 78° 25' 06" E

Glacier Characteristics
Simple basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.28	710
2.	Exposed Ablation zone	---	---
3.	Moraine covered Ablation zone	1.89	2670
4.	Hanging glacier	---	---
5.	Glacierete	---	---
6.	Six Permanent Snowfields	---	---
7.	Deglaciated valley	---	---
8.	Hanging valley	---	---
9.	Lakes	---	---

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NNE-SSW	Two		
2.	Medial moraine	--	--		
3.	Terminal moraine	NW-SE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4678	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4723	4678
Longitude: 78°24'04" E	78°24'00" E
Latitude: 31°23'50" N	31°23'45" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	2.17	---	---
Length (meters)	3380	---	---

Mangsa Garang Glacier

Topographic map No. - 53 I/7 **Glacier No.** – 3b

Location – Latitude - 31°23'20" N to 31°25'00" N **Table No. 4.4**

Longitude - 78° 22' 43" E to 78° 25' 06" E

Glacier Characteristics
Simple basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.4	540
2.	Exposed Ablation zone	0.29	240
3.	Moraine covered Ablation zone	1.81	1680
4.	Hanging glacier	---	---
5.	Glacierete	---	---
6.	Permanent Snowfields	---	---
7.	Deglaciated valley	0.38	740
8.	Hanging valley	---	---
9.	Lakes	---	---

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	One		
2.	Medial moraine	--	--		
3.	Terminal moraine	NW-SE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4642	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4922.3	4642
Longitude: 78°24'38" E	78°24'14" E
Latitude: 31°23'44" N	31°23'31" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	2.5	2.88	0.38
Length (meters)	2460	3200	740

Shushang Nala

Topographic map No. - 53 I/7 **Glacier No.** – 4

Location – Latitude - 31°22'52" N to31°25'13" N **Table No. 4.5**

Longitude - 78°25'15" E to 78°27'13" E

Glacier Characteristics
Simple basin with broad U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	1.54	970
2.	Exposed Ablation zone	0.85	1090
3.	Moraine covered Ablation zone	3.03	1280
4.	Hanging glacier	---	---
5.	Glacierete (empty)	0.14	
6.	Permanent Snowfields	---	---
7.	Deglaciated valley	0.82	1460
8.	Hanging valley	---	---
9.	Lakes	---	---

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NNE-SSW	1		
2.	Medial moraine	--	--		
3.	Terminal moraine	NW-SE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4343	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4860	4343
Longitude: 78°26'01" E	78°25'24" E
Latitude: 31°23'30" N	31°22'55" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	5.42	6.38	0.96
Length (meters)	3340	4800	1460

Shailpya Garang Glacier

Topographic map No. - 53 I/7 **Glacier No.** – 5

Location – Latitude - 31°22'14" N to 31°23'39" N **Table No. 4.6**

Longitude - 78°26'41" E to 78°27'57" E

Glacier Characteristics
Compound basin with broad U- shape, comprises of three individual limbs

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.14	220
2.	Exposed Ablation zone	---	---
3.	Moraine covered Ablation zone	---	---
4.	Hanging glacier	---	---
5.	Glacierete	---	---
6.	Six Permanent Snowfields	---	---
7.	Deglaciated valley	1.03	1830
8.	Hanging valley	---	---
9.	Lakes	---	---

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NW-SE,NE-SW	Two		
2.	Medial moraine	--	--		
3.	Terminal moraine	NWW-SEE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4729	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
---	4729
Longitude: --	78°27' 05".01 E
Latitude: --	31°22' 28".98 N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	0.14	1.17	1.03
Length (meters)	220	2050	1830

Rimdarang Nala

Topographic map No. - 53 I/7 **Glacier No.** – 6

Location – Latitude - 31°22'12" N to 31°23'09" N **Table No. 4.7**

Longitude - 78°27'47" E to 78°28'40" E

Glacier Characteristics
Small empty glacierete having irregular shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	--	--
2.	Exposed Ablation zone	--	--
3.	Moraine covered Ablation zone	--	--
4.	Hanging glacier	--	--
5.	Glacierete (empty)	1.31	1680
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	--	--
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	--	--		
2.	Medial moraine	--	--		
3.	Terminal moraine	--	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			--	--	--
4.	Glacio-fluvial fans	absent			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
Evacuated	4609
Longitude: --	78°28'13" E
Latitude: --	31°22'10" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	---	1.31	1.31
Length (meters)	---	1680	1680

Nagsu Garang Glacier

Topographic map No. - 53 I/7 **Glacier No.** – 7

Location – Latitude - 31°22'00" N to 31°23'22" N **Table No. 4.8**

Longitude - 78°28'41" E to 78°29'56" E

Glacier Characteristics
Simple basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.27	840
2.	Exposed Ablation zone	---	---
3.	Moraine covered Ablation zone	0.46	1420
4.	Hanging glacier	---	---
5.	Glacierete	---	---
6.	Six Permanent Snowfields	---	---
7.	Deglaciated valley	0.37	940
8.	Hanging valley	0.40	1470
9.	Lakes	---	---

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	One		
2.	Medial moraine	--	--		
3.	Terminal moraine	NW-SE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4335	--	--
4.	Glacio-fluvial fans	Significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4727	4335
Longitude: 78°28'59" E	78°28'44" E
Latitude: 31°22'18" N	31°21'50" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	1.46	2.23	0.77
Length (meters)	2260	3200	940

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 8

Location – Latitude - 31°21'39" N to 31°22'32" N **Table No. 4.9**

Longitude - 78°29'35" E to 78°30'22" E

Glacier Characteristics
Glacierete with very narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	--	--
2.	Exposed Ablation zone	--	--
3.	Moraine covered Ablation zone	--	--
4.	Hanging glacier	--	--
5.	Empty Glacierete	0.36	1150
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	--	--
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	One		
2.	Medial moraine	--	--		
3.	Terminal moraine	NW-SE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4817	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
Evacuated	4814.5
Longitude: --	78°29'48" E
Latitude: --	31°21'43" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	--	0.36	0.36
Length (meters)	--	1150	1150

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 9

Location – Latitude - 31°21'09" N to 31°21'59" N **Table No. 4.10**

Longitude - 78°30'59" E to 78°31'44" E

Glacier Characteristics
Very narrow U-shaped glacierete

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	--	--
2.	Exposed Ablation zone	--	--
3.	Moraine covered Ablation zone	--	--
4.	Hanging glacier	--	--
5.	Empty Glacierete	1.08	1700
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	--	--
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	--	--		
2.	Medial moraine	--	--		
3.	Terminal moraine	--	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			--	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
Evacuated	4453
Longitude: --	78°31'02" E
Latitude: --	31°21'09" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	---	1.08	1.08
Length (meters)	---	1700	1700

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 10

Location – Latitude - 31°21'17" N to 31°22'21" N **Table No. 4.11**

Longitude - 78°30'10" E to 78°31'12" E

Glacier Characteristics
Glacierete

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.04	400
2.	Exposed Ablation zone	--	--
3.	Moraine covered Ablation zone	--	--
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.49	1450
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	One		
2.	Medial moraine	--	--		
3.	Terminal moraine	NW-SE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4708	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005		Elevation of Snout in (m) during Glacial maxima
5348		4708
Longitude:	78°31'34" E	78°30'13" E
Latitude:	31°21'47" N	31°21'19" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	0.04	0.53	0.49
Length (meters)	400	1850	1450

Magsu Garang Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 11

Location – Latitude - 31°20'40" N to 31°22'06" N **Table No. 4.12**

Longitude - 78°31'02" E to 78°32'59" E

Glacier Characteristics
Simple basin with broad U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.54	1220
2.	Exposed Ablation zone	0.21	530
3.	Moraine covered Ablation zone	0.31	780
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.97	1650
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NNE-SSW,NE-SW	Three		
2.	Medial moraine	--	--		
3.	Terminal moraine	--	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			--	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
5013	4479
Longitude: 78°31'53" E	78°31'00" E
Latitude: 31°21'21" N	31°20'55" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	1.06	2.03	0.97
Length (meters)	2530	4180	1650

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No. –** 12

Location – Latitude - 31°20'06" N to 31°21'04" N **Table No. 4.13**

Longitude - 78°31'38" E to 78°32'58" E

Glacier Characteristics
Simple basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.12	4700
2.	Exposed Ablation zone	0.14	550
3.	Moraine covered Ablation zone	0.35	910
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.14	550
8.	Deglaciated Hanging valley	0.23	1230
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	One		
2.	Medial moraine	--	--		
3.	Terminal moraine	--	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			--	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4863	4641
Longitude: 78°31'56" E	78°31'43" E
Latitude: 31°20'24" N	31°20'11" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	0.61	0.98	0.37
Length (meters)	6160	6710	550

Tumur Garang Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 13

Location – Latitude - 31°18'55" N to 31°20'31" N **Table No. 4.14**

Longitude - 78°32'01" E to 78°35'05" E

Glacier Characteristics
Simple basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.39	610
2.	Exposed Ablation zone	0.41	1280
3.	Moraine covered Ablation zone	1.20	1560
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.43	1230
8.	Deglaciated Hanging valley	0.83	2260
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	One		
2.	Medial moraine	--	--		
3.	Terminal moraine	NW-SE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4307	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4687	4307
Longitude: 78°32'46" E	78°31'59" E
Latitude: 31°19'30" N	31°19'29" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	2	3.26	1.26
Length (meters)	3450	4680	1230

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 14

Location – Latitude - 31°17'41" N to 31°19'56" N **Table No. 4.15**

Longitude - 78°35'17" E to 78°37'08" E

Glacier Characteristics
Simple basin with U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	1.14	1420
2.	Exposed Ablation zone	--	--
3.	Moraine covered Ablation zone	0.74	1830
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.30	1040
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NS	One		
2.	Medial moraine	--	--		
3.	Terminal moraine	EW	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4446	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4739	4446
Longitude: 78°36'24" E	78°36'32" E
Latitude: 31°18'32" N	31°18'00" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	1.88	2.18	0.30
Length (meters)	3250	4290	1040

Suti Thatang Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 15

Location – Latitude - 31°18'02" N to 31°20'12" N **Table No. 4.16**

Longitude - 78°36'27" E to 78°38'19" E

Glacier Characteristics
Simple basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	2.33	1270
2.	Exposed Ablation zone	1.58	1660
3.	Moraine covered Ablation zone	--	--
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.82	1210
8.	Hanging valley	--	--
9.	Lakes	0.01	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	EW, NEE-SWW	One		
2.	Medial moraine	--	--		
3.	Terminal moraine	NNE-SSW	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4961	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
5072	4961
Longitude: 78°37'39" E	78°38'17" E
Latitude: 31°18'37" N	31°18'32" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	3.91	4.73	0.82
Length (meters)	2930	4140	1210

Suti Thatang Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 15a

Location – Latitude - 31°18'02" N to 31°19'55" N **Table No. 4.17**

Longitude - 78°38'06" E to 78°39'14" E

Glacier Characteristics
Compound basin with broad U-shape,

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.44	490
2.	Exposed Ablation zone	0.12	960
3.	Moraine covered Ablation zone	0.23	1180
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	0.15	--
7.	Deglaciated valley	0.82	2120
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	--	--		
2.	Medial moraine	--	--		
3.	Terminal moraine	NE-SW	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4742	4857	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
5300	4742
Longitude: 78°38'31" E	78°38'43" E
Latitude: 31°19'04" N	31°18'04" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	0.79	1.61	0.82
Length (meters)	2630	4750	2120

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 16

Location – Latitude - 31°17'42" N to 31°20'12" N **Table No. 4.18**

Longitude - 78°38'49" E to 78°42'40" E

Glacier Characteristics
Compund basin with narrow U-shape and many tributary glaciers.

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.51	770
2.	Exposed Ablation zone	0.15	610
3.	Moraine covered Ablation zone	3.81	3690
4.	2 Hanging glaciers	0.87 and0.41	1810 and 760
	deglaciated valleys of 2 hanging glaciers	0.23 and 0.31	950 and 930
5.	3 Glacieretes	0.95,0.22,0.18	1760,830,580
6.	Permanent Snowfields	0.30	
7.	Deglaciated valley	0.94	2650
8.	Hanging valley		
9.	Lakes	0.01	

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NWW-SEE	One		
2.	Medial moraine	--	--		
3.	Terminal moraine	--	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			--	--	--
4.	Glacio-fluvial fans	Significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4842	4550
Longitude: 78°40'31" E	78°39'21" E
Latitude: 31°18'48" N	31°17'55" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	7.1	8.58	1.48
Length (meters)	5070	7720	2650

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 17

Location – Latitude - 31°15'20" N to 31°21'59" N **Table No. 4.19**

Longitude - 78°40'44" E to 78°49'06" E

Glacier Characteristics
Huge compound basin with broad U-shape and many tributary glaciers

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	3.88	1100
2.	Exposed Ablation zone	3.75	4040
3.	Moraine covered Ablation zone	2.52	1800
4.	Hanging glacier	0.81,3.11,0.65,0.15,1.33,	1550,3600,1940,1840,1810
	(DGV) of hanging glacier	0.64,--,--,--,0.59	1420,--,--,--,1130
5.	Glacierete	0.57,0.43,0.08,0.54,0.81,2.07	1490,1380,380,1650,980,2230
6.	Permanent Snowfields	0.12,0.16	
7.	Deglaciated valley(DGV)	5.71	4670
8.	Tributary glacier	1.7,1.35,3.31,0.83,1.83,1.64	2640,1330,1260,1360,3090,3080
	DGV of tributary glacier	--,0.51,0.71,0.47,0.39,0.41	--,1400,1950,1310,1220,950
9.	Lakes	0.01	----

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	--	--		
2.	Medial moraine	--	--		
3.	Terminal moraine	--	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			--	--	--
4.	Glacio-fluvial fans	Significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
5028	4648
Longitude: 78°46'47" E	78°44'06" E
Latitude: 31°17'38" N	31°18'24" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	31.36	38.28	6.92
Length (meters)	5140	9810	4670

Unnamed Glacier

Topographic map No. - 53 I/16 **Glacier No.** – 18

Location – Latitude - 31°12'56" N to 31°16'17" N **Table No. 4.20**

Longitude - 78°41'50" E to 78°46'56" E

Glacier Characteristics
Simple basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	3.53	1170
2.	Exposed Ablation zone	4.21	4490
3.	Moraine covered Ablation zone	0.47	--
4.	Hanging glacier	1.05	2120
5.	Tributary glacier	6.66	6910
6.	Permanent Snowfields	0.59	--
7.	Deglaciated valley	1.77,0.49	2890
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	One		
2.	Medial moraine	--			
3.	Terminal moraine	--	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			--	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
5024	4480
Longitude: 78°43'35" E	78°41'55" E
Latitude: 31°15'14" N	31°14'44" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	15.95	17.74	1.79
Length (meters)	5660	8550	2890

Unnamed Glacier

Topographic map No. - 53 I/16, I/12 **Glacier No.** – 19

Location – Latitude - 31°11'04" N to 31°14'58" N **Table No. 4.21**

Longitude - 78°38'49" E to 78°49'51" E

Glacier Characteristics
Huge compound basin with broad U-shape and large tributary glaciers.

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	13.4	3030
2.	Exposed Ablation zone	14.2	1030
3.	Moraine covered Ablation zone	7.08	4540
4.	Hanging glacier	2.5, 0.49,2.63	2950,1780,3620
	DGV of hanging glacier	--,--,0.52	--,--,1120
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	3.91,1.42	3560
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	EW,NW-SE	Two		
2.	Medial moraine	--	--		
3.	Terminal moraine	NWW-SEE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4255	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4306	4255
Longitude: 78°41'49" E	78°41'08" E
Latitude: 31°13'22" N	31°15'12" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	41.11	46.81	5.7
Length (meters)	8600	12160	3560

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 20

Location – Latitude - 31°13'20" N to 31°14'22" N **Table No. 4.22**

Longitude - 78°39'12" E to 78°41'19" E

Glacier Characteristics
Glacierete with simple basin

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.27	470
2.	Exposed Ablation zone	0.51	710
3.	Moraine covered Ablation zone	0.21	580
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.58	1170
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	One		
2.	Medial moraine	--	--		
3.	Terminal moraine	NNW-SSE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			---	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4466	4348
Longitude: 78°40'27" E	78°41'00" E
Latitude: 31°13'53" N	31°14'13" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	0.99	1.57	0.58
Length (meters)	1760	2930	1170

Karu Garang Glacier

Topographic map No. - 53 I/12 **Glacier No.** – 21

Location – Latitude - 31°12'53" N to 31°15'54" N **Table No. 4.23**

Longitude - 78°37'08" E to 78°40'00" E

Glacier Characteristics
Simple basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	3.03	1690
2.	Exposed Ablation zone	1.86	3610
3.	Moraine covered Ablation zone	1.86	990
4.	Hanging glacier	--	--
5.	Glacierete	1.22	1980
	Dgv of glacierete	0.80	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.44	640
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	Two		
2.	Medial moraine	--	--		
3.	Terminal moraine	NNW-SSE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4494	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4633	4494
Longitude: 78°39'18" E	78°39'40" E
Latitude: 31°15'33" N	31°15'42" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	7.97	9.21	1.24
Length (meters)	6290	6930	640

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 22

Location – Latitude - 31°15'50" N to 31°16'45" N **Table No. 4.24**

Longitude - 78°38'45" E to 78°39'16" E

Glacier Characteristics
Glacierete, Simple basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	--	
2.	Exposed Ablation zone	--	
3.	Moraine covered Ablation zone	0.12	400
4.	Hanging glacier		
5.	Glacierete		
6.	Permanent Snowfields		
7.	Deglaciated valley	0.22	1000
8.	Hanging valley		
9.	Lakes		

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	--	--		
2.	Medial moraine	--	--		
3.	Terminal moraine	--	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			--	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4864	4358
Longitude: 78°39'01" E	78°39'12" E
Latitude: 31°16'10" N	31°16'42" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	0.12	0.35	0.23
Length (meters)	400	1400	1000

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 23

Location – Latitude - 31°15'26" N to 31°16'53" N **Table No. 4.25**

Longitude - 78°37'54" E to 78°38'52" E

Glacier Characteristics
Glacierete, simple basin

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.68	980
2.	Exposed Ablation zone	--	--
3.	Moraine covered Ablation zone	0.19	410
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.26	550
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	--	--		
2.	Medial moraine	--	--		
3.	Terminal moraine	--	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			--	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4954	4460
Longitude: 78°38'35" E	78°38'28" E
Latitude: 31°16'06" N	31°16'25" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	0.87	1.13	0.26
Length (meters)	1390	1940	550

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 24

Location – Latitude - 31°15'46" N to 31°16'58" N **Table No. 4.26**

Longitude - 78°37'28" E to 78°38'11" E

Glacier Characteristics
Glacierete, simple basin

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	--	--
2.	Exposed Ablation zone	--	--
3.	Moraine covered Ablation zone	--	--
4.	Hanging glacier	--	--
5.	Empty Glacierete	0.99	1660
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	--	--
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	--	--		
2.	Medial moraine	--	--		
3.	Terminal moraine	--	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			--	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
Evacuated	4460
Longitude: --	78°37'57" E
Latitude: --	31°16'44" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	nil	0.99	0.99
Length (meters)	nil	1660	1660

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 25

Location – Latitude - 31°13'30" N to 31°17'07" N **Table No. 4.27**

Longitude - 78°34'31" E to 78°38'04" E

Glacier Characteristics
Simple basin with U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	3.80	2960
2.	Exposed Ablation zone	1.04	1290
3.	Moraine covered Ablation zone	2.81	4340
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.64	1400
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NS	One		
2.	Medial moraine	--	--		
3.	Terminal moraine	EW	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4186	4265	4385.6
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4702	4186
Longitude: 78°36'48" E	78°36'51" E
Latitude: 31°16'19" N	31°17'04" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	7.65	8.29	0.64
Length (meters)	8590	9990	1400

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 26

Location – Latitude - 31°14'55" N to 31°17'04" N **Table No. 4.28**

Longitude - 78°34'31" E to 78°36'25" E

Glacier Characteristics
Simple cirque basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	1.32	1280
2.	Exposed Ablation zone	0.24	570
3.	Moraine covered Ablation zone	1.23	2150
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.82	1400
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NW-SE	Two		
2.	Medial moraine	--	--		
3.	Terminal moraine	NE-SW	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4179	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4581	4179
Longitude: 78°35'09" E	78°34'37" E
Latitude: 31°16'27" N	31°17'01" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	2.79	3.61	0.82
Length (meters)	4000	5400	1400

Unnamed Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 27

Location – Latitude - 31°15'09" N to 31°17'12" N **Table No. 4.29**

Longitude - 78°33'59" E to 78°35'16" E

Glacier Characteristics
Simple basin with very narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.76	1950
2.	Exposed Ablation zone	--	--
3.	Moraine covered Ablation zone	0.39	320
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	0.14,0.39	--
7.	Deglaciated valley	0.47	1670
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	--	--		
2.	Medial moraine	--	--		
3.	Terminal moraine	EW	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4224	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4519	4224
Longitude: 78°35'09" E	78°34'37" E
Latitude: 31°16'27" N	31°17'01" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	1.15	1.62	0.47
Length (meters)	2270	3940	1670

Shanchyo Garang Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 28

Location – Latitude - 31°13'42" N to 31°17'13" N **Table No. 4.30**

Longitude - 78°31'52" E to 78°35'24" E

Glacier Characteristics
Compound basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	4.85	2010
2.	Exposed Ablation zone	1.88	1320
3.	Moraine covered Ablation zone	1.36	2550
4.	Hanging glacier	0.81	1850
5.	Glacierete	--	
6.	Permanent Snowfields	--	
7.	Deglaciated valley	1.31	2600
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NS	Two		
2.	Medial moraine	--	--		
3.	Terminal moraine	EW	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4008	4059	4663
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4747	4008
Longitude: 78°33'27" E	78°33'3" E
Latitude: 31°15'45" N	31°17'09" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	8.9	10.21	1.31
Length (meters)	5880	8480	2600

Shakyul Garang Glacier

Topographic map No. - 53 I/11 **Glacier No.** – 29

Location – Latitude - 31°15'27" N to 31°17'39" N **Table No. 4.31**

Longitude - 78°30'38" E to 78°32'36" E

Glacier Characteristics
Simple glacier with broad U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	1.31	960
2.	Exposed Ablation zone		--
3.	Moraine covered Ablation zone	1.04	1780
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.13	260
8.	Hanging valley	1.01	2230
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	--	--		
2.	Medial moraine	--	--		
3.	Terminal moraine	EW	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4240	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4336	4240
Longitude: 78°31'49" E	78°31'46" E
Latitude: 31°16'59" N	31°17'08" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	2.35	3.49	1.14
Length (meters)	2740	4970	2230

Jorya Garang Glacier

Topographic map No. - 53 I/7, I/8 **Glacier No.** – 30

Location – Latitude - 31°11'53" N to 31°18'27" N **Table No. 4.32**

3

Longitude - 78°26'15" E to 78°34'44" E

Glacier Characteristics
Huge compound basin with broad U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	11.19	7480
2.	Exposed Ablation zone	3.66	7470
3.	Moraine covered Ablation zone	6.86	7530
4.	Hanging glacier	2.52,5.44,3.7,2.32,4.0	4120,3320,4750,2410 3840
5.	Glacierete	0.76,0.46,0.46	--
6.	Permanent Snowfields	0.63,0.36,0.14,0.18,0.38,0.1,0.61	--
7.	Deglaciated valley	3.22	3880
8.	Cirque glacier	0.35	
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	Two		
2.	Medial moraine	NE-SW	One		
3.	Terminal moraine	NW-SE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			3886	3942	4031
4.	Glacio-fluvial fans	Significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4209	3886
Longitude: 78°28'57" E	78°29'59" E
Latitude: 31°16'21" N	31°18'17" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	41.72	44.94	3.22
Length (meters)	22480	26360	3880

Janapa Garang Glacier

Topographic map No. - 53 I/7 **Glacier No.** – 31

Location – Latitude - 31°14'21" N to 31°19'16" N **Table No. 4.33**

Longitude - 78°23'51" E to 78°29'25" E

Glacier Characteristics
Compound basin with U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	5.31	2610
2.	Exposed Ablation zone	4.58	2590
3.	Moraine covered Ablation zone	1.74	1290
4.	Hanging glacier	0.69	1.41
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	2.52	3550
8.	Hanging valley	0.65,0.58	1590,2020
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	Two		
2.	Medial moraine	NE-SW	One		
3.	Terminal moraine	NW-SE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4062	4150	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4349	4062
Longitude: 78°26'08" E	78°27'24" E
Latitude: 31°17'19" N	31°18'48" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	12.32	16.07	3.75
Length (meters)	6490	10040	3550

Naradu Garang Glacier

Topographic map No. - 53 I/7 **Glacier No.** – 32

Location – Latitude - 31°16'24" N to 31°19'14" N **Table No. 4.34**

Longitude - 78°22'25" E to 78°26'26" E

Glacier Characteristics
Simple basin with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	2.24	1130
2.	Exposed Ablation zone	1.23	2000
3.	Moraine covered Ablation zone	1.64	1490
4.	Hanging glacier	0.74	320
	DGV of hanging glacier	0.58	1690
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	1.67	2330
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW	Two		
2.	Medial moraine	NE-SW	One		
3.	Terminal moraine	NW-SE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4281	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4484	4281
Longitude: 78°25'25" E	78°26'04" E
Latitude: 31°17'54" N	31°18'58" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	5.85	8.1	2.25
Length (meters)	4620	6950	2330

Billare Bange Glacier

Topographic map No. - 53 I/7 **Glacier No.** – 33

Location – Latitude - 31°17'25" N to 31°20'19" N **Table No. 4.35**

Longitude - 78°20'53" E to 78°23'58" E

Glacier Characteristics
Simple basin with narrow U--shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	0.75	200
2.	Exposed Ablation zone	0.24	200
3.	Moraine covered Ablation zone	3.36	4330
4.	Hanging glacier	--	--
5.	Glacierete	--	--
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	0.73	920
8.	Hanging valley	--	--
9.	Lakes	--	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine				
2.	Medial moraine				
3.	Terminal moraine		Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4146	--	--
4.	Glacio-fluvial fans	Not significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Glacial maxima
4342	4146
Longitude: 78°21'13" E	78°21'01" E
Latitude: 31°19'31" N	31°19'59" N

Maximum limit of glacier	2005	Glacial maxima	Total evacuation
Area (sq.km)	4.35	5.08	0.73
Length (meters)	4730	5650	920

Shaune Garang Glacier

Topographic map No. - 53 I/7 **Glacier No.** – 34

Location – Latitude - 31°16'41" N to 31°19'51" N **Table No. 4.36**

Longitude - 78°17'30" E to 78°22'31" E

Glacier Characteristics
Compound glacier with broad U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	1.23	750
2.	Exposed Ablation zone	3.25	2270
3.	Moraine covered Ablation zone	5.28	2580
4.	Hanging glacier	2.55	2040
5.	Glacierete		
6.	Permanent Snowfields	0.22,0.15	
7.	Deglaciated valley	2.07	3040
8.	Hanging valley	--	--
9.	Lakes	0.03,0.01,0.01,0.02,0.01	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	NE-SW,NNW-SSE	Three		
2.	Medial moraine	--	--		
3.	Terminal moraine	NW-SE	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4172	4257	4402
4.	Glacio-fluvial fans	Significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Geologic past
4512	4172
Longitude: 78°19'55" E	78°20'33" E
Latitude: 31°17'57" N	31°19'19" N

Maximum limit of glacier	2005	Geologic past	Total evacuation
Area (sq.km)	12.31	13.58	1.27
Length (meters)	5600	8640	3040

Hania Glacier

Topographic map No. - 53 I/7

Glacier No. – 35

Location – Latitude - 31°19'21" N to 31°21'55" N

Longitude - 78°14'57" E to 78°19'47" E

Table No. 4.37

Glacier Characteristics
Simple glacier with narrow U-shape

Sr. No.	Category	Area (sq.km)	Length (meters)
1.	Accumulation zone	3.19	1910
2.	Exposed Ablation zone	2.2	2380
3.	Moraine covered Ablation zone	2.55	1940
4.	Hanging glacier	0.13	270
5.	Glacierete	0.19	490
	Empty glacierete	0.44	1400
6.	Permanent Snowfields	--	--
7.	Deglaciated valley	1.25	1880
8.	Hanging valley	--	--
9.	Lakes	0.10	--

Sr. No.	Geomorphic feature	Orientation	Stages		
1.	Lateral moraine	EW, NS	Two		
2.	Medial moraine	EW	One		
3.	Terminal moraine	EW	Elevation (m)		
			Stage 1	Stage 2	Stage 3
			4062	4241	4417
4.	Glacio-fluvial fans	Significant			

Elevation of Snout in (m) as on year 2005	Elevation of Snout in (m) during Geologic past
4481	4062
Longitude: 78°16'14" E	78°16'08" E
Latitude: 31°20'12" N	31°21'10" N

Maximum limit of glacier	2005	Geologic past	Total evacuation
Area (sq.km)	8.26	9.95	1.69
Length (meters)	6230	8110	1880

Table 4.38. Summary of Glacial Geomorphic Inventory

Glacier No.	Orientation	Accumulation Area sq.km	Exposed ablation Area sq.km	Moraine covered ablation Area sq.km	Lateral moraine stages	Terminal moraine stages	Elevation of snout (m)		Snout variation (m)	Length (m)		Evacuation (m)	Area (sq.km)		Evacuation (Sq.km)
							2005	Glacial maxima		2005	Glacial maxima		2005	Glacial maxima	
1.	South	2.47	0.63	6.75	Two	One	4637	4444	193	4970	6220	1250	9.85	11.38	1.53
2.	South	2.36	0.24	3.42	Two	One	4757	4561	196	5280	5810	530	6.02	6.52	0.50
3a.	South	0.28	--	1.89	Two	One	4723	4678	79	--	--	--	--	--	--
3b.	South	0.4	0.29	1.81	One	One	4923	4642	281	2460	3200	740	2.5	2.88	0.38
4.	South	1.54	0.85	3.03	One	One	4860	4343	517	3340	4800	1460	5.42	6.38	0.96
5.	South	0.14	--	--	Two	One	5241	4729	512	220	2050	1830	0.14	1.17	1.03
6.	South	empty	--	--	--	--	5191	4609	--	0	1680	1680	0	1.31	1.31
7.	South	0.27	--	0.46	One	One	4727	4335	392	2260	3200	940	1.46	2.23	0.77
8.	South	empty			One	One	--	4817	--	0	1150	1150	0	0.36	0.36
9.	South	empty	--	--	One	One	--	4456	--	0	1700	1700	0	1.08	1.08
10.	South	0.04	--	--	One	One	5348	4708	640	400	1850	1450	0.04	0.53	0.49
11.	South	0.54	0.21	0.31	Three	--	5013	4479	534	2530	4180	1650	1.06	2.03	0.97
12.	South	0.12	0.14	0.35	One	--	4863	4641	222	6160	6710	550	0.61	0.98	0.37
13.	South	0.39	0.41	1.20	One	One	4687	4307	380	3450	4680	1230	2	3.26	1.26
14.	South	1.14	--	0.74	One	One	4739	4446	293	3250	4290	1040	1.88	2.18	0.30
15.	South	2.33	1.58	--	One	One	5072	4961	111	2930	4140	1210	3.91	4.73	0.82
15a.	South	0.44	0.12	0.23	--	Two	5300	4742	558	2630	4750	2120	0.79	1.61	0.82
16.	South	1.66	0.25	5.16	One	--	4842	4550	292	5070	7720	2650	7.1	8.58	1.48
17.	South	12.69	10.24	9.37	---	---	5028	4648	380	5140	9810	4670	31.4	38.3	6.9
18.	South	8.62	5.51	1.08	One	--	5024	4480	144	5660	8550	2890	15.95	17.74	1.79

Table.4.38. Summary of Glacial Geomorphic Inventory

Glacier No.	Orientation	Accumulation Area sq.km	Exposed ablation Area sq.km	Moraine covered ablation Area sq.km	Lateral moraine stages	Terminal moraine stages	Elevation of snout (m)		Snout variation (m)	Length (m)		Evacuation (m)	Area (sq.km)		Evacuation (Sq.km)
							2005	Glacial maxima		2005	Glacial maxima		2005	Glacial maxima	
19.	West	17.32	17.36	7.88	Two	One	4306	4255	51	8600	12160	3560	41.11	46.81	5.7
20.	North	0.27	0.51	0.21	One	---	4466	4348	118	1760	2930	1170	0.99	1.57	0.58
21.	North	3.68	2	2.29	Two	One	4633	4494	139	6290	6930	640	7.97	9.21	1.24
22.	North	--	--	0.12	--	--	4864	4358	506	400	1400	1000	0.12	0.35	0.23
23.	North	0.68	--	0.19	--	--	4954	4460	494	1390	1940	550	0.87	1.13	0.26
24.	North	empty	--	--	--	--	--	4460	--	0	1660	1660	0	0.99	0.99
25.	North	3.80	1.04	2.81	One	Three	4702	4186	516	8590	9990	1400	7.65	8.29	0.64
26.	North	1.32	0.24	1.23	Two	One	4581	4179	402	4000	5400	1400	2.79	3.61	0.82
27.	North	0.76	--	0.39	--	Two	4519	4224	295	2270	3940	1670	1.15	1.62	0.47
28.	North	5.29	1.88	2.37	Two	Three	4747	4008	739	5880	8480	2600	8.9	10.21	1.31
29.	North	1.31	--	1.04	--	One	4336	4240	96	2740	4970	2230	2.35	3.49	1.14
30.	North	23.48	7.54	9.18	Two	Three	4209	3886	323	22480	26360	3880	41.72	44.94	3.22
31.	North	5.75	5.36	1.74	Two	Two	4349	4062	287	6490	10040	3550	12.32	16.07	3.75
32.	North	2.52	1.23	1.64	Two	One	4484	4281	203	4620	6950	2330	5.85	8.1	2.25
33.	North	0.74	0.24	3.36	Two	One	4342	4146	196	4730	5650	920	4.35	5.08	0.73
34.	North	3.28	3.91	5.79	Three	Three	4512	4172	340	5600	8640	3040	12.31	13.58	1.27
35.	North	3.51	1.87	2.50	Two	Three	4481	4062	419	6230	8110	1880	8.26	9.95	1.69

The scope of above study is such that it would form the database for future reference in various aspects of studies viz:

Hydropower potential and site selection – Prediction of water availability over a long term based on past trend (10-15 years) using mass balance techniques.

Disaster warning – Rapid retreat of glacier can form terminal moraine, which can obstruct glacier melt run-off and form lake resulting into Glacial Lake Out-burst Floods (GLOF).

Irrigation – In order to meet the growing demand, and sustain agriculture activities for optimum benefit, information regarding total availability of water can be analyzed.

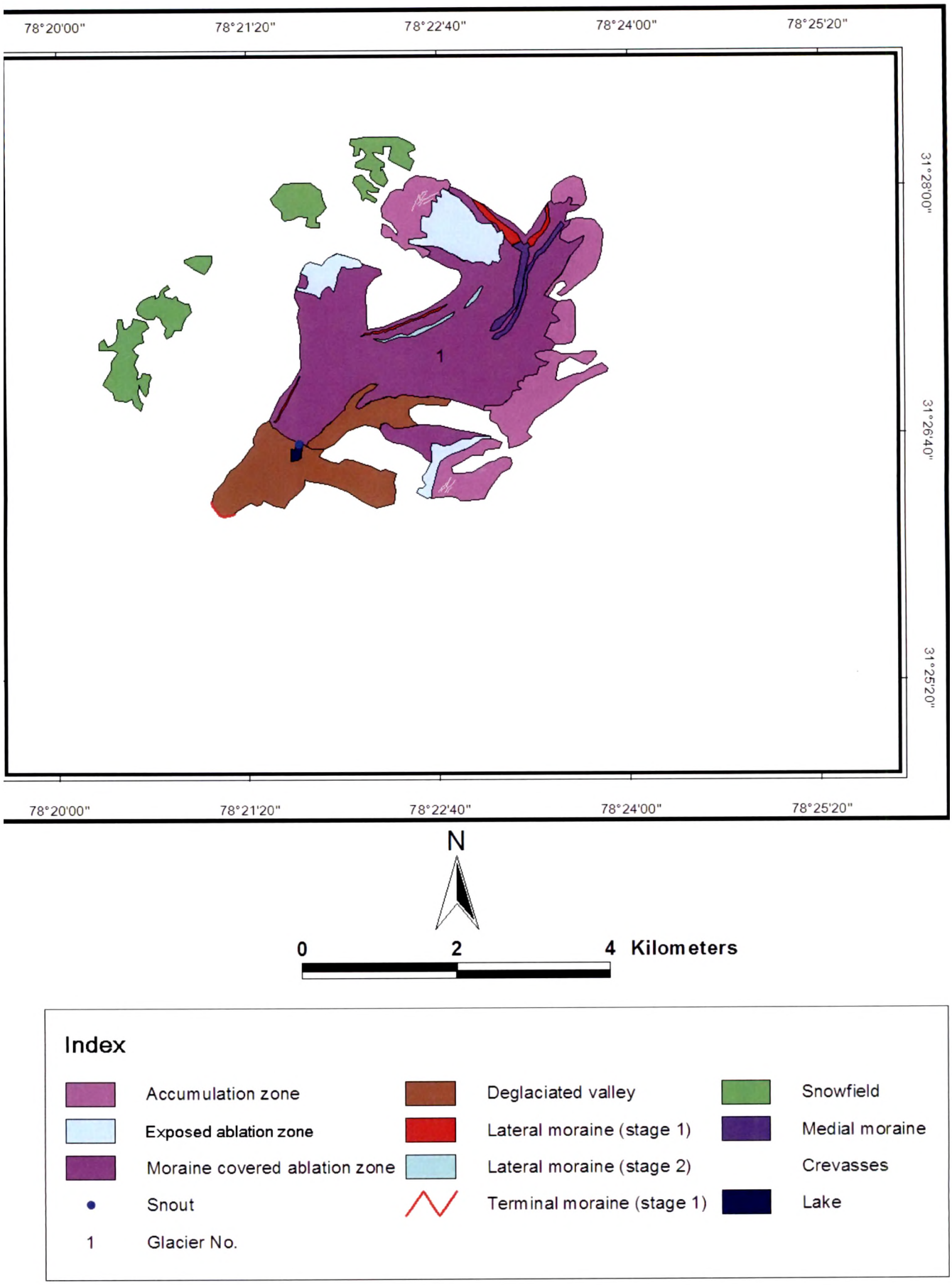
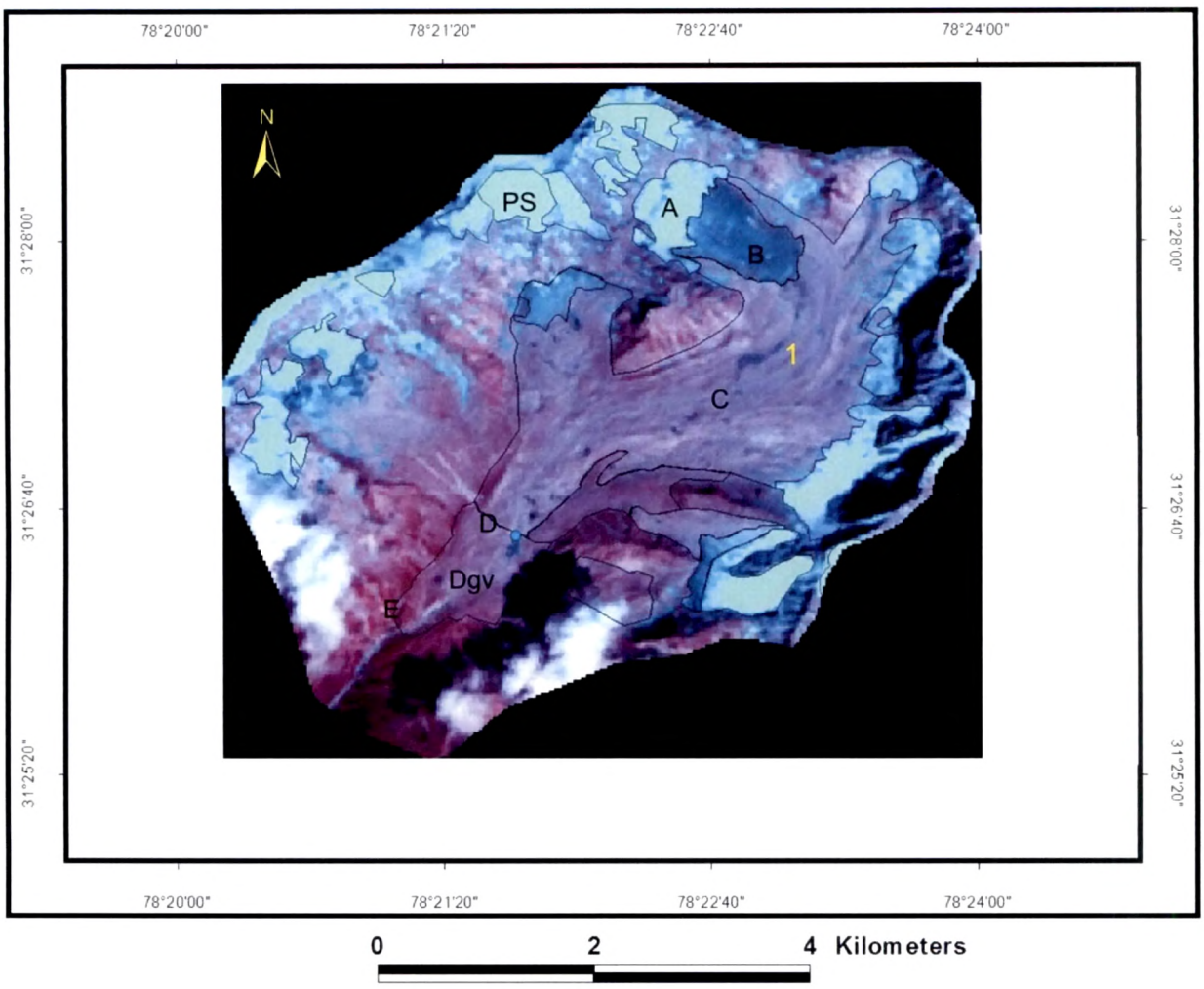


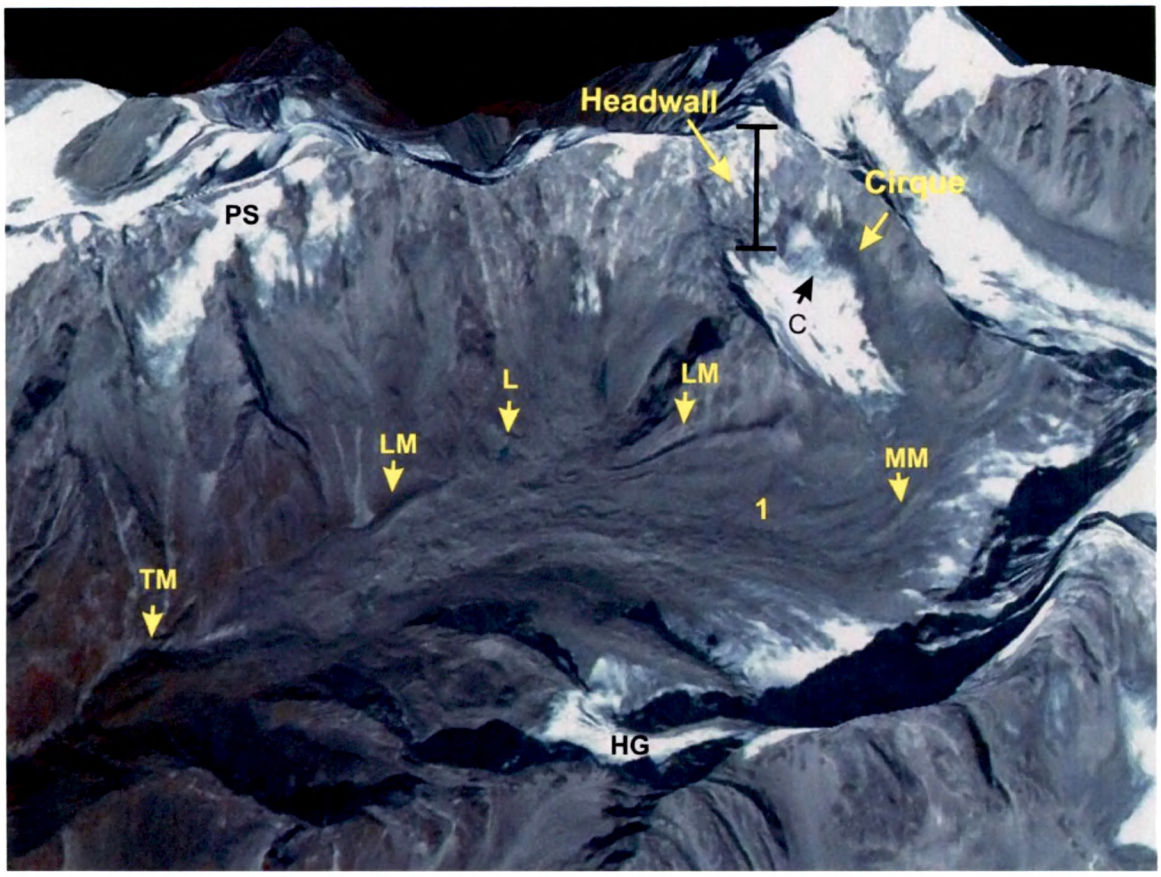
Fig 4.1 : **Geomorphological map of Saro glacier (1)**



Index

A	Accumulation zone	D	Glacial Limit of 2005	PS	Permanent snowfield
B	Exposed ablation zone	E	Maximum Glacial Limit	●	Snout
C	Moraine covered ablation zone	Dgv	Deglaciated valley	1	Glacier No.

Fig: 4.2 IRS P6, 2005, Liss III image of Saro Glacier (Glacier No.1)



Index

LM	Lateral moraine	HG	Hanging glacier	C	Crevasses
TM	Terminal moraine	L	Lake	1	Glacier No.
MM	Medial moraine	PS	Permanent snowfield		

Fig: 4.3 IRS 1D, 2001, LISS III + PAN merged image of Saro glacier (1) draped on DEM of SRTM data

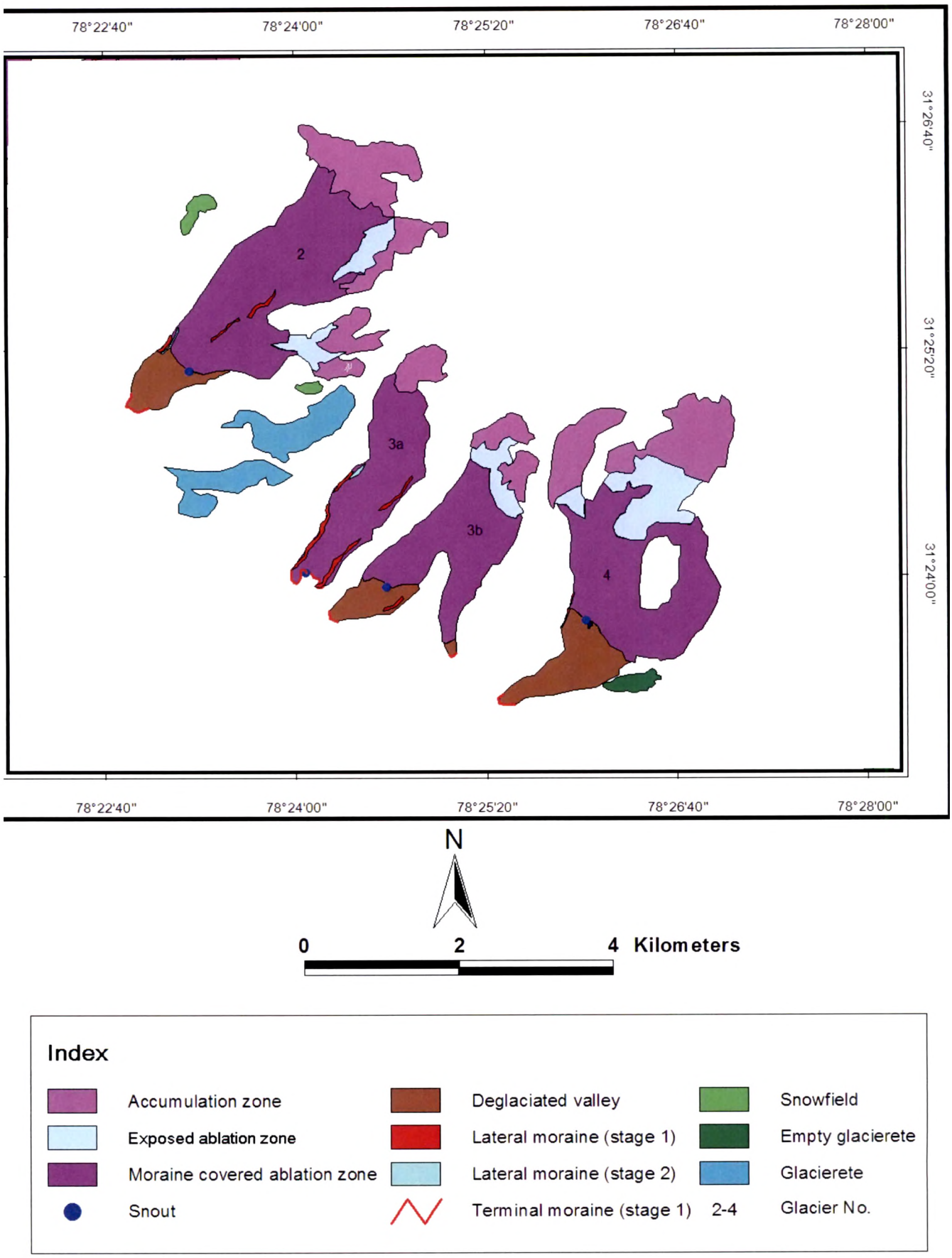
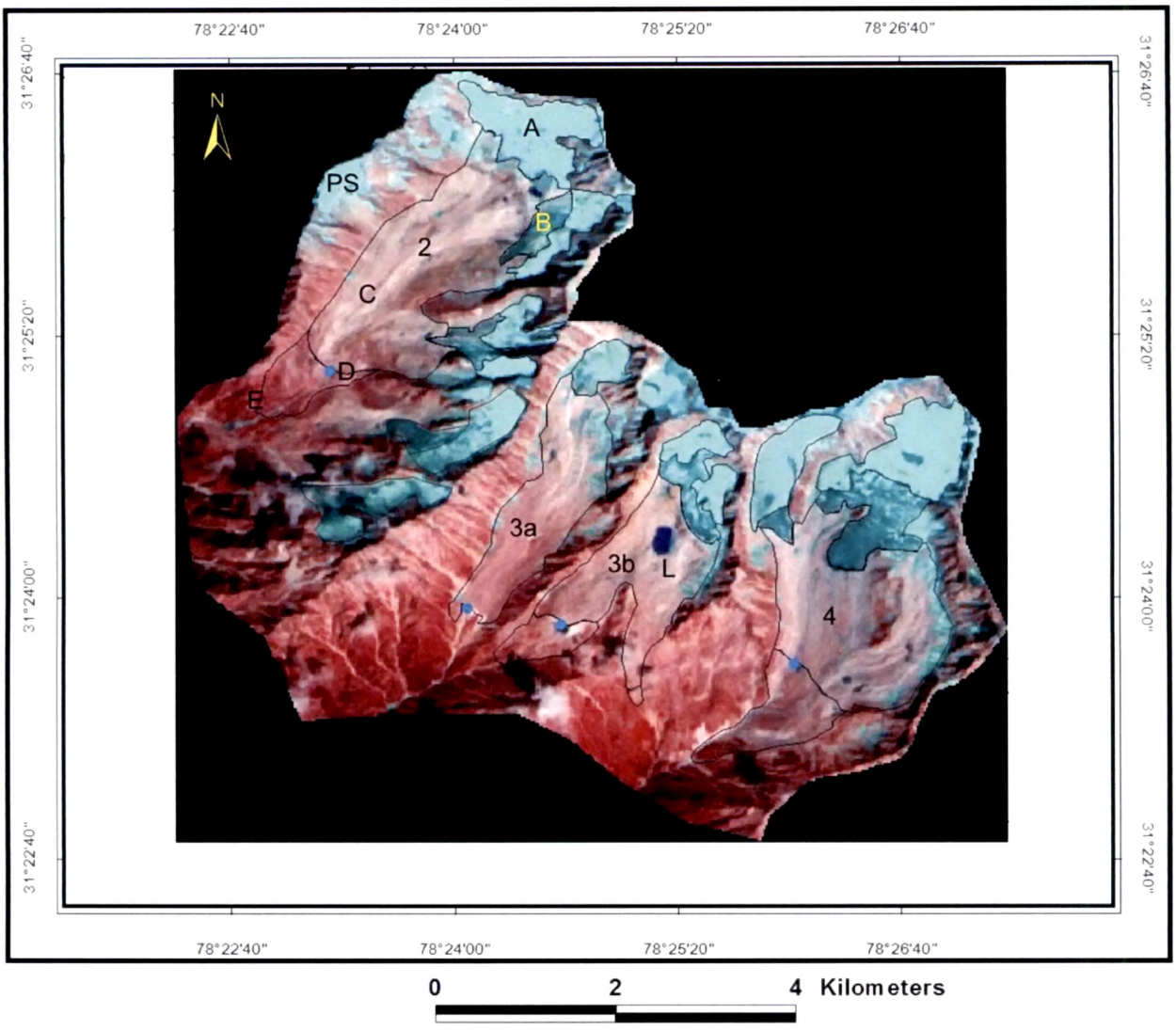


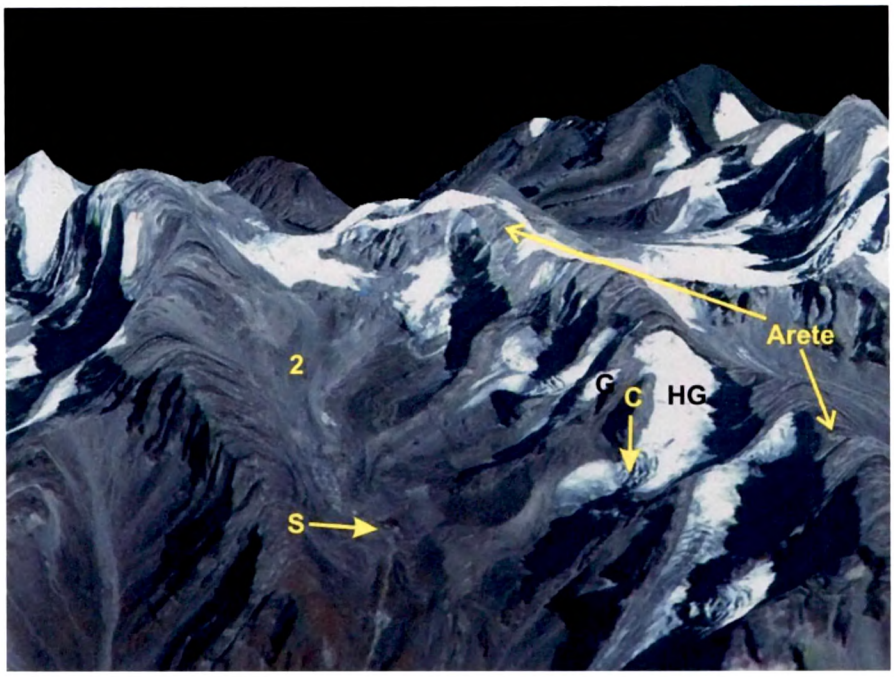
Fig 4.4 : Geomorphological map of Gor garang (2), Mangsa garang (3a,3b) and Shushang nala (4)

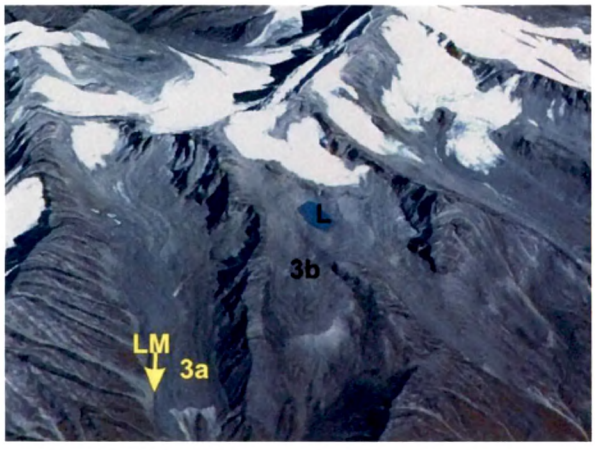


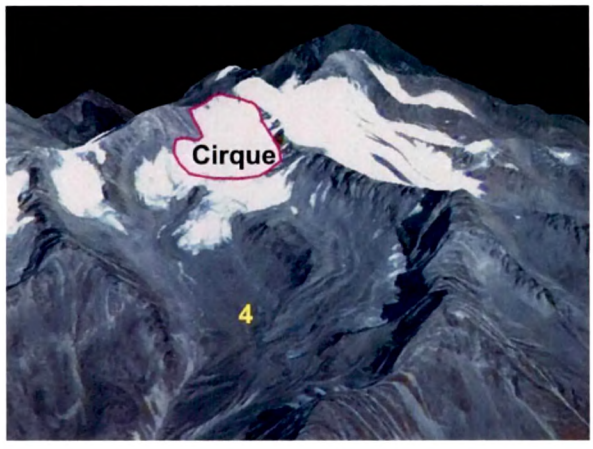
Index

A	Accumulation zone	D	Glacial Limit of 2005	L	Lake
B	Exposed ablation zone	E	Maximum Glacial Limit	●	Snout
C	Moraine covered ablation zone	PS	Permanent snowfield		

Fig: 4.5 IRS P6, 2005, Liss III image of Gor garang (2), Mangsa garang (3a,3b) and Shushang nala (4)







Index

LM	Lateral moraine	C	Crevasses	2-4	Glacier No.
L	Lake	HG	Hanging glacier	G	Glacierete
S	Snout				

Fig: 4.6 IRS 1D, 2001, LISS III + PAN merged image of Gor garang (2), Mangsa garang (3a,3b) and Shushang nala (4), draped on DEM of SRTM data

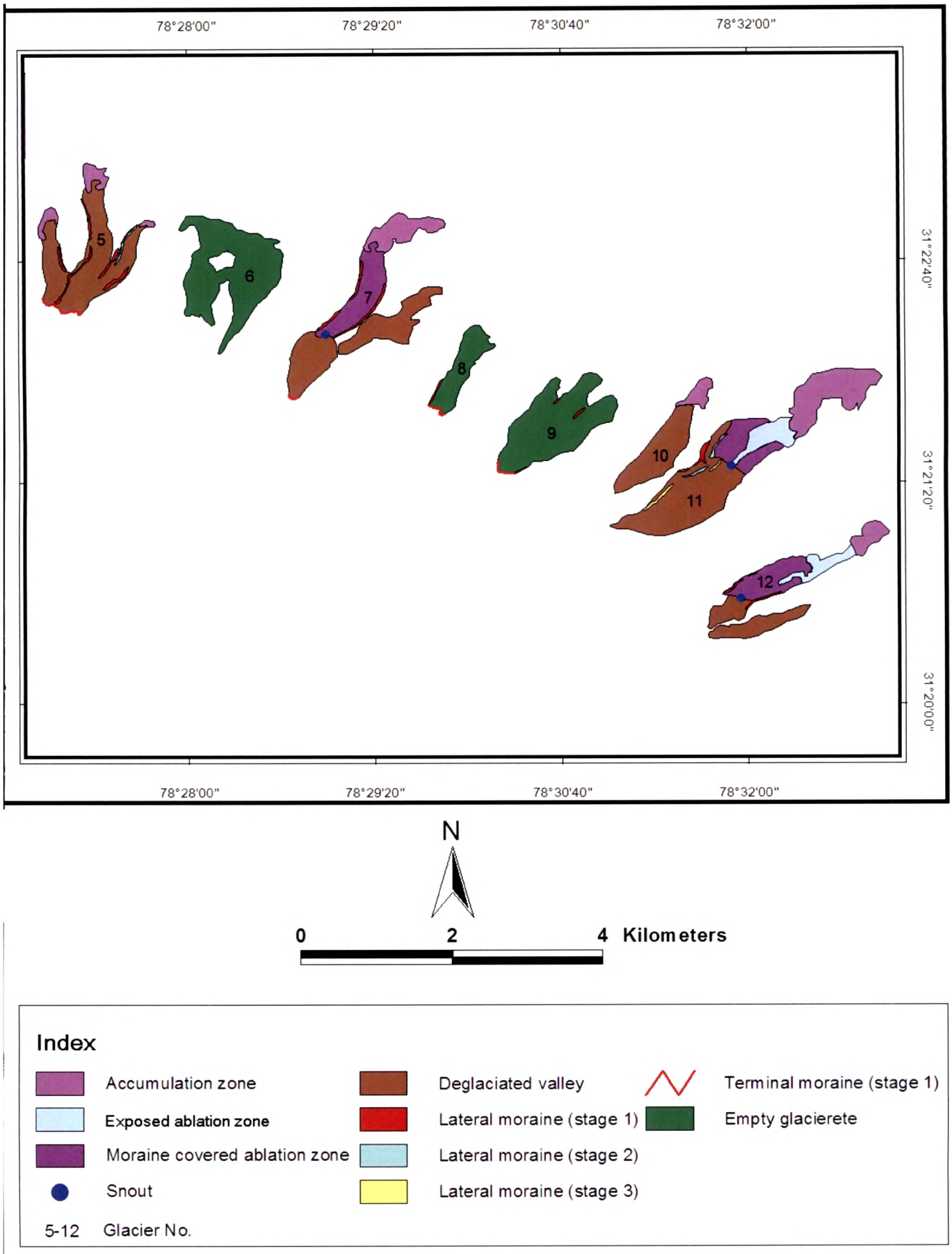
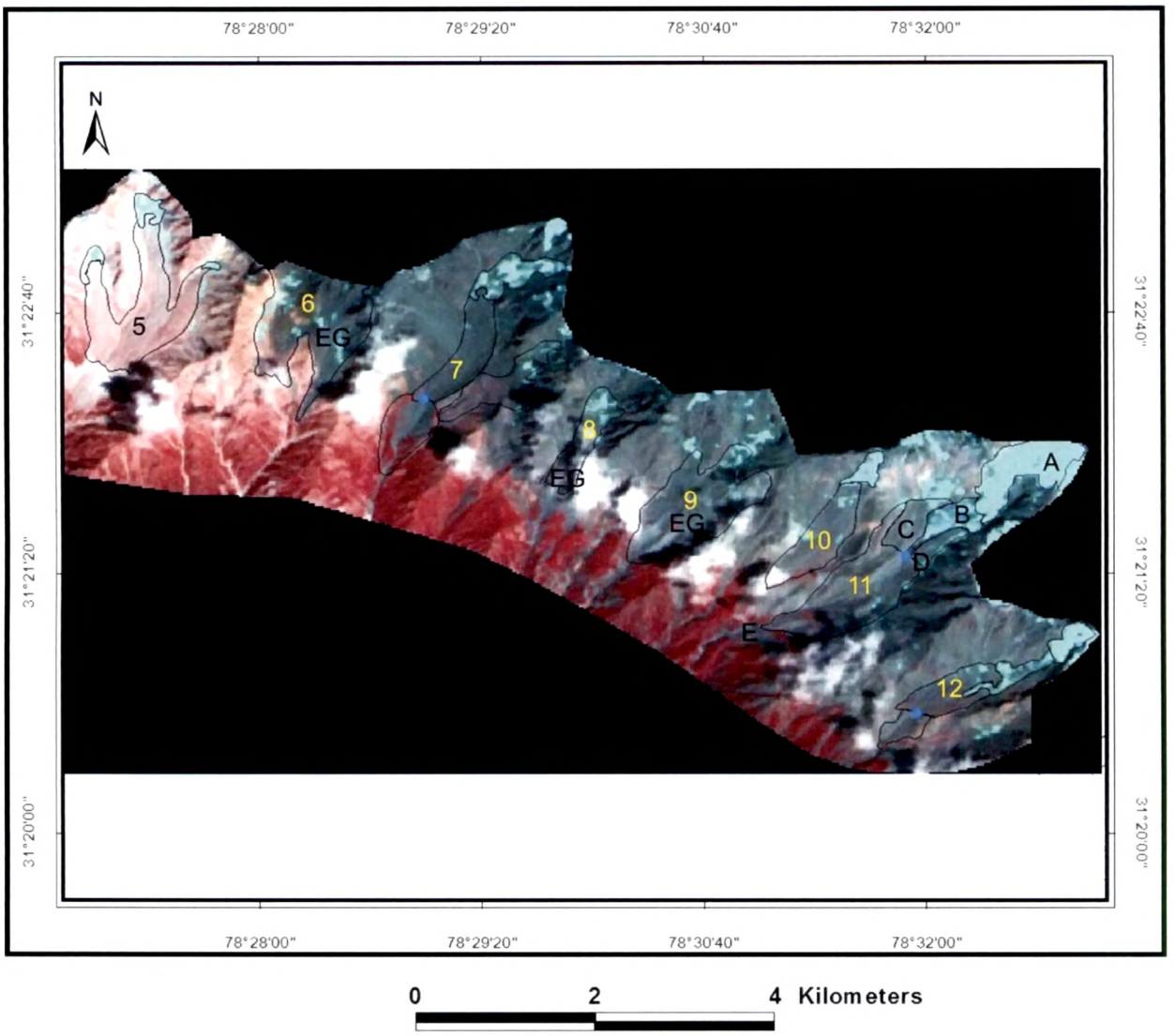


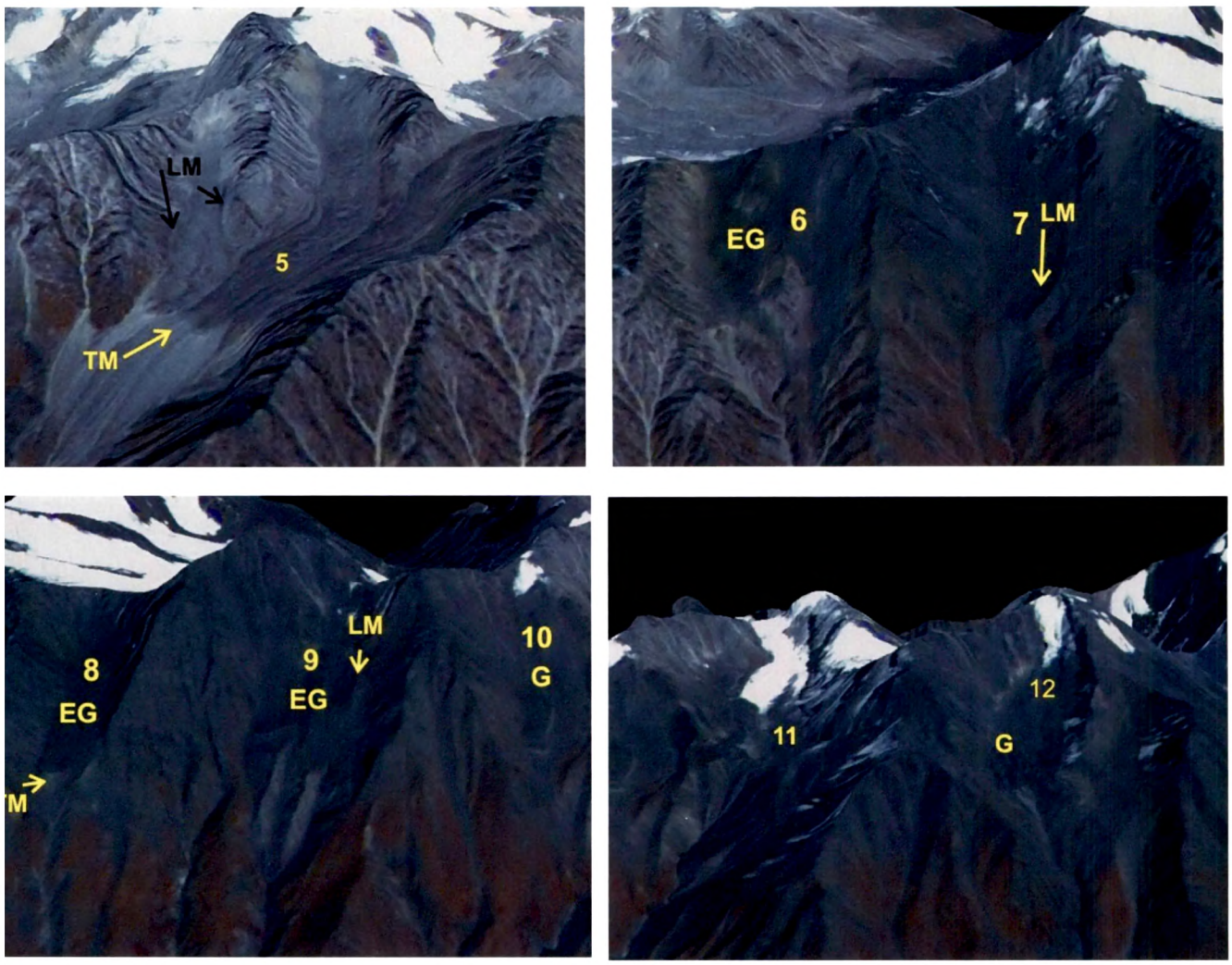
Fig 4.7 : Geomorphological map of Shailpya garang(5), Rimdarang nala(6), Nagsu garang(7) and glacier no. 8,9,10,11 & 12



Index

A	Accumulation zone	D	Glacial Limit of 2005	EG	Empty glacierete
B	Exposed ablation zone	E	Maximum Glacial Limit	●	Snout
C	Moraine covered ablation zone				

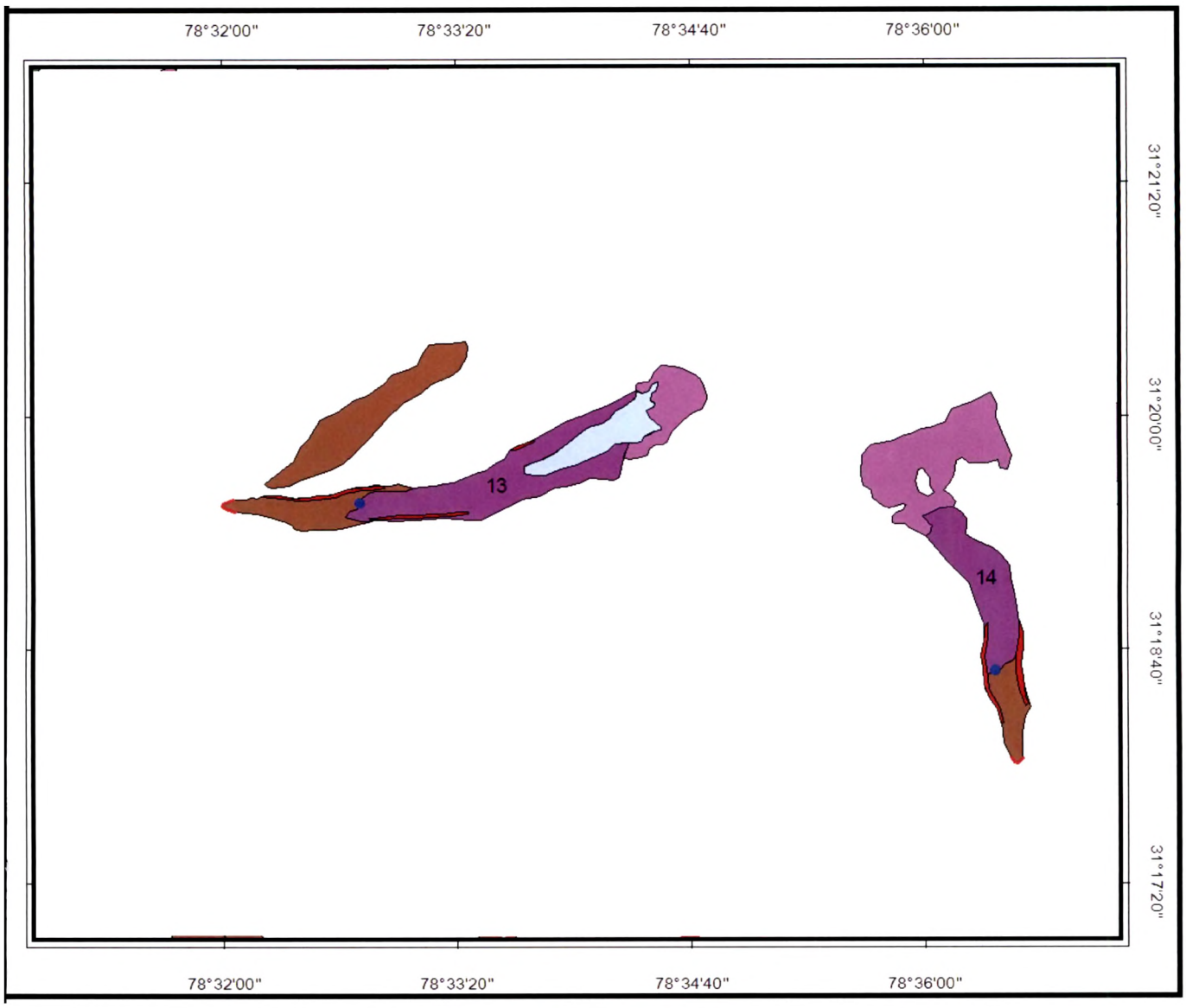
Fig: 4.8 IRS P6, 2005, Liss III image of Shailpya garang (5), Rimdarang nala (6), Nagsu garang (7) and glacier No. 8,9,10,11 & 12

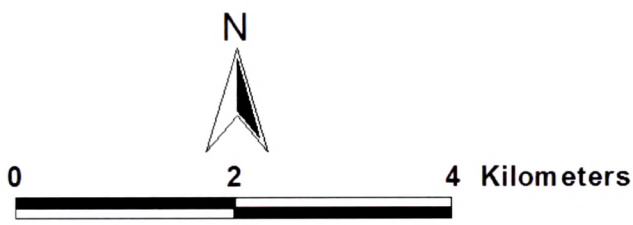


Index

LM	Lateral moraine	HG	Hanging glacier	TM	Terminal moraine
EG	Empty glacierete	G	Glacierete	5-12	Glacier No.

ig: 4.9 IRS 1D, 2001, LISS III+PAN merged image of Shailpya garang (5), Rimdarang ala (6),Nagsu garang (7) and glacier No. 8,9,10,11 &12 draped on DEM of SRTM data

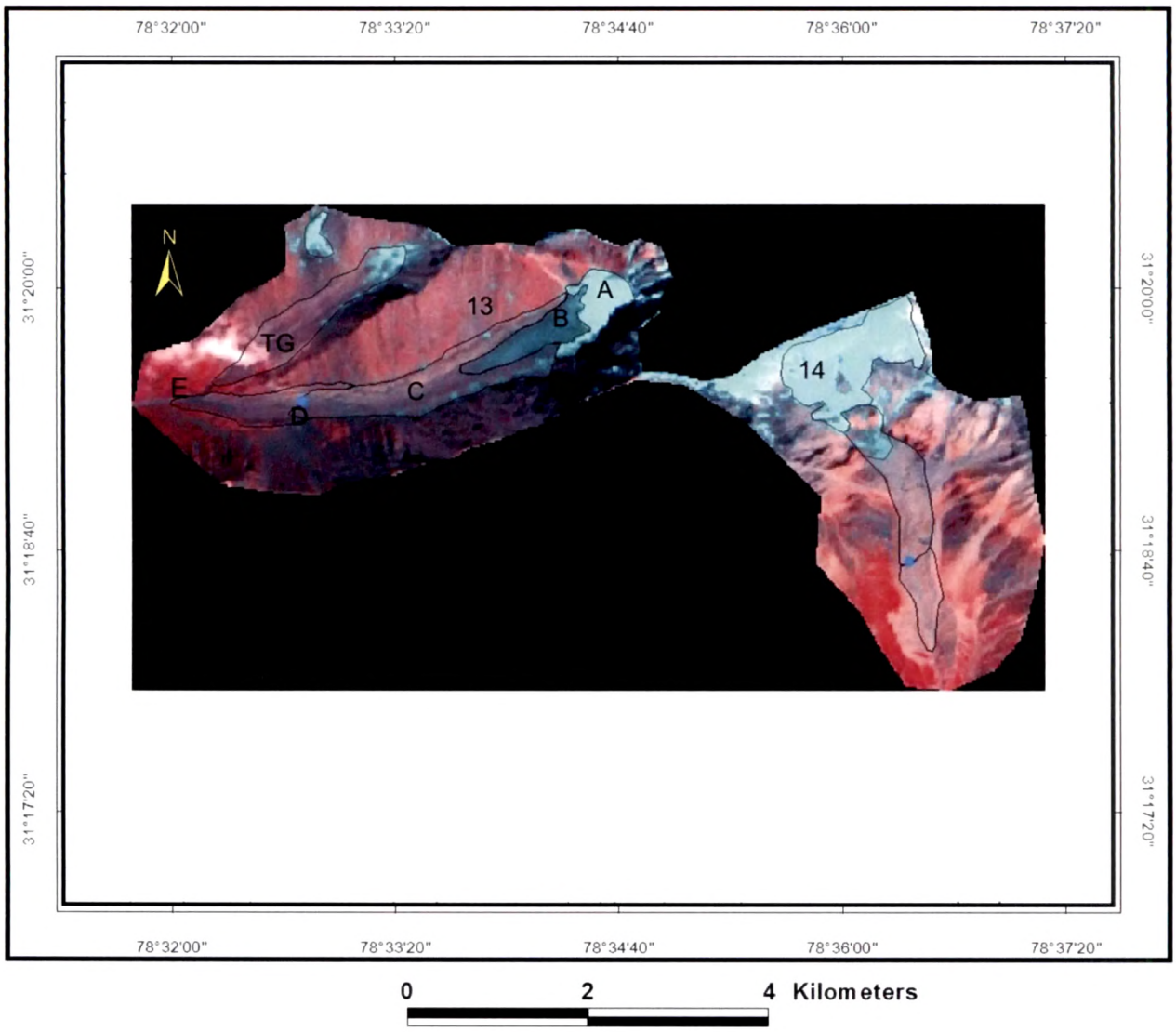




Index

	Accumulation zone		Snout		Terminal moraine (stage 1)
	Exposed ablation zone		Deglaciated valley		Rocky exposure
	Moraine covered ablation zone		Lateral moraine (stage 1)		
13, 14	Glacier No.				

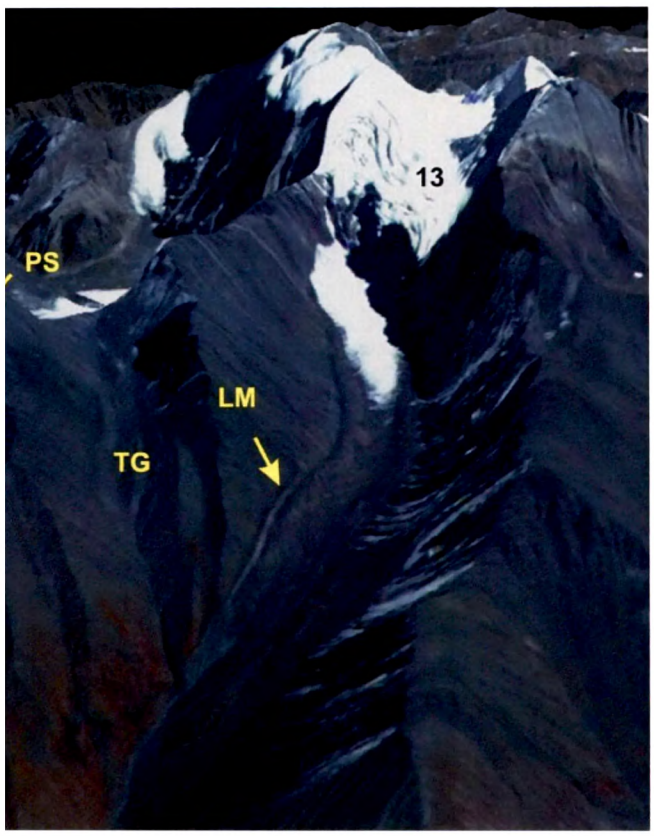
Fig 4.10 : **Geomorphological map of Tumur garang (13) and glacier no. 14.**

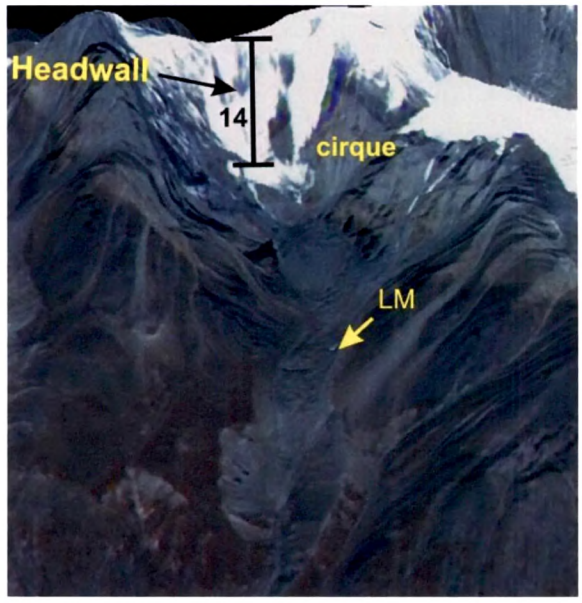


Index

A	Accumulation zone	D	Glacial Limit of 2005	TG	Tributary glacier
B	Exposed ablation zone	E	Maximum Glacial Limit	13 & 14	Glacier number
C	Moraine covered ablation zone	●	Snout		

Fig: 4.11 IRS P6, 2005, Liss III image of Tumur garang (13) and Glacier No. (14)





Index

LM	Lateral moraine	HG	Hanging glacier
TG	Tributary glacier	13 & 14	Glacier number

Fig: 4.12 IRS 1D, 2001, LISS III+PAN merged image of Tumur garang (13) and Glacier no. (14) draped on DEM of SRTM data

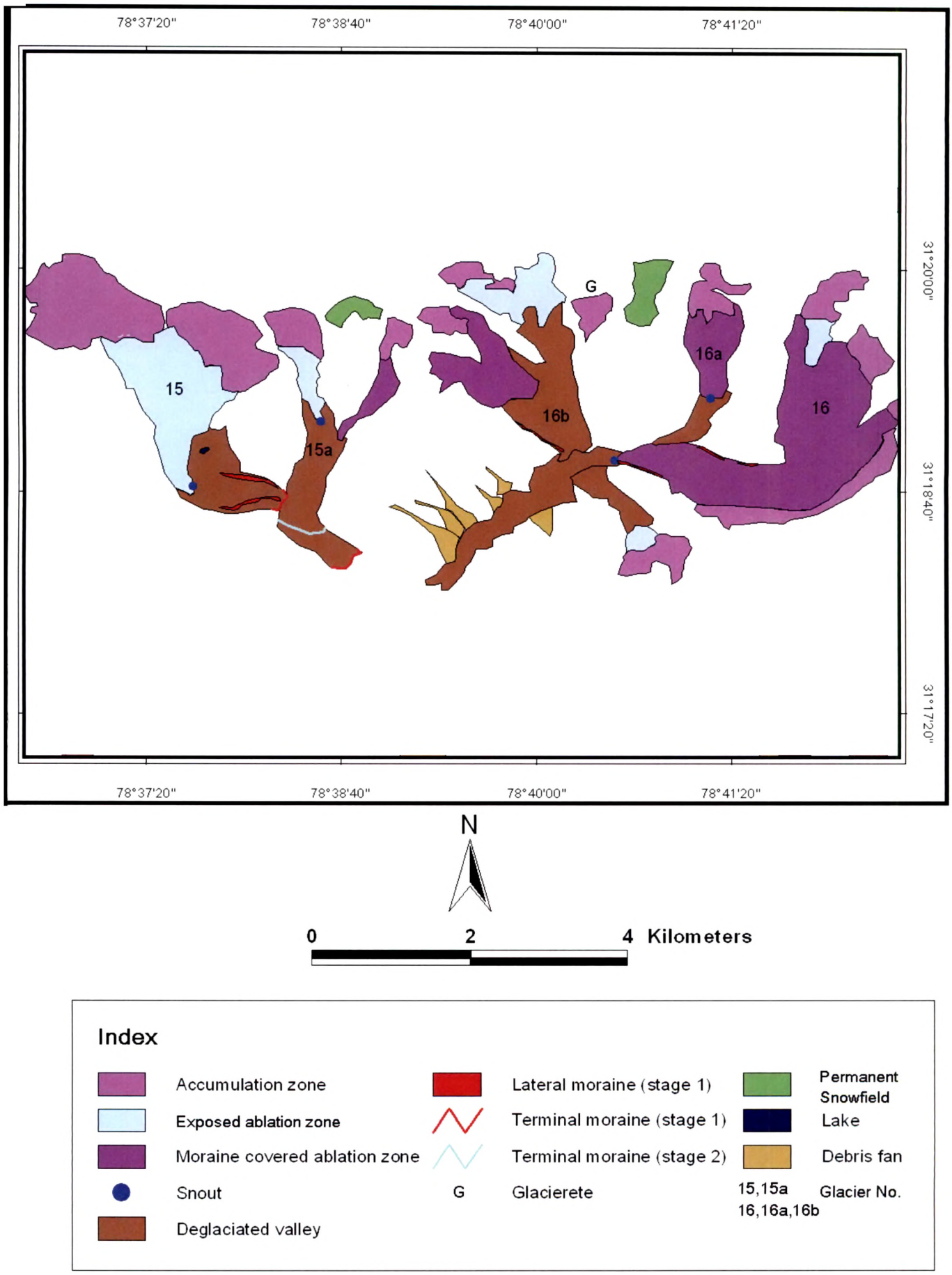
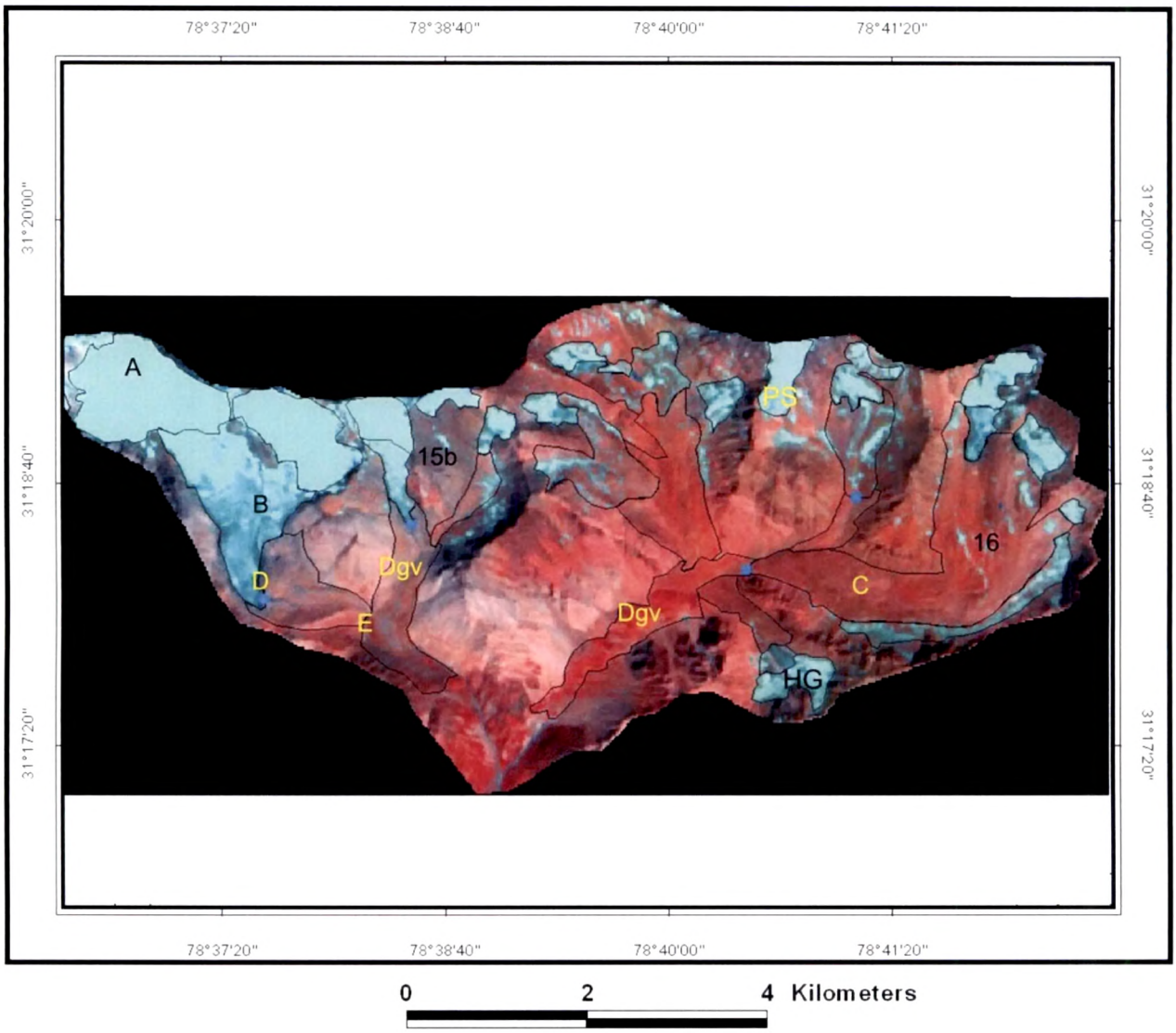


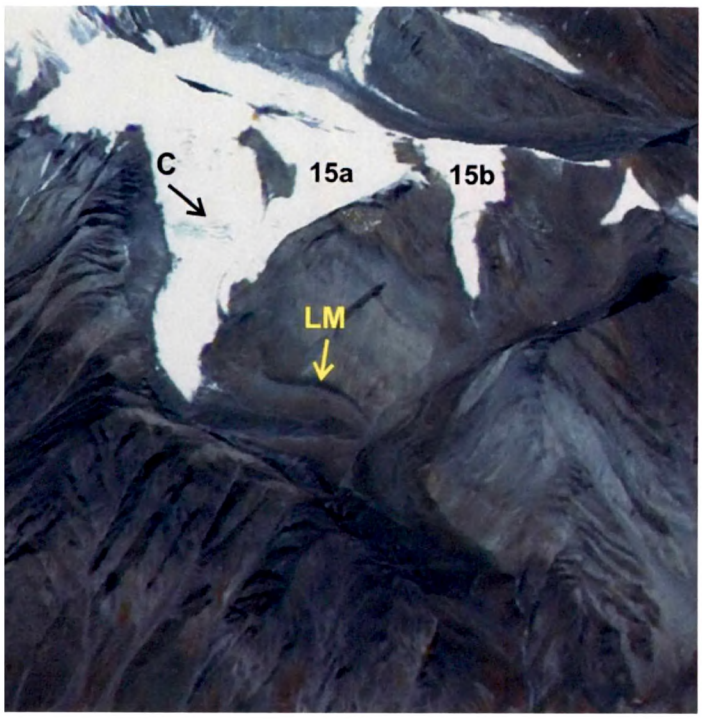
Fig 4.13 : **Geomorphological map of Suti thatang (15, 15a) and glacier no. 16, 16a & 16b**

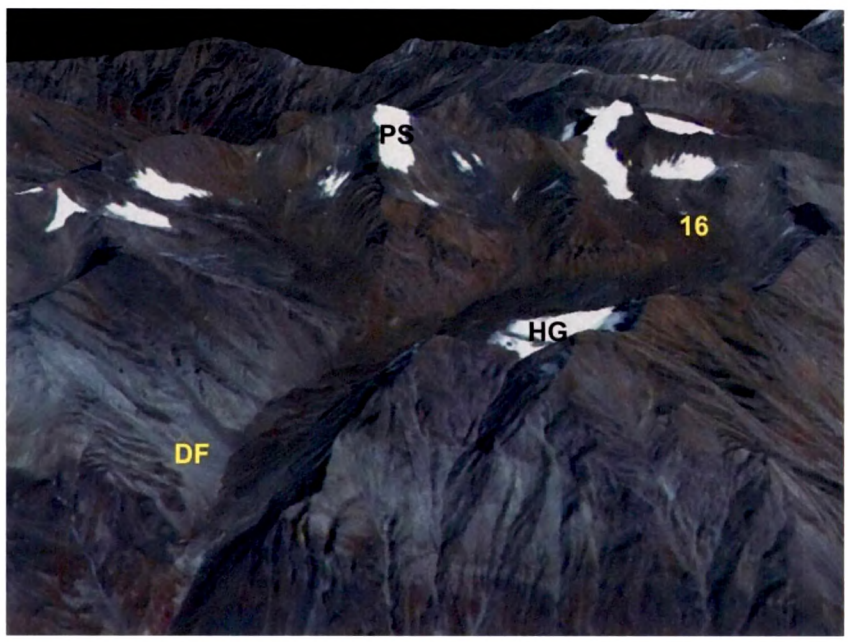


Index

A	Accumulation zone	D	Glacial Limit of 2005	●	Snout
B	Exposed ablation zone	E	Maximum Glacial Limit	15a,15b &16	Glacier No.
C	Moraine covered ablation zone	Dgv	Deglaciated valley		
HG	Hanging glacier	PS	Permanent snowfield		

Fig: 4.16 IRS P6, 2005, LISS III image of Suti thatang (15) and Unnamed glacier (16)





Index

C	Crevasses	HG	Hanging glacier	TM	Terminal moraine
LM	Lateral moraine	DF	Debris fans	PS	Permanent snowfield
15a,15b &16	Glacier No.				

Fig: 4.17 IRS 1D, 2001, LISS III image of Suti thatang (15) and Unnamed glacier (16) draped on DEM of SRTM data

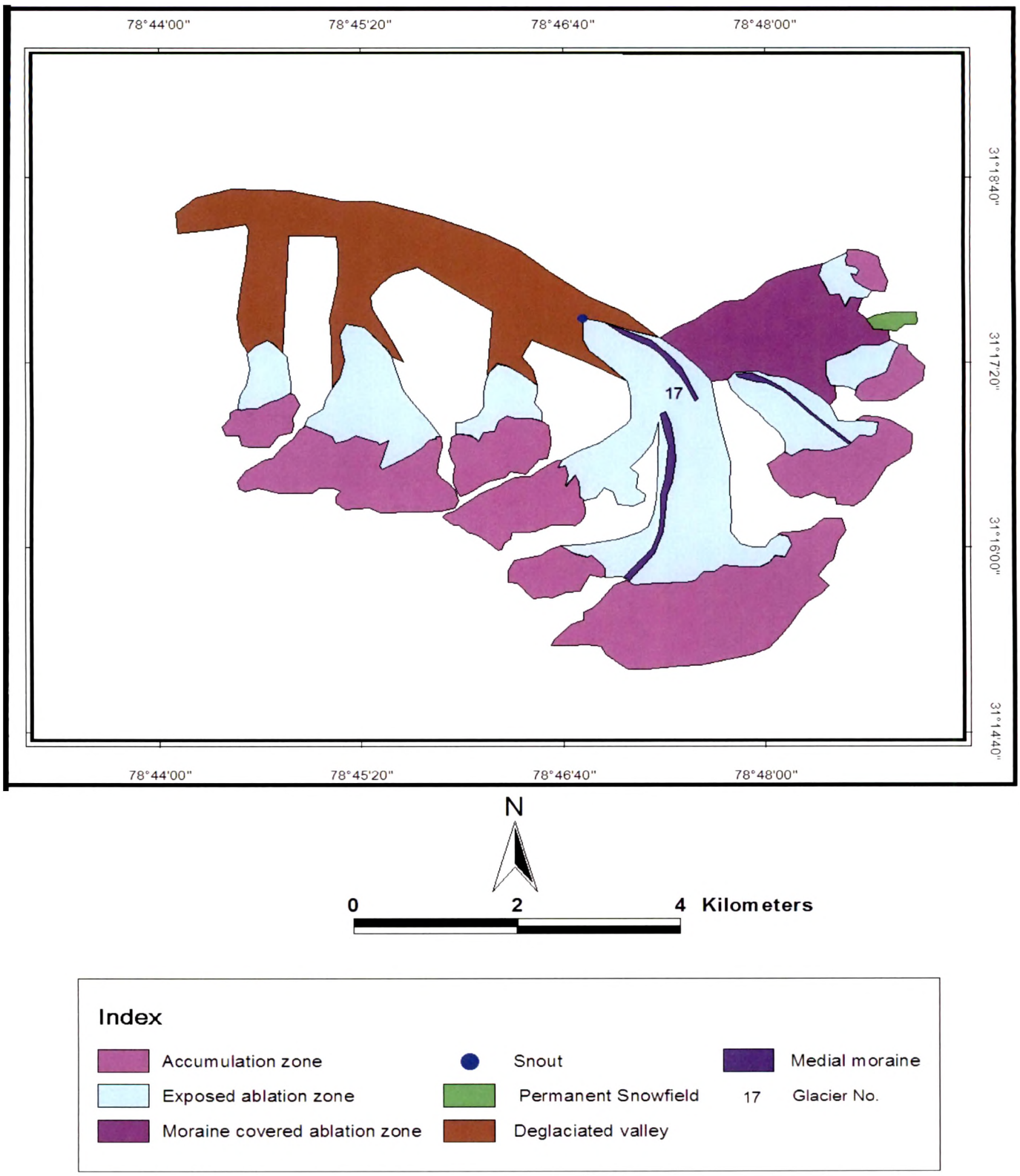


Fig 4.18 : **Geomorphological map of glacier no. 17**

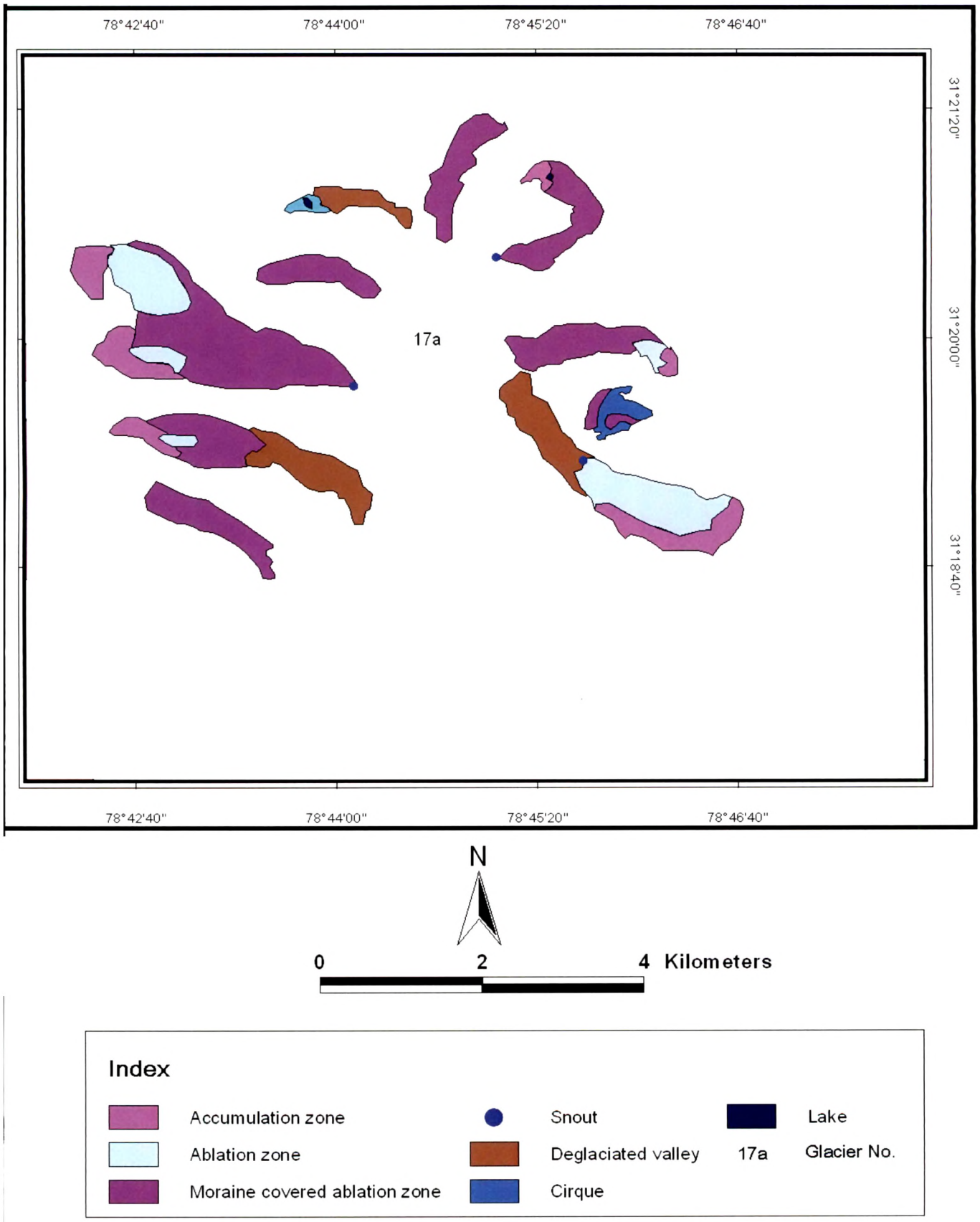


Fig 4.19 : **Geomorphological map of glacier no. 17a**

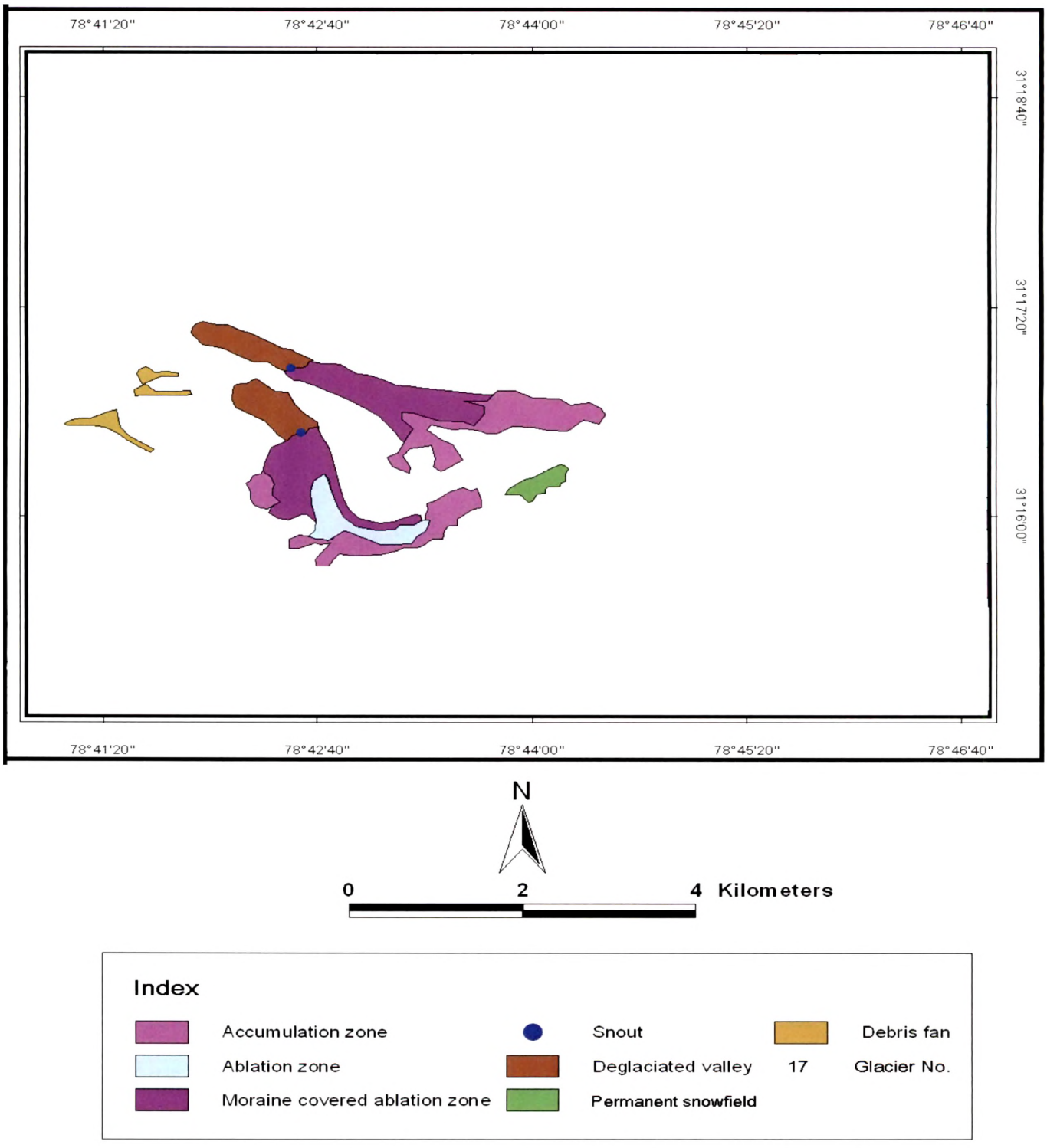
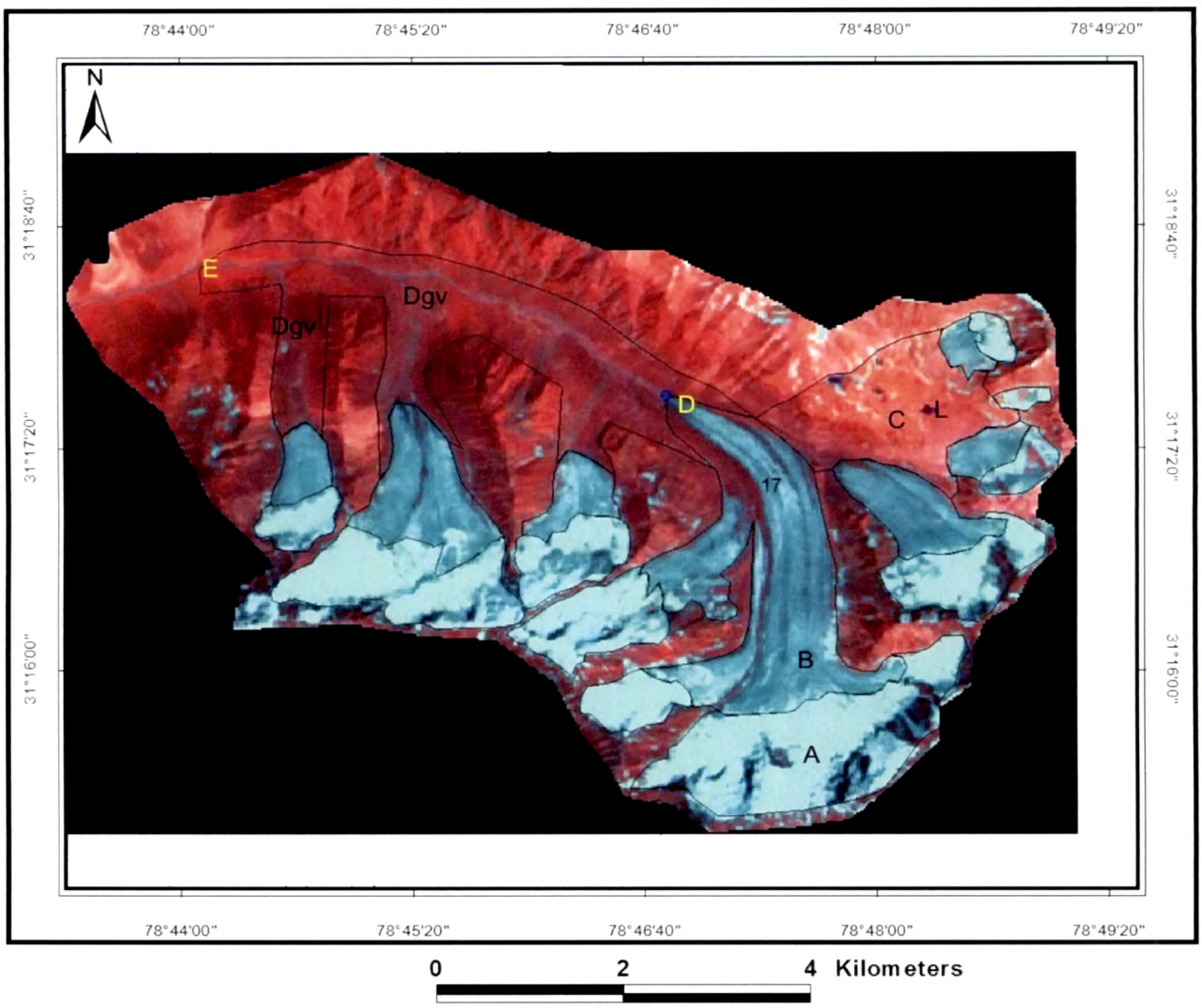


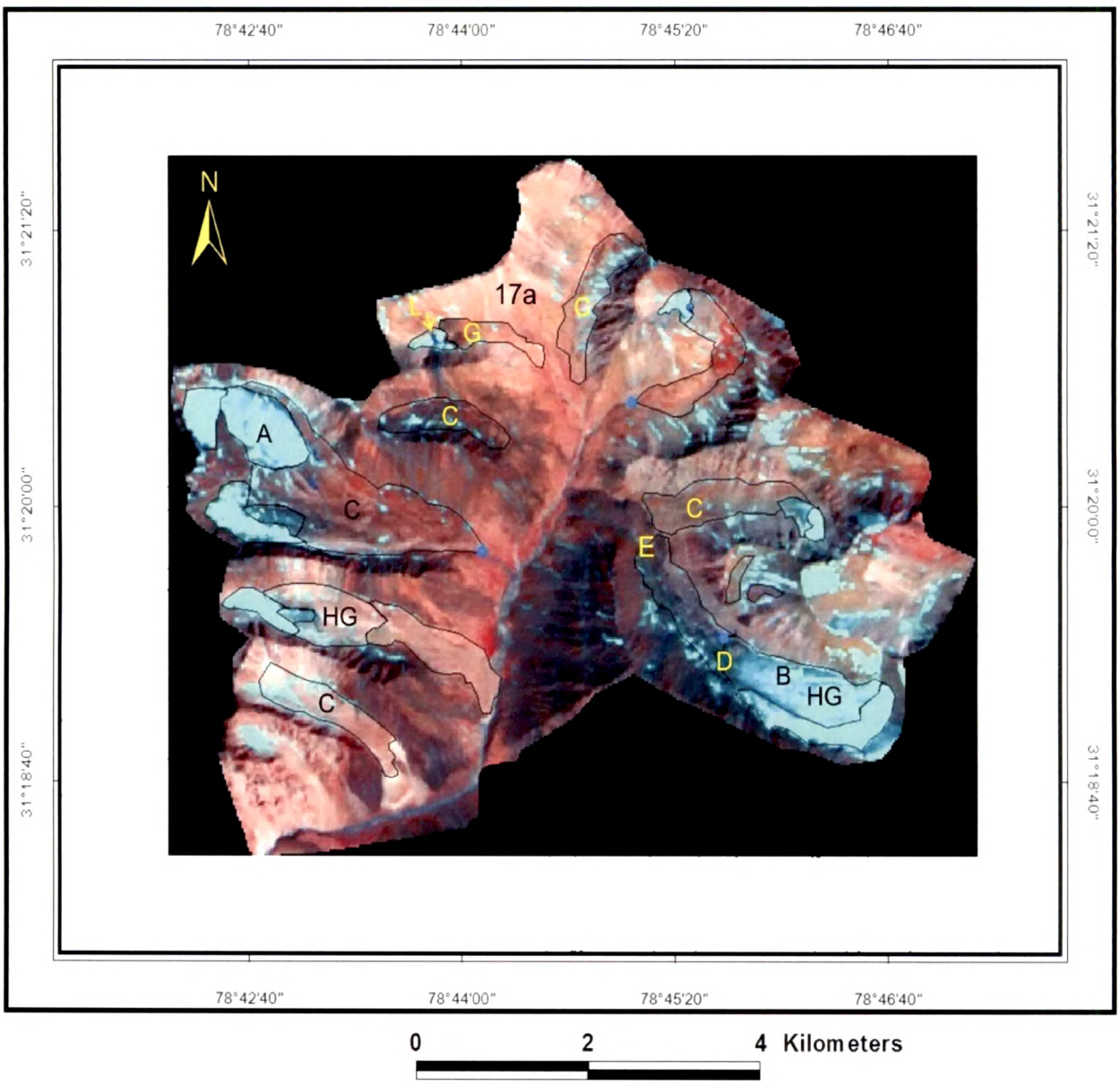
Fig 4.20 : **Geomorphological map of glacier no. 17b**



Index

A	Accumulation zone	D	Glacial Limit of 2005	L	Lake
B	Exposed ablation zone	E	Maximum Glacial Limit	●	Snout
Dgv	Deglaciated valley	PS	Permanent snowfield	17	Glacier No.
C	Moraine covered ablation zone				

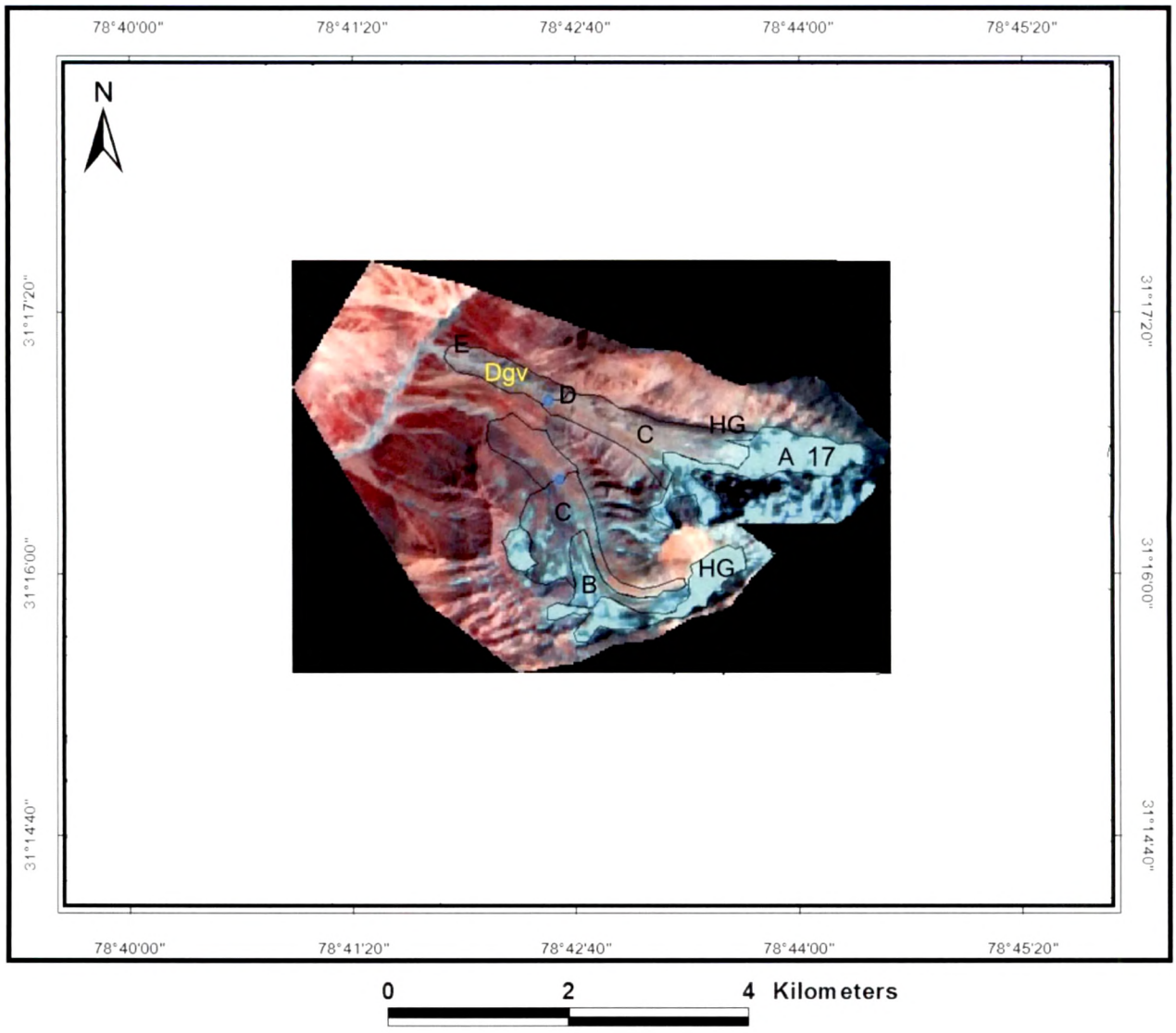
Fig: 4.21 IRS P6, 2005, LISS III image of glacier no.17



Index

A	Accumulation zone	D	Glacial Limit of 2005	L	Lake
B	Exposed ablation zone	E	Maximum Glacial Limit	●	Snout
C	Moraine covered ablation zone	G	Glacierete	HG	Hanging glacier
17a	Glacier No.				

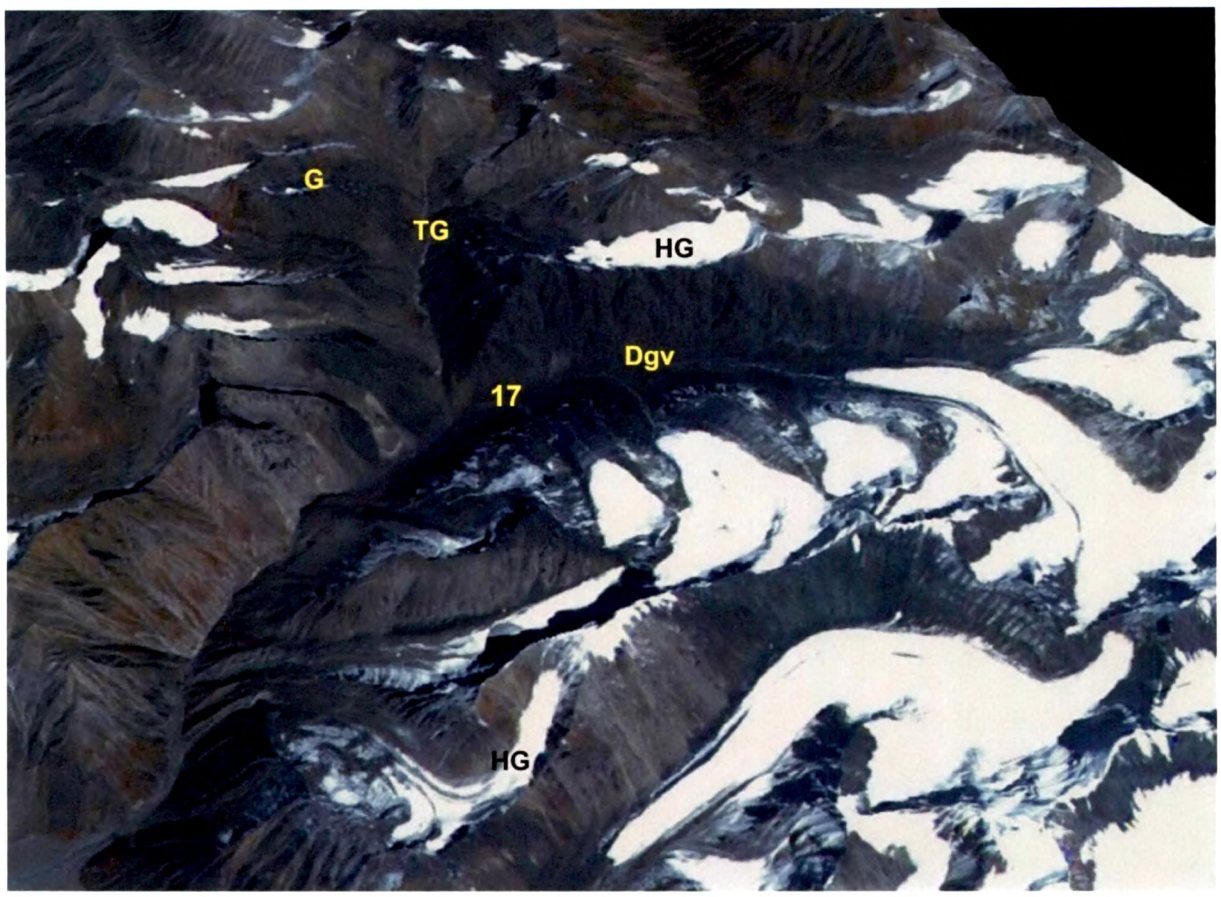
Fig: 4.22 IRS P6, 2005, LISS III image of glacier no.17a



Index

A	Accumulation zone	D	Glacial Limit of 2005	●	Snout
B	Exposed ablation zone	E	Maximum Glacial Limit	Dgv	Deglaciated valley
C	Moraine covered ablation zone	HG	Hanging glacier	17	Glacier No.

Fig: 4.23 IRS P6, 2005, LISS III image of glacier no.17



Index

HG	Hanging glacier	G	Glacierete
TG	Tributary glacier	Dgv	Deglaciated valley
17	Glacier No.		

Fig: 4.24 IRS 1D, 2001, LISS III image of glacier no.17 draped on DEM of SRTM data

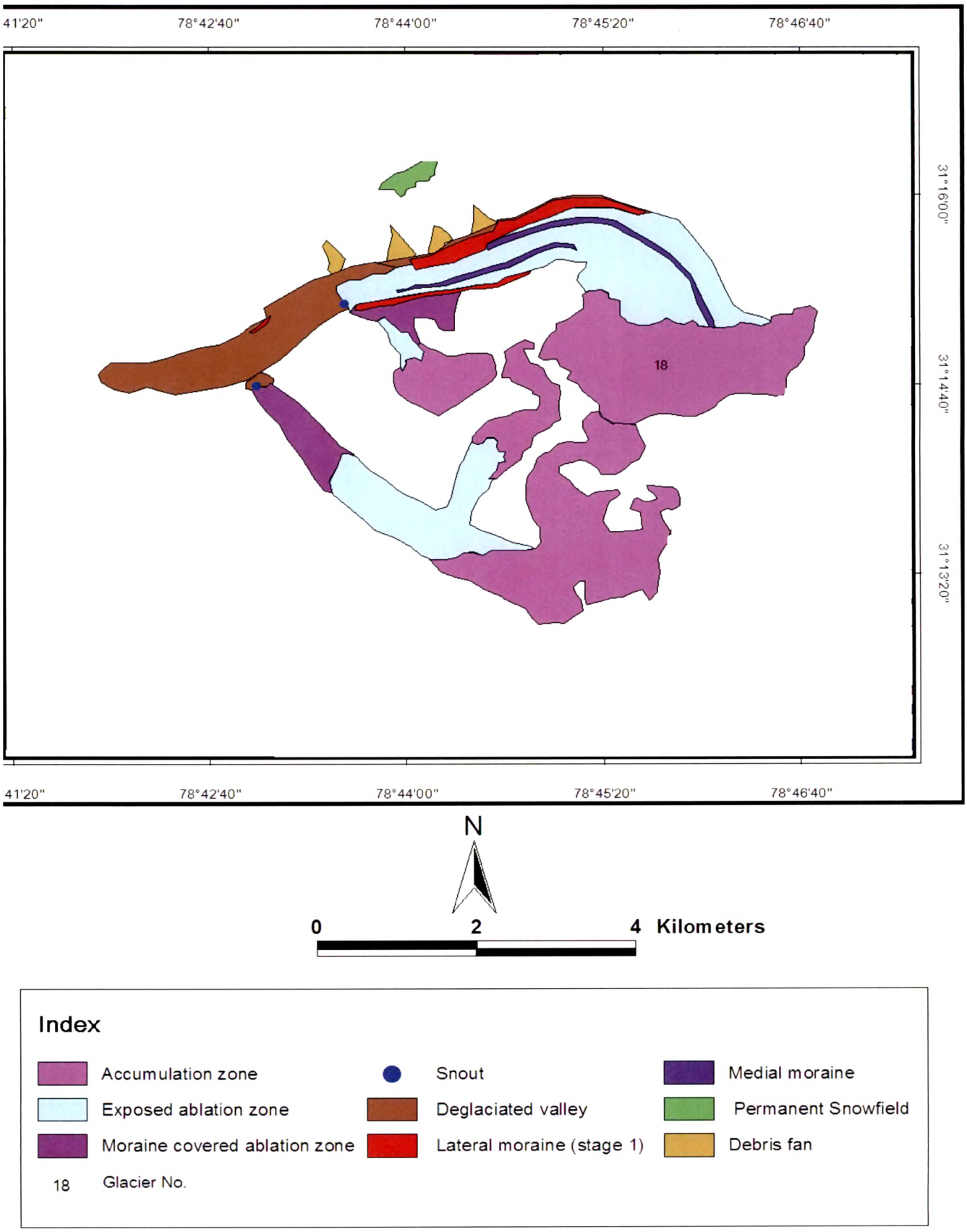
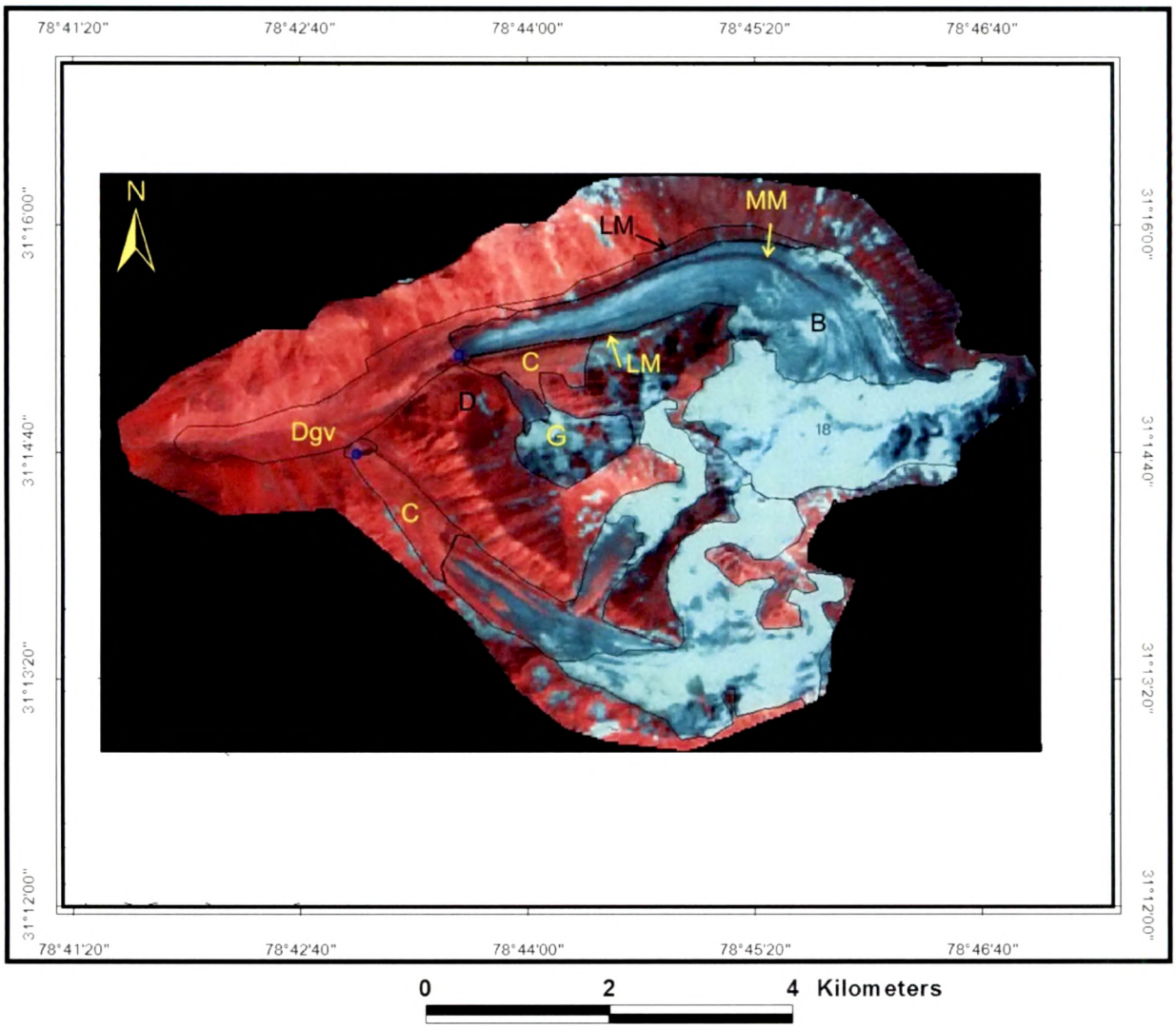


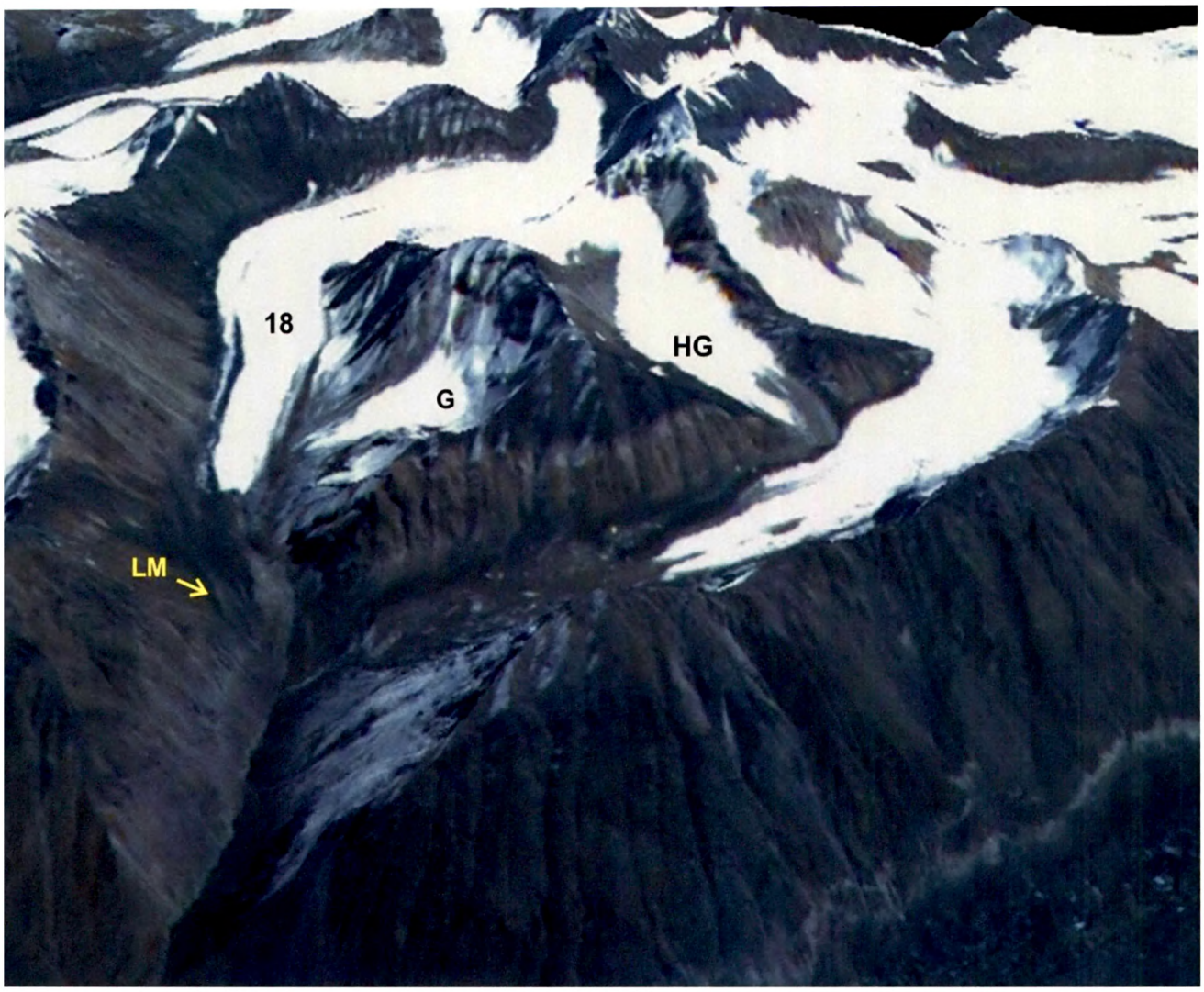
Fig 4.25 : **Geomorphological map of glacier no.18**



Index

A	Accumulation zone	D	Glacial Limit of 2005	●	Snout
B	Exposed ablation zone	E	Maximum Glacial Limit	LM	Lateral moraine
C	Moraine covered ablation zone	Dgv	Deglaciated valley		
G	Glacierete	18	Glacier No.		

Fig: 4.26 IRS P6, 2005, LISS III image of glacier no.18



Index

LM	Lateral moraine	G	Glacierete	HG	Hanging glacier
18	Glacier No.				

Fig: 4.27 IRS 1D, 2001, LISS III image of glacier no. 18 draped on DEM of SRTM data

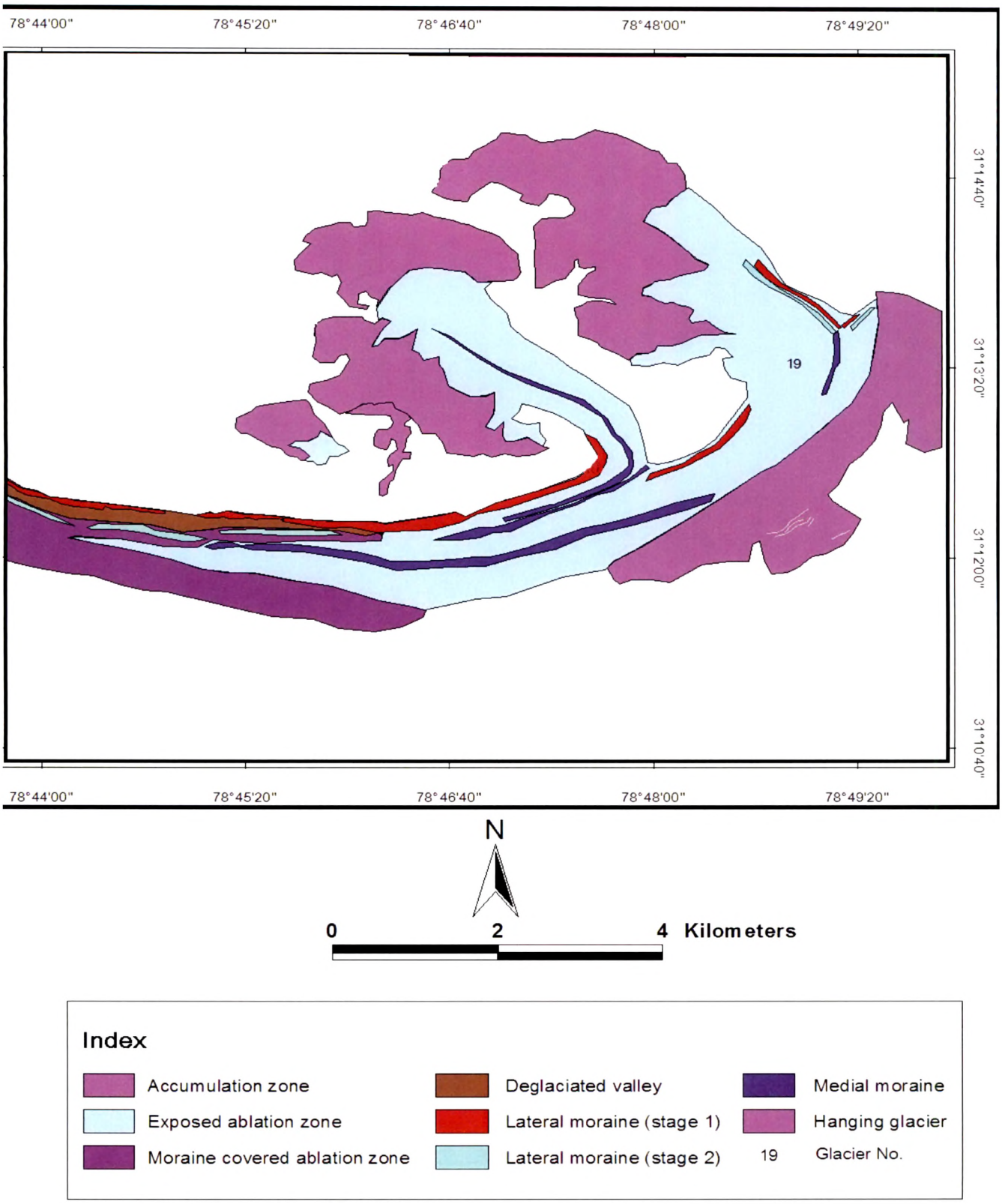


Fig 4.28 : **Geomorphological map of Baspa Bamak glacier (19)**

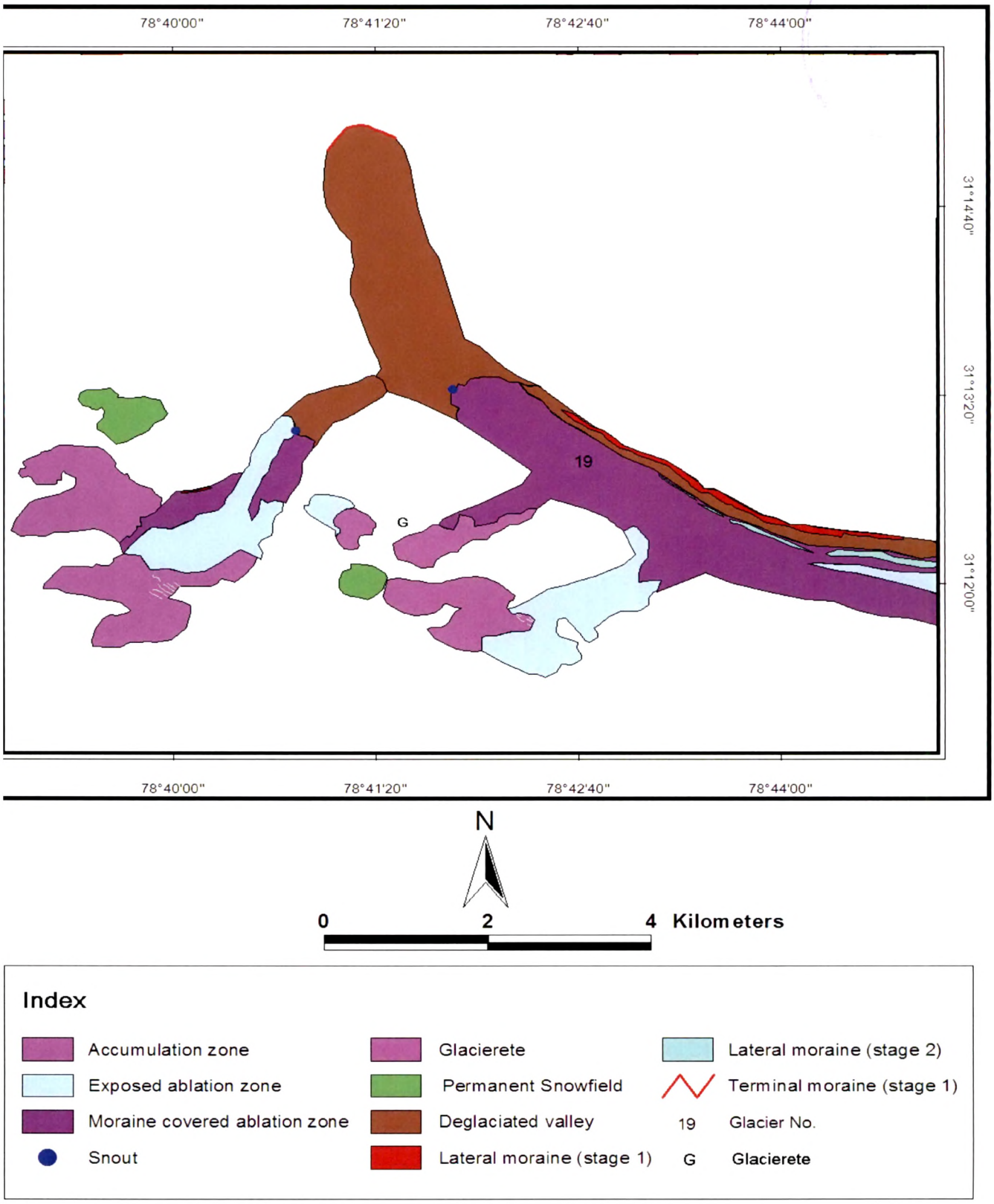
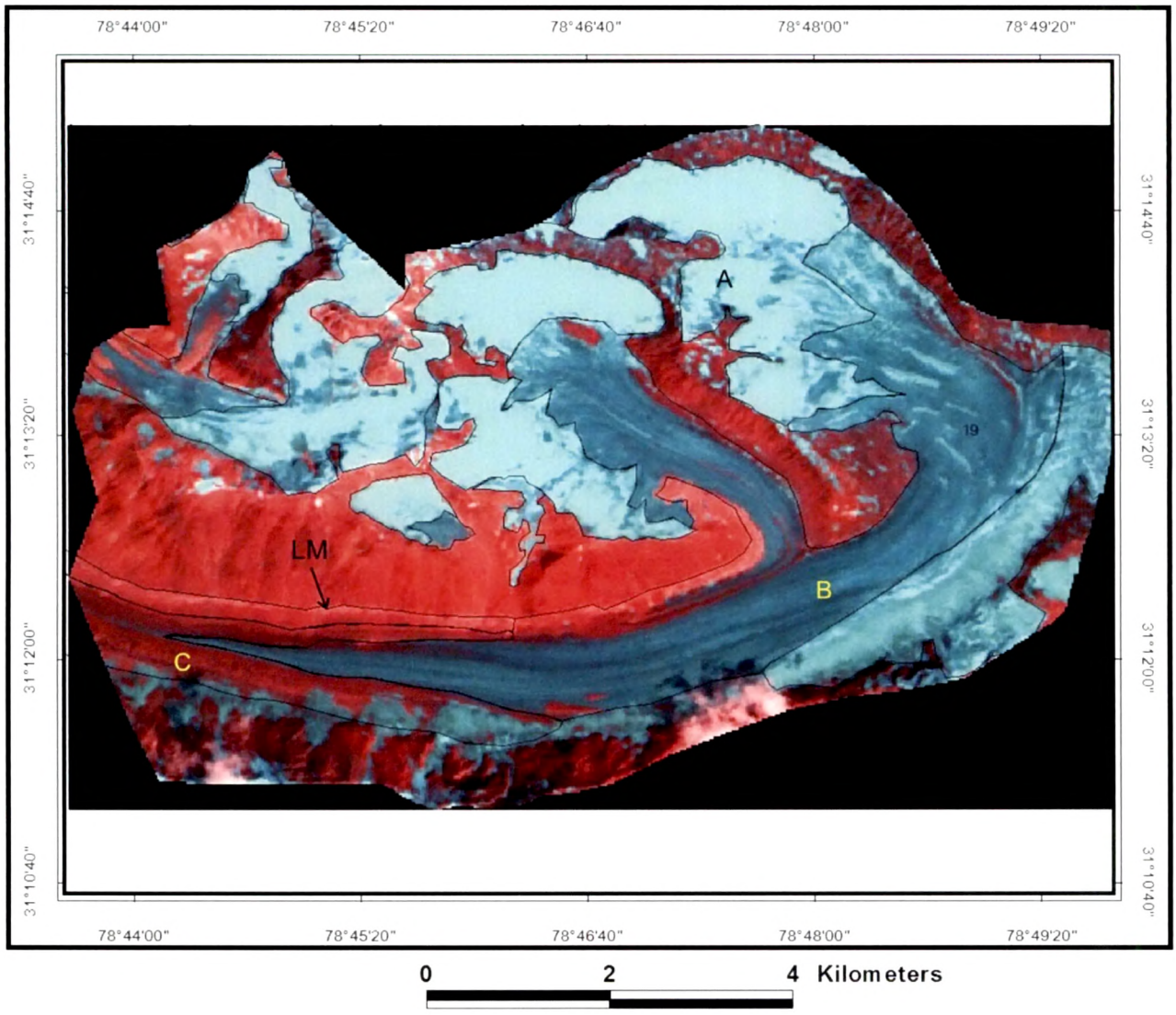


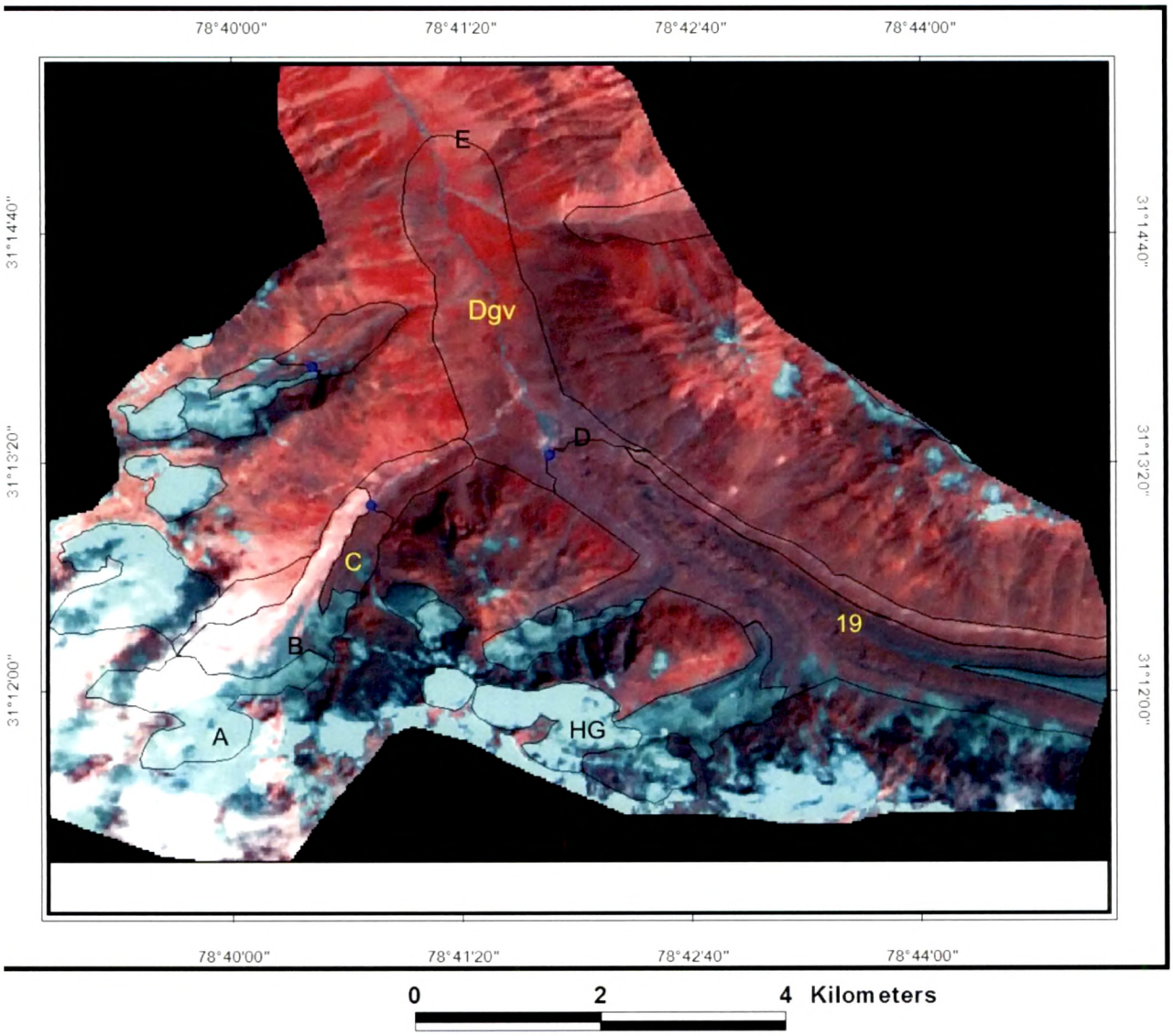
Fig 4.29 : **Geomorphological map of Baspa Bamak glacier (19)**



Index

A	Accumulation zone	C	Moraine covered ablation zone
B	Exposed ablation zone	19	Glacier No.
LM	Lateral moraine		

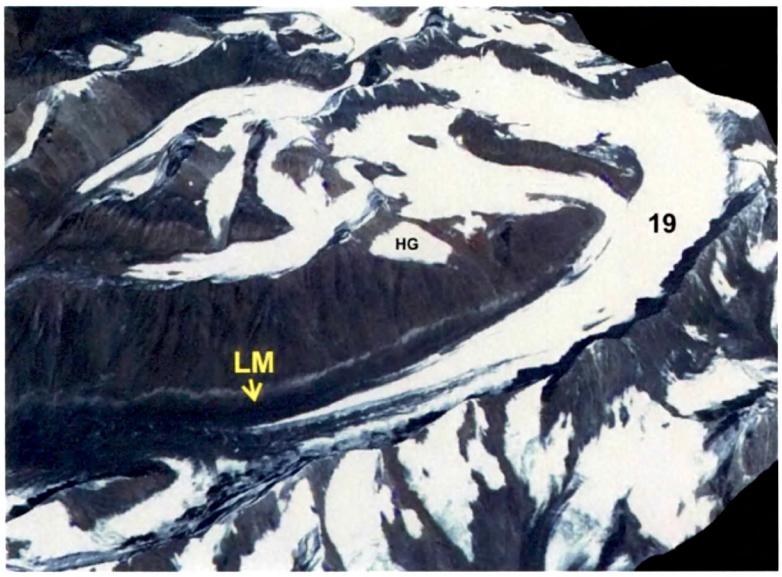
Fig: 4.30 IRS P6, 2005, LISS III image of Baspa Bamak glacier (19)

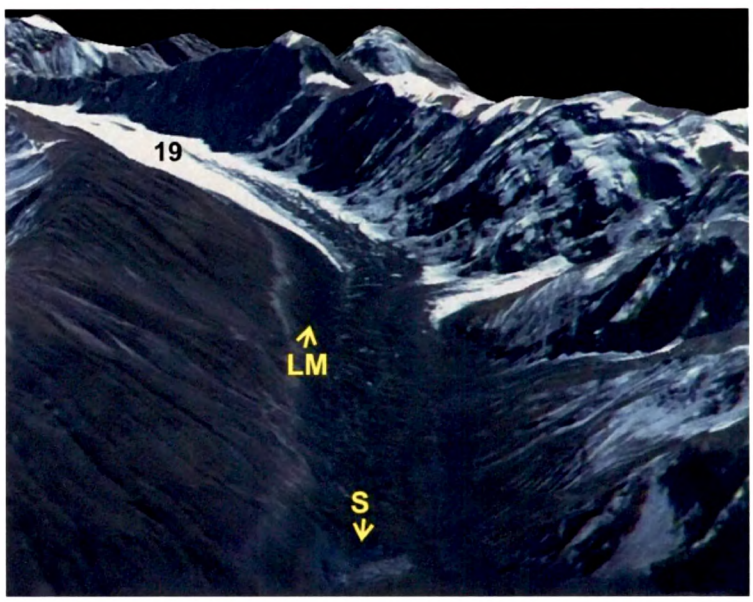


Index

A	Accumulation zone	D	Glacial Limit of 2005	●	Snout
B	Exposed ablation zone	E	Maximum Glacial Limit	HG	Hanging glacier
C	Moraine covered ablation zone	Dgv	Deglaciated valley	19	Glacier No.

Fig: 4.31 IRS P6, 2005, LISS III image of Baspa Bamak (19)





Index

LM	Lateral moraine	HG	Hanging glacier
S	Snout	19	Glacier No.

Fig: 4.32 IRS 1D, 2001, LISS III + PAN merged image of Baspa Bamak glacier (19) draped on DEM of SRTM data

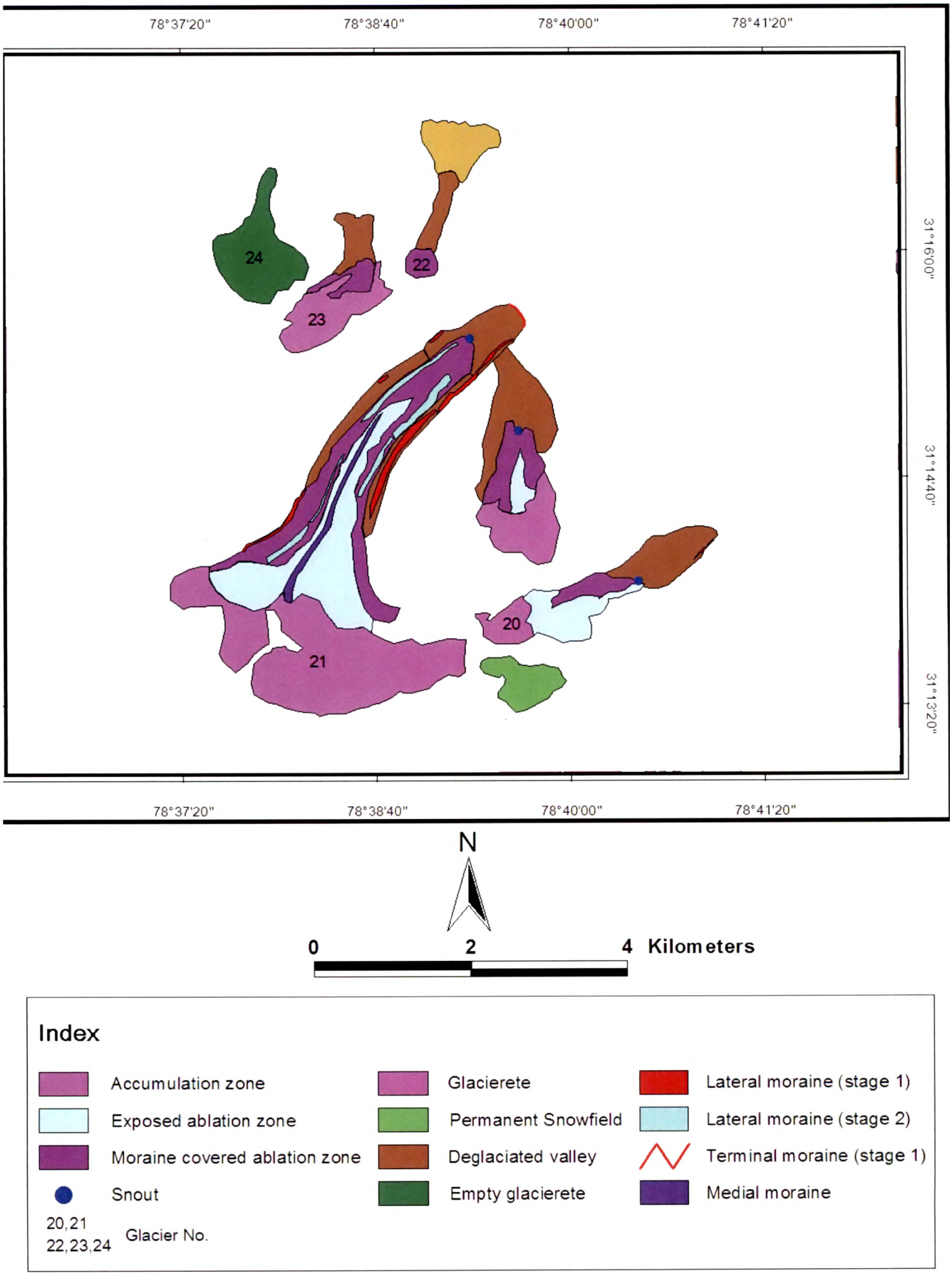
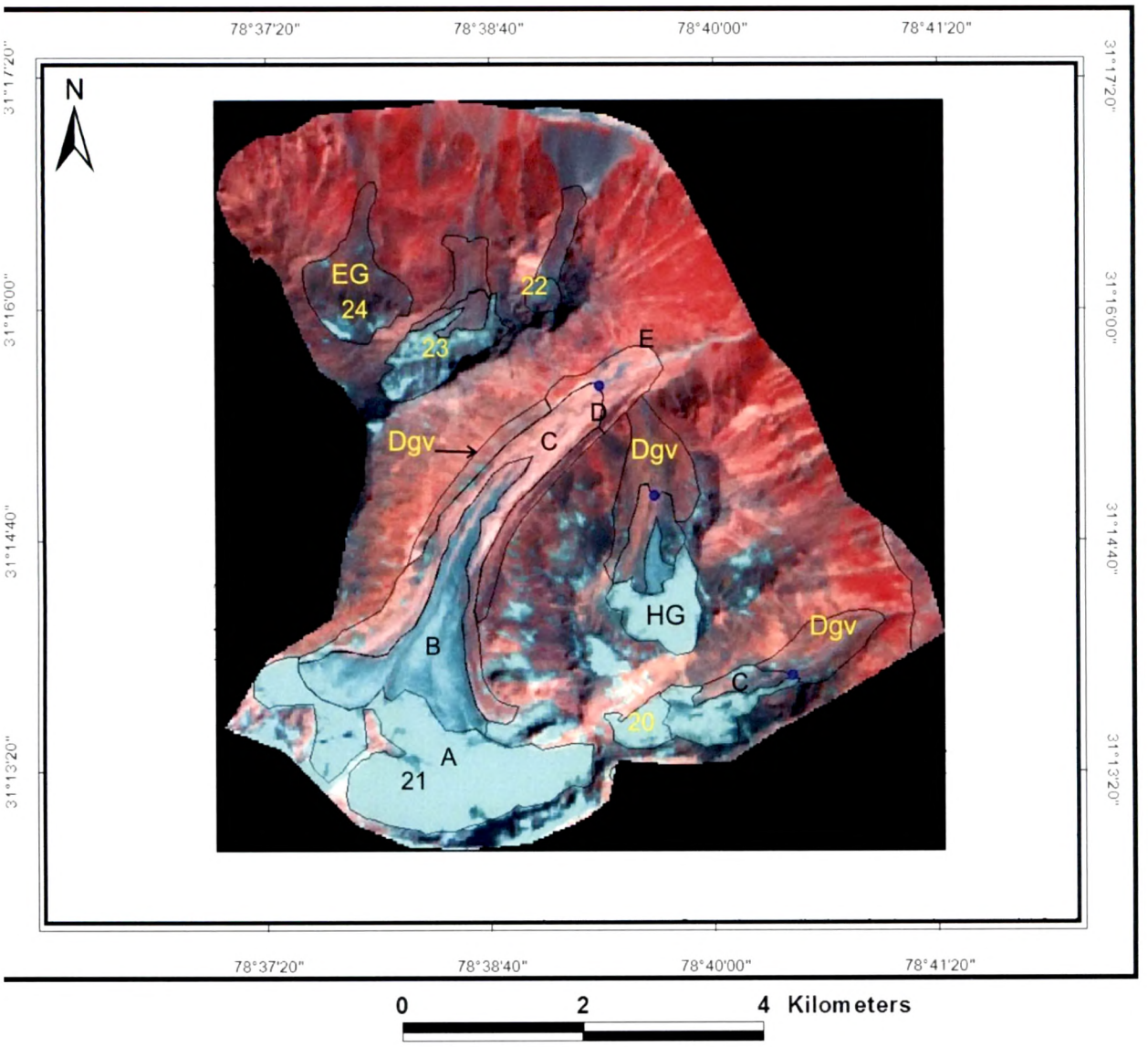


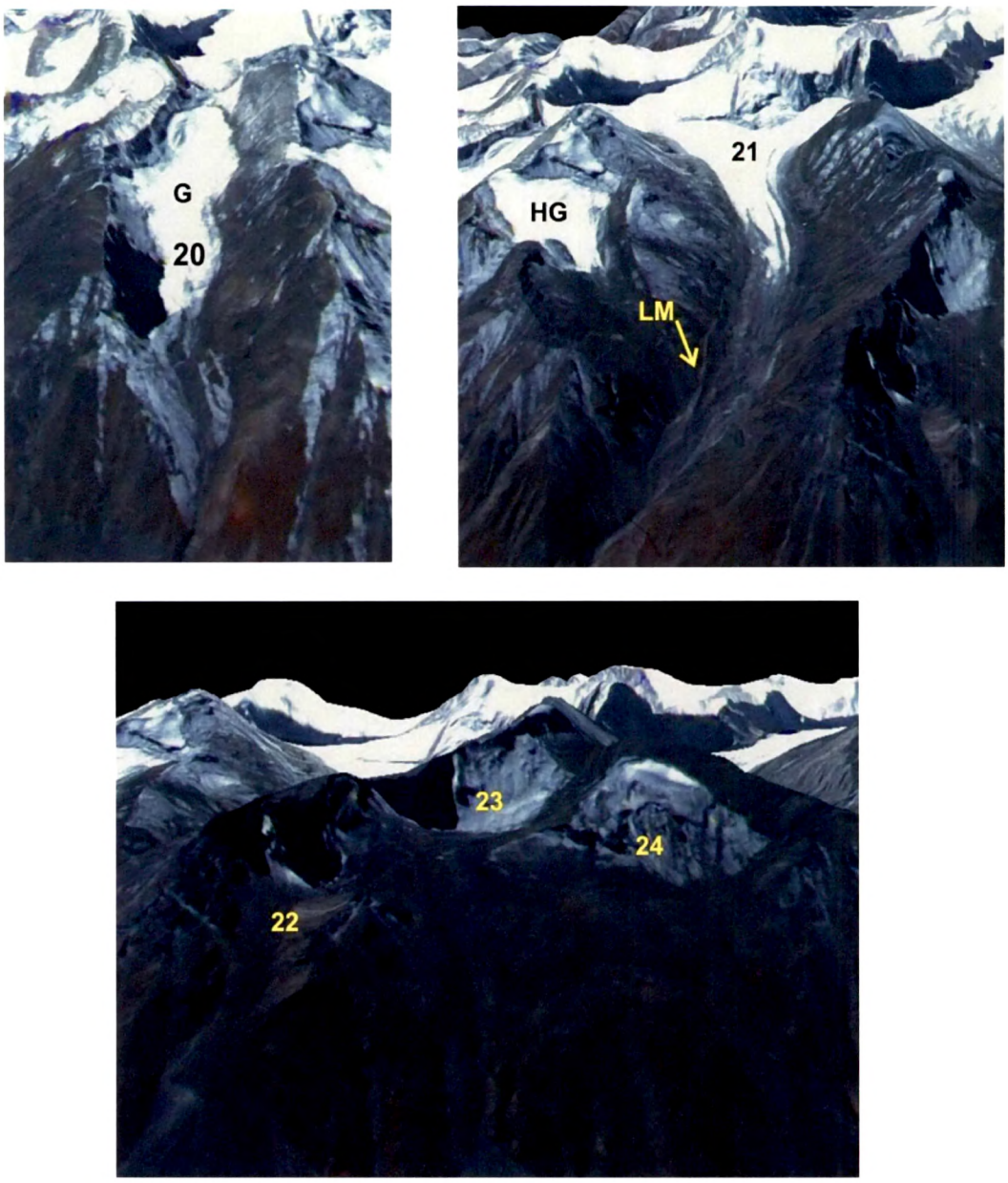
Fig 4.33 : **Geomorphological map of Karu garang (21), and glacier no. 20, 22, 23 & 24**



Index

A	Accumulation zone	D	Glacial Limit of 2005	●	Snout
B	Exposed ablation zone	E	Maximum Glacial Limit	20,21,22 23,24	Glacier No.
C	Moraine covered ablation zone	Dgv	Deglaciated valley		
EG	Empty Glacierete	HG	Hanging glacier		

Fig: 4.34 IRS P6, 2005, LISS III image of Karu garang (21), glacier no.20, 22, 23 & 24



Index

LM	Lateral moraine	HG	Hanging glacier
EG	Empty Glacierete	20,21,22 23,24	Glacier No.

Fig: 4.35 IRS 1D, 2001, LISS III + PAN merged image of Karu garang (21) and glacier No. 20,22,23 and 24 draped on DEM of SRTM data

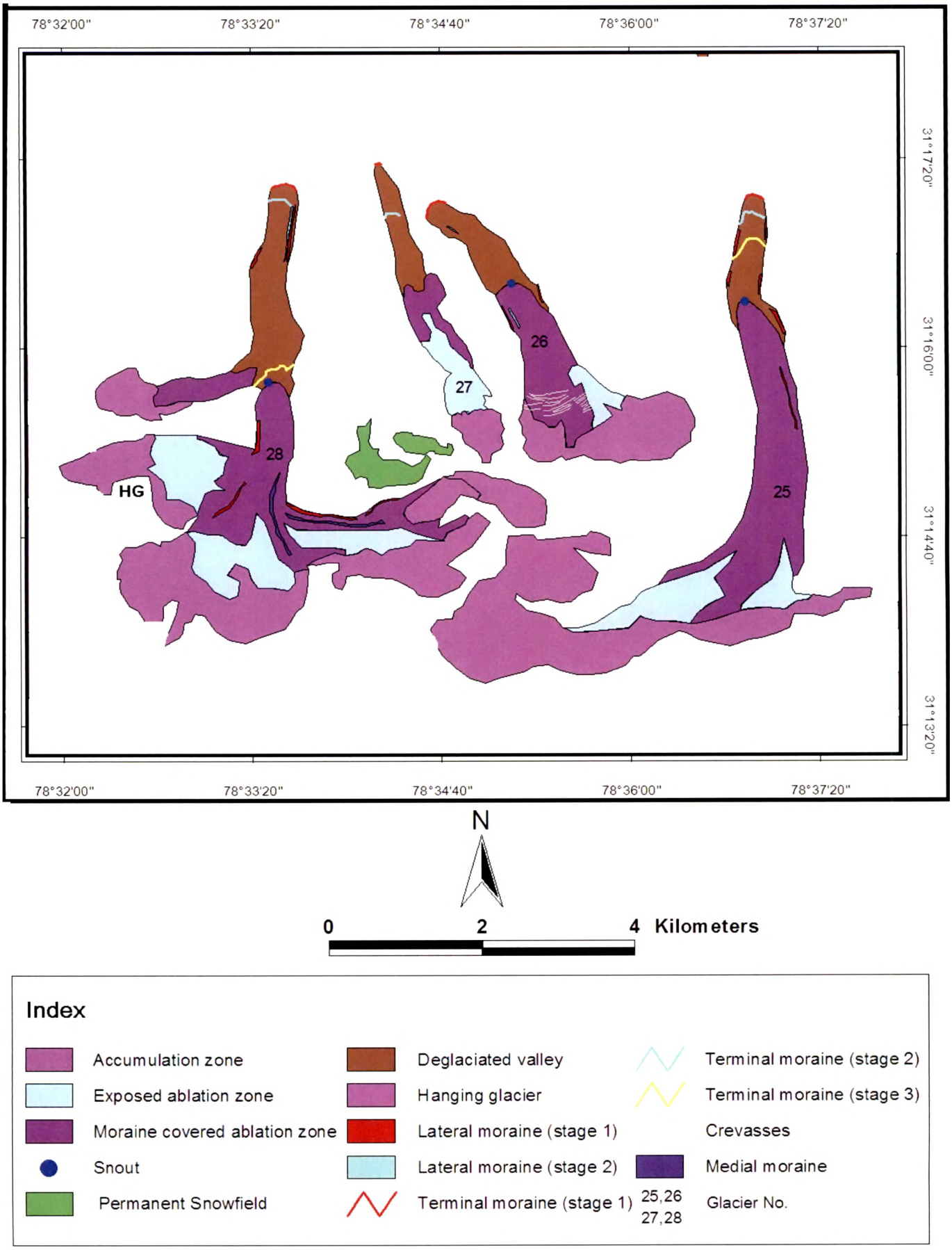
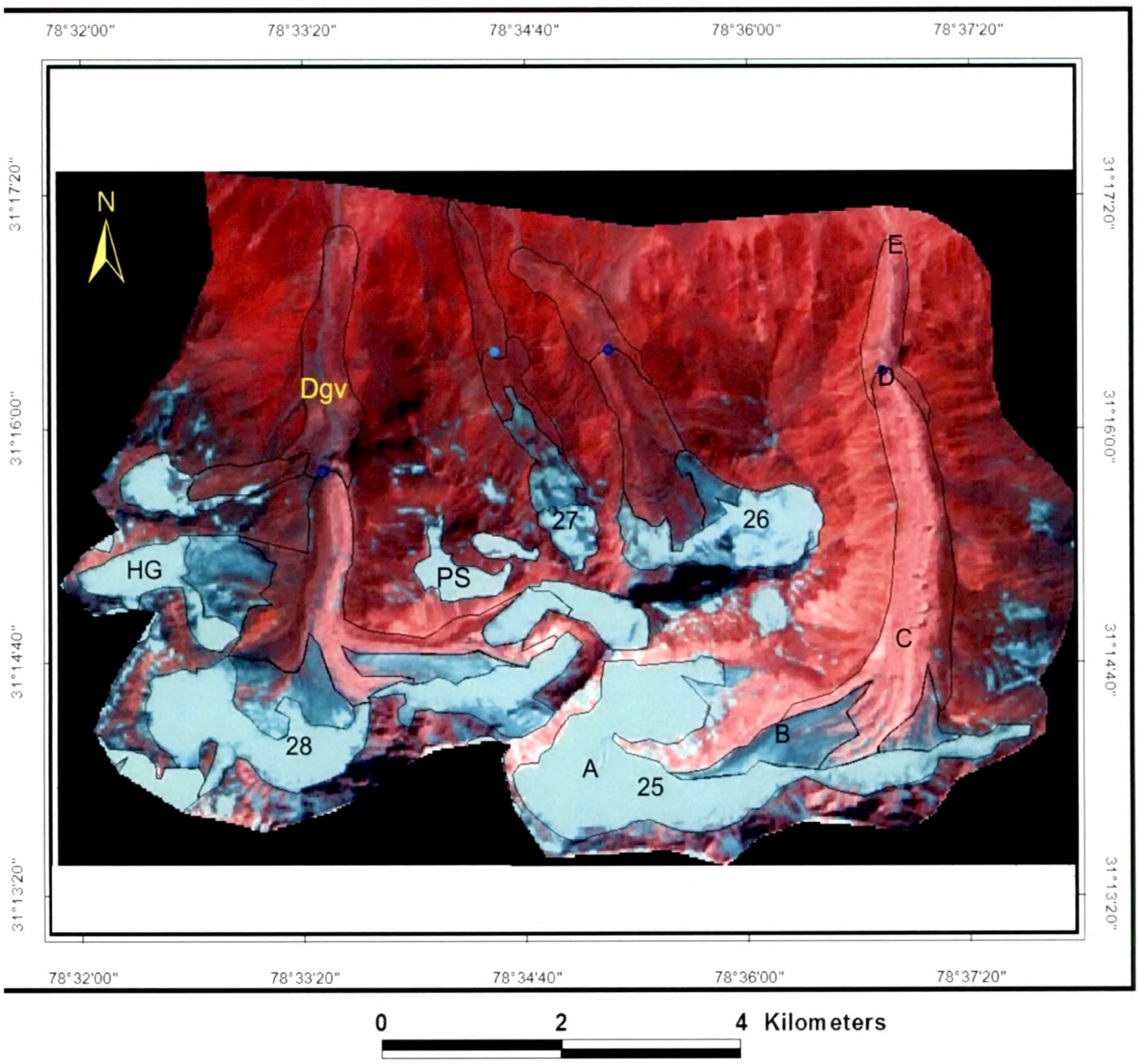


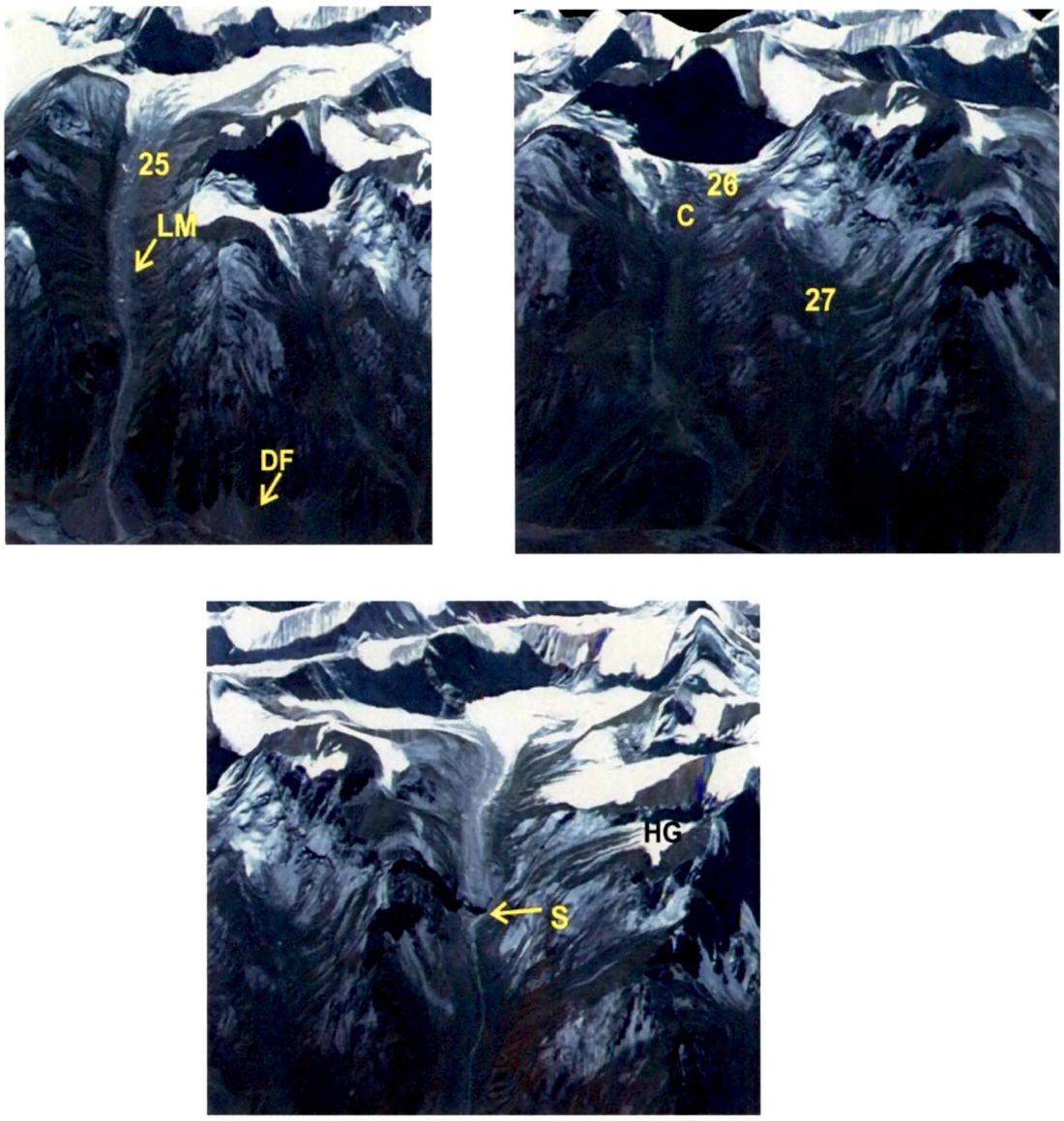
Fig 4.36 : **Geomorphological map glacier no. 25, 26, 27 and Sanchyo garng (28)**



Index

A	Accumulation zone	D	Glacial Limit of 2005	●	Snout
B	Exposed ablation zone	E	Maximum Glacial Limit	25,26, 27,28	Glacier no.
C	Moraine covered ablation zone	Dgv	Deglaciated valley		
HG	Hanging glacier	PS	Permanent snowfield		

Fig: 4.37 IRS P6, 2005, LISS III image of glacier no. 25,26,27 and Sanchyo garang (28)



Index

C	Crevasses	HG	Hanging glacier	TM	Terminal moraine
LM	Lateral moraine	DF	Debris fans	25,26 27,28	Glacier No.
S	Snout				

Fig: 4.38 IRS 1D, 2001, LISS III+PAN merged image of glacier no. 25,26,27 and Sanchyo garang (28), draped on DEM of SRTM data

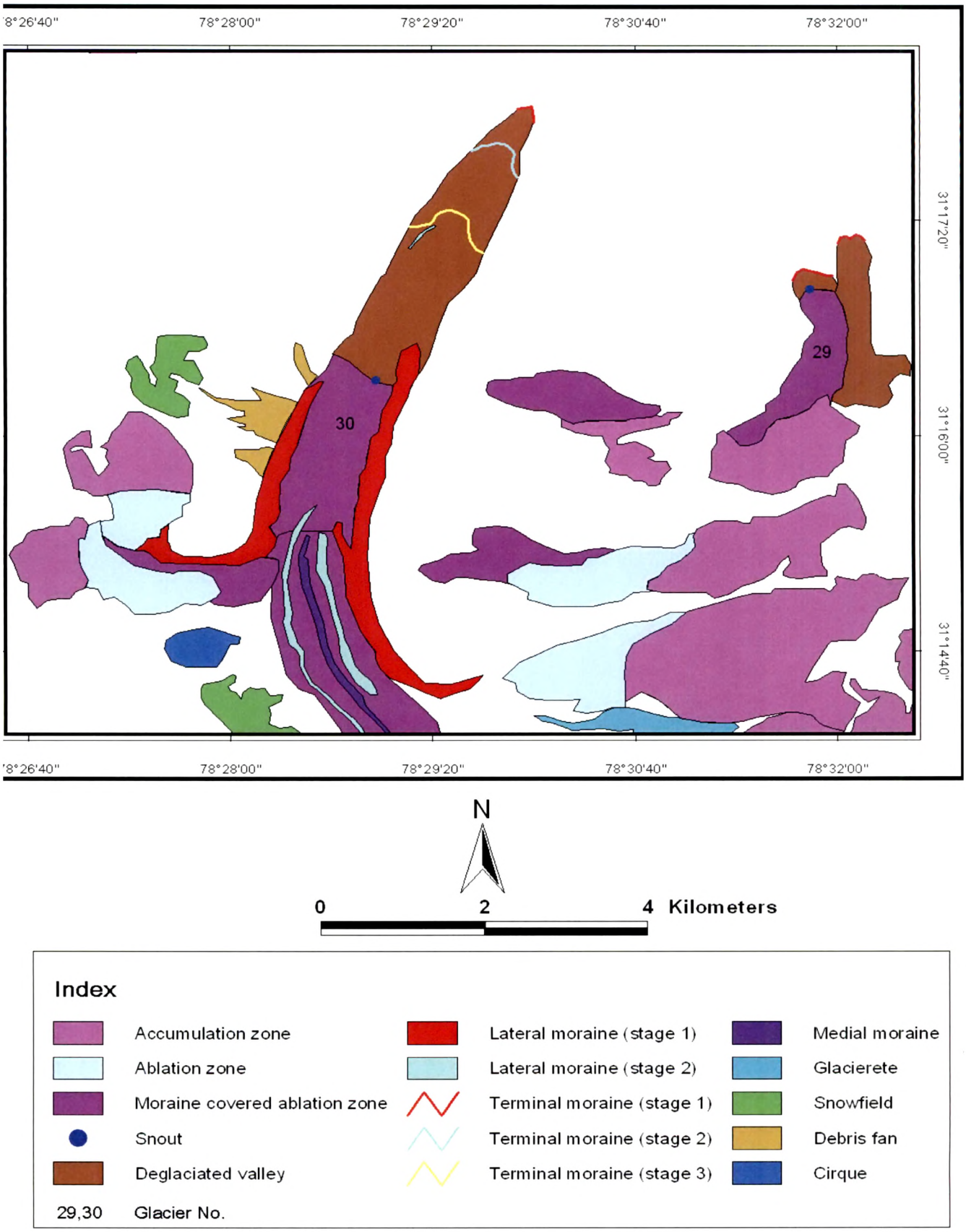


Fig 4.39 : Geomorphological map of Shakyul (29) and Jorya garang glacier (30)

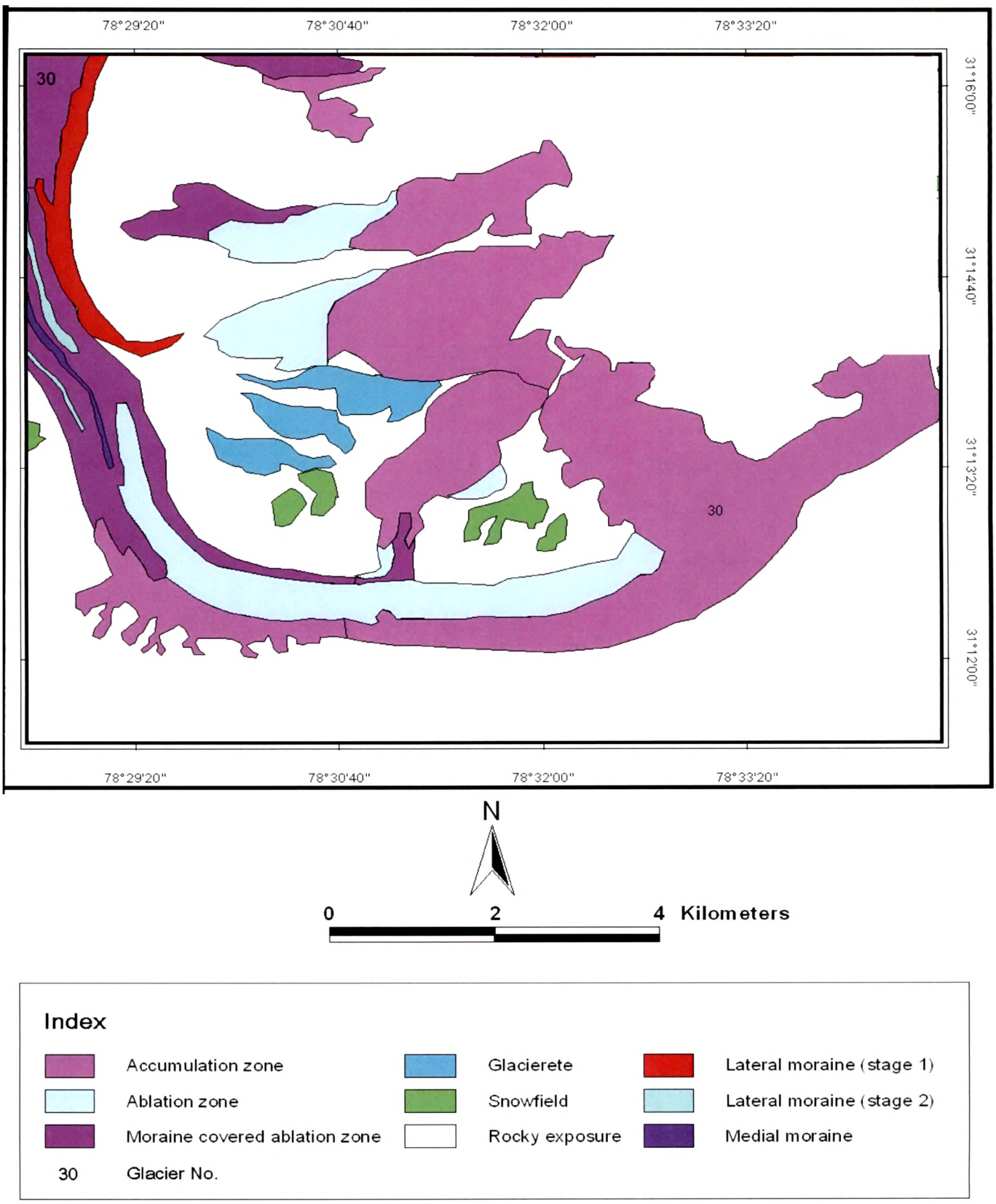
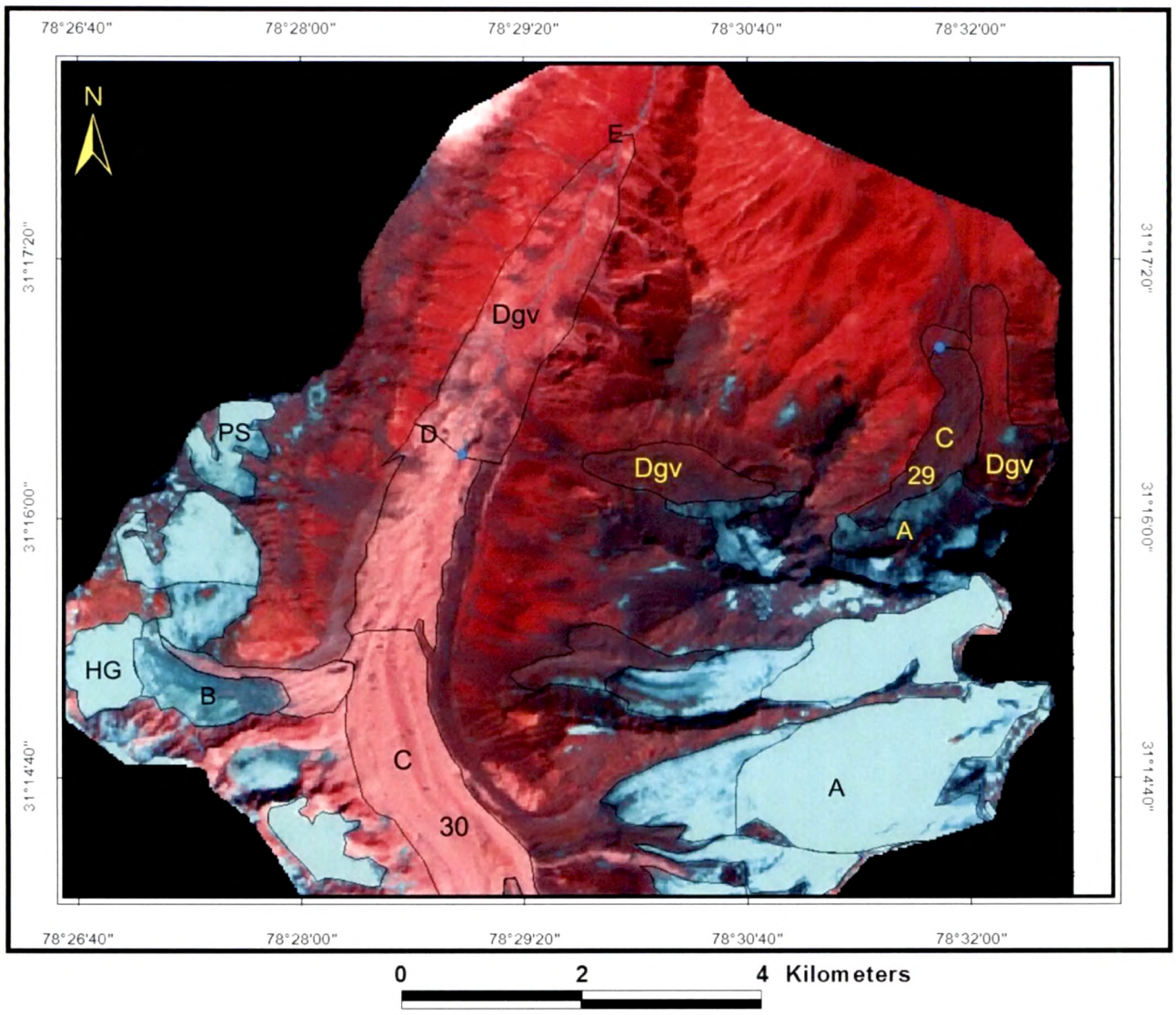


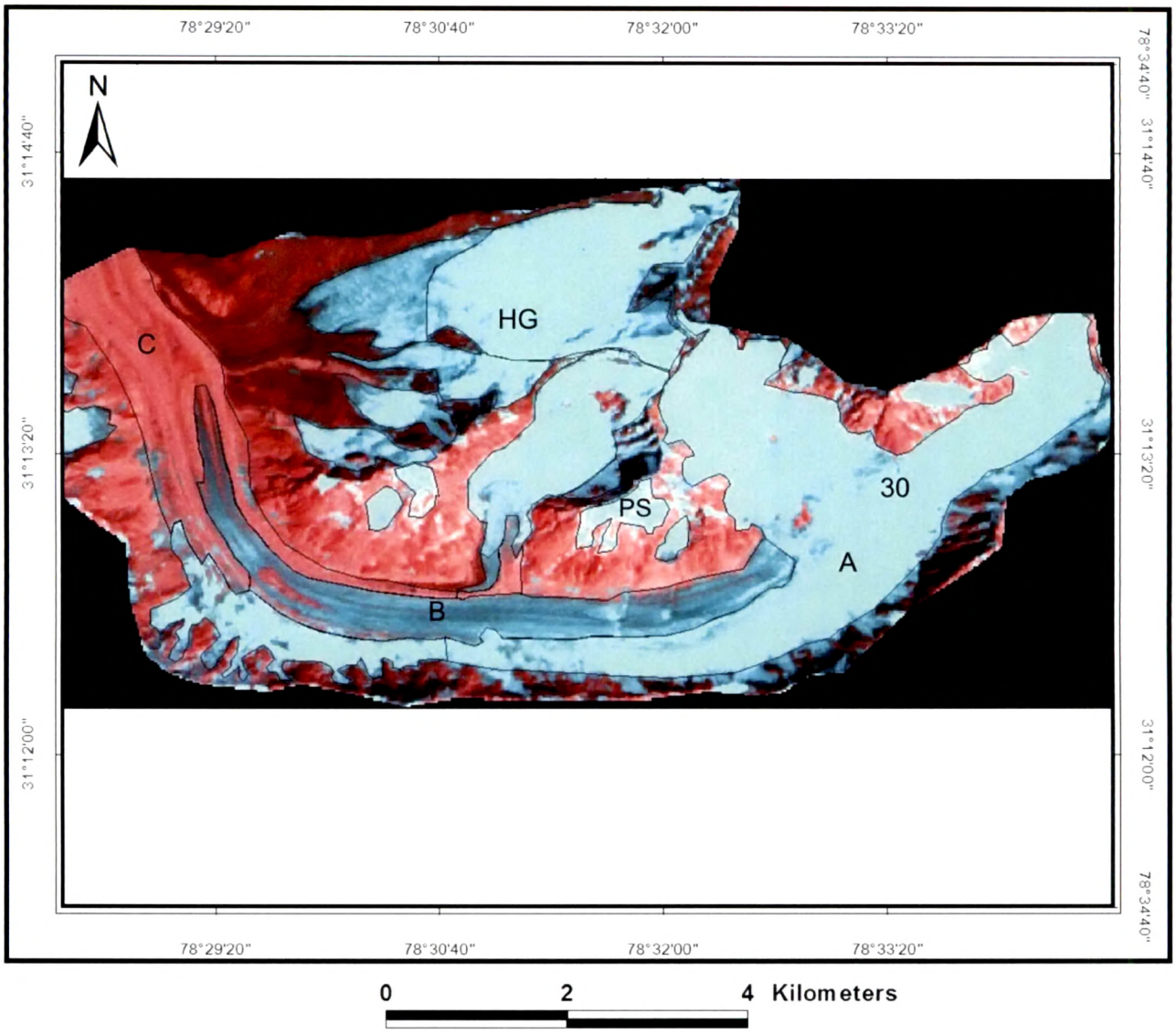
Fig 4.40 : **Geomorphological map of Jorya garang glacier (30)**



Index

A	Accumulation zone	D	Glacial Limit of 2005	●	Snout
B	Exposed ablation zone	E	Maximum Glacial Limit	29 & 30	Glacier No.
C	Moraine covered ablation zone	Dgv	Deglaciated valley		
HG	Hanging glacier	PS	Permanent snowfield		

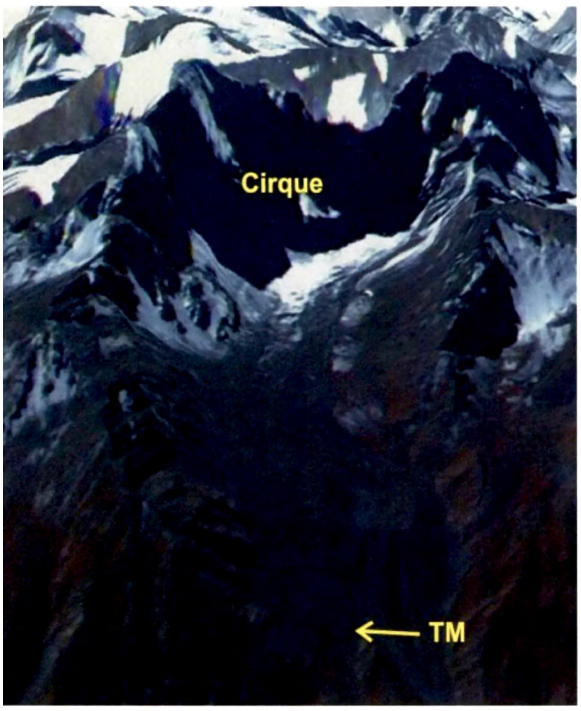
Fig: 4.41 IRS P6, 2005, LISS III image of Shakyul and Jorya garang glacier (29 & 30)

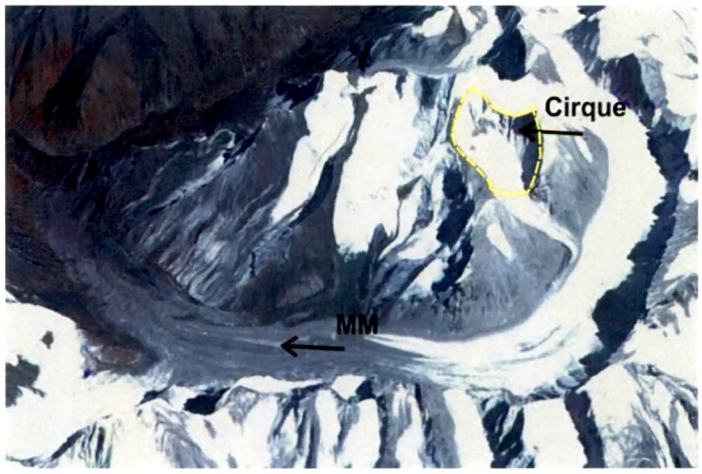


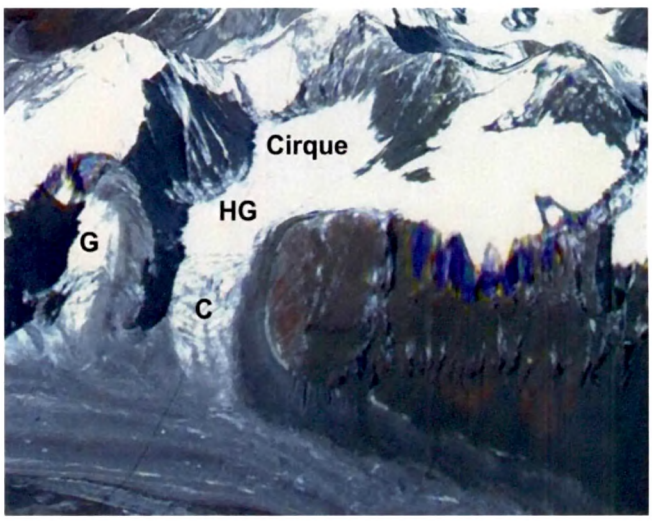
Index

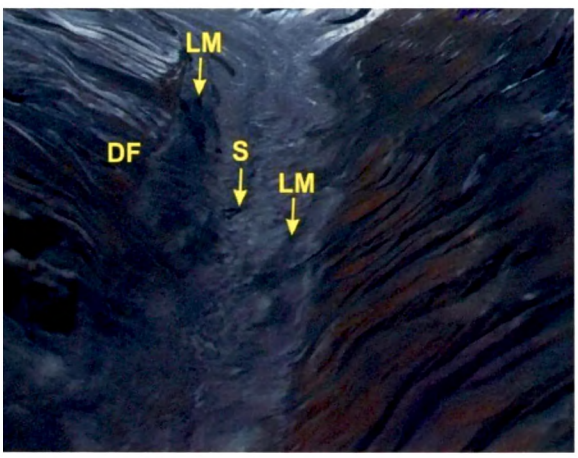
A	Accumulation zone	PS	Permanent snowfield
B	Exposed ablation zone	HG	Hanging glacier
C	Moraine covered ablation zone	29 & 30	Glacier No.

Fig: 4.42 IRS P6, 2005, LISS III image of Jorya garang glacier (30)









Index

C	Crevasses	G	Glacierete	HG	Hanging glacier
LM	Lateral moraine	DF	Debris fans	TM	Terminal moraine
MM	Medial moraine	29 & 30	Glacier No.		

Fig: 4.43 IRS 1D, 2001, LISS III+PAN merged image of Shakyul and Jorya garang glacier, draped on DEM of SRTM data (29 & 30)

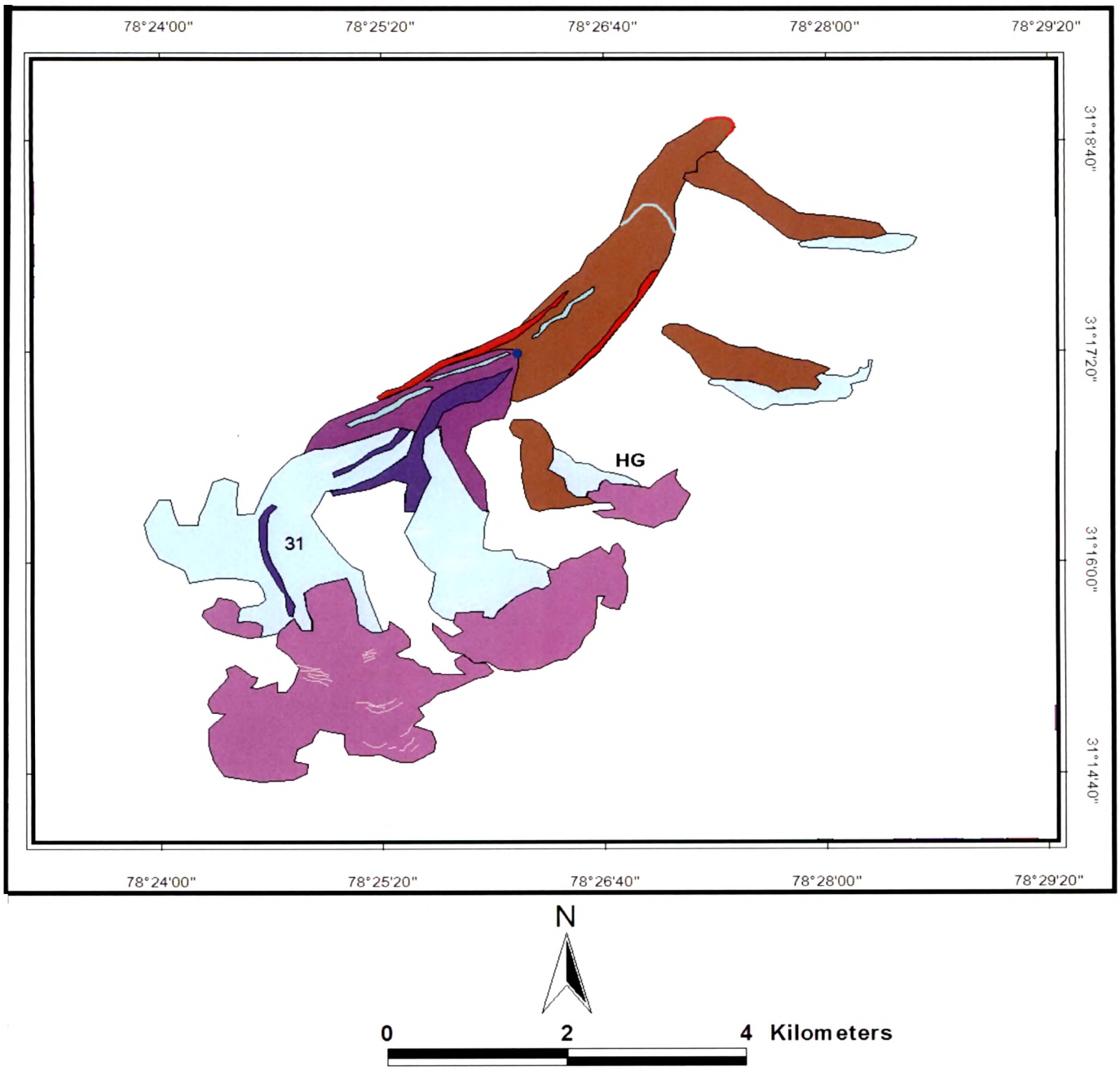
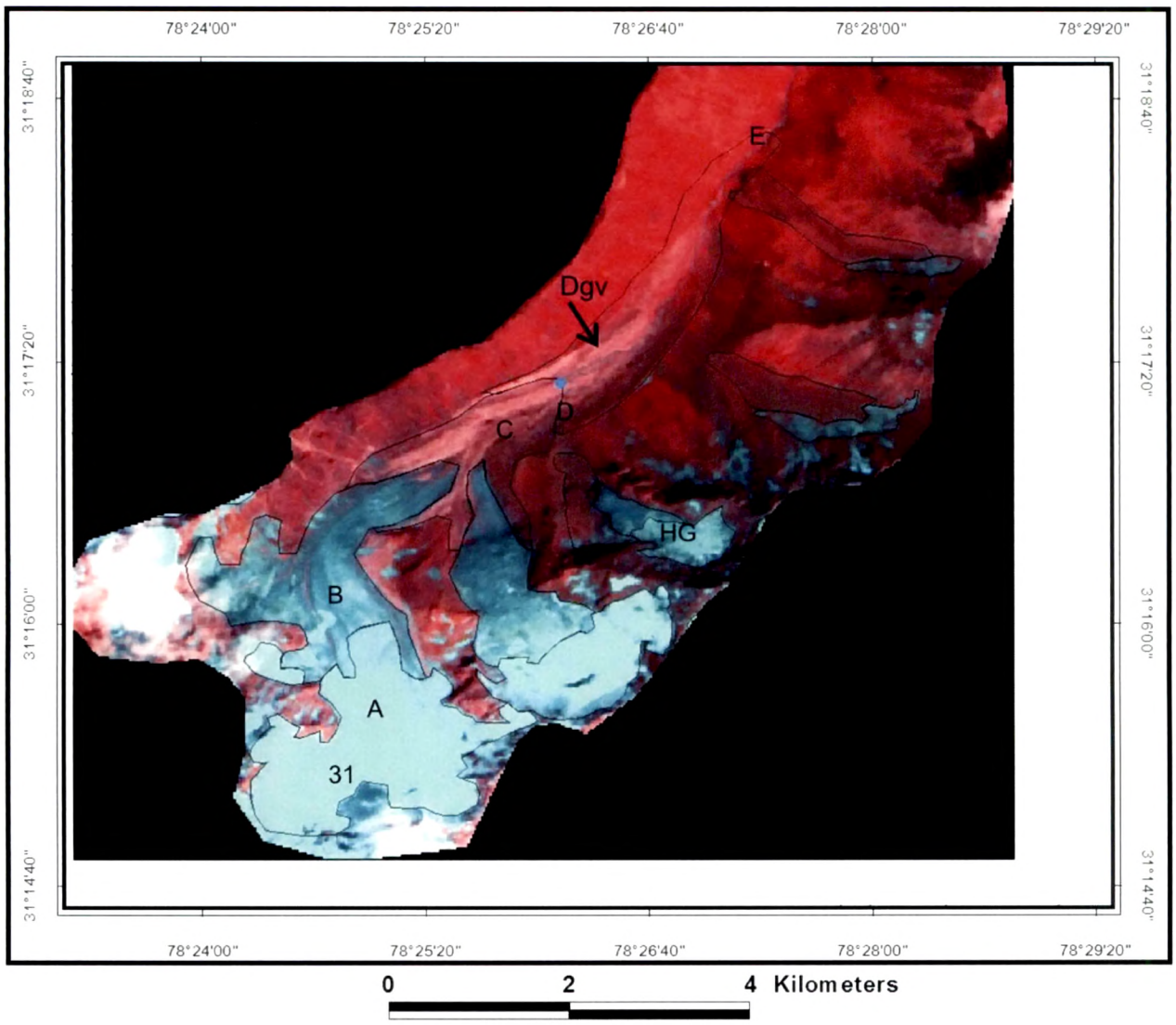


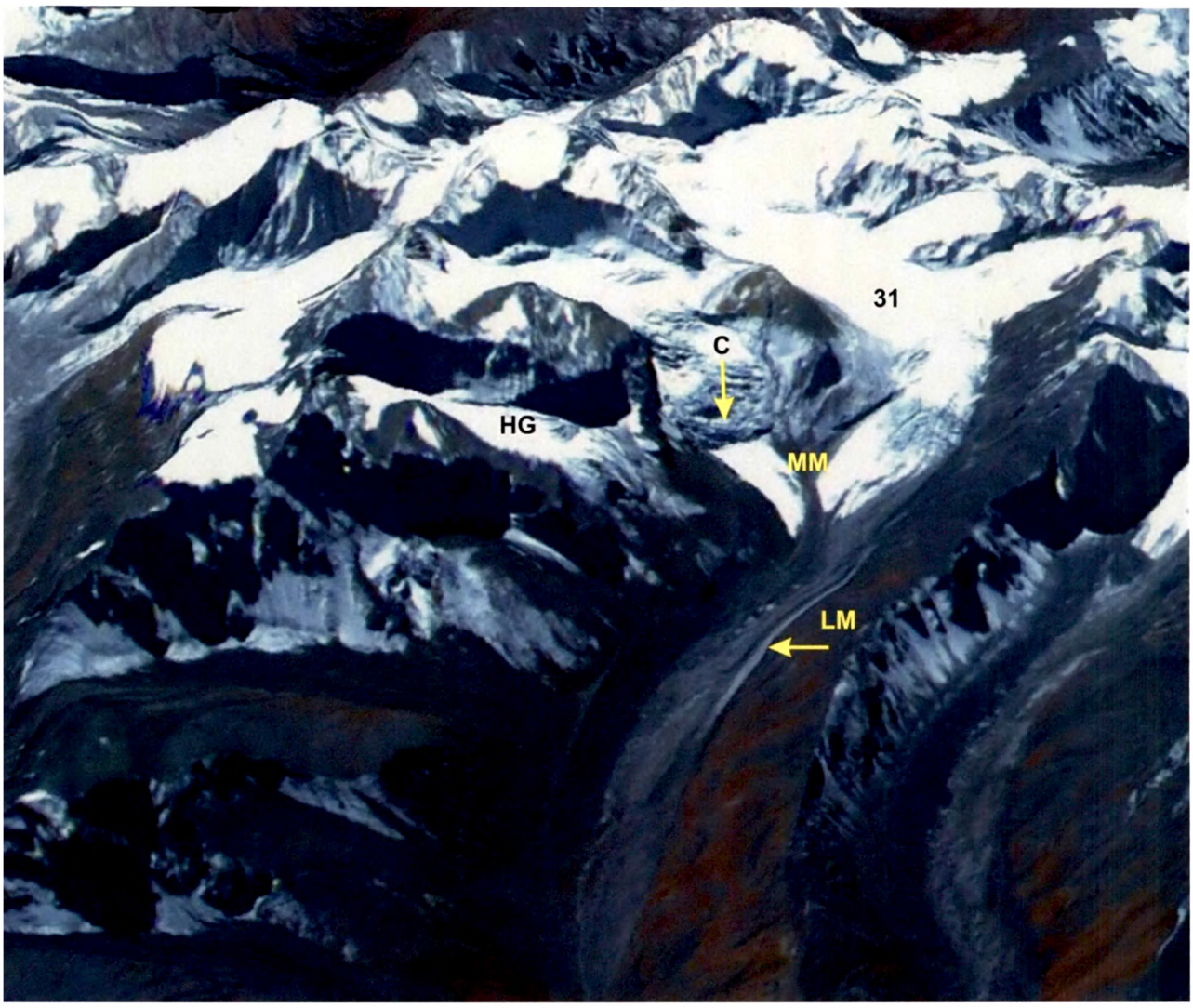
Fig 4.44 : Geomorphological map of Janapa garang glacier (31)



Index

A	Accumulation zone	D	Glacial Limit of 2005	●	Snout
B	Exposed ablation zone	E	Maximum Glacial Limit	HG	Hanging glacier
C	Moraine covered ablation zone	Dgv	Deglaciated valley	31	Glacier No.

Fig: 4.45 IRS P6, 2005, LISS III image of Janapa garang glacier (31)



Index

LM	Lateral moraine	MM	Medial moraine	HG	Hanging glacier
C	Crevasses	31	Glacier No.		

Fig: 4.46 IRS 1D, 2001, LISS III + PAN merged image of Janapa garang (31) glacier draped on DEM of SRTM data

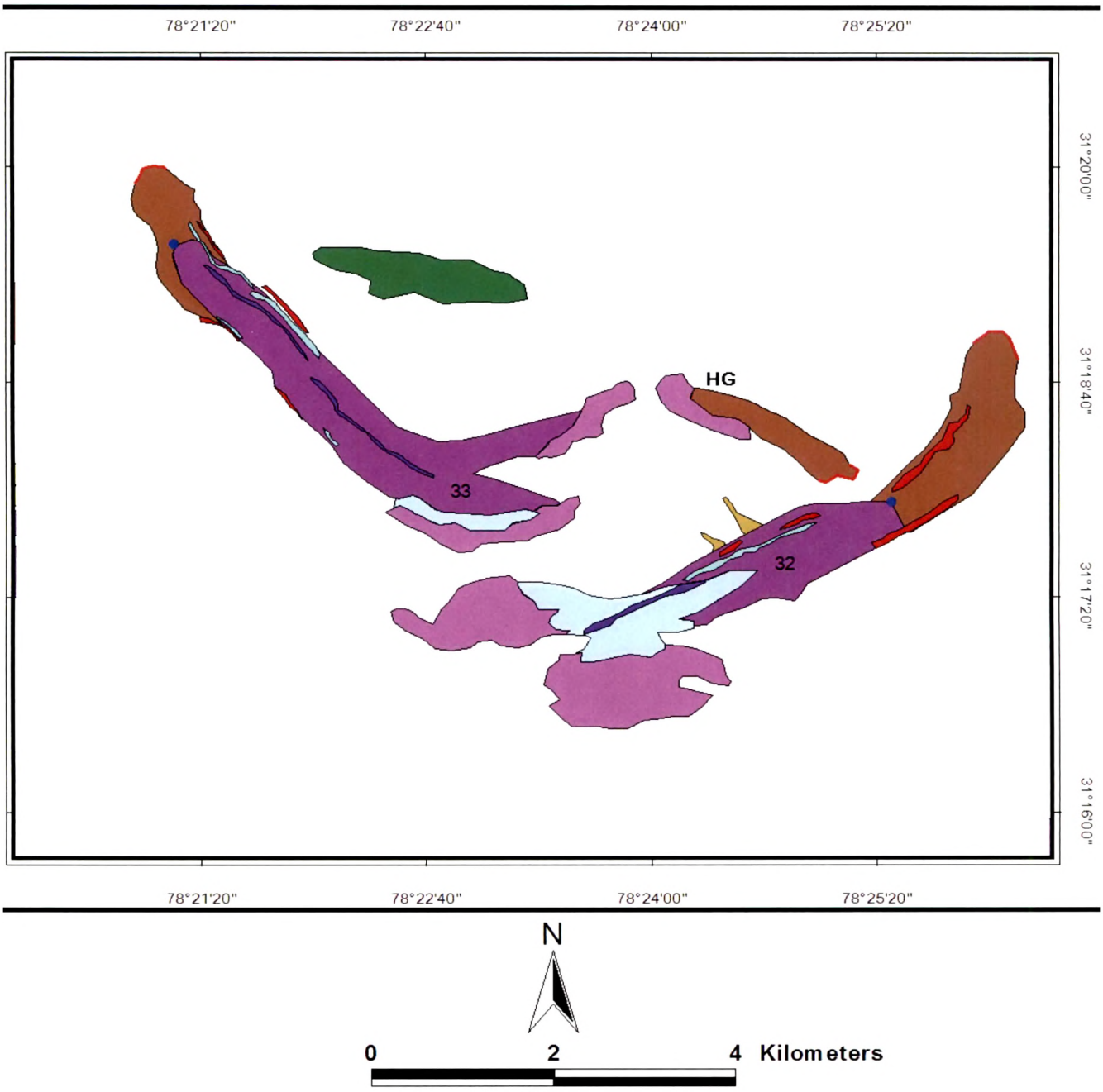
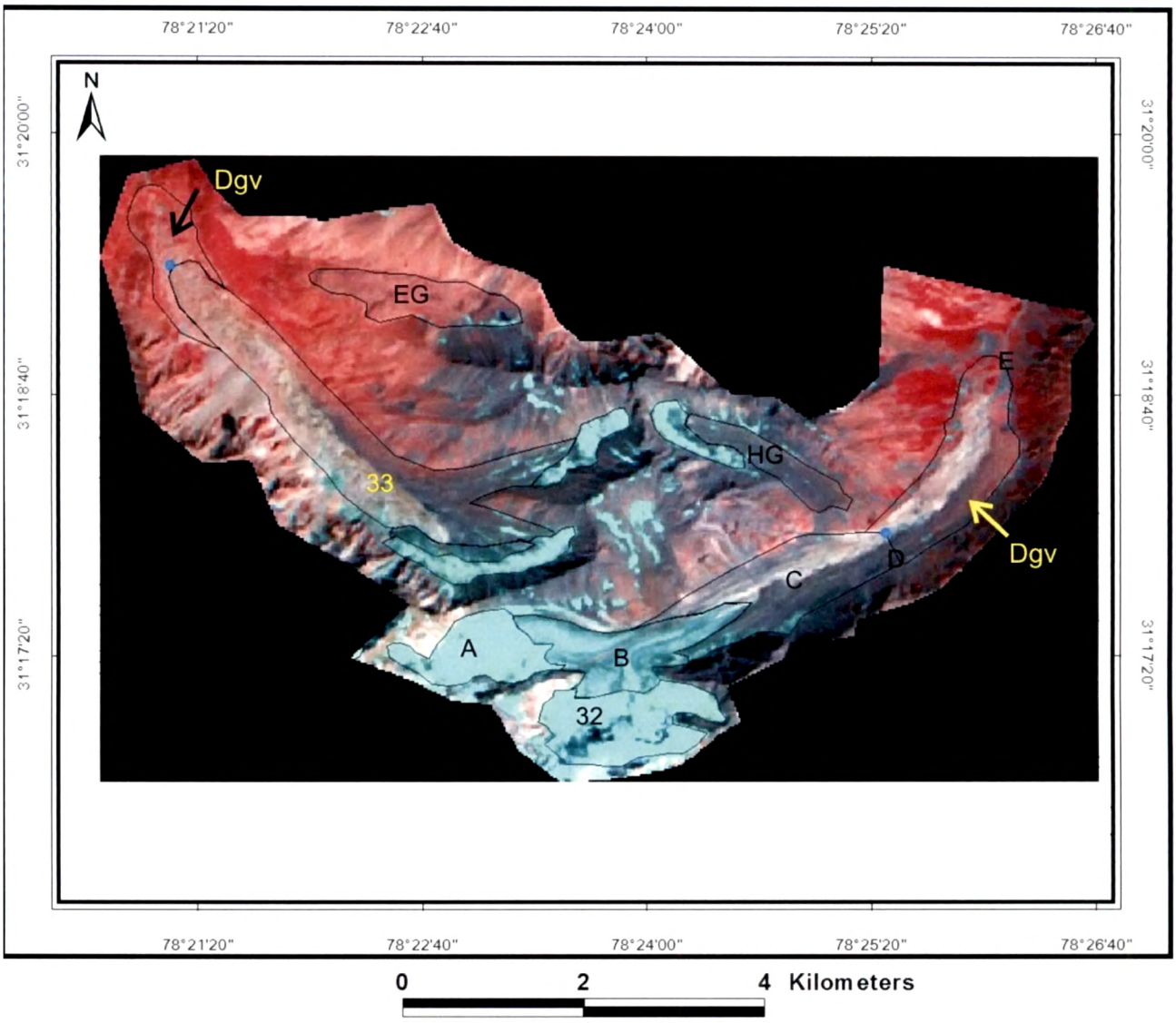


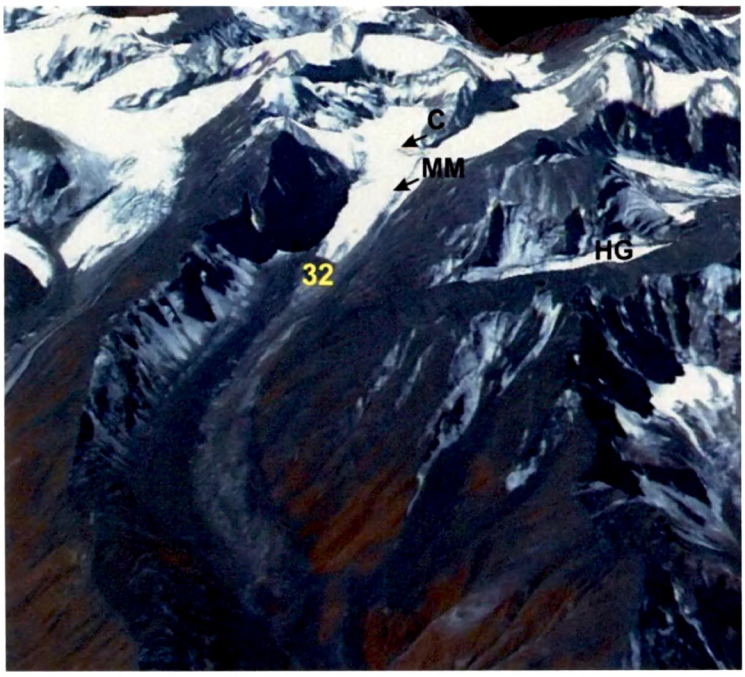
Fig 4.47 : Geomorphological map of Naradu garang (32) and Billare Bange glacier (33)

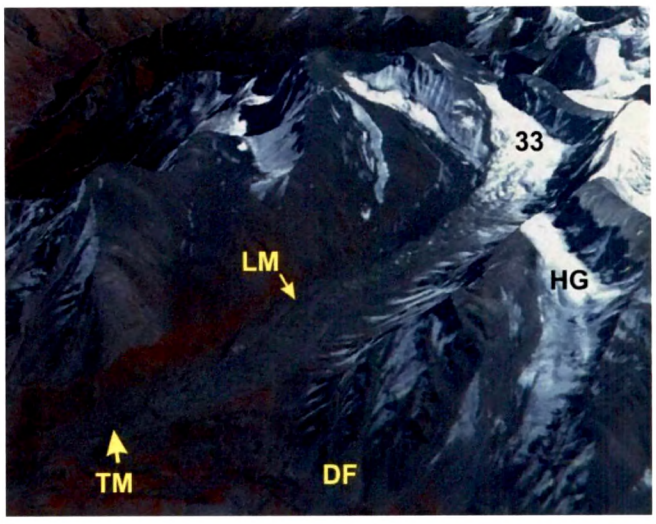


Index

A	Accumulation zone	D	Glacial Limit of 2005	●	Snout
B	Exposed ablation zone	E	Maximum Glacial Limit	32,33	Glacier No.
C	Moraine covered ablation zone	Dgv	Deglaciated valley		
EG	Empty Glacierete	HG	Hanging glacier		

Fig: 4.48 IRS P6, 2005, LISS III image of Naradu garang and Billare Bange glacier (32 & 33)





Index

C	Crevasses	HG	Hanging glacier	TM	Terminal moraine
LM	Lateral moraine	DF	Debris fans		
MM	Medial moraine	32,33	Glacier No.		

Fig: 4.49 IRS 1D, 2001, LISS III + PAN merged image of Naradu garang (32) and Billare Bange glacier(33) draped on DEM of SRTM data

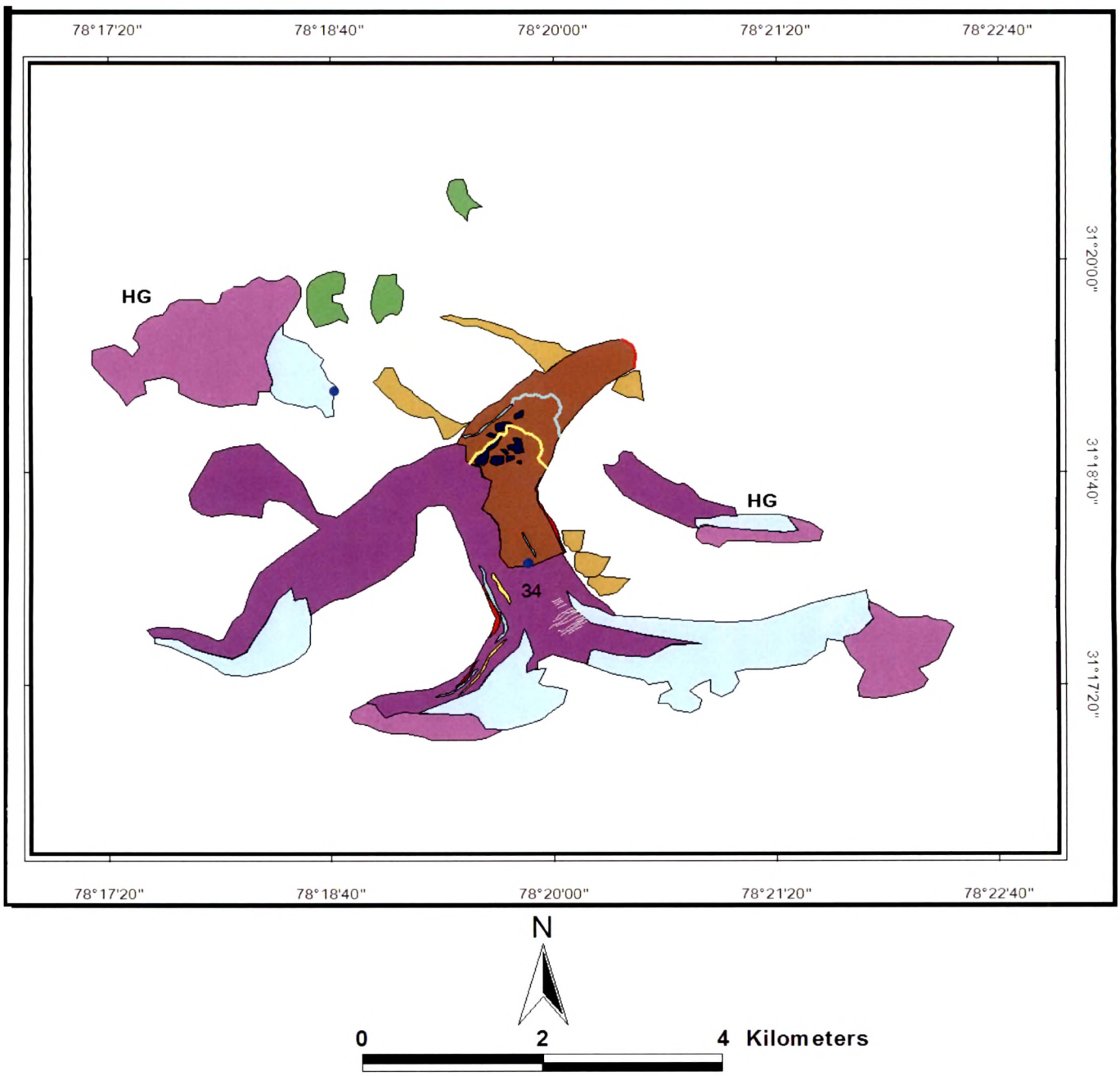
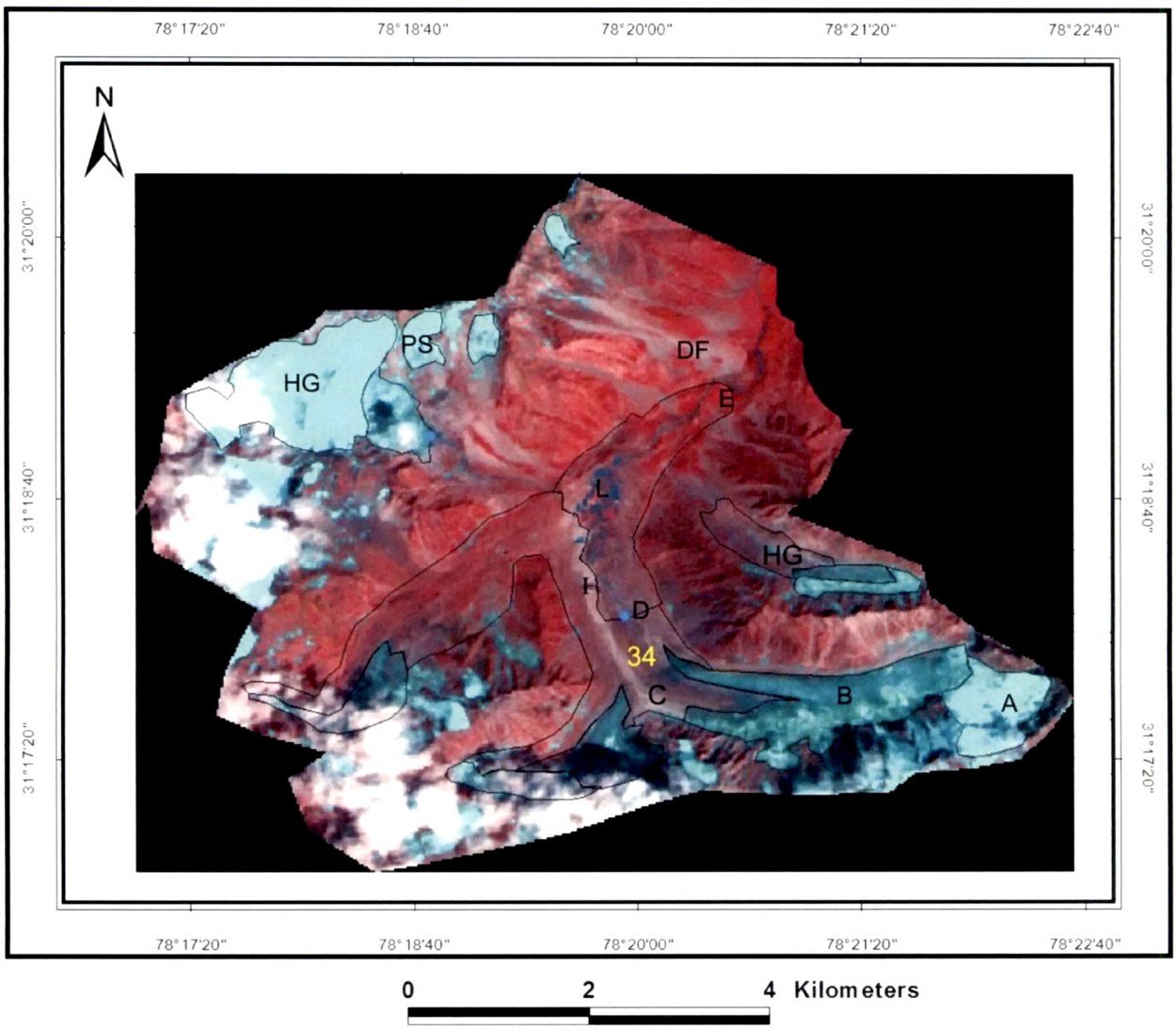


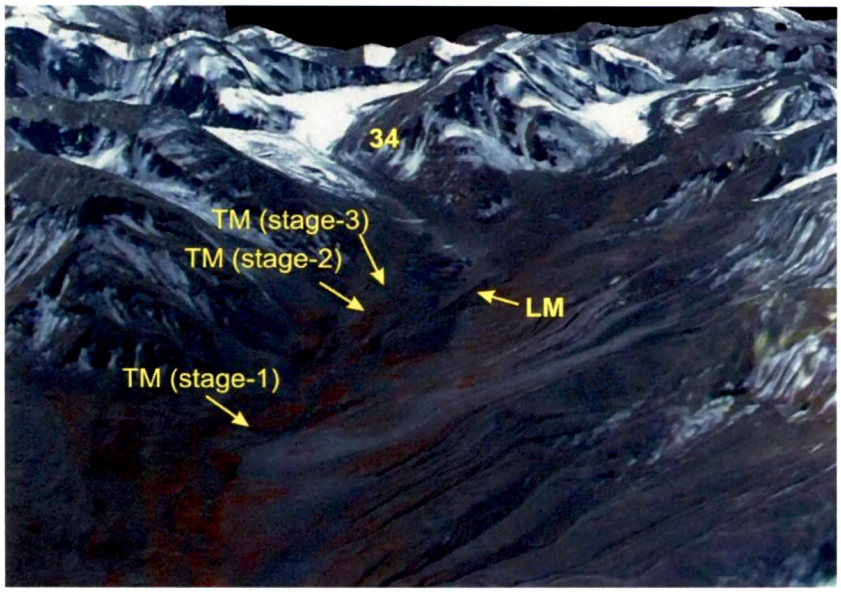
Fig 4.50 : **Geomorphological map of Shaune garang glacier (34)**

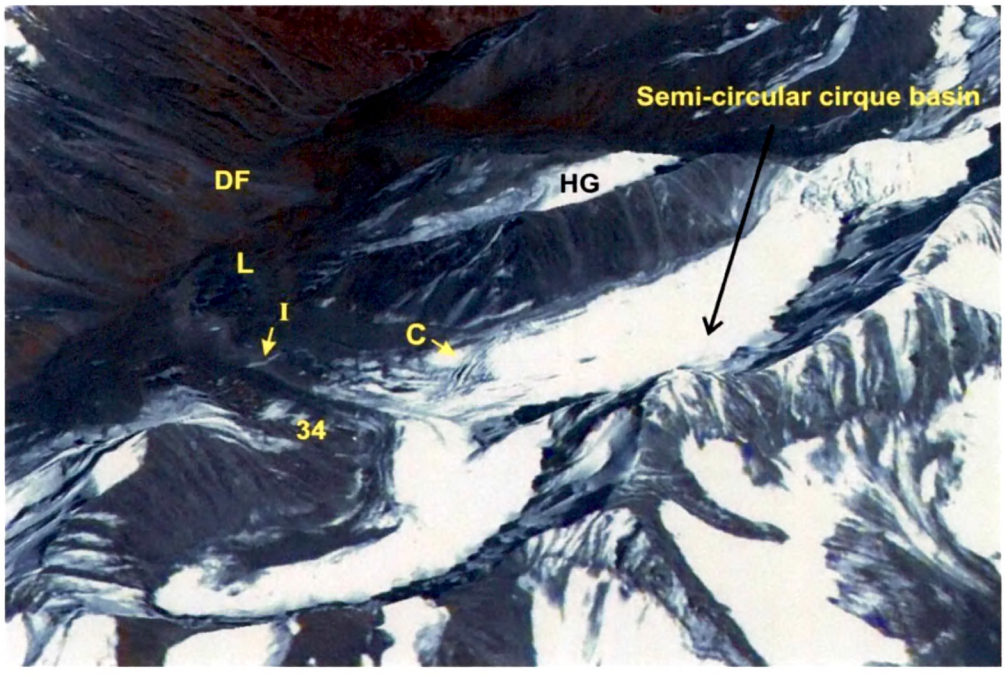


Index

A	Accumulation zone	D	Glacial Limit of 2005	L	Lake
B	Exposed ablation zone	E	Maximum Glacial Limit	●	Snout
C	Moraine covered ablation zone	G	Glacierete	HG	Hanging glacier
PS	Permanent snowfield	DF	Debris fans	I	Ice wall
34	Glacier No.				

Fig: 4.51 IRS P6, 2005, LISS III image of Shaune garang glacier (34)

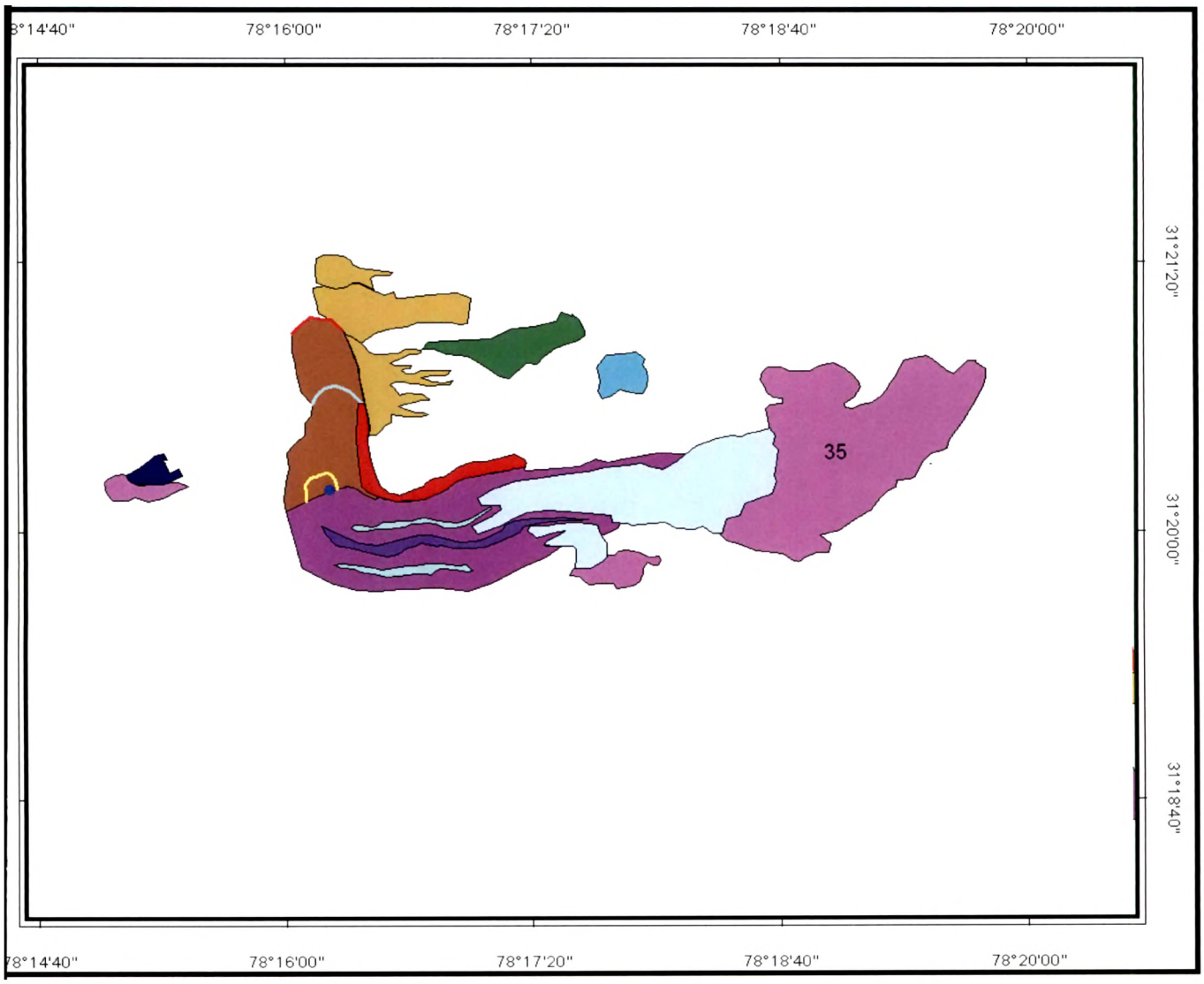


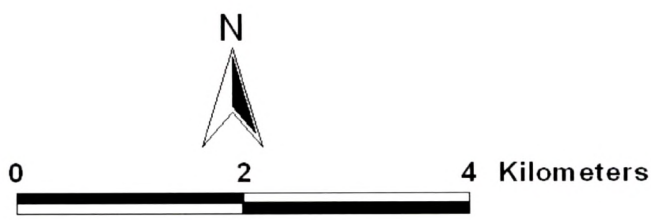


Index

L	Lake	DF	Debris fans	HG	Hanging glacier
C	Crevasses	I	Ice wall	TM	Terminal moraine
LM	Lateral moraine	34	Glacier No.		

Fig: 4.52 IRS 1D, 2001, LISS III + PAN merged image of Shaune garang glacier (34) draped on DEM of SRTM data

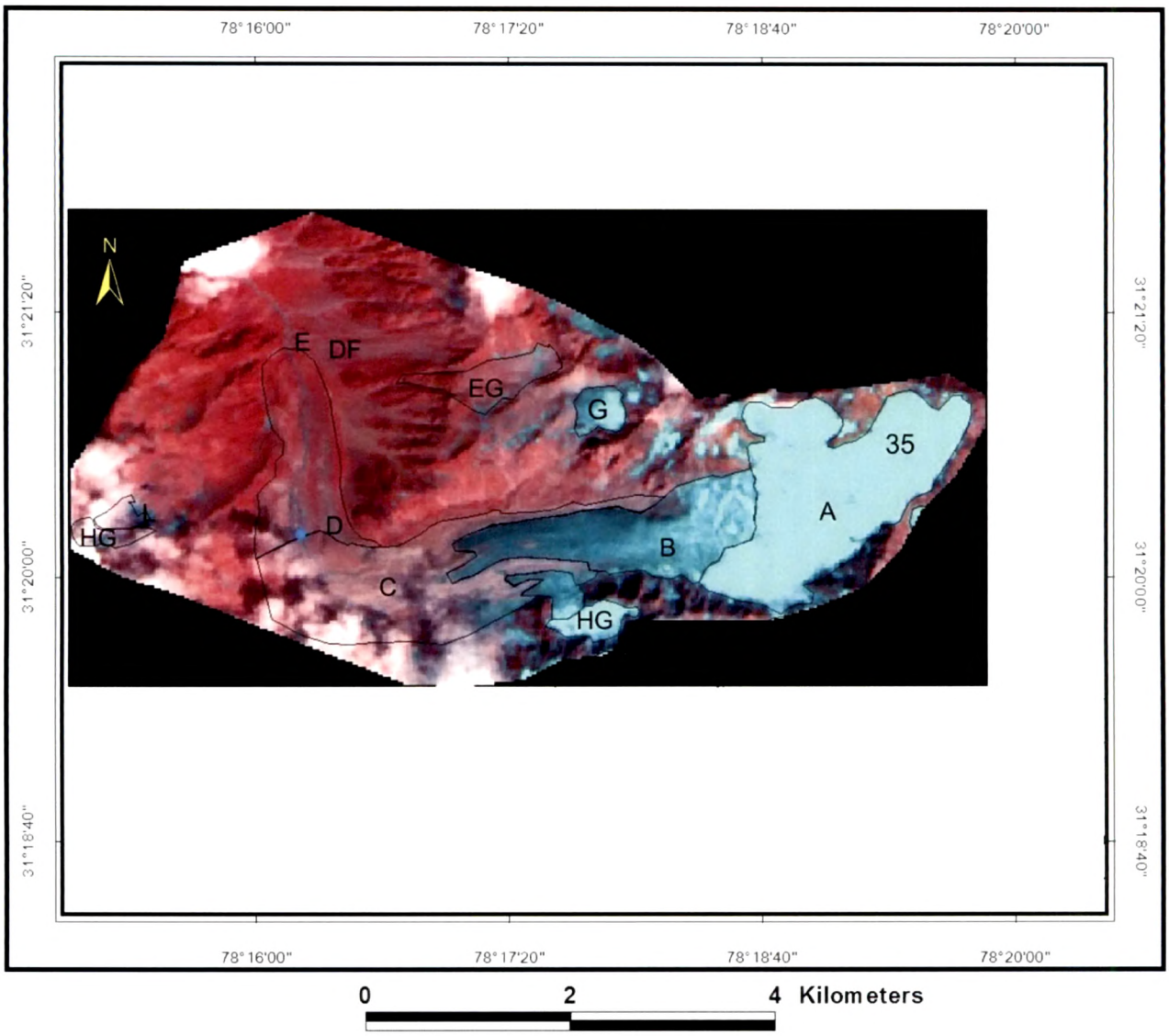




Index

	Accumulation zone		Lateral moraine (stage 2)		Empty glacierete
	Ablation zone		Terminal moraine (stage 1)		Debris fan
	Moraine covered ablation zone		Terminal moraine (stage 2)		Lake
	Snout		Terminal moraine (stage 3)	35	Glacier No.
	Deglaciated valley		Medial moraine		
	Lateral moraine (stage 1)		Glacierete		

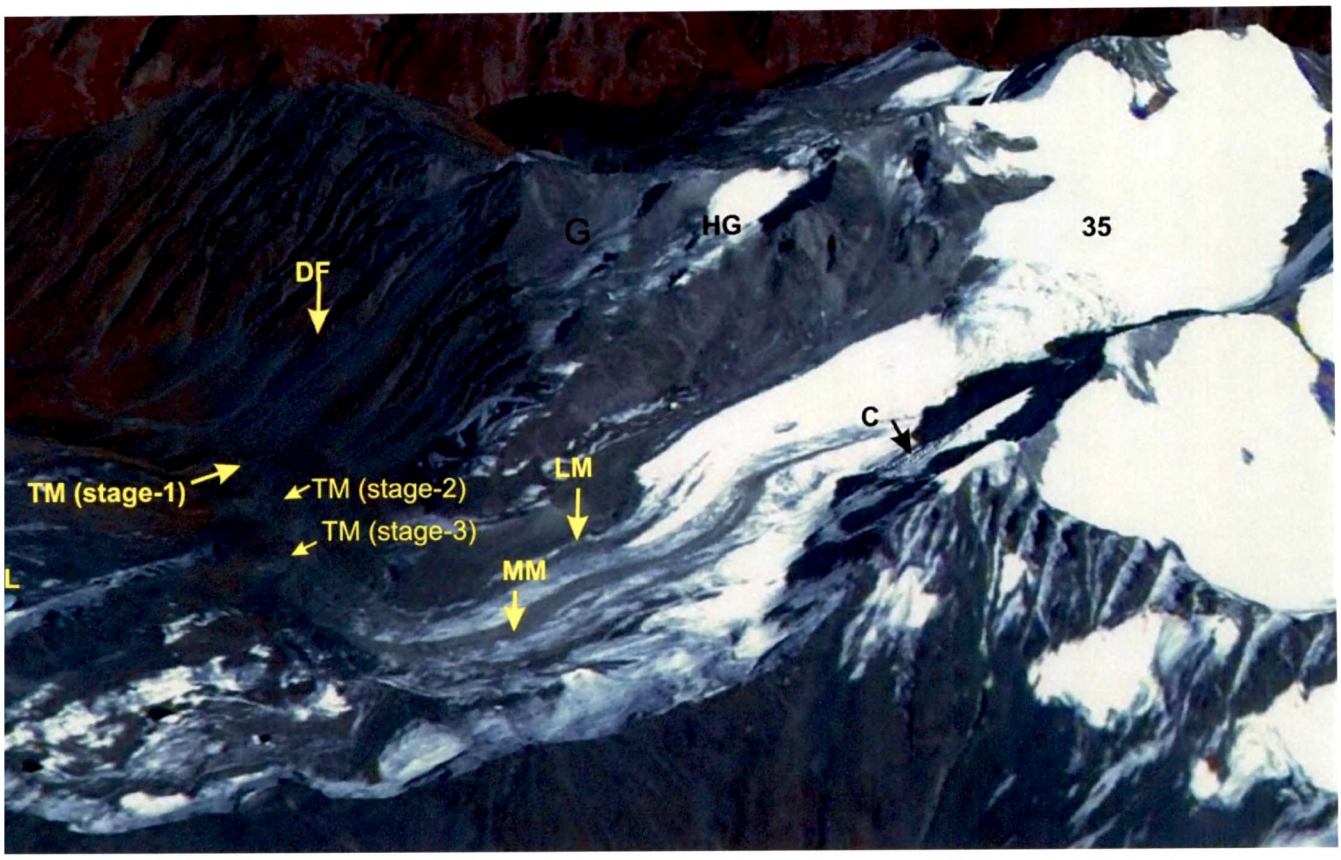
Fig 4.53 : **Geomorphological map of Hania glacier (35)**



Index

A	Accumulation zone	D	Glacial Limit of 2005	L	Lake
B	Exposed ablation zone	E	Maximum Glacial Limit	●	Snout
C	Moraine covered ablation zone	G	Glacierete	HG	Hanging glacier
EG	Empty Glacierete	DF	Debris fans	35	Glacier No.

Fig: 4.54 IRS P6, 2005, LISS III image of Hania glacier (35)



Index

L	Lake	G	Glacierete	HG	Hanging glacier
C	Crevasses	DF	Debris fans	TM	Terminal moraine
LM	Lateral moraine	MM	Medial moraine	35	Glacier No.

Fig: 4.55 IRS 1D, 2001, LISS III + PAN merged image of Hania glacier (35) draped on DEM of SRTM data