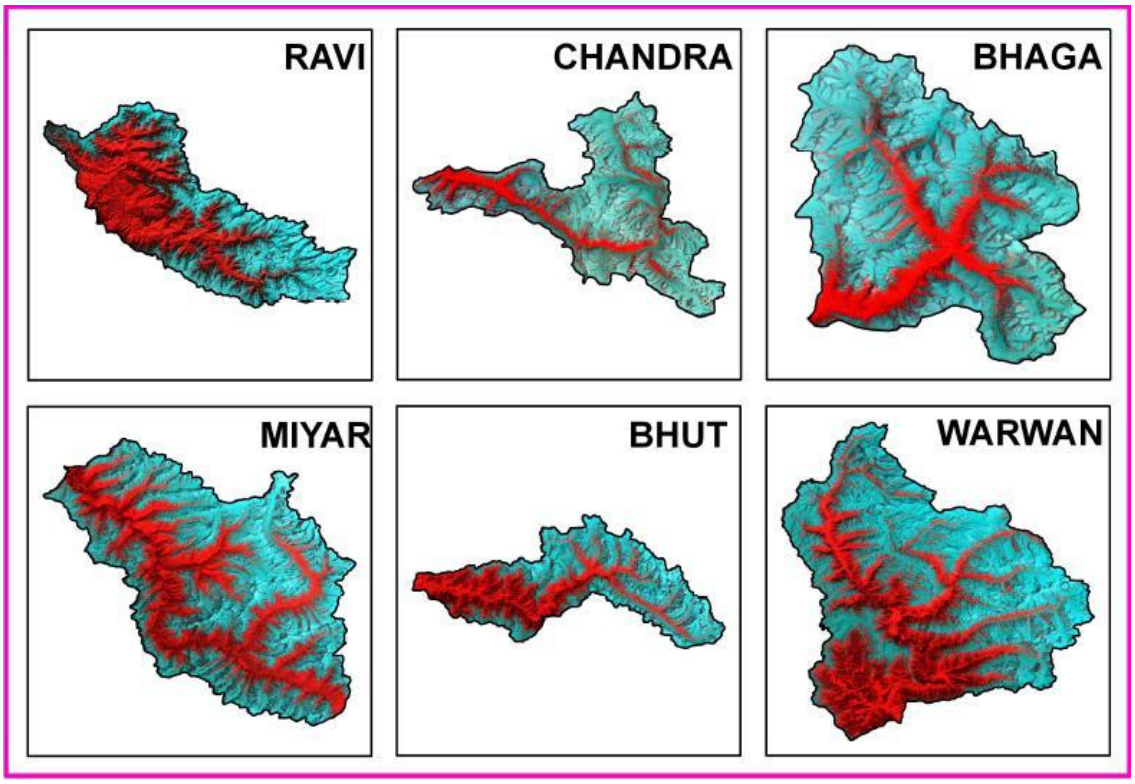
SNOW COVER ATLAS OF THE CHENAB BASIN

Sub-basins: Ravi, Chandra, Bhaga, Miyar, Bhut and Warwan

(A Joint Project of Indian Space Research Organisation and Ministry of Environment, Forests & Climate Change, Govt. of India)

Year 2013-2014



Faculty of Geomatics and Space Applications
CEPT University- Ahmadabad 380009
&
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January, 2015

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SPACE APPLICATIONS CENTRE (ISRO), AHMEDABAD - 380015

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Abstract	This atlas gives subbasin-wise distribution of snow cover in the Chenab basin from October 2013 to June 2014. The subbasins included in this report are Ravi, Chandra, Bhaga, Miyar, Bhut and Warwan. The areal extent of snow cover was estimated in fully automatic mode using Normalized Difference Snow Index (NDSI) based algorithm. For this purpose AWiFS sensor of Resourcesat satellite was used. This atlas gives snow cover products, statistics and seasonal snow depletion curve. It is expected that this data will be useful for hydrological and climatological applications.
Key words	Snow cover, NDSI, AWiFS, depletion curve, Ravi, Chandra, Bhaga, Miyar, Bhut and Warwan basins.
Security Classification	Unrestricted
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CONTENTS

1. **Introduction**

Snow covers almost 40 per cent of the Earth's land surface during Northern Hemisphere winter. This makes albedo and areal extent of snow as important component of the Earth's radiation balance (Foster and Chang, 1993). In addition, large areas in the Himalayas are also covered by snow during winter. Area of snow can change significantly during winter and spring. This can affect stream flow for rivers originating in the higher Himalayas. All the rivers originating from higher Himalayas receive almost 30-50 % of annual flow from snow and glacier melt run off (Agarwal et al., 1983). In addition, snow pack ablation is highly sensitive to climatic variation. Increase in atmospheric temperature can influence snowmelt and stream runoff pattern (Kulkarni et al., 2002). Therefore, mapping of the areal extent and reflectance of snow are important parameter for various climatological and hydrological applications. In addition, extent of snow cover can also be used as input for numerous other applications.

Mapping and monitoring of seasonal snow cover using field methods are normally very difficult in a mountainous terrain, like the Himalayas. Therefore, remote sensing techniques have been extensively used for snow cover monitoring. Snow cover monitoring using satellite images were started by using the TIROS-1 satellite from April 1960 (Singer and Popham 1963). Since then, the potential for operational satellite-based mapping has been enhanced by the development of higher temporal frequency and satellite sensors with higher spatial resolution. In addition, satellites with better radiometric resolutions, such as NOAA have been used successfully for snow mapping (Hall et al., 1995). This is possibly due to the distinct spectral reflectance characteristics of snow in visible and near infrared regions. India has launched series of Indian Remote Sensing satellite (IRS) to study the different earth resources. Previously launched satellites have flown with many sensors having different spatial, temporal and spectral resolutions. Recently launched RESOURCESAT-1 satellite has three different sensors namely LISS III, LISS IV & AWiFS with different spatial, temporal and spectral resolutions as desired for different applications. AWiFS (Advanced Wide Field Sensor) is an advanced version of earlier Indian satellite sensor WiFS (Wide Field Sensor) with improved spectral and spatial resolutions maintaining the same repetivity. There are a series of other polar orbiting satellites, like Landsat, NOAA and MODIS etc., which have provided information on different aspects of

snow. Geo-stationary satellites also proved their utility in mapping/monitoring the snow-covered regions. Information generated from satellite observations has been extensively used for snowmelt runoff modeling (Kulkarni et al., 1997).

2. Study Area:

This Atlas gives distribution of snow cover in six subbasins of the Chenab basin. These are Ravi, Chandra, Bhaga, Miyar, Bhut and Warwan sub basins. Locations of these basins are shown in Figure 1.

3. Data used:

AWiFS data from October 2013 to June 2014 were used in this study.

4. Normalised Difference Snow Index (NDSI):

In general, the reflectance of snow is high at the red end of the visible spectrum. It tends to decline in the near-infrared region until 1090 nm, where slight gain in reflectance occurs and gives a minor peak at approximately 1090 to 1100 nm. One of the important difficulties in snow cover monitoring is the presence of cloud cover. Cloud has strong reflectivity in visible, NIR and SWIR regions while snow absorbs in SWIR, and this difference can be utilized for snow/cloud discrimination. Normalized Difference Snow Index (NDSI) utilize the normalized ratio of green and SWIR and is used as an automated approach for snow mapping addressing the shadow and cloud problems in snow bound areas.

Normalized Difference Snow Index was calculated using the ratio of green wavelength (band 2) and SWIR (band 5) of AWiFS sensor:

$$Normalized\,Difference\,Snow\,Index(NDSI) = (band2 - band5)/(band2 + band5) \quad ..(1)$$

To estimate NDSI, DN numbers were converted into reflectance. This involves conversion of digital numbers into the radiance values, known as sensor calibration, and then estimation of reflectance from these radiance values. Various parameters needed for estimating spectral reflectance are maximum and minimum radiances and mean solar exo-atmospheric spectral irradiances in the satellite sensor bands, satellite data acquisition time, solar declination, solar zenith and solar azimuth angles, mean Earth-Sun distance etc. (Markham and Barker, 1987; Srinivasulu and Kulkarni, 2004).

5. Snow cover monitoring algorithm

An algorithm is developed to provide changes in the areal extent of snow (Kulkarni et. al., 2006). Snow extent is estimated at an interval of 5-days and 10-days, depending upon availabilities of AWiFS data. In 5-daily product, snow extent is generated scene-wise. In this product, snow and cloud extents are given. Estimate of cloud is important because, at times, snow is covered by cloud and this may be classified as non-snow area, leading to erroneous conclusions. In 10-daily product, three scenes are analyzed, if available. For example, 10 March product data of 5, 10 and 15 March was used. If any pixel is identified as snow on any one date then this pixel will be classified as snow on final product. This provides snow cover at an interval of 10 days, an important requirement in hydrological applications. Therefore, this product is generated basin-wise. Since this product is using three scenes, probability becomes high that at least in one scene, pixel may be cloud-free and this helps in overcoming problem associated with snow under cloud cover. If three consecutive scenes are not available, then all available scenes in 10 days window was used in the analysis. Differentiation between water and snow is difficult using NDSI image. In addition, separation of snow and water pixels is also difficult based on reflectance due to mountain shadow. Therefore, in the present algorithm, water bodies are marked in pre-winter

season and are masked in the final products during winter. Flow diagram of the algorithm is given in Figure 2.

6. Results and discussions

In this atlas, basin-wise snow cover statistics, maps, and seasonal depletion curves have been provided from October 2013 to June 2014. Snow ablation pattern varies from basin to basin, depending on area altitude distribution in the basins. Accumulation and ablation pattern in Chandra and Bhaga river basin is almost same and significant amount of melting was observed in early part of winter. From January to end of April almost entire basin is covered by snow for Chandra, Bhaga and ablation starts from the end of April. In the Bhut, Warwan and the Miyar sub-basins accumulation starts from mid of December and ablation starts from mid of March. In case of Ravi sub-basin no accumulation is found till mid of December then in the month of January, maximum snow was observed 85% and it reduces up to 54% in the mid of January and accumulation and ablation continuous till mid of March then ablation starts continuous.

Acknowledgements

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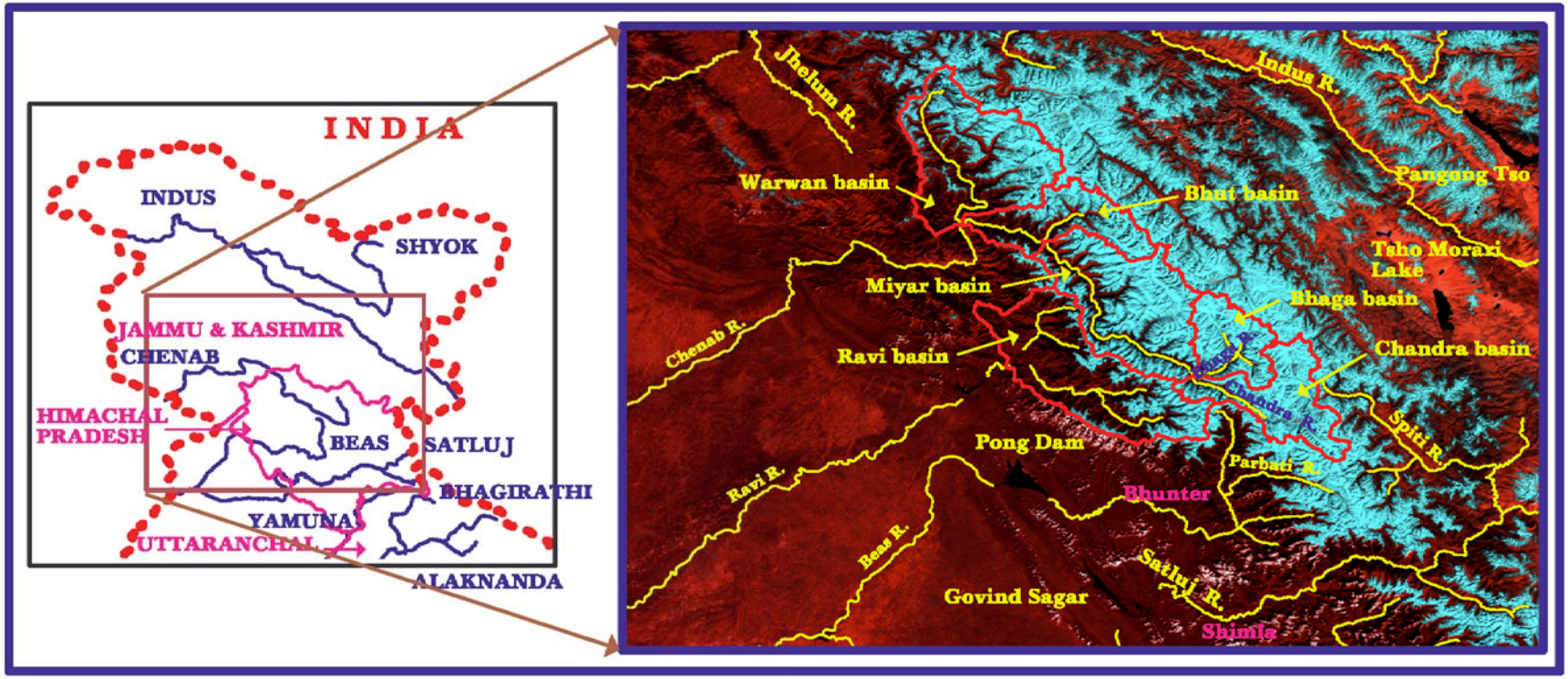


Figure 1: Location map of Ravi, Chandra, Bhaga, Miyar, Bhut and Warwan sub-basins (Part of Chenab basin)

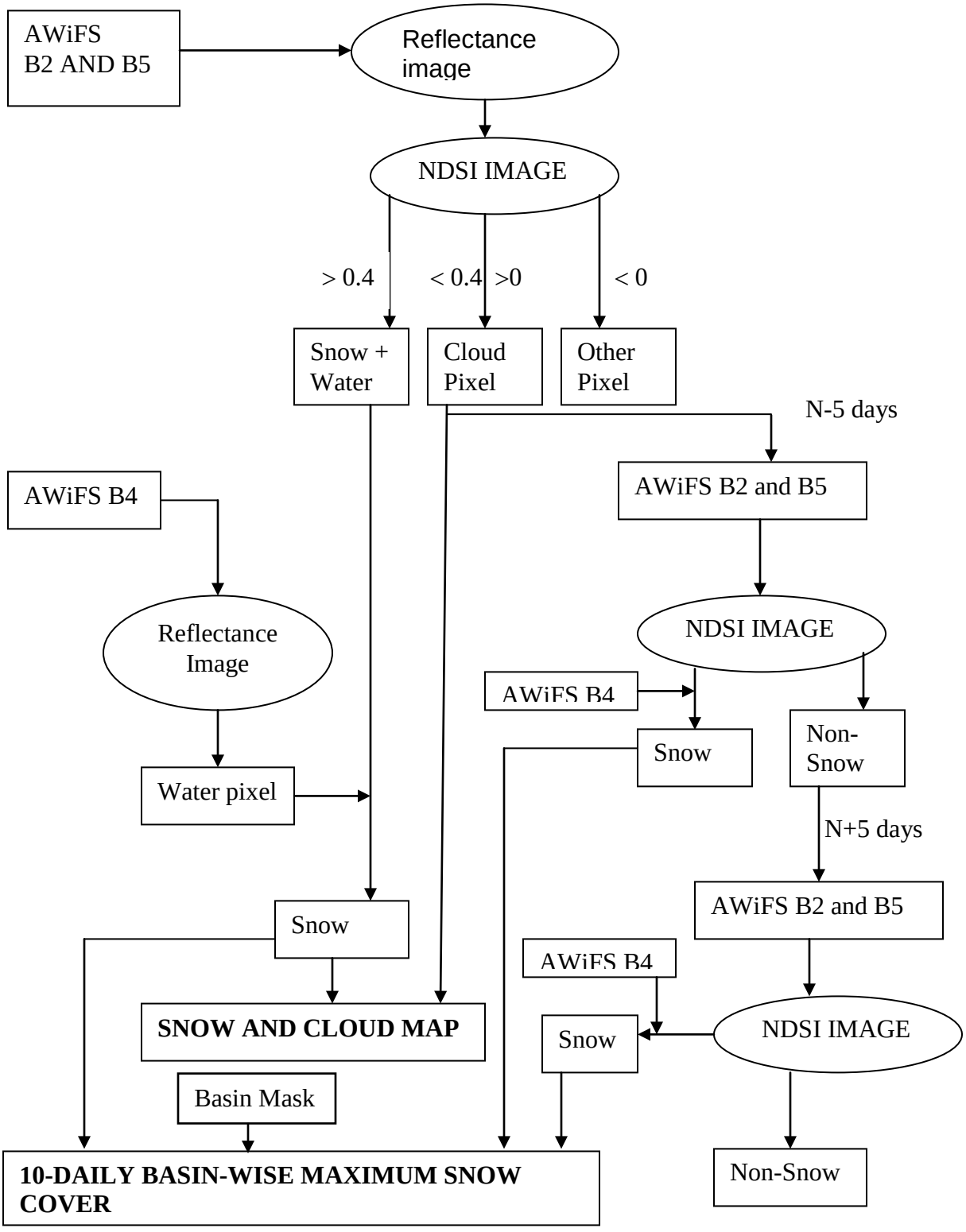


Figure 2: Algorithm for snow cover mapping using AWiFS data

RAVI BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: RAVI **BASIN AREA: 4907 Sq km**

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2013							
1	2-Oct-13	452	9	5	23-Oct-13	281	6
2	9-Oct-13	294	6	6	25-Oct-13	354	7
3	16-Oct-13	518	11	7	28-Oct-13	232	5
4	21-Oct-13	411	8				
November 2013							
8	1-Nov-13	497	10	11	25-Nov-13	974	20
9	2-Nov-13	790	16	12	30-Nov-13	823	17
10	16-Nov-13	1449	30				
December 2013							
13	1-Dec-13	770	16	15	15-Dec-13	499	10
14	10-Dec-13	305	305.12	16	24-Dec-13	4182	85
January 2014							
17	3-Jan-14	2252	46	21	27-Jan-14	2596	53
18	6-Jan-14	2851	58	22	29-Jan-14	2822	58
19	20-Jan-14	2638	54	23	30-Jan-14	2724	56
20	24-Jan-14	3658	75				
February 2014							
24	8-Feb-14	3503	71	27	20-Feb-14	2473	50
25	13-Feb-14	3208	65	28	25-Feb-14	2643	54
26	17-Feb-14	4182	85				
March 2014							
29	6-Mar-14	3116	64	32	21-Mar-14	3196	65
30	7-Mar-14	2820	57	33	25-Mar-14	2100	43
31	13-Mar-14	3562	73	34	30-Mar-14	2556	52
April 2014							
35	9-Apr-14	2229	45	39	24-Apr-14	2150	44
36	12-Apr-14	2495	51	40	26-Apr-14	1763	36
37	14-Apr-14	2164	44	41	28-Apr-14	2048	42
38	23-Apr-14	2150	44	42	30-Apr-14	2148	44

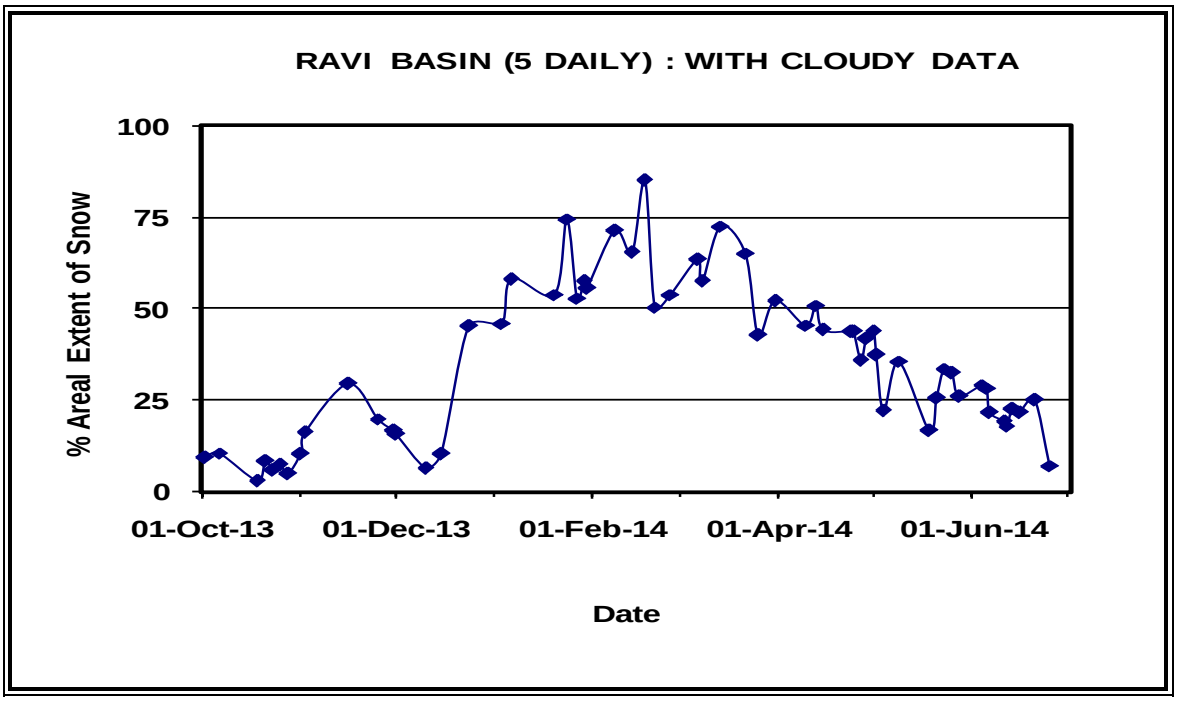
S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
May-2014							
43	1-May-14	1837	37	47	20-May-14	1258	26
44	3-May-14	1079	22	48	22-May-14	1654	34
45	8-May-14	1747	36	49	25-May-14	1597	33
46	18-May-14	819	17	50	27-May-14	1277	26
June-2014							
51	3-Jun-14	1436	29	56	13-Jun-14	1108	23
52	5-Jun-14	1384	28	57	15-Jun-14	1066	22
53	6-Jun-14	1061	22	58	20-Jun-14	1225	25
54	10-Jun-14	931	19	59	25-Jun-14	344	7
55	11-Jun-14	876	18				

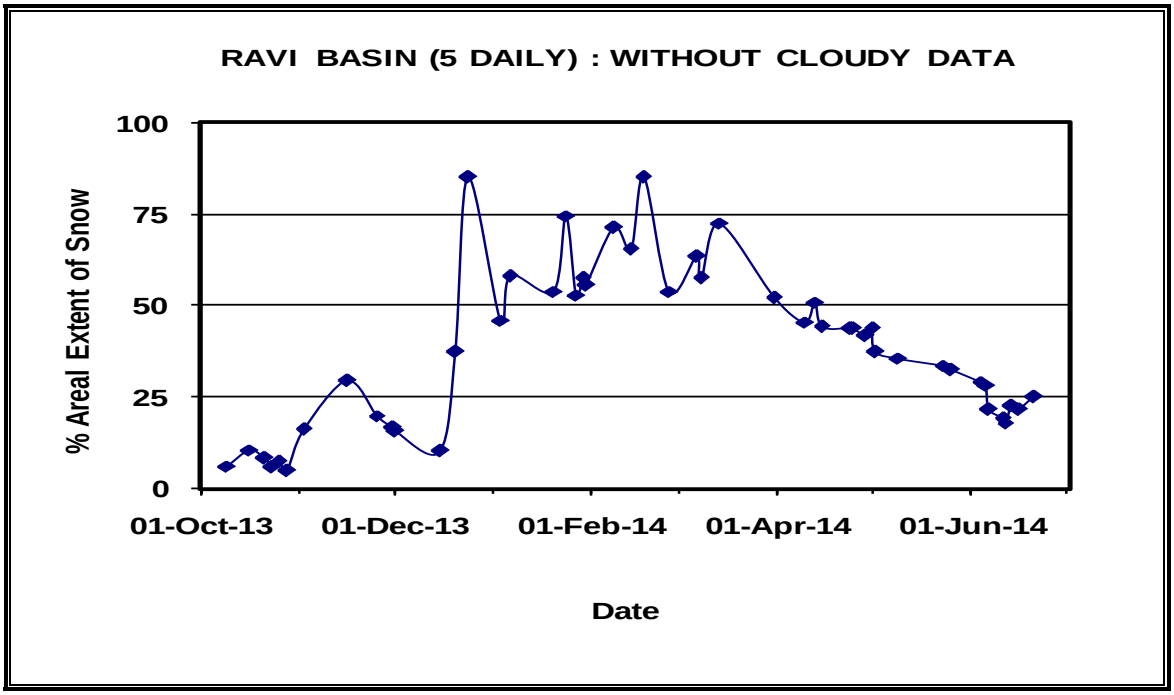
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: RAVI **BASIN AREA: 4907 sq km**

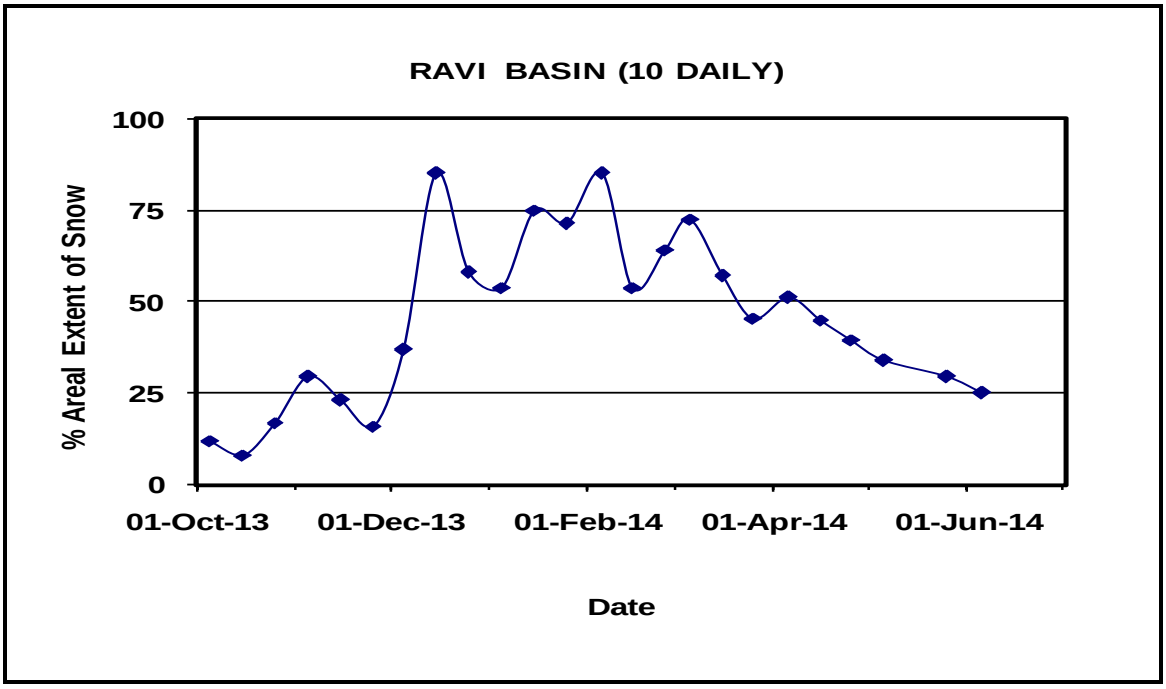
S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2013							
1	5-Oct-13	294	6	3	25-Oct-13	393	8
2	15-Oct-13	590	12				
November 2013							
4	5-Nov-13	833	17	6	30-Nov-13	1131	23
5	15-Nov-13	1449	30				
December 2013							
7	5-Dec-13	785	16	9	25-Dec-13	4171	85
8	15-Dec-13	1816	37				
January-2014							
10	5-Jan-14	2846	58	12	25-Jan-14	3680	75
11	15-Jan-14	2639	54				
February 2014							
13	5-Feb-14	3503	71	15	25-Feb-14	2643	54
14	15-Feb-14	4182	85				
March 2014							
16	5-Mar-14	3151	64	18	25-Mar-14	2802	57
17	15-Mar-14	3351	73				
April 2014							
19	5-Apr-14	2229	45	21	25-Apr-14	2209	45
20	15-Apr-14	2503	51				
May 2014							
22	5-May-13	1944	40	23	25-May-14	1668	34
June 2014							
24	5-Jun-14	1449	30	25	15-June-14	1229	25

SNOW COVER DEPLETION CURVE





SNOW COVER DEPLETION CURVE



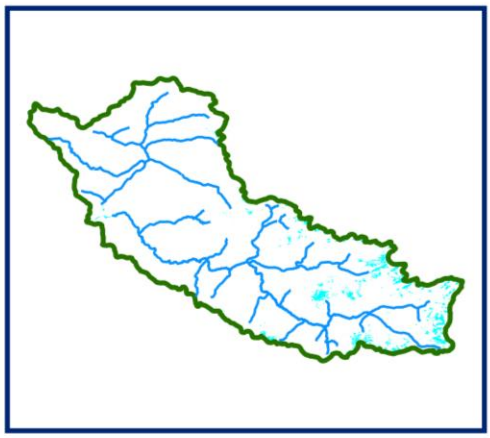
SNOW COVER MAP

SNOW COVER MAP : RAVI BASIN

DATA NOT AVAILABLE

DATA NOT AVAILABLE

14 OCTOBER 2013



18 OCTOBER 2013

23 OCTOBER 2013

28 OCTOBER 2013

SNOW

2512.5 0 25 50 75 100

Kilometers

10 DAILY SNOW COVER MAP : RAVI BASIN

DATA NOT AVAILABLE

DATA USED

14 OCTOBER 2013
16 OCTOBER 2013
18 OCTOBER 2013

DATA USED

23 OCTOBER 2013
25 OCTOBER 2013
28 OCTOBER 2013

SNOW

2512.5 0 25 50 75 100

Kilometers

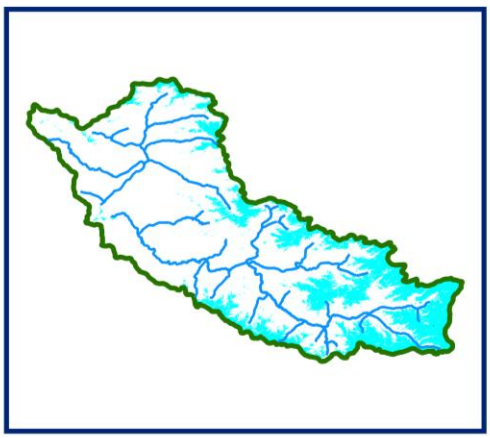
10 DAILY SNOW COVER MAP : RAVI BASIN

DATA USED

01 NOVEMBER 2013
02 NOVEMBER 2013

DATA USED

16 NOVEMBER 2013



DATA USED

25 NOVEMBER 2013
30 NOVEMBER 2013

SNOW

2512.5 0 25 50 75 100

Kilometers

SNOW COVER MAP : RAVI BASIN

01 NOVEMBER 2013

DATA NOT AVAILABLE

DATA NOT AVAILABLE

16 NOVEMBER 2013

25 NOVEMBER 2013

30 NOVEMBER 2013

SNOW

2512.5 0 25 50 75 100

Kilometers

SNOW COVER MAP : RAVI BASIN

01 DECEMBER 2013

10 DECEMBER 2013

15 DECEMBER 2013

DATA NOT AVAILABLE

24 DECEMBER 2013

DATA NOT AVAILABLE

SNOW

2512.5 0 25 50 75 100

Kilometers

10 DAILY SNOW COVER MAP : RAVI BASIN

DATA USED

01 DECEMBER 2013
10 DECEMBER 2013

DATA USED

15 DECEMBER 2013

DATA USED

24 DECEMBER 2013

SNOW

2512.5 0 25 50 75 100

Kilometers

10 DAILY SNOW COVER MAP : RAVI BASIN

DATA USED

03 JANUARY 2014
06 JANUARY 2014

DATA USED

20 JANUARY 2014

DATA USED

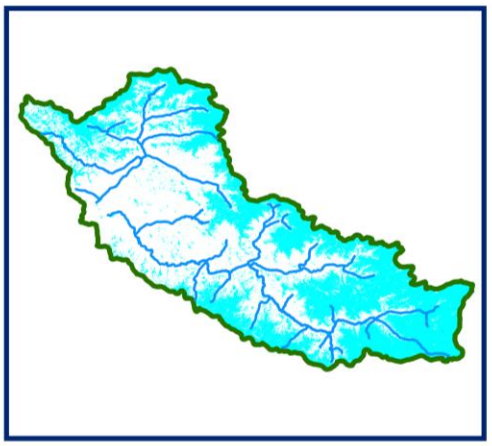
27 JANUARY 2014
24 JANUARY 2014
31 JANUARY 2014

SNOW

20 10 0 20 40 60 80

Kilometers

SNOW COVER MAP : RAVI BASIN



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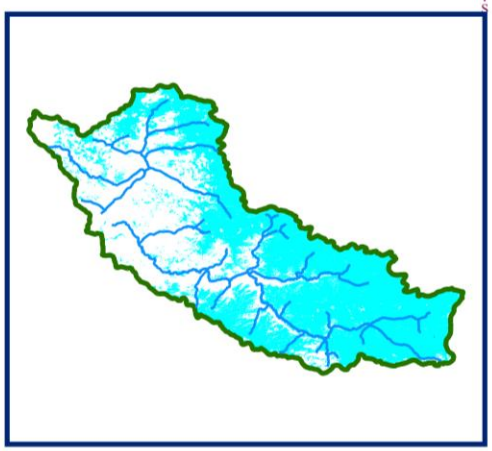


06 JANUARY 2014

DATA NOT AVAILABLE

20 JANUARY 2014

24 JANUARY 2014

30 JANUARY 2014

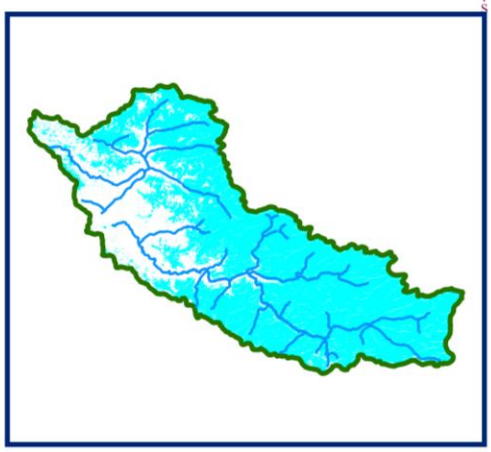
SNOW

2512.5 0 25 50 75 100

Kilometers

SNOW COVER MAP : RAVI BASIN

DATA NOT AVAILABLE



08 FEBRUARY 2014

13 FEBRUARY 2014

20 FEBRUARY 2014

25 FEBRUARY 2014

DATA NOT AVAILABLE

SNOW

2512.5 0 25 50 75 100

Kilometers

10 DAILY SNOW COVER MAP : RAVI BASIN

DATA USED

08 FEBRUARY 2014

DATA USED

13 FEBRUARY 2014
17 FEBRUARY 2014
20 FEBRUARY 2014

DATA USED

25 FEBRUARY 2014

SNOW

20 10 0 20 40 60 80

Kilometers

SNOW COVER MAP : RAVI BASIN

06 MARCH 2014

DATA NOT AVAILABLE

13 MARCH 2014

DATA NOT AVAILABLE

21 MARCH 2014

30 MARCH 2014

SNOW

2512.5 0 25 50 75 100

Kilometers

10 DAILY SNOW COVER MAP : RAVI BASIN

DATA USED
06 MARCH 2014
07 MARCH 2014

DATA USED
13 MARCH 2014

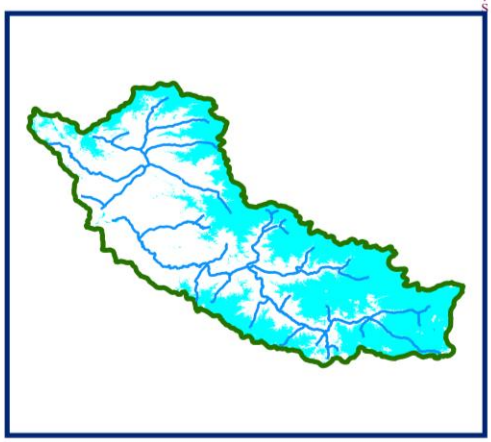
DATA USED
21 MARCH 2014
25 MARCH 2014
30 MARCH 2014

SNOW

2010 0 20 40 60 80 Kilometers

SNOW COVER MAP : RAVI BASIN

DATA NOT AVAILABLE



09 APRIL 2014

12 APRIL 2014

DATA NOT AVAILABLE

23 APRIL 2014

30 APRIL 2014

SNOW

2512.5 0 25 50 75 100

Kilometers

10 DAILY SNOW COVER MAP : RAVI BASIN

DATA USED
09 APRIL 2014

DATA USED
12 APRIL 2014
14 APRIL 2014

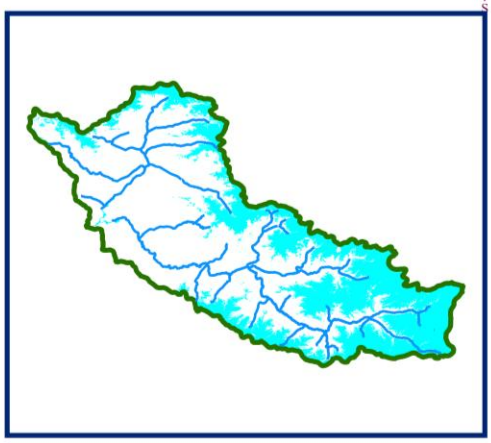
DATA USED
23 APRIL 2014
28 APRIL 2014
30 APRIL 2014

SNOW

20 10 0 20 40 60 80
Kilometers

SNOW COVER MAP : RAVI BASIN

03 MAY 2014



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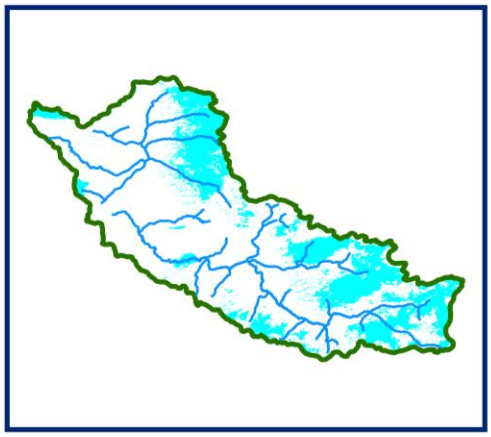


20 MAY 2014

22 MAY 2014

27 MAY 2014

SNOW

2512.5 0 25 50 75 100

Kilometers

10 DAILY SNOW COVER MAP : RAVI BASIN

DATA USED
01 MAY 2014
03 MAY 2014
08 MAY 2014

DATA USED
18 MAY 2014

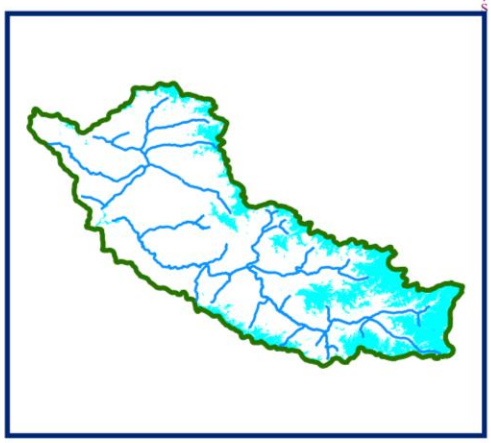
DATA USED
27 MAY 2014

SNOW

20 10 0 20 40 60 80
Kilometers

SNOW COVER MAP : RAVI BASIN

03 JUNE 2014



06 JUNE 2014

11 JUNE 2014

20 JUNE 2014

25 JUNE 2014

DATA NOT AVAILABLE

SNOW

2512.5 0 25 50 75 100

Kilometers

10 DAILY SNOW COVER MAP : RAVI BASIN

DATA USED

05 JUNE 2014
06 JUNE 2014
10 JUNE 2014

DATA USED

13 JUNE 2014
15 JUNE 2014
20 JUNE 2014

DATA USED

25 JUNE 2014

SNOW

20 10 0 20 40 60 80

Kilometers

CHANDRA BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: CHANDRA **BASIN AREA: 2433 sq km**

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2013							
1	4-Oct-13	597	25	6	19-Oct-13	987	41
2	9-Oct-13	550	23	7	21-Oct-13	1105	45
3	14-Oct-13	1534	63	8	23-Oct-13	904	37
4	16-Oct-13	1277	52	9	25-Oct-13	1045	43
5	18-Oct-13	972	40	10	28-OCT-13	886	36
November 2013							
11	4-Nov-13	1354	56	14	21-Nov-13	2087	86
12	12-Nov-13	2353	97	15	26-Nov-13	1845	76
13	16-Nov-13	2265	93				
December 2013							
16	1-Dec-13	1580	65	20	20-Dec-13	1670	69
17	10-Dec-13	1340	55	21	24-Dec-13	2113	87
18	15-Dec-13	1506	62	22	25-Dec-13	1554	64
19	18-Dec-13	1576	65	23	27-Dec-13	2016	83
January 2014							
24	1-Jan-14	2175	89	28	27-Jan-14	2425	100
25	3-Jan-14	2034	84	29	29-Jan-14	2440	100
26	11-Jan-14	2436	100	30	30-Jan-14	2430	100
27	20-Jan-14	2436	100				
February 2014							
31	1-Feb-14	2266	93	34	20-Feb-14	2295	94
32	8-Feb-14	2440	100	35	25-Feb-14	2437	100
33	16-Feb-14	2440	100				
March 2014							
36	6-Mar-14	2442	100	39	16-Mar-14	2438	100
37	7-Mar-14	2440	100	40	21-Mar-14	2416	99
38	12-Mar-14	2425	100	41	30-Mar-14	2440	100
April 2014							
42	2-Apr-14	2430	100	46	23-Apr-14	2321	95
43	9-Apr-14	2430	100	47	24-Apr-14	2405	99
44	12-Apr-14	2434	100	48	26-Apr-14	2411	99
45	14-Apr-14	2430	100	49	28-Apr-14	2405	99

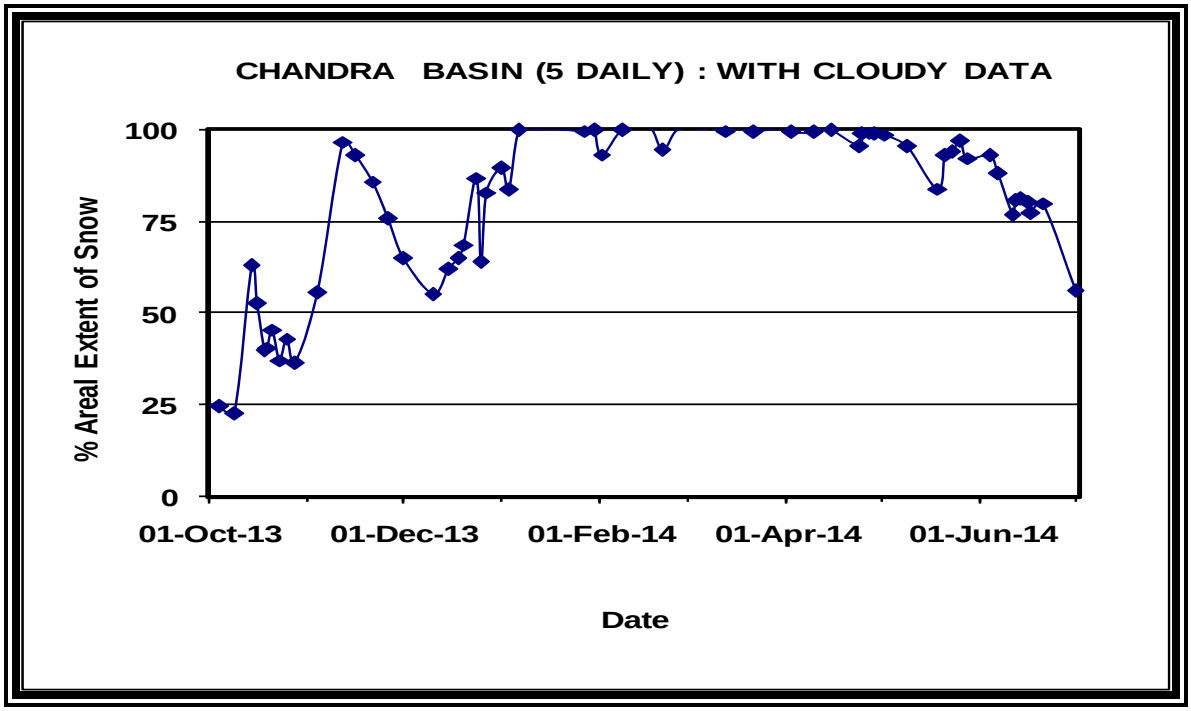
S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
May-2014							
50	1-May-14	2399	99	54	22-May-14	2284	94
51	8-May-14	2318	95	55	25-May-14	2357	97
52	18-May-14	2040	84	56	27-May-14	2245	92
53	20-May-14	2259	93				
June-2014							
57	3-Jun-14	2263	93	61	26-Jun-14	1876	77
58	10-Jun-14	1869	77	62	20-Jun-14	1944	80
59	11-Jun-14	1966	81	63	30-Jun-14	1362	56
60	15-Jun-14	1953	80				

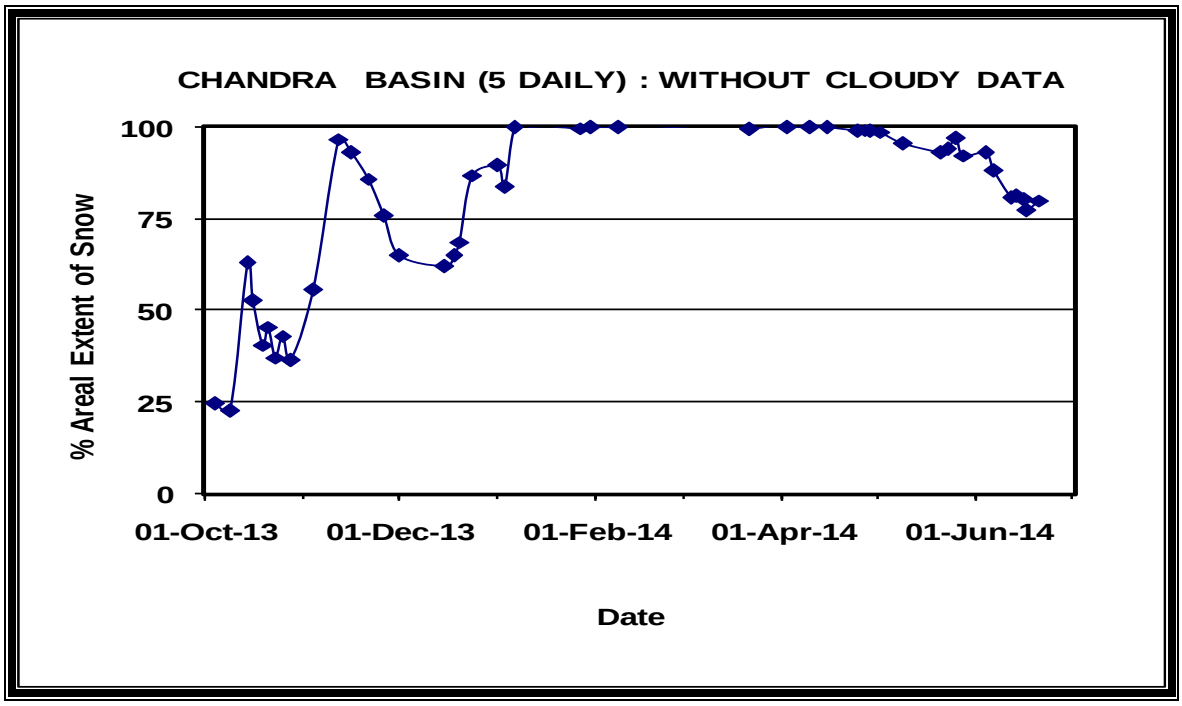
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: CHANDRA **BASIN AREA: 2433 sqkm**

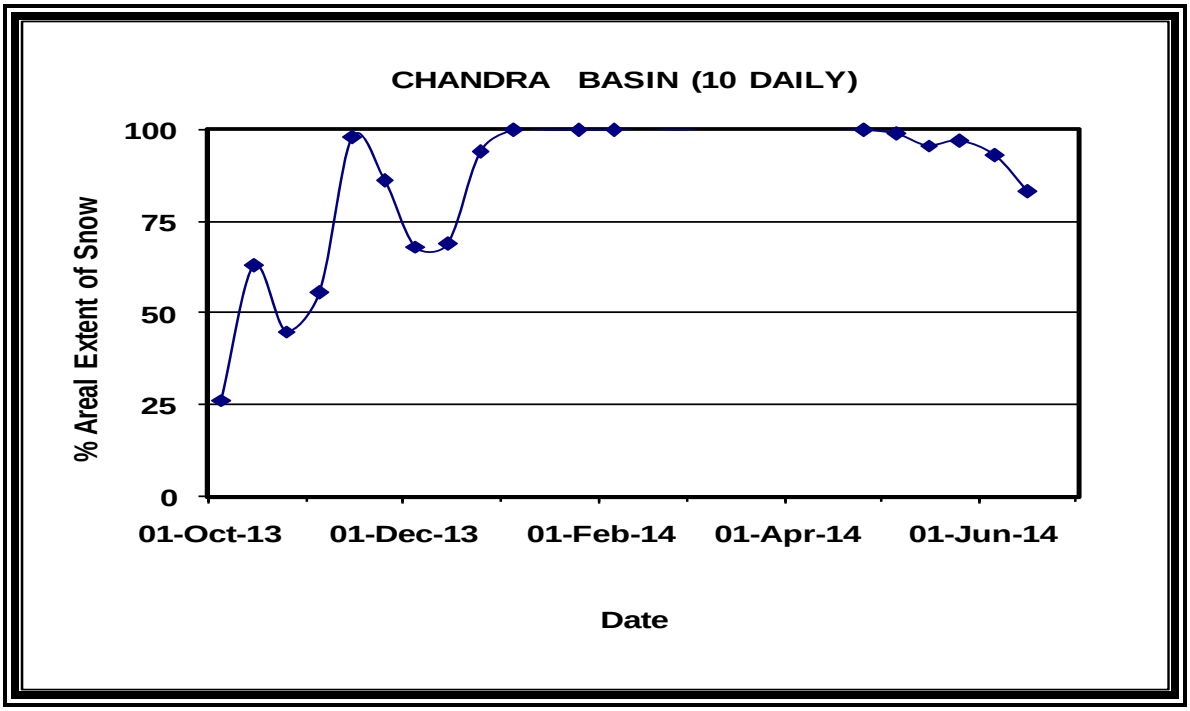
S No	Date	Snow Cover (sq km)	Snow Cover (%)	S No	Date	Snow Cover (sq km)	Snow Cover (%)
October 2013							
1	5-Oct-13	638	26	3	25-Oct-13	1105	45
2	15-Oct-13	1534	63				
November 2013							
4	5-Nov-13	1354	56	6	25-Nov-13	2087	86
5	15-Nov-13	2378	98				
December 2013							
7	5-Dec-13	1657	68	9	25-Dec-13	2299	94
8	15-Dec-13	1670	69				
January 2014							
10	5-Jan-14	2436	100	12	25-Jan-14	2429	100
11	15-Jan-14	2436	100				
February 2014							
13	5-Feb-14	2432	100	15	25-Feb-14	2437	100
14	15-Feb-14	2442	100				
March 2014							
16	5-Mar-14	2442	100	18	25-Mar-14	2442	100
17	15-Mar-14	2442					
April 2014							
19	5-Apr-14	2442	100	21	25-Apr-14	2430	97
20	15-Apr-14	2440	100				
May-2014							
22	5-May-14	2402	99	24	25-May-14	2357	97
23	15-May-14	2328	96				
June 2014							
25	5-June-14	2261	93	26	15-June-14	2021	83

SNOW COVER DEPLETION CURVE



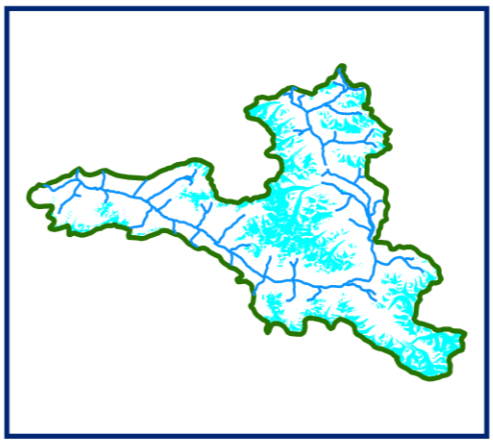


SNOW COVER DEPLETION CURVE

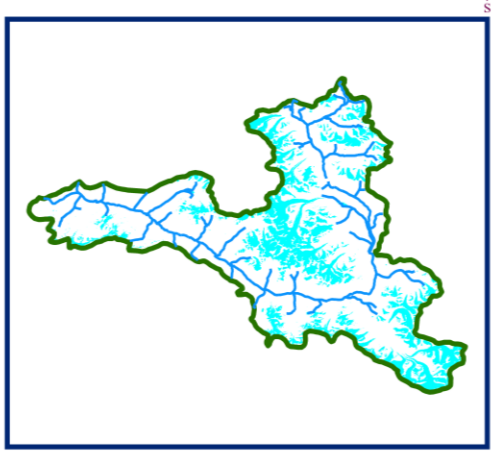


SNOW COVER MAP

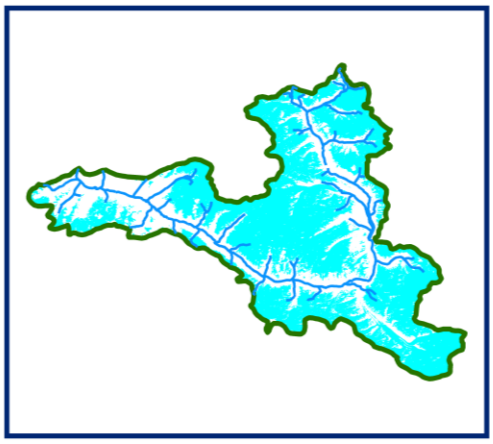
SNOW COVER MAP : CHANDRA BASIN



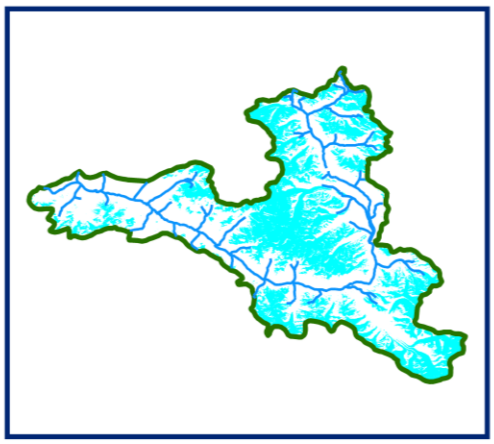
04 OCTOBER 2013



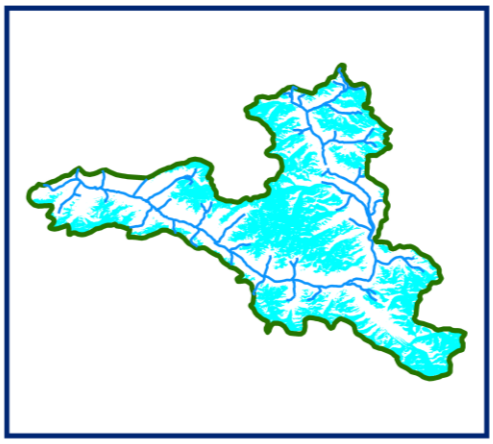
09 OCTOBER 2013



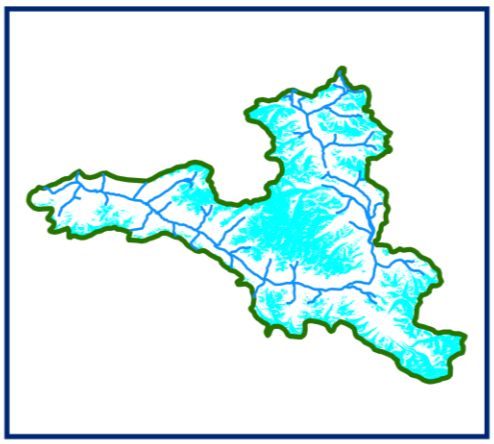
14 OCTOBER 2013



18 OCTOBER 2013



21 OCTOBER 2013



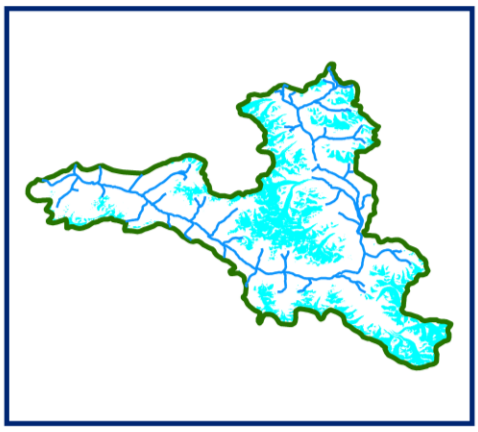
28 OCTOBER 2013

SNOW

105 0 10 20 30 40

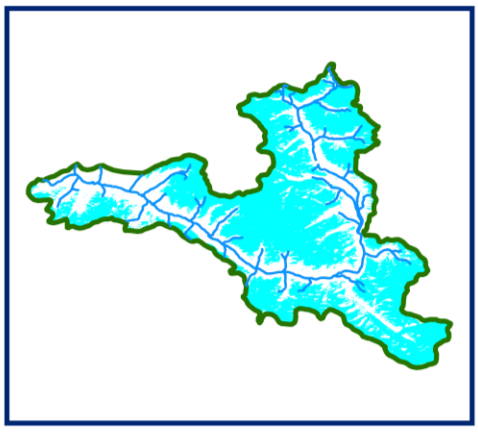
Kilometers

10 DAILY SNOW COVER MAP : CHANDRA BASIN



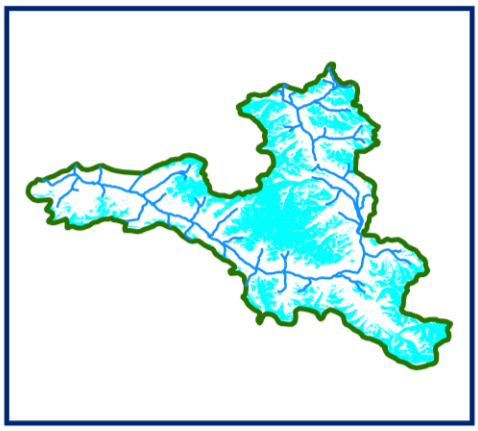
DATA USED

04 OCTOBER 2014
09 OCTOBER 2014



DATA USED

14 OCTOBER 2014
16 OCTOBER 2014
18 OCTOBER 2014



DATA USED

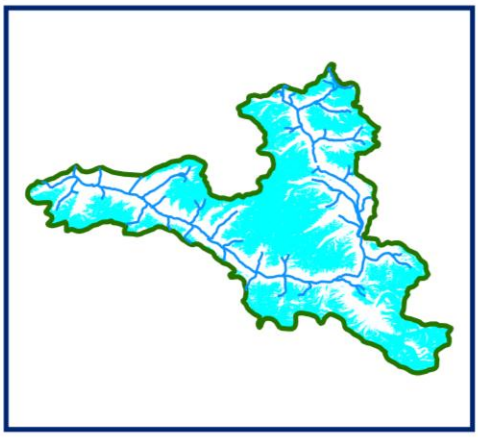
23 OCTOBER 2014
25 OCTOBER 2014
28 OCTOBER 2014

SNOW

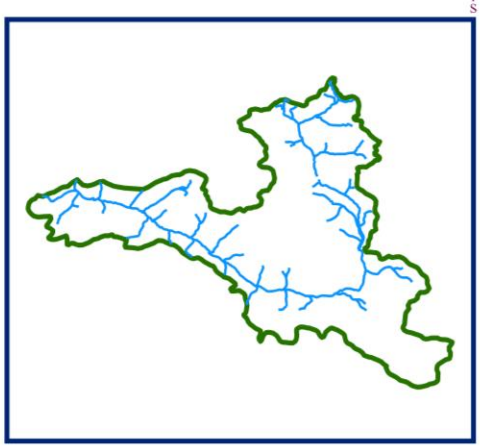
105 0 10 20 30 40

Kilometers

SNOW COVER MAP : CHANDRA BASIN



04 NOVEMBER 2013



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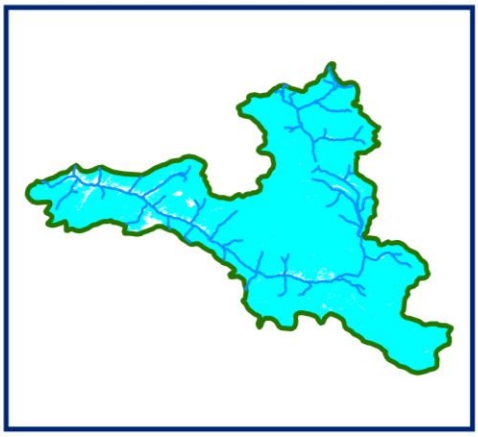
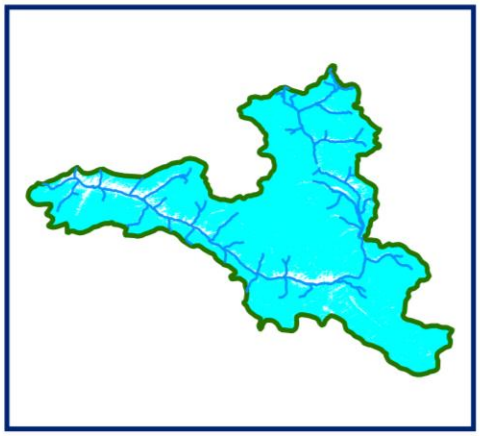
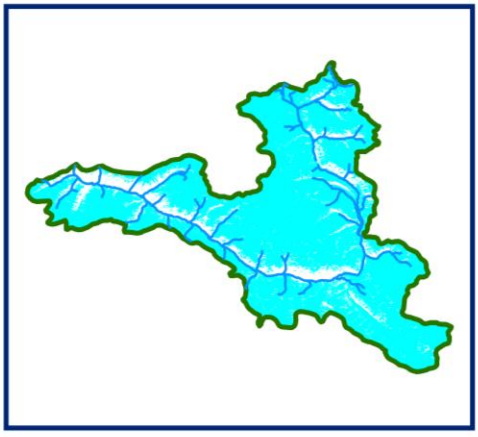


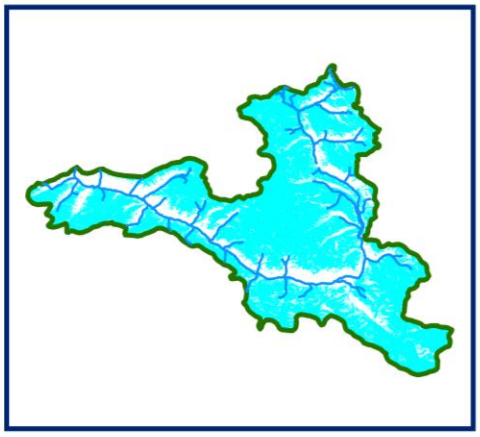
12 NOVEMBER 2013



16 NOVEMBER 2013



21 NOVEMBER 2013



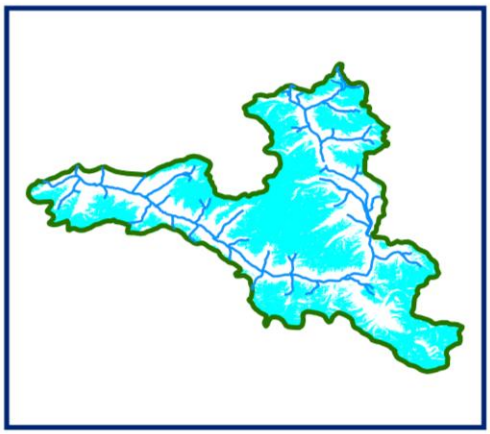
26 NOVEMBER 2013

SNOW

105 0 10 20 30 40

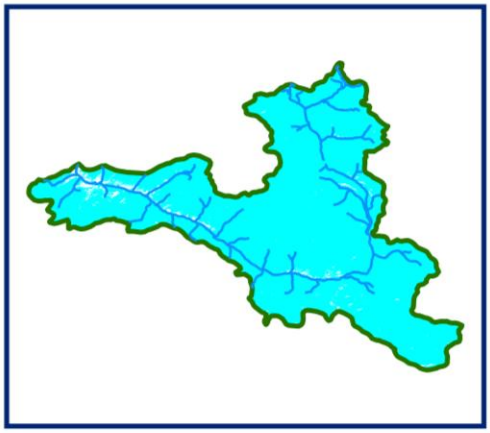
Kilometers

10 DAILY SNOW COVER MAP : CHANDRA BASIN



DATA USED

04 NOVEMBER 2013



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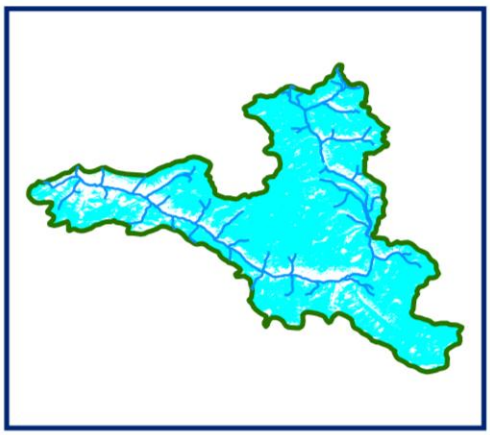
12 NOVEMBER 2014
16 NOVEMBER 2014
16 NOVEMBER 2014



DATA USED

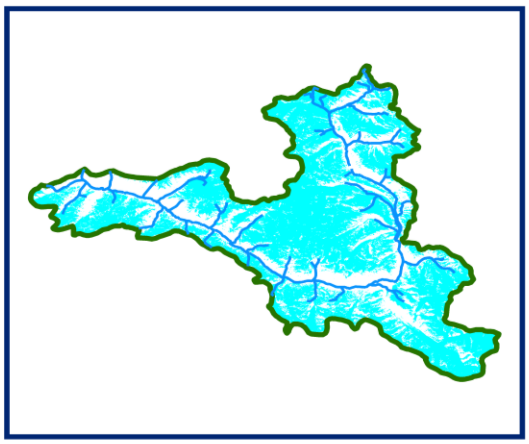
21 NOVEMBER 2014
26 NOVEMBER 2014

SNOW

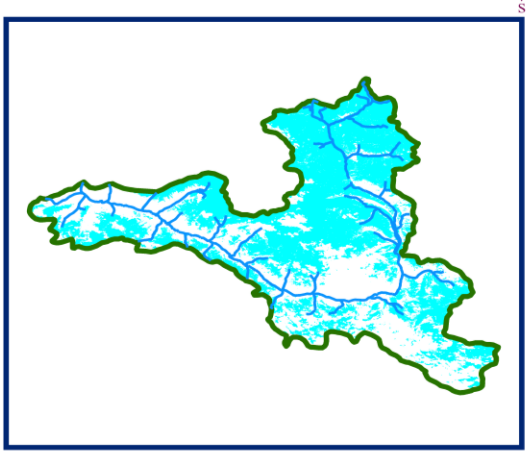
105 0 10 20 30 40

Kilometers

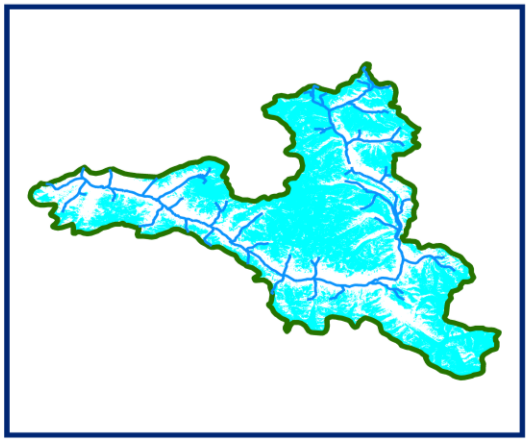
SNOW COVER MAP : CHANDRA BASIN



01 DECEMBER 2013



10 DECEMBER 2013



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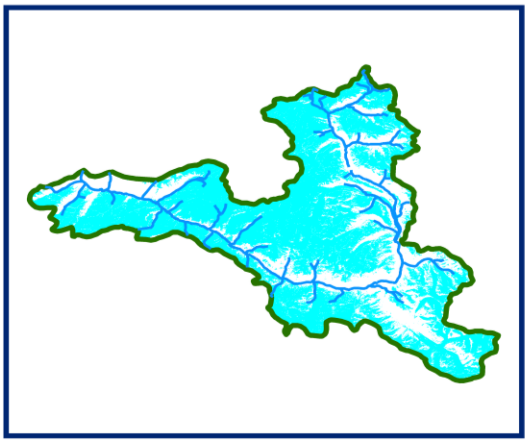

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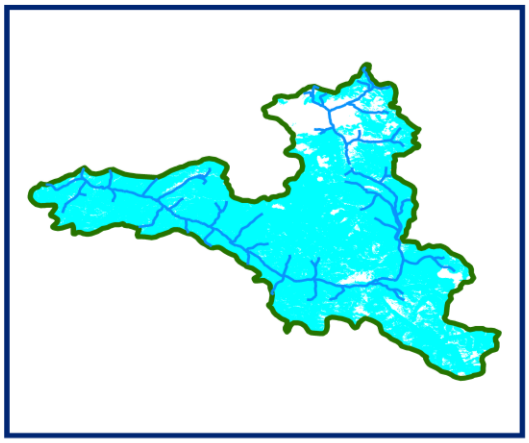

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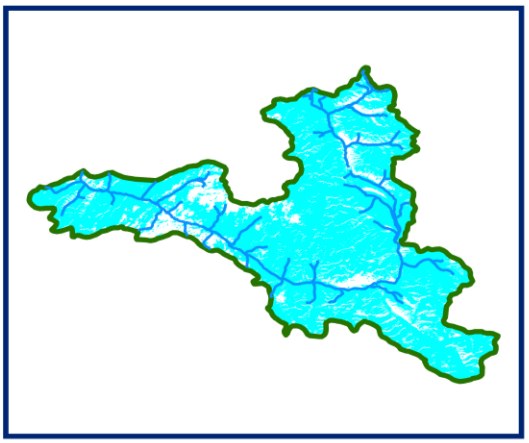


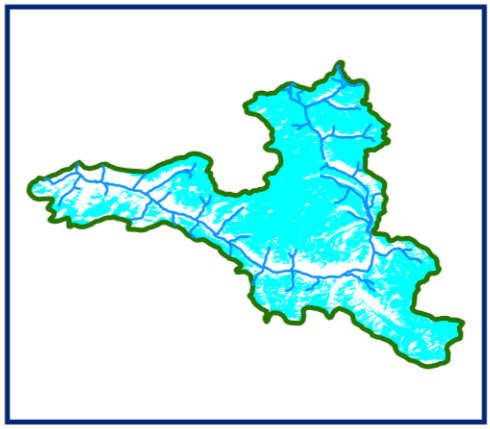
27 DECEMBER 2013

SNOW

105 0 10 20 30 40

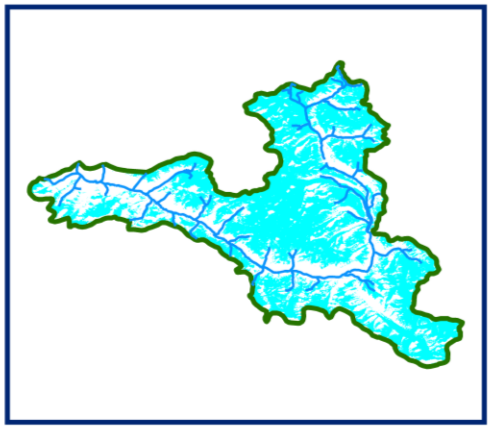
Kilometers

10 DAILY SNOW COVER MAP : CHANDRA BASIN



DATA USED

01 DECEMBER 2013
10 DECEMBER 2013



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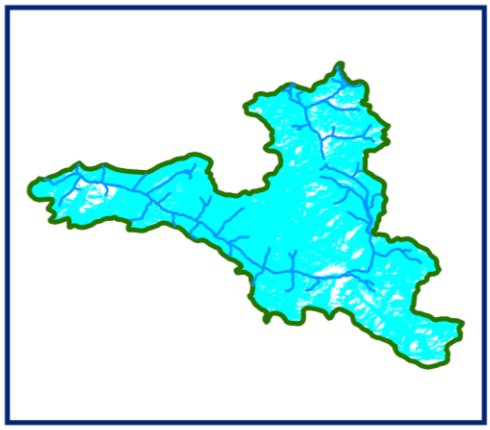
15 DECEMBER 2013
18 DECEMBER 2013
20 DECEMBER 2013



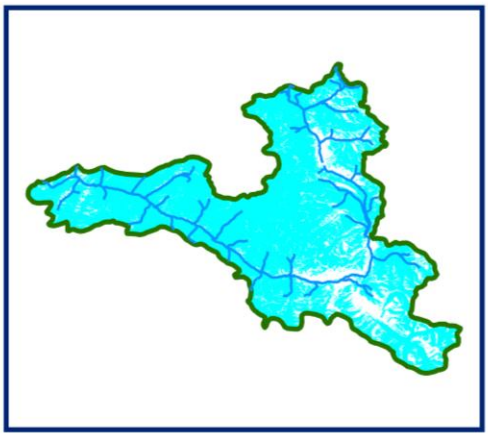
DATA USED

24 DECEMBER 2013
25 DECEMBER 2013
27 DECEMBER 2013

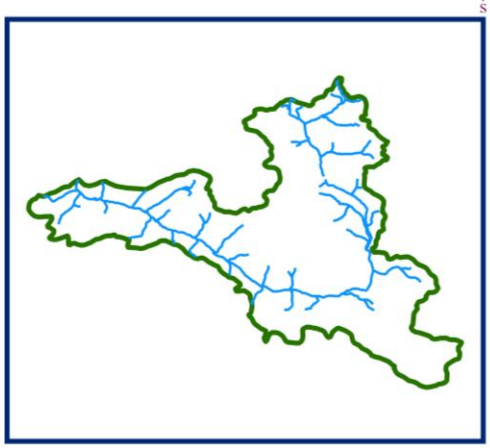
SNOW

105 0 10 20 30 40 Kilometers

SNOW COVER MAP : CHANDRA BASIN



03 JANUARY 2014



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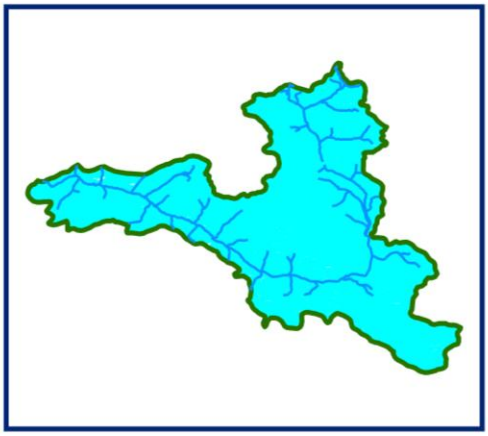
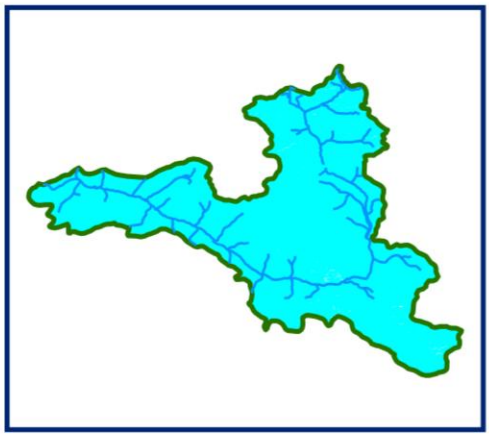


11 JANUARY 2014



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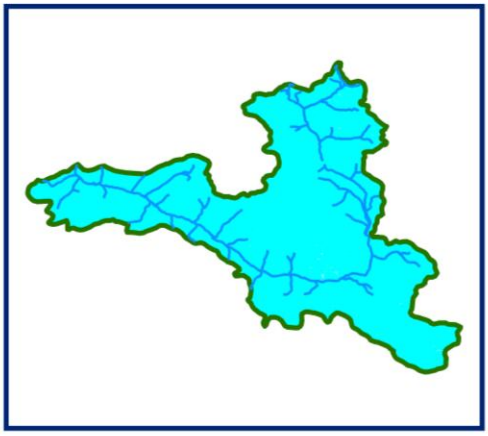

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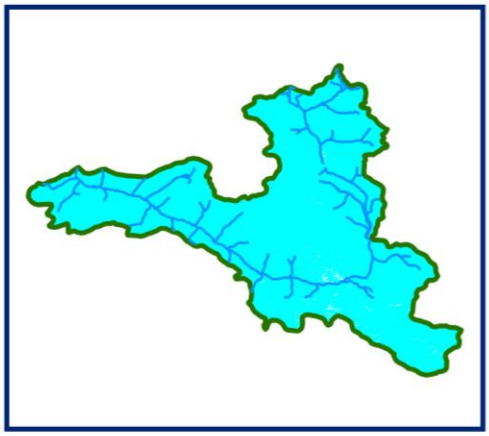


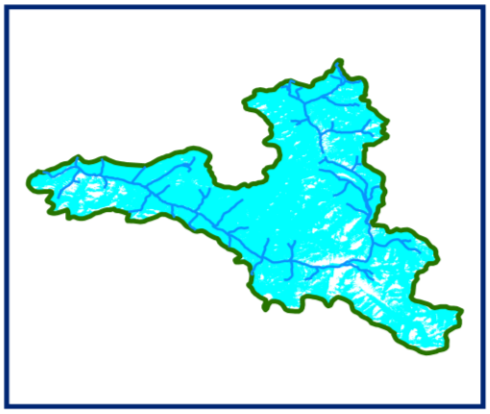
30 JANUARY 2014

SNOW

105 0 10 20 30 40

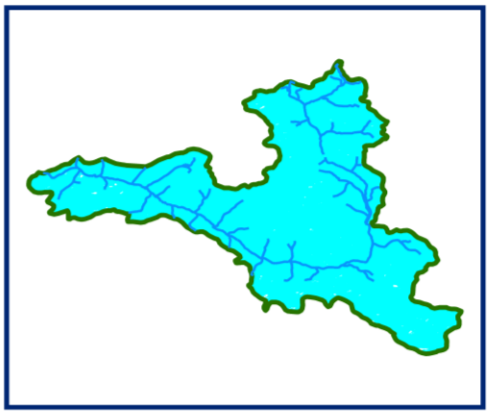
Kilometers

10 DAILY SNOW COVER MAP : CHANDRA BASIN



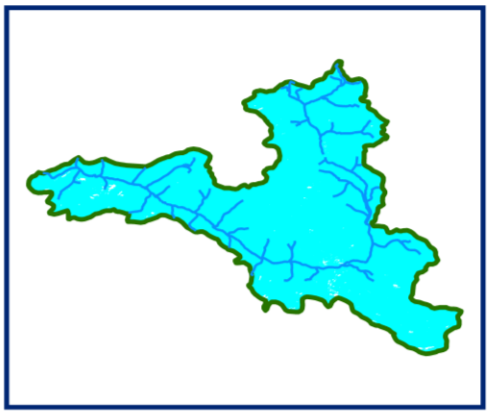
DATA USED

01 JANUARY 2014
10 JANUARY 2014



DATA USED

11 JANUARY 2014
20 JANUARY 2014



DATA USED

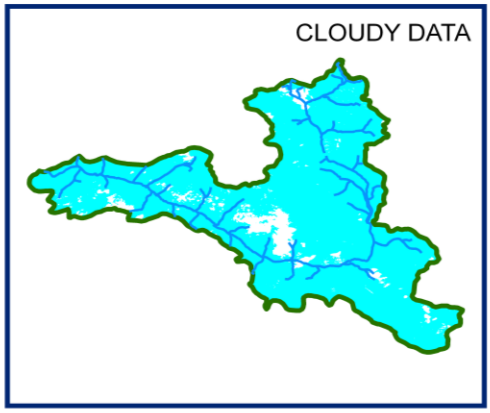
27 JANUARY 2014
29 JANUARY 2014
30 JANUARY 2014

SNOW

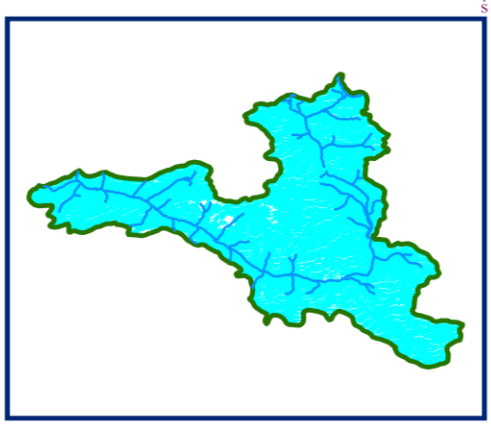
105 0 10 20 30 40

Kilometers

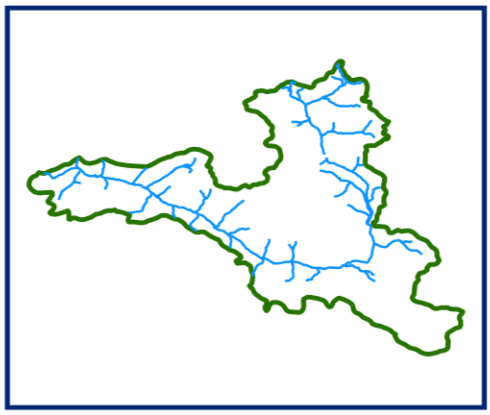
SNOW COVER MAP : CHANDRA BASIN



01 FEBRUARY 2014



08 FEBRUARY 2014



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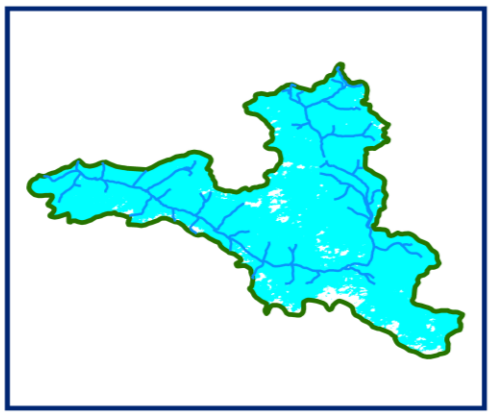
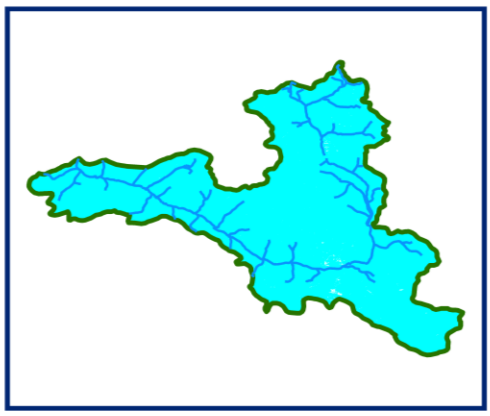
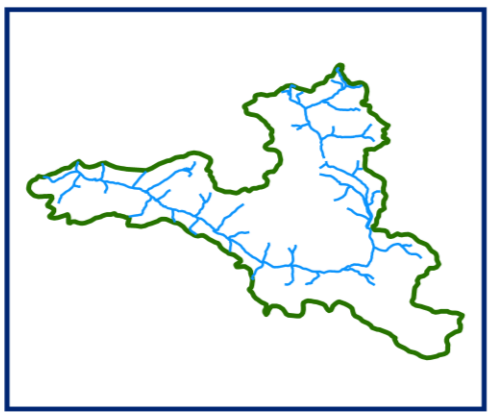


20 FEBRUARY 2014



25 FEBRUARY 2014

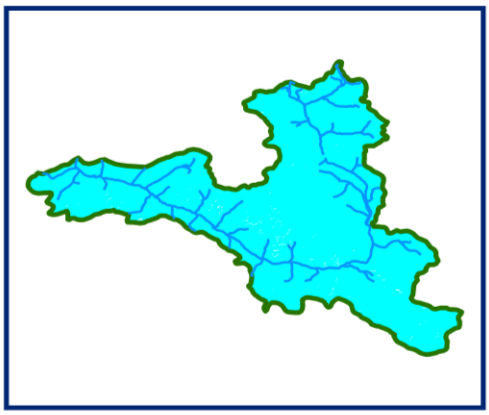


DATA NOT AVAILABLE

SNOW

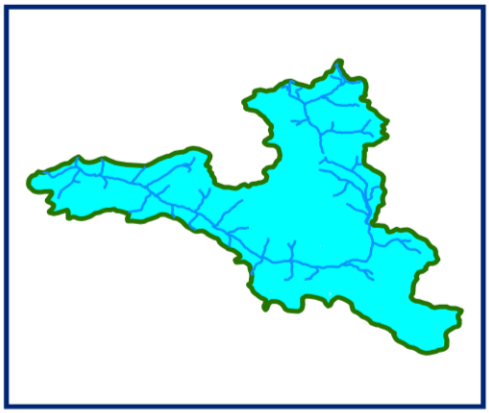
105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : CHANDRA BASIN



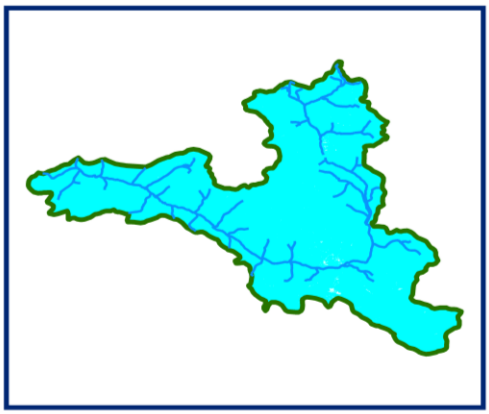
DATA USED

01 FEBRUARY 2014
08 FEBRUARY 2014



DATA USED

16 FEBRUARY 2014
20 FEBRUARY 2014



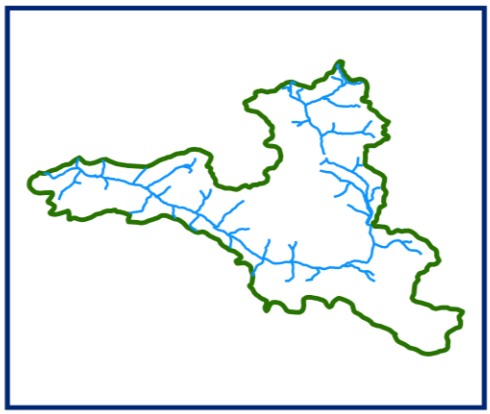
DATA USED

25 FEBRUARY 2014

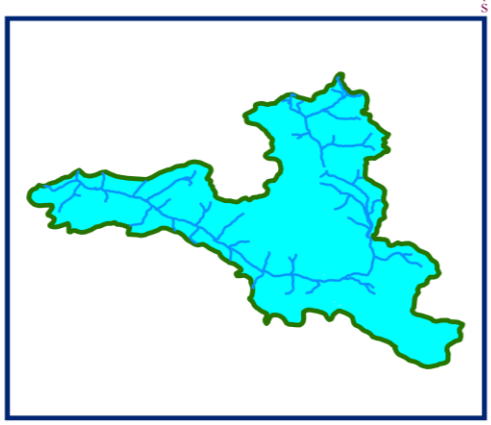
SNOW

105 0 10 20 30 40 Kilometers

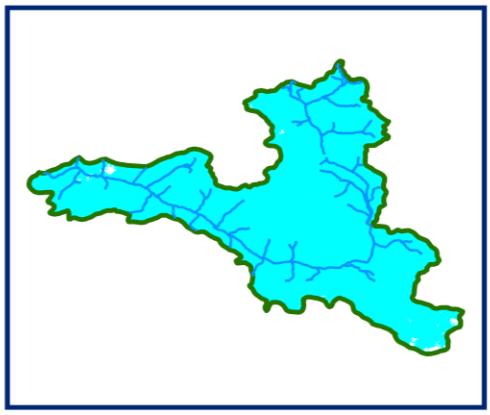
SNOW COVER MAP : CHANDRA BASIN



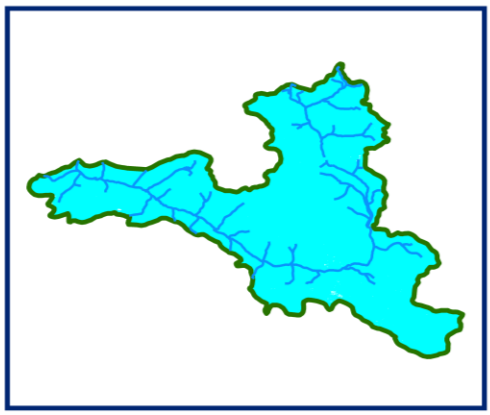
DATA NOT AVAILABLE



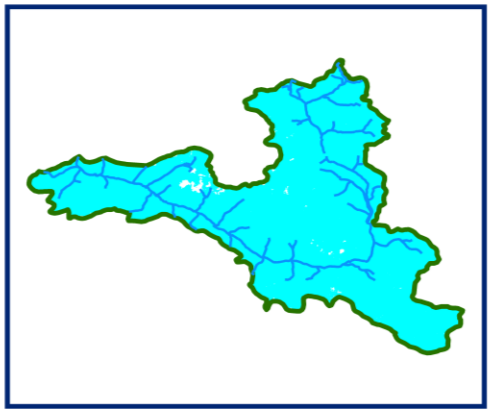
06 MARCH 2014



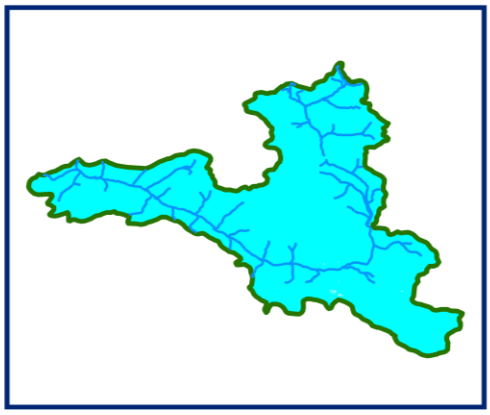
12 MARCH 2014



16 MARCH 2014



21 MARCH 2014



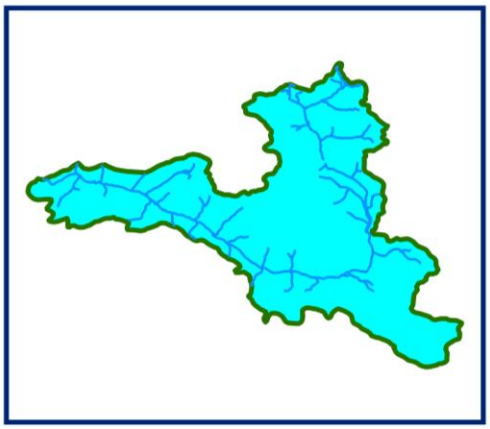
30 MARCH 2014

SNOW

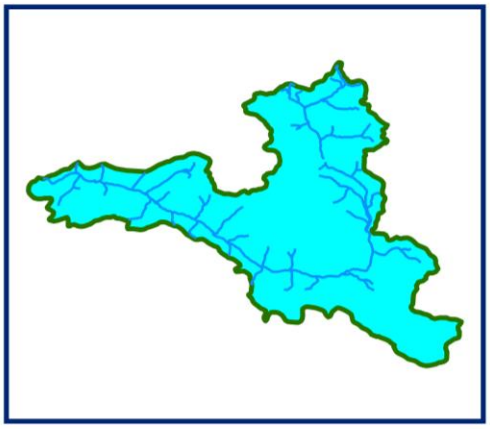
105 0 10 20 30 40

Kilometers

10 DAILY SNOW COVER MAP : CHANDRA BASIN



DATA USED
06 MARCH 2014
07 MARCH 2014



DATA USED
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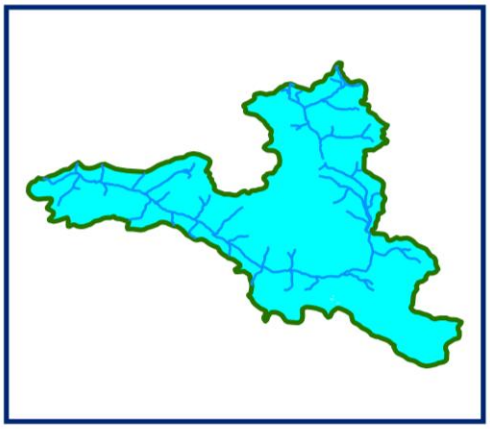
16 MARCH 2014

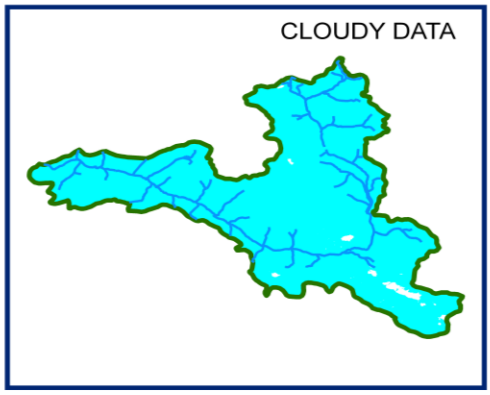


DATA USED
21 MARCH 14
30 MARCH 14

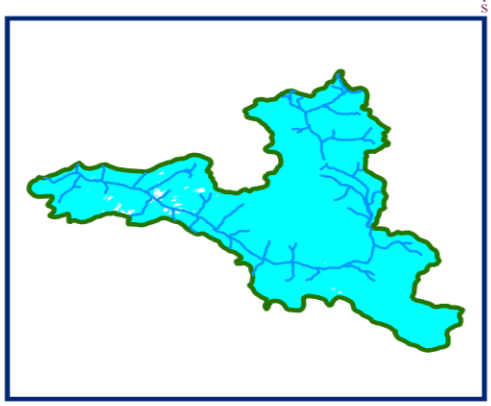
SNOW

105 0 10 20 30 40 Kilometers

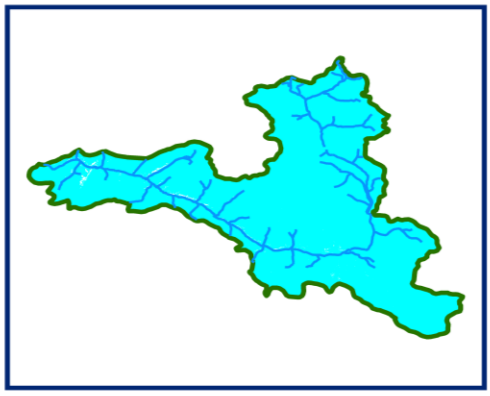
SNOW COVER MAP : CHANDRA BASIN



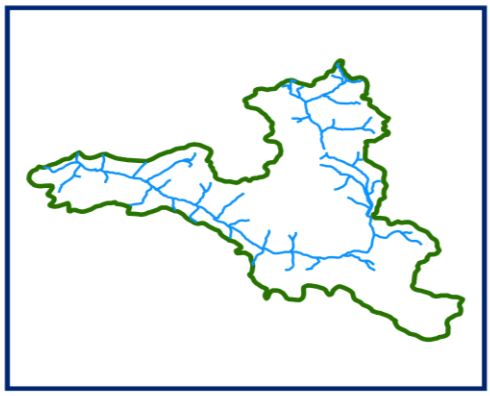
02 APRIL 2014



09 APRIL 2014



14 APRIL 2014



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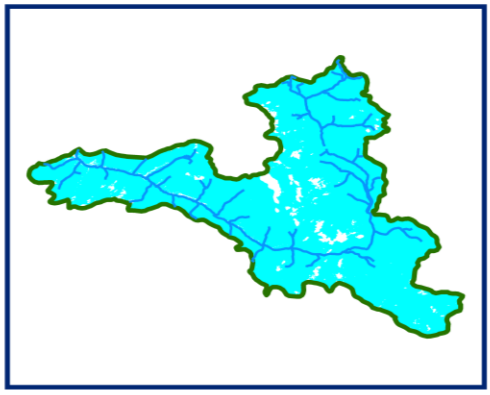
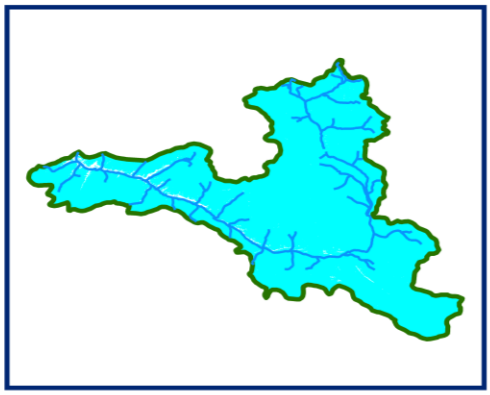


23 APRIL 2014

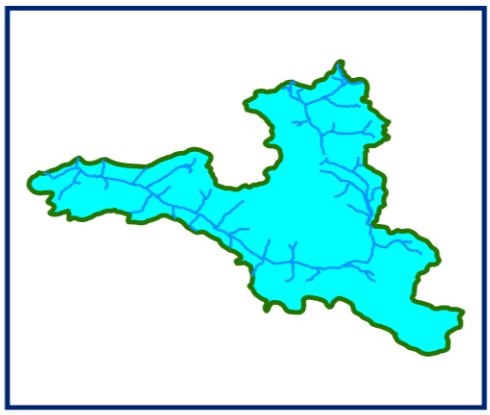


28 APRIL 2014

SNOW

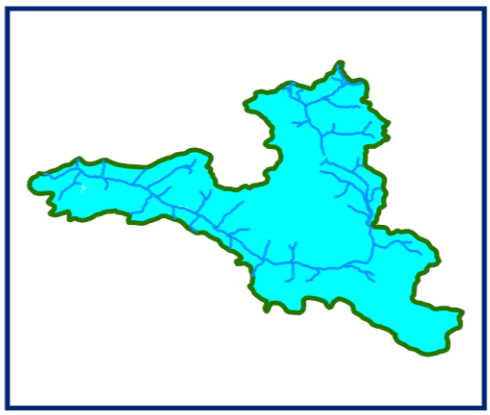
105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : CHANDRA BASIN



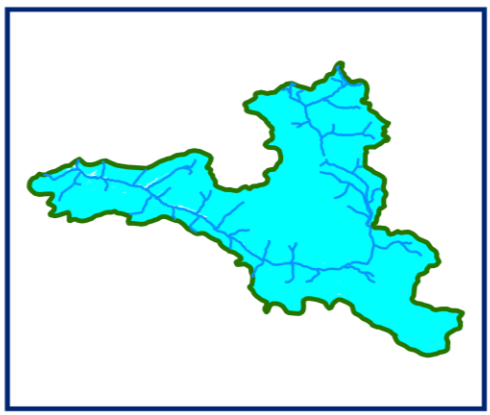
DATA USED

02 APRIL 2014
09 APRIL 2014



DATA USED

12 APRIL 2014
14 APRIL 2014

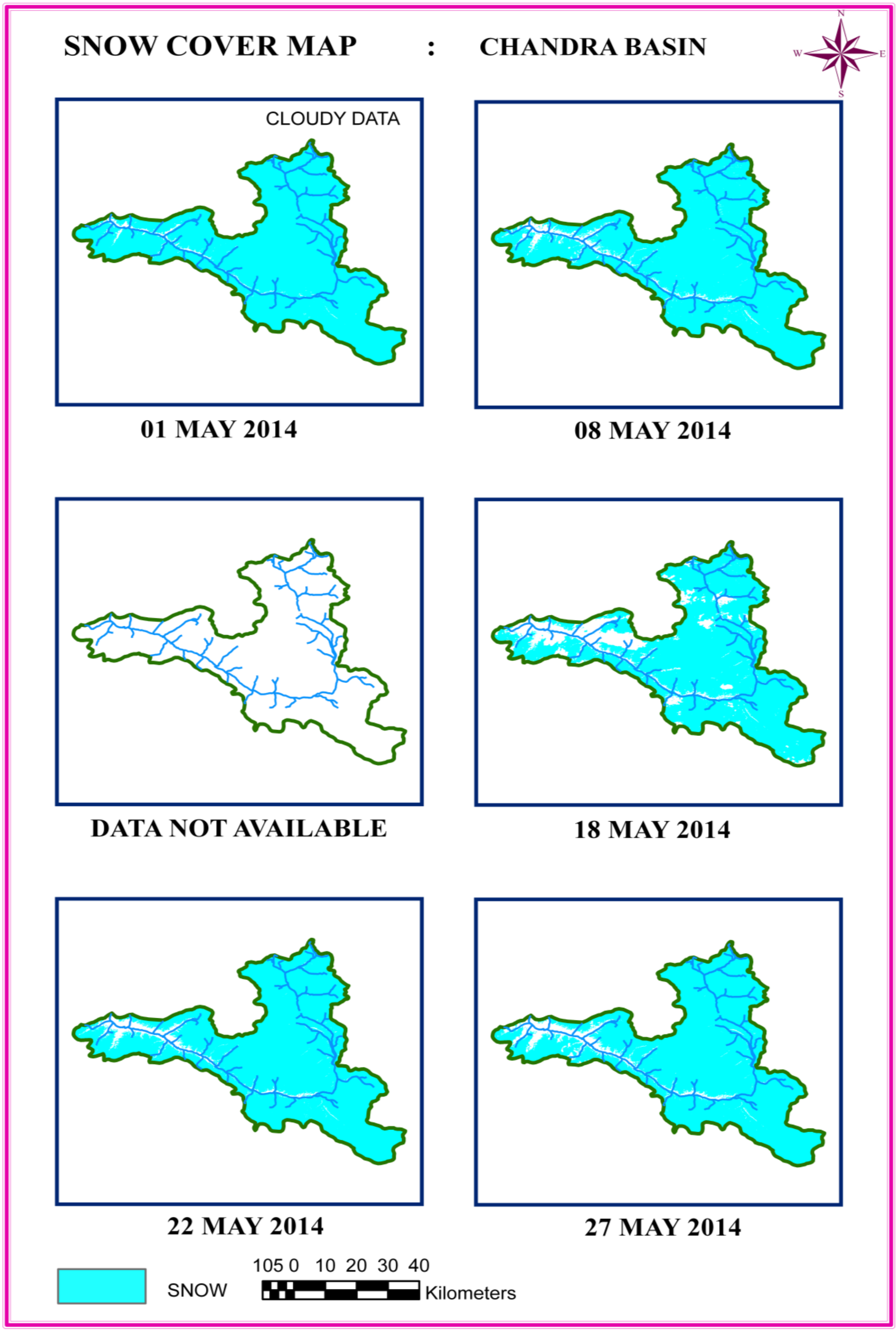


DATA USED

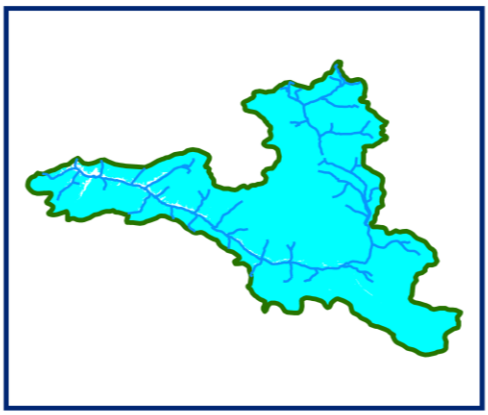
23 APRIL 2014
26 APRIL 2014
28 APRIL 2014

SNOW

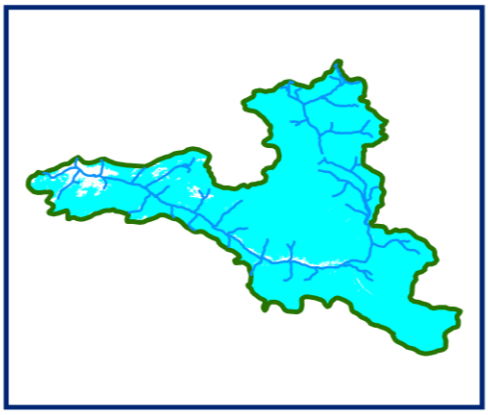
105 0 10 20 30 40 Kilometers


SNOW COVER MAP : CHANDRA BASIN
N
W
E
S
CLOUDY DATA
01 MAY 2014
08 MAY 2014
DATA NOT AVAILABLE
18 MAY 2014
22 MAY 2014
27 MAY 2014
SNOW
105 0 10 20 30 40
Kilometers

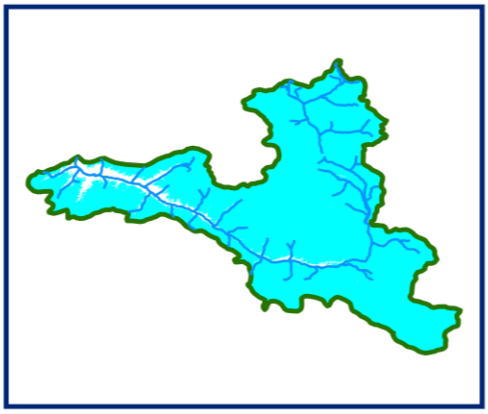
10 DAILY SNOW COVER MAP : CHANDRA BASIN



DATA USED
01 MAY 2014
08 MAY 2014



DATA USED
18 MAY 2014
20 MAY 2014

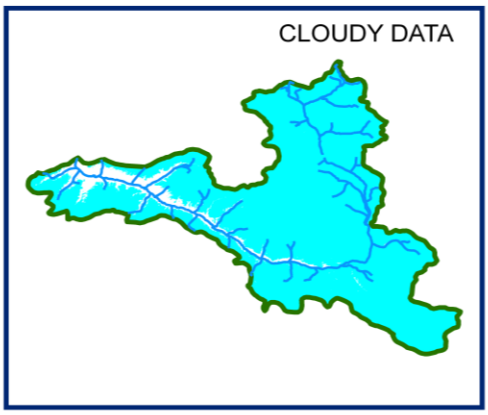


DATA USED
22 MAY 2014
25 MAY 2014
27 MAY 2014

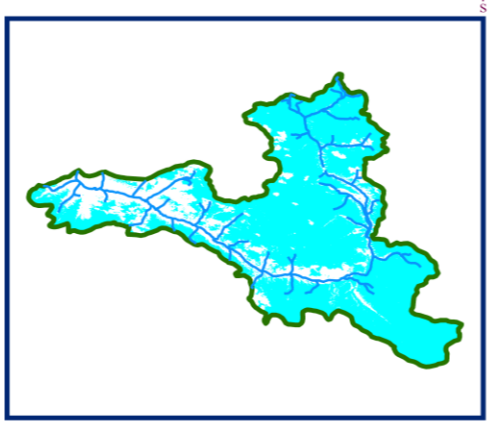
SNOW

105 0 10 20 30 40 Kilometers

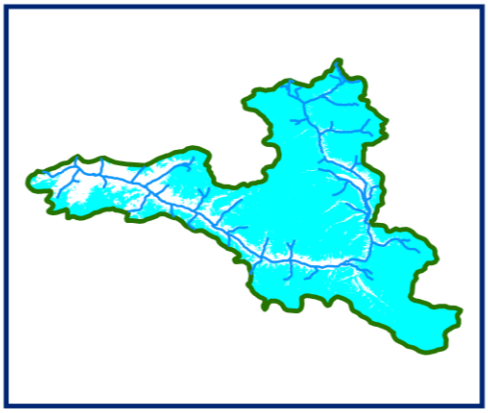
SNOW COVER MAP : CHANDRA BASIN



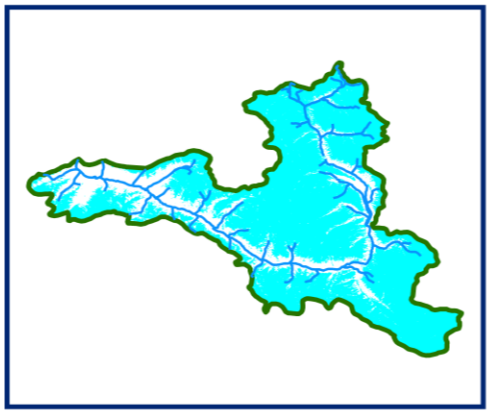
03 JUNE 2014



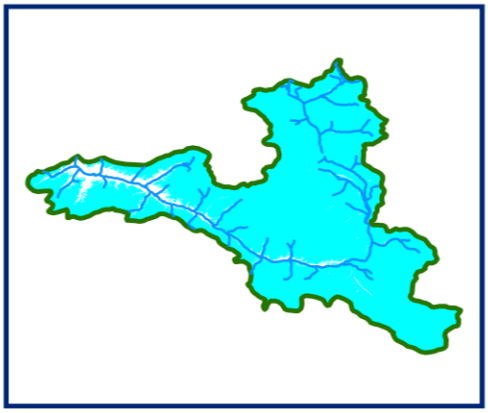
10 JUNE 2014



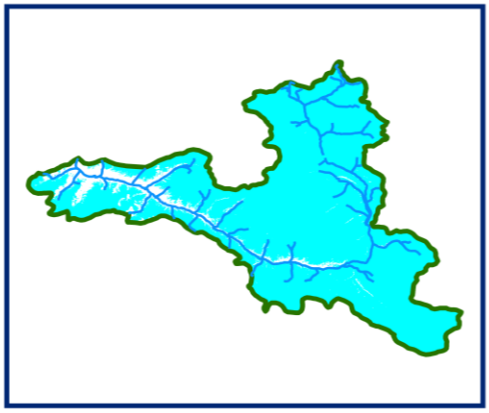
11 JUNE 2014



16 JUNE 2014



22 JUNE 2014

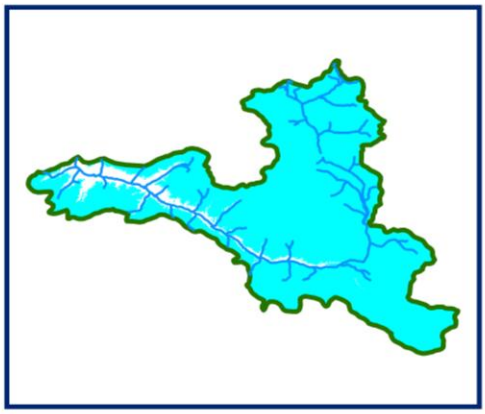


27 JUNE 2014

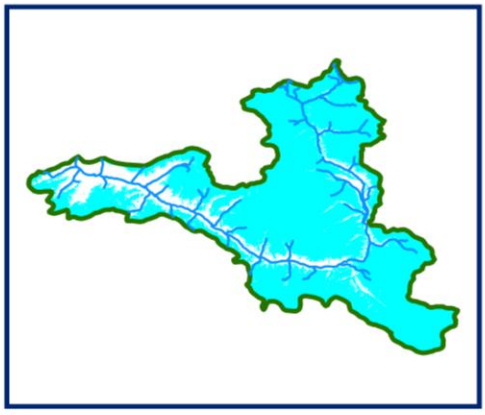
SNOW

105 0 10 20 30 40 Kilometers

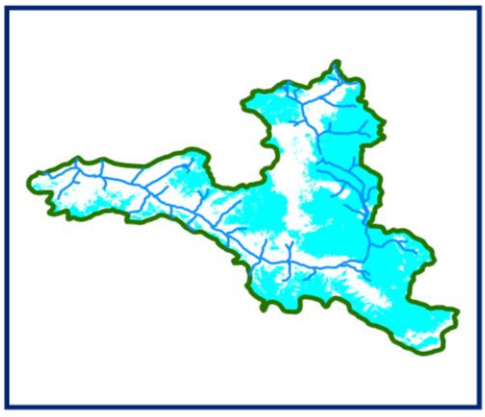
10 DAILY SNOW COVER MAP : CHANDRA BASIN



DATA USED
03 JUNE 2014
06 JUNE 2014
10 JUNE 2014



DATA USED
11 JUNE 2014
16 JUNE 2014
20 JUNE 2014



DATA USED
30 JUNE 2014

SNOW

105 0 10 20 30 40 Kilometers

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: BHAGA **BASIN AREA: 1680 sq km**

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2013							
1	4-Oct-13	339	20	5	18-Oct-13	569	34
2	9-Oct-13	312	19	6	21-Oct-13	693	41
3	14-Oct-13	789	47	7	25-Oct-13	616	37
4	16-Oct-13	863	51	8	28-Oct-13	542	32
November 2013							
7	2-Nov-13	1062	63	10	21-Nov-13	1396	83
8	12-Nov-13	1597	95	11	26-Nov-13	1271	76
9	16-Nov-13	1509	90	12	30-Nov-13	1152	69
December 2013							
13	10-Dec-13	1093	65	16	20-Dec-13	1216	72
14	15-Dec-13	1101	66	17	24-Dec-13	1317	78
15	18-Dec-13	1138	68		27-Dec-13	1351	80
January 2014							
18	1-Jan-14	1475	88	22	24-Jan-14	1677	100
19	3-Jan-14	1454	87	23	27-Jan-14	1680	100
20	6-Jan-14	1660	99	24	29-Jan-14	1680	100
21	20-Jan-14	1680	101				
February 2014							
25	1-Feb-14	1634	97	28	20-Feb-14	1658	99
26	8-Feb-14	1651	98	29	25-Feb-14	1680	11
27	13-Feb-14	1678	100				
March 2014							
30	6-Mar-14	1680	100	32	16-Mar-14	1680	100
31	7-Mar-14	1680	100	33	21-Mar-14	1676	100
April 2014							
34	9-Apr-14	1680	100	38	24-Apr-14	1534	91
35	12-Apr-14	1677	100	39	26-Apr-14	1647	98
36	14-Apr-14	1668	99	40	28-Apr-14	1613	96
37	23-Apr-14	1592	95				

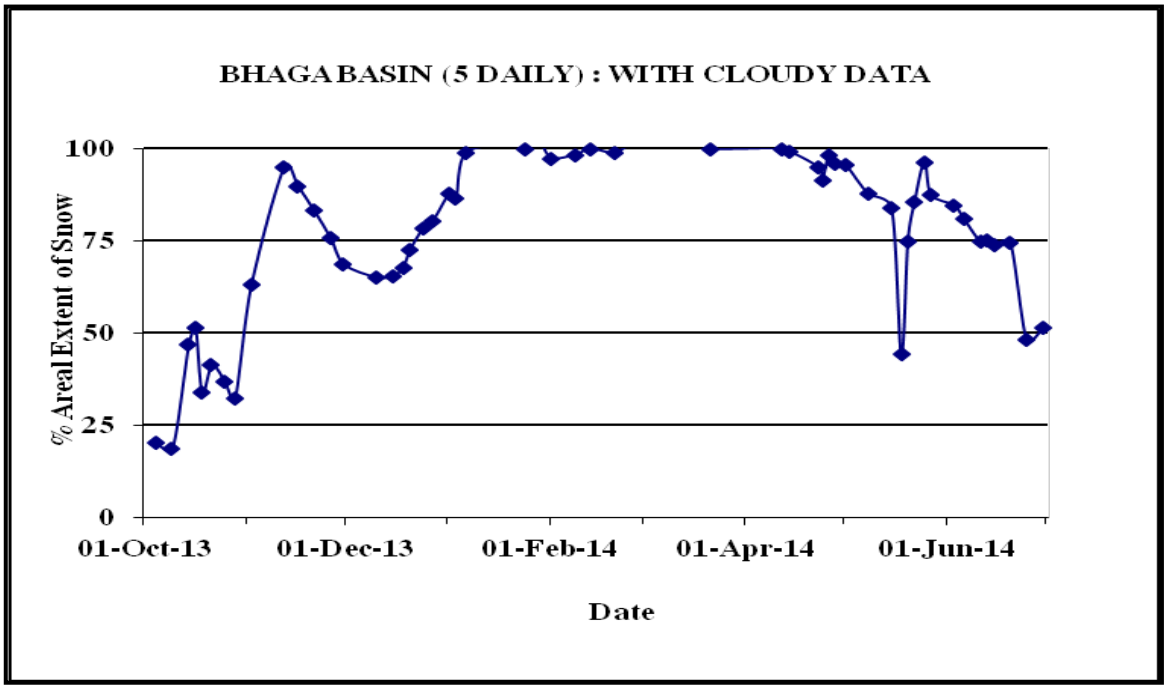
S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
May-2014							
41	1-May-14	1606	96	45	20-May-14	1259	75
42	8-May-14	1472	88	46	22-May-14	1436	85
43	15-May-14	1409	84	47	25-May-14	1618	96
44	18-May-14	743	44	48	27-May-14	1469	87
June-2014							
62	3-Jun-14	1420	85	66	15-Jun-14	1243	74
63	6-Jun-14	1358	81	67	20-Jun-14	1252	75
64	11-Jun-14	1254	75	68	25-Jun-14	810	48
65	13-Jun-14	1264	75	69	30-Jun-14	862	51

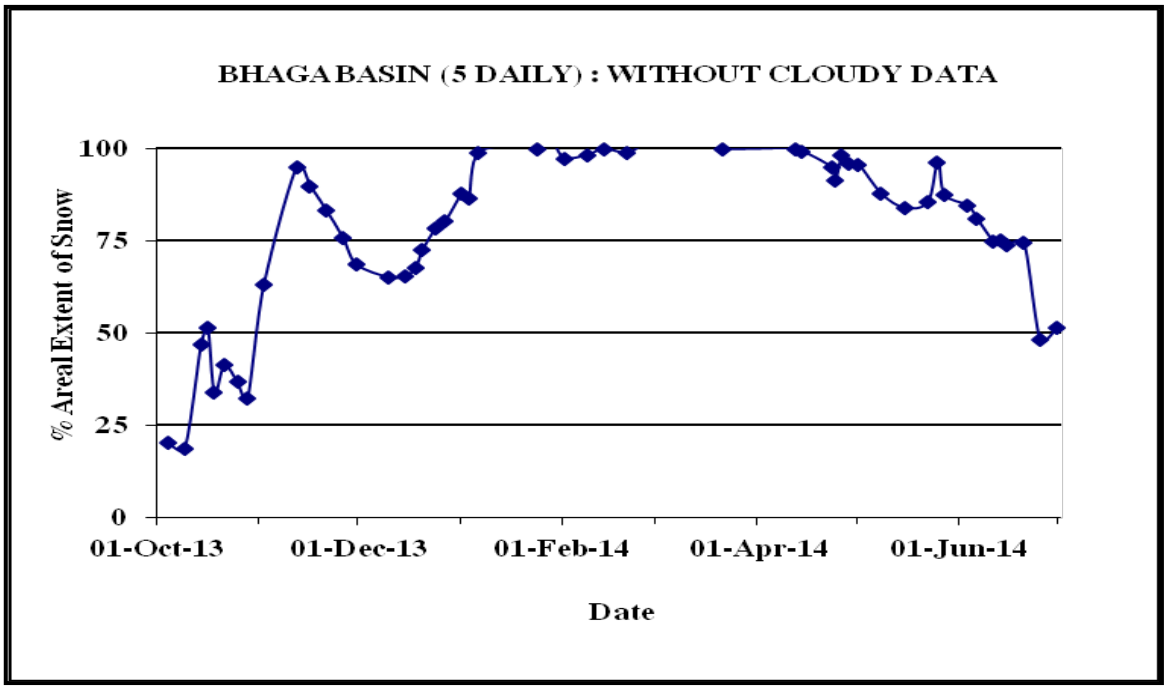
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: BHAGA **BASIN AREA: 1680 sqkm**

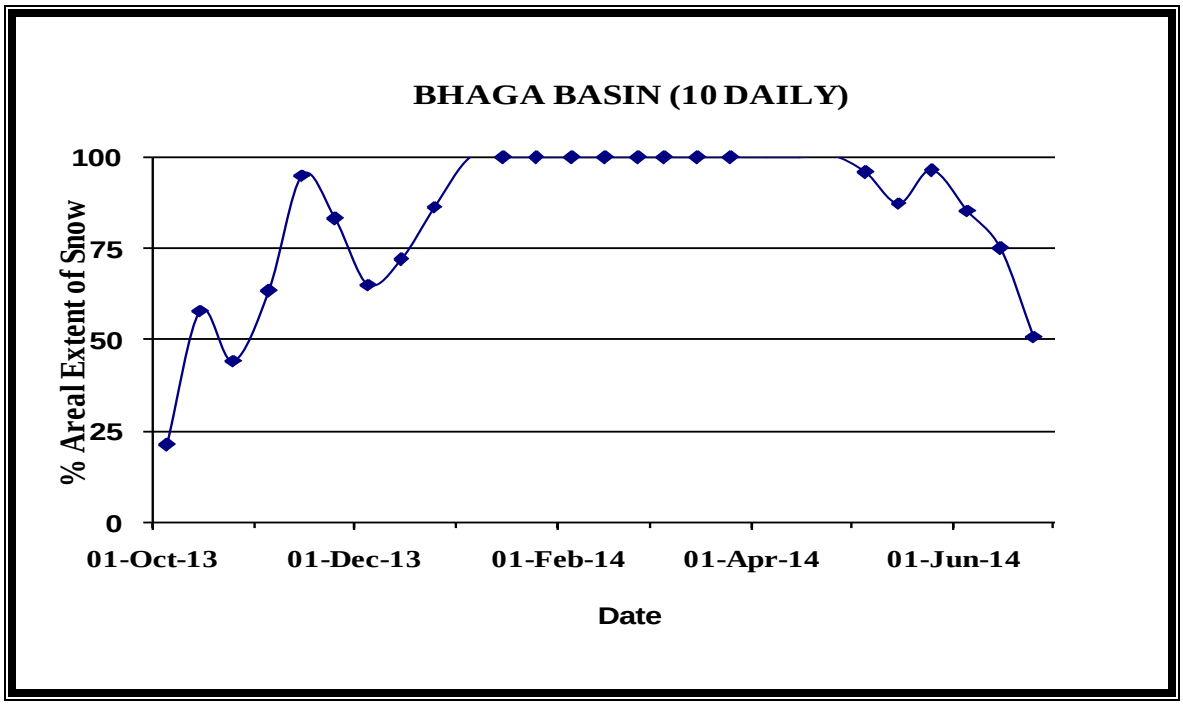
S No	Date	Snow cover (sq km)	Snow cover (%)	S. No	Date	Snow cover (sq km)	Snow cover (%)
October 2013							
1	5-Oct-13	359	21	3	25-Oct-13	744	44
2	15-Oct-13	976	58				
November 2013							
4	5-Nov-13	1065	63	6	25-Nov-13	1394	83
5	15-Nov-13	1596	95				
December 2013							
7	5-Dec-13	1293	65	8	25-Dec-13	86	1451
7	15-Dec-13	1209	72				
January 2014							
9	5-Jan-14	1680	100	11	25-Jan-14	1680	100
10	15-Jan-14	1680	100				
February 2014							
12	5-Feb-14	1680	100	14	25-Feb-14	1680	100
13	15-Feb-14	1680	100				
March 2014							
15	5-Mar-14	1680	100	17	25-Mar-14	1676	100
16	15-Mar-14	1680	100				
April 2014							
18	5-Apr-14	1680	100	20	25-Apr-14	1680	100
19	15-Apr-14	1680	100				
May-2014							
21	5-May-14	1608	96	22	25-May-14	1619	96
22	15-May-14	1470	87				
June-2014							
23	5-June-14	1437	86	25	25-June-14	857	51
24	15-June-14	1260	75				

SNOW COVER DEPLETION CURVE



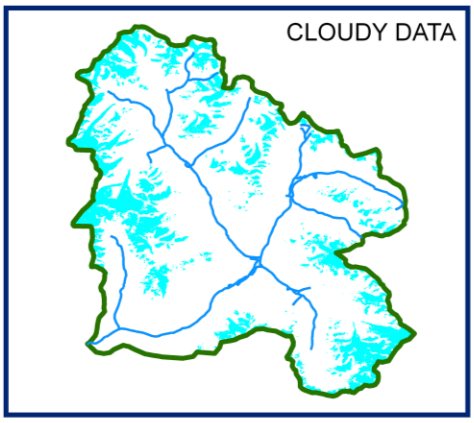


SNOW COVER DEPLETION CURVE

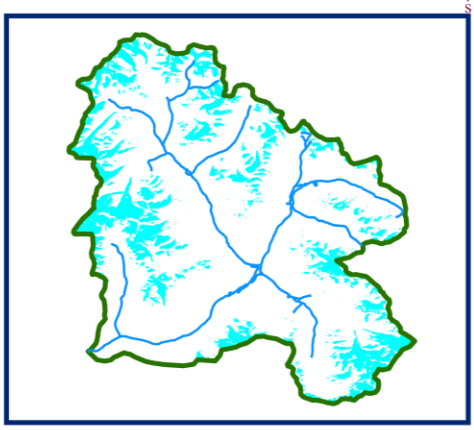


SNOW COVER MAP

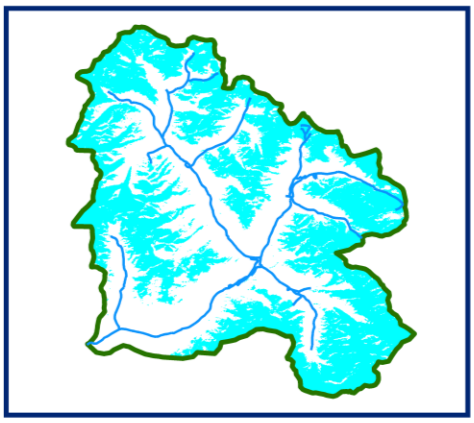
SNOW COVER MAP : BHAGA BASIN



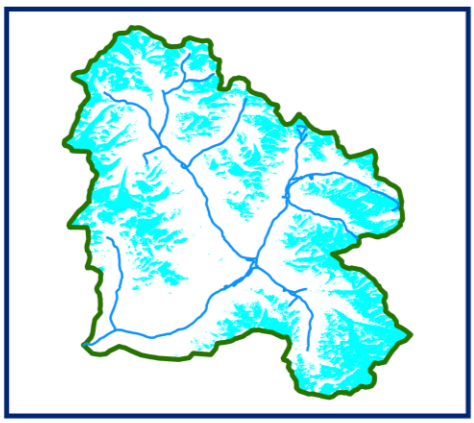
04 OCTOBER 2013



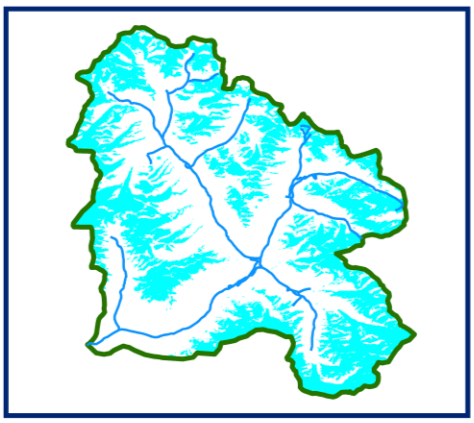
09 OCTOBER 2013



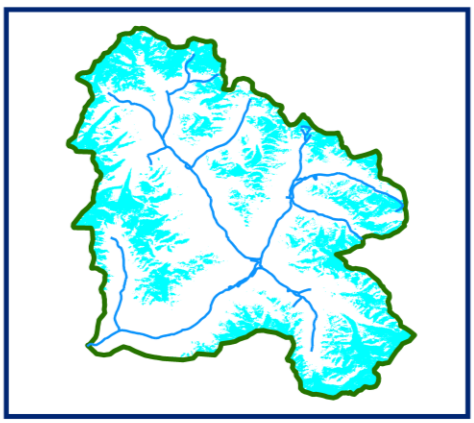
16 OCTOBER 2013



18 OCTOBER 2013



21 OCTOBER 2013

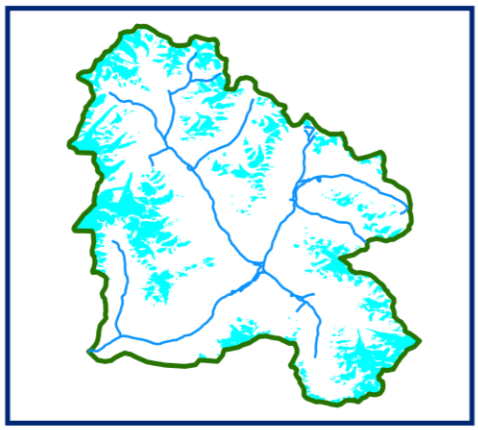


28 OCTOBER 2013

SNOW

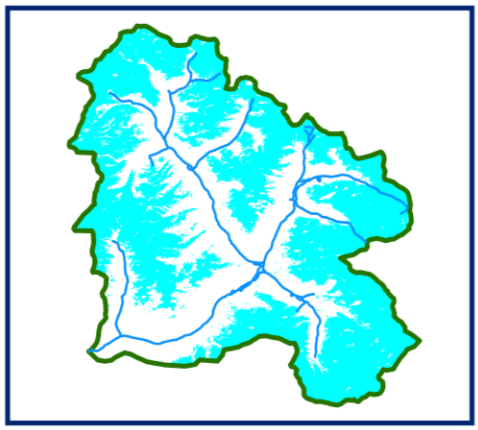
10 5 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : BHAGA BASIN



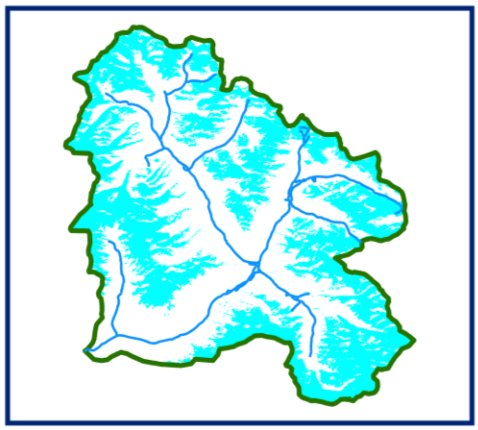
DATA USED

04 OCTOBER 2013
09 OCTOBER 2013



DATA USED

14 OCTOBER 2013
16 OCTOBER 2013
18 OCTOBER 2013

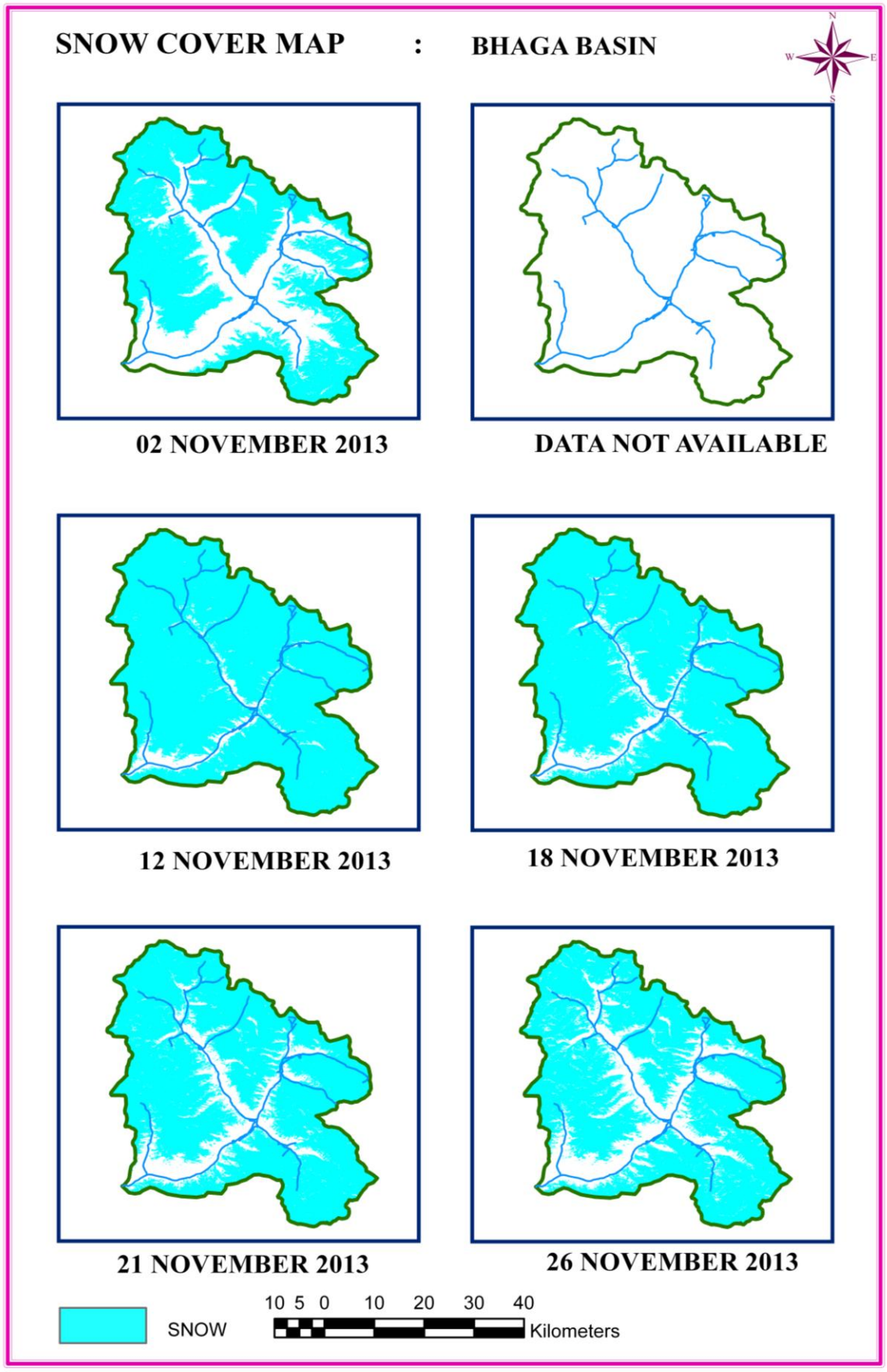


DATA USED

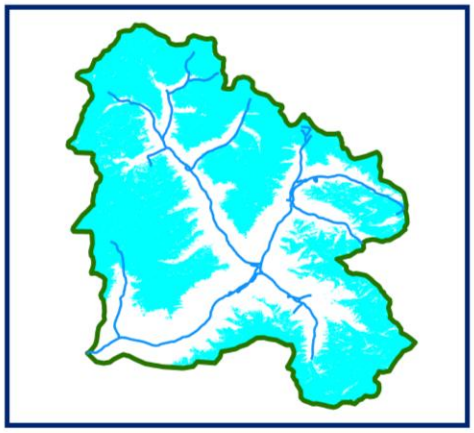
21 OCTOBER 2013
25 OCTOBER 2013
28 OCTOBER 2013

SNOW

0 5 10 20 30 40
Kilometers


SNOW COVER MAP : BHAGA BASIN
N
W
E
S
02 NOVEMBER 2013
DATA NOT AVAILABLE
12 NOVEMBER 2013
18 NOVEMBER 2013
21 NOVEMBER 2013
26 NOVEMBER 2013
SNOW
10 5 0 10 20 30 40
Kilometers

10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
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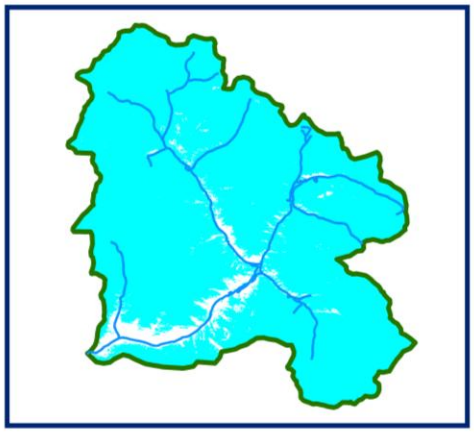
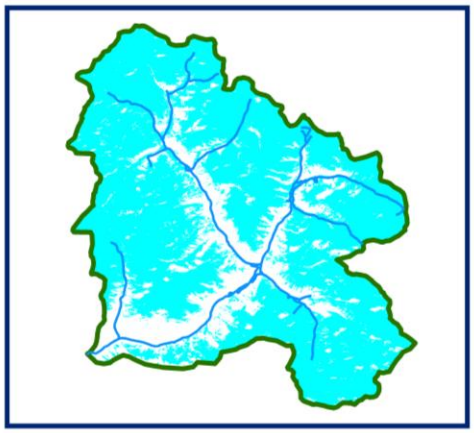


DATA USED
12 NOVEMBER 2013
16 NOVEMBER 2013

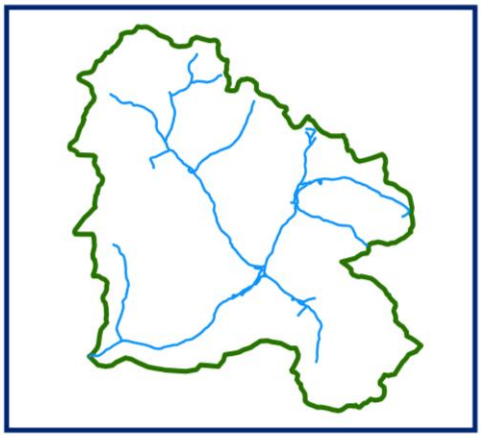


DATA USED
21 NOVEMBER 2013
26 NOVEMBER 2013
30 NOVEMBER 2013

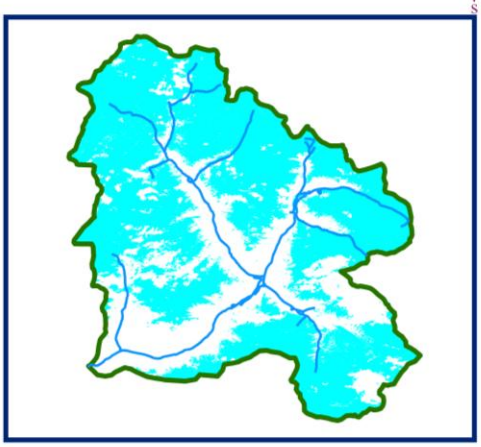
SNOW

10 5 0 10 20 30 40 Kilometers

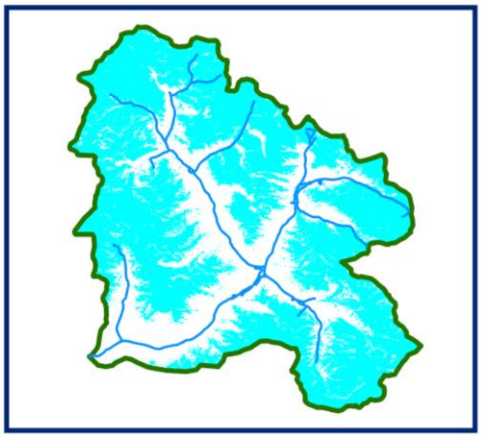
SNOW COVER MAP : BHAGA BASIN



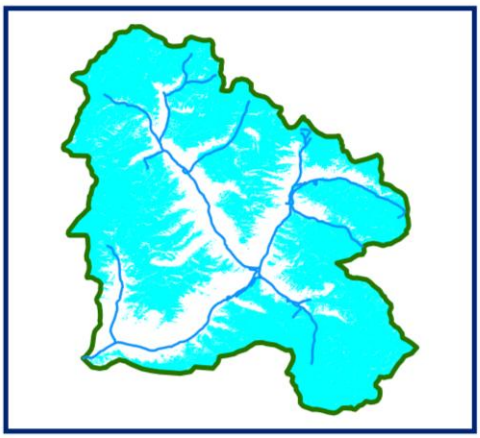
DATA NOT AVAILABLE



10 DECEMBER 2013



15 DECEMBER 2013



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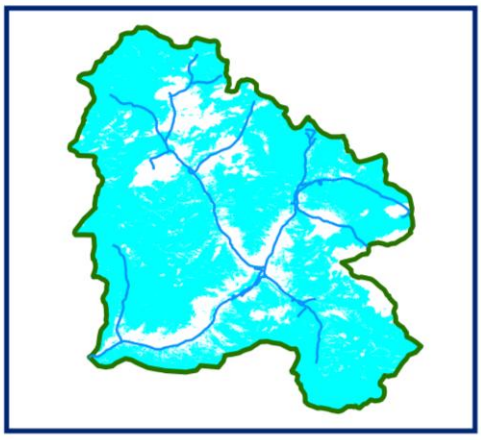
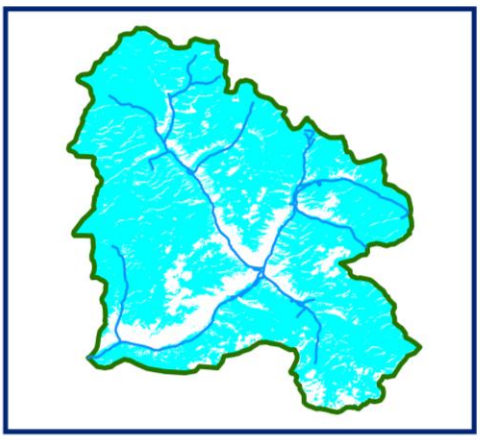


24 DECEMBER 2013



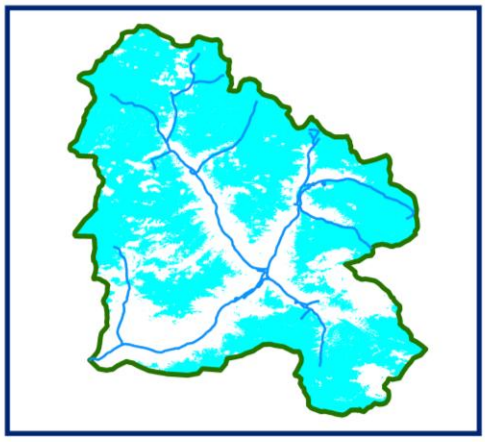
27 DECEMBER 2013

SNOW

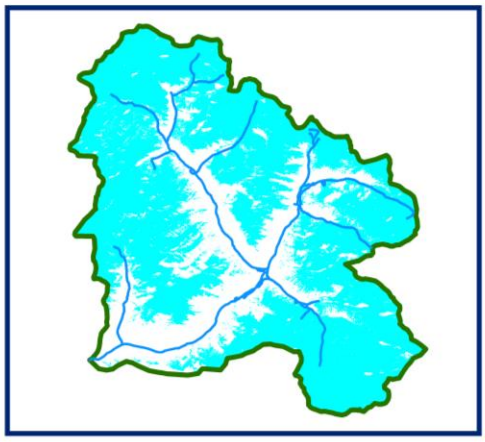
10 5 0 10 20 30 40

Kilometers

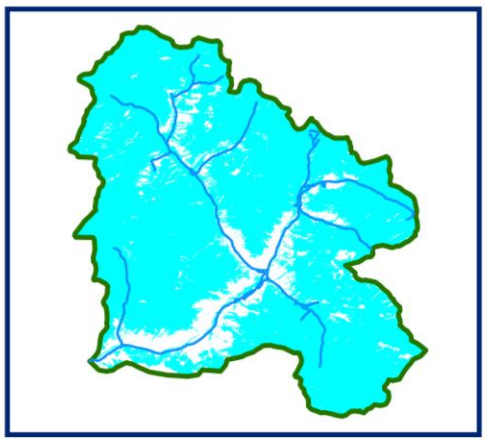
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
05 DECEMBER 2013



DATA USED
15 DECEMBER 2013
18 DECEMBER 2013

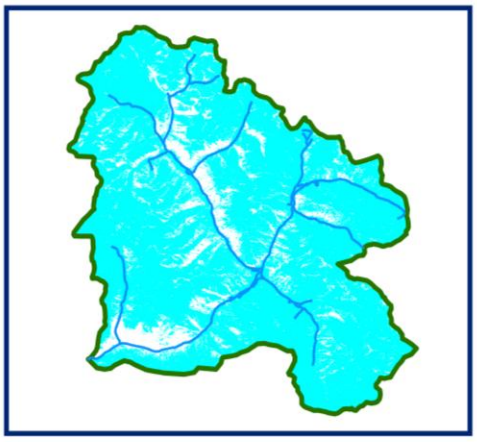


DATA USED
24 DECEMBER 2013
27 DECEMBER 2013

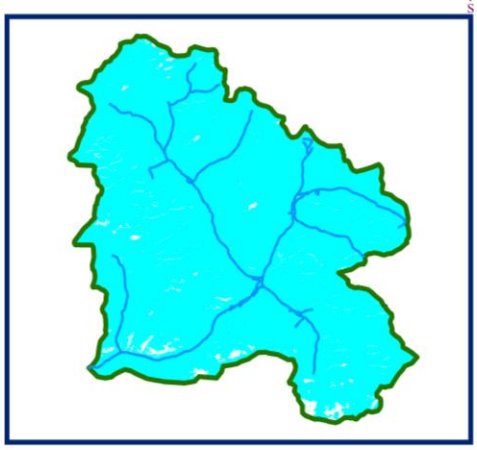
SNOW

10 5 0 10 20 30 40 Kilometers

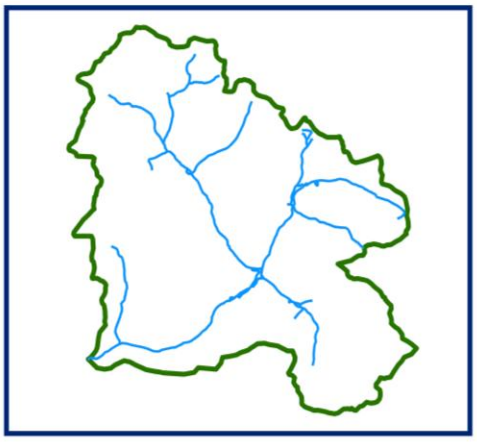
SNOW COVER MAP : BHAGA BASIN



03 JANUARY 2014



06 JANUARY 2014



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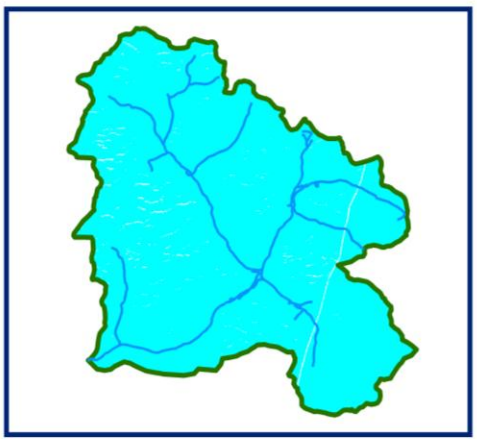
20 JANUARY 2014



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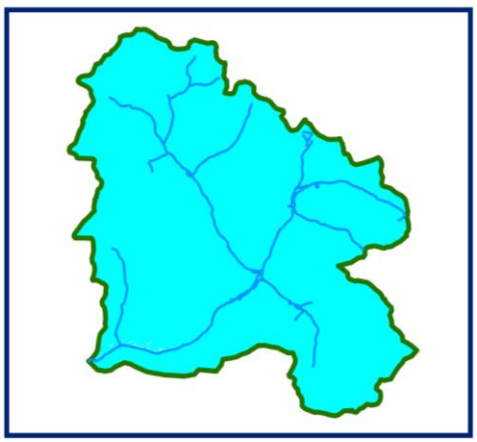


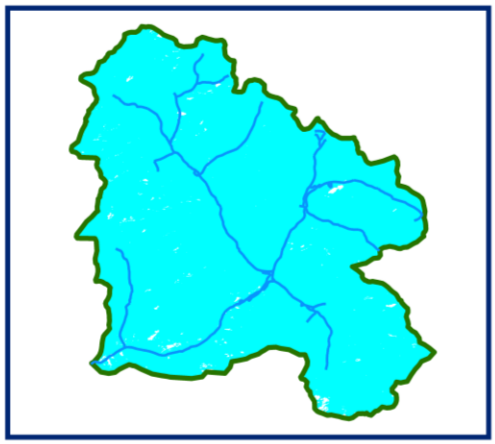
29 JANUARY 2014

SNOW

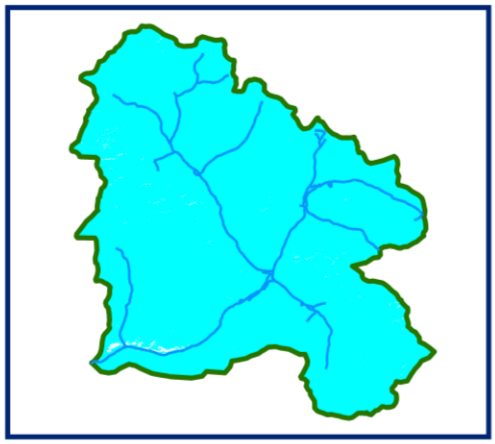
10 5 0 10 20 30 40

Kilometers

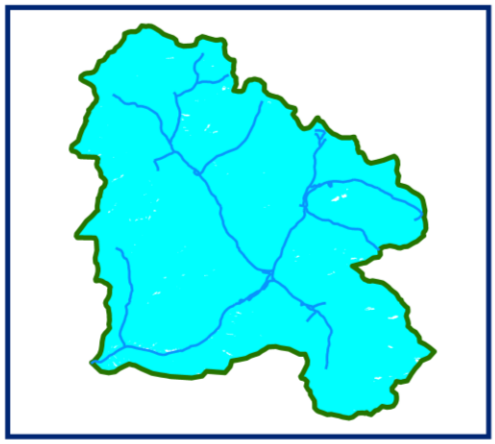
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
01 JANUARY 2014
03 JANUARY 2014
06 JANUARY 2014



DATA USED
15 JANUARY 2014

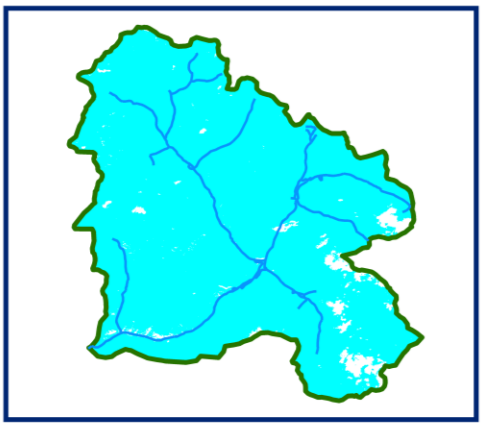


DATA USED
27 JANUARY 2014
29 JANUARY 2014

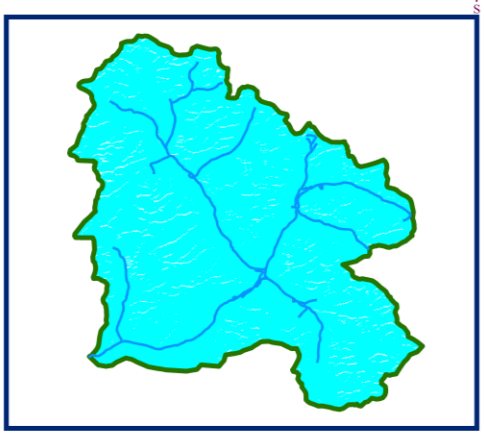
SNOW

10 5 0 10 20 30 40
Kilometers

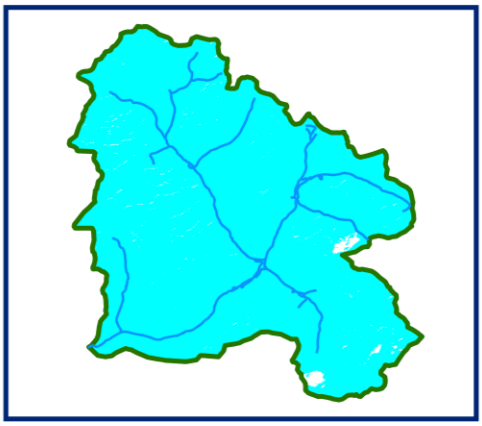
SNOW COVER MAP : BHAGA BASIN



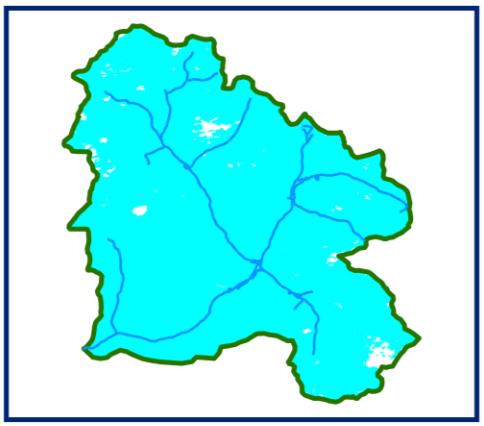
01 FEBRUARY 2014



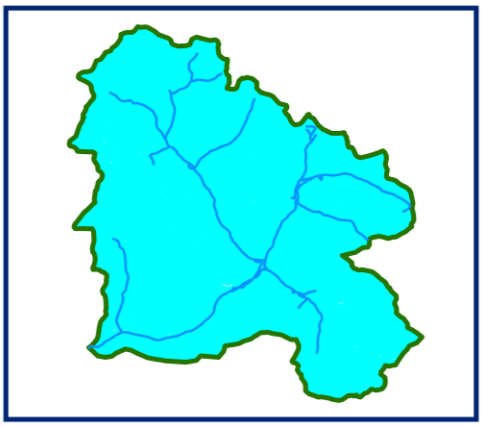
08 FEBRUARY 2014



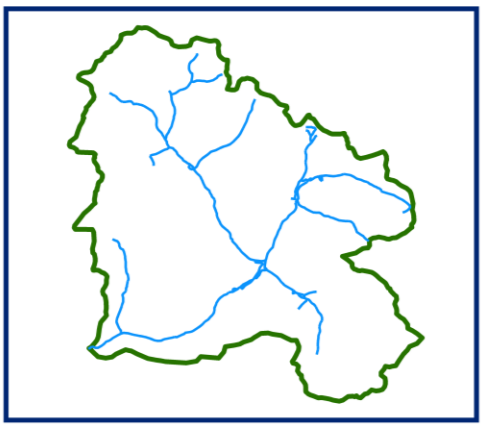
13 FEBRUARY 2014



20 FEBRUARY 2014



25 FEBRUARY 2014

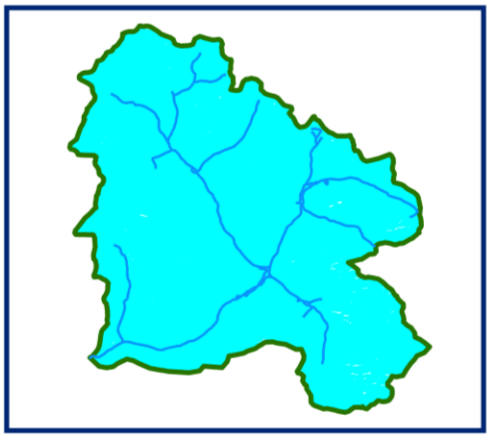


DATA NOT AVAILABLE

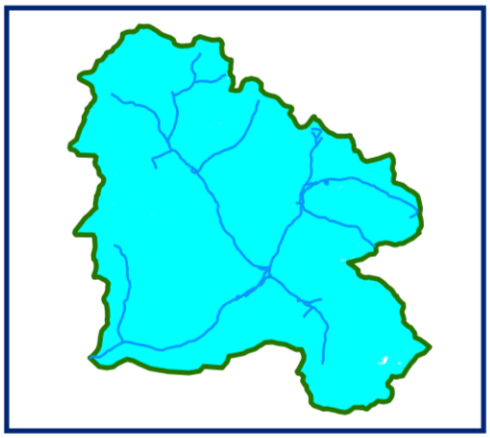
SNOW

10 5 0 10 20 30 40 Kilometers

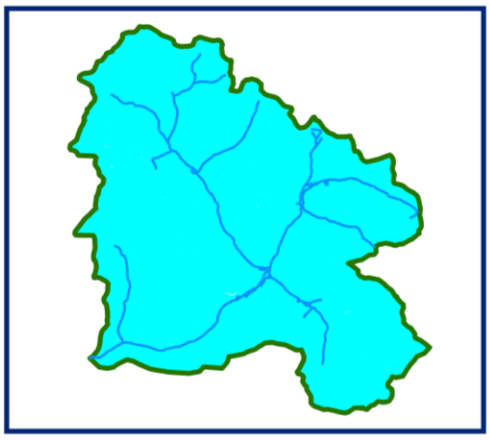
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
01 FEBUARY 2014



DATA USED
13 FEBUARY 2014
20 FEBUARY 2014



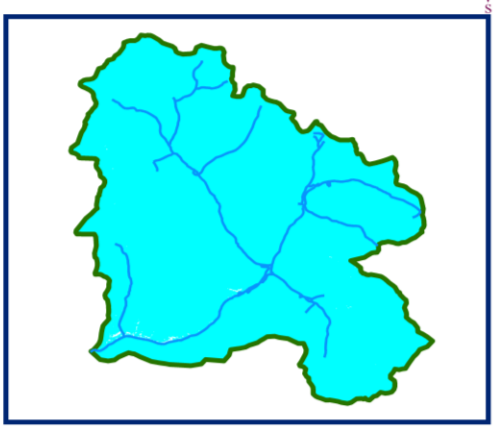
DATA USED
27 FEBUARY 2014

SNOW

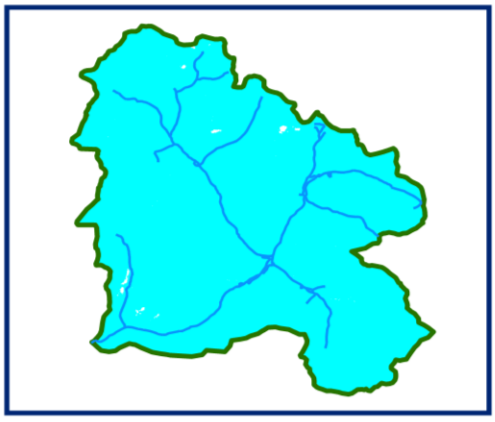
10 5 0 10 20 30 40
Kilometers

SNOW COVER MAP : BHAGA BASIN

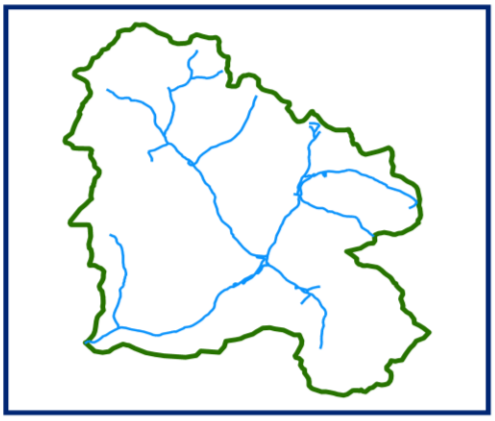
06 MARCH 2014



07 MARCH 2014



16 MARCH 2014



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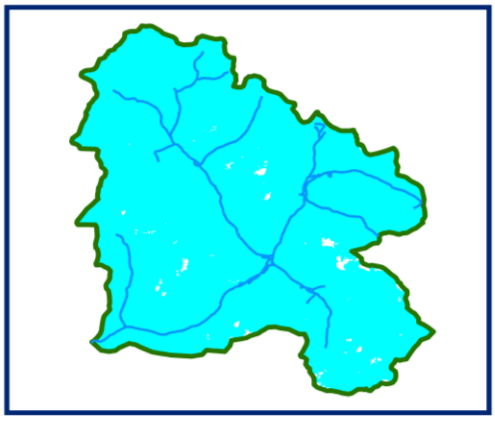
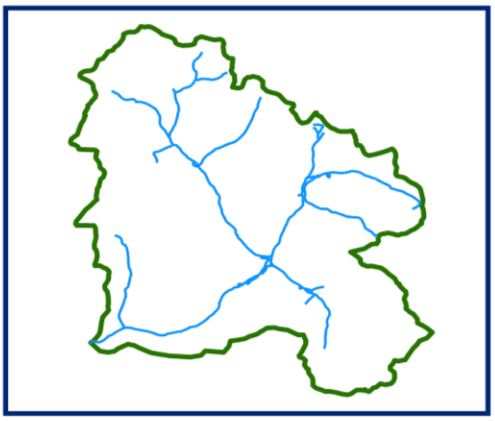


21 MARCH 2014



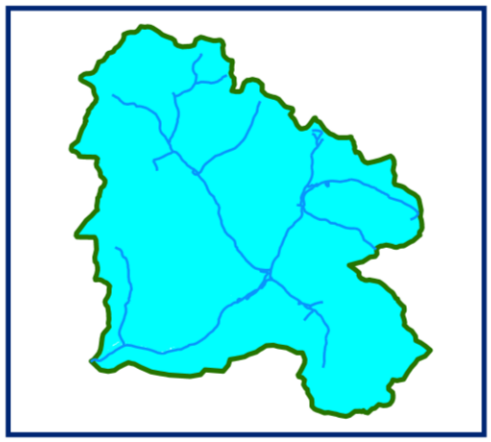
DATA NOT AVAILABLE

SNOW

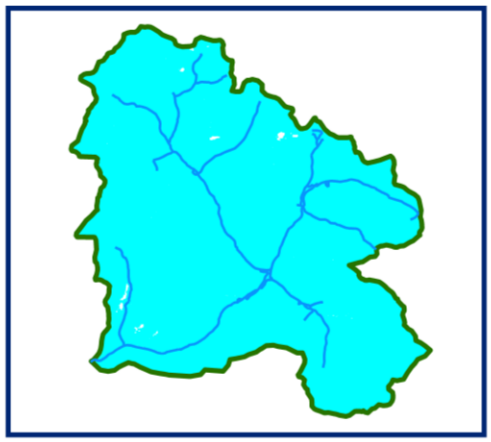
10 5 0 10 20 30 40

Kilometers

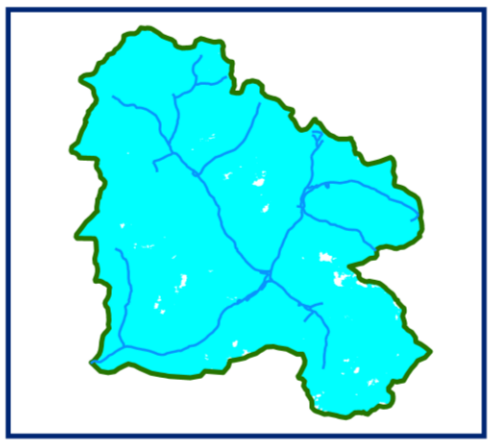
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
06 MARCH 2014
07 MARCH 2014



DATA USED
16 MARCH 2014

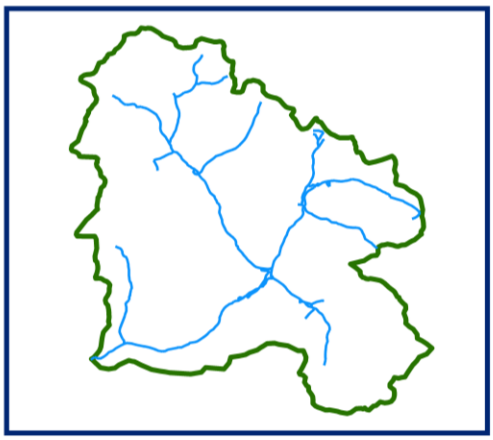


DATA USED
27 MARCH 2014

SNOW

10 5 0 10 20 30 40
Kilometers

SNOW COVER MAP : BHAGA BASIN



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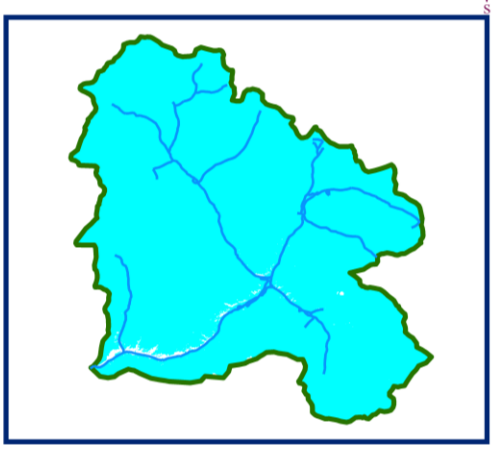
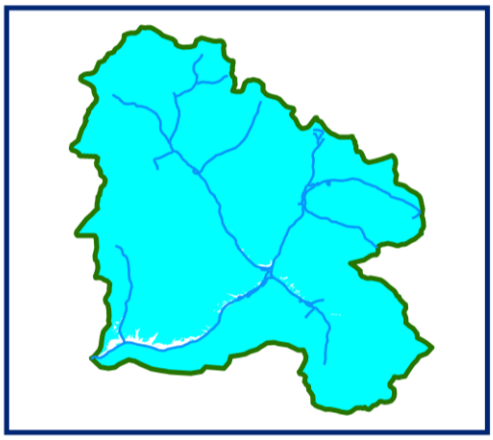
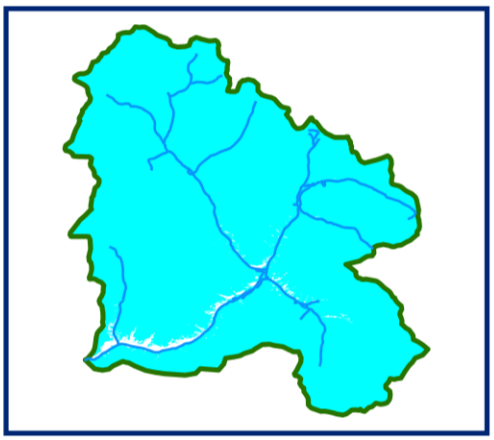


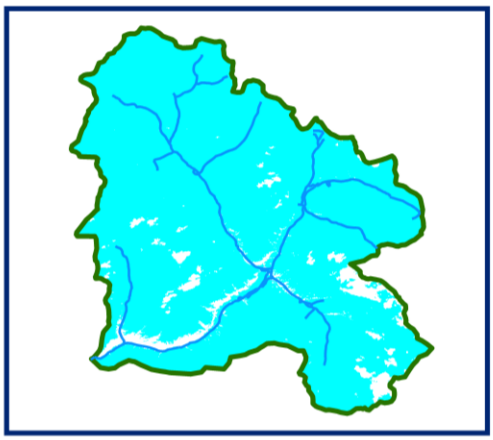
09 APRIL 2014



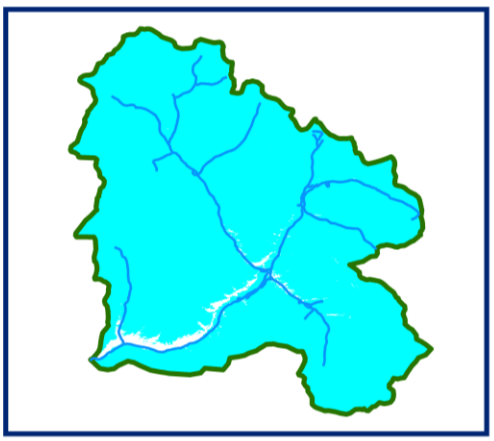
12 APRIL 2014



14 APRIL 2014



23 APRIL 2014



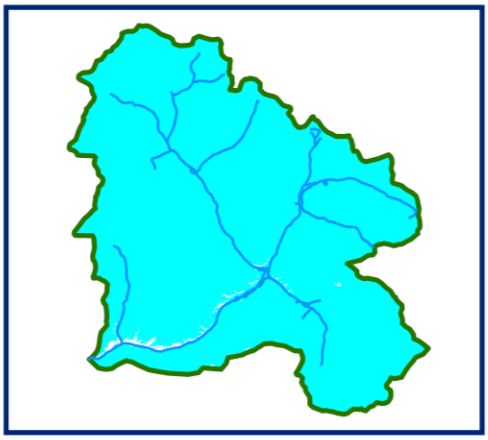
28 APRIL 2014

SNOW

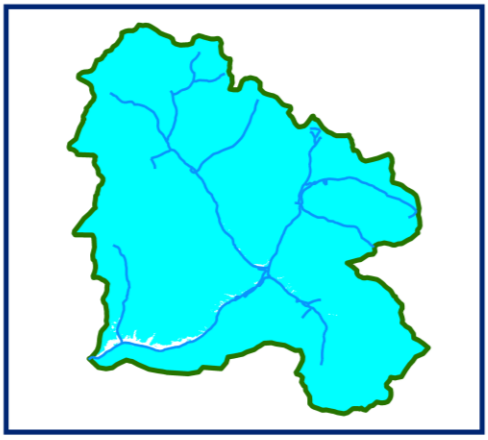
10 5 0 10 20 30 40

Kilometers

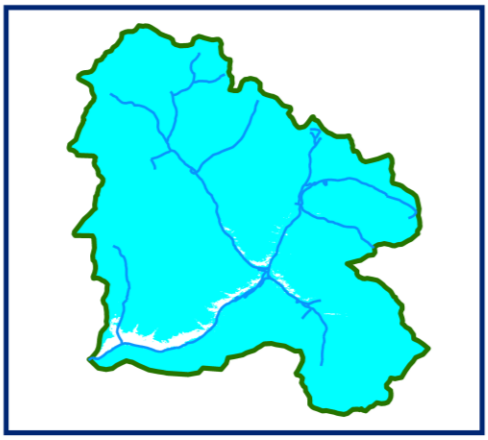
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
05 APRIL 2014



DATA USED
12 APRIL 2014
14 APRIL 2014



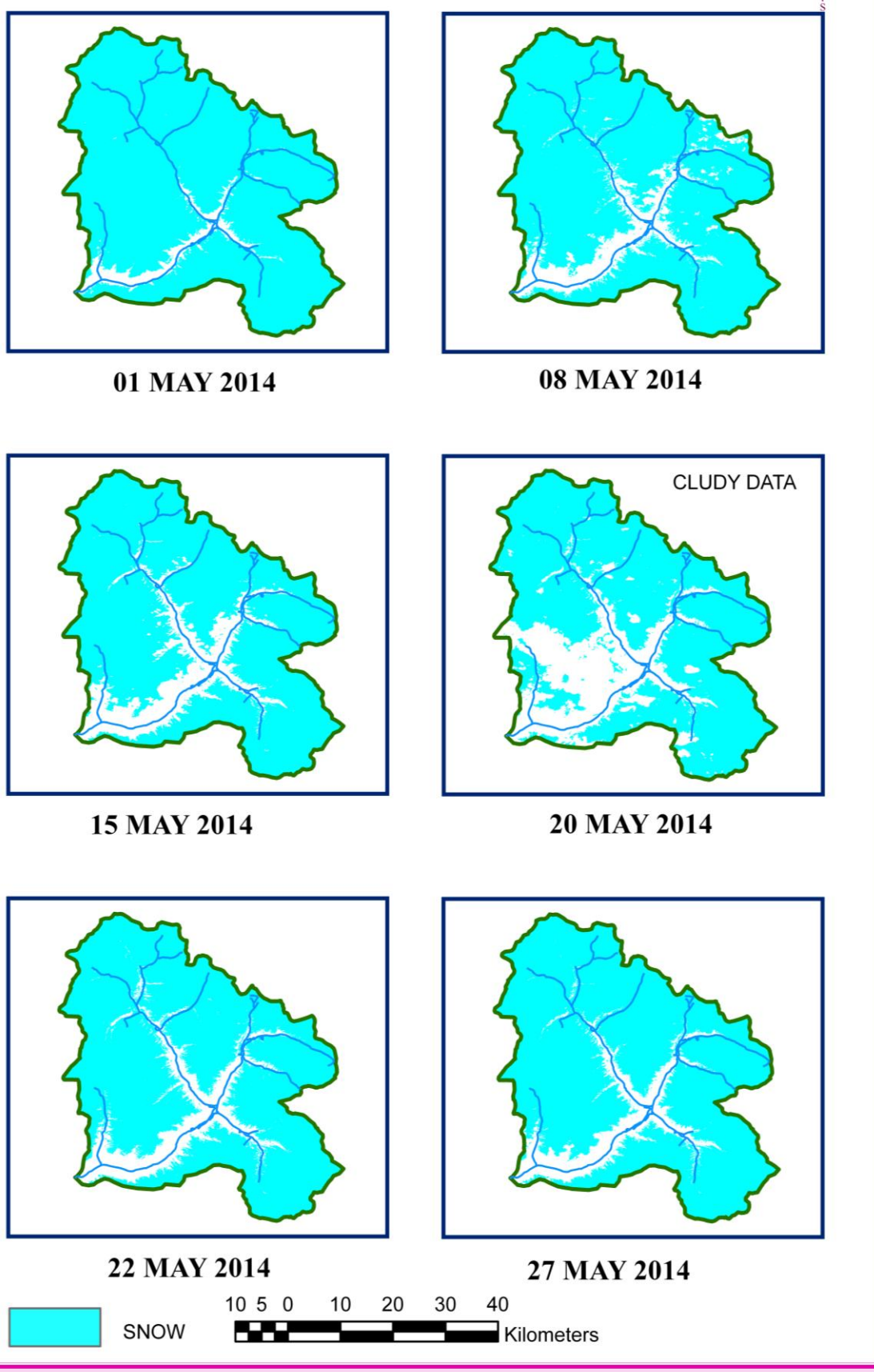
DATA USED
24 APRIL 2014
26 APRIL 2014
28 APRIL 2014

SNOW

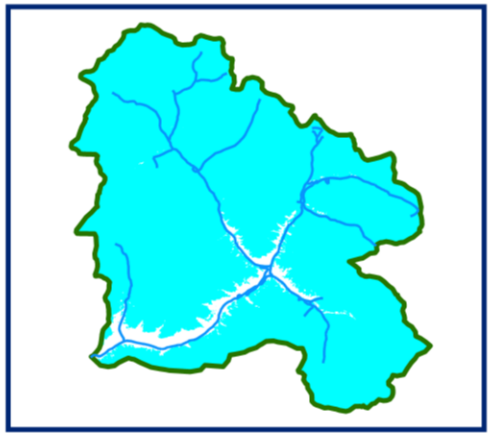
10 5 0 10 20 30 40

Kilometers

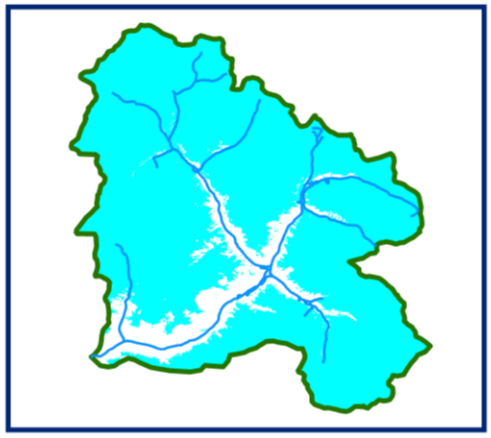
SNOW COVER MAP : BHAGA BASIN



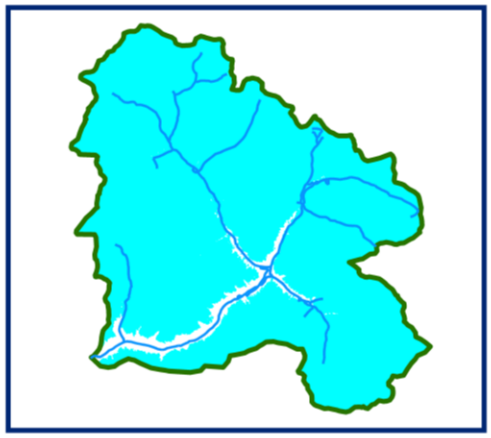
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
01 MAY 2014
08 MAY 2014



DATA USED
15 MAY 2014
18 MAY 2014
20 MAY 2014

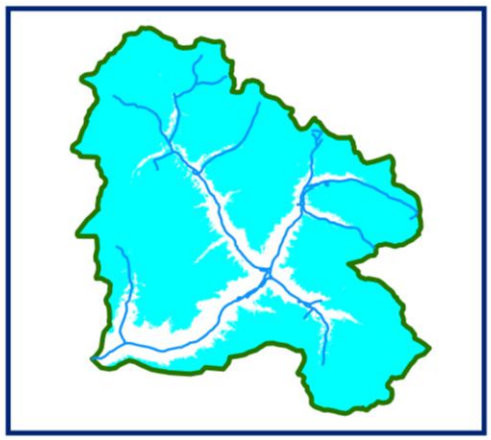


DATA USED
22 MAY 2014
25 MAY 2014
27 MAY 2014

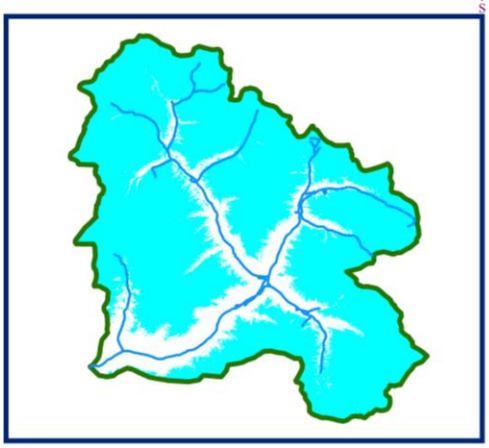
SNOW

10 5 0 10 20 30 40 Kilometers

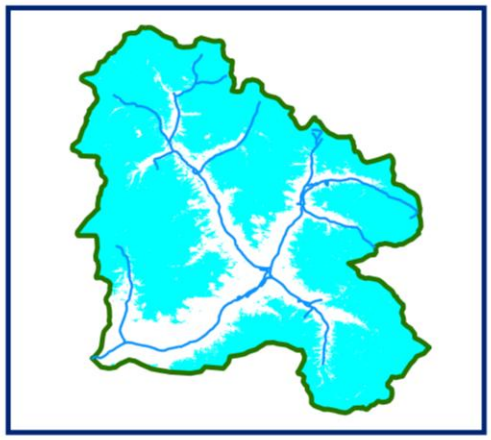
SNOW COVER MAP : BHAGA BASIN



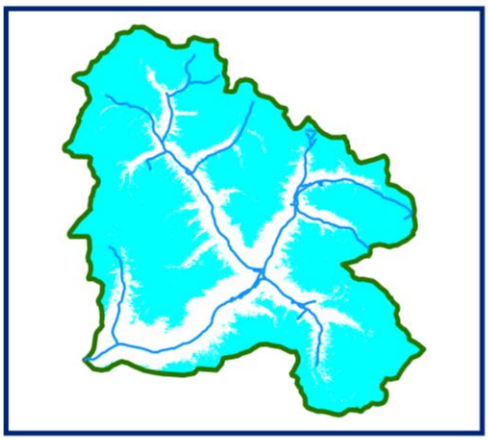
03 JUNE 2014



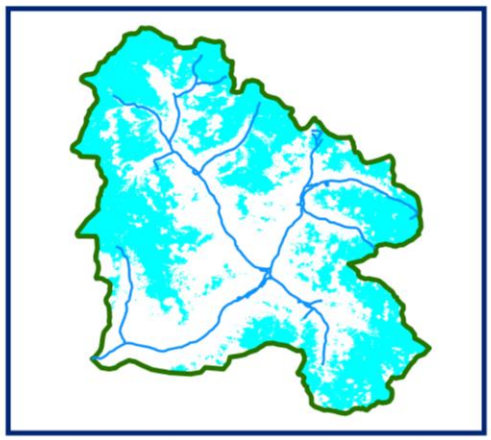
06 JUNE 2014



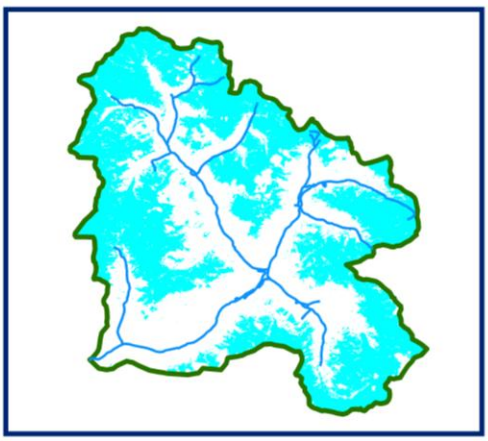
11 JUNE 2014



15 JUNE 2014



25 JUNE 2014



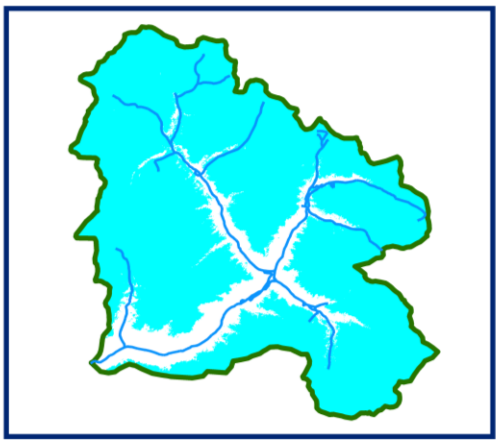
30 JUNE 2014

SNOW

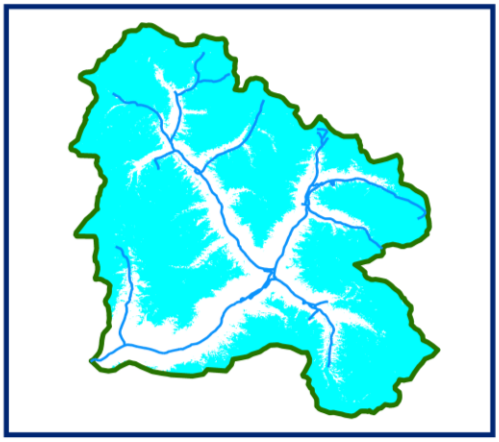
10 5 0 10 20 30 40

Kilometers

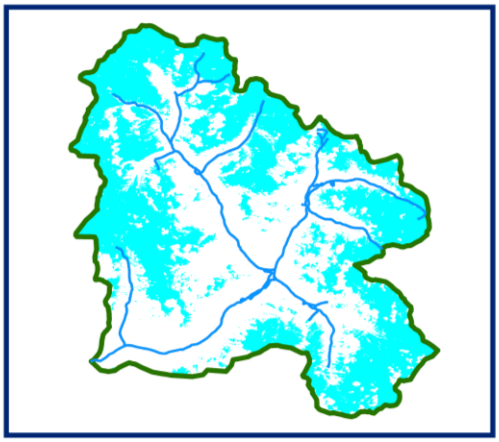
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
03 JUNE 2014
06 JUNE 2014



DATA USED
15 JUNE 2014



DATA USED
25 JUNE 2014

SNOW

10 5 0 10 20 30 40 Kilometers

MIYAR BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: MIYAR **BASIN AREA: 4449 sq km**

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2013							
1	4-Oct-13	544	12	5	21-Oct-13	926	21
2	8-Oct-13	467	10	6	23-Oct-13	716	16
3	9-Oct-13	381	9	7	25-Oct-13	868	20
4	16-Oct-13	1110	25	8	28-Oct-13	735	17
November 2013							
9	1-Nov-13	1877	42	13	25-Nov-13	1958	44
10	2-Nov-13	2275	51	14	26-Nov-13	1921	43
11	16-Nov-13	2714	61	15	30-Nov-13	1728	39
12	21-Nov-13	2343	53				
December 2013							
16	1-Dec-13	1650	37	20	24-Dec-13	3436	77
17	10-Dec-13	1318	30	21	25-Dec-13	1688	38
18	15-Dec-13	1450	33	22	27-Dec-13	3625	81
19	20-Dec-13	2433	55				
January 2014							
23	1-Jan-14	3624	81	27	24-Jan-14	4387	99
24	3-Jan-14	3061	69	28	27-Jan-14	4177	94
25	6-Jan-14	3887	87	29	29-Jan-14	4212	95
26	20-Jan-14	4200	94	30	30-Jan-14	4119	93
February 2014							
31	8-Feb-14	4309	97	34	20-Feb-14	3811	86
32	13-Feb-14	4410	99	35	25-Feb-14	4290	96
33	17-Feb-14	4390	99				
March 2014							
36	6-Mar-14	4250	96	39	21-Mar-14	4347	98
37	13-Mar-14	4434	100	40	25-Mar-14	4206	95
38	16-Mar-14	3999	90	41	30-Mar-14	4129	93
April 2014							
42	9-Apr-14	4077	92	46	24-Apr-14	3646	82
43	12-Apr-14	4021	90	47	26-Apr-14	3856	87
44	14-Apr-14	3991	90	48	28-Apr-14	3758	84
45	23-Apr-14	3877	87	49	30-Apr-14	3817	86

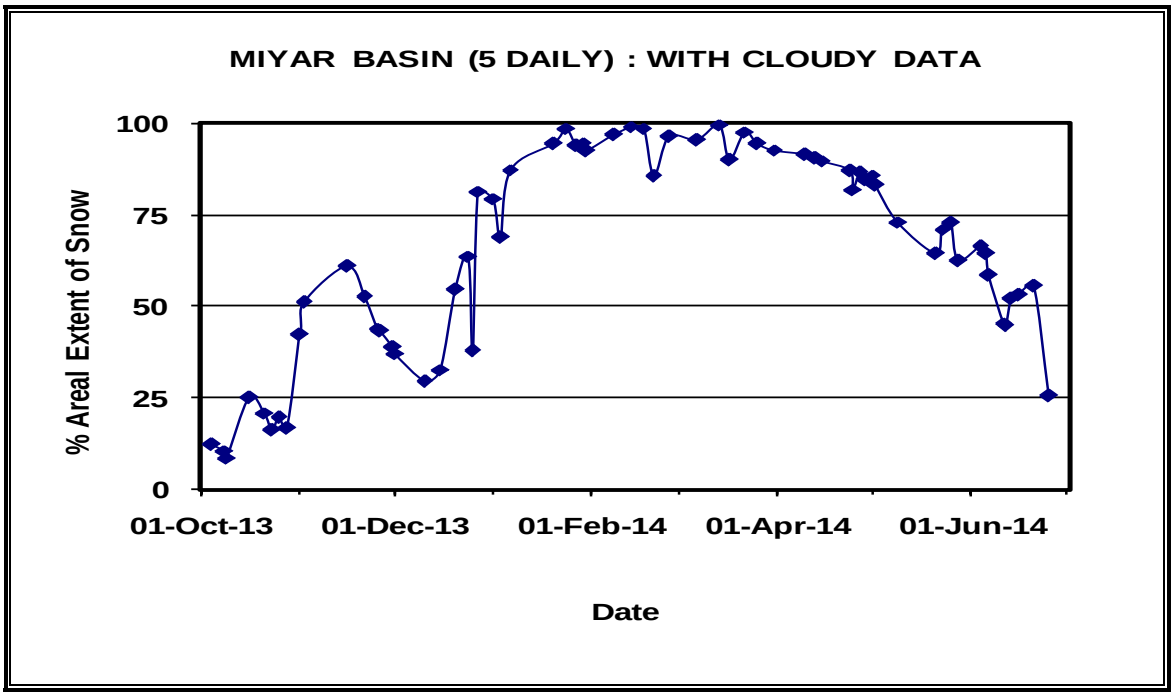
S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
May-2014							
50	1-May-14	3699	83	54	25-May-14	3231	73
51	8-May-14	3246	73	55	27-May-14	2778	62
52	20-May-14	2870	65				
53	22-May-14	3162	71				
June-2014							
56	3-Jun-14	2947	66	61	13-Jun-14	2320	52
57	5-Jun-14	2864	64	62	15-Jun-14	2363	53
58	6-Jun-14	2597	58	63	20-Jun-14	2476	56
59	10-Jun-14	2023	45	64	25-Jun-14	1129	25
60	11-Jun-14	1991	45				

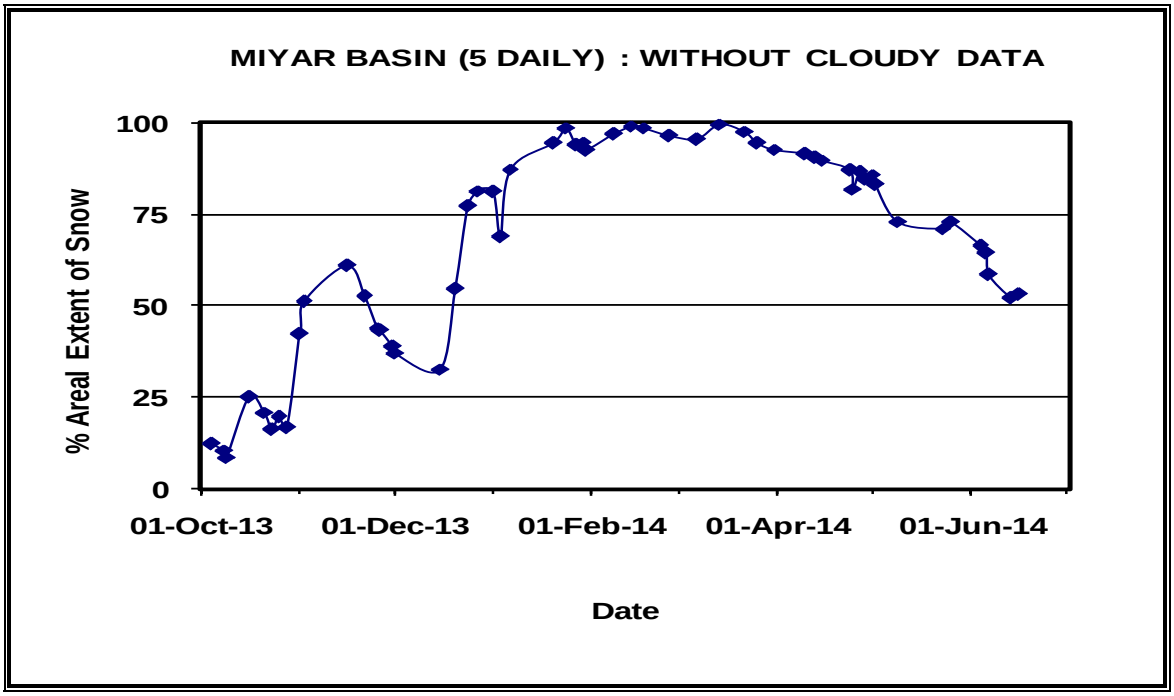
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: MIYAR **BASIN AREA: 4449 sq km**

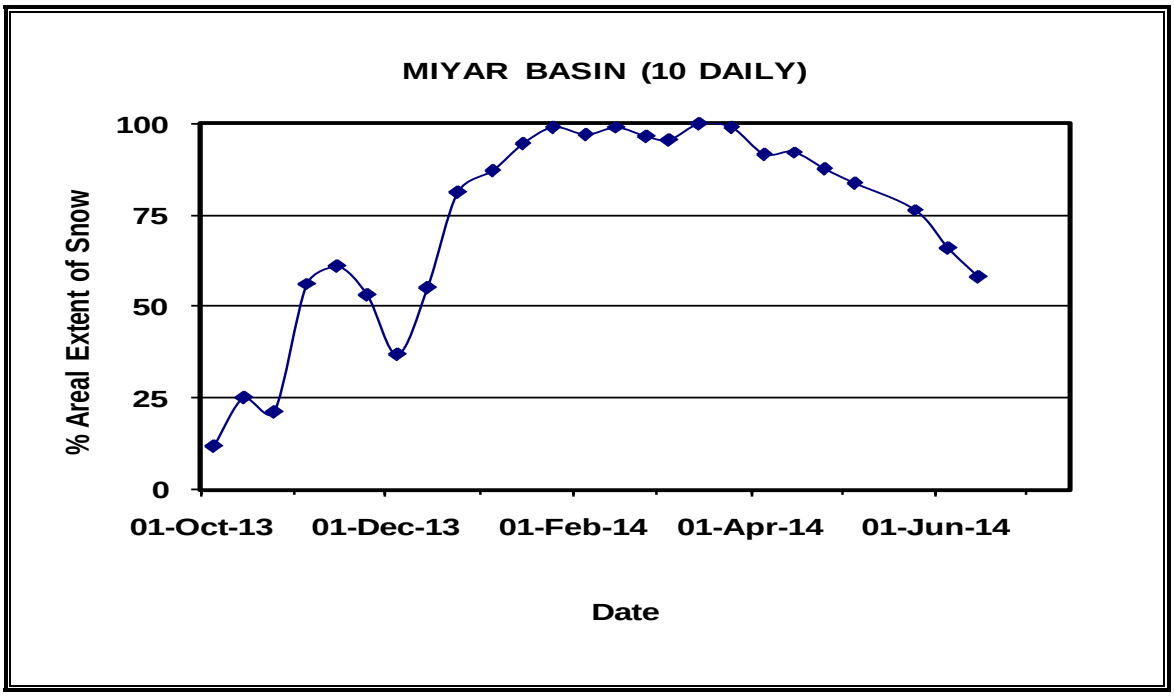
S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2013							
1	5-Oct-13	522	12	3	25-Oct-13	934	21
2	15-Oct-13	1112	25				
November 2013							
4	5-Nov-13	2503	56	6	25-Nov-13	2358	53
5	15-Nov-13	2714	61				
December 2013							
7	5-Dec-13	1646	37	9	25-Dec-13	4049	91
8	15-Dec-13	2447	55				
January 2013							
10	5-Jan-14	3870	87	12	25-Jan-14	4405	99
11	15-Jan-14	4200	94				
February-2014							
13	5-Feb-14	4309	97	15	25-Feb-14	4290	96
14	15-Feb-14	4408	99				
March 2014							
16	5-Mar-14	4250	96	18	25-Mar-14	4397	99
17	15-Mar-14	4440	100				
April-2014							
19	5-Apr-14	4077	92	21	25-Apr-14	3889	87
20	15-Apr-14	4105	92				
May-2014							
22	5-May-14	3715	83	23	15-May-14	3405	77
June-2014							
24	5-Jun-14	2936	66	25	15-Jun-14	2580	58

SNOW COVER DEPLETION CURVE



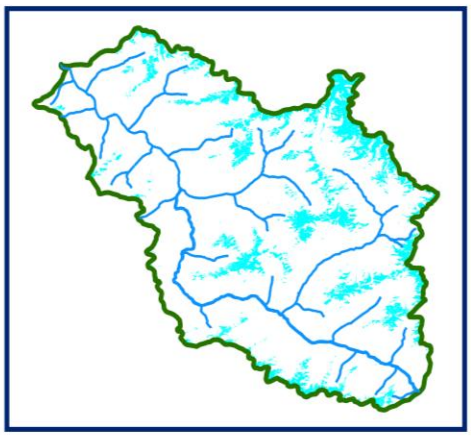


SNOW COVER DEPLETION CURVE

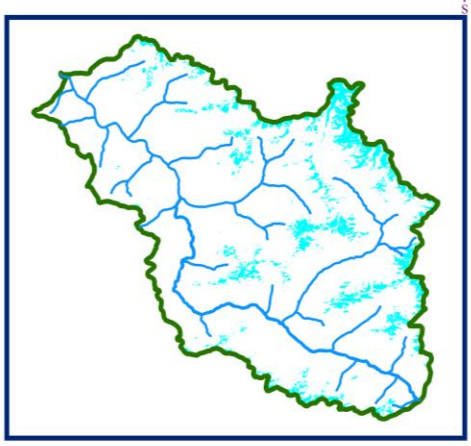


SNOW COVER MAP

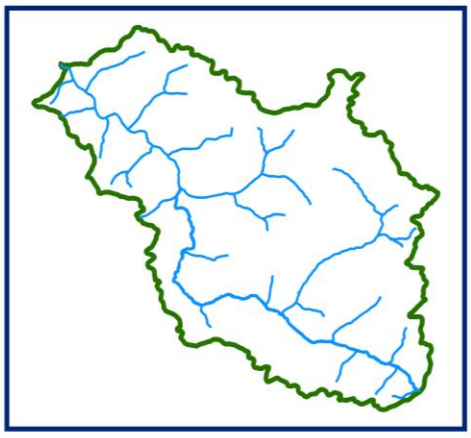
SNOW COVER MAP : MIYAR BASIN



04 OCTOBER 2013



09 OCTOBER 2013



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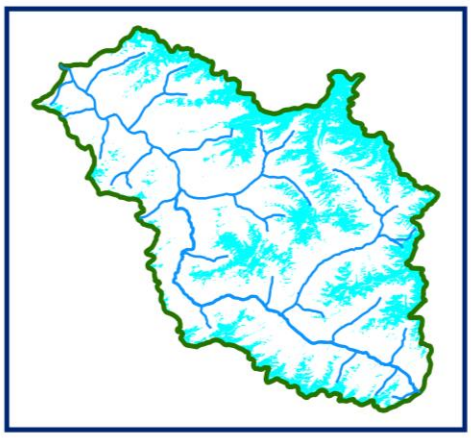
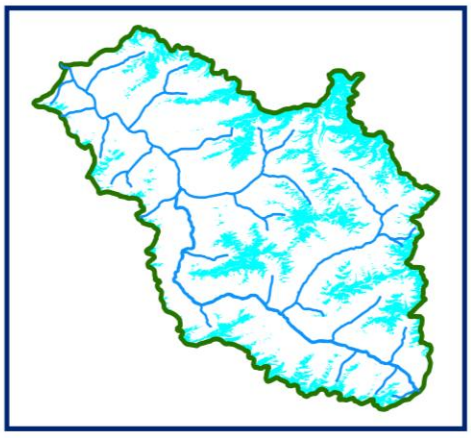
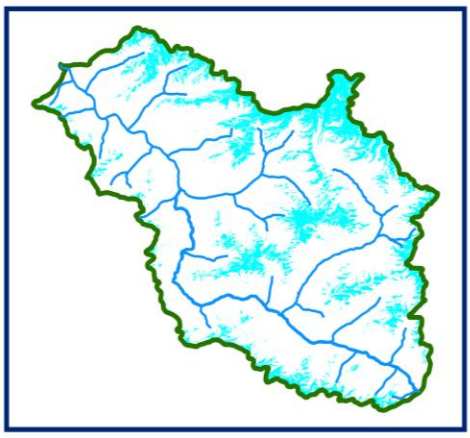


16 OCTOBER 2013



21 OCTOBER 2013

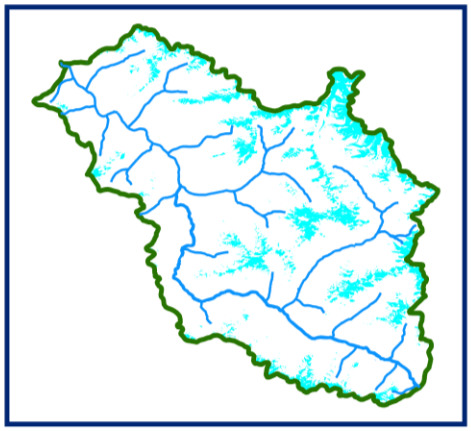


28 OCTOBER 2013

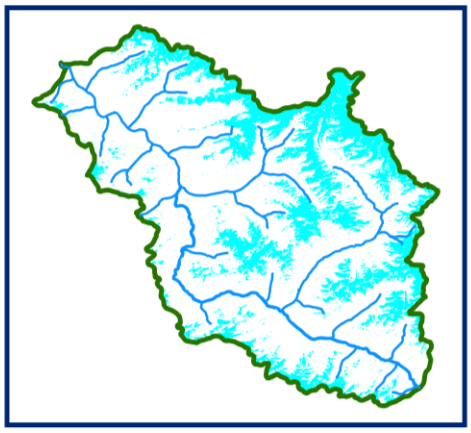
SNOW

105 0 10 20 30 40 Kilometers

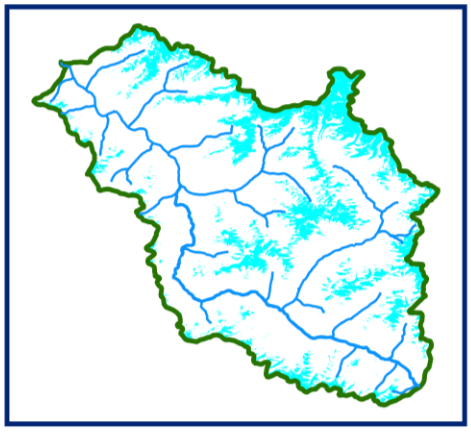
10 DAILY SNOW COVER MAP : MIYAR BASIN



DATA USED
04 OCTOBER 2013
08 OCTOBER 2013
09 OCTOBER 2013



DATA USED
15 OCTOBER 2013
16 OCTOBER 2013

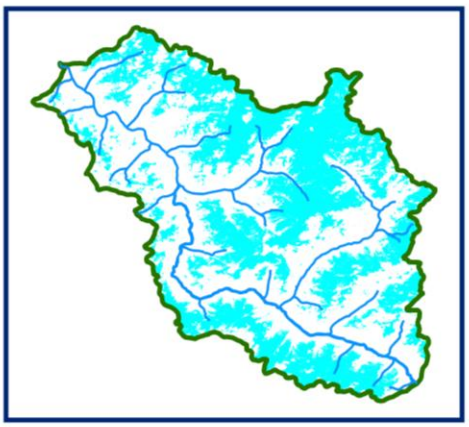


DATA USED
23 OCTOBER 2013
25 OCTOBER 2013
28 OCTOBER 2013

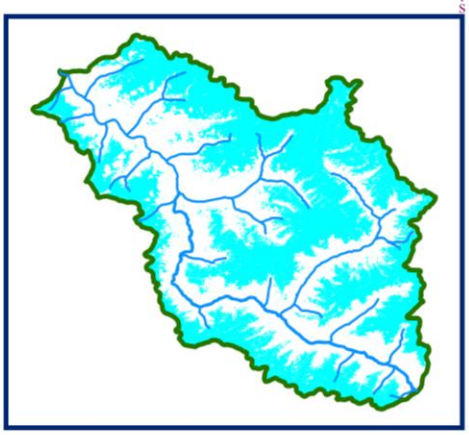
SNOW

105 0 10 20 30 40
Kilometers

SNOW COVER MAP : MIYAR BASIN



01 NOVEMBER 2013



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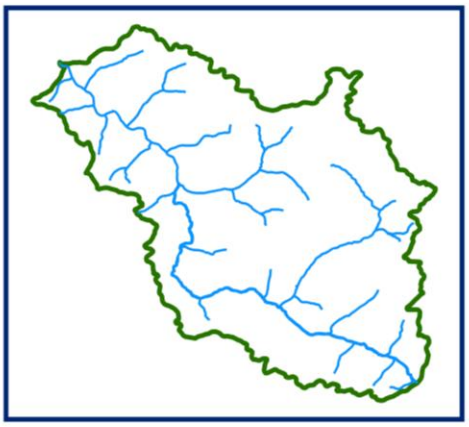

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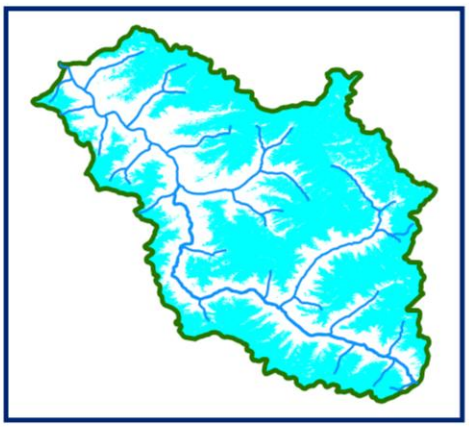


16 NOVEMBER 2013

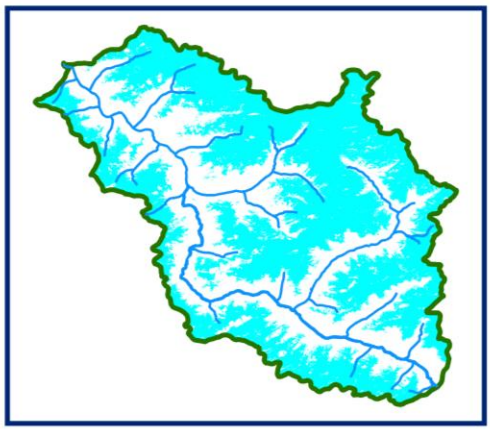
21 NOVEMBER 2013

30 NOVEMBER 2013

SNOW

105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : MIYAR BASIN



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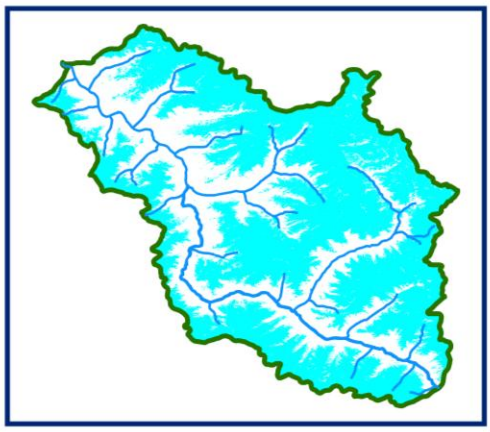
01 NOVEMBER 2013
02 NOVEMBER 2013



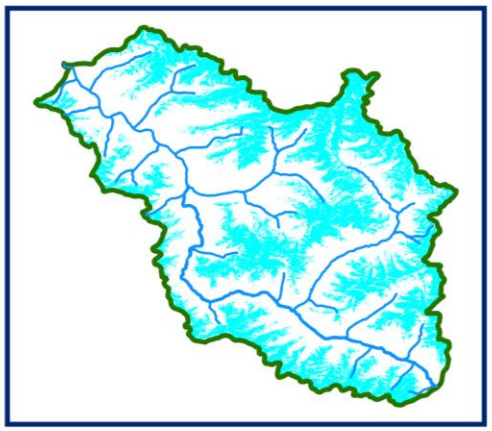
DATA USED
16 NOVEMBER 2013

DATA USED
25 NOVEMBER 2013
26 NOVEMBER 2013
30 NOVEMBER 2013

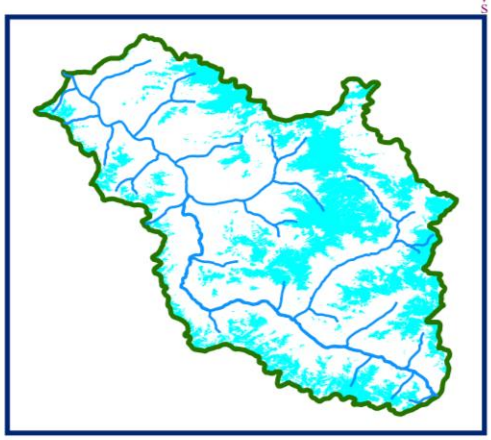
SNOW

105 0 10 20 30 40
Kilometers

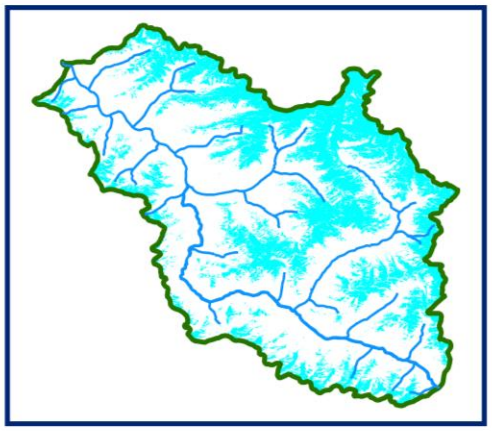
SNOW COVER MAP : MIYAR BASIN



01 DECEMBER 2013



10 DECEMBER 2013



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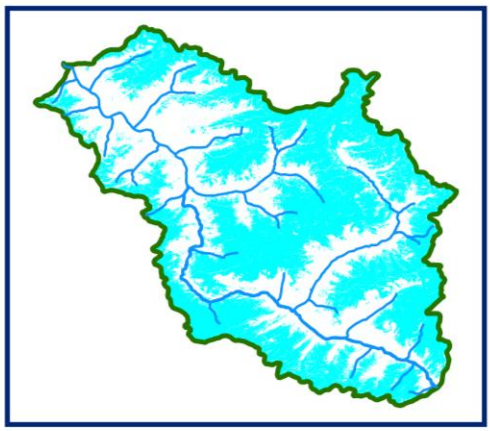
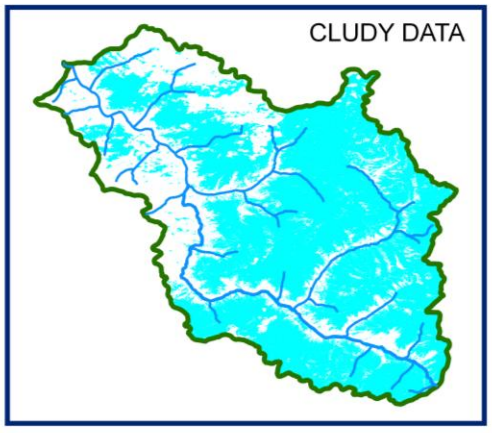


20 DECEMBER 2013



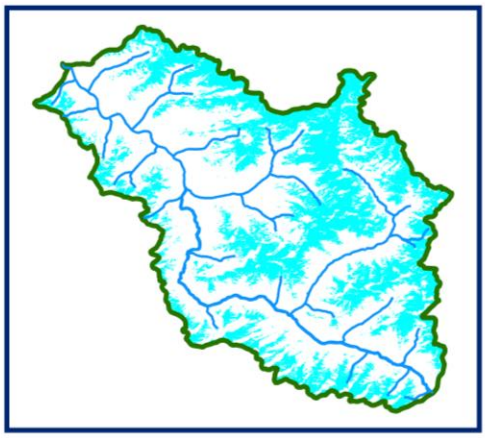
24 DECEMBER 2014

27 DECEMBER 2014

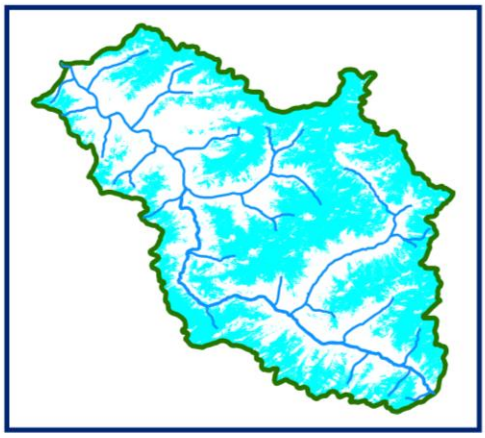
SNOW

105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : MIYAR BASIN



DATA USED
01 DECEMBER 2013
10 DECEMBER 2013



DATA USED
15 DECEMBER 2013
20 DECEMBER 2013

DATA USED
24 DECEMBER 2013
25 DECEMBER 2013
27 DECEMBER 2013

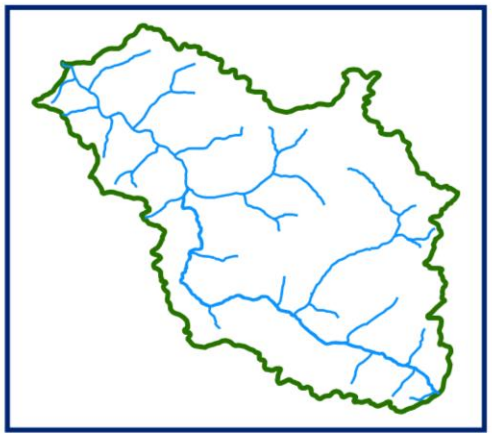
SNOW

105 0 10 20 30 40 Kilometers

SNOW COVER MAP : MIYAR BASIN

01 JANUARY 2014

06 JANUARY 2014



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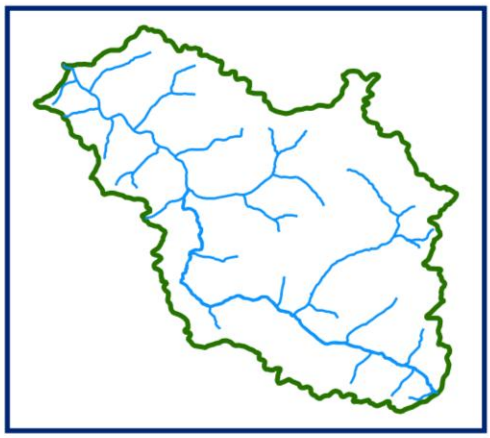

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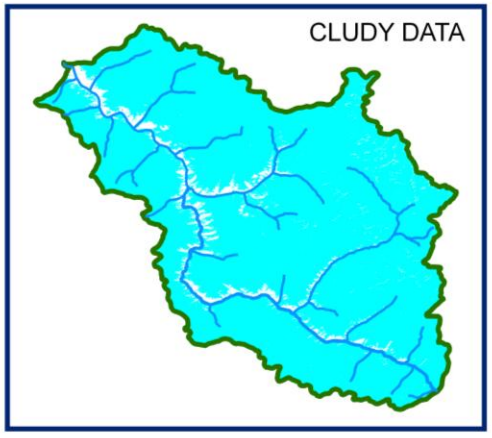


21 JANUARY 2014

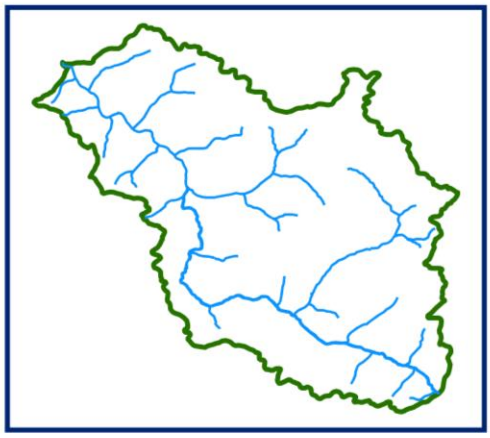
30 JANUARY 2014

SNOW

105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : MIYAR BASIN

DATA USED
01 JANUARY 2014
03 JANUARY 2014
06 JANUARY 2014



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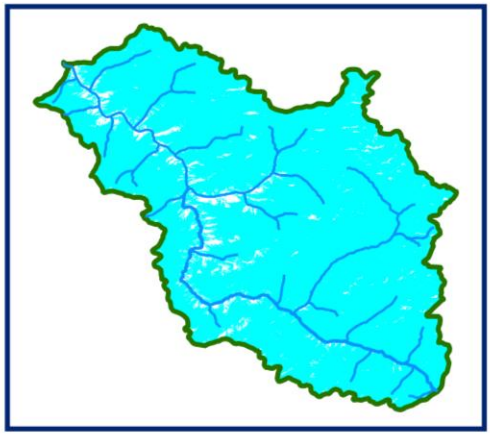
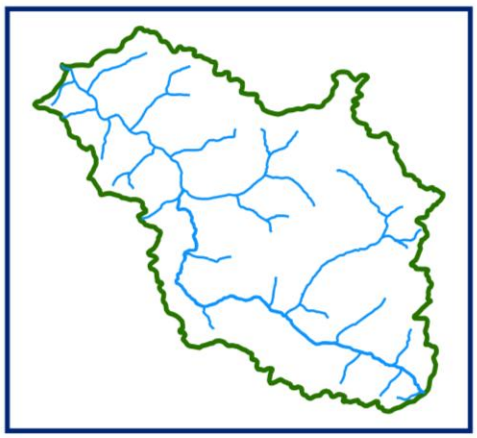


DATA USED
24 JANUARY 2014
27 JANUARY 2014
31 JANUARY 2014

SNOW

105 0 10 20 30 40 Kilometers

SNOW COVER MAP : MIYAR BASIN



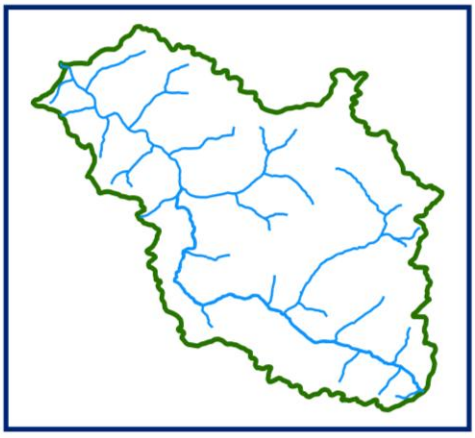
DATA NOT AVAILABLE

08 FEBRUARY 2014

13 FEBRUARY 2014

17 FEBRUARY 2014

25 FEBRUARY 2014

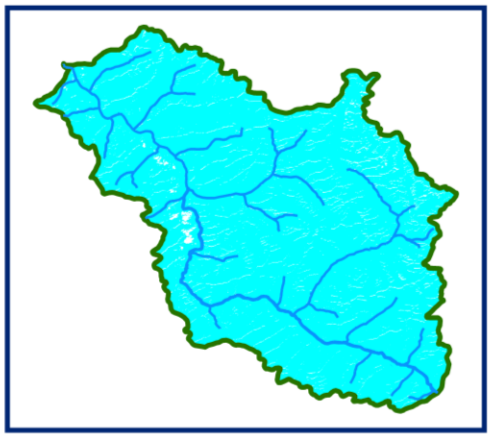


DATA NOT AVAILABLE

SNOW

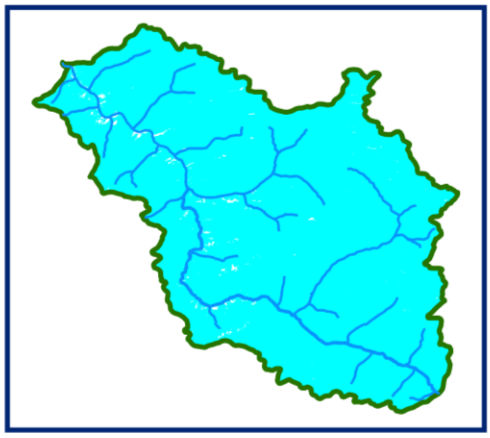
105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : MIYAR BASIN



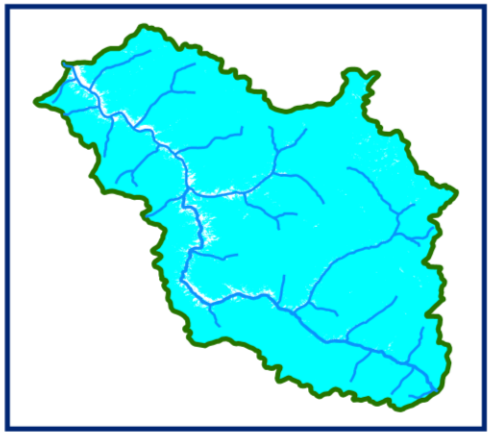
DATA USED

08 FEBRUARY 2014



DATA USED

13 FEBRUARY 2014
17 FEBRUARY 2014
20 FEBRUARY 2014



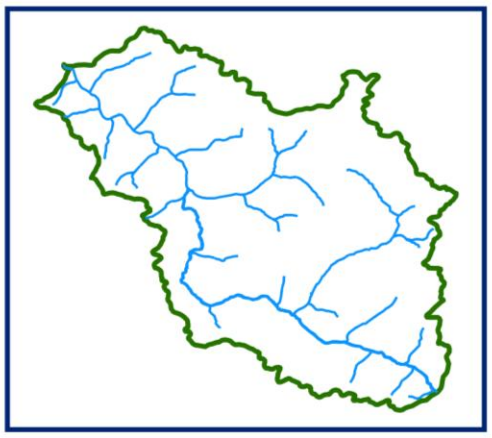
DATA USED

25 FEBRUARY 2014

SNOW

105 0 10 20 30 40 Kilometers

SNOW COVER MAP : MIYAR BASIN



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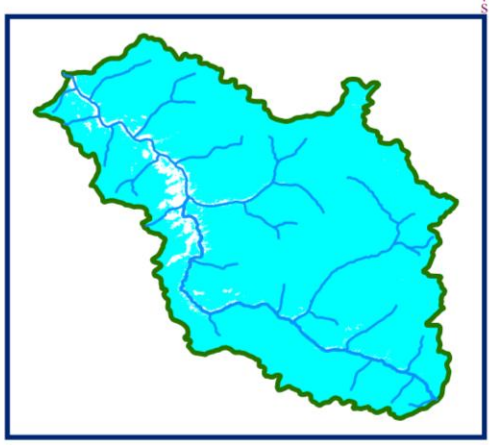
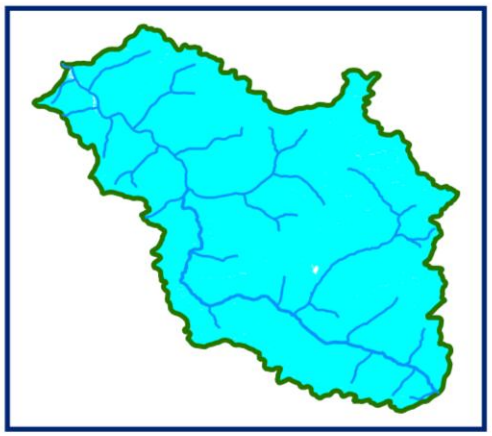
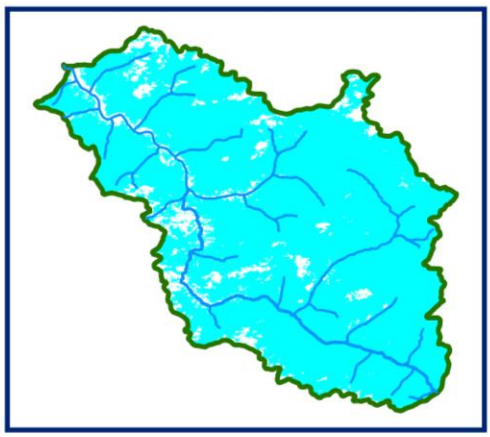


06 MARCH 2014



13 MARCH 2014



16 MARCH 2014

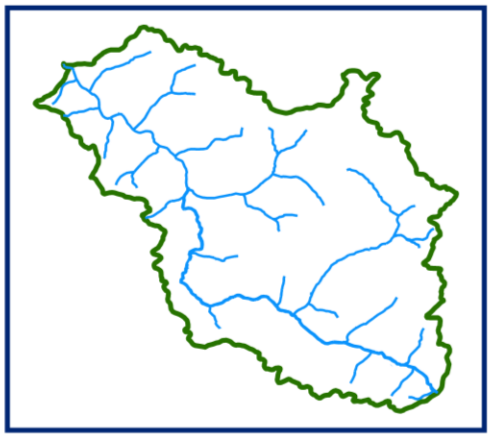
25 MARCH 2014

30 MARCH 2014

SNOW

105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : MIYAR BASIN



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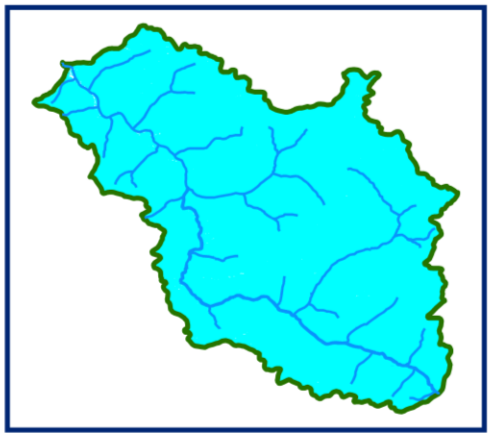
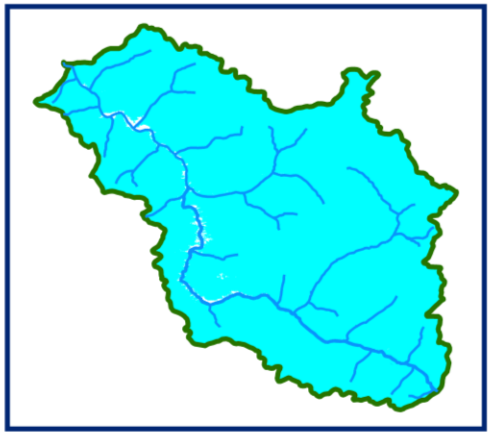


DATA USED

13 MARCH 2014
16 MARCH 2014



DATA USED

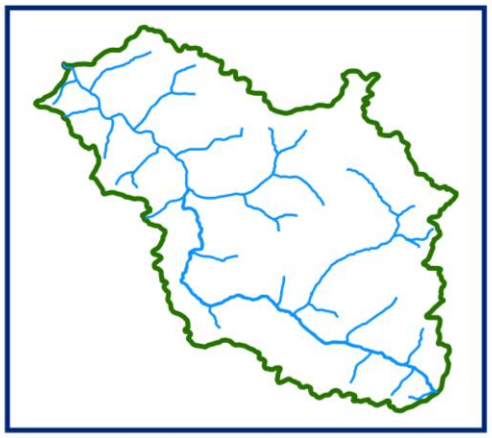
21 MARCH 2014
25 MARCH 2014
30 MARCH 2014

SNOW

105 0 10 20 30 40

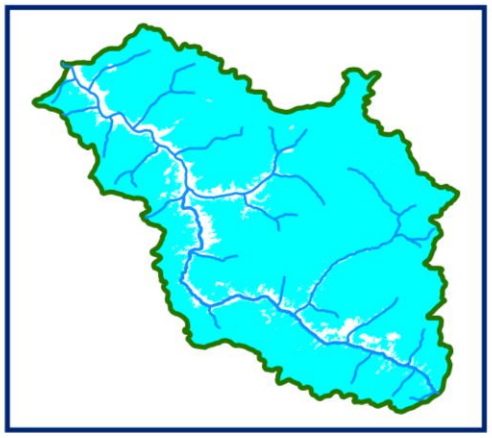
Kilometers

SNOW COVER MAP : MIYAR BASIN

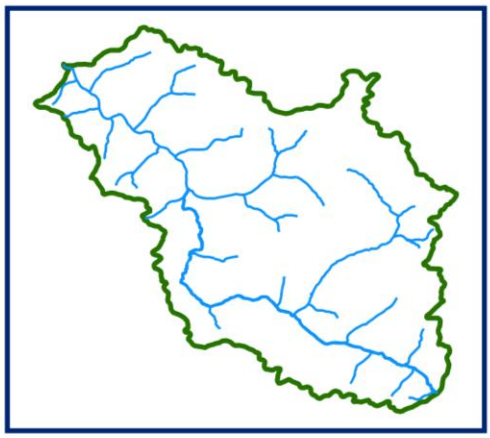


DATA NOT AVAILABLE

09 APRIL 2014



12 APRIL 2014



DATA NOT AVAILABLE

23 APRIL 2014

28 APRIL 2014

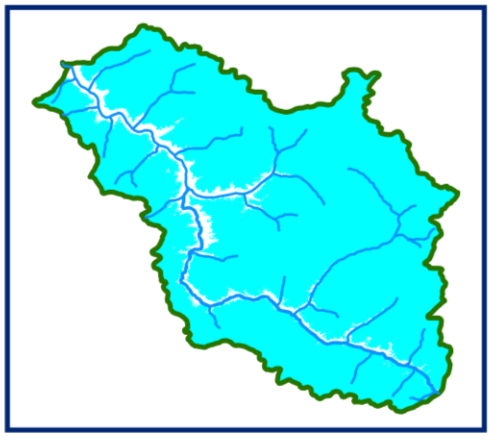
SNOW

105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : MIYAR BASIN

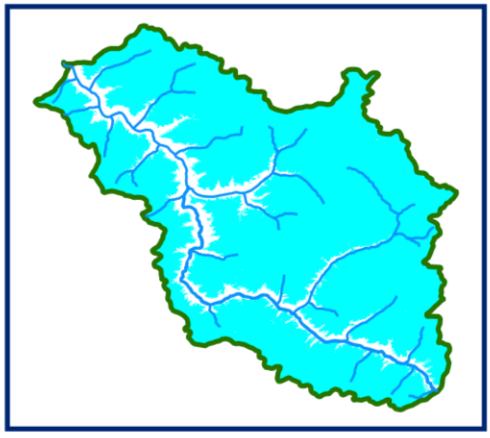
DATA USED

09 APRIL 2014



DATA USED

12 APRIL 2014
14 APRIL 2014



DATA USED

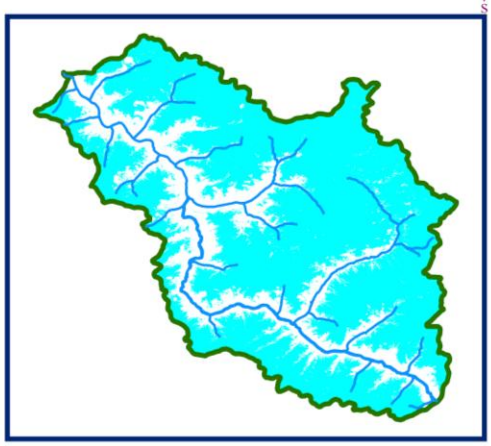
23 APRIL 2014
26 APRIL 2014
38 APRIL 2014

SNOW

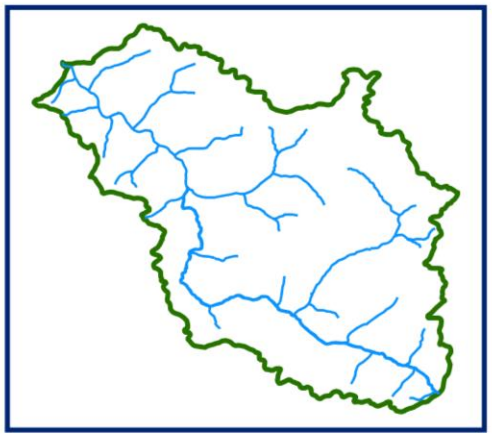
105 0 10 20 30 40 Kilometers

SNOW COVER MAP : MIYAR BASIN

01 MAY 2014



08 MAY 2014



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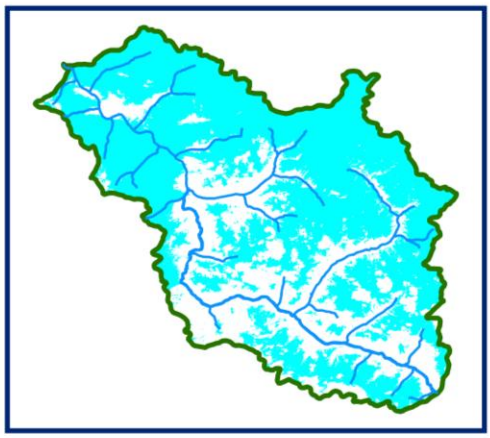
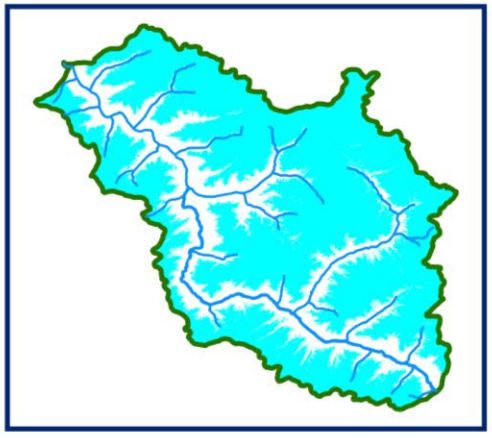
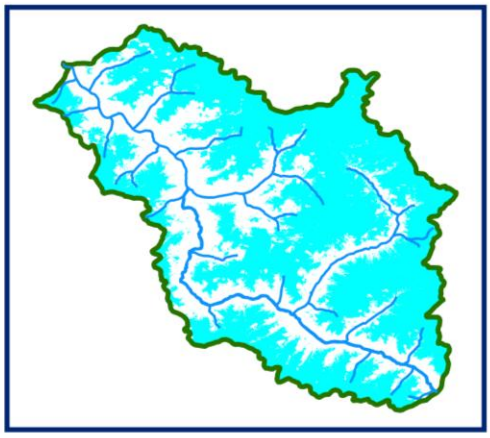


20 MAY 2014



22 MAY 2014



27 MAY 2014

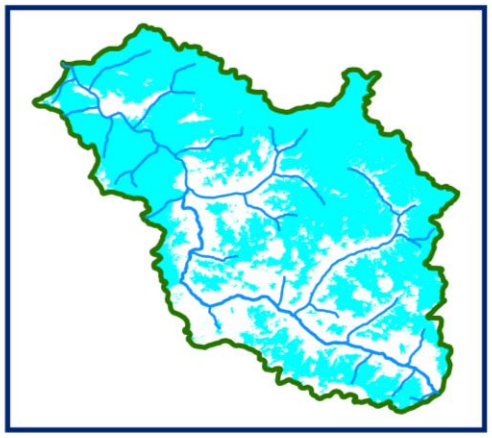
SNOW

105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : MIYAR BASIN

DATA USED

01 MAY 2014
08 MAY 2014



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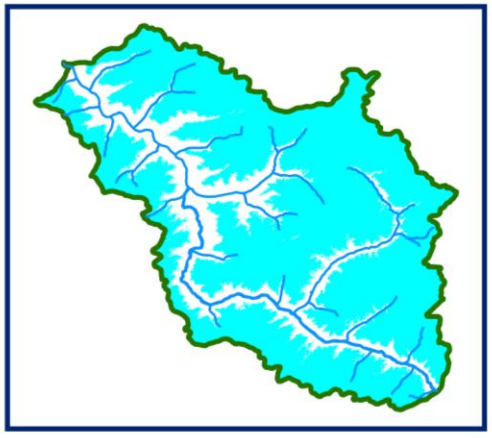


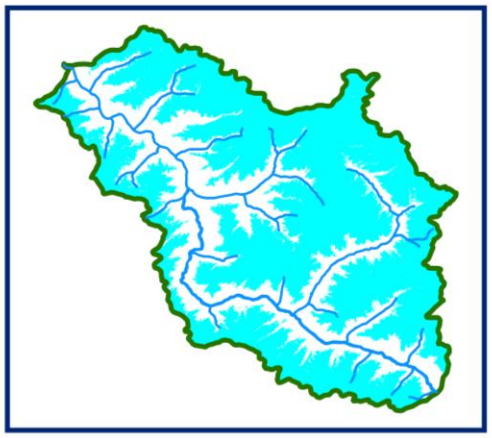
DATA USED

22 MAY 2014
25 MAY 2014
27 MAY 2014

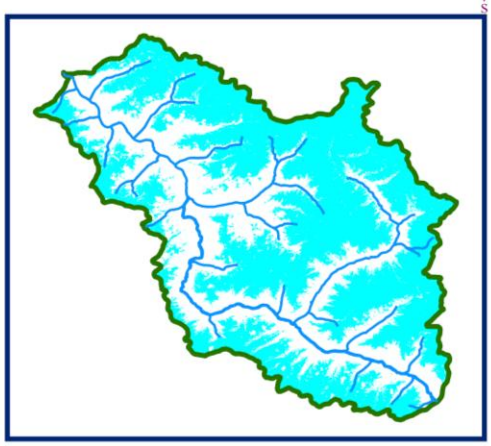
SNOW

105 0 10 20 30 40 Kilometers

SNOW COVER MAP : MIYAR BASIN



03 JUNE 2014



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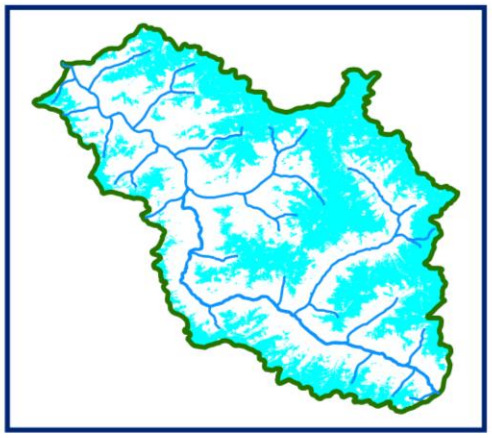

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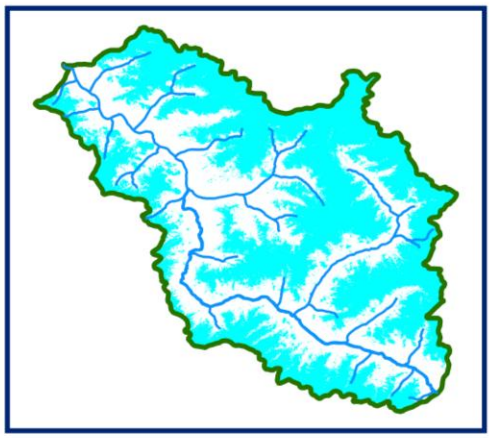
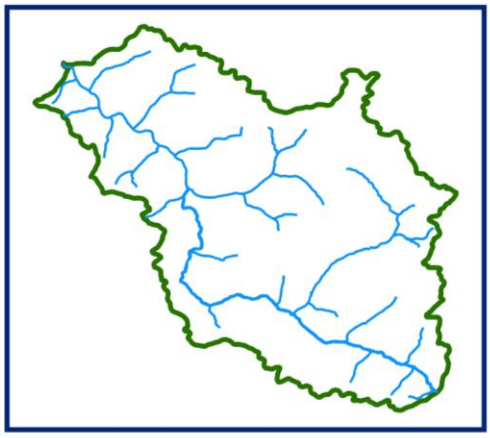


20 JUNE 2014

25 JUNE 2014



DATA NOT AVAILABLE

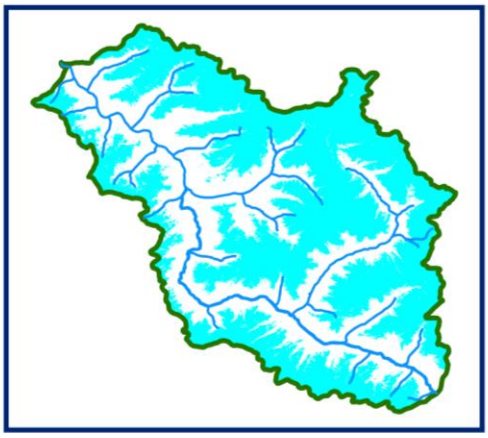
SNOW

105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : MIYAR BASIN

DATA USED

03 JUNE 2014
05 JUNE 2014
10 JUNE 2014



DATA USED

11 JUNE 2014
13 JUNE 2014
15 JUNE 2014

DATA USED

25 JUNE 2014

SNOW

105 0 10 20 30 40 Kilometers

BHUT BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: BHUT **BASIN AREA: 2218 sq km**

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2013							
1	4-Oct-13	393	18	6	21-Oct-13	761	34
2	6-Oct-13	418	19	7	23-Oct-13	513	23
3	8-Oct-13	328	15	8	26-Oct-13	624	28
4	9-Oct-13	280	13	9	28-Oct-13	582	26
5	16-Oct-13	761	34				
November 2013							
10	1-Nov-13	1022	46	14	25-Nov-13	910	41
11	2-Nov-13	953	43	15	26-Nov-13	922	42
12	16-Nov-13	1245	56	16	30-Nov-13	846	38
13	21-Nov-13	1107	50				
December 2013							
17	1-Dec-13	1262	57	20	20-Dec-13	1038	47
18	15-Dec-13	899	41	21	27-Dec-13	1840	83
19	17-Dec-13	850	38				
January 2014							
22	1-Jan-14	1262	57	26	27-Jan-14	1744	79
23	3-Jan-14	1673	75	27	29-Jan-14	1883	85
24	6-Jan-14	1551	70	28	30-Jan-14	1808	82
25	15-Jan-14	1909	86				
February 2014							
29	1-Feb-14	1022	46	32	20-Feb-14	2076	94
30	8-Feb-14	2000	90	33	25-Feb-14	1839	83
31	13-Feb-14	2002	90				
March 2014							
34	6-Mar-14	1963	89	37	25-Mar-14	1589	72
35	7-Mar-14	1855	84	38	30-Mar-14	1835	83
36	13-Mar-14	2152	97	39			
April-2014							
40	9-Apr-14	1813	82	44	26-Apr-14	1463	65.94
41	14-apr-14	1748	79	45	28-Apr-14	1704	77
42	21-Apr-14	1960	88				
43	24-Apr-14	1691	76				

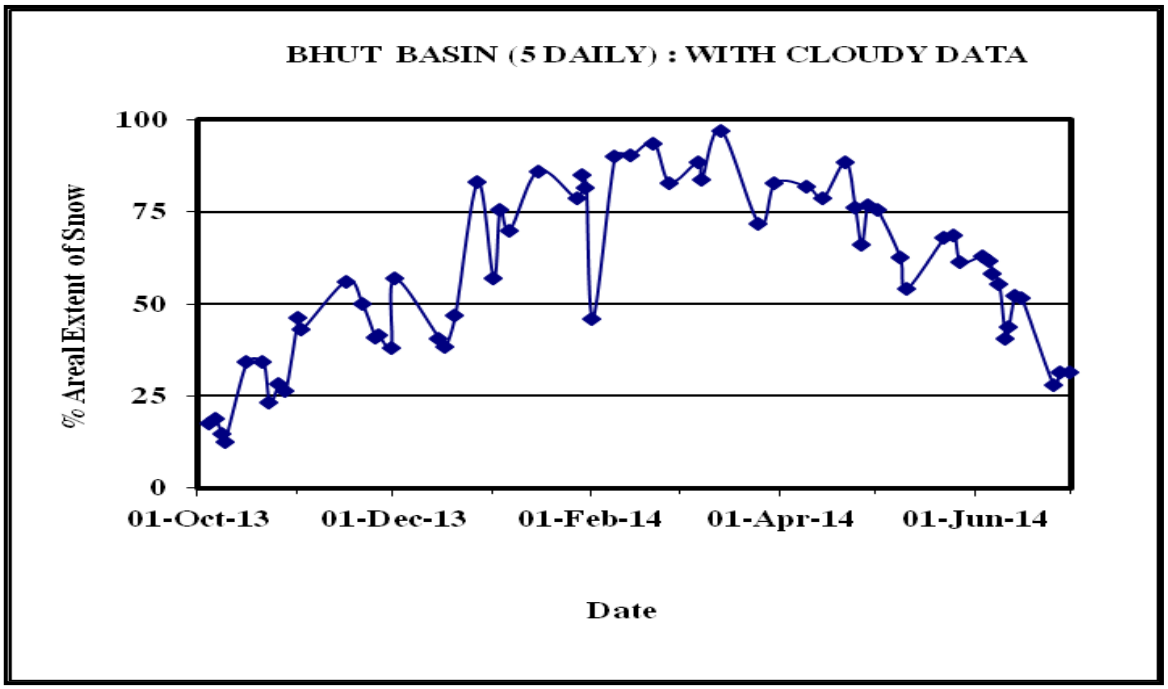
S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
May-2014							
46	1-May-14	1674	75	49	22-May-14	1507	68
47	8-May-14	1390	63	50	25-May-14	1519	68
48	10-May-14	1197	54	51	27-May-14	1359	61
June-2014							
52	3-Jun-14	1399	63	58	13-Jun-14	1159	52
53	5-Jun-14	1371	62	59	15-Jun-14	1145	52
54	6-Jun-14	1293	58	60	25-Jun-14	620	28
55	8-Jun-14	1232	56	61	27-Jun-14	695	31
56	10-Jun-14	902	41	62	30-Jun-14	696	31
57	11-Jun-14	970	44				

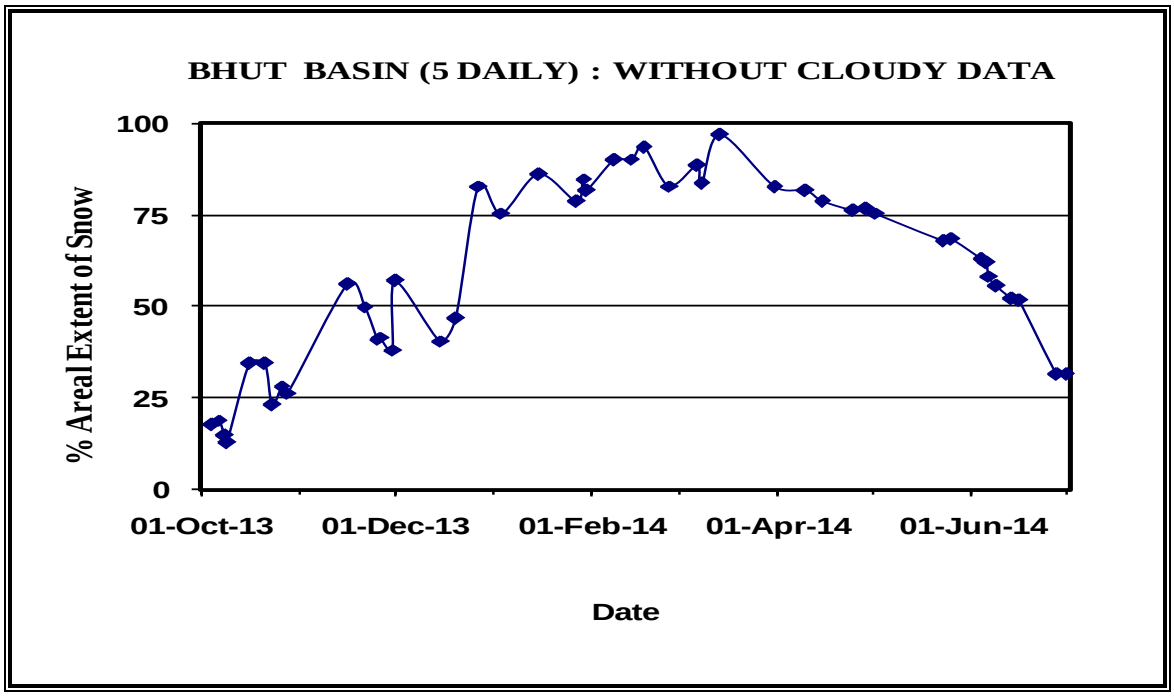
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: BHUT **BASIN AREA: 2218 sq km**

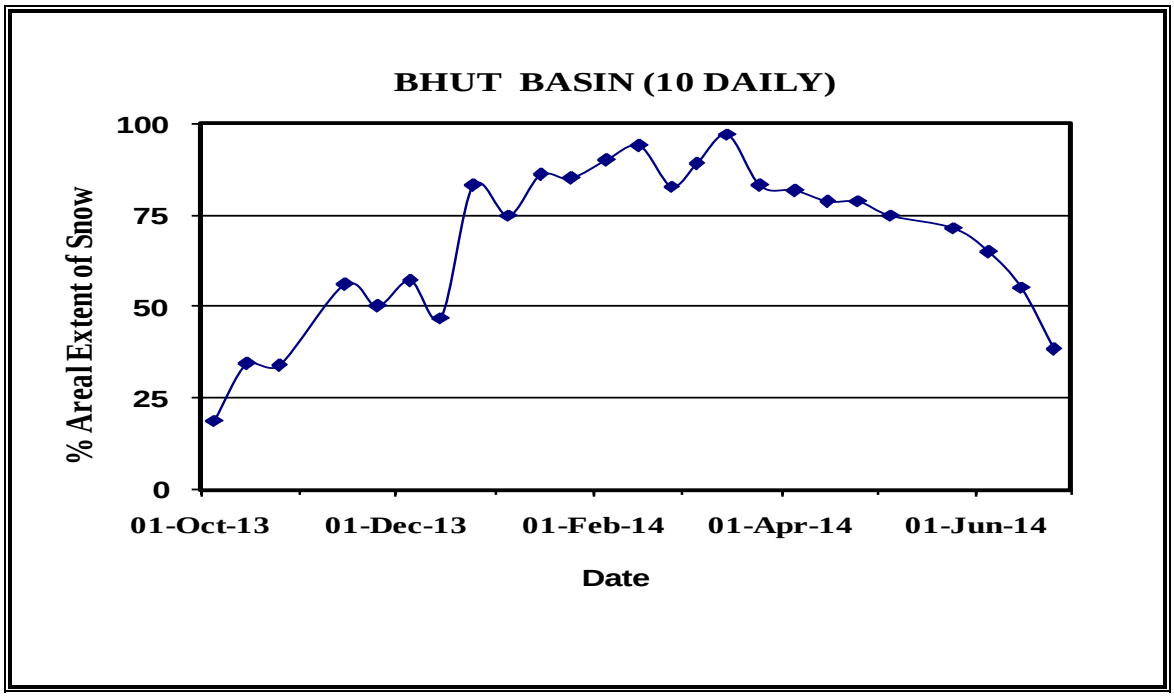
S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October-2013							
1	5-Oct-13	418	19	3	25-Oct-13	754	34
2	15-Oct-13	761	34				
November 2013							
5	15-Nov-13	1245	56	6	25-Nov-13	1109	50
December 2013							
7	5-Dec-13	1262	57	9	25-Dec-13	1841	83
8	15-Dec-13	1042	47				
January 2014							
10	5-Jan-13	1664	75	12	25-Jan-13	1885	85
11	15-Jan-13	1907	86				
February 2014							
13	5-Feb-14	1994	90	15	25-Feb-14	1839	83
14	15-Feb-14	2084	94				
March 2014							
16	5-Mar-14	1974	89	18	25-Mar-14	1840	83
17	15-Mar-14	2152	97				
April-2014							
19	5-Apr-14	1813	82	21	25-Apr-14	1749	79
20	15-Apr-14	1748	79				
May-2014							
22	5-May-14	1673	75	23	25-May-14	1588	72
June-2014							
24	5-Jun-14	1442	65	26	25-June-14	850	38
25	15-Jun-14	1226	55				

SNOW COVER DEPLETION CURVE



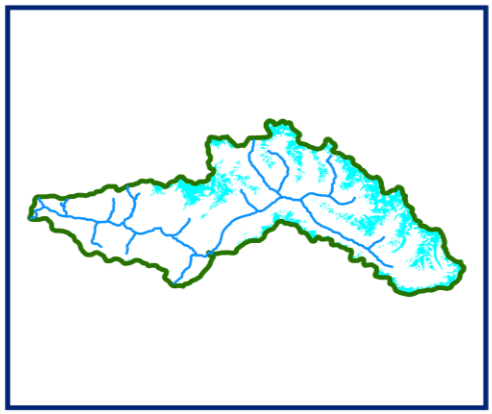


SNOW COVER DEPLETION CURVE

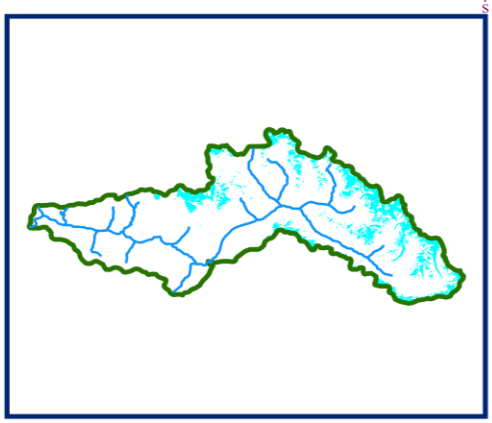


SNOW COVER MAP

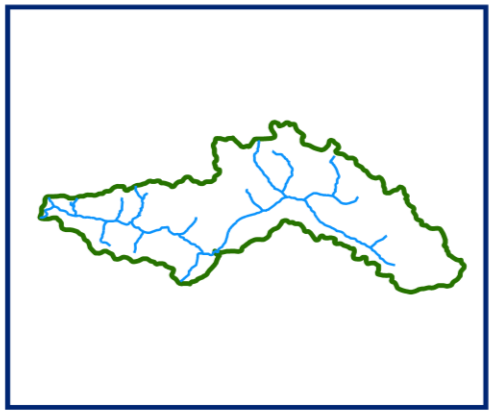
SNOW COVER MAP : BHUT BASIN



04 OCTOBER 2013



09 OCTOBER 2013



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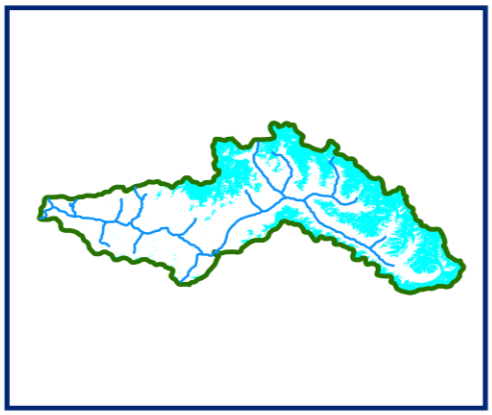
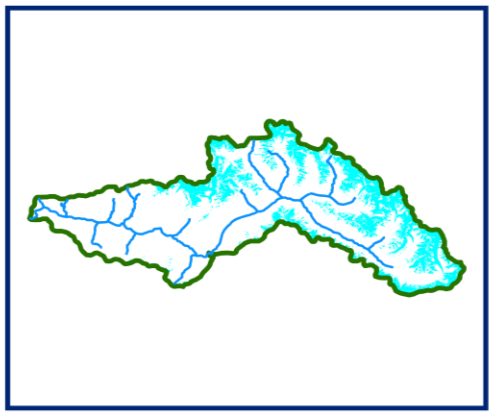


16 OCTOBER 2013



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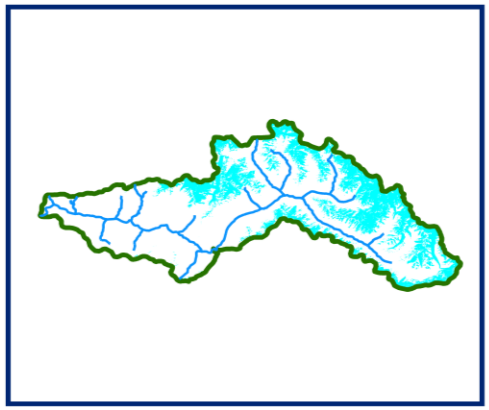


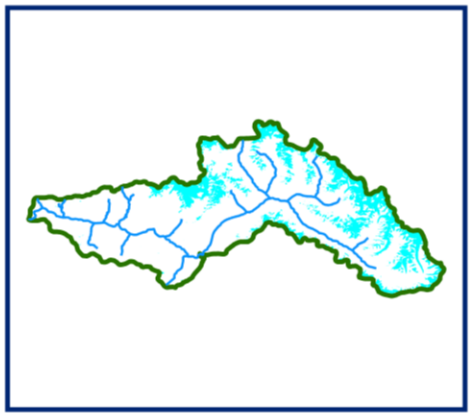
28 OCTOBER 2013

SNOW

105 0 10 20 30 40

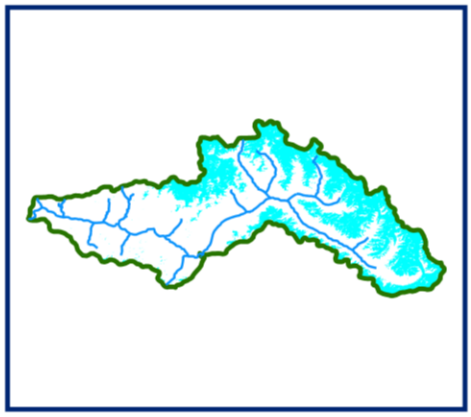
Kilometers

10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED

04 OCTOBER 2013
06 OCTOBER 2013
08 OCTOBER 2013



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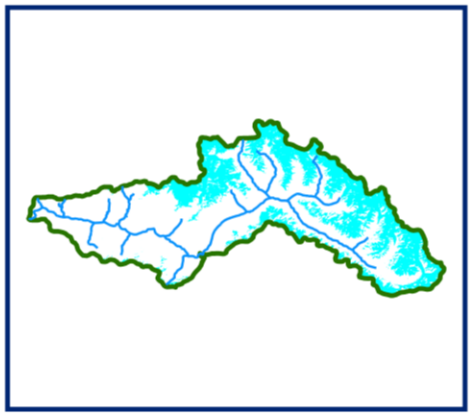
16 OCTOBER 2013



DATA USED

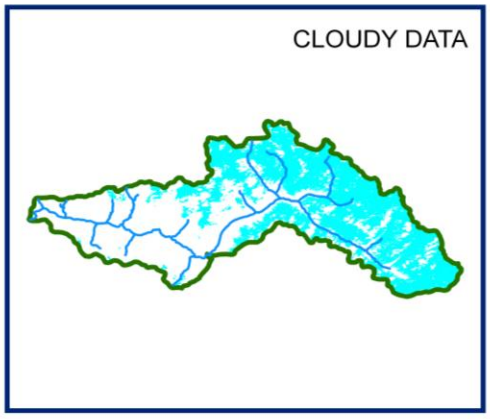
21 OCTOBER 2013
26 OCTOBER 2013
28 OCTOBER 2013

SNOW

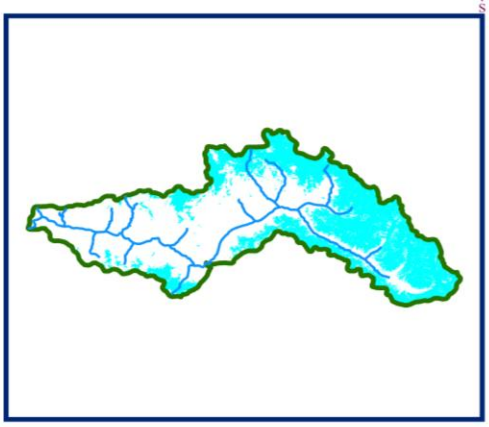
105 0 10 20 30 40

Kilometers

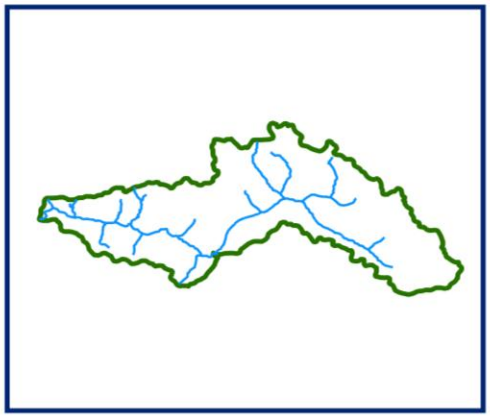
SNOW COVER MAP : BHUT BASIN



01 NOVEMBER 2013



02 NOVEMBER 2013



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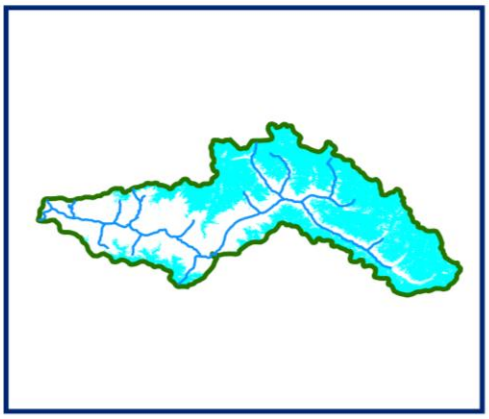
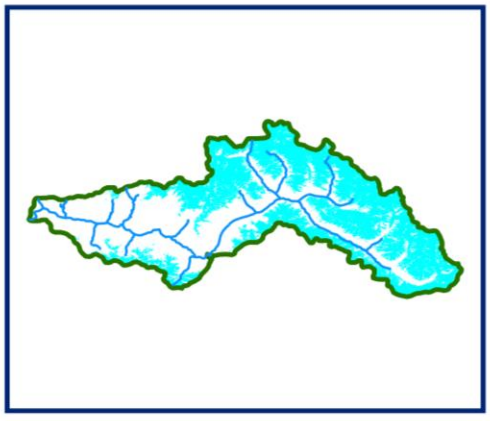
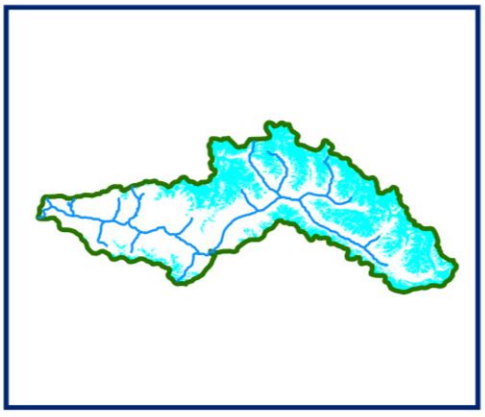


16 NOVEMBER 2013



21 NOVEMBER 2013



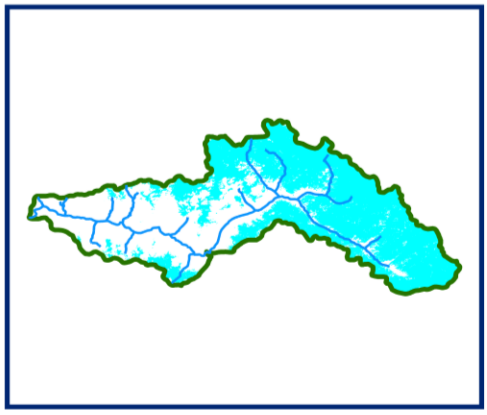
30 NOVEMBER 2013

SNOW

105 0 10 20 30 40

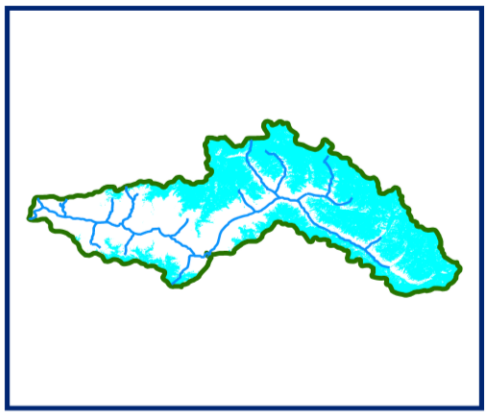
Kilometers

10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED

01 NOVEMBER 2013
02 NOVEMBER 2013



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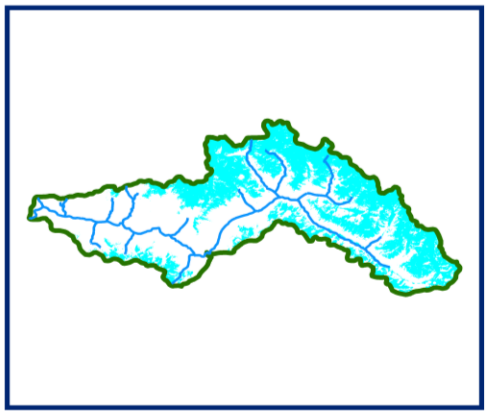
16 NOVEMBER 2013



DATA USED

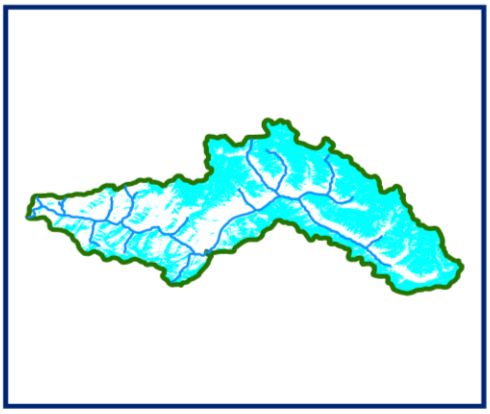
21 NOVEMBER 2013
26 NOVEMBER 2013
28 NOVEMBER 2013

SNOW

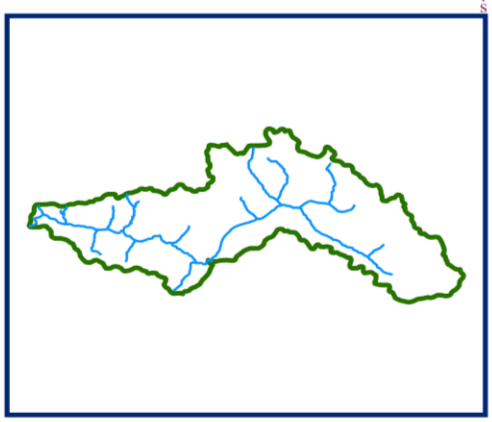
105 0 10 20 30 40

Kilometers

SNOW COVER MAP : BHUT BASIN



01 DECEMBER 2013



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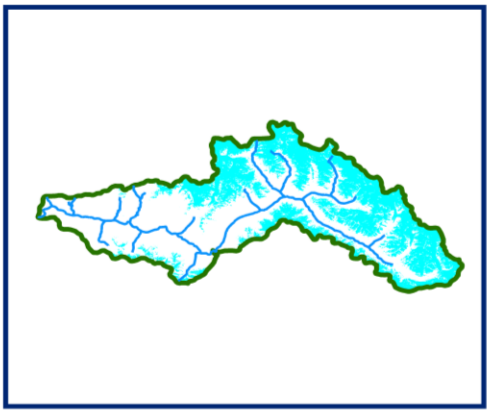
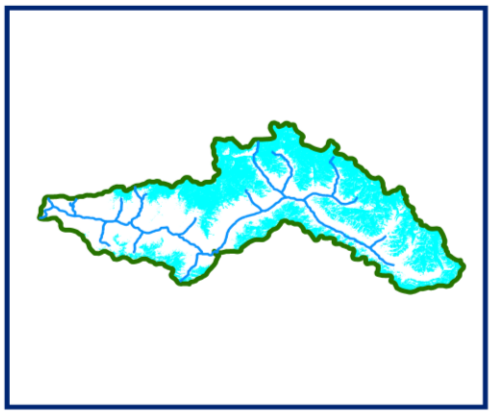
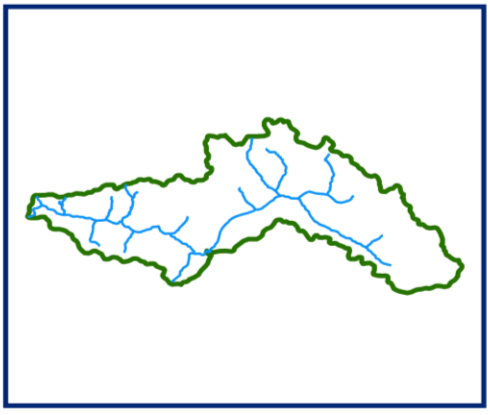


15 DECEMBER 2013



20 DECEMBER 2013



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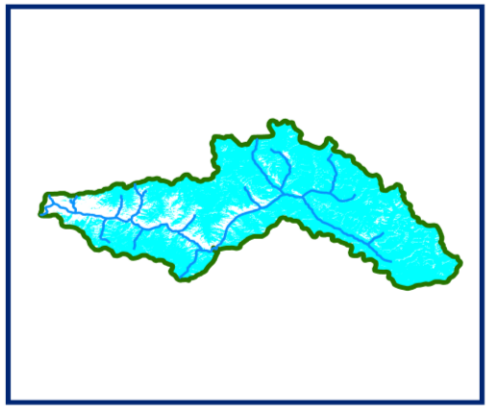


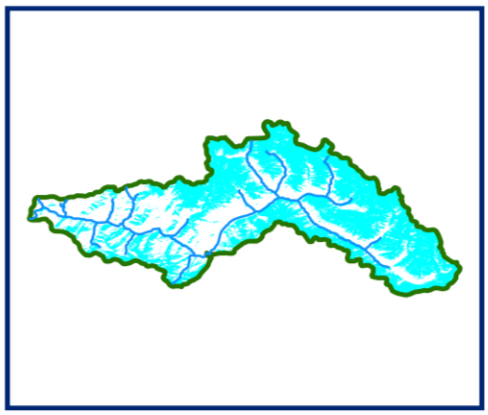
27 DECEMBER 2013

SNOW

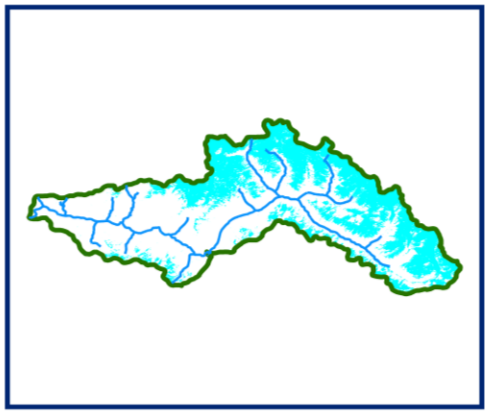
105 0 10 20 30 40

Kilometers

10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED
01 DECEMBER 2013



DATA USED
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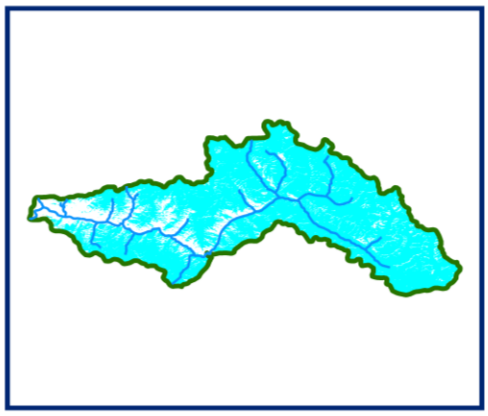
17 DECEMBER 2013
20 DECEMBER 2013

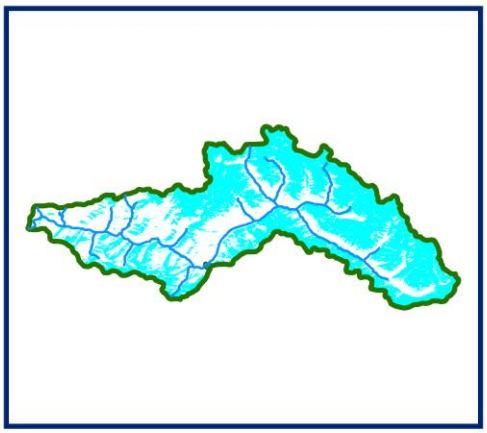


DATA USED
27 DECEMBER 2013

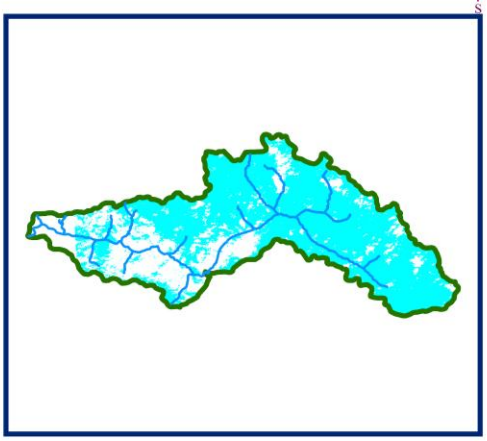
SNOW

105 0 10 20 30 40
Kilometers

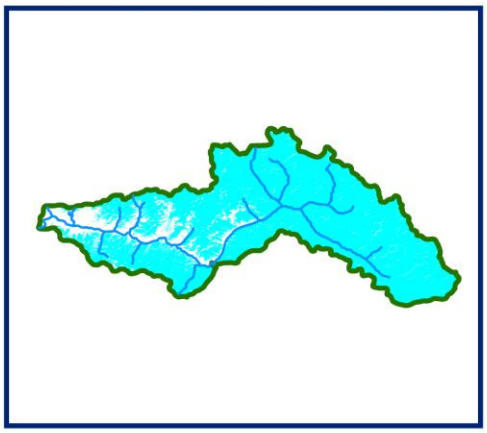
SNOW COVER MAP : BHUT BASIN



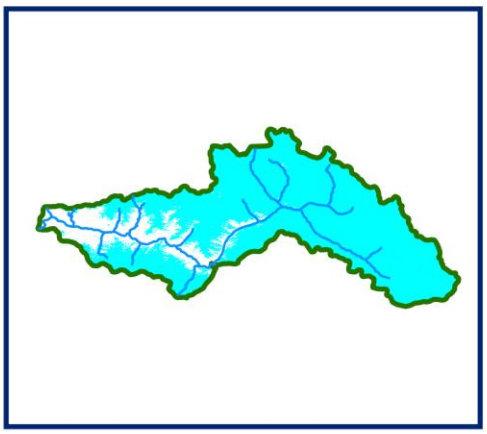
01 JANUARY 2014



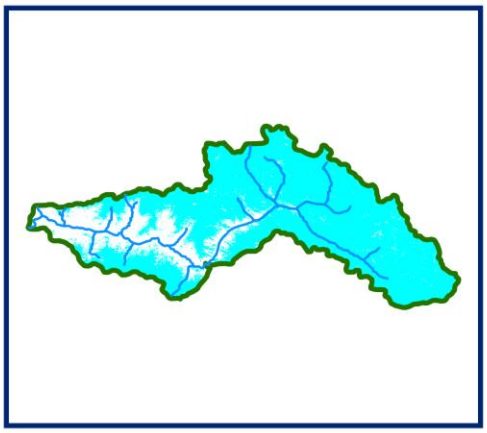
06 JANUARY 2014



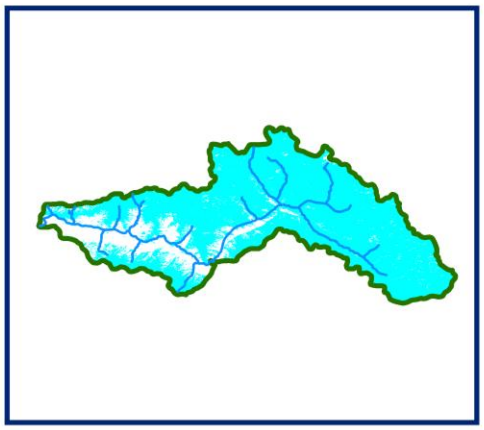
15 JANUARY 2014



20 JANUARY 2014



27 JANUARY 2014



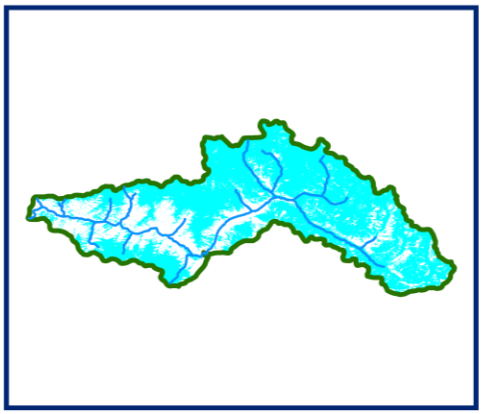
30 JANUARY 2014

SNOW

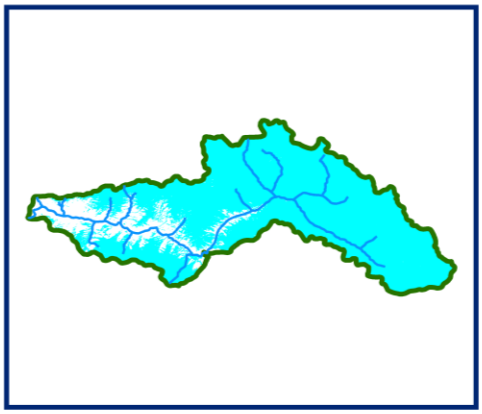
0 5 10 20 30 40

Kilometers

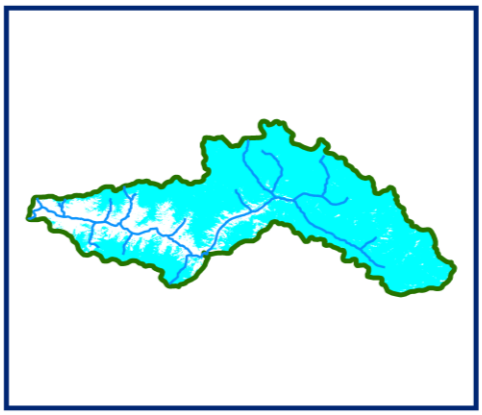
10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED
01 JANUARY 2014
03 JANUARY 2014
06 JANUARY 2014



DATA USED
15 JANUARY 2014
20 JANUARY 2014

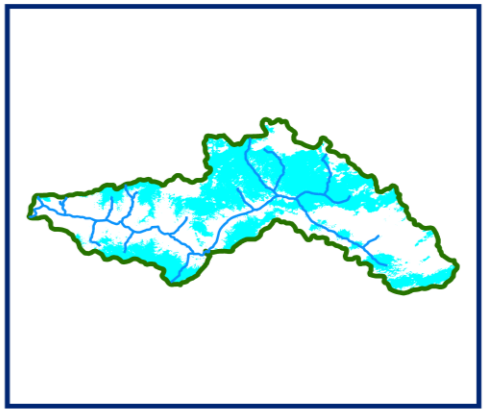


DATA USED
27 JANUARY 2014
29 JANUARY 2014
30 JANUARY 2014

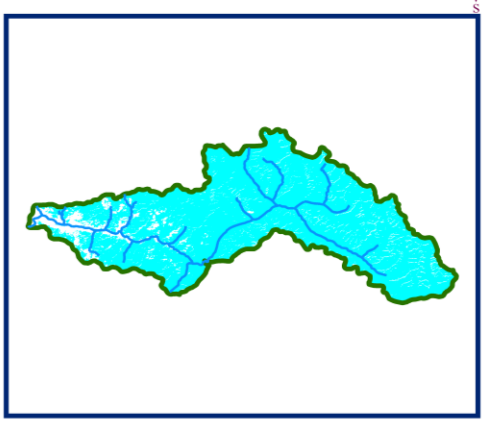
SNOW

105 0 10 20 30 40
Kilometers

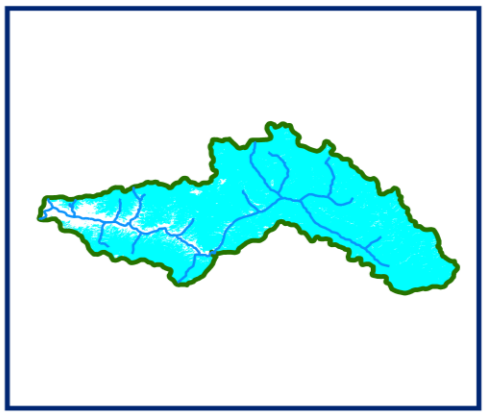
SNOW COVER MAP : BHUT BASIN



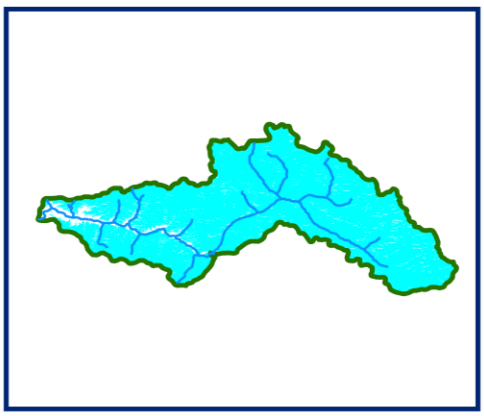
01 FEBRUARY 2014



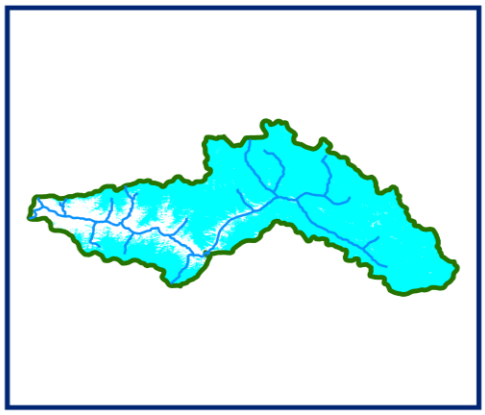
08 FEBRUARY 2014



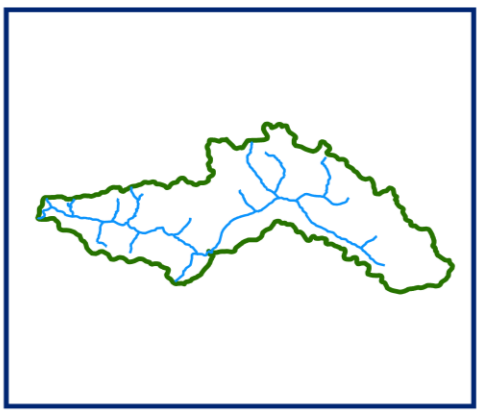
13 FEBRUARY 2014



20 FEBRUARY 2014



25 FEBRUARY 2014



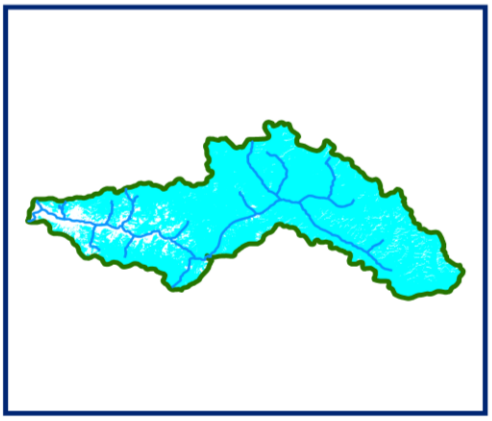
DATA NOT AVAILABLE

SNOW

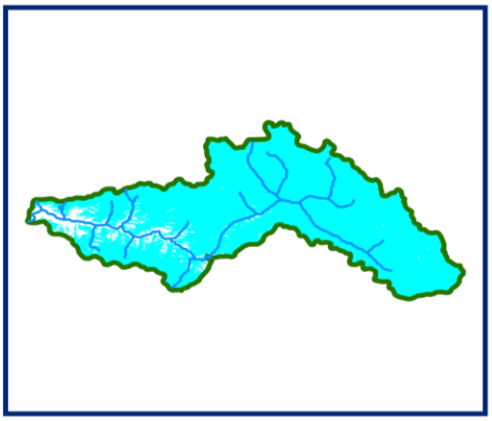
105 0 10 20 30 40

Kilometers

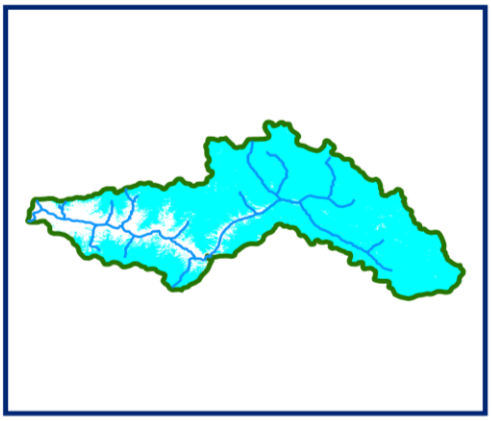
10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED
01 FEBRUARY 2014
08 FEBRUARY 2014



DATA USED
13 FEBRUARY 2014
17 FEBRUARY 2014

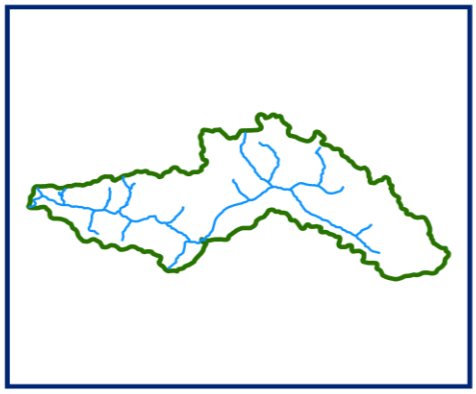


DATA USED
25 FEBRUARY 2014

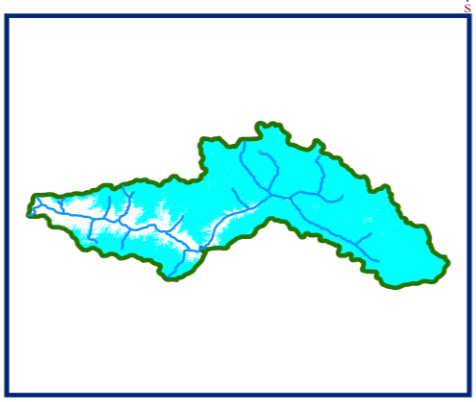
SNOW

105 0 10 20 30 40
Kilometers

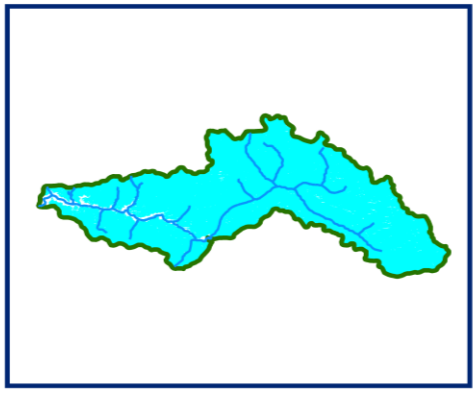
SNOW COVER MAP : BHUT BASIN



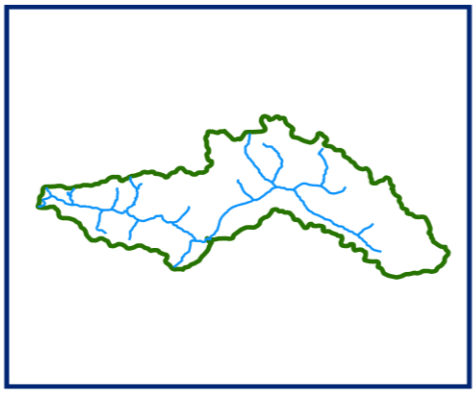
DATA NOT AVAILABLE



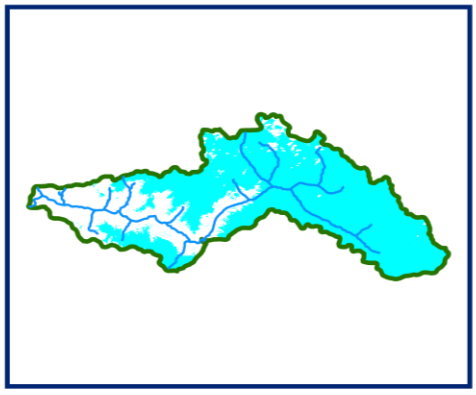
07 MARCH 2014



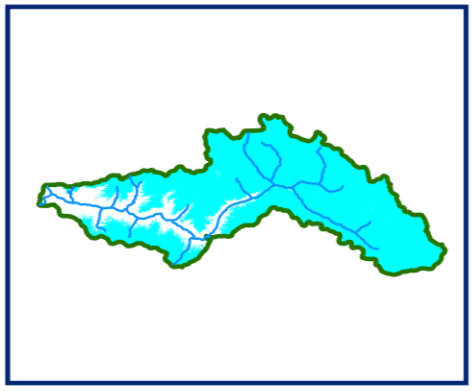
13 MARCH 2014



DATA NOT AVAILABLE



25 MARCH 2014



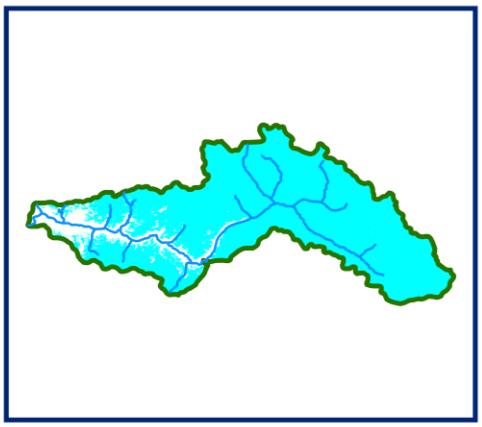
30 MARCH 2014

SNOW

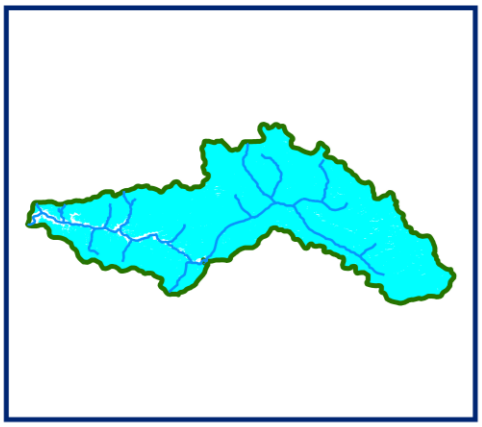
10 5 0 10 20 30 40

Kilometers

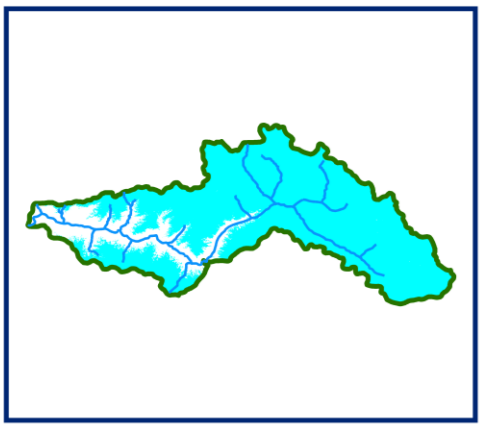
10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED
03 MARCH 2014
06 MARCH 2014
07 MARCH 2014



DATA USED
13 MARCH 2014

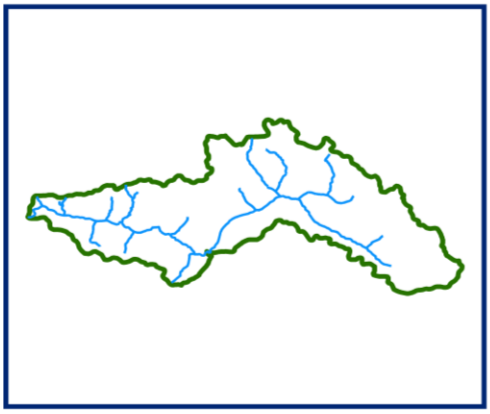


DATA USED
25 MARCH 2014
30 MARCH 2014

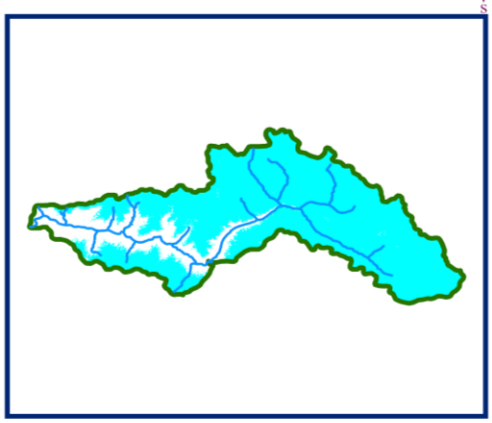
SNOW

105 0 10 20 30 40
Kilometers

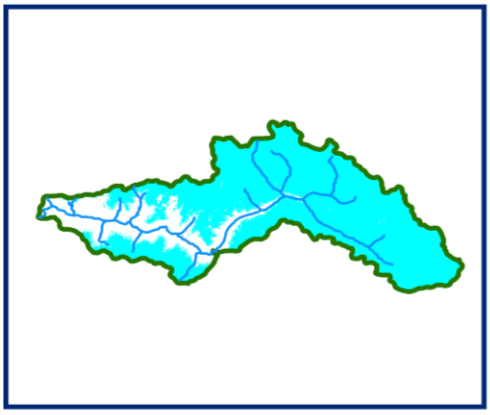
SNOW COVER MAP : BHUT BASIN



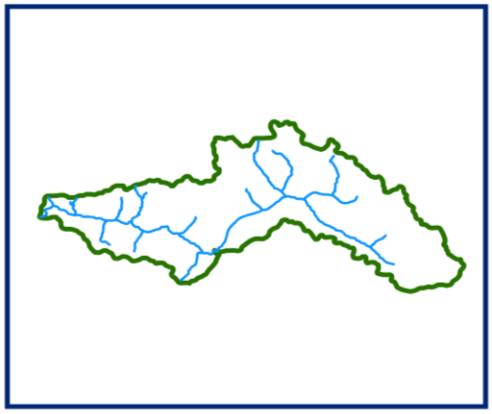
DATA NOT AVAILABLE



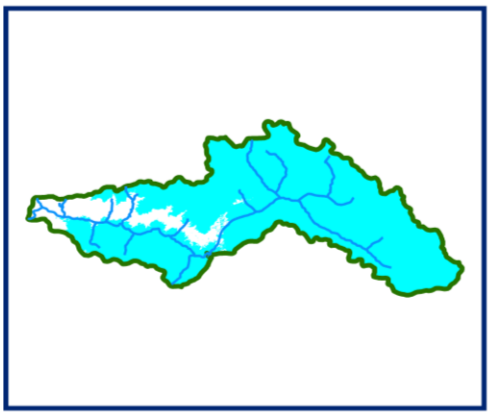
09 APRIL 2014



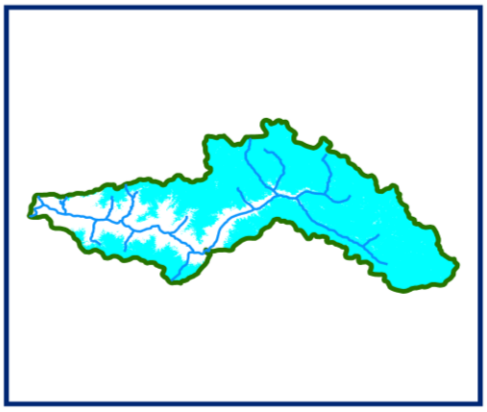
14 APRIL 2014



DATA NOT AVAILABLE



21 APRIL 2014



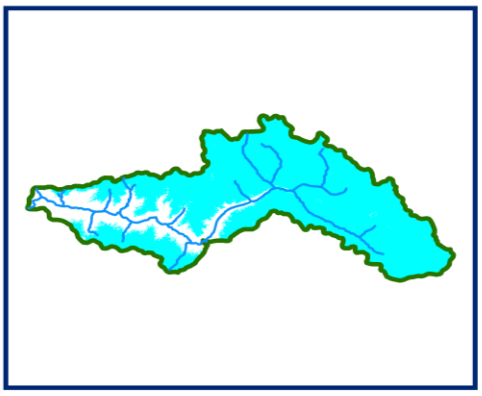
28 APRIL 2014

SNOW

105 0 10 20 30 40

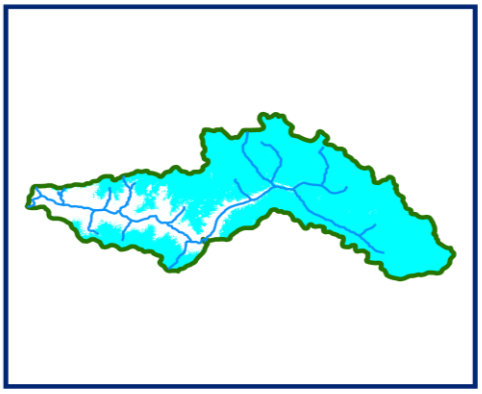
Kilometers

10 DAILY SNOW COVER MAP : BHUT BASIN



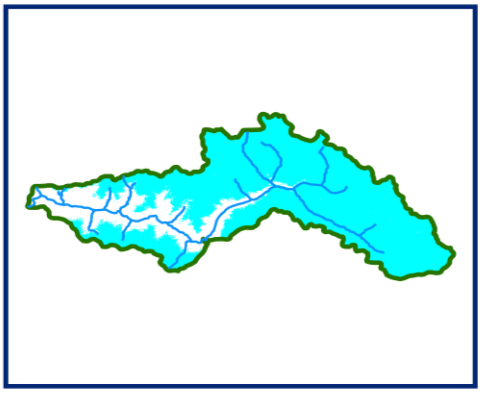
DATA USED

09 APRIL 2014



DATA USED

14 APRIL 2014



DATA USED

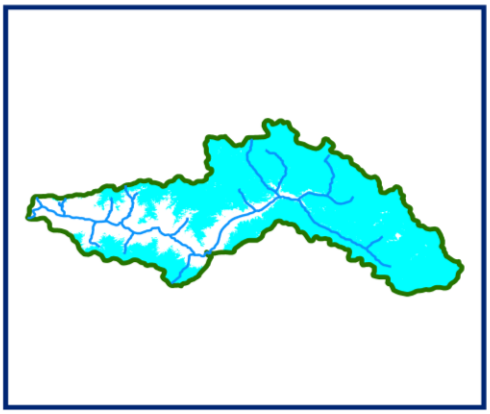
24 APRIL 2014
26 APRIL 2014
28 APRIL 2014

SNOW

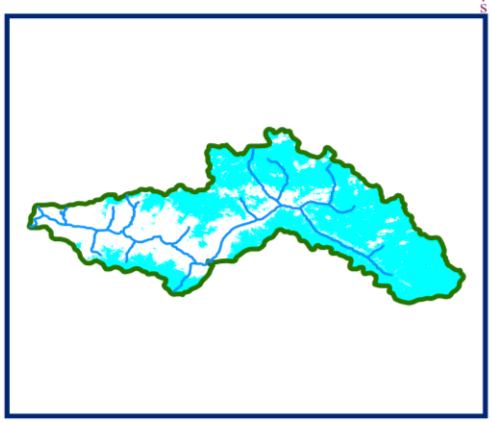
105 0 10 20 30 40

Kilometers

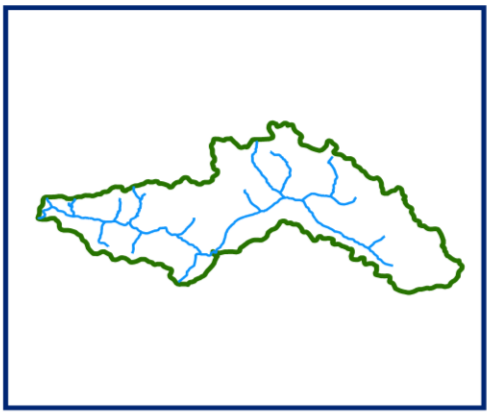
SNOW COVER MAP : BHUT BASIN



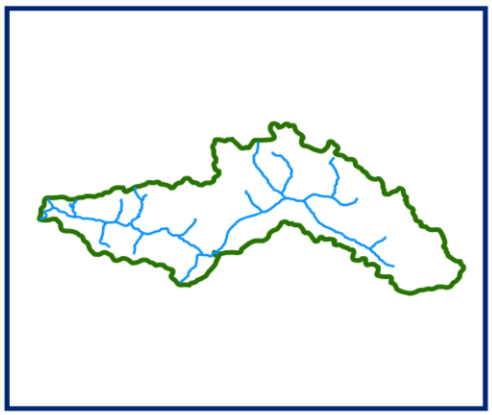
01 MAY 2014



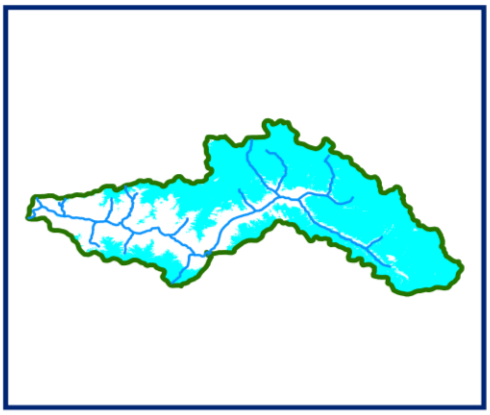
08 MAY 2014



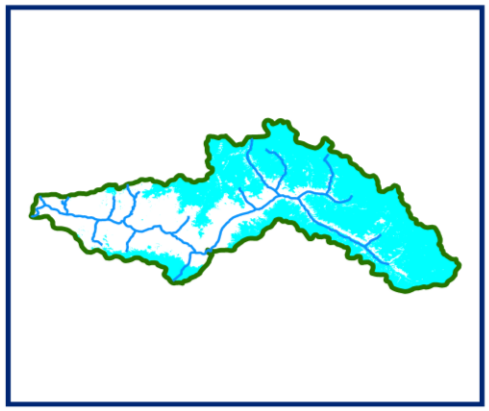
DATA NOT AVAILABLE



DATA NOT AVAILABLE



22 MAY 2014



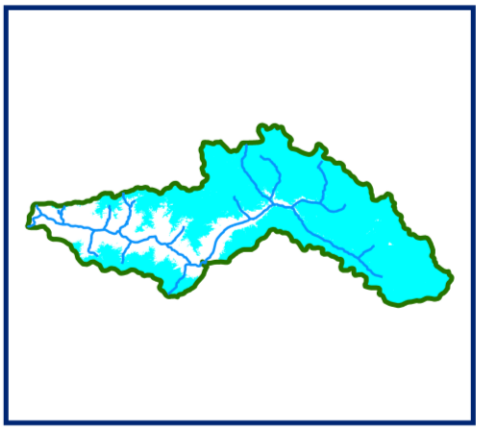
27 MAY 2014

SNOW

105 0 10 20 30 40

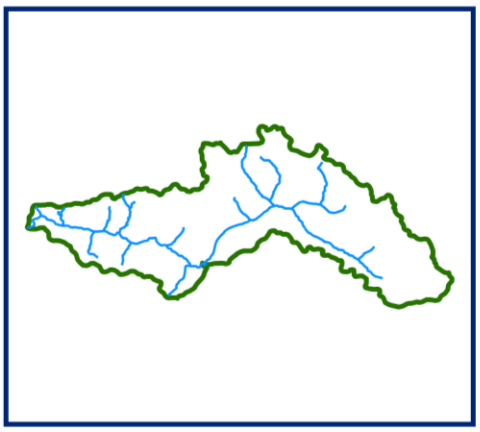
Kilometers

10 DAILY SNOW COVER MAP : BHUT BASIN

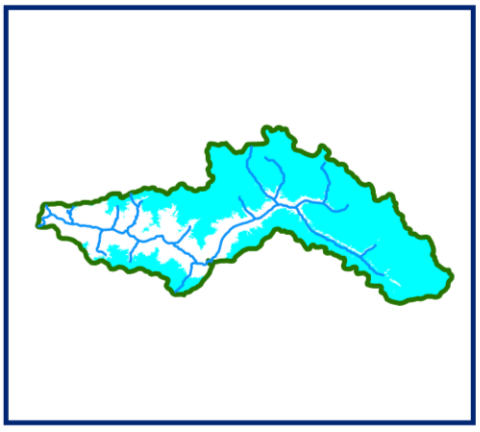


DATA USED

01 MAY 2014
08 MAY 2014
10 MAY 2014



DATA NOT AVAILABLE



DATA USED

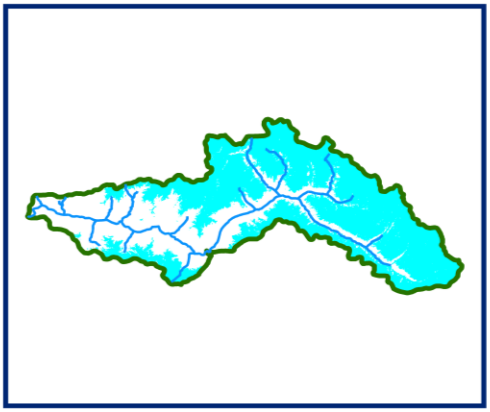
22 MAY 2014
25 MAY 2014
27 MAY 2014

SNOW

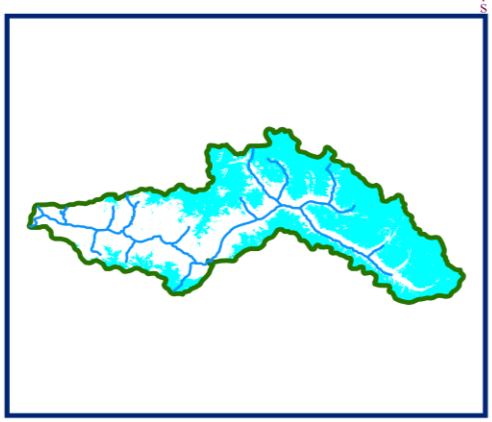
105 0 10 20 30 40

Kilometers

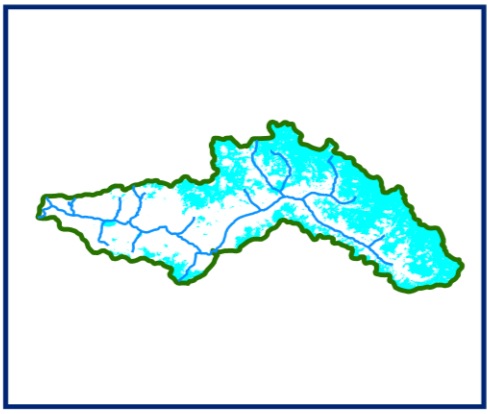
SNOW COVER MAP : BHUT BASIN



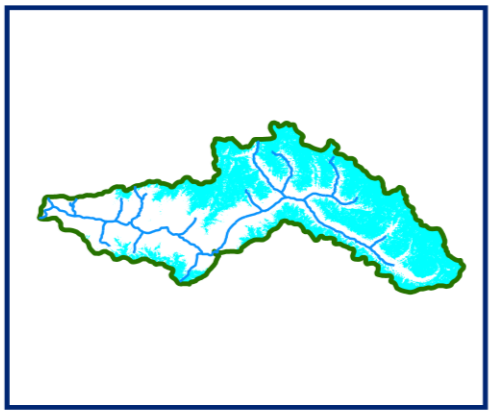
03 JUNE 2014



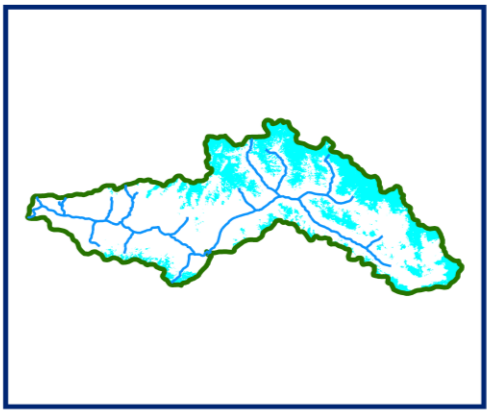
08 JUNE 2014



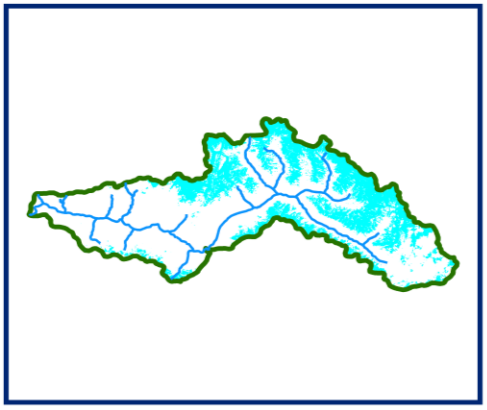
11 JUNE 2014



15 JUNE 2014



25 JUNE 2014



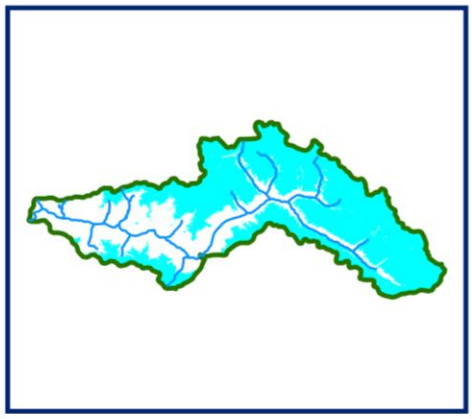
30 JUNE 2014

SNOW

105 0 10 20 30 40

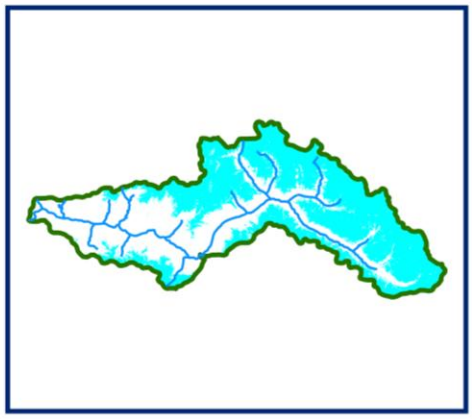
Kilometers

10 DAILY SNOW COVER MAP : BHUT BASIN



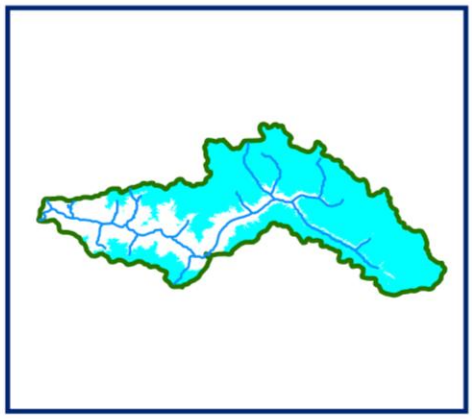
DATA USED

03 JUNE 2014
05 JUNE 2014
08 JUNE 2014



DATA USED

11 JUNE 2014
13 JUNE 2014
15 JUNE 2014



DATA USED

22 JUNE 2014
25 JUNE 2014
27 JUNE 2014

SNOW

105 0 10 20 30 40

Kilometers

WARWAN BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: WARWAN **BASIN AREA: 4670 sq km**

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2013							
1	2-Oct-13	486	10	8	15-Oct-13	2346	50
2	3-Oct-13	862	18	9	16-Oct-13	1897	41
3	4-Oct-13	548	12	10	18-Oct-13	805	17
4	6-Oct-13	590	13	11	21-Oct-13	1375	29
5	8-Oct-13	473	10	12	23-Oct-13	1115	24
6	9-Oct-13	400	9	13	25-Oct-13	1194	26
7	11-Oct-13	387	8	14	28-Oct-13	925	20
November 2013							
15	11-Nov-13	2137	46	19	25-Nov-13	2366	51
16	16-Nov-13	2766	59	20	26-Nov-13	2209	47
17	20-Nov-13	2648	57	21	30-Nov-13	2082	45
18	21-Nov-13	2470	53				
December 2013							
22	10-Dec-13	1465	31	26	20-Dec-13	3454	74
23	14-Dec-13	1662	36	27	26-Dec-13	4147	89
24	15-Dec-13	1995	43	28	27-Dec-13	4087	88
25	17-Dec-13	804	17				
January 2014							
29	3-Jan-14	4145	89	33	27-Jan-14	4013	86
30	7-Jan-14	3926	84	34	29-Jan-14	4148	89
31	20-Jan-14	4082	87	35	31-Jan-14	3768	81
32	24-Jan-14	4474	96				
February 2014							
36	8-Feb-14	4184	90	39	24-Feb-14	3976	85
37	13-Feb-14	4184	90	40	25-Feb-14	3976	85
38	17-Feb-14	4410	94				
March 2014							
41	6-Mar-14	4148	89	44	20-Mar-14	4034	86
42	8-Mar-14	4221	90	45	26-Mar-14	2741	59
43	16-Mar-14	2783	60	46	30-Mar-14	4034	86

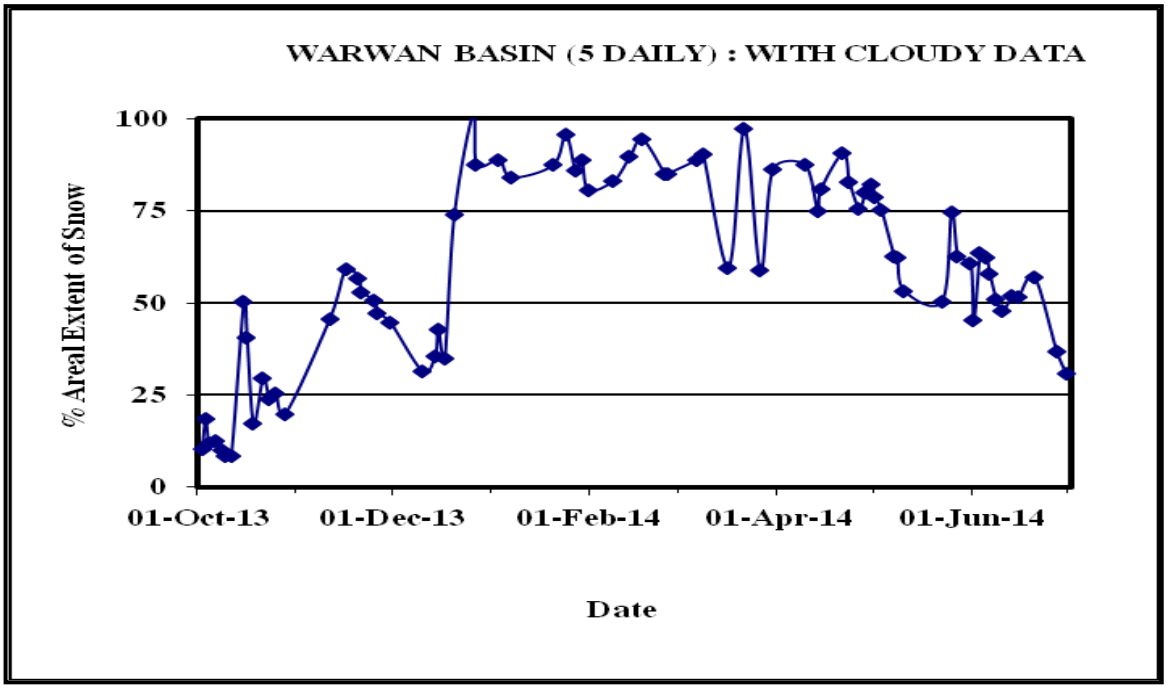
S NO	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
April-2014							
47	9-Apr-14	4091	88	51	23-Apr-14	3861	83
48	13-Apr-14	3502	75	52	26-Apr-14	3532	76
49	14-Apr-14	3776	81	53	28-Apr-14	3739	80
50	21-Apr-14	4238	91	54	30-Apr-14	3844	82
May 2014							
55	1-May-14	3676	79	60	22-May-14	2353	50
56	3-May-14	3513	75	61	25-May-14	3487	75
57	7-May-14	2930	63	62	27-May-14	2918	62
58	8-May-14	2908	62	63	31-May-14	2840	61
59	10-May-14	2489	53				
June 2014							
64	1-Jun-14	2118	45	70	13-Jun-14	2417	52
65	3-Jun-14	2971	64	71	15-Jun-14	2414	52
66	5-Jun-14	2903	62	72	20-Jun-14	2661	57
67	6-Jun-14	2702	58	73	27-Jun-14	1713	37
68	8-Jun-14	2381	51	74	30-Jun-14	1434	31
69	10-Jun-14	2228	48				

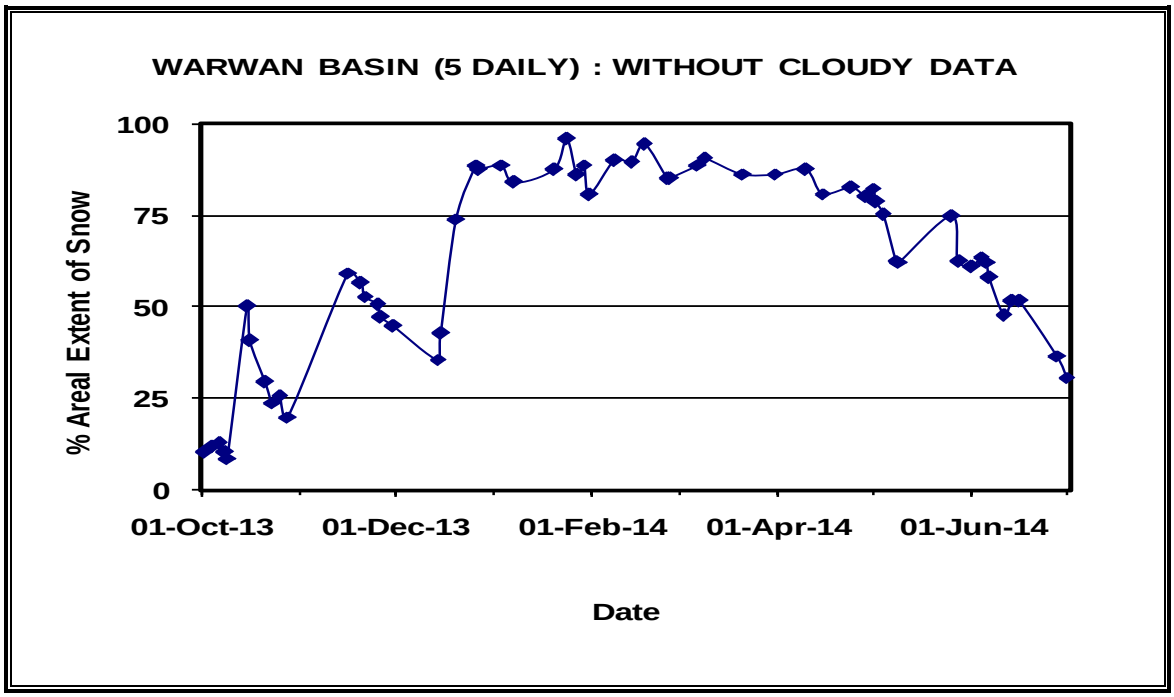
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: WARWAN **BASIN AREA: 4670 sq km**

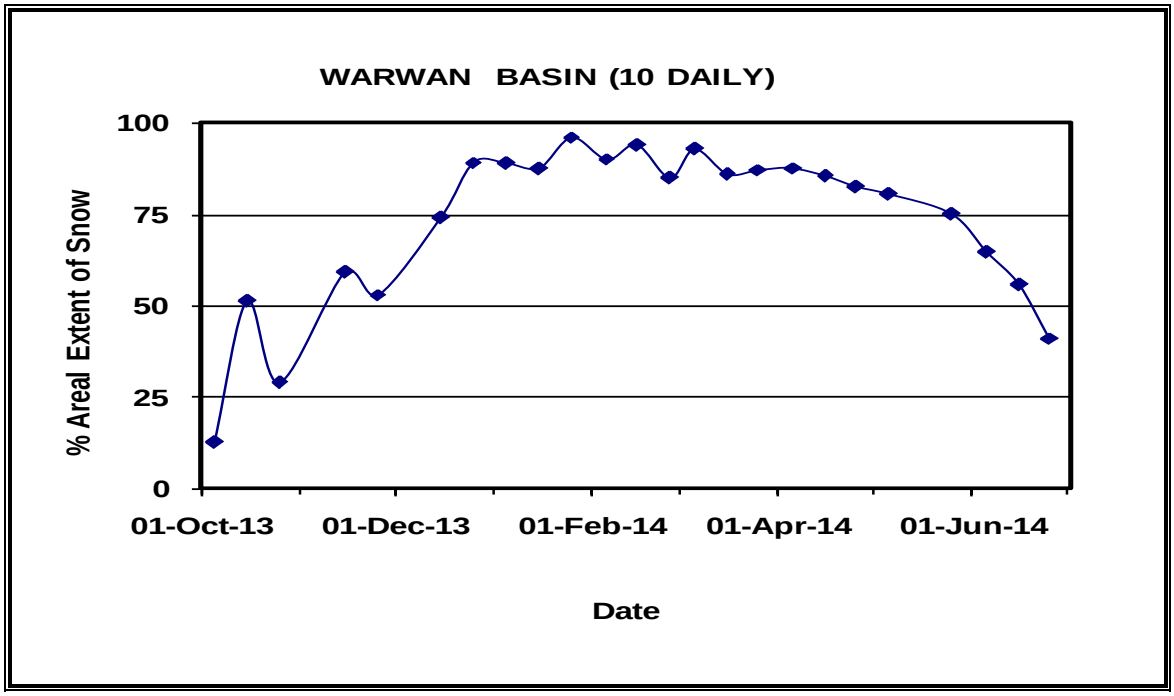
S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2013							
1	5-Oct-13	590	13	3	25-Oct-13	1354	29
2	15-Oct-13	2387	51				
November 2013							
5	15-Nov-13	2755	59	6	25-Nov-13	2475	53
December 2013							
8	15-Dec-13	3456	74	9	25-Dec-13	4156	89
January 2014							
10	5-Jan-14	4141	89	12	25-Jan-14	4483	96
11	15-Jan-14	4082	87				
February 2014							
13	5-Feb-14	4203	90	15	25-Feb-14	3964	85
14	15-Feb-14	4381	94				
March 2014							
16	5-Mar-14	4326	93	18	25-Mar-14	4068	87
17	15-Mar-14	4016	86				
April 2014							
19	5-Apr-14	4091	88	21	25-Apr-14	3851	82
20	15-Apr-14	3983	85				
May 2014							
22	5-May-14	3753	80	24	25-May-14	3503	75
June 2014							
25	5-June-14	3016	65	27	25-Jun-14	1914	41
26	15-June-14	2596	56				

SNOW COVER DEPLETION CURVE



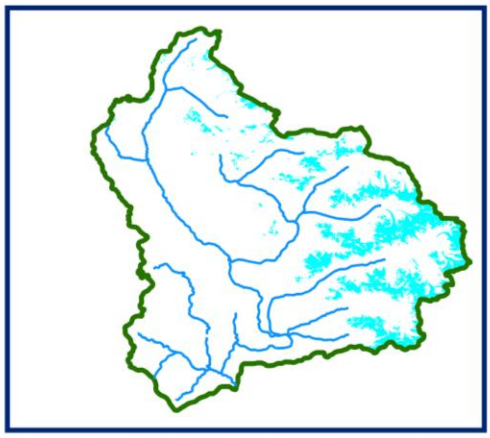


SNOW COVER DEPLETION CURVE

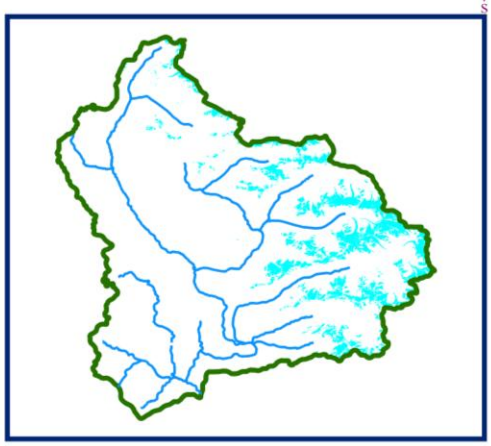


SNOW COVER MAP

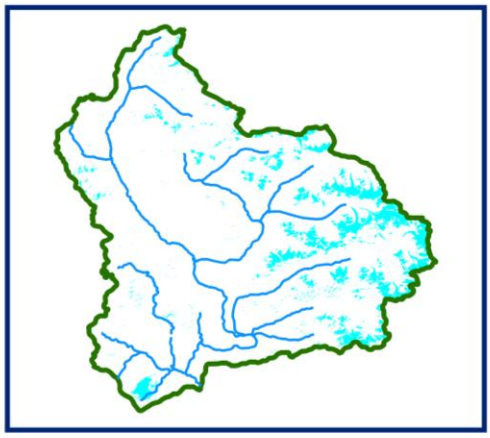
SNOW COVER MAP : WARWAN BASIN



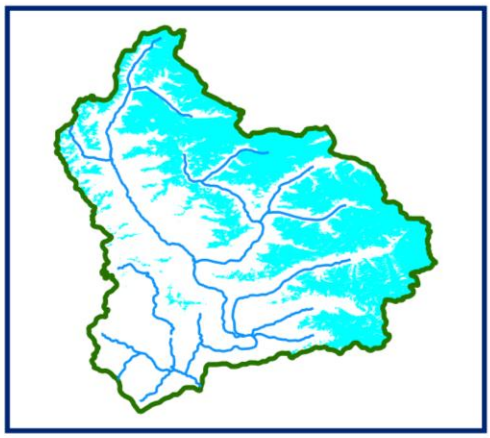
02 OCTOBER 2013



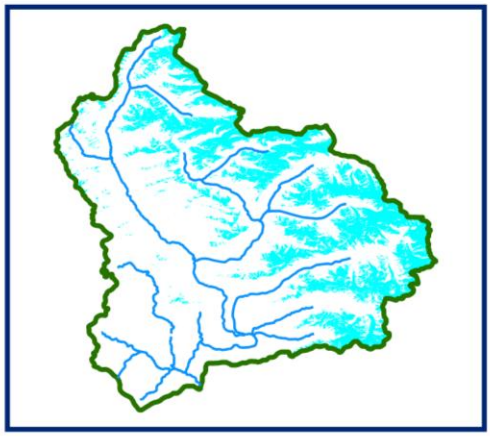
09 OCTOBR 2013



11 OCTOBER 2013



16 OCTOBER 2013



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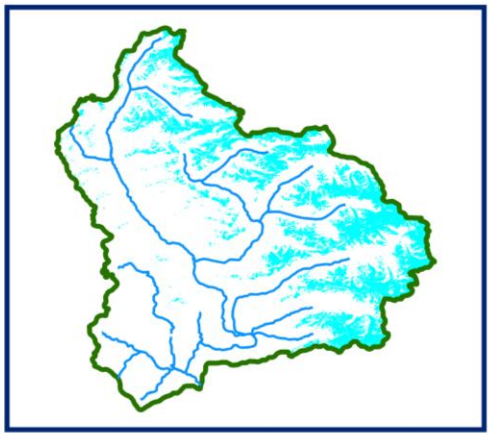


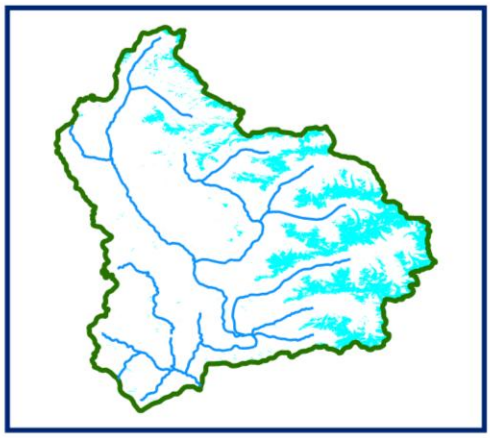
28 OCTOBER 2013

SNOW

0 5 10 20 30 40

Kilometers

10 DAILY SNOW COVER MAP : WARWAN BASIN

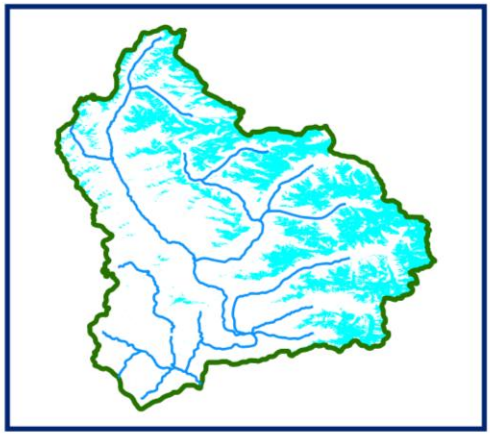


DATA USED

03 OCTOBER 2013
06 OCTOBER 2013
09 OCTOBER 2013

DATA USED

15 OCTOBER 2013
16 OCTOBER 2013
18 OCTOBER 2013



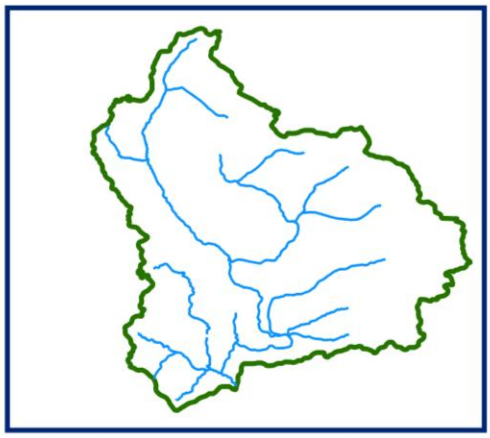
DATA USED

23 OCTOBER 2013
25 OCTOBER 2013
28 OCTOBER 2013

SNOW

105 0 10 20 30 40 Kilometers

SNOW COVER MAP : WARWAN BASIN



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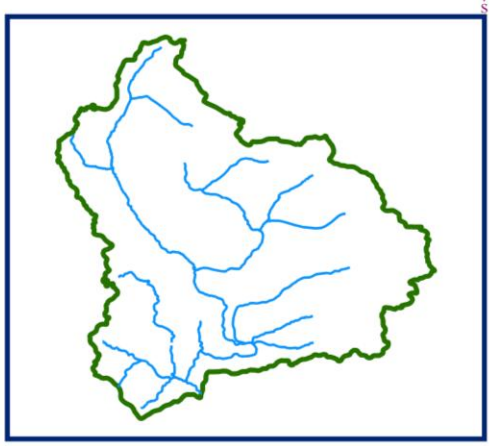


DATA NOT AVAILABLE

11 NOVEMBER 2013

16 NOVEMBER 2013

21 NOVEMBER 2013

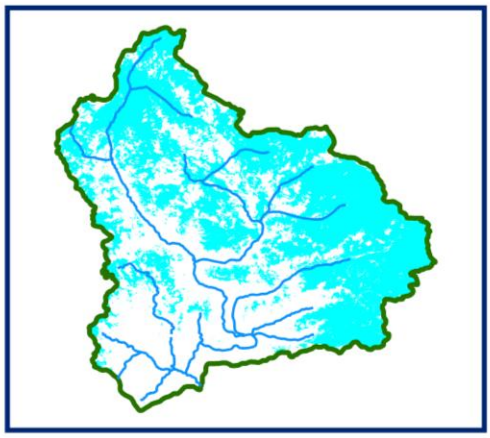
30 NOVEMBER 2013

SNOW

0 5 10 20 30 40

Kilometers

10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA USED

02 NOVEMBER 2013

DATA USED

11 NOVEMBER 2013
16 NOVEMBER 2013
20 NOVEMBER 2013

DATA USED

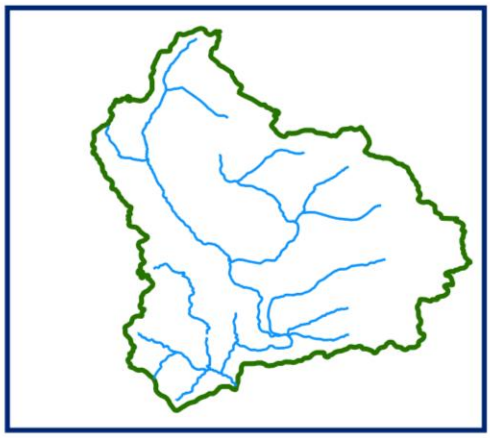
21 NOVEMBER 2013
25 NOVEMBER 2013
30 NOVEMBER 2013

SNOW

105 0 10 20 30 40

Kilometers

SNOW COVER MAP : WARWAN BASIN



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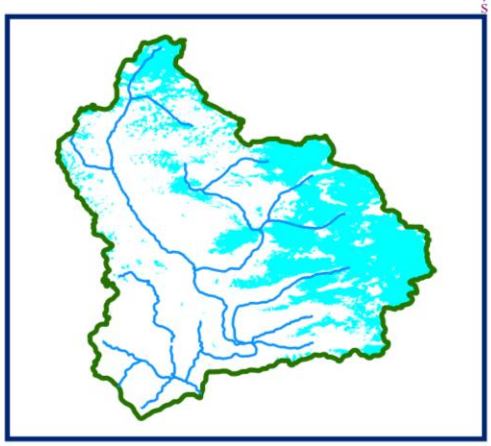
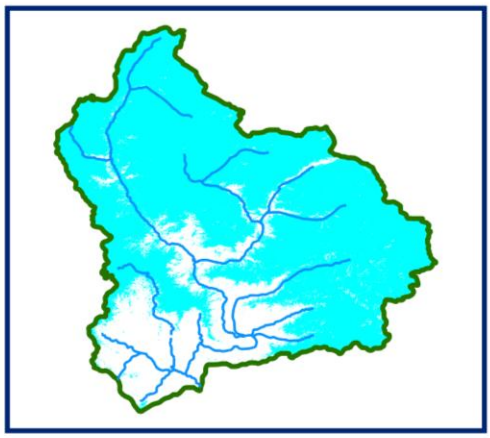


10 DECEMBER 2013

15 DECEMBER 2013



20 DECEMBER 2013

26 DECEMBER 2013

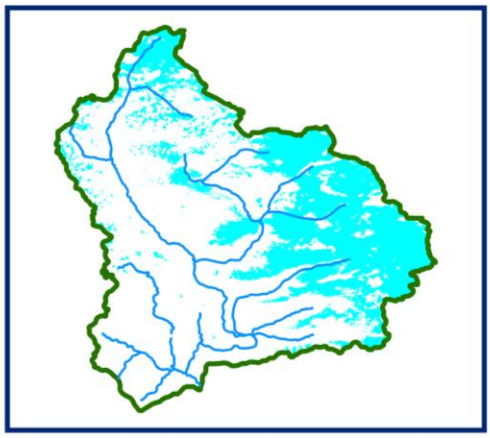
27 DECEMBER 2013

SNOW

105 0 10 20 30 40

Kilometers

10 DAILY SNOW COVER MAP : WARWAN BASIN

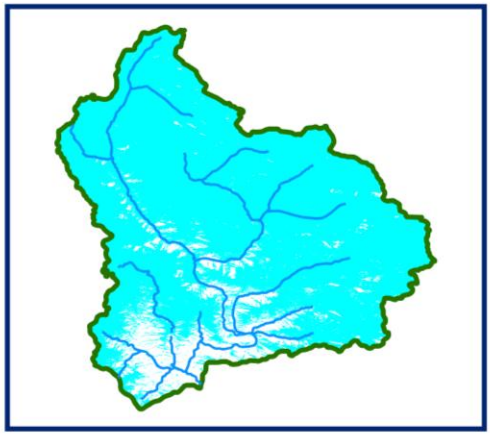


DATA USED

10 DECEMBER 2013

DATA USED

15 DECEMBER 2013
17 DECEMBER 2013
20 DECEMBER 2013



DATA USED

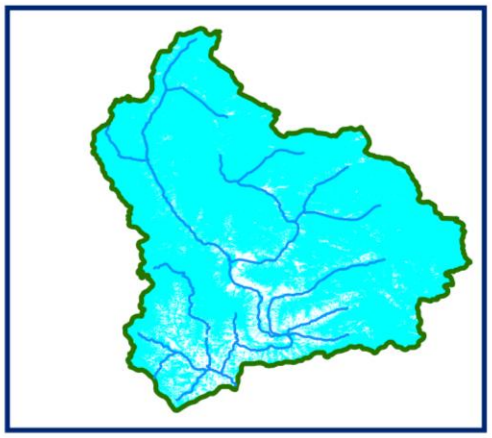
26 DECEMBER 2013
27 DECEMBER 2013

SNOW

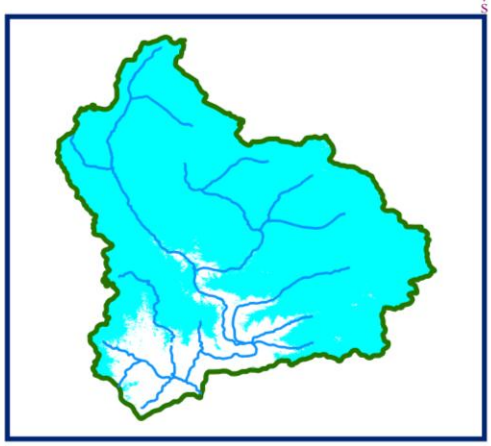
105 0 10 20 30 40

Kilometers

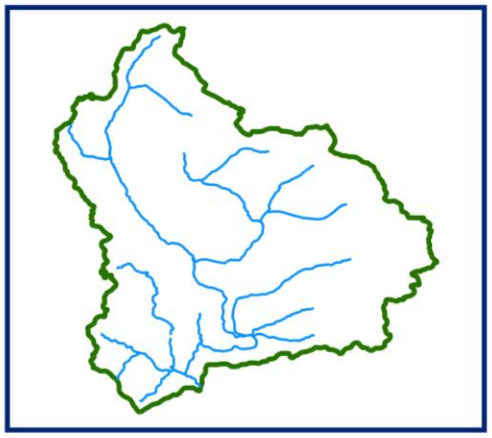
SNOW COVER MAP : WARWAN BASIN



03 JANUARY 2014



07 JANUARY 2014



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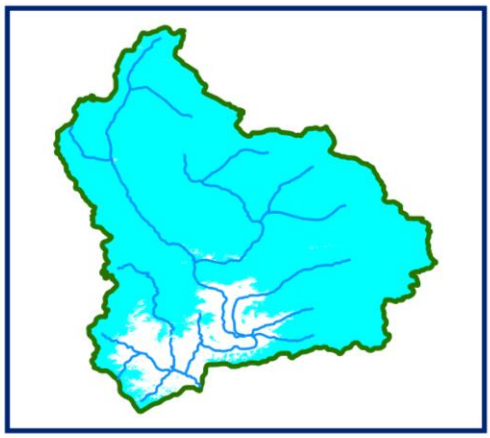
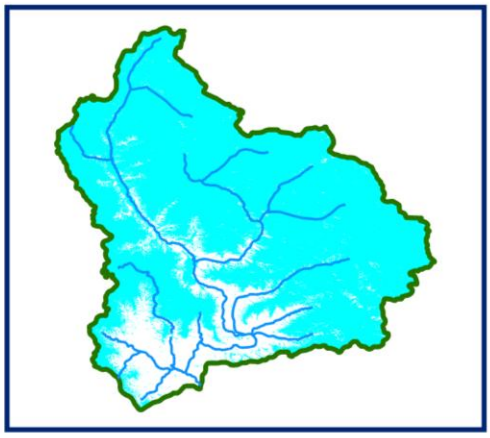


20 JANUARY 2014

24 JANUARY 2014



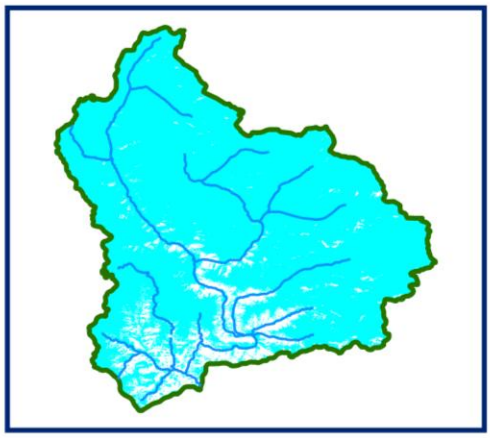
31 JANUARY 2014

105 0 10 20 30 40

SNOW

Kilometers

10 DAILY SNOW COVER MAP : WARWAN BASIN



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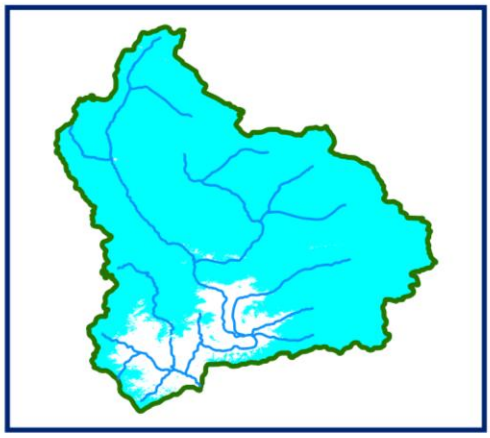
07 JANUARY 2014



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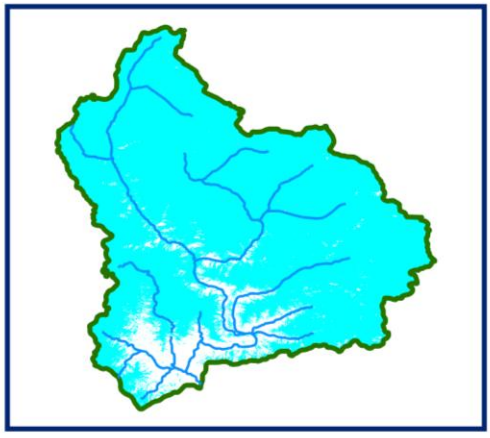

DATA USED
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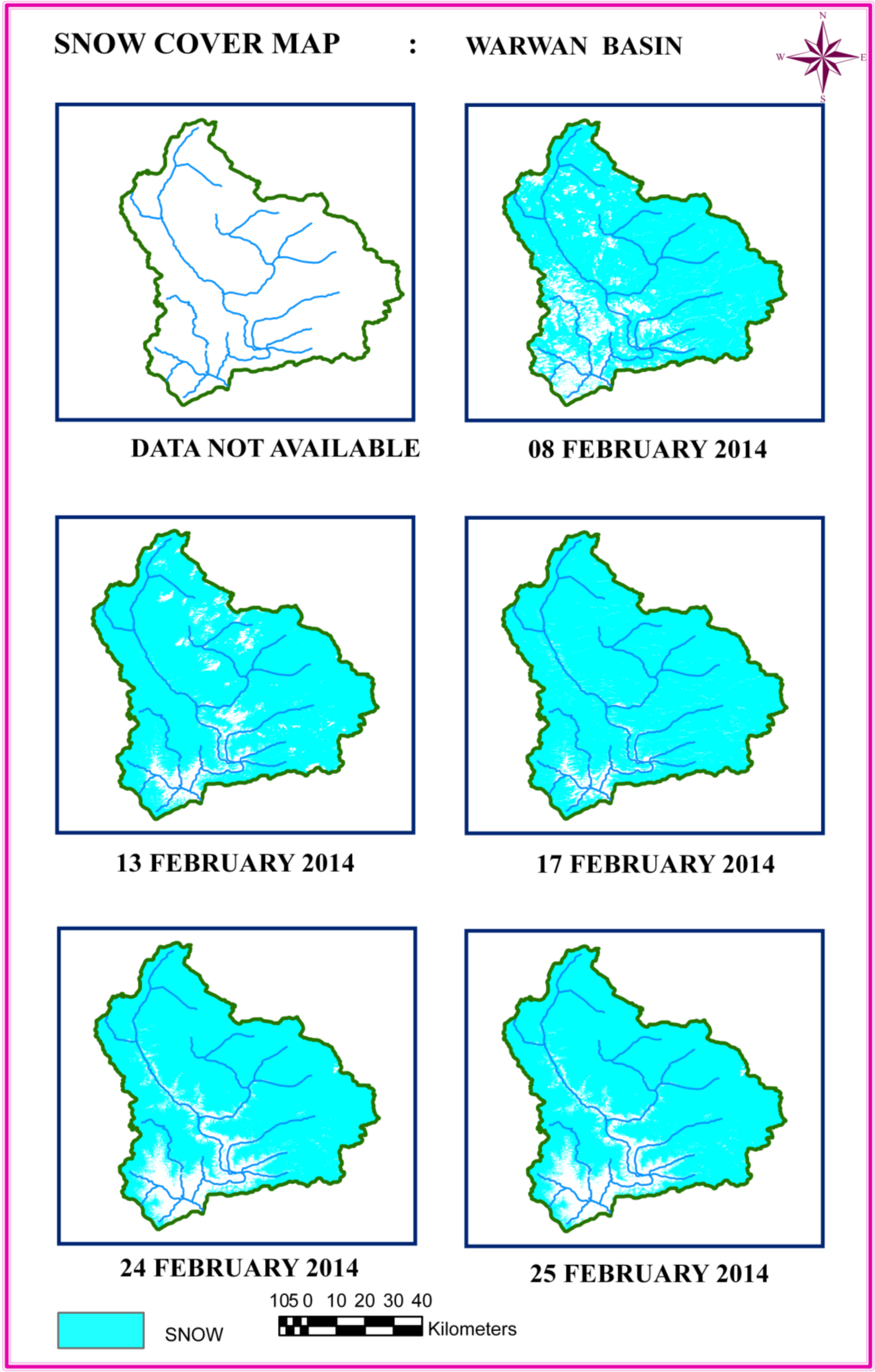
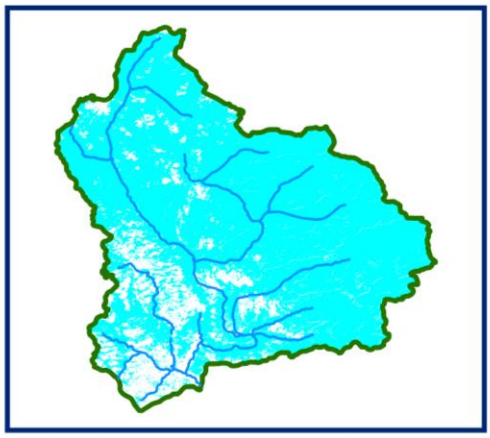
29 JANUARY 2014
31 JANUARY 2014

SNOW

105 0 10 20 30 40
Kilometers


SNOW COVER MAP : WARWAN BASIN
N
S
E
W
DATA NOT AVAILABLE
08 FEBRUARY 2014
13 FEBRUARY 2014
17 FEBRUARY 2014
24 FEBRUARY 2014
25 FEBRUARY 2014
SNOW
10 5 0 10 20 30 40
Kilometers

10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA USED
08 FEBRUARY 2014

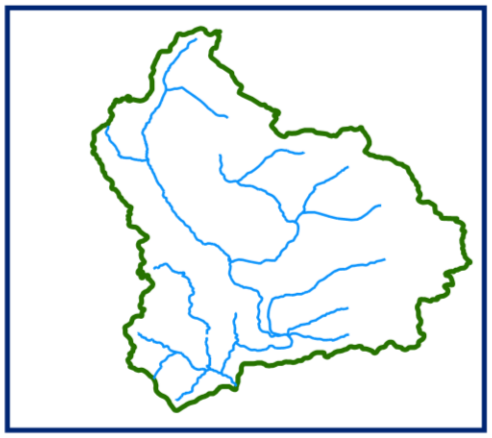
DATA USED
13 FEBRUARY 2014
17 FEBRUARY 2014

DATA USED
24 FEBRUARY 2014
25 FEBRUARY 2014

SNOW

105 0 10 20 30 40
Kilometers

SNOW COVER MAP : WARWAN BASIN



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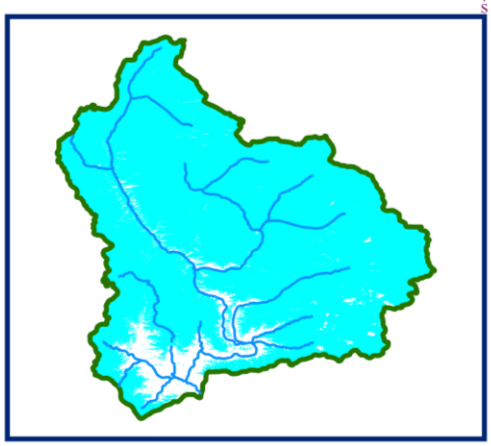
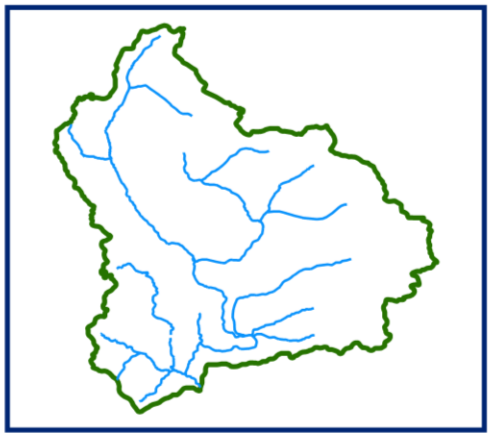


08 MARCH 2014



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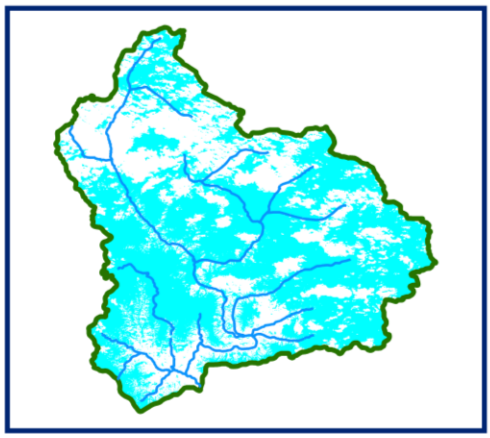

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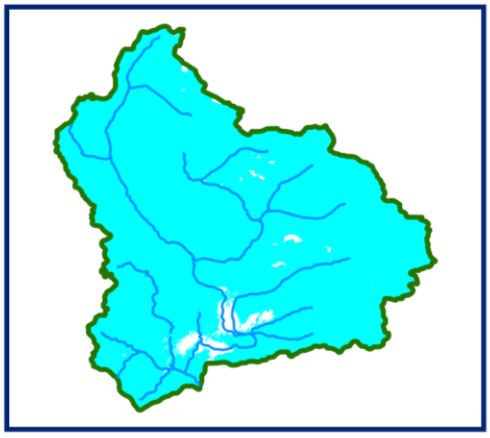
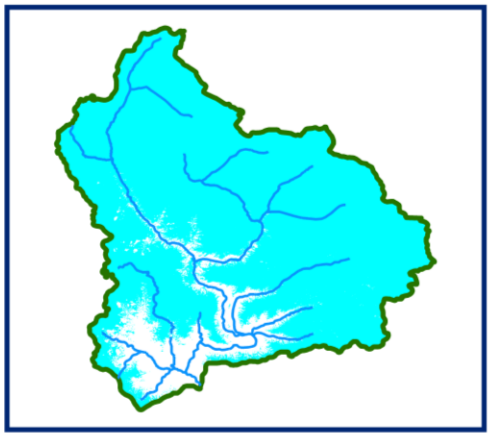


21 MARCH 2014



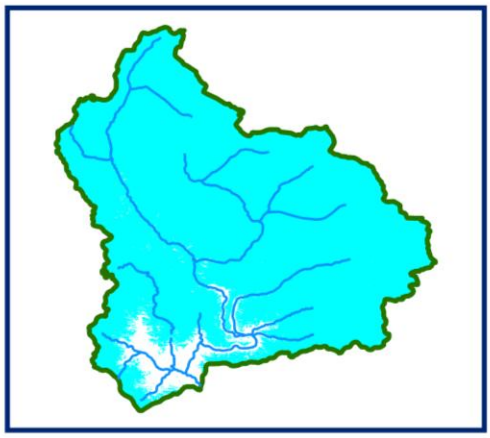
30 MARCH 2014

SNOW

105 0 10 20 30 40

Kilometers

10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA USED
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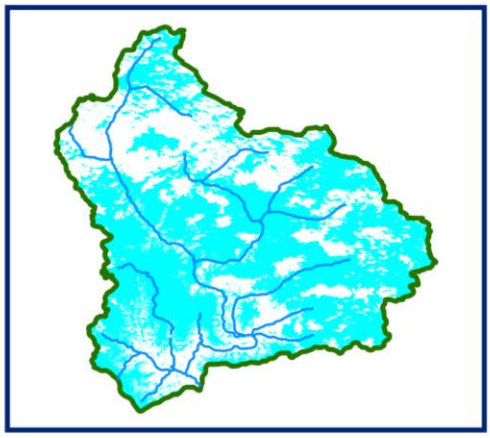


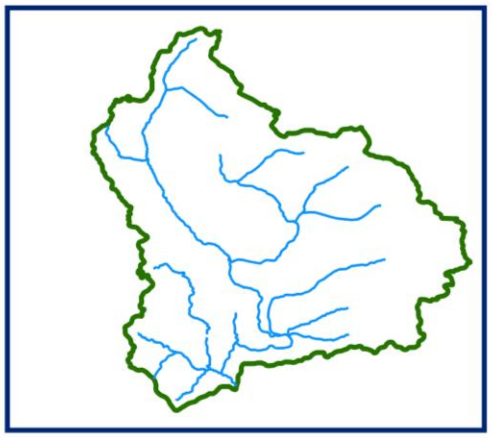
DATA USED
16 MARCH 2014

DATA USED
21 MARCH 2014
26 MARCH 2014
30 MARCH 2014

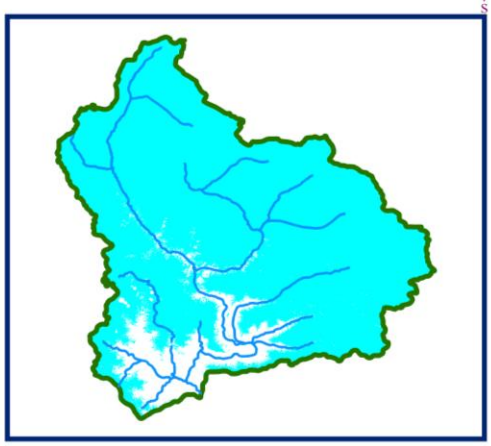
SNOW

105 0 10 20 30 40
Kilometers

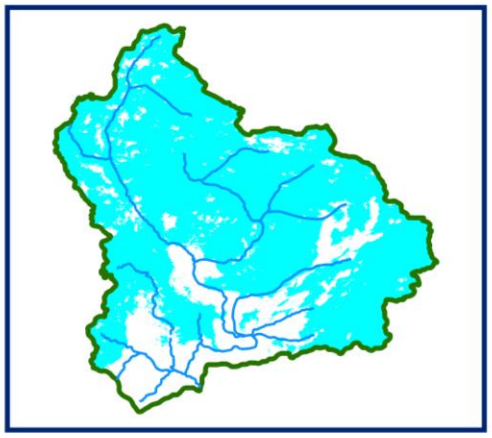
SNOW COVER MAP : WARWAN BASIN



DATA NOT AVAILABLE



09 APRIL 2014



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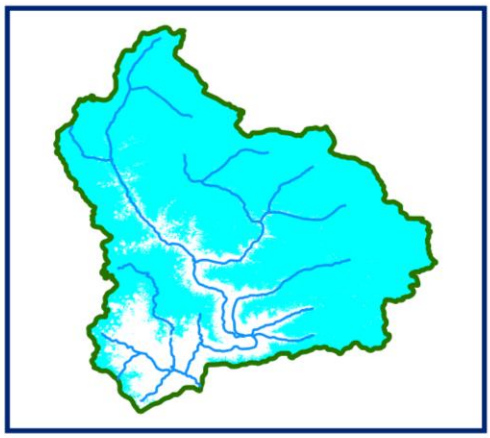

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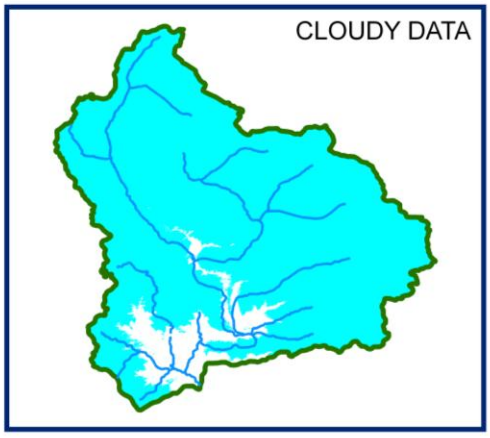
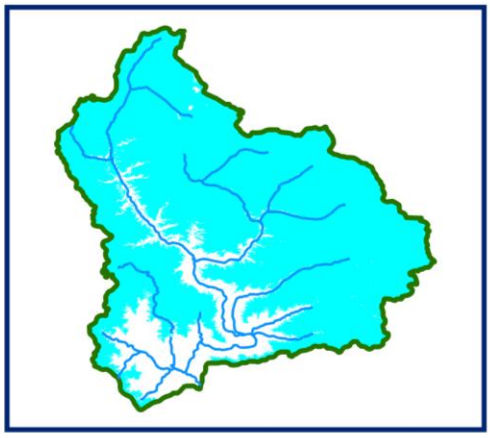


21 APRIL 2014

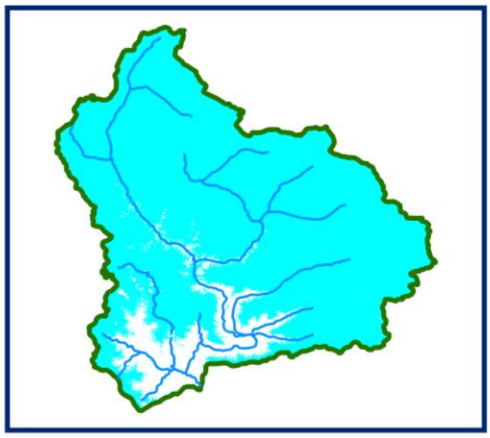


30 APRIL 2014

SNOW

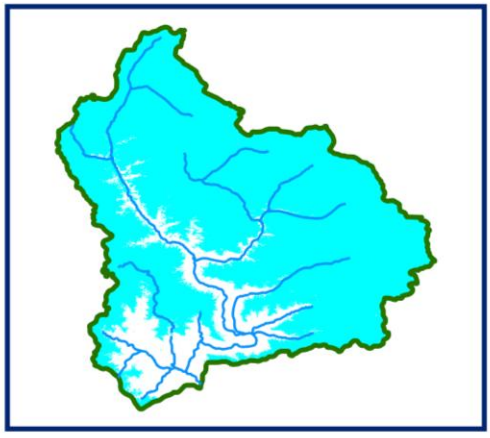
105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA USED
09 APRIL 2014

DATA USED
13 APRIL 2014
14 APRIL 2014

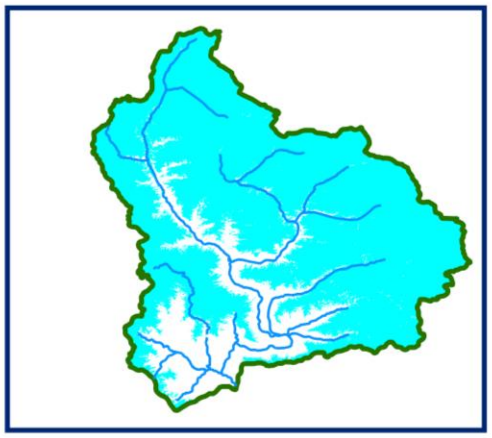


DATA USED
26 APRIL 2014
28 APRIL 2014
30 APRIL 2014

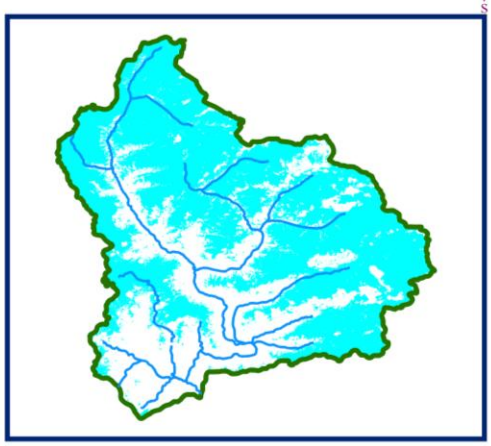
SNOW

105 0 10 20 30 40
Kilometers

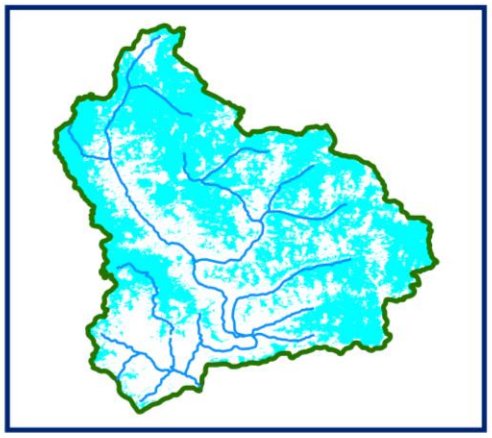
SNOW COVER MAP : WARWAN BASIN



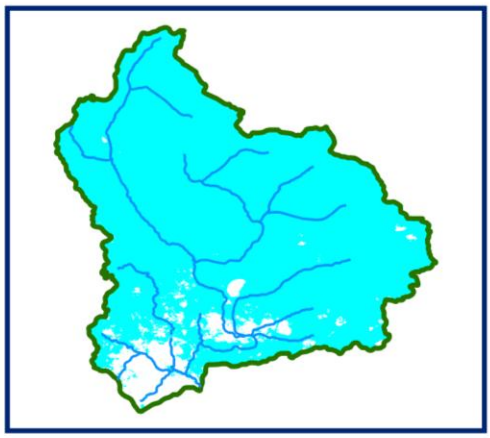
01 MAY 2014



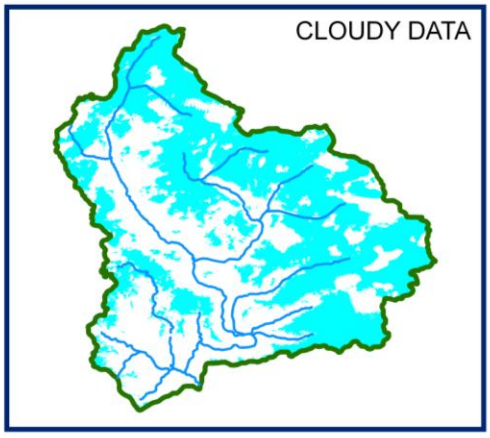
08 MAY 2014



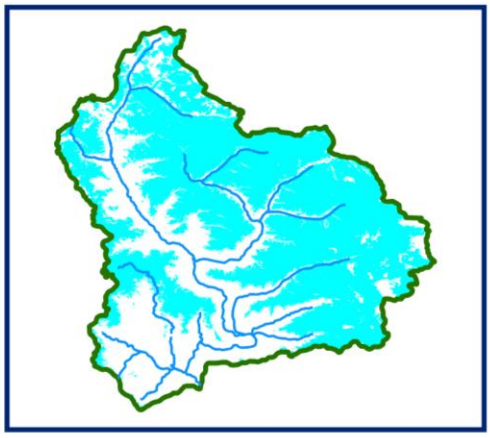
10 MAY 2014



20 MAY 2014



22 MAY 2014

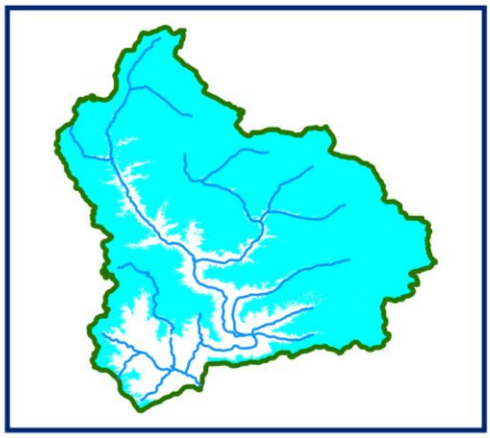


31 MAY 2014

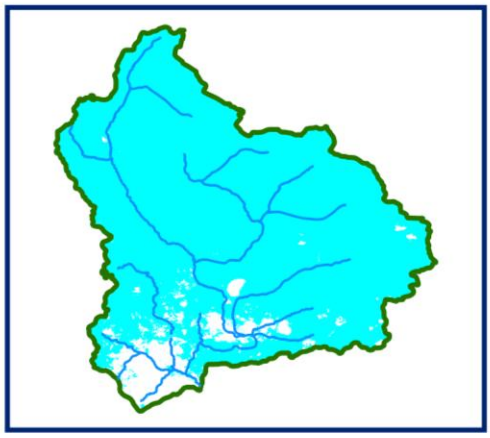
SNOW

105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA USED
01 MAY 2014
03 MAY 2014
07 MAY 2014

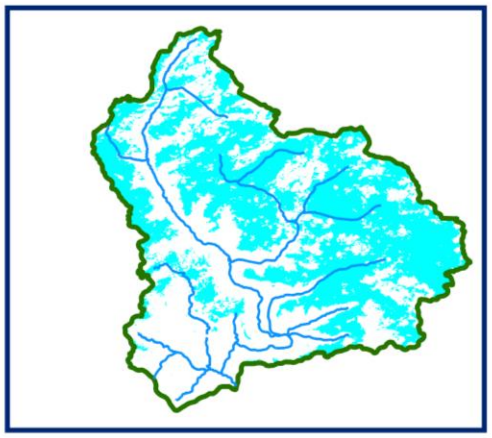


DATA USED
20 MAY 2014

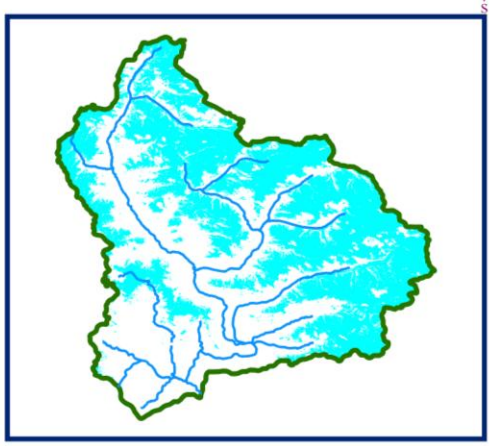
DATA USED
22 MAY 2014
27 MAY 2014
31 MAY 2014

SNOW

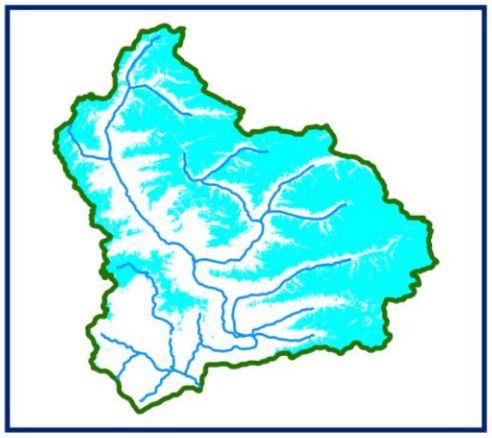
SNOW COVER MAP : WARWAN BASIN



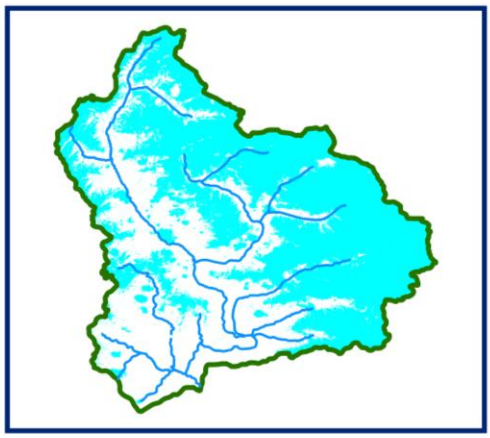
01 JUNE 2014



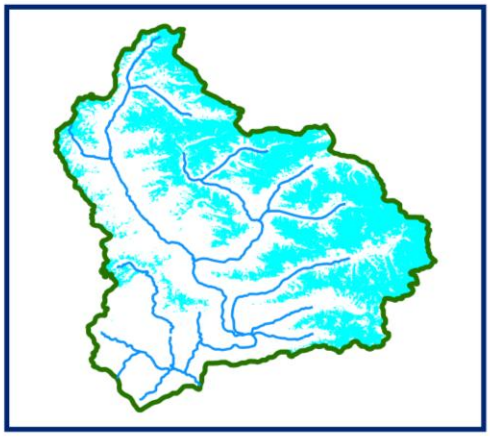
10 JUNE 2014



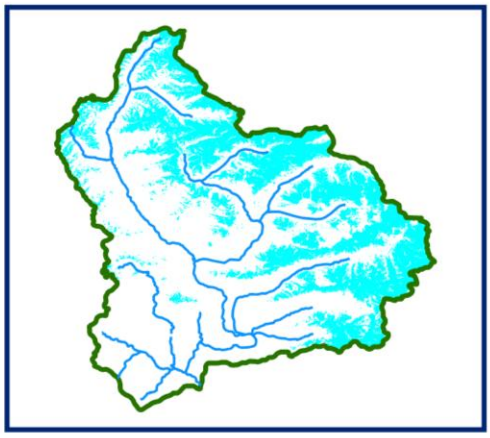
13 JUNE 2014



20 JUNE 2014



27 JUNE 2014

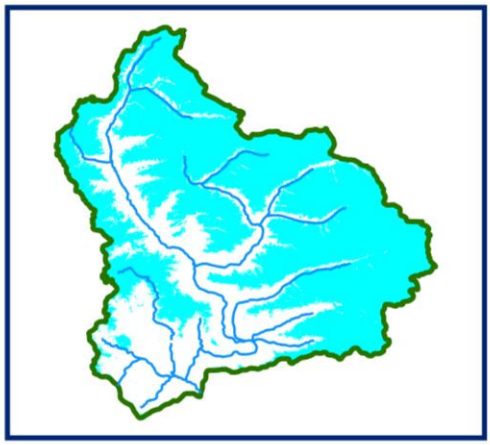


30 JUNE 2014

SNOW

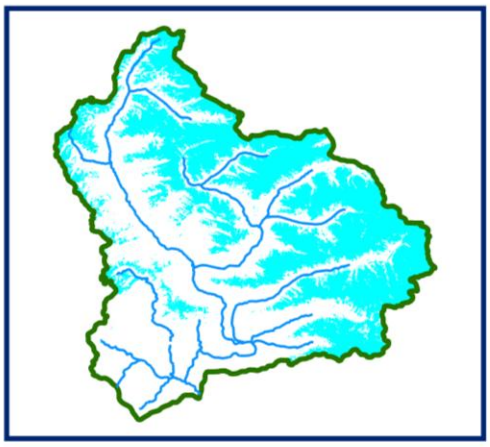
105 0 10 20 30 40 Kilometers

10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA USED
03 JUNE 2014
08 JUNE 2014
10 JUNE 2014

DATA USED
13 JUNE 2014
15 JUNE 2014
20 JUNE 2014



DATA USED
27 JUNE 2014
30 JUNE 2014

SNOW

105 0 10 20 30 40 Kilometers