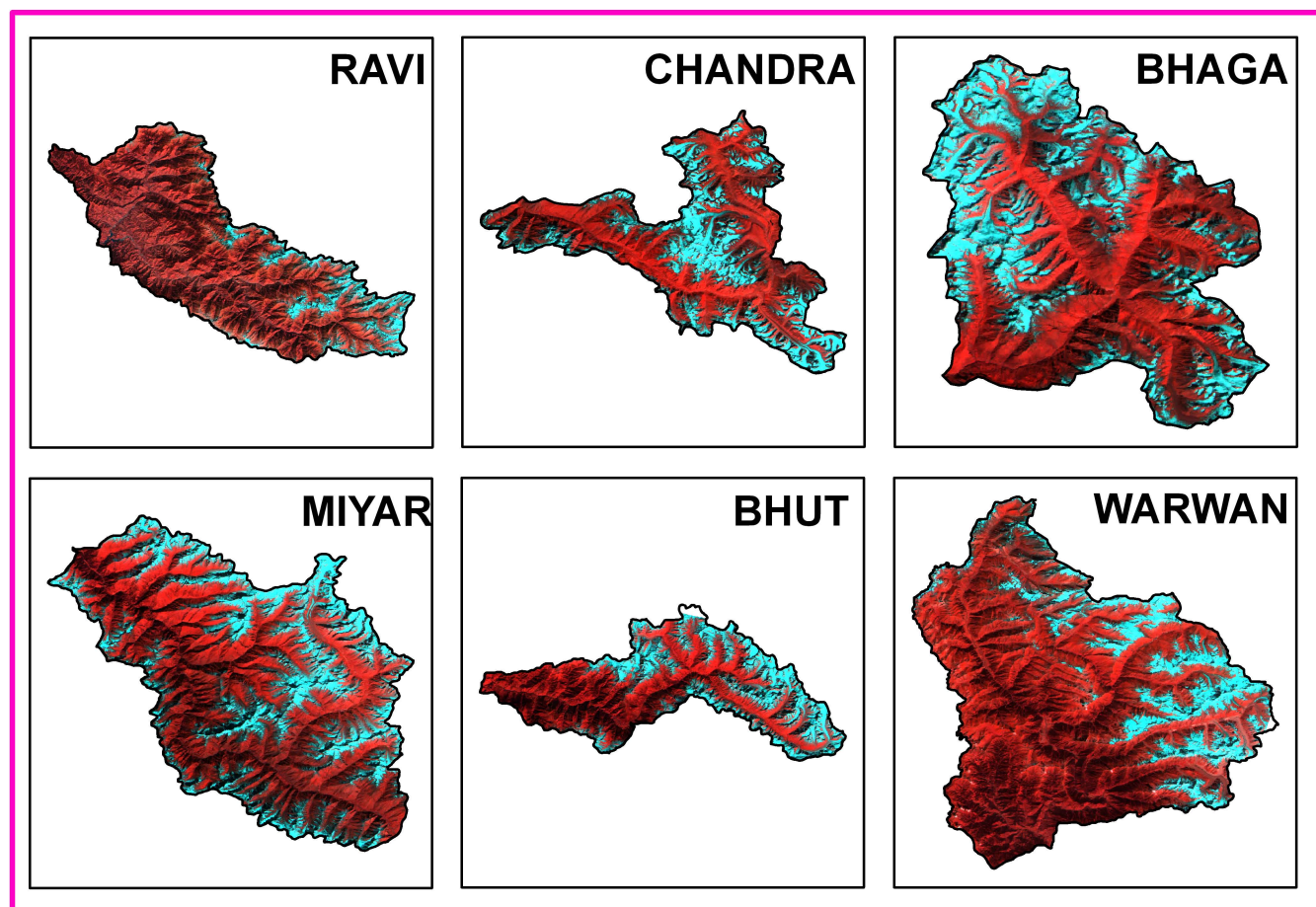


SNOW COVER ATLAS OF CHENAB BASIN

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

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

Year : 2011-12



Faculty of Geomatics and Space Applications
CEPT University- Ahmedabad - 380009

&

Space Applications Centre (ISRO)
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SPACE APPLICATIONS CENTRE (ISRO), AHMEDABAD - 380015**DOCUMENT CONTROL AND DATA SHEET**

Report Number	SAC/RESA/MESG/SGP/SN/ 78 /2013
Month and year of publication	January 2013
Title	Snow cover Atlas of the Chenab basin
Type of Report	Scientific Report
No. of pages	145
No. of figures, Charts & Tables	110, 18 & 12
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Originating Unit	Geo Sciences Division, Marine, Geo and Planetary Sciences Group, Earth, Ocean, Atmosphere, Planetary Sciences and Applications area, Space Applications Centre (ISRO), Ahmedabad-15
Abstract	<p>This atlas gives subbasin-wise distribution of snow cover in the Chenab basin from October 2011 to June 2012. 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.</p>
Key words	Snow cover, NDSI, AWiFS, depletion curve, Ravi, Chandra, Bhaga, Miyar, Bhut and Warwan basins.
Security Classification	Unrestricted
Distribution	Among concerned

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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 2011 to June 2012 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:

$$\text{Normalized Difference Snow Index (NDSI)} = (\text{band2} - \text{band5}) / (\text{band2} + \text{band5}) \quad \dots(1)$$

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 2011 to June 2012. 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 mid 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 93% and it reduces up to 70% in the beginning of March and ablation continuous till June.

Acknowledgements

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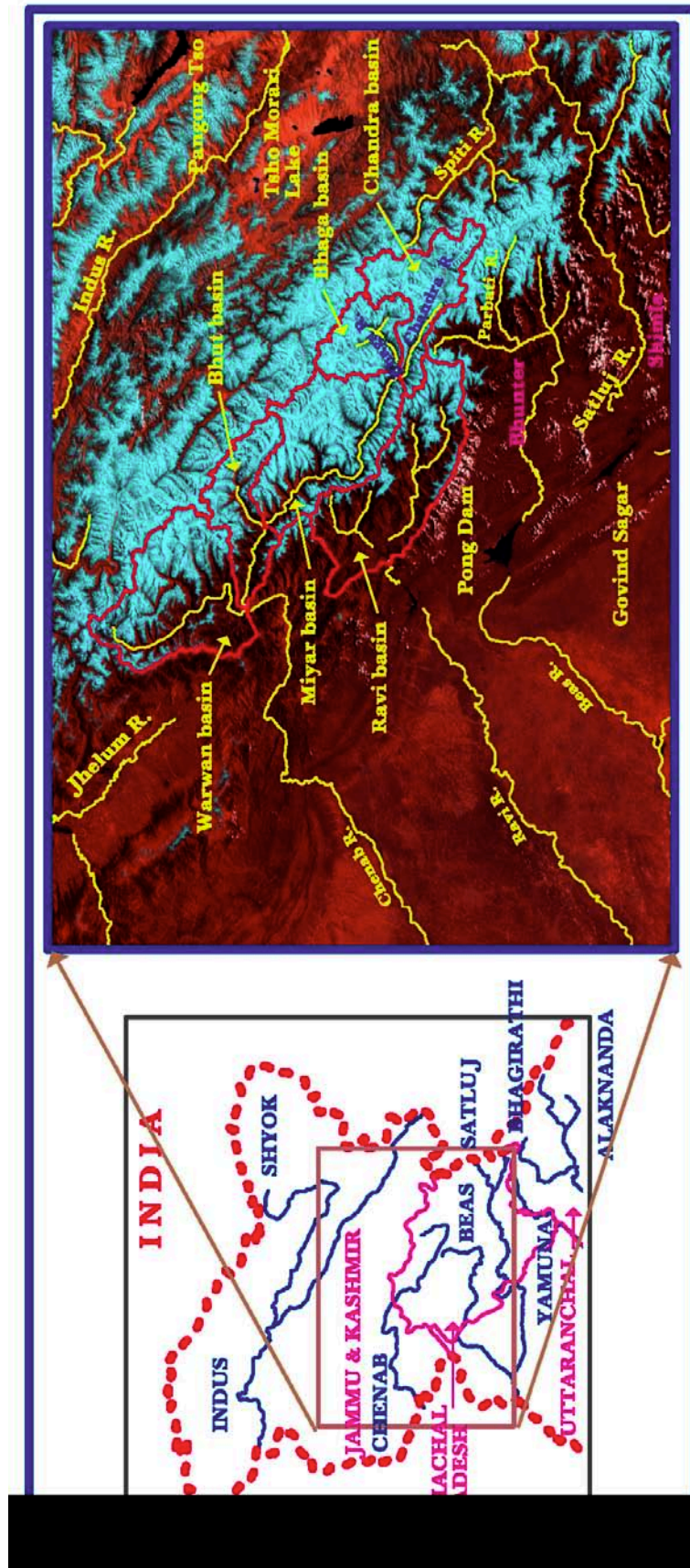


Figure 1: Location map of Ravi, Chandra, Bhag, Miyar, and Warwan sub-basins (Part of Chenab basin)

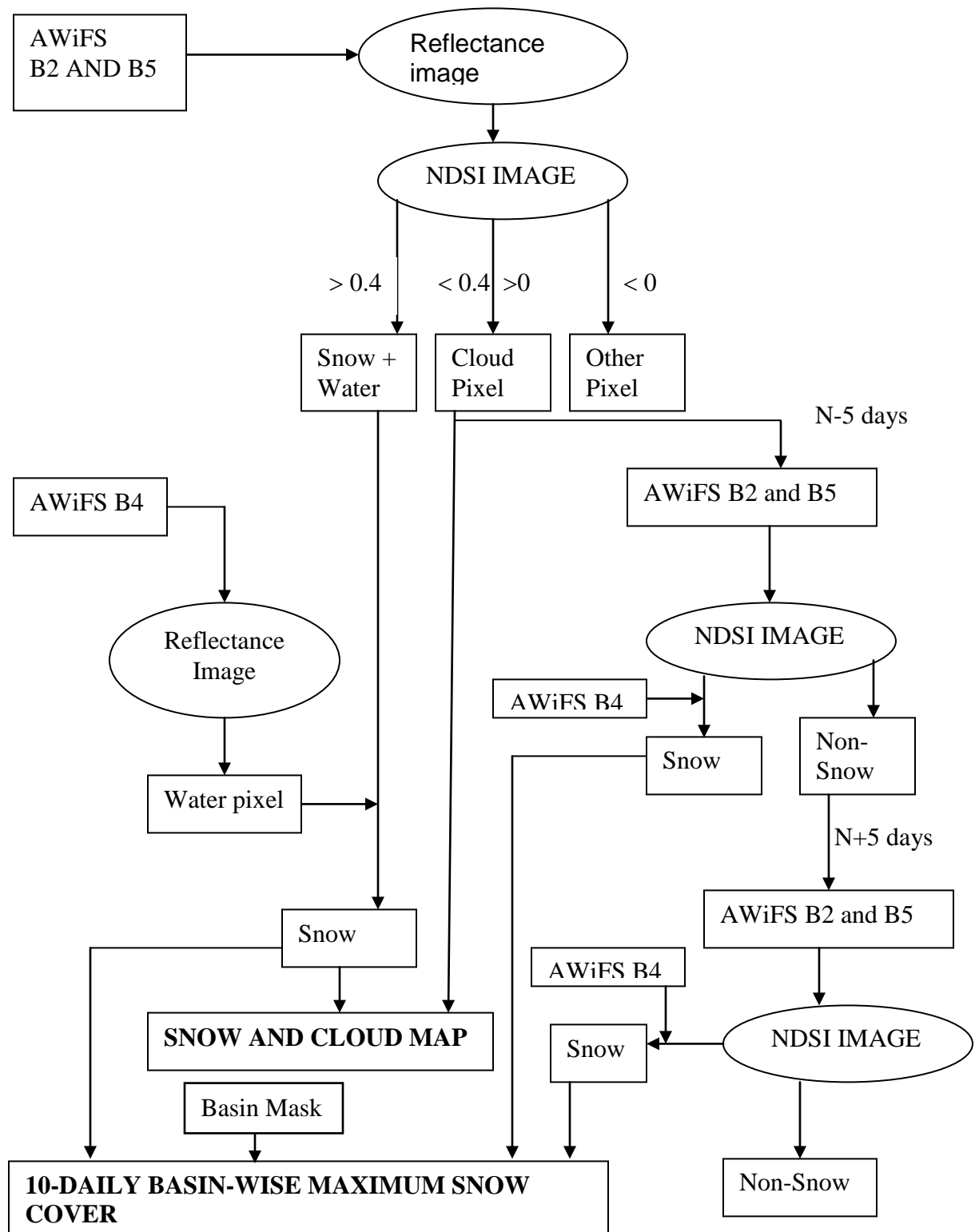


Figure 2: Algorithm for snow cover mapping using AWiFS data

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 2011							
1	3-Oct-11	225	5	4	25-Oct-11	1713.16	35
2	12-Oct-11	344.3	7	5	27-Oct-11	1154.54	23
3	15-Oct-11	365.86	7	6	31-Oct-11	408.25	8
November 2011							
7	1-Nov-11	694.13	13	11	20-Nov-11	801.22	16
8	6-Nov-12	631.13	13	12	29-Nov-11	547.12	11
9	13-Nov-11	1248	25	13	30-Nov-11	524.09	11
10	18-Nov-11	972.61	11				
December 2011							
14	2-Dec-11	594.83	12	18	21-Dec-11	1860.12	37
15	12-Dec-11	1533.74	21	19	26-Dec-11	1270.16	26
16	13-Dec-11	1028.24	21	20	30-Dec-11	1126.13	23
17	16-Dec-11	1250.69	25	21	31-Dec-11	1028.24	21
January-2012							
22	9-Jan-12	4844.09	99	26	24-Jan-12	4367.08	89
23	14-Jan-12	4701.54	96	27	28-Jan-12	4413	90
24	19-Jan-12	4869	99	28	29-Jan-12	2941.71	60
25	23-Jan-12	4534.19	92				
February-2012							
29	2-Feb-12	3733.15	76	32	22-Feb-12	4284.34	87
30	7-Feb-12	3666.8	75	33	26-Feb-12	3657.37	74
31	17-Feb-12	4180.71	85				
March-2012							
34	2-March-12	3331.68	68	39	23-March-12	1932.82	39
35	7-March-12	3237.02	66	40	24-March-12	2077.83	42
36	11-March-12	3069.67	62	41	29-March-12	2197.28	45
37	12-March-12	2869.61	58	42	31-march-12	2381.47	49
38	21-March-12	2717.58	55				
April-2012							
43	2-Apr-12	1863.65	38	46	7-Apr-12	1544.29	31
44	4-Apr-12	2312.51	47	47	12-Apr-12	2491.07	51
45	5-Apr-12	2879.52	59	48	24-Apr-12	2015.14	41
May- 2012							
49	3-May-12	2048.61	42	56	18-May-12	2089.8	43
50	4-May-12	1948.22	31	57	20-May-12	1260.01	26
51	6-May-12	1530.11	31	58	22-May-12	2535.11	52
52	8-May-12	2467.21	50	59	23-May-12	1642.69	33
53	13-May-12	1930.36	39	60	25-May-12	1369.12	28
54	15-May-12	1355.77	28	61	28-May-12	1126.95	23
55	16-May-12	1513.63	31	62	30-May-12	1248.5	25

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
June-2012							
63	1-June-2012	2662.21	54	66	23-Jun-12	650.34	13
64	4-Jun-12	981.95	20	67	27-June-12	1311.08	27
65	16-June-12	1017.7	21	68	30-June-12	807.62	16

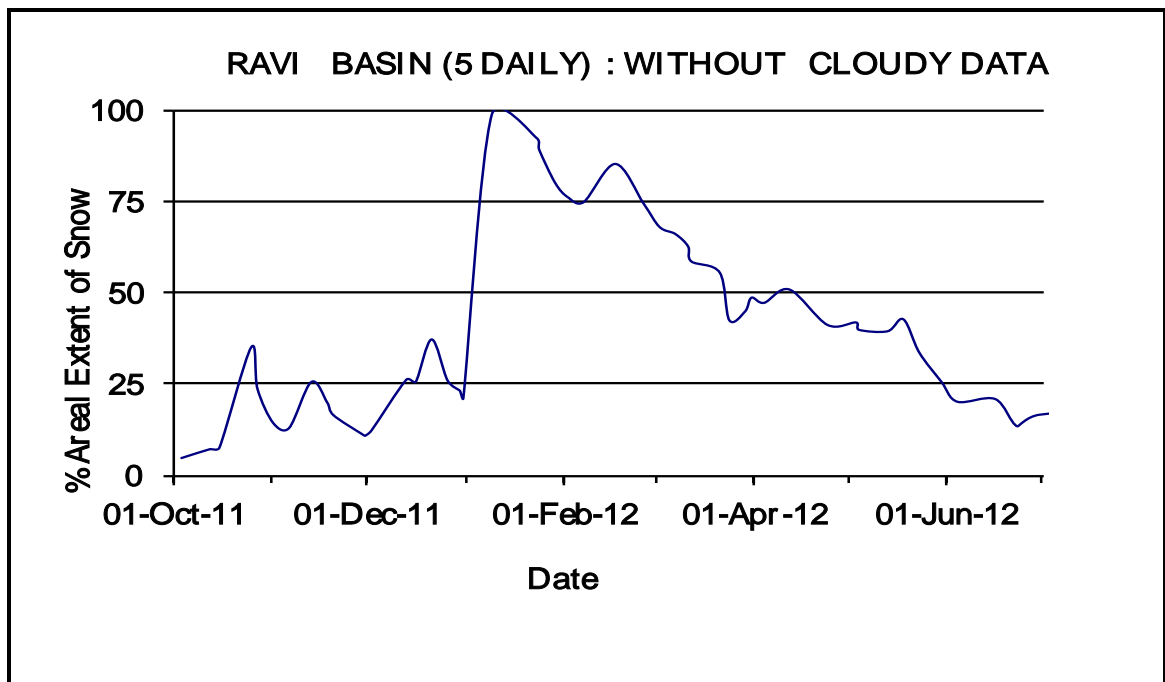
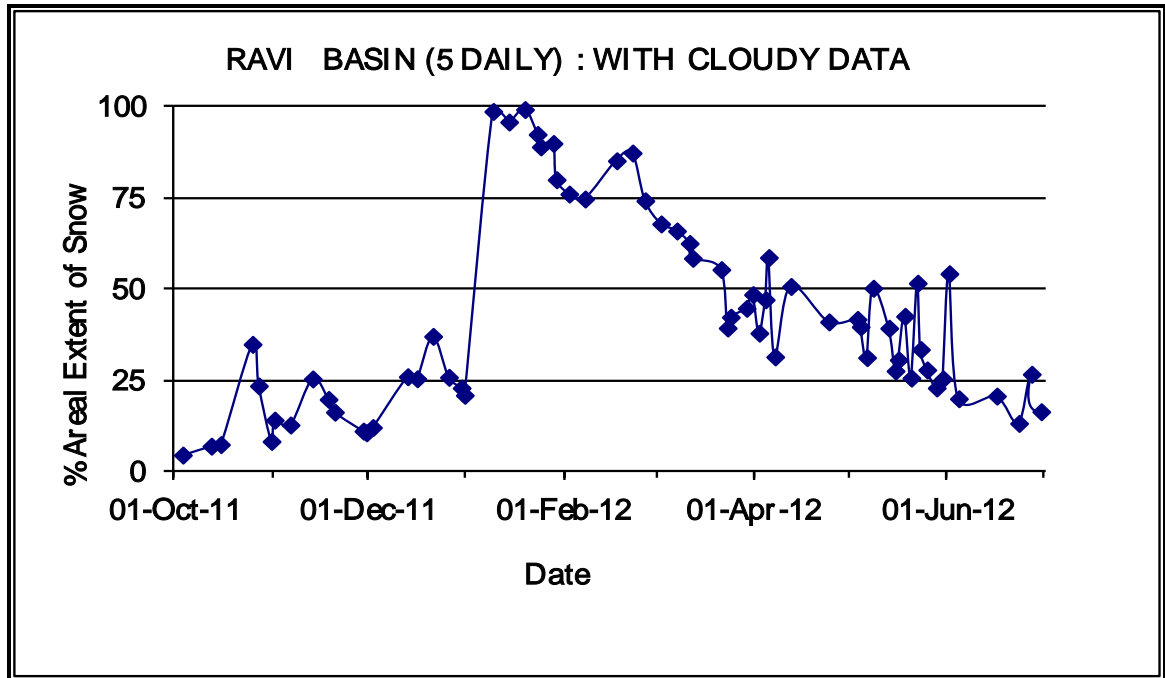
AREAL EXTENT OF SNOW (10-DAILY)

BASIN NAME: RAVI

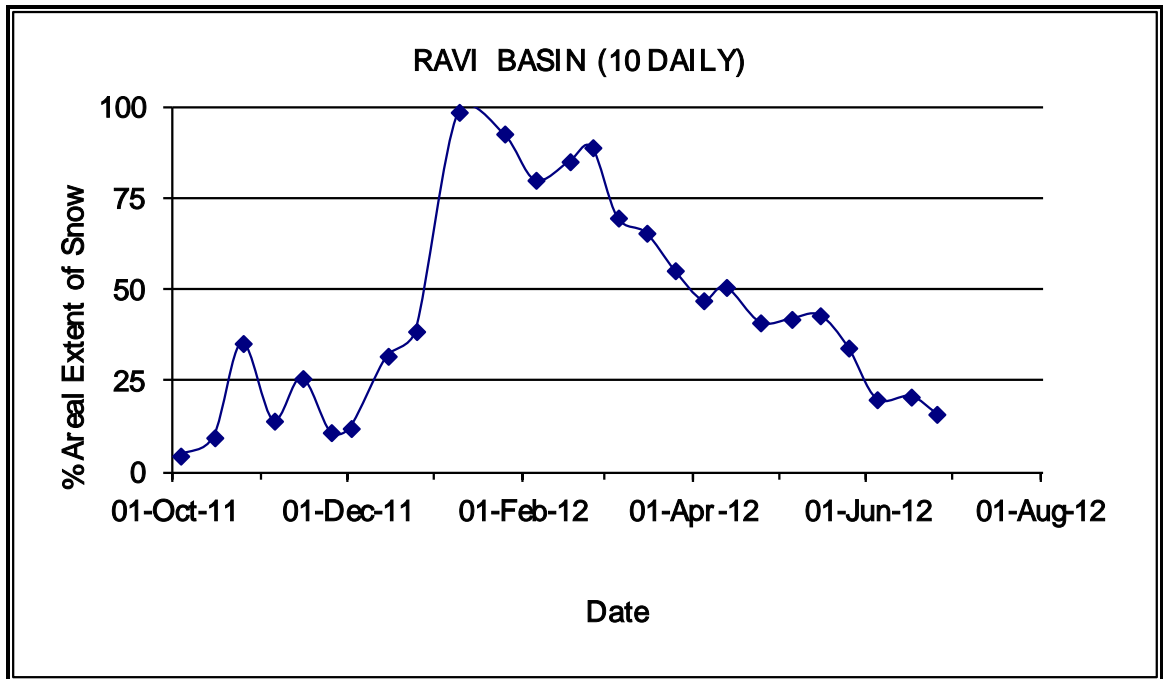
BASIN AREA: 4907 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	3-Oct-11	224.69	5	3	25-Oct-11	1737.41	35
2	15-Oct-11	470.7	10				
November 2011							
4	5-Nov-11	611.26	12	6	25-Nov-11	387.4	8
5	15-Nov-11	1266.45	26				
December 2011							
7	2-Dec-11	594.83	12	9	25-Dec-11	1898.2	38
8	15-Dec-11	1565.43	3				
January-2012							
10	25-Jan-12	4552.98	93				
February-2012							
11	5-Feb-12	3930.89	80	13	25-Feb-12	4369.19	89
12	17-Feb-12	4180.71	85				
March-2012							
14	5-Mar-12	3423.35	70	16	25-Mar-12	2735.44	55
15	15-Mar-12	3219.47	66				
April-2012							
17	4-Apr-12	2312.51	47.	19	24-Apr-12	2015.14	41
18	12-Apr-12	2491.07	51				
May- 2012							
20	5-May-12	2627.96	53	22	25-May-12	1676.37	34
21	15-May-12	2325.93	47				
June-2012							
23	4-Jun-12	981.95	20	24	25-Jun-12	1666.2	34

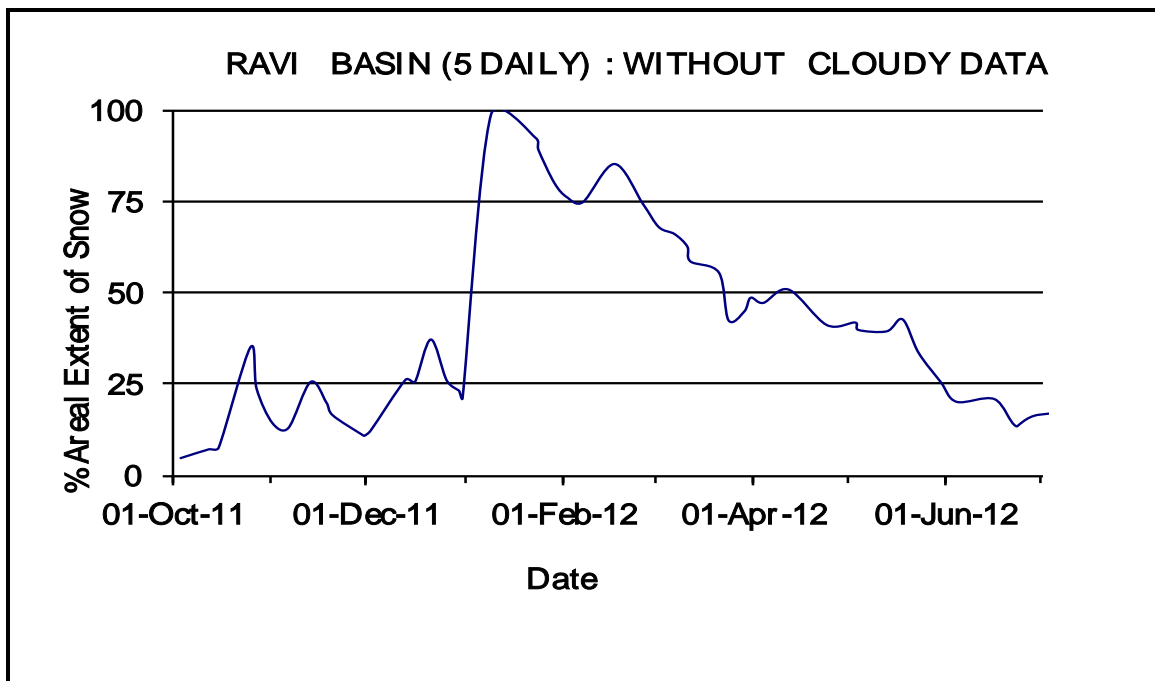
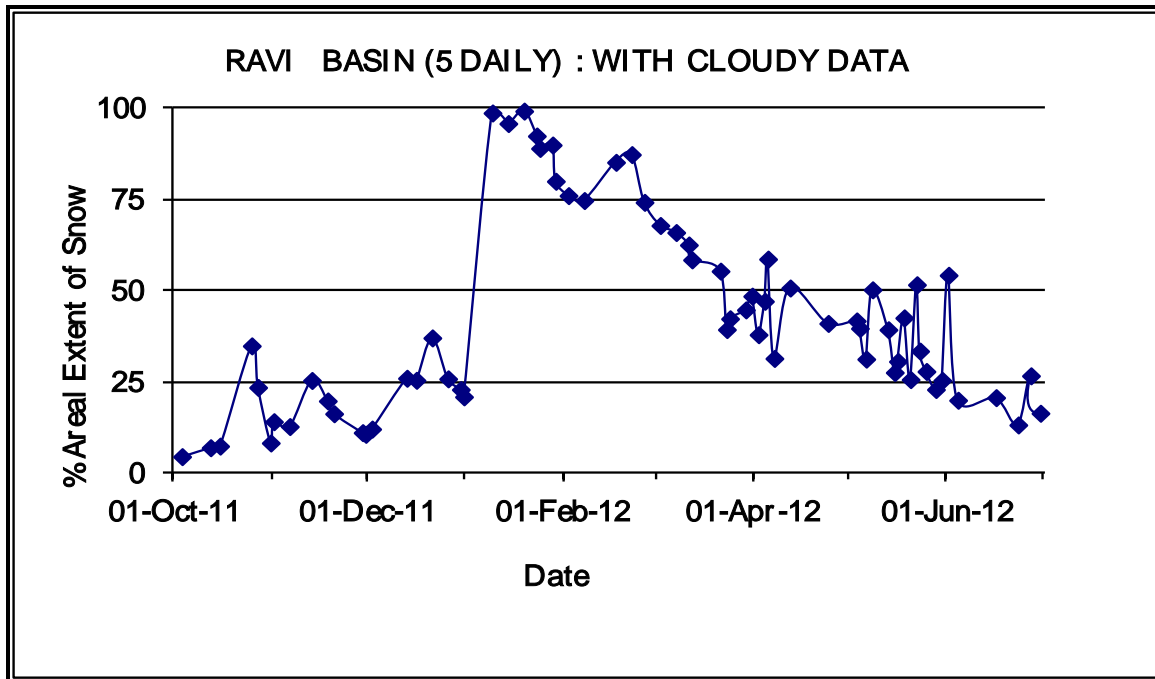
SNOW COVER DEPLETION CURVE



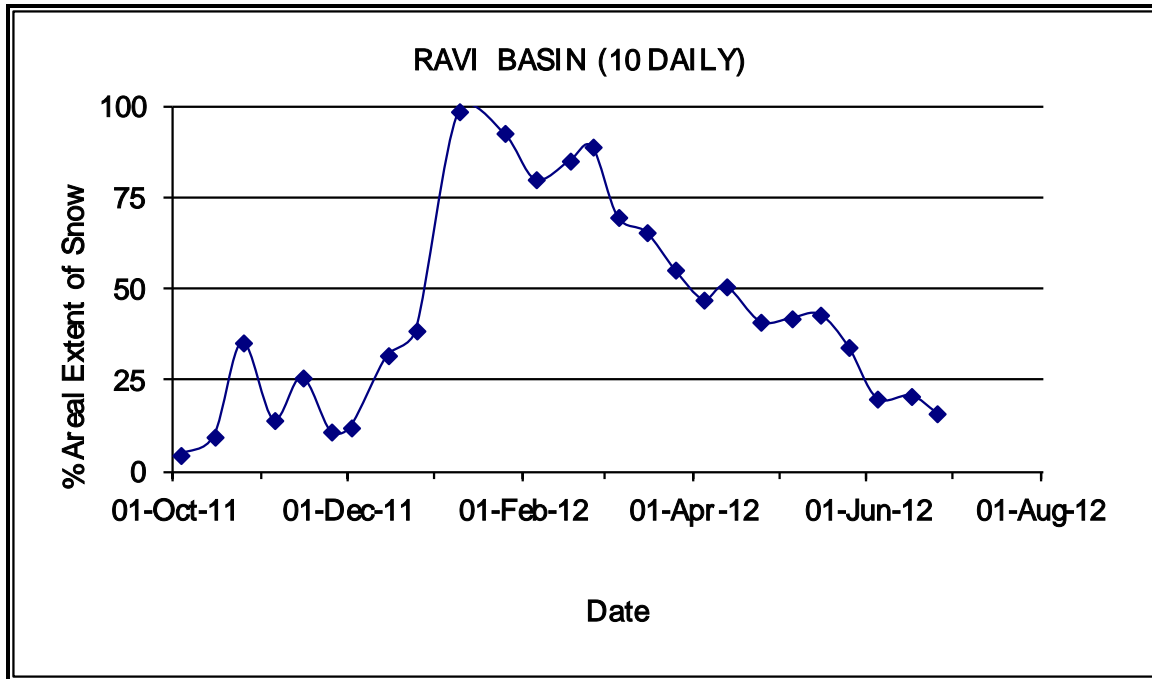
SNOW COVER DEPLETION CURVE



SNOW COVER DEPLETION CURVE

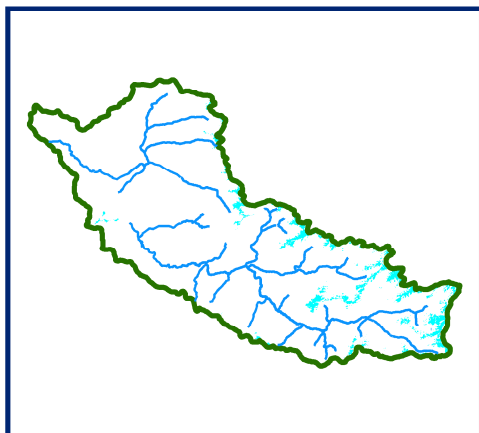


SNOW COVER DEPLETION CURVE

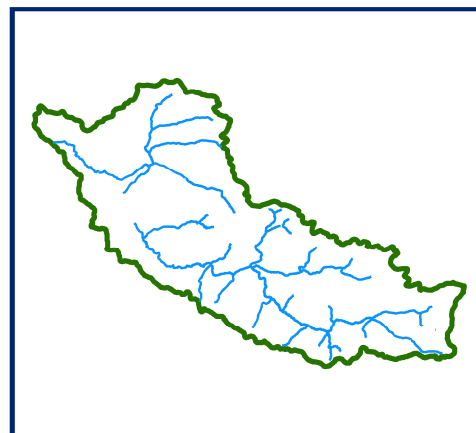


SNOW COVER MAP

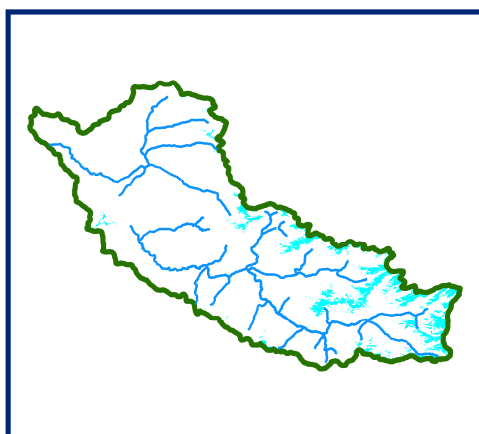
SNOW COVER MAP : RAVI BASIN



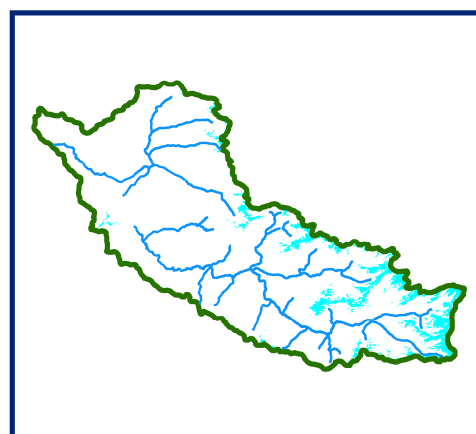
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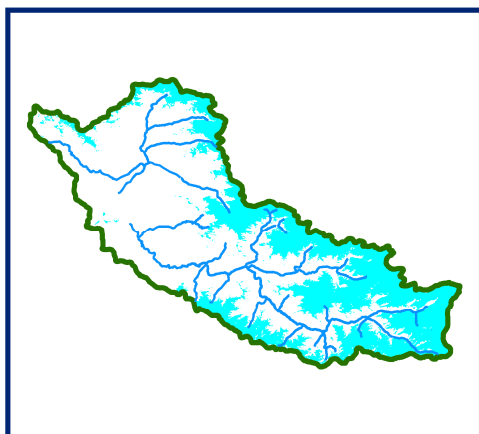
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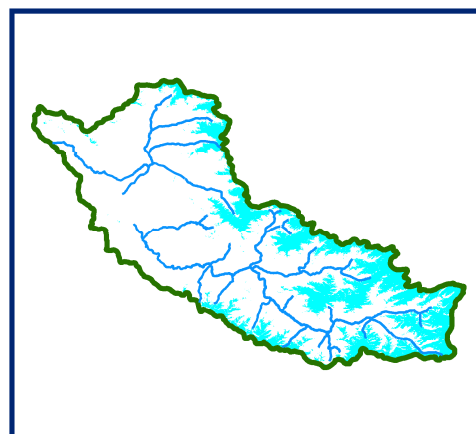
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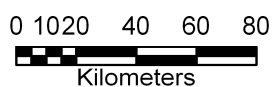
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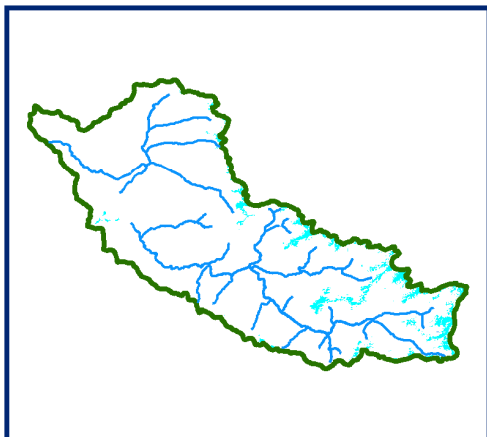
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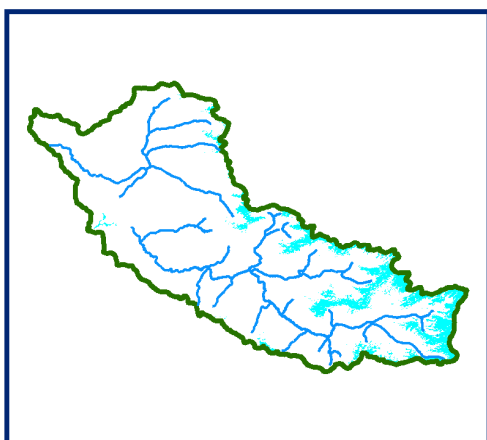
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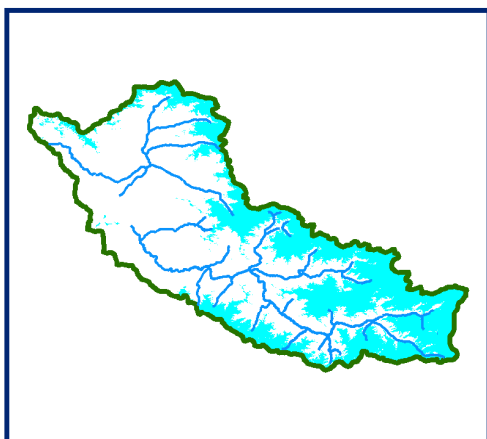
10 DAILY SNOW COVER MAP : RAVI BASIN



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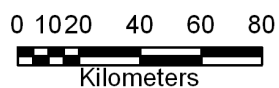
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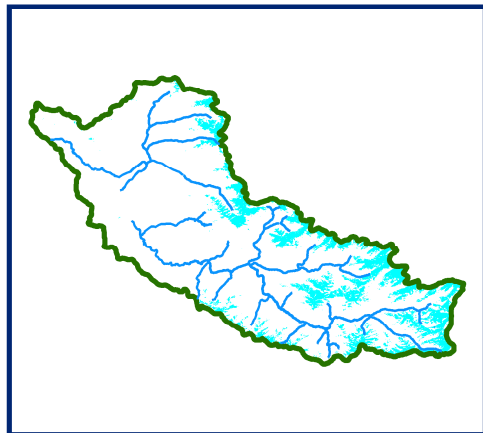
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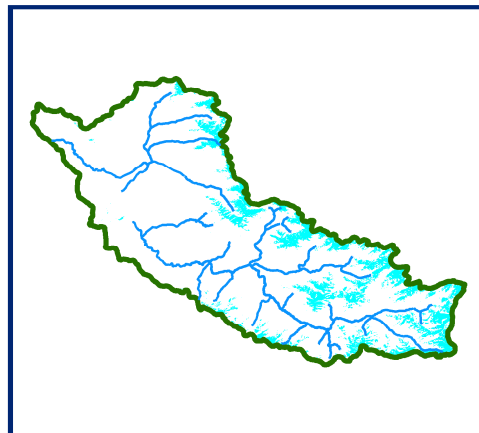
SNOW



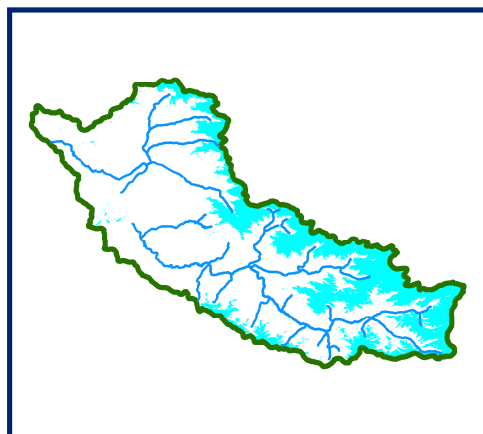
SNOW COVER MAP : RAVI BASIN



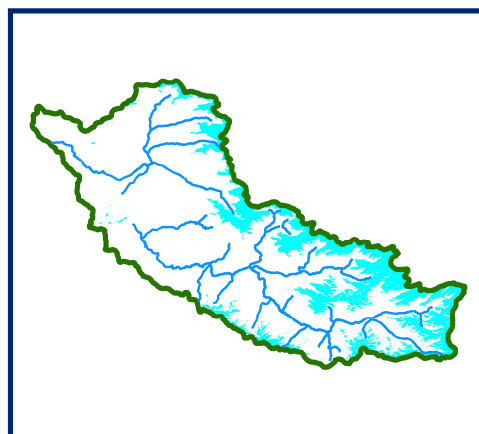
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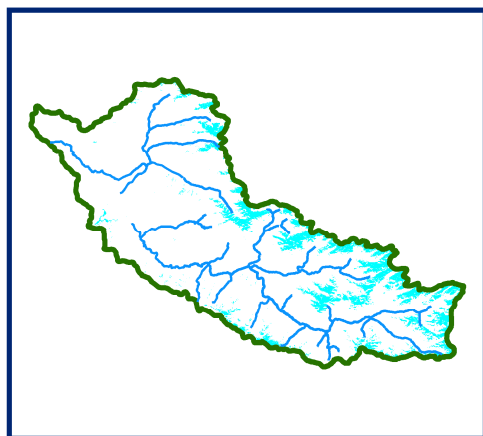
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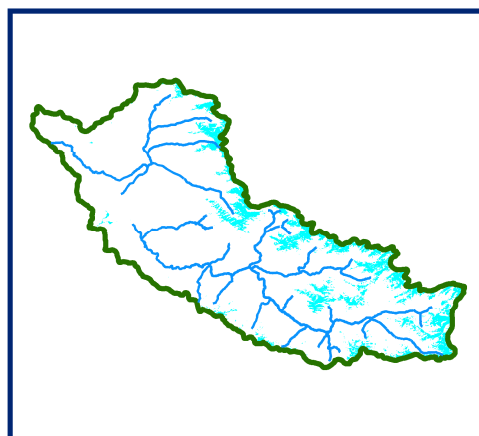
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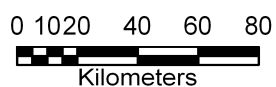
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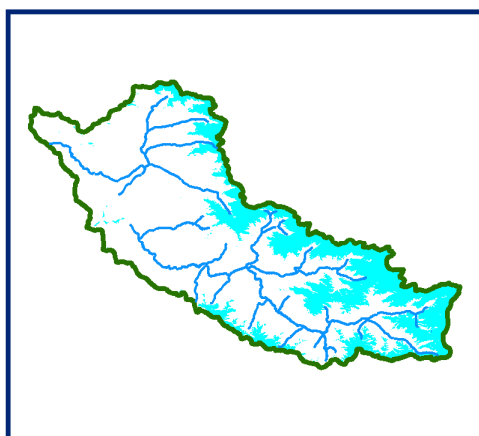
SNOW



10 DAILY SNOW COVER MAP : RAVI BASIN



DATA USED
01 NOVEMBER 2011
06 NOVEMBER 2011



DATA USED
13 NOVEMBER 2011
18 NOVEMBER 2011
20 NOVEMBER 2011



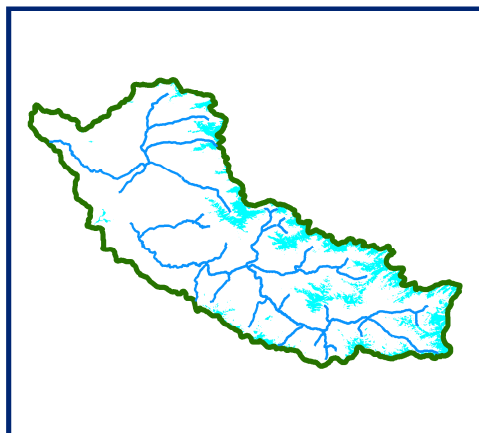
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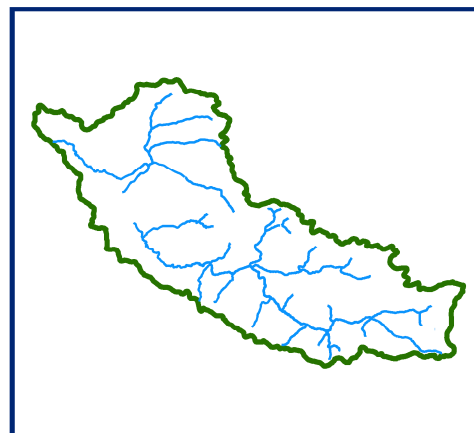
SNOW

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Kilometers

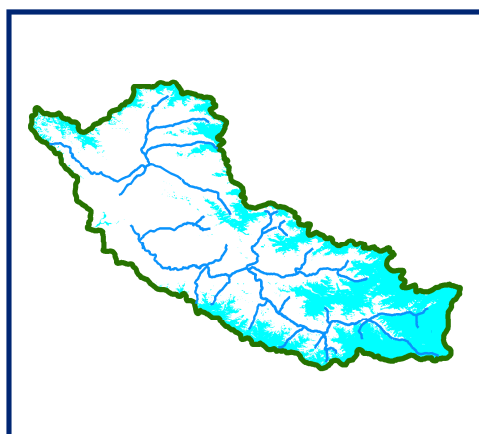
SNOW COVER MAP : BHAGA BASIN



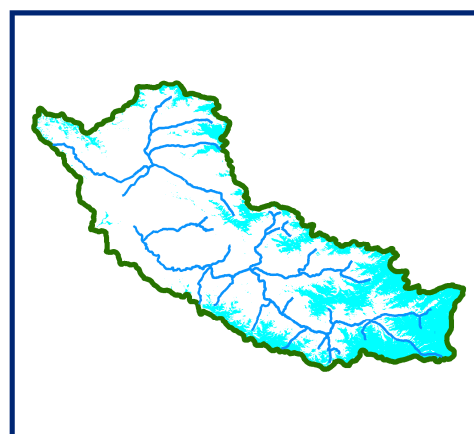
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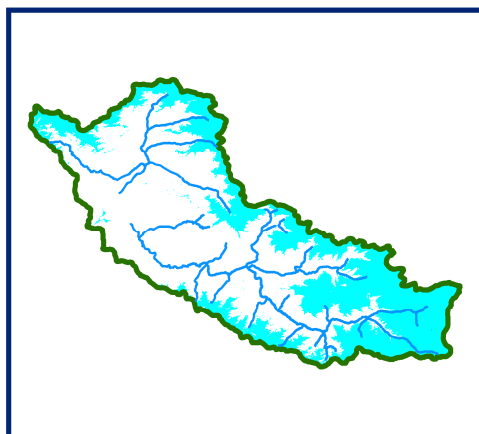
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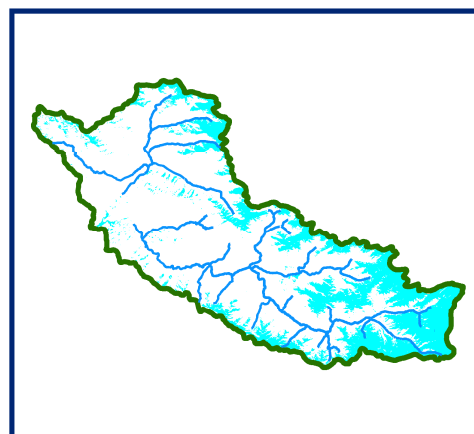
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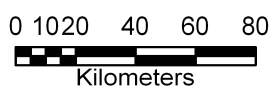
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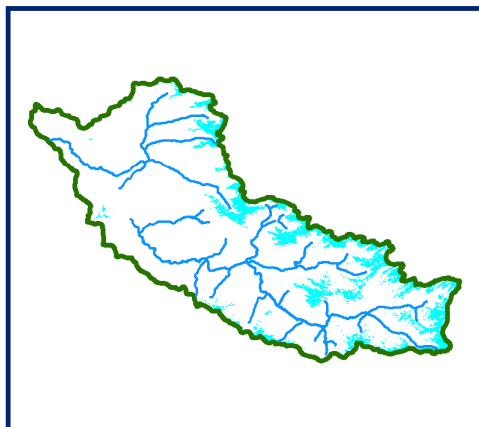
26 DECEMBER 2011



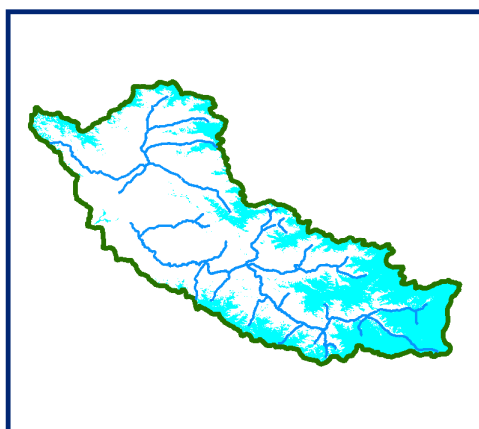
SNOW



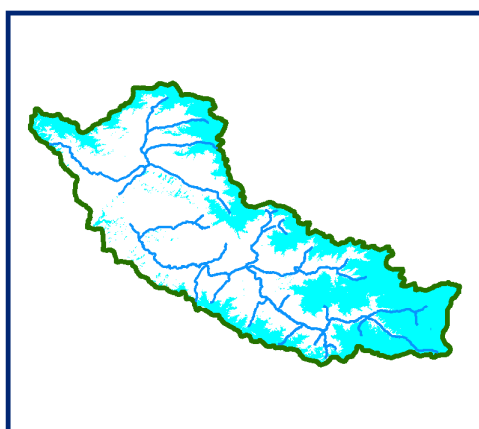
10 DAILY SNOW COVER MAP : RAVI BASIN



DATA USED
02 DECEMBER 2011




DATA USED
12 DECEMBER 2011
13 DECEMBER 2011
16 DECEMBER 2011



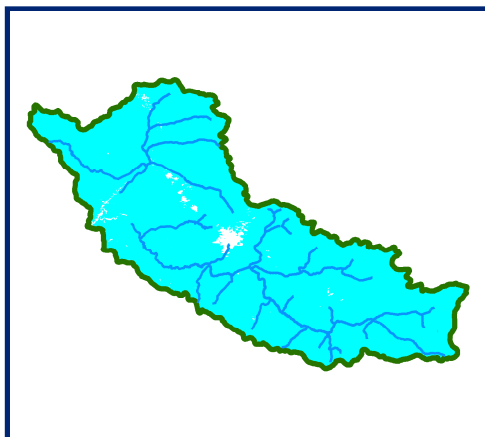
DATA USED
21 DECEMBER 2011
26 DECEMBER 2011
30 DECEMBER 2011



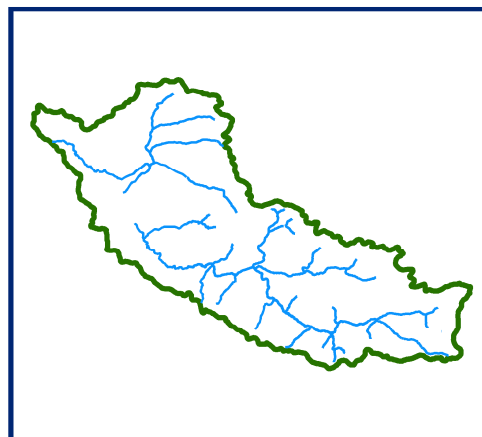
SNOW

0 10 20 40 60 80

Kilometers

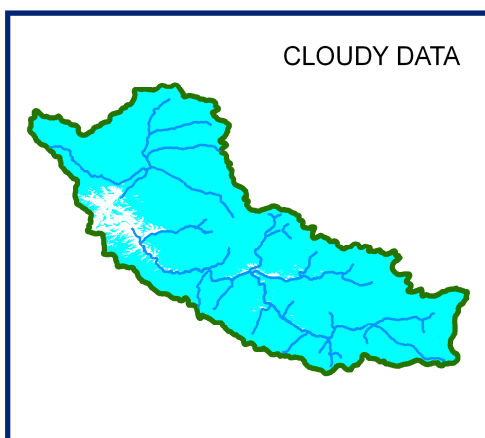
SNOW COVER MAP : RAVI BASIN



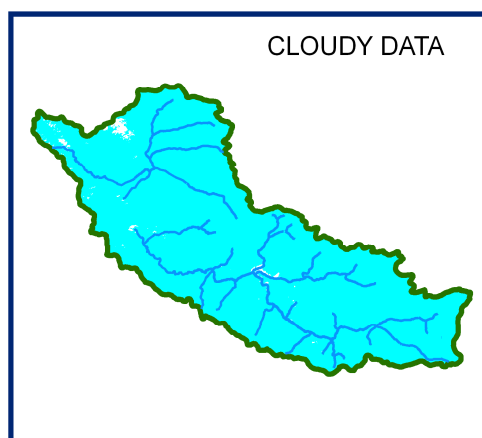
09 JANUARY 2012



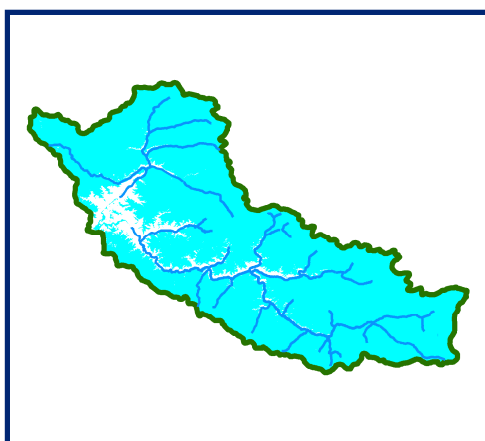
DATA NOT AVAILABLE



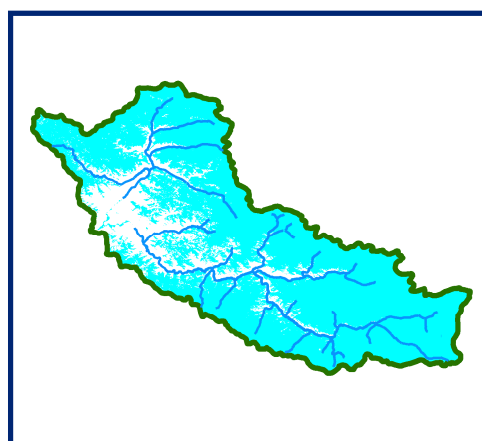
14 JANUARY 2012



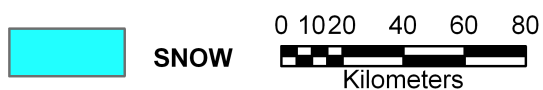
19 JANUARY 2012



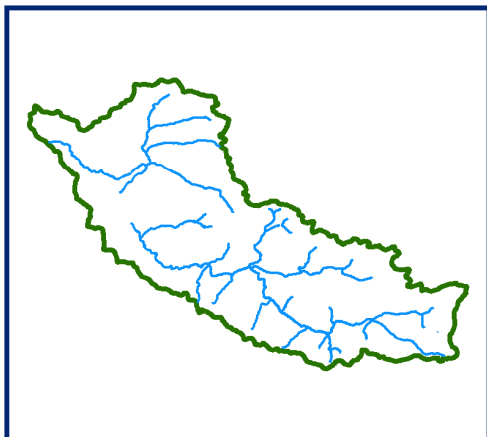
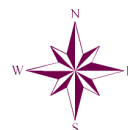
23 JANUARY 2012



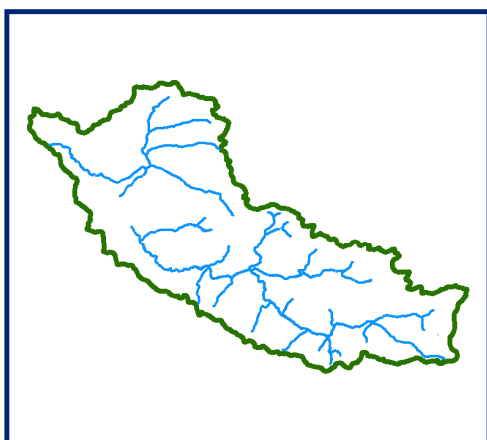
29 JANUARY 2012



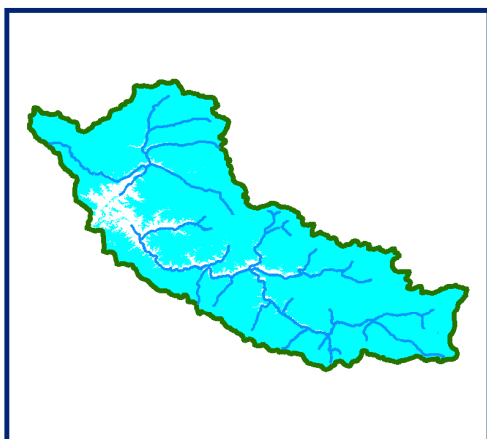
10 DAILY SNOW COVER MAP : RAVI BASIN



DATA NOT AVAILABLE



DATA NOT AVAILABLE



DATA USED

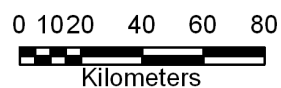
23 JANUARY 2012

24 JANUARY 2012

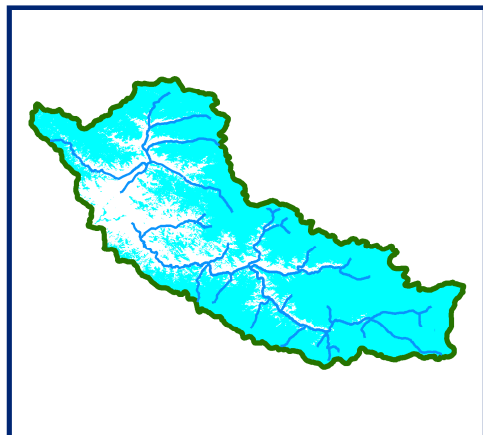
29 JANUARY 2012



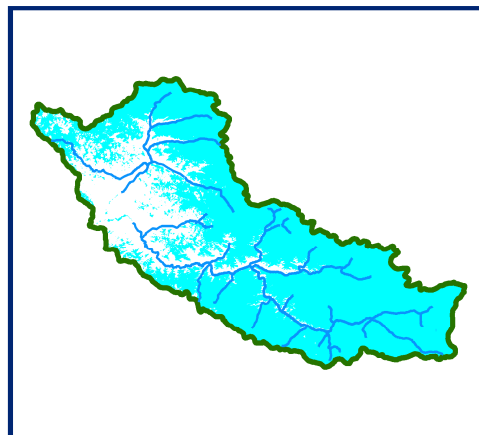
SNOW



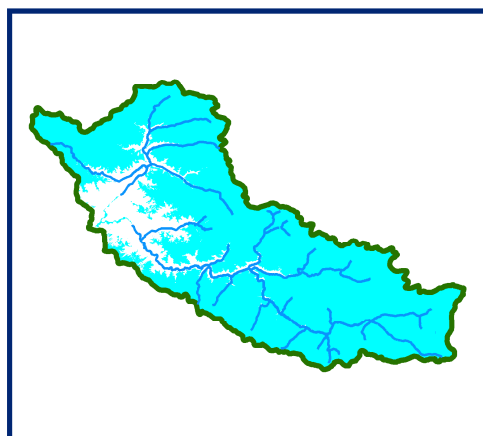
SNOW COVER MAP : RAVI BASIN



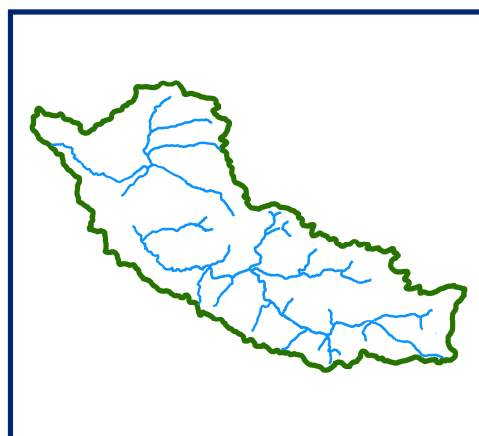
02 FEBRUARY 2012



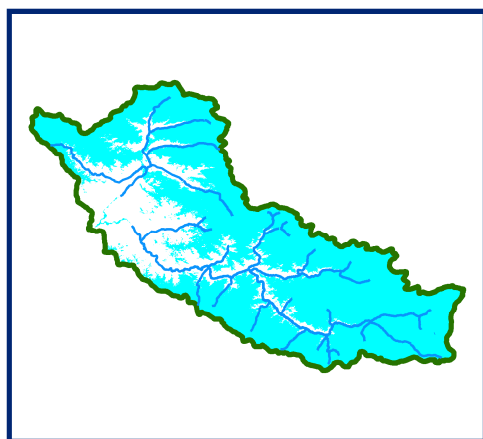
07 FEBRUARY 2012



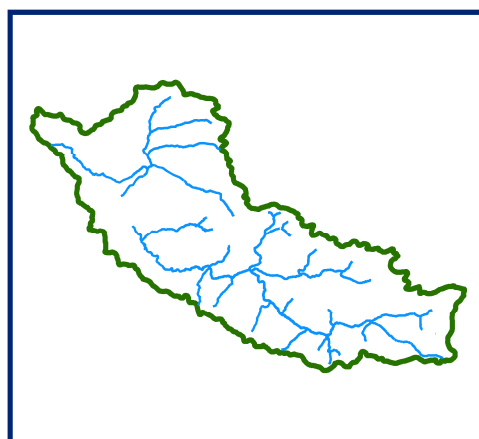
17 FEBRUARY 2012



DATA NOT AVAILABLE



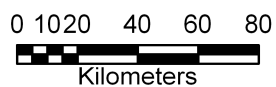
26 FEBRUARY 2012



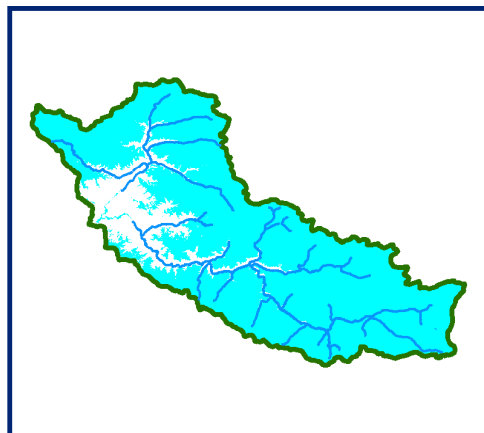
DATA NOT AVAILABLE



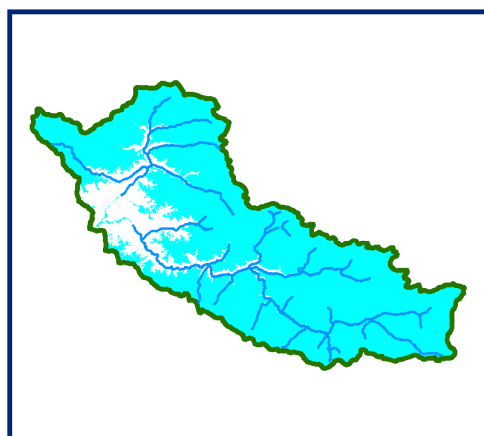
SNOW



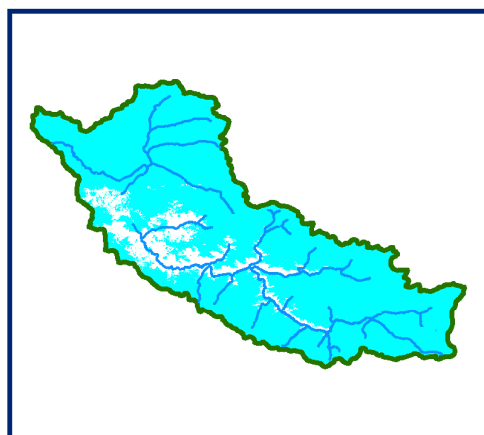
10 DAILY SNOW COVER MAP : RAVI BASIN



DATA USED
02 FEBRUARY 2012
07 FEBRUARY 2012



DATA USED
17 FEBRUARY 2012



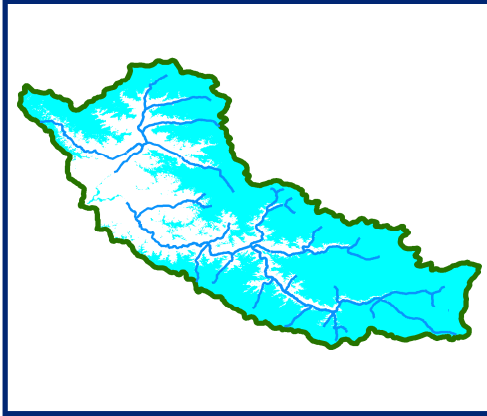
DATA USED
22 FEBRUARY 2012
26 FEBRUARY 2012



SNOW

0 10 20 40 60 80
Kilometers

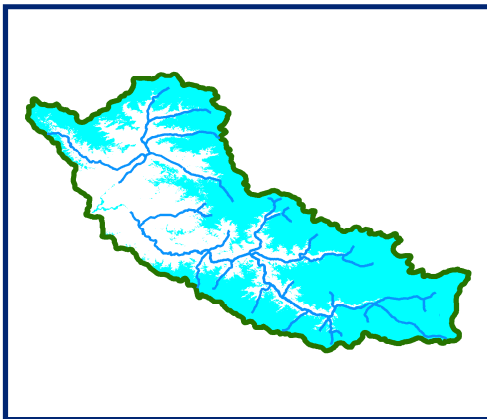
SNOW COVER MAP : RAVI BASIN



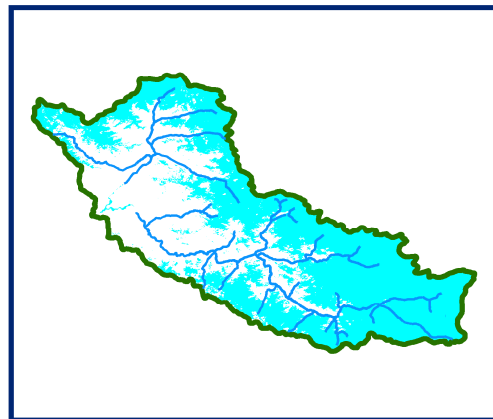
02 MARCH 2012



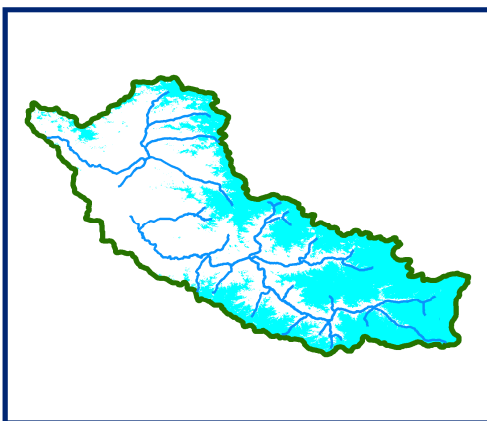
07 MARCH 2012



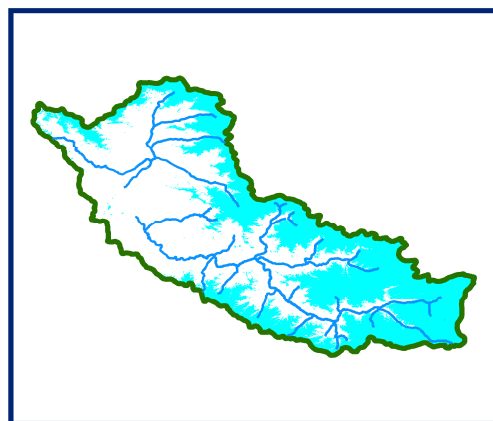
11 MARCH 2012



12 MARCH 2012



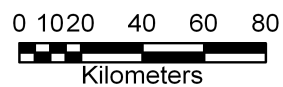
24 MARCH 2012



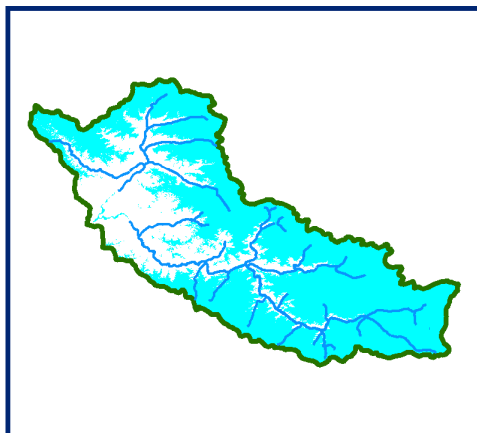
29 MARCH 2012



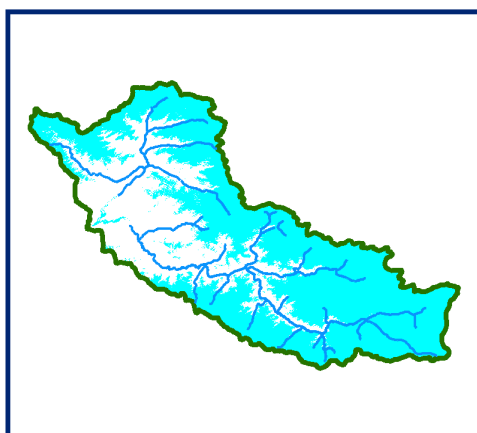
SNOW



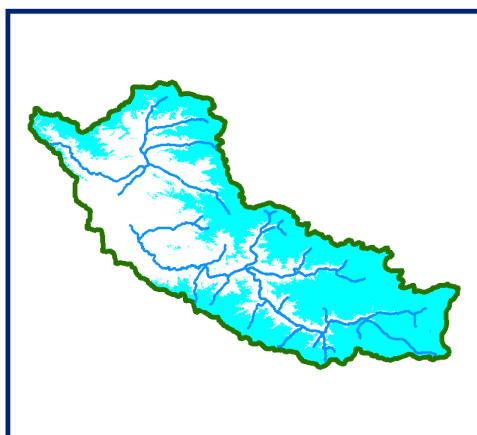
10 DAILY SNOW COVER MAP: RAVI BASIN



DATA USED
02 MARCH 2012
07 MARCH 2012



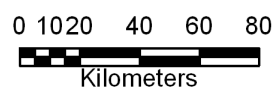
DATA USED
11 MARCH 2012
12 MARCH 2012



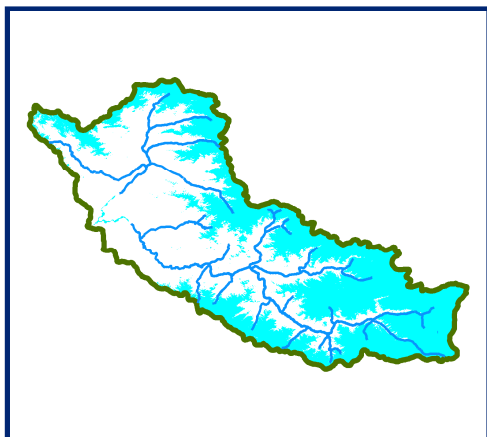
DATA USED
21 MARCH 2012
24 MARCH 2012
31 MARCH 2012



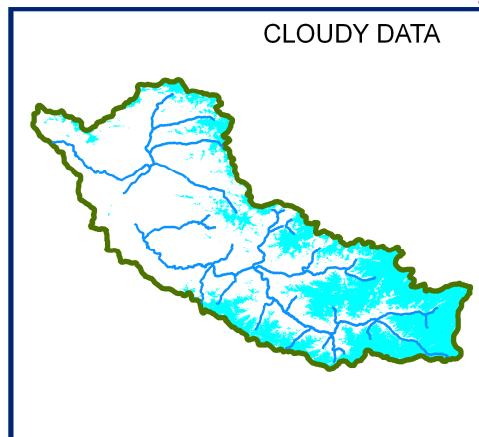
SNOW



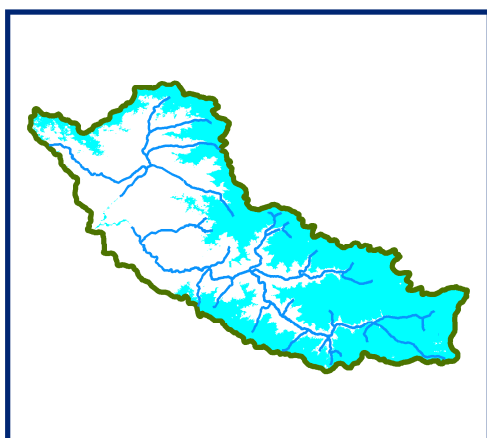
SNOW COVER MAP : RAVI BASIN



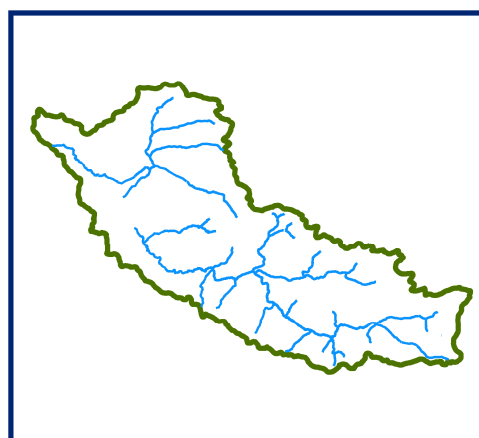
04 APRIL 2012



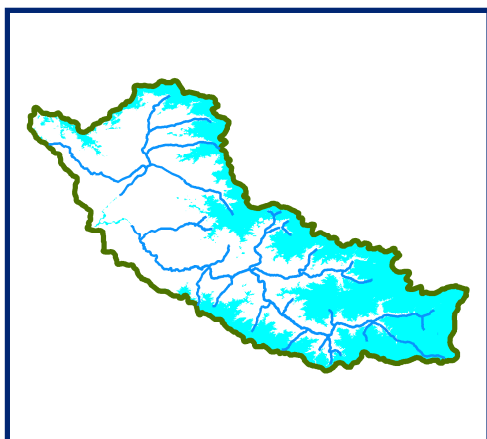
07 APRIL 2012



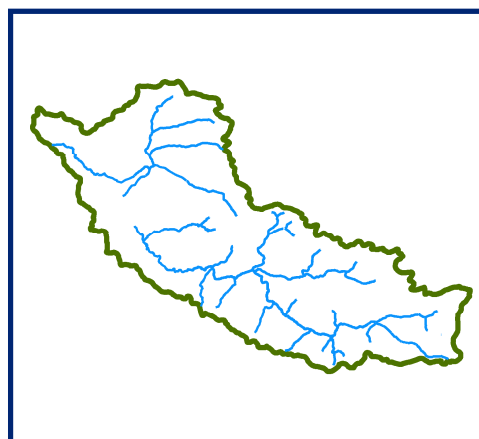
12 APRIL 2012



DATA NOT AVAILABLE



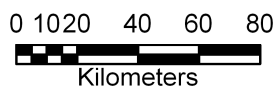
24 APRIL 2012



DATA NOT AVAILABLE



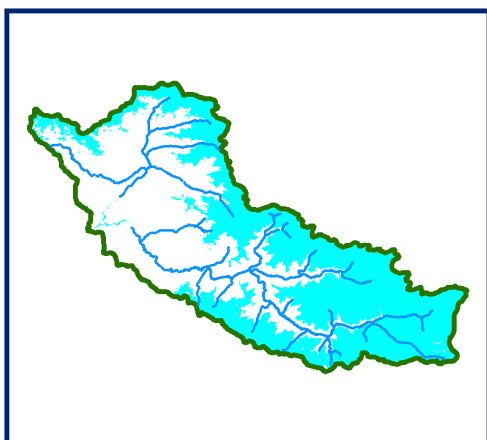
SNOW



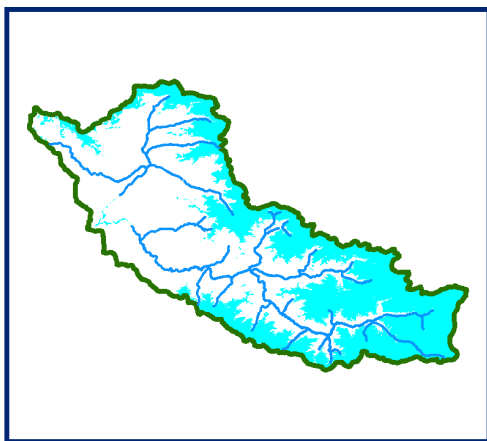
10 DAILY SNOW COVER MAP : RAVI BASIN



DATA USED
04 APRIL 2012



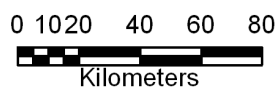
DATA USED
12 APRIL 2012



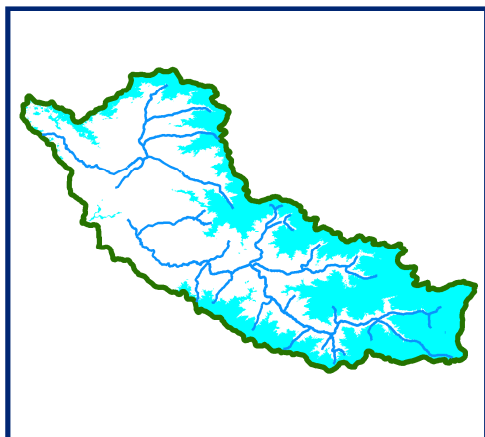
DATA USED
24 APRIL 2012



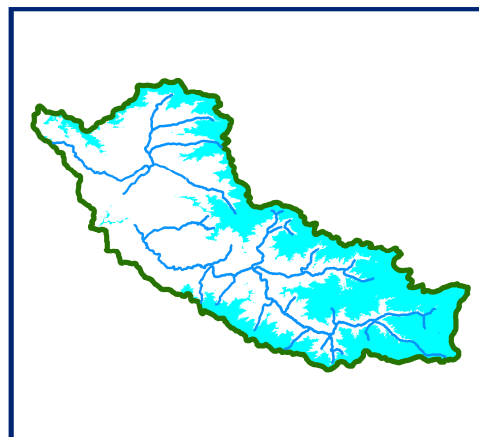
SNOW



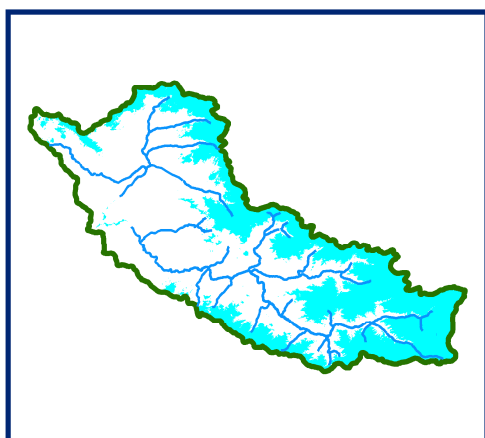
SNOW COVER MAP : RAVI BASIN



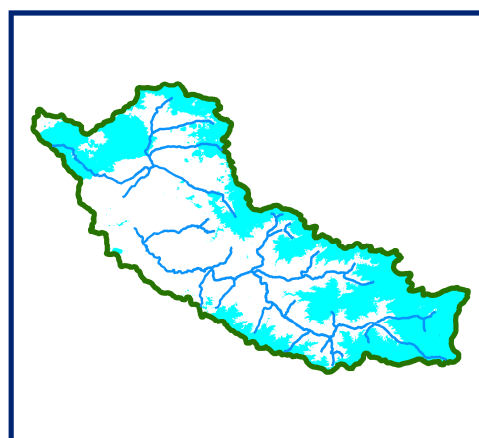
03 MAY 2012



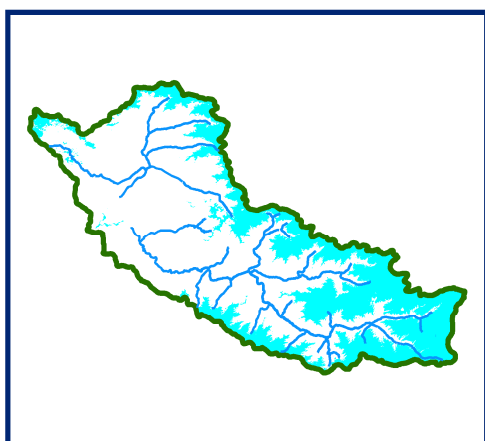
04 MAY 2012



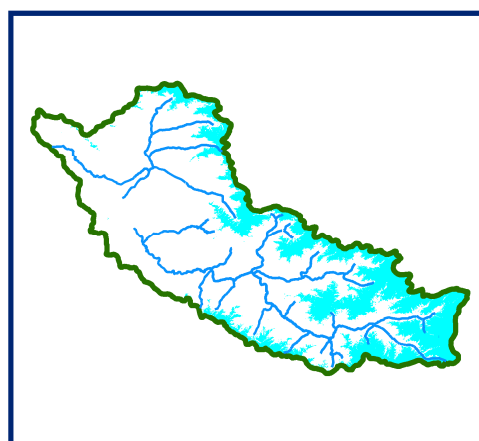
13 MAY 2012



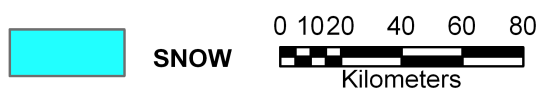
18 MAY 2012



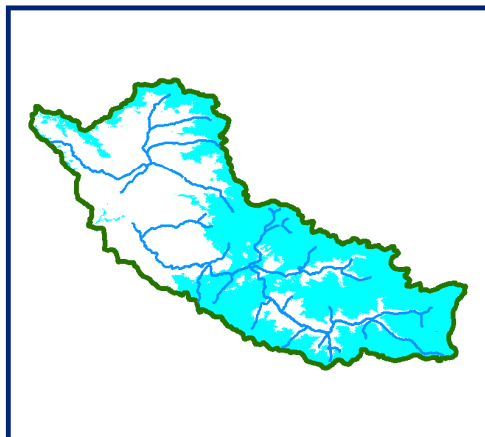
23 MAY 2012



30 MAY 2012



10 DAILY SNOW COVER MAP : RAVI BASIN

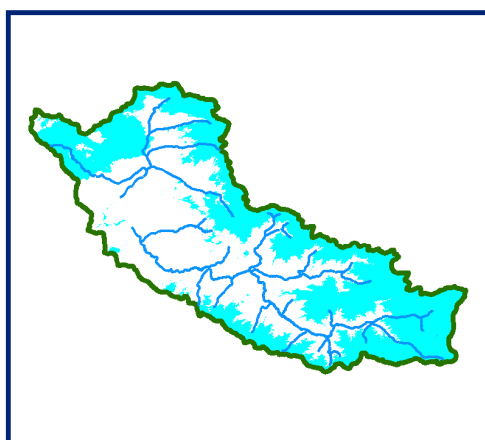


DATA USED

03 MAY 2012

04 MAY 2012

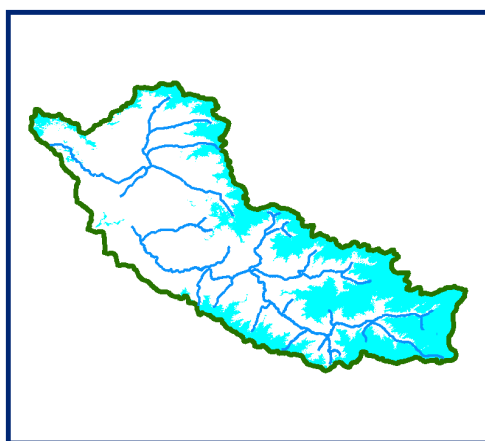
08 MAY 2012



DATA USED

13 MAY 2012

18 MAY 2012



DATA USED

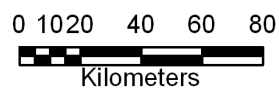
23 MAY 2012

28 MAY 2012

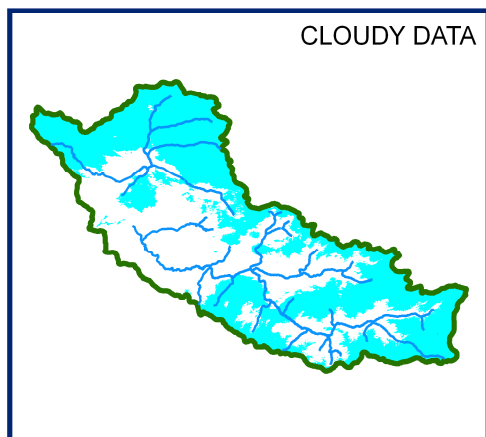
30 MAY 2012



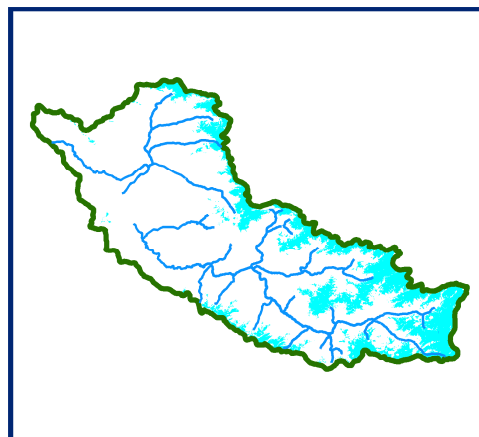
SNOW



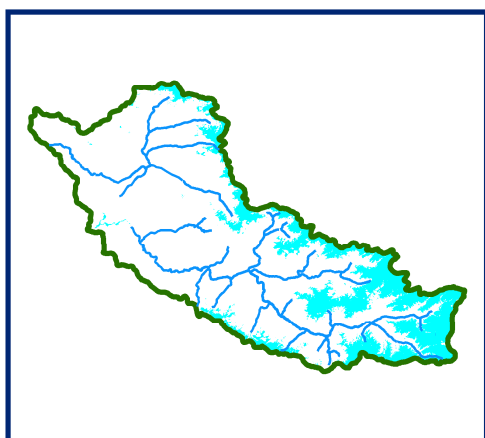
SNOW COVER MAP : BHAGA BASIN



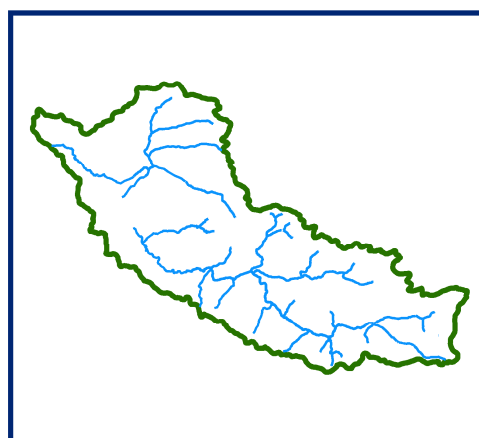
01 JUNE 2012



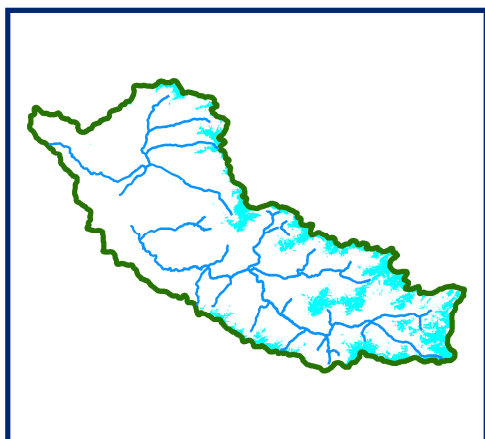
04 JUNE 2012



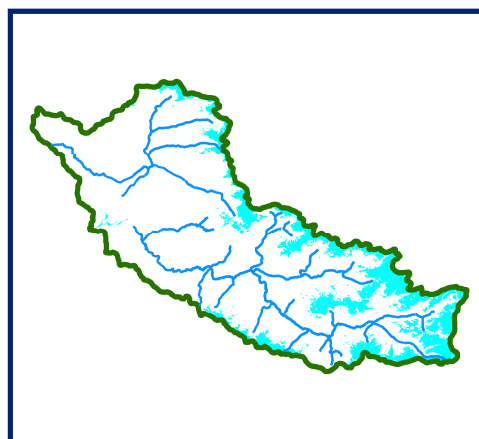
16 JUNE 2012



DATA NOT AVAILABLE



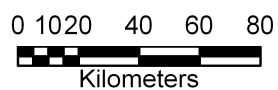
23 JUNE 2012



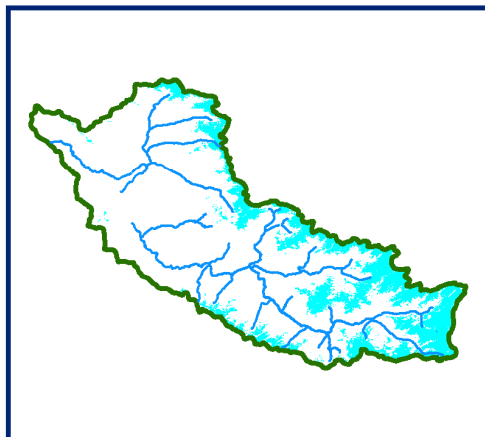
30 JUNE 2012



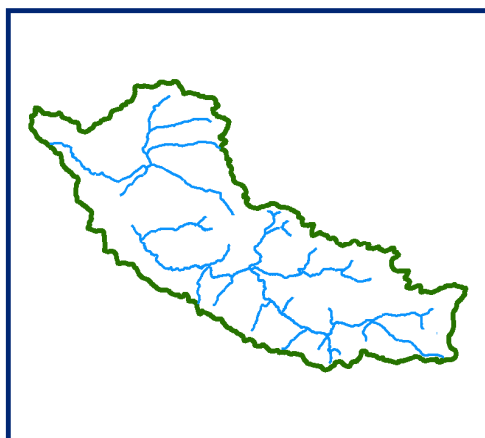
SNOW



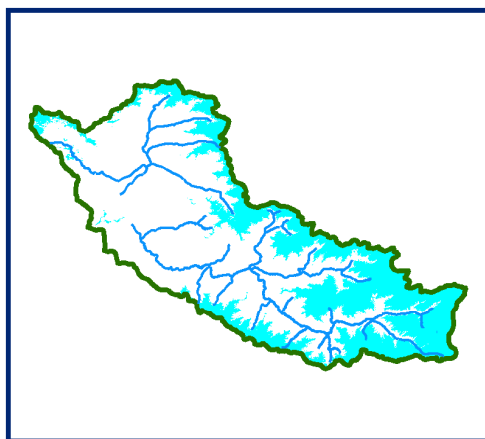
10 DAILY SNOW COVER MAP : RAVI BASIN



DATA USED
04 JUNE 2012



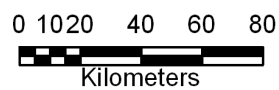
DATA NOT AVAILABLE



DATA USED
23 JUNE 2012
30 JUNE 2012



SNOW



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 2011							
1	3-Oct-11	751	31	4	18-Oct-11	837	34
2	12-Oct-11	900	37	5	25-Oct-11	1868	77
3	15-Oct-11	933	38	6	27-Oct-11	14421	59
November 2011							
7	1-Nov-11	1160	48	11	20-Nov-11	1342	55
8	6-Nov-11	1077	44	12	29-Nov-11	1058	43
9	13-Nov-11	1952	80	13	30-Nov-11	953	39
10	18-Nov-11	1635	67				
December 2011							
14	2-Dec-11	1094	45	18	16-Dec-11	2208	91
15	5-Dec-11	720	30	19	21-dec-11	2339	96
16	12-Dec-11	2348	97	20	26-Dec-11	2029	83
17	14-Dec-11	2113	87	21	31-Dec-11	1881	77
January 2012							
22	14-Jan-12	2441	100	25	28-Jan-12	2442	100
23	19-Jan-12	2441	100	26	29-Jan-12	2442	100
24	24-Jan-12	2441	100				
February 2012							
27	2-Feb-12	2441	100	30	26-Feb-12	2442	100
28	7-Feb-12	2441	100				
29	17-Feb-12	2442	100				
March 2012							
31	2-Mar-12	2441	100	35	21-Mar-12	2440	100
32	7-Mar-12	2442	100	36	24-Mar-12	2426	100
33	12-Mar-12	2442	100	37	31-Mar-12	2433	100
34	29-Mar-12	2424	100				
April 2012							
38	2-Apr-12	2385	98	42	12-Apr-12	2423	100
39	3-Apr-12	2287	94	43	19-Apr-12	2441	100
40	5-Apr-12	2395	98	44	24-Apr-12	2354	97
41	7-Apr-12	2288	94				
May-2012							
45	1-May-12	2403	99	49	8-May-12	2261	93
46	3-May-12	2318	95	50	9-May-12	2214	91
47	4-May-12	2286	94	51	13-May-12	2272	93
48	6-May-12	2221	91	52	15-May-12	2043	84

S No	Date	Snow Cover (sq km)	Snow Cover (%)	S No	Date	Snow Cover (sq km)	Snow Cover (%)
53	16-May-12	2001	82	57	25-May-12	1936	80
54	18-May-12	2179	90	58	28-May-12	1951	80
55	20-May-12	1988	82	59	30-May-12	1857	76
56	23-May-12	2093	86				
June-2012							
60	1-June-12	1994	82	64	16-June-12	1747	72
61	2-June-12	1992	82	65	23-June-12	1245	51
62	4-June-12	1343	55	66	30-June-12	1454	60
63	14-June-12	1568	64				

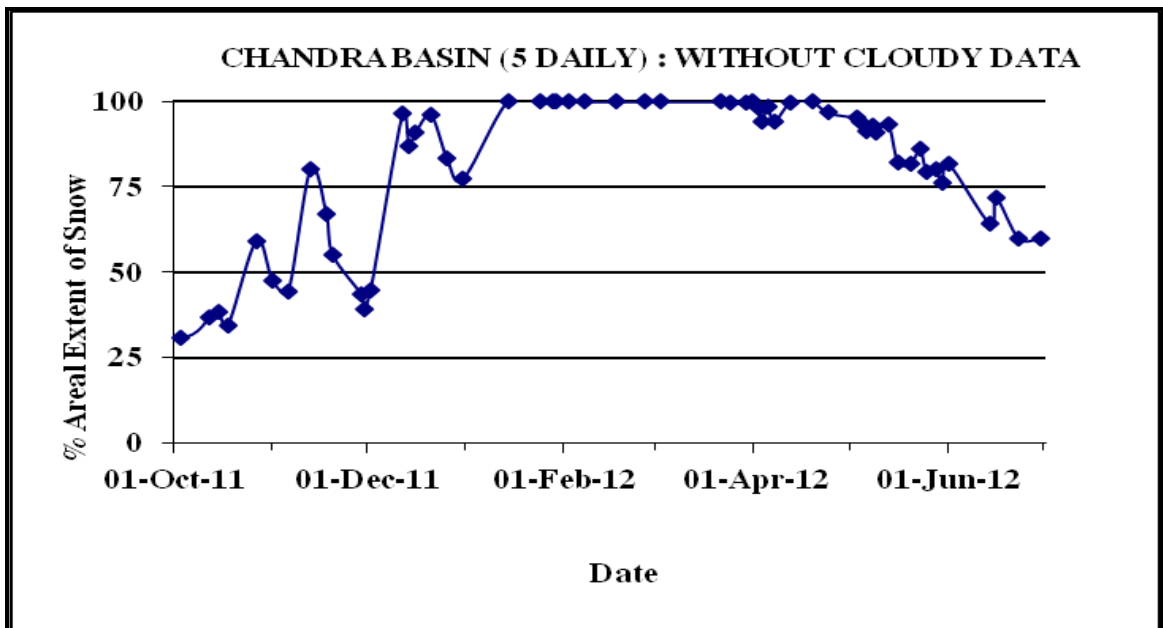
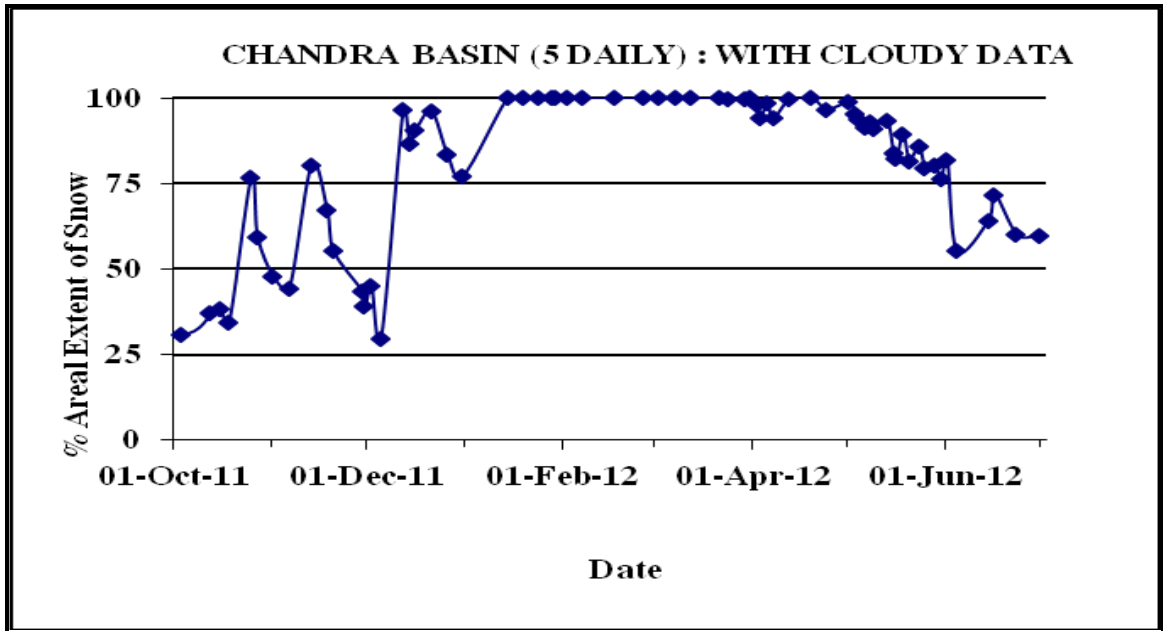
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: CHANDRA

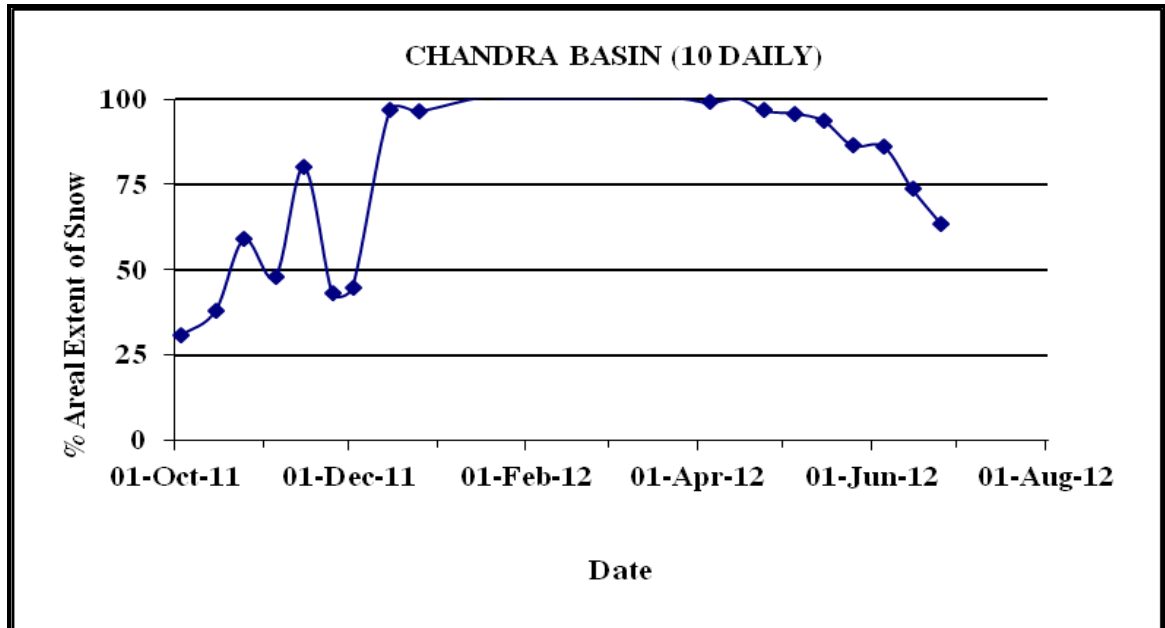
BASIN AREA: 2433 Sq km

S No	Date	Snow Cover (sq km)	Snow Cover (%)	S No	Date	Snow Cover (sq km)	Snow Cover (%)
October 2011							
1	3-Oct-11	750.	31	3	25-Oct-11	1880	59
2	15-Oct-11	1144	38				
November 2011							
4	5-Nov-11	1137	48	6	25-Nov-11	820	43
5	15-Nov-11	1953	80				
December 2011							
7	2-Dec-11	1094	45	9	25-Dec-11	2348	97
8	15-Dec-11	2353	97				
January 2012							
10	14-Jan-12	2442	100	11	25-Jan-12	2441	100
February 2012							
12	5-Feb-12	2441	100	14	26-Feb-12	2442	100
13	17-Feb-12	2442	100				
March 2012							
15	2-Mar-12	2442	100	16	25-Mar-12	2441	100
April 2012							
17	5-Apr-12	2411	99	19	24-Apr-12	2354	97
18	15-Apr-12	2441	100				
May-2012							
20	5-May-12	2333	96	22	25-May-12	2105	87
21	15-May-12	2281	94				
June 2012							
23	5-June-12	2097	86	25	25-June-12	1546	64
24	15-June12	1794	74				

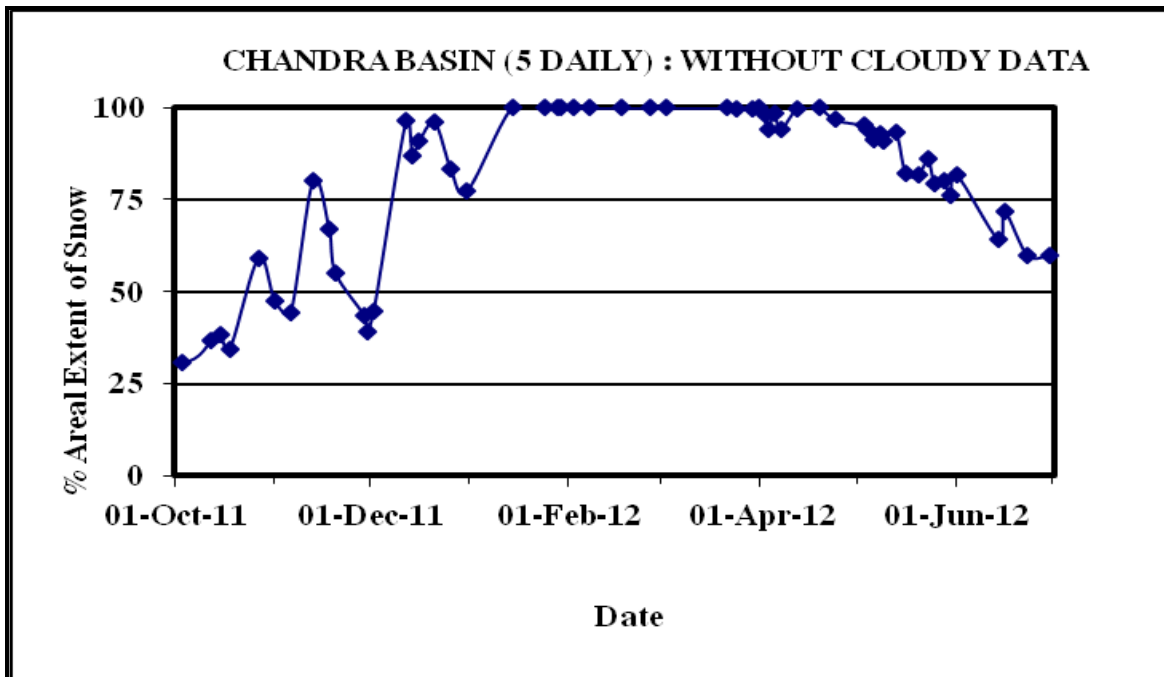
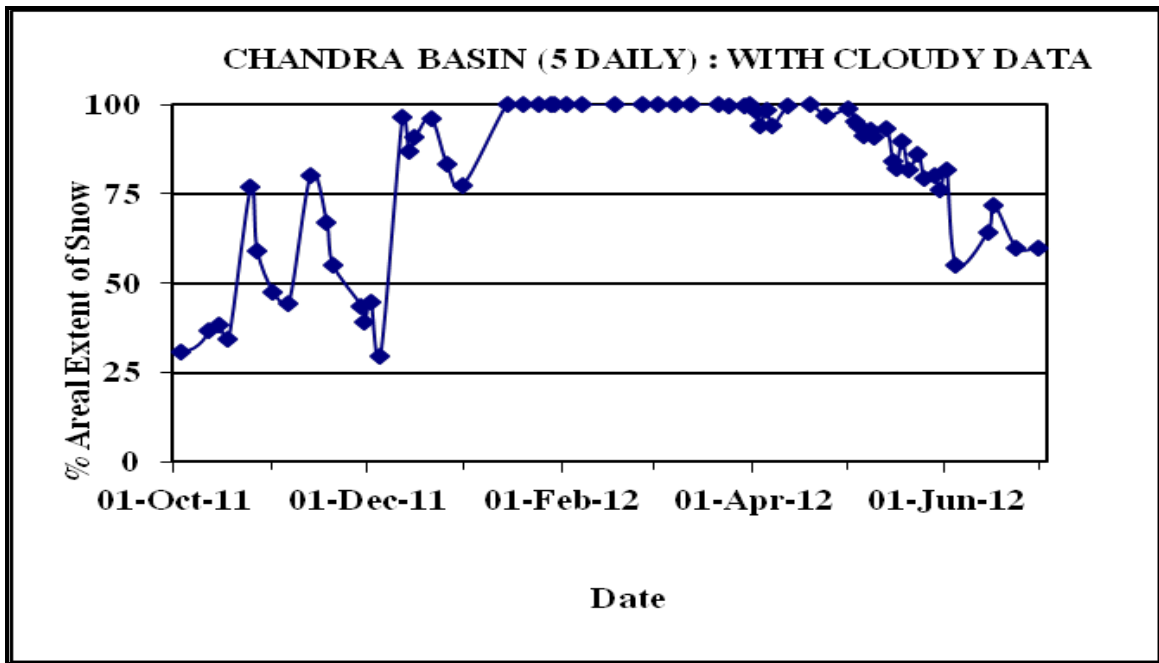
SNOW COVER DEPLETION CURVE



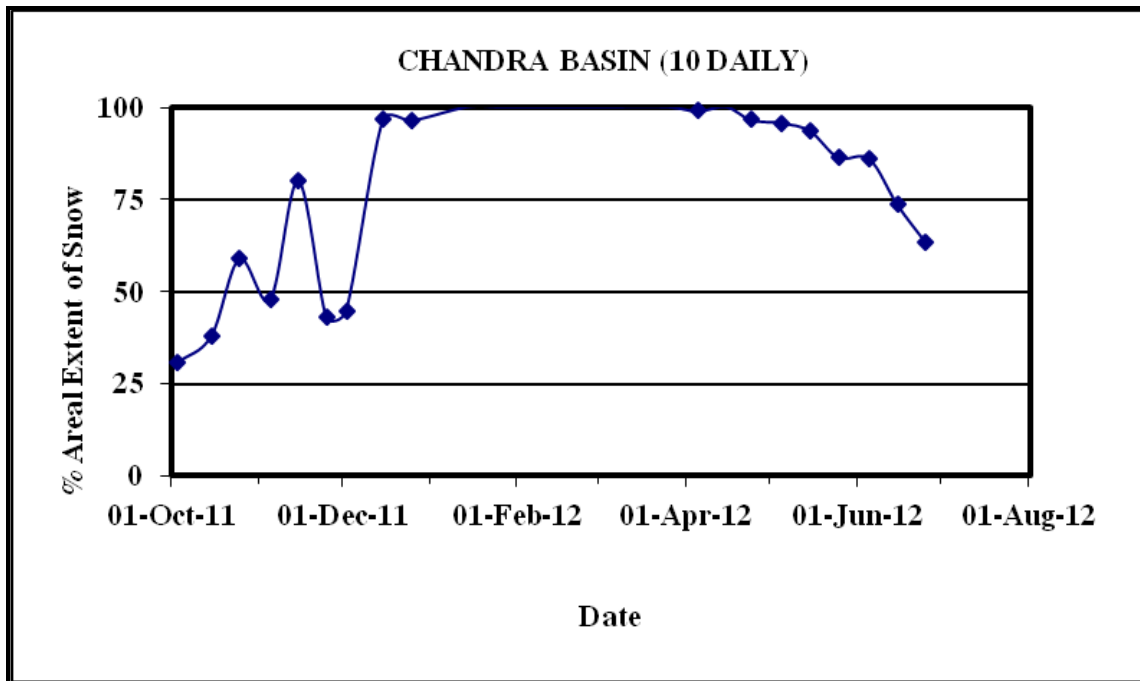
SNOW COVER DEPLETION CURVE



SNOW COVER DEPLETION CURVE

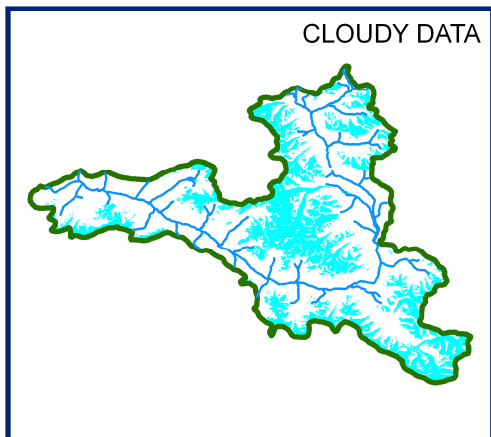


SNOW COVER DEPLETION CURVE

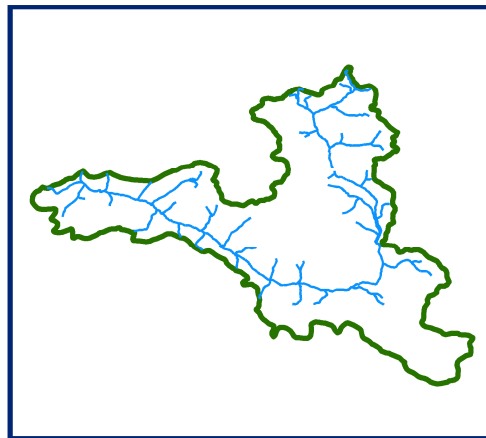


CHANDRA BASIN

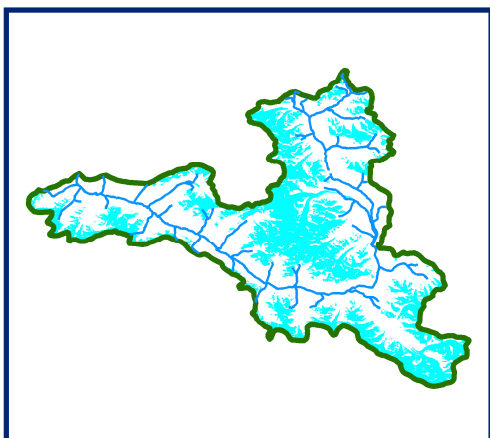
SNOW COVER MAP : CHANDRA BASIN



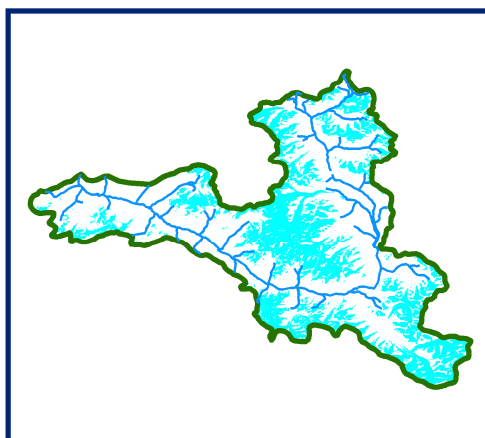
03 OCTOBER 2011



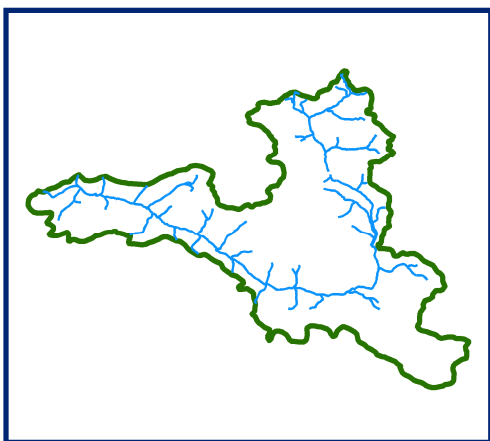
DATA NOT AVAILABLE



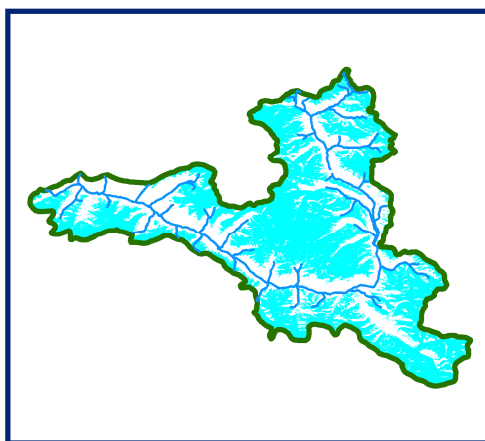
12 OCTOBER 2011



18 OCTOBER 2011



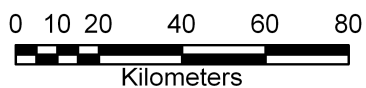
DATA NOT AVAILABLE



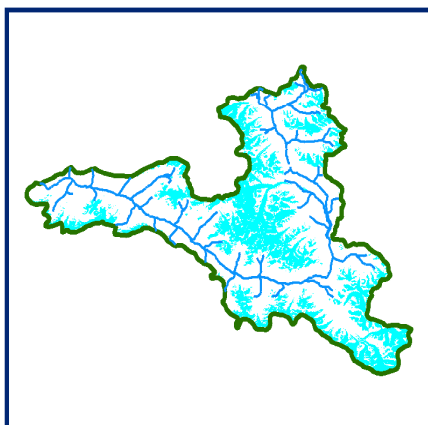
27 OCTOBER 2011



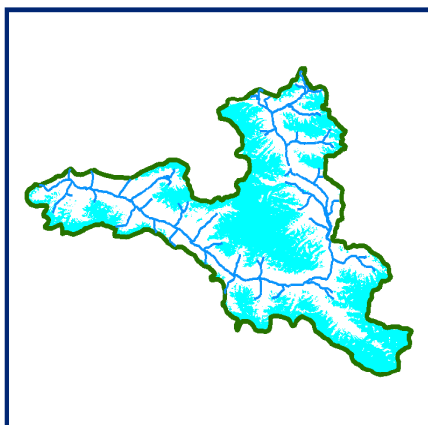
SNOW



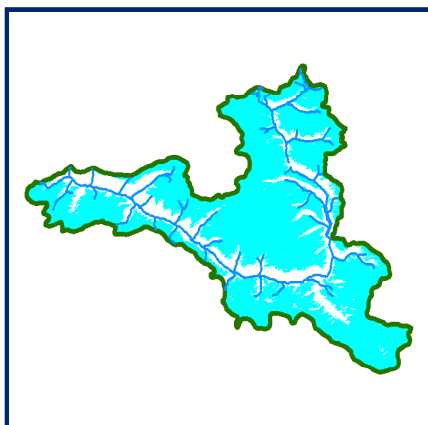
10 DAILY SNOW COVER MAP : CHANDRA BASIN



DATA USED
03 OCTOBER 2011




DATA USED
12 OCTOBER 2011
15 OCTOBER 2011
18 OCTOBER 2011



DATA USED
25 OCTOBER 2011
27 OCTOBER 2011



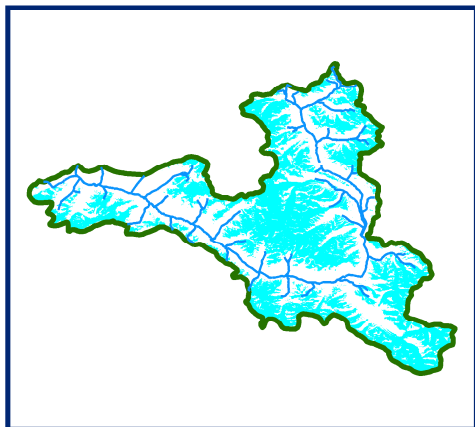
SNOW

0 5 10 20 30 40

Kilometers

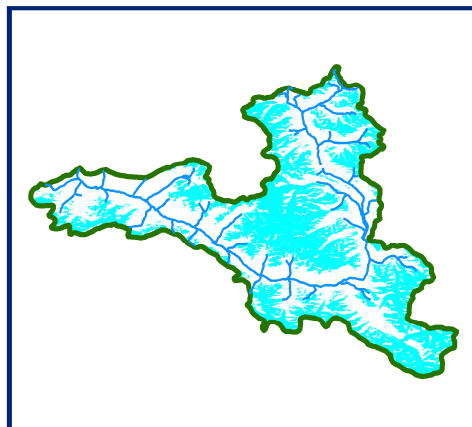
SNOW COVER MAP

:

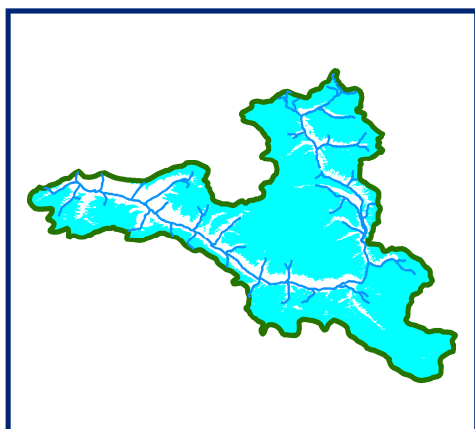
CHANDRA BASIN



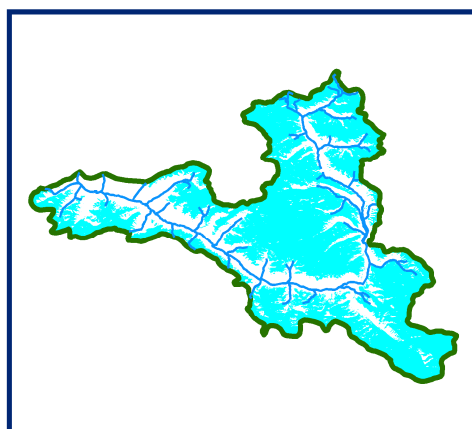
01 NOVEMBER 2011



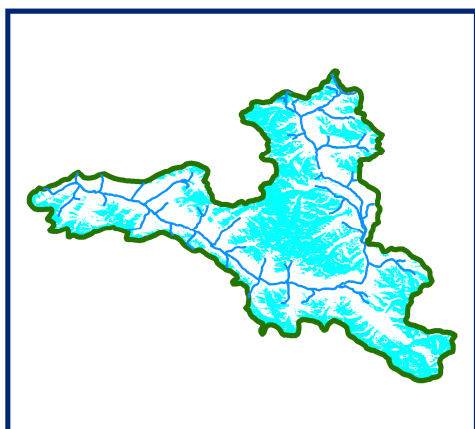
06 NOVEMBER 2011



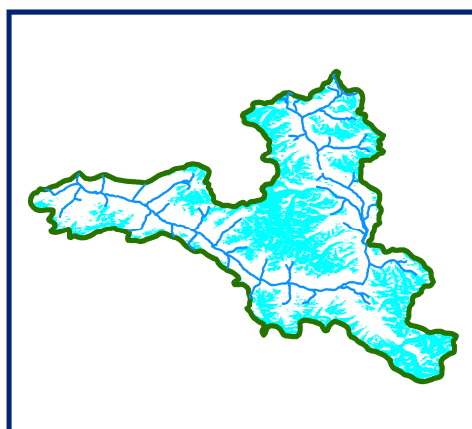
13 NOVEMBER 2011



18 NOVEMBER 2011



29 NOVEMBER 2011



30 NOVEMBER 2011



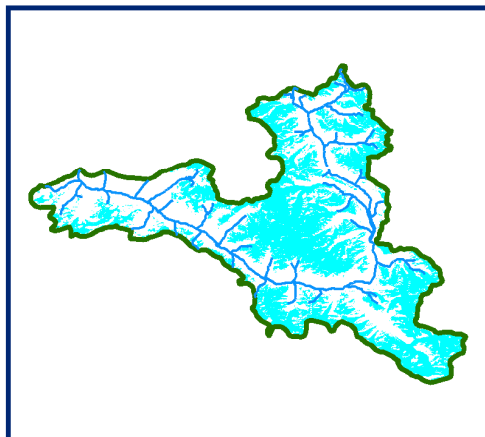
SNOW

0 10 20 40 60 80

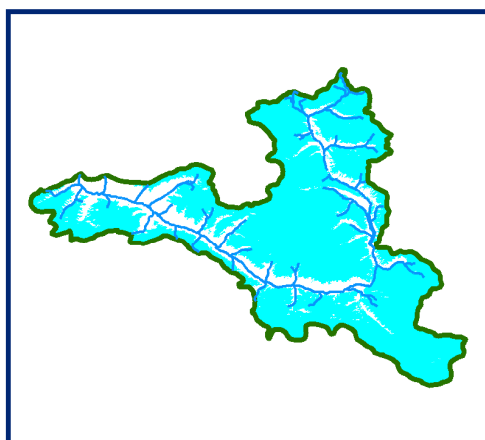


Kilometers

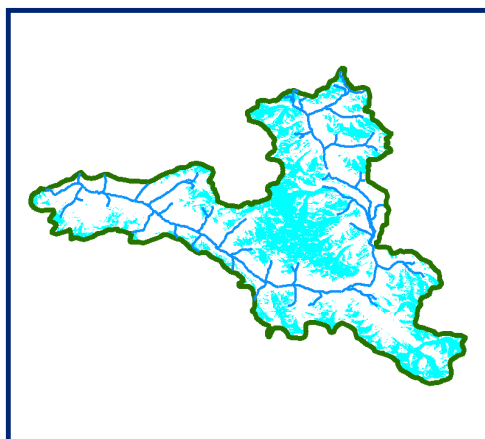
10 DAILY SNOW COVER MAP : CHANDRA BASIN



DATA USED
01 NOVEMBER 2011
06 NOVEMBER 2011




DATA USED
13 NOVEMBER 2011
18 NOVEMBER 2011
20 NOVEMBER 2011



DATA USED
23 NOVEMBER 2011
29 NOVEMBER 2011



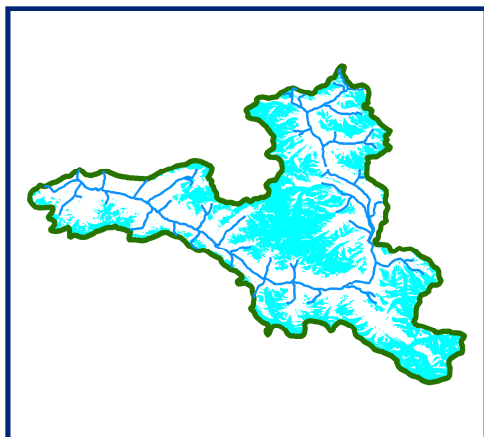
SNOW

0 5 10 20 30 40

Kilometers

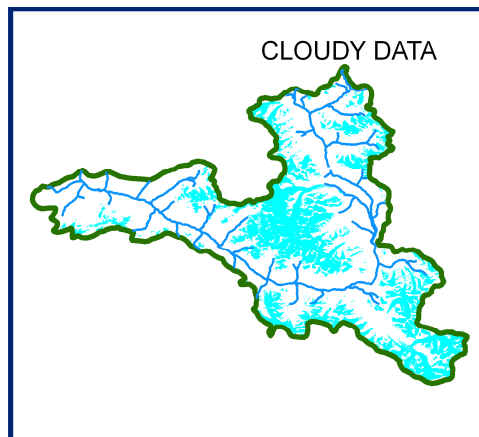
SNOW COVER MAP

:

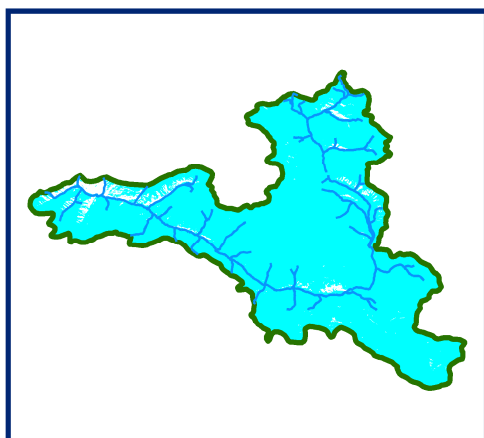
CHANDRA BASIN



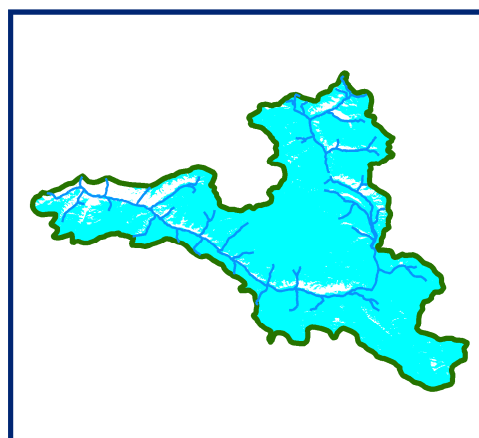
02 DECEMBER 2011



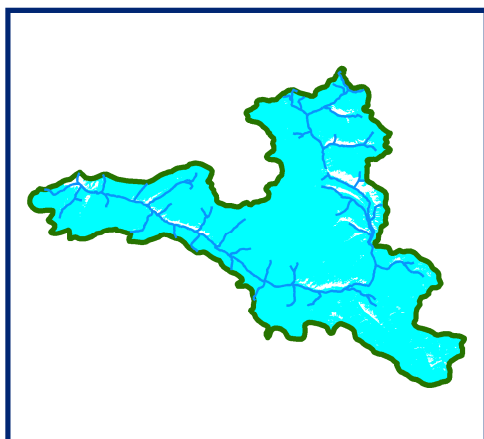
05 DECEMBER 2011



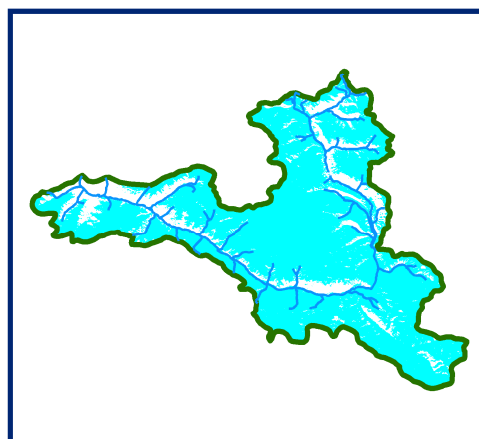
12 DECEMBER 2011



16 DECEMBER 2011



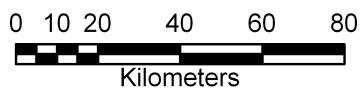
21 DECEMBER 2011



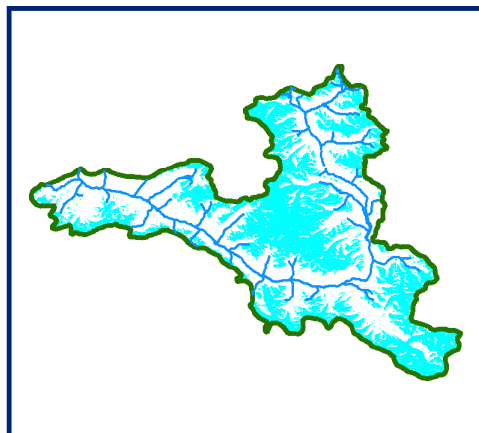
26 DECEMBER 2011



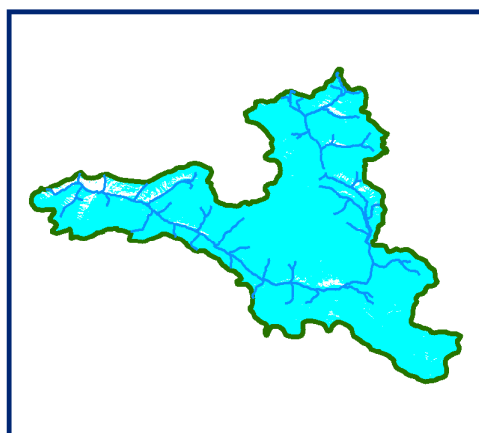
SNOW



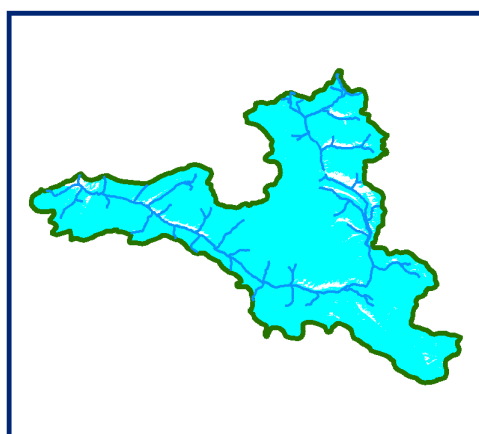
10 DAILY SNOW COVER MAP : CHANDRA BASIN



DATA USED
02 DECEMBER 2011




DATA USED
12 DECEMBER 2011
14 DECEMBER 2011
16 DECEMBER 2011



DATA USED
21 DECEMBER 2011
26 DECEMBER 2011
31 DECEMBER 2011



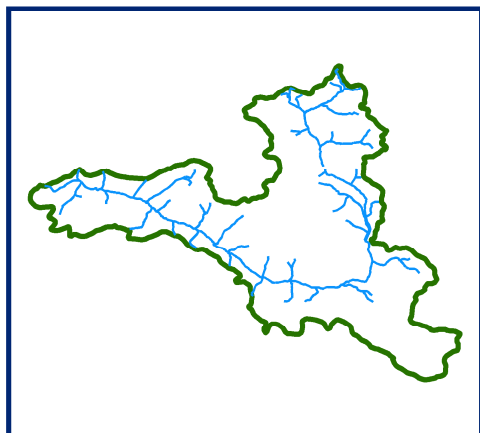
SNOW

0 5 10 20 30 40

Kilometers

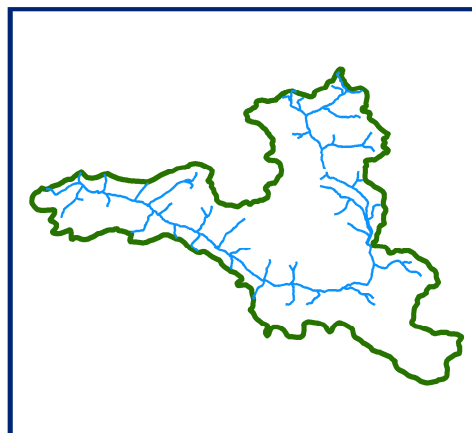
SNOW COVER MAP

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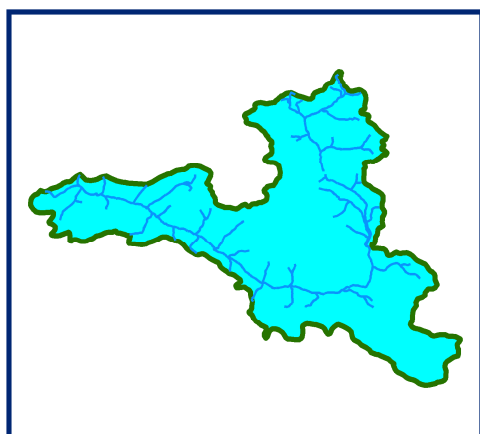
CHANDRA BASIN



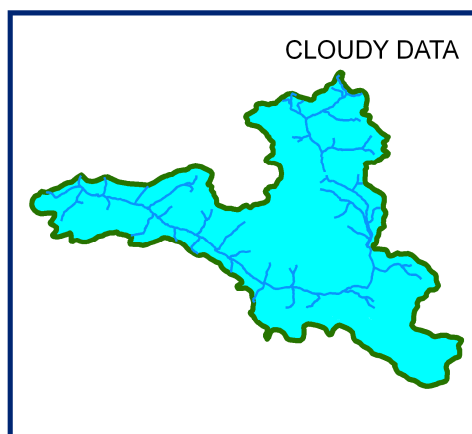
DATA NOT AVAILABLE



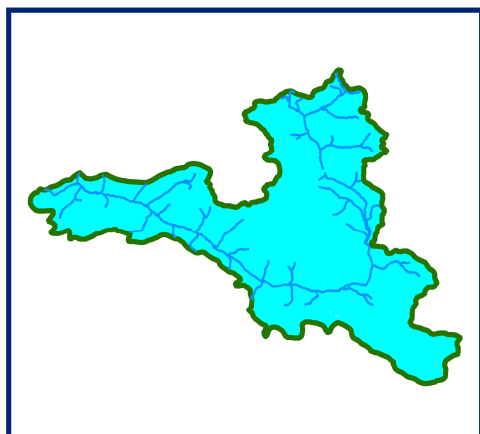
DATA NOT AVAILABLE



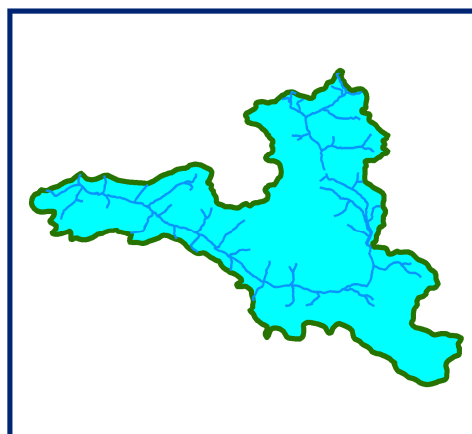
14 JANUARY 2012



19 JANUARY 2012



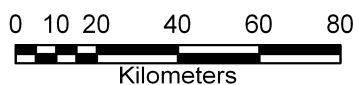
24 JANUARY 2012



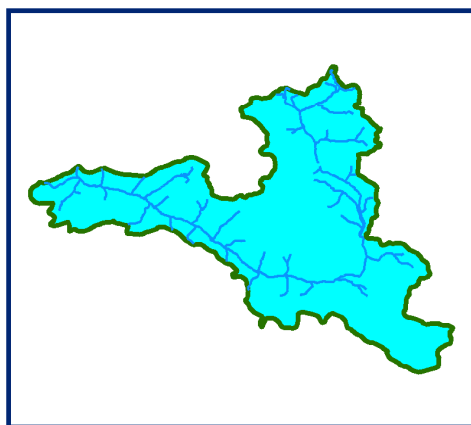
29 JANUARY 2012



SNOW

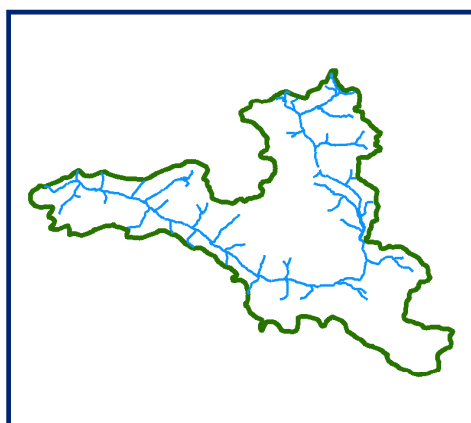


10 DAILY SNOW COVER MAP : CHANDRA BASIN

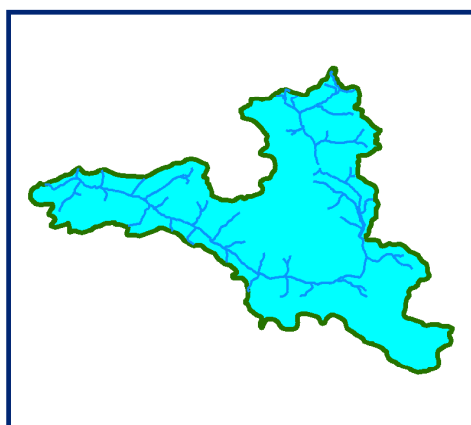


DATA USED

14 JANUARY 2012



DATA NOT AVAILABLE



DATA USED

24 JANUARY 2012

28 JANUARY 2012

29 JANUARY 2012



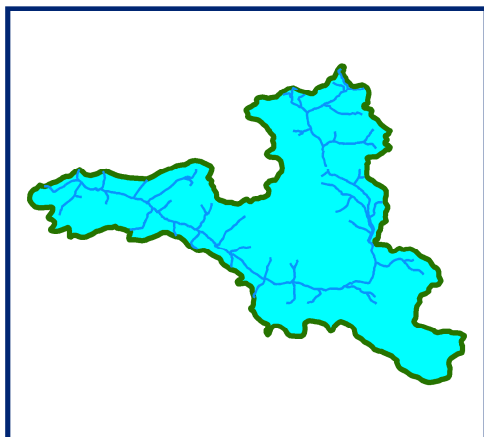
SNOW

0 5 10 20 30 40

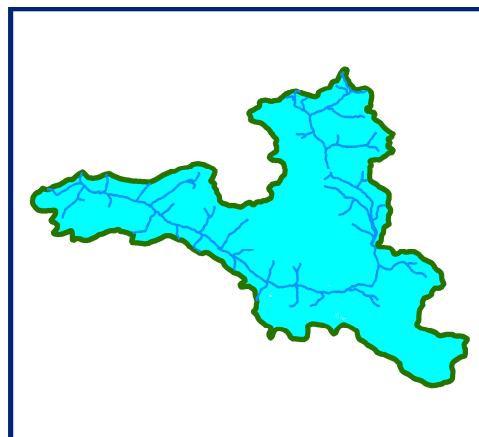


Kilometers

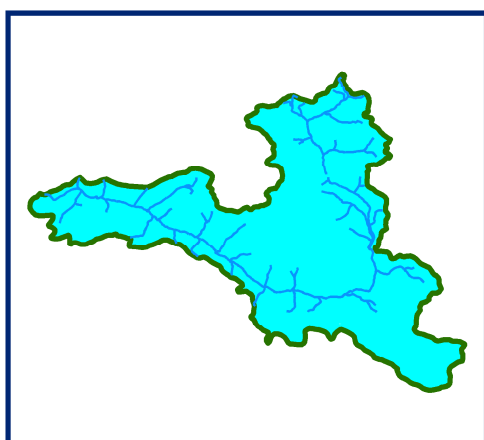
SNOW COVER MAP : CHANDRA BASIN



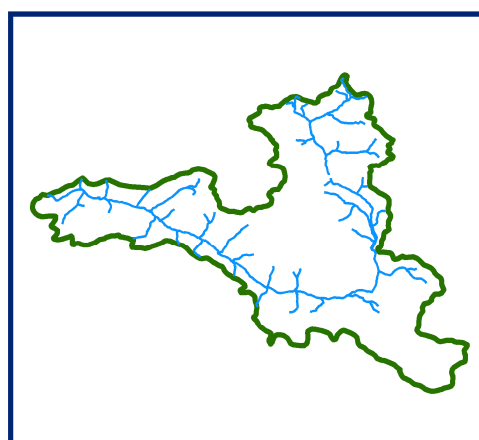
02 FEBRUARY 2012



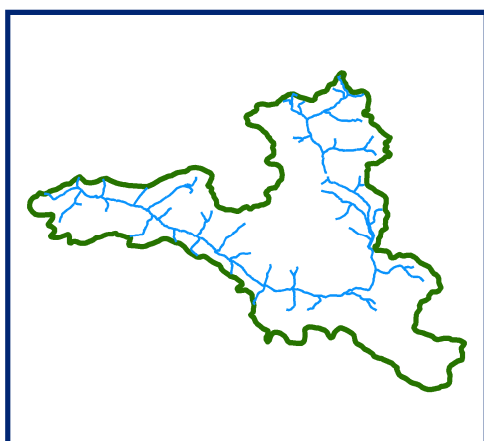
07 FEBRUARY 2012



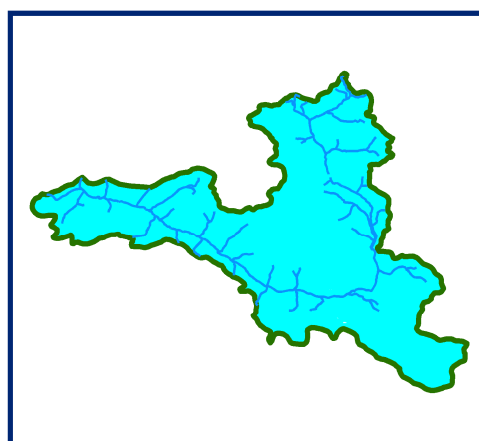
17 FEBRUARY 2012



DATA NOT AVAILABLE



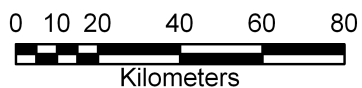
DATA NOT AVAILABLE



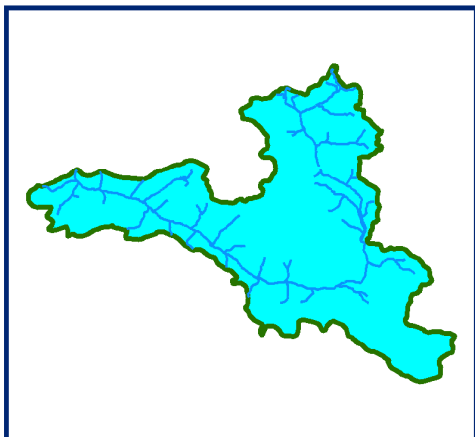
26 FEBRUARY 2012



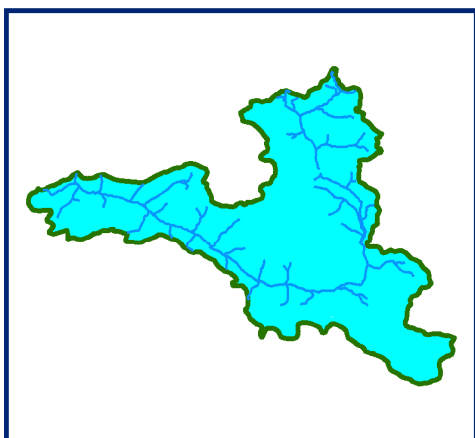
SNOW



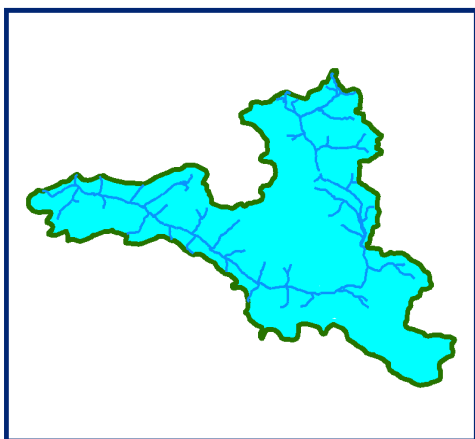
10 DAILY SNOW COVER MAP : CHANDRA BASIN



DATA USED
02 FEBRUARY 2012
07 FEBRUARY 2012




DATA USED
17 FEBRUARY 2012



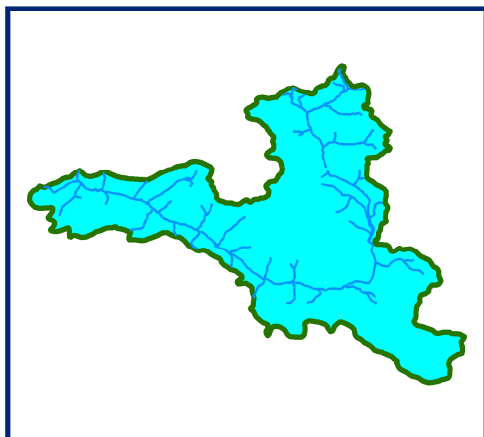
DATA USED
26 FEBRUARY 2012



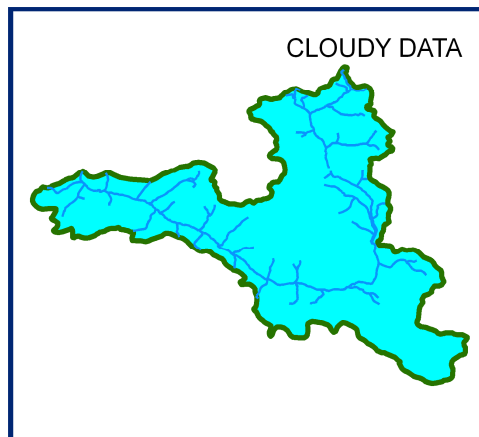
SNOW

0 5 10 20 30 40

Kilometers

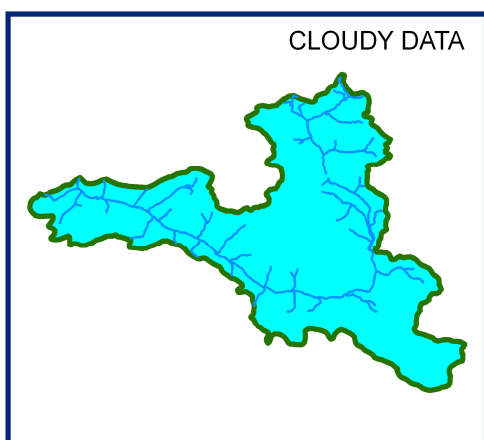
SNOW COVER MAP : CHANDRA BASIN



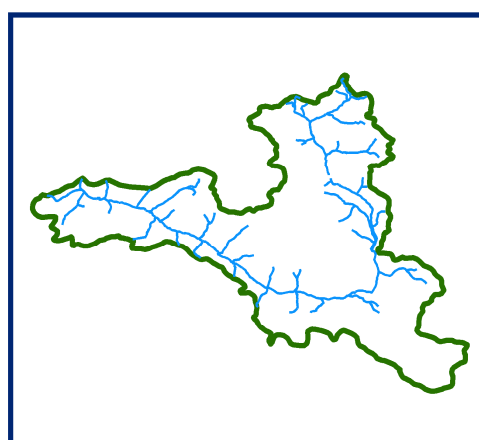
02 MARCH 2012



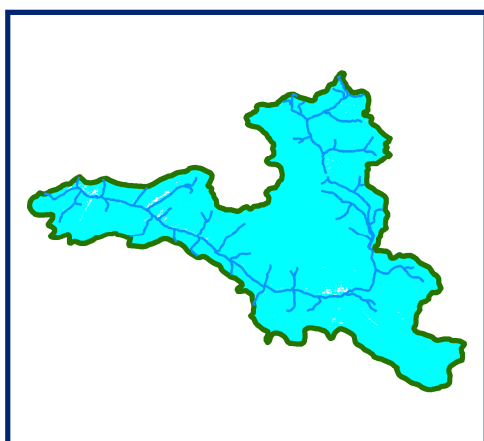
07 MARCH 2012



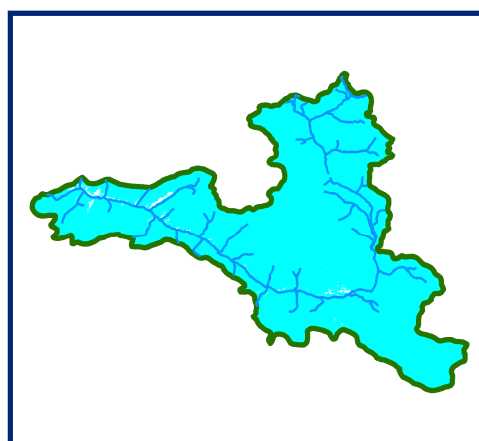
12 MARCH 2012



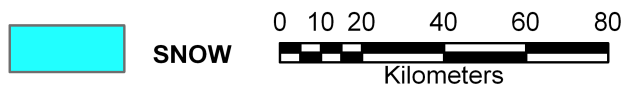
DATA NOT AVAILABLE



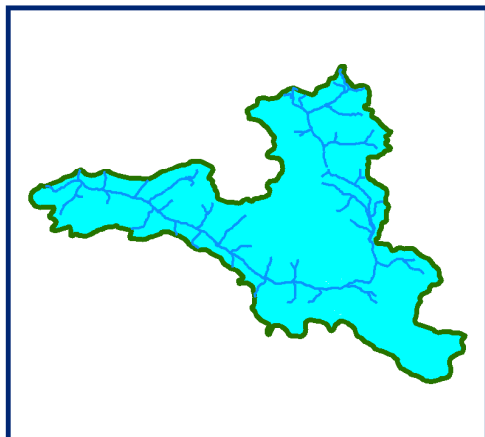
24 MARCH 2012



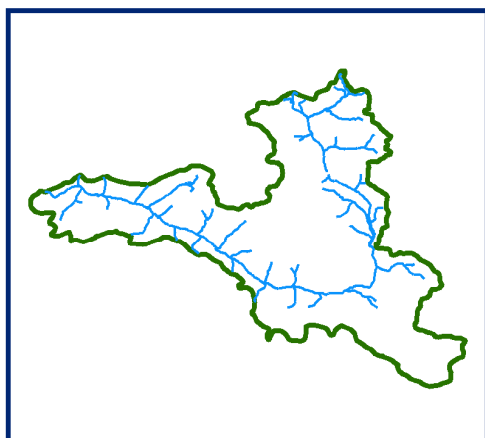
29 MARCH 2012



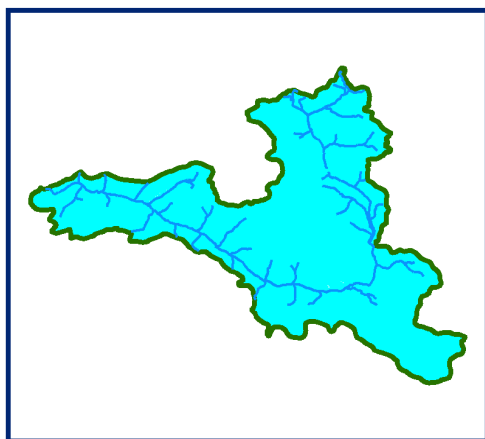
10 DAILY SNOW COVER MAP : CHANDRA BASIN



DATA USED
02 MARCH 2012



DATA NOT AVAILABLE



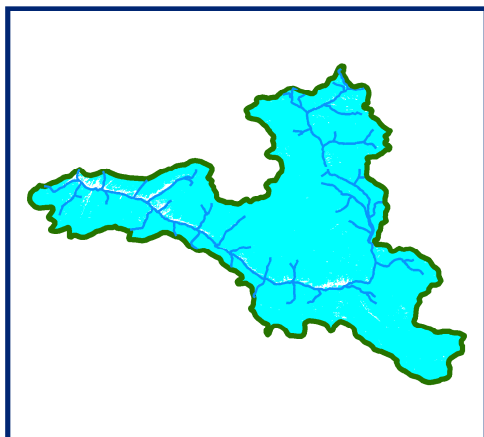
DATA USED
21 MARCH 2012
24 MARCH 2012
31 MARCH 2012



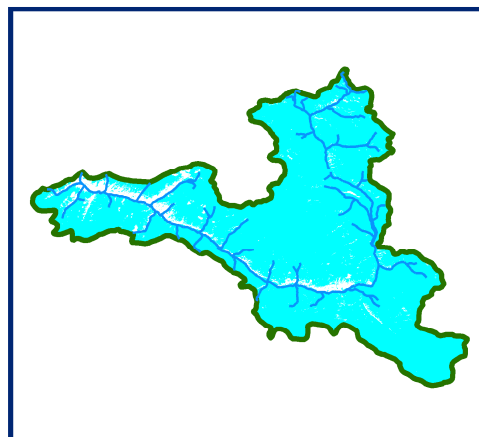
SNOW

0 5 10 20 30 40
Kilometers

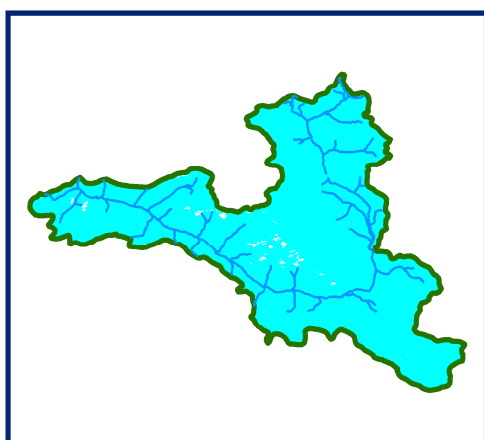
SNOW COVER MAP : CHANDRA BASIN



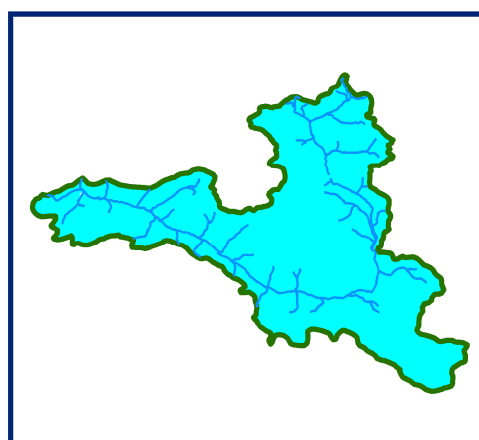
02 APRIL 2012



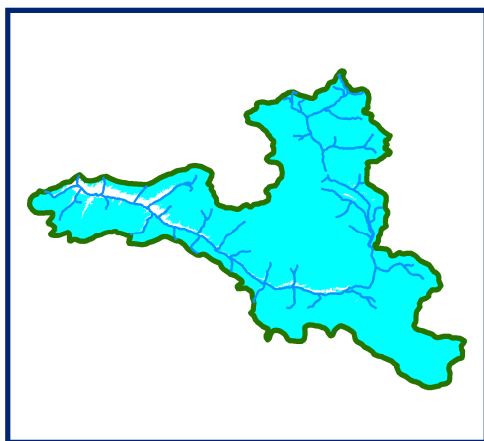
07 APRIL 2012



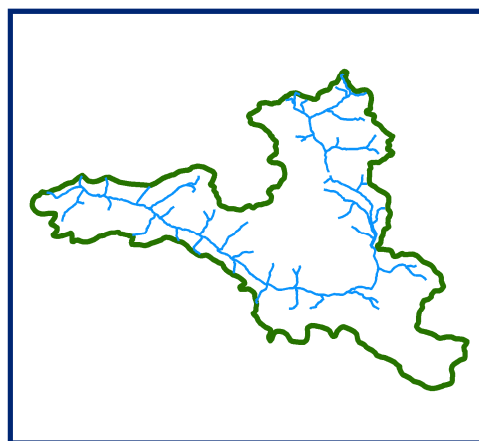
12 APRIL 2012



19 APRIL 2012



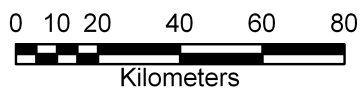
24 APRIL 2012



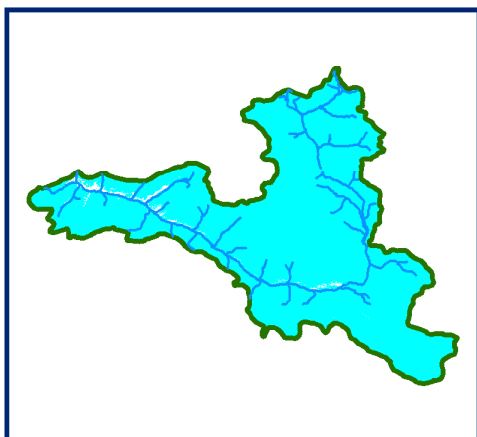
DATA NOT AVAILABLE



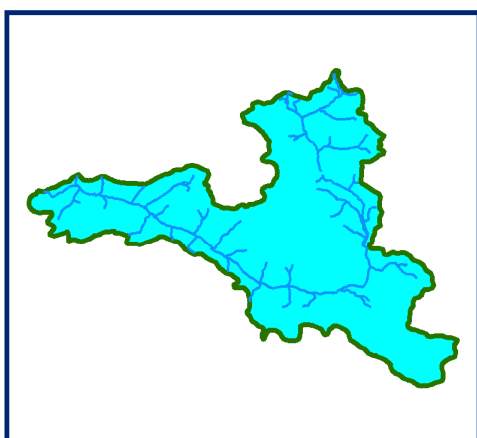
SNOW



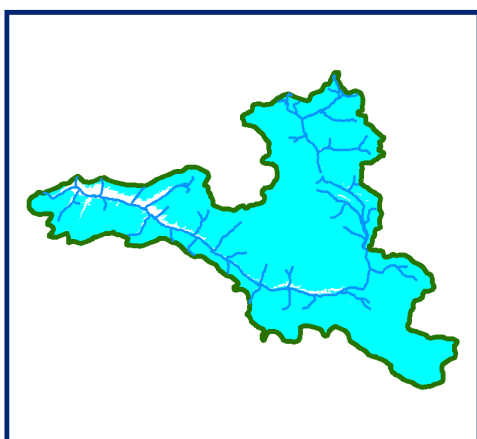
10 DAILY SNOW COVER MAP : CHANDRA BASIN



DATA USED
02 APRIL 2012
05 APRIL 2012
07 APRIL 2012




DATA USED
12 APRIL 2012
19 APRIL 2012



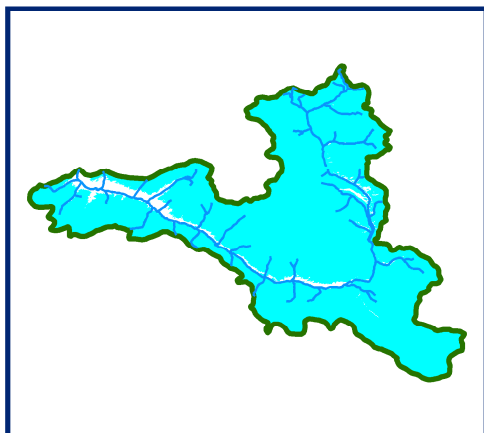
DATA USED
24 APRIL 2012



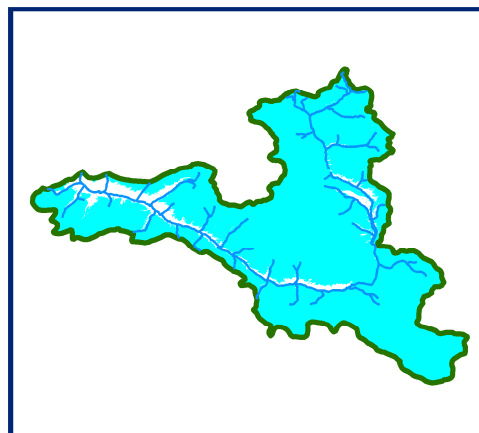
SNOW

0 5 10 20 30 40

Kilometers

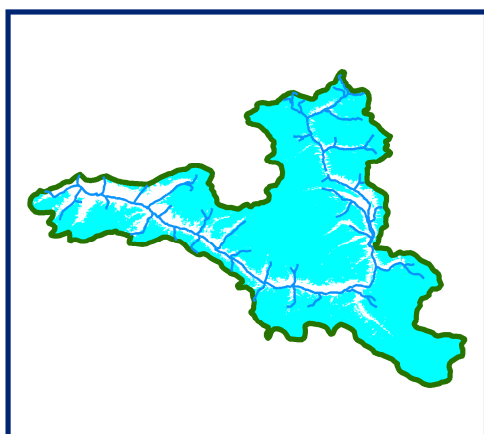
SNOW COVER MAP : CHANDRA BASIN



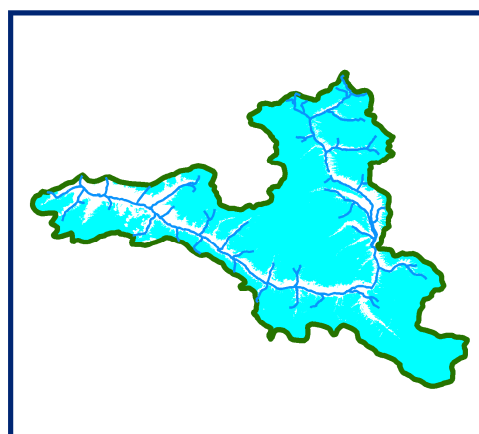
03 MAY 2012



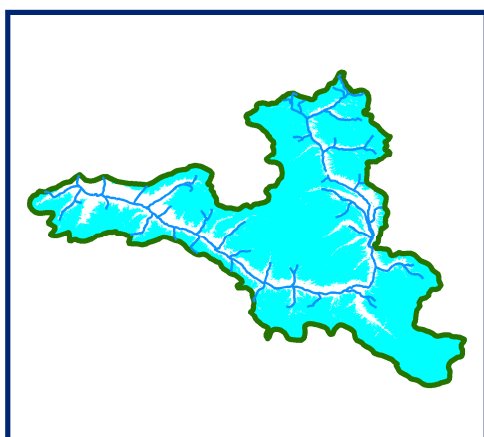
08 MAY 2012



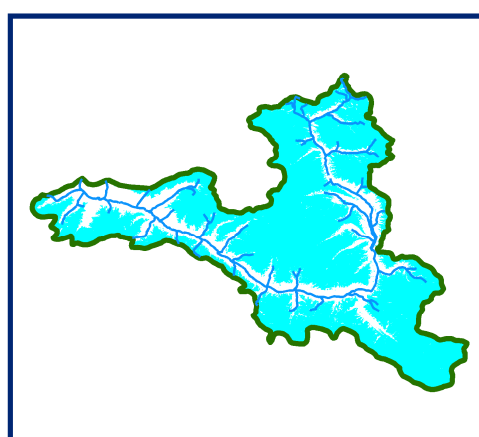
16 MAY 2012



20 MAY 2012



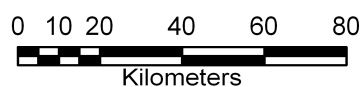
25 MAY 2012



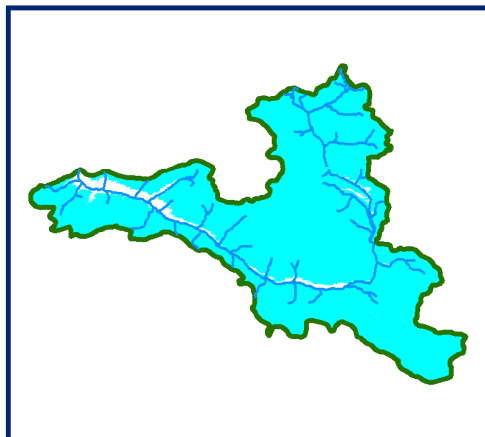
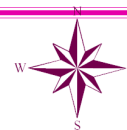
30 MAY 2012



SNOW



10 DAILY SNOW COVER MAP : CHANDRA BASIN

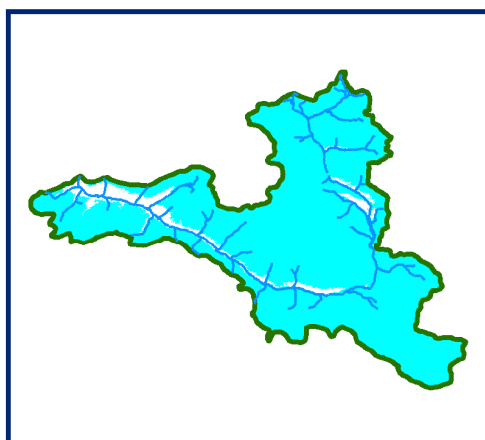


DATA USED

03 MAY 2012

06 MAY 2012

09 MAY 2012

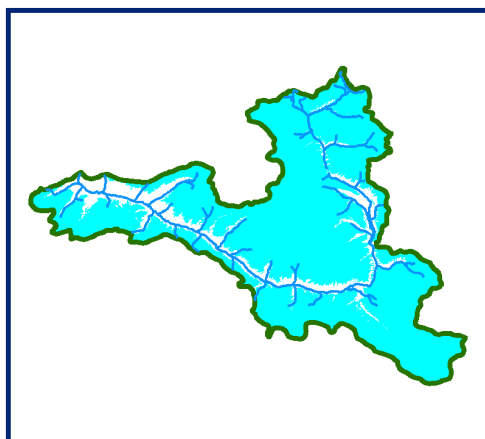


DATA USED

13 MAY 2012

15 MAY 2012

18 MAY 2012



DATA USED


23 MAY 2012

28 MAY 2012

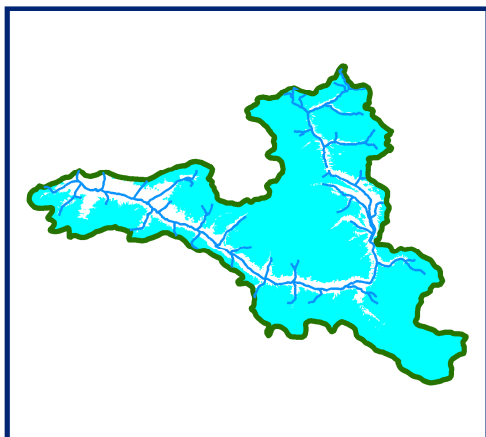
30 MAY 2012



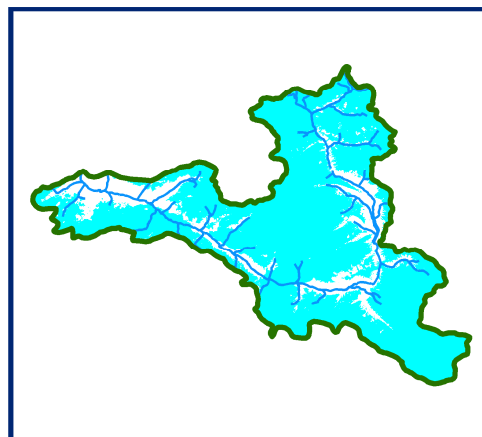
SNOW

0 5 10 20 30 40

Kilometers

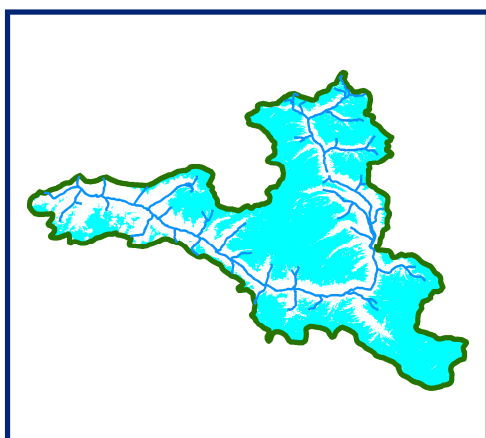
SNOW COVER MAP : CHANDRA BASIN



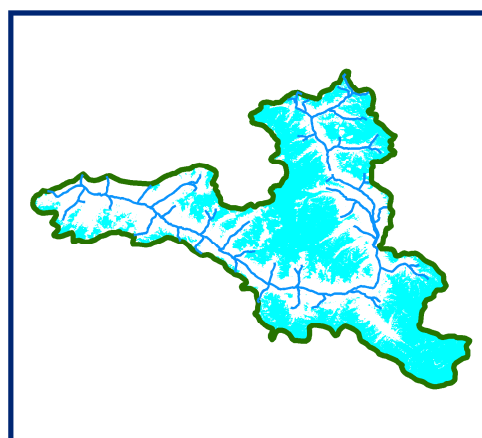
01 JUNE 2012



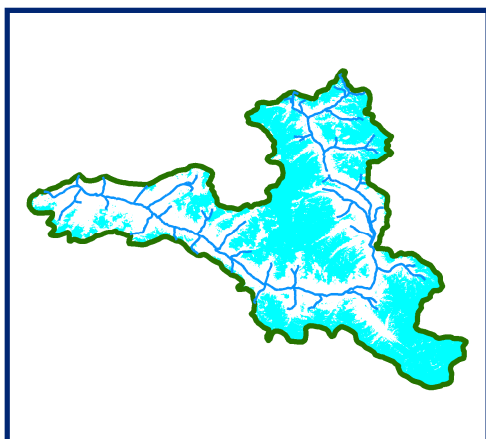
02 JUNE 2012



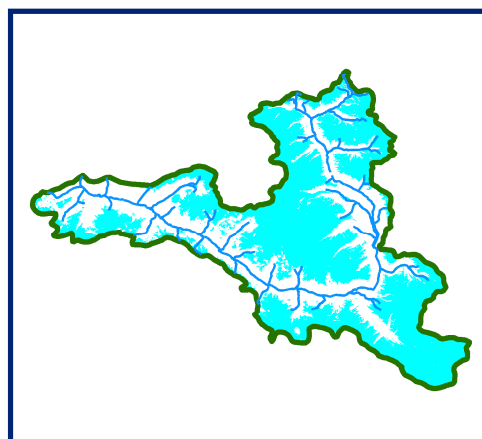
14 JUNE 2012



16 JUNE 2012



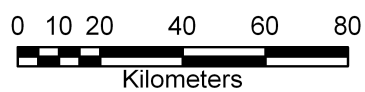
23 JUNE 2012



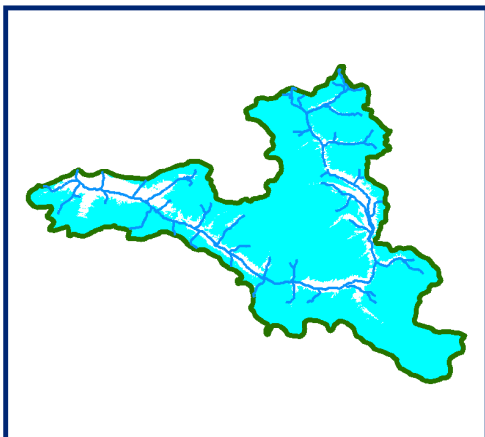
30 JUNE 2012



SNOW



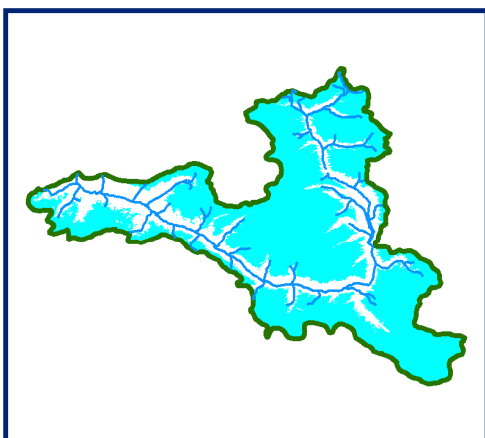
10 DAILY SNOW COVER MAP : CHANDRA BASIN



DATA USED

01 JUNE 2012

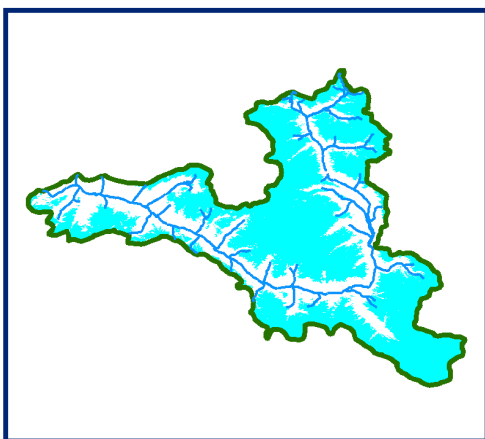
02 JUNE 2012



DATA USED

14 JUNE 2012

16 JUNE 2012



DATA USED

23 JUNE 2012

30 JUNE 2012



SNOW

0 5 10 20 30 40
Kilometers

BHAGA BASIN

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 2011							
1	3-Oct-11	476.44	28	4	18-Oct-11	508.75	30
2	12-Oct-11	645.34	38	5	25-Oct-11	1439.16	86
3	15-Oct-11	700.41	42	6	27-Oct-11	1104.46	66
November 2011							
7	1-Nov-11	817.82	49	11	20-Nov-11	1076.75	64
8	6-Nov-11	751.06	45	12	29-Nov-11	805.25	48
9	13-Nov-11	1400.14	83	13	30-Nov-11	777.61	46
10	18-Nov-11	1238.47	74				
December 2011							
14	2-Dec-11	945.67	56	18	16-Dec-11	1160.92	69
15	5-Dec-11	320.7	19	19	21-Dec-11	1474.06	88
16	12-Dec-11	1397.82	83	20	26-Dec-11	1110.1	66
17	14-Dec-11	1147.26	68	21	31-Dec-11	1011.79	60
January 2012							
22	14-Jan-12	1695.5	100	25	24-Jan-12	1695.56	100
23	19-Jan-12	1695.56	100	26	28-Jan-11	1695.5	100
24	23-Jan-12	1695.29	100				
February 2012							
27	2-Feb-12	1695.6	100	29	17-Feb-12	1695.36	100
28	7-Feb-12	1694.11	100	30	26-Feb-12	1695.74	100
March 2012							
31	2-Mar-12	1695.23	100	35	24-Mar-12	1666.61	99
32	7-Mar-12	1695.78	100	36	29-Mar-12	1650.02	98
33	21-Mar-12	1691.92	100	37	31-Mar-12	1660.08	98
34	23-Mar-12	1588.6	95				
April 2012							
38	2-Apr-12	1599.08	95	43	15-Apr-12	1672.78	100
39	3-Apr-12	1520.77	91	44	19-Apr-12	1693.83	100
40	5-Apr-12	1607.22	96	45	22-Apr-12	1418.22	84
41	7-Apr-12	1460.21	87	46	24-Apr-12	1561.18	93
42	12-Apr-12	1661.53	99				

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
May-2012							
47	1-May-12	1588.6	95	55	16-May-12	1328.97	79
48	3-May-12	1522.32	91	55	18-May-12	1429.33	85
49	4-May-12	1512.43	90	57	20-May-12	1307.33	84
50	6-May-12	1431.73	85	58	23-May-12	1402.87	84
51	8-May-12	1474.36	88	59	25-May-12	1297.06	77
52	9-May-12	1465.6	87	60	28-May-12	1330.25	79
53	13-May-12	1503.14	89	61	30-May-12	1262.25	75
54	15-May-12	1330.46	79				
June-2012							
62	1-June-12	1331.43	83	66	16-June-12	1173.38	70
63	2-June-12	1337.69	80	67	23-June-12	656.72	39
64	4-June-12	893.13	53	68	30-June-12	950.78	62
65	14-June-12	1026.8	61				

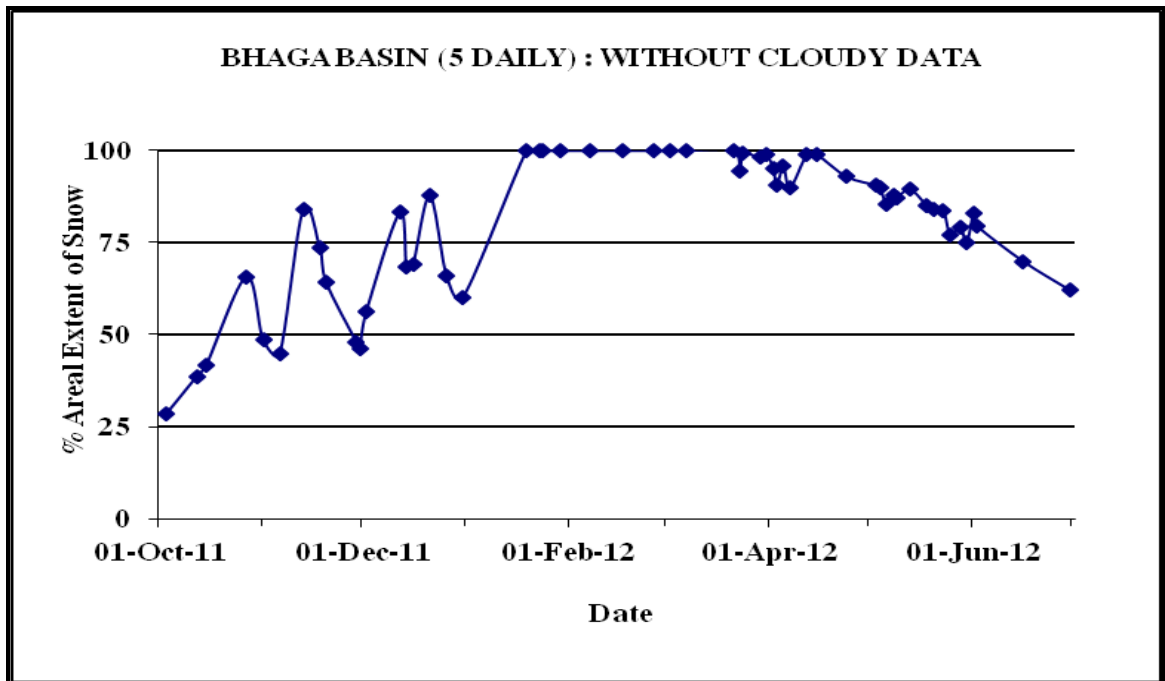
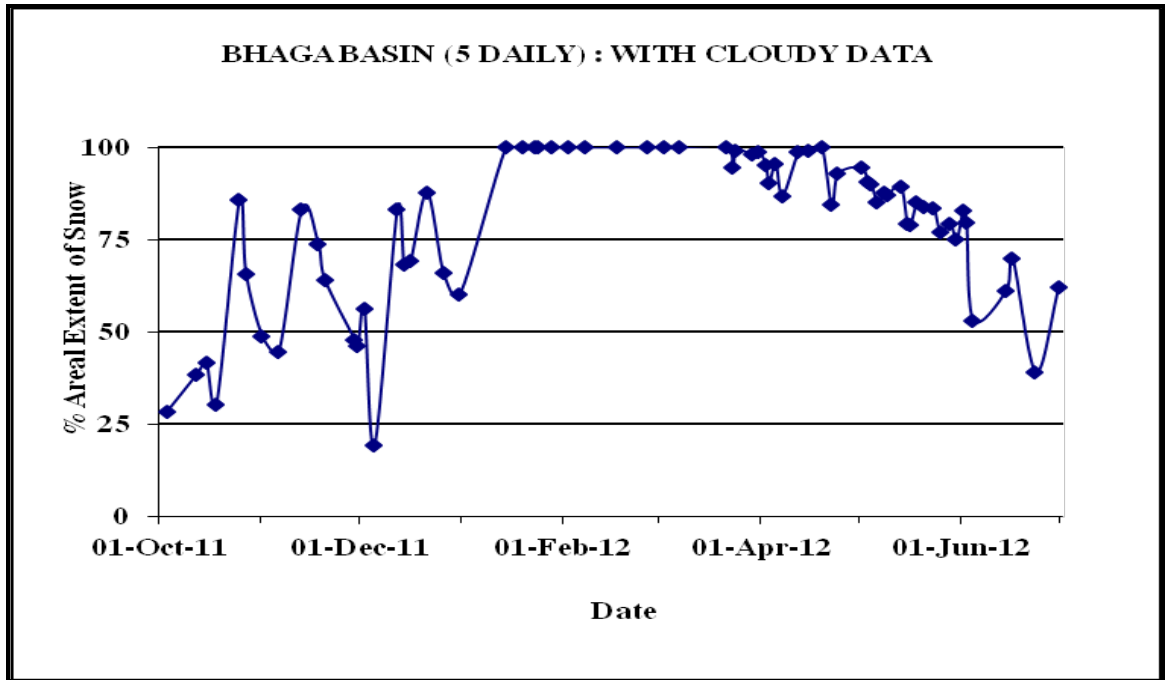
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: BHAGA

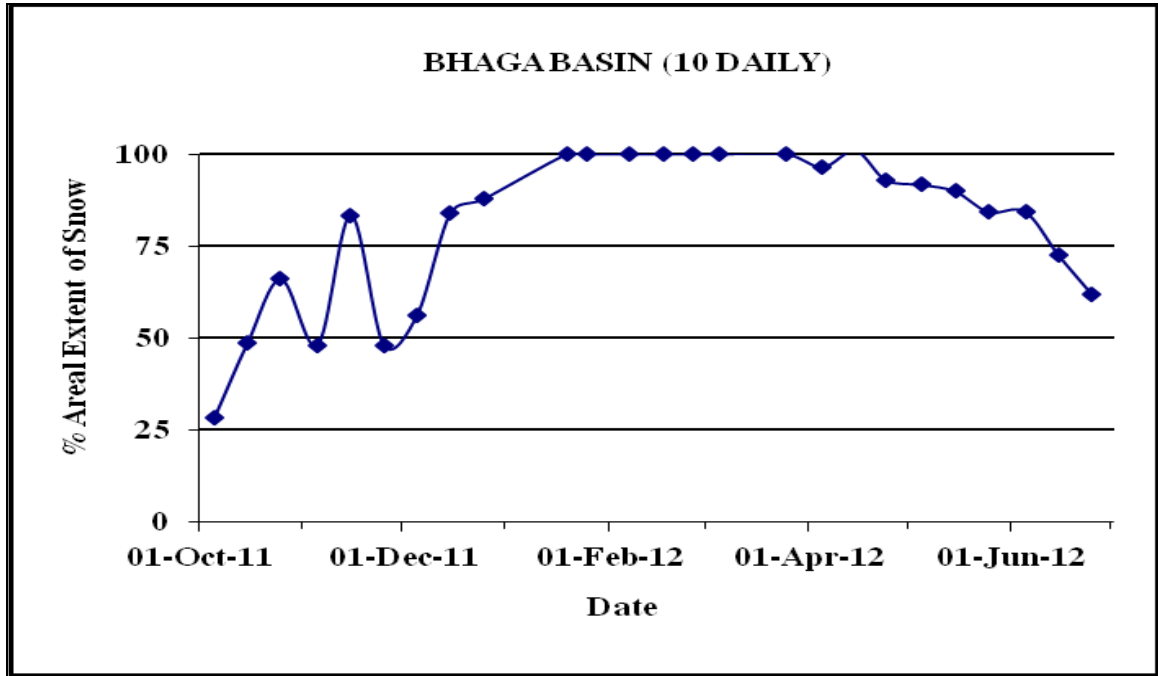
BASIN AREA: 1680 sqkm

S No	Date	Snow cover (sq km)	Snow cover (%)	S. No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	5-Oct-11	476.44	28	3	25-Oct-11	1411.11	66
2	15-Oct-11	819.28	49				
November 2011							
4	5-Nov-11	807.61	48	6	25-Nov-11	721.8	48
5	15-Nov-11	1401.01	83				
December 2011							
7	5-Dec-11	945.67	56	9	25-Dec-11	1475.22	88
8	15-Dec-11	1410.07	84				
January 2012							
10	19-Jan-12	1695.65	100				
11	25-Jan-12	1695.73	100				
February 2012							
12	7-Feb-12	1694.11	100	14	26-Feb-12	1695.74	100
13	17-Feb-12	1695.73	100				
March 2012							
15	5-Mar-12	4710.54	100	16	25-Mar-12	4709.12	100
April 2012							
17	5-Apr-12	1621.32	97	19	24-Apr-12	166.61	93
18	15-Apr-12	1695.67	100				
May-2012							
20	5-May-12	1539.81	92	22	25-May-12	1415.55	84
21	15-May-12	1501	90				
June-2012							
23	5-June-12	1417.6	84	25	25-June-12	950.78	62
24	15-june-12	1219.68	73				

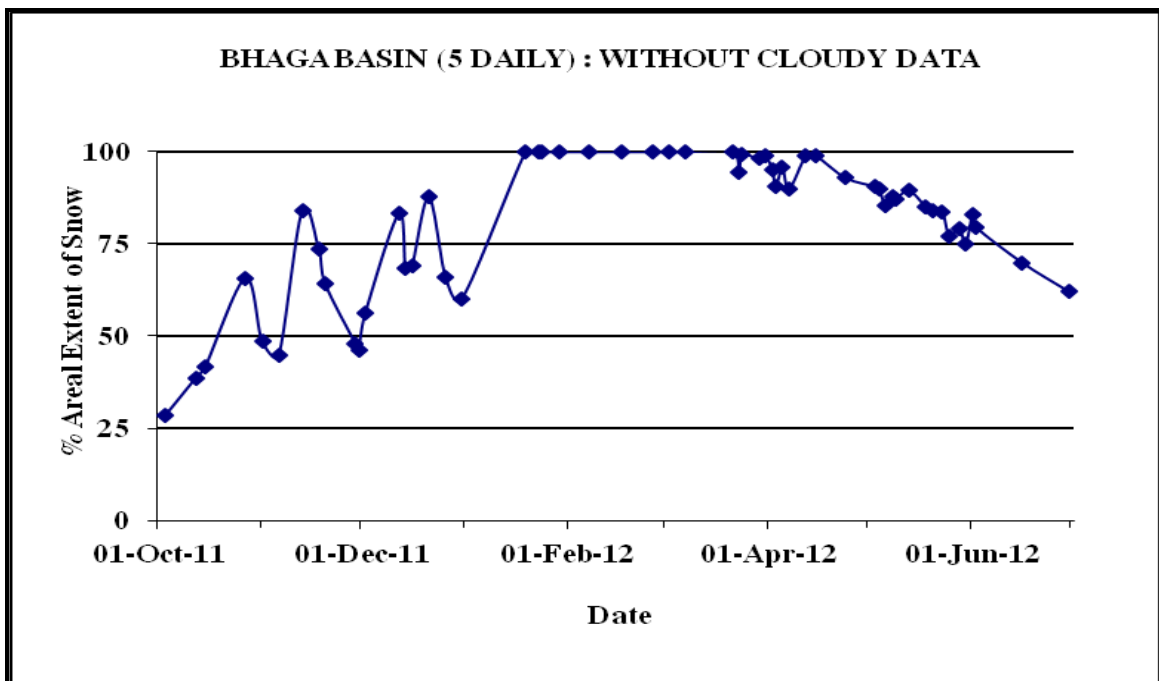
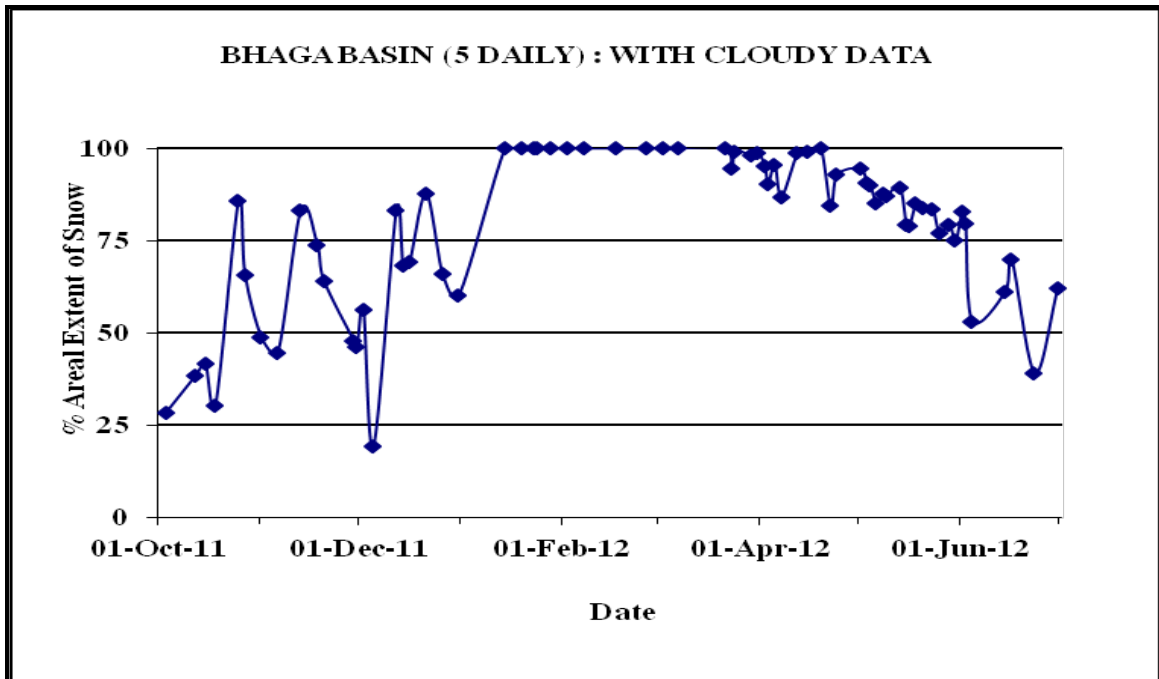
SNOW COVER DEPLETION CURVE



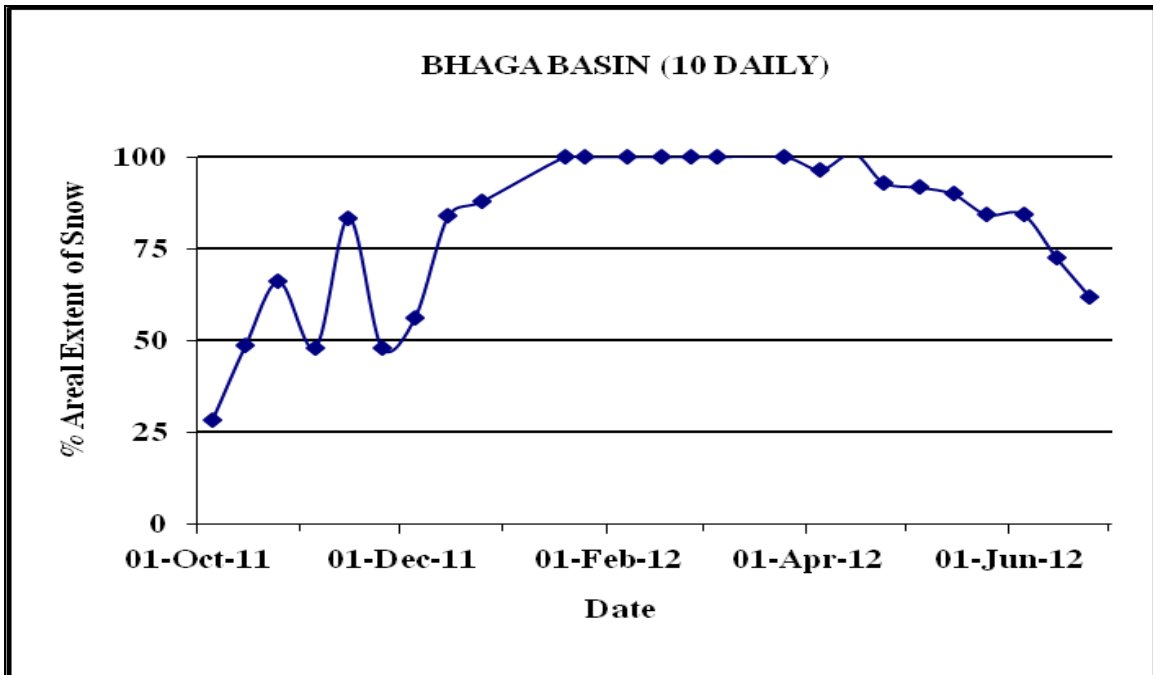
SNOW COVER DEPLETION CURVE



SNOW COVER DEPLETION CURVE

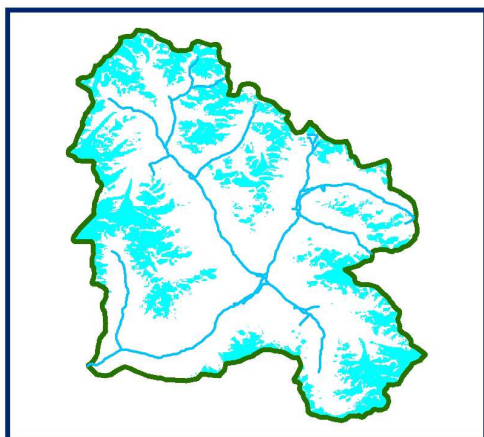


SNOW COVER DEPLETION CURVE

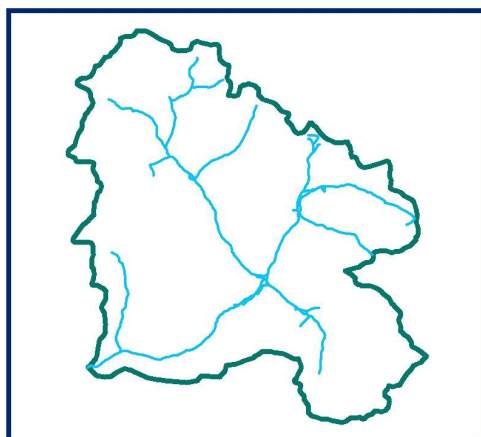


SNOW COVER MAP

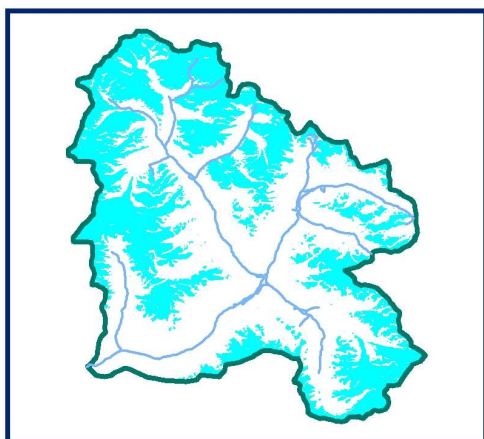
SNOW COVER MAP : BHAGA BASIN



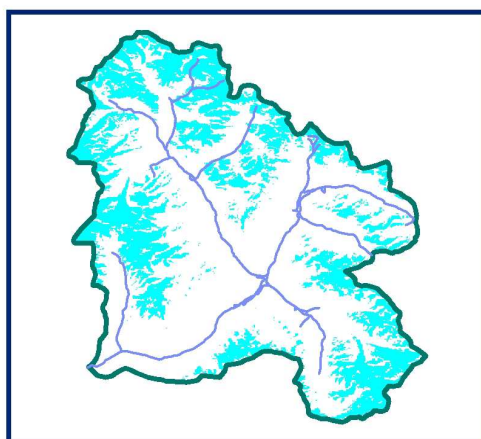
3 OCTOBER 2011



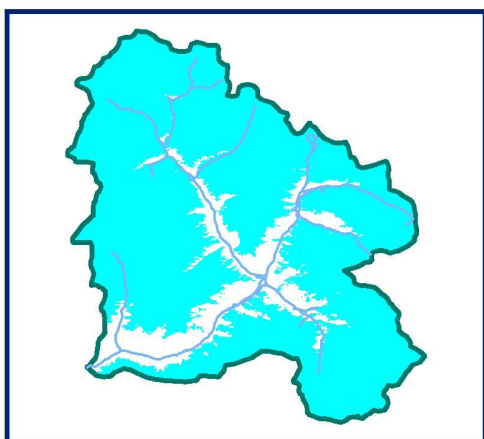
DATA NOT AVAILABLE



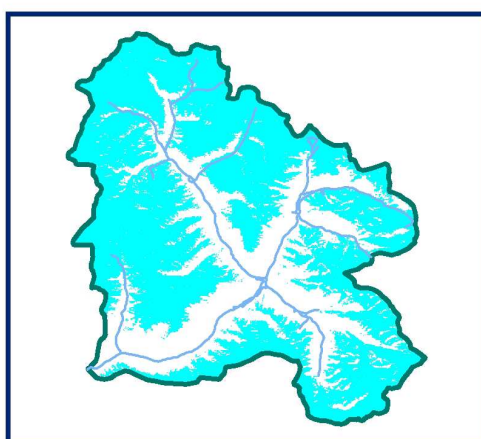
15 OCTOBER 2011



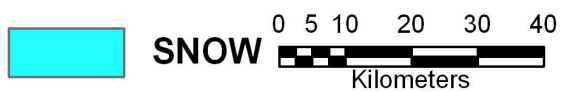
18 OCTOBER 2011



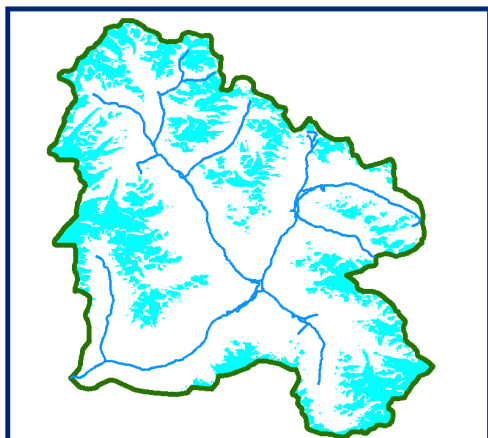
25 OCTOBER 2011



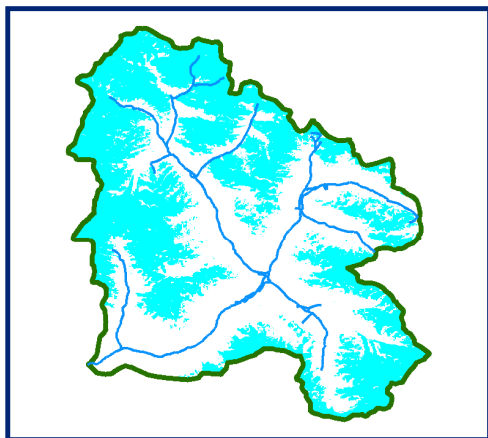
27 OCTOBER 2011



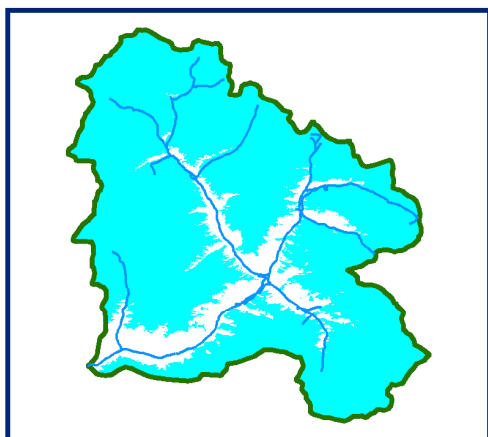
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
03 OCTOBER 2011



DATA USED
12 OCTOBER 2011
15 OCTOBER 2011
18 OCTOBER 2011



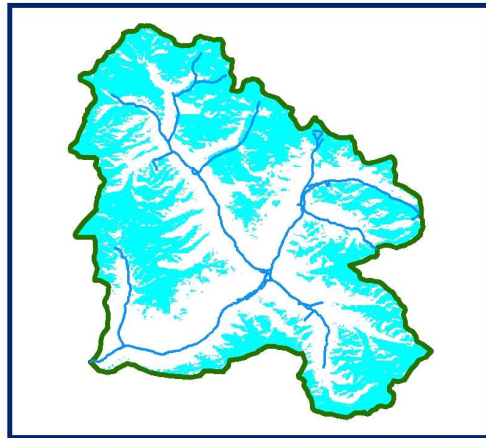
DATA USED
25 OCTOBER 2011
27 OCTOBER 2011



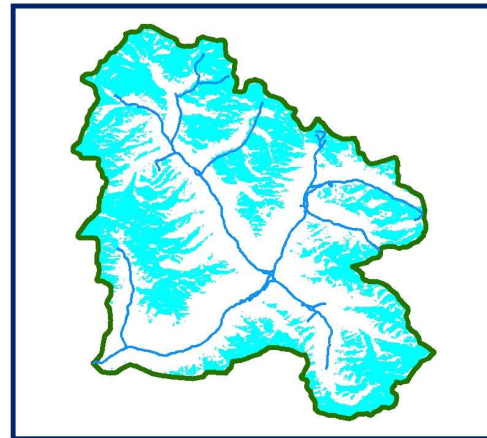
SNOW



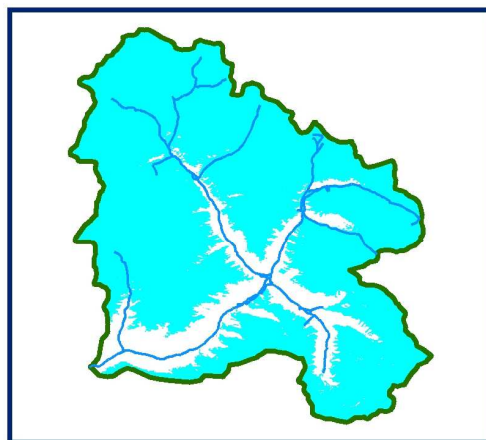
SNOW COVER MAP : BHAGA BASIN



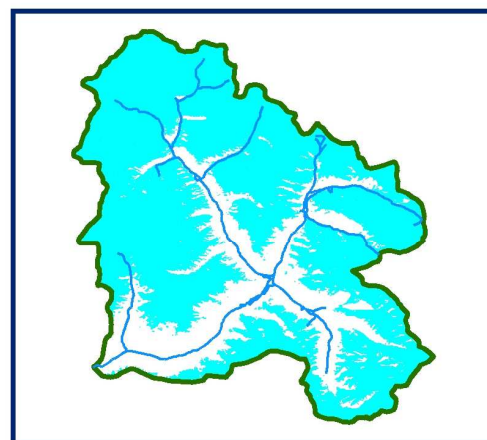
01 NOVEMBER 2011



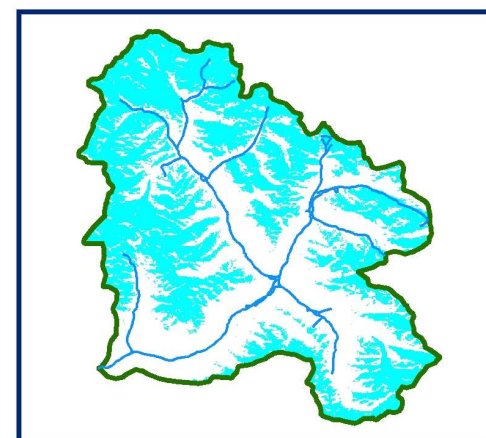
06 NOVEMBER 2010



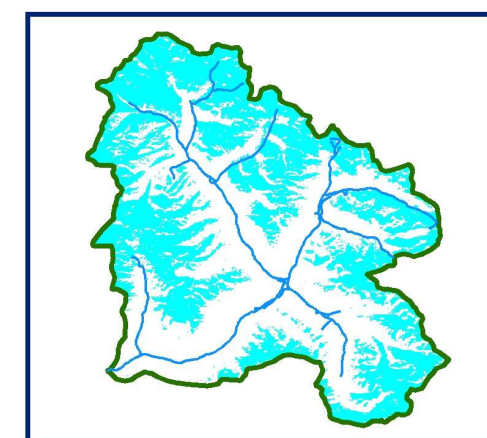
13 NOVEMBER 2011



18 NOVEMBER 2011



29 NOVEMBER 2011



30 NOVEMBER 2011



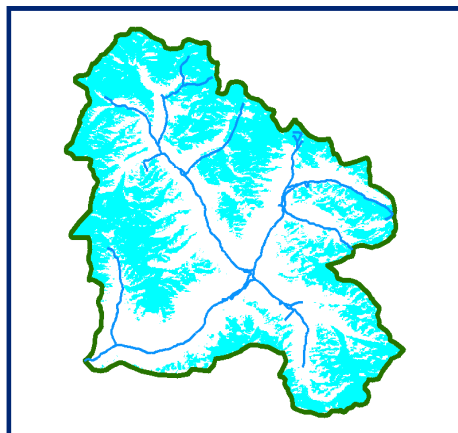
SNOW

0 5 10 20 30 40

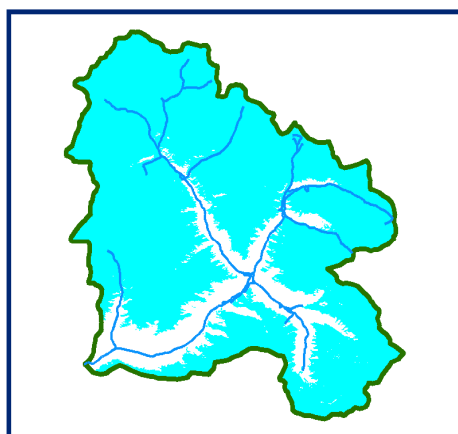


Kilometers

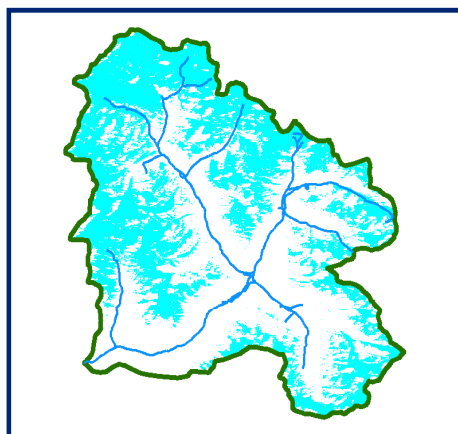
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
01 NOVEMBER 2011
06 NOVEMBER 2011



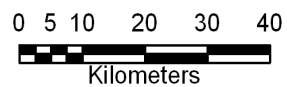
DATA USED
13 NOVEMBER 2011
18 NOVEMBER 2011
20 NOVEMBER 2011



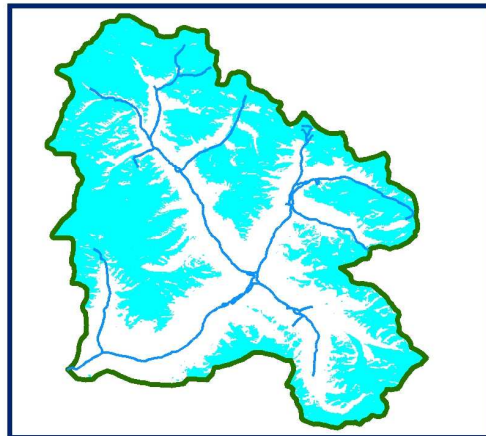
DATA USED
29 NOVEMBER 2011
30 NOVEMBER 2011



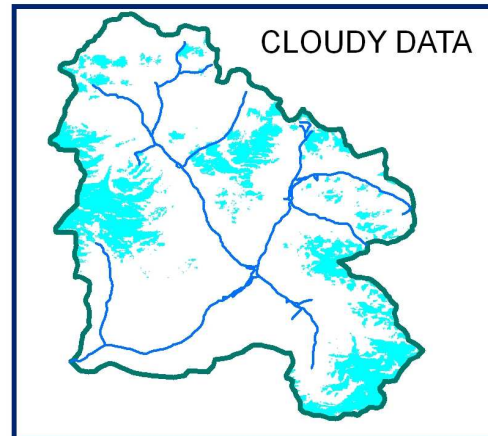
SNOW



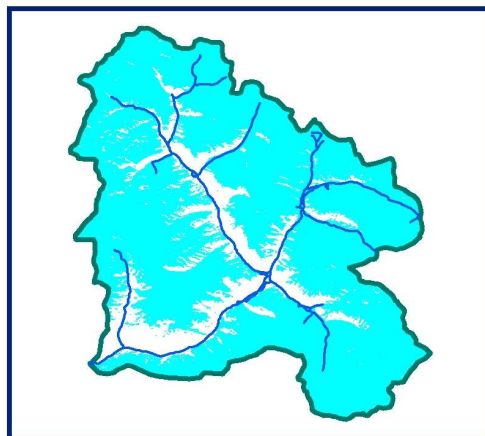
SNOW COVER MAP : BHAGA BASIN



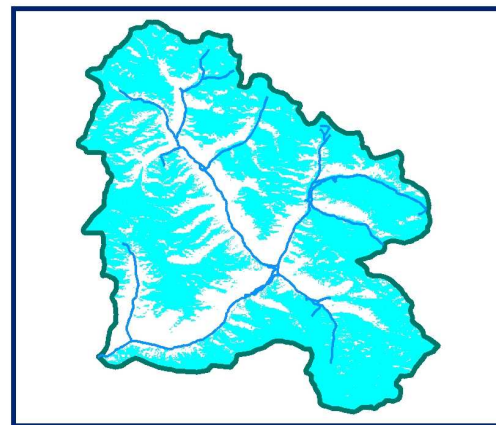
02 DECEMBER 2011



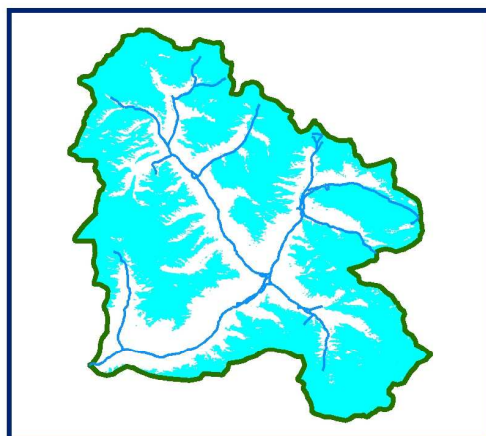
05 DECEMBER 2011



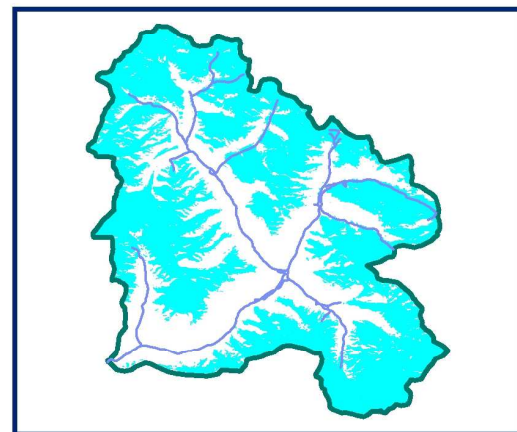
12 DECEMBER 2011



14 DECEMBER 2011



26 DECEMBER 2011



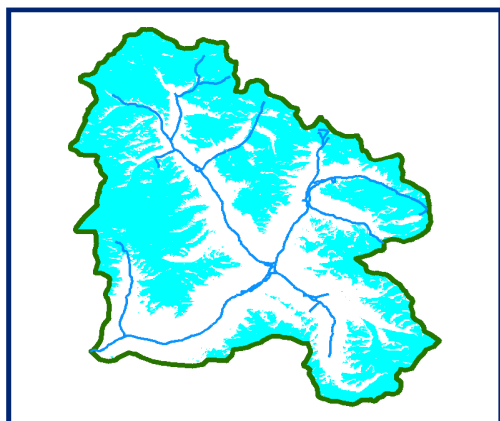
31 DECEMBER 2011



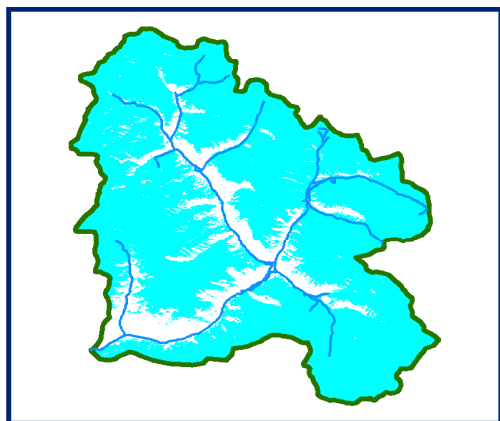
SNOW



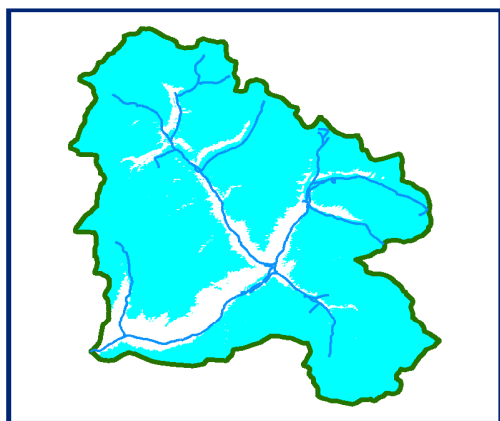
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
02 DECEMBER 2011



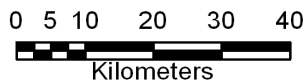
DATA USED
12 DECEMBER 2011
14 DECEMBER 2011
16 DECEMBER 2011



DATA USED
21 DECEMBER 2011
26 DECEMBER 2011
31 DECEMBER 2011



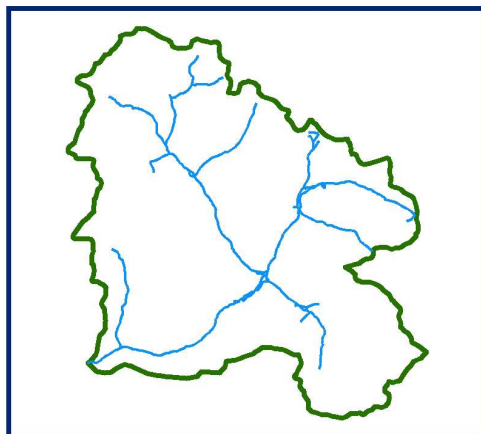
SNOW



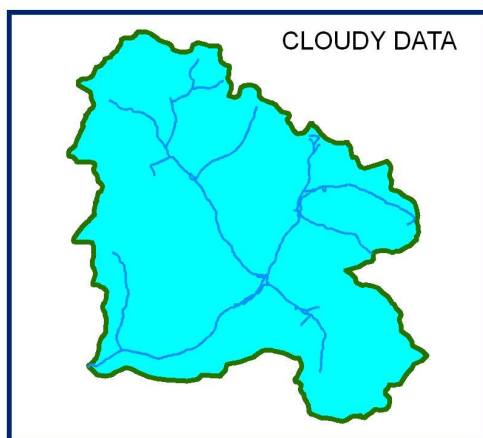
SNOW COVER MAP : BHAGA BASIN



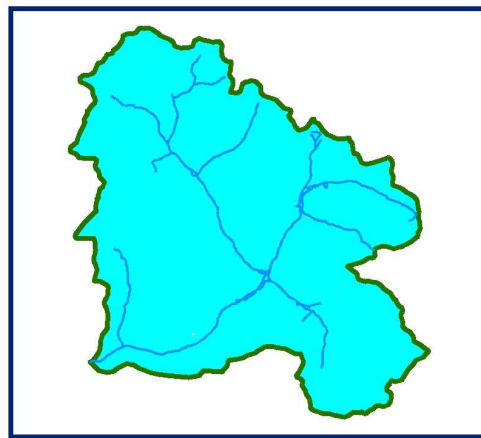
DATA NOT AVAILABLE



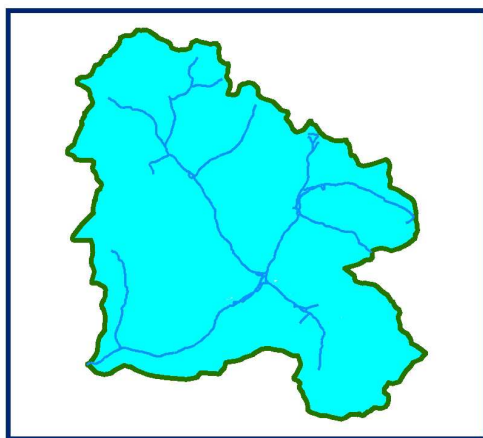
DATA NOT AVAILABLE



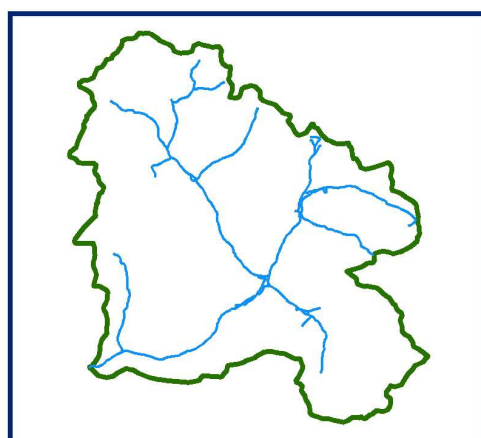
14 JANUARY 2012



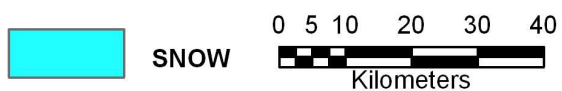
19 JANUARY 2012



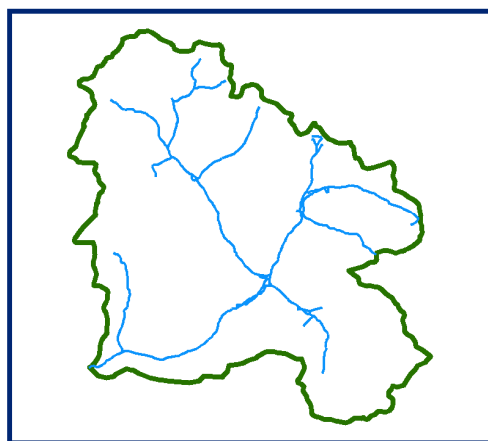
24 JANUARY 2012



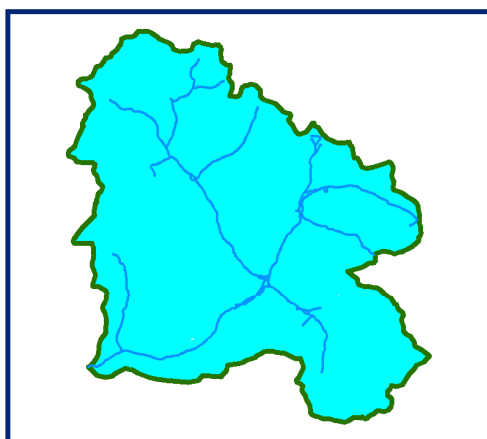
DATA NOT AVAILABLE



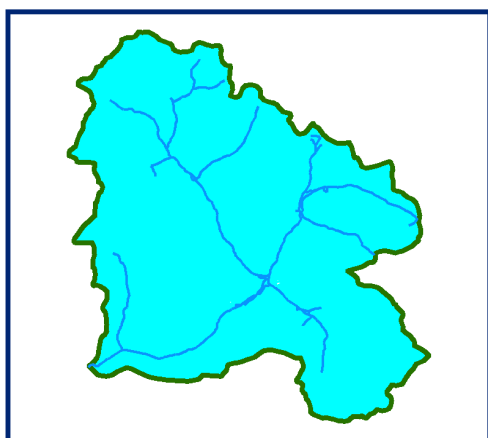
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA NOT AVILABLE



DATA USED
19 JANUARY 2012



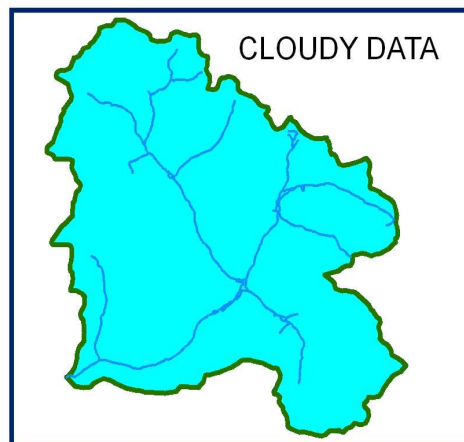
DATA USED
23 JANUARY 2012
24 JANUARY 2012



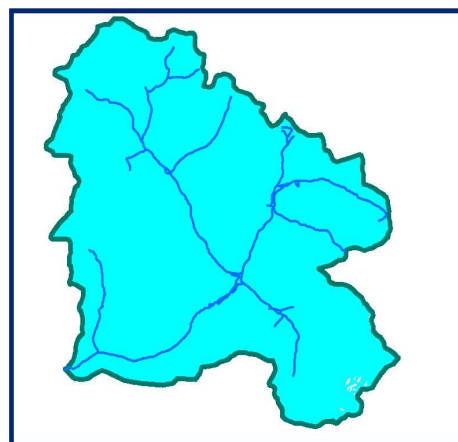
SNOW



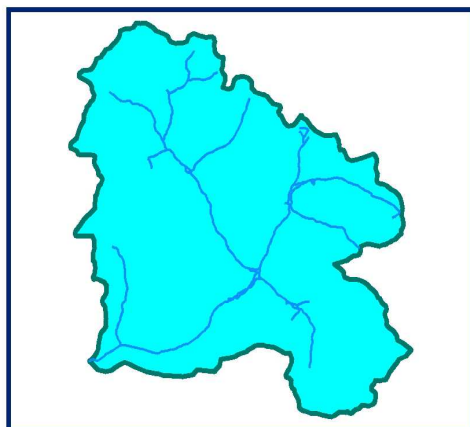
SNOW COVER MAP : BHAGA BASIN



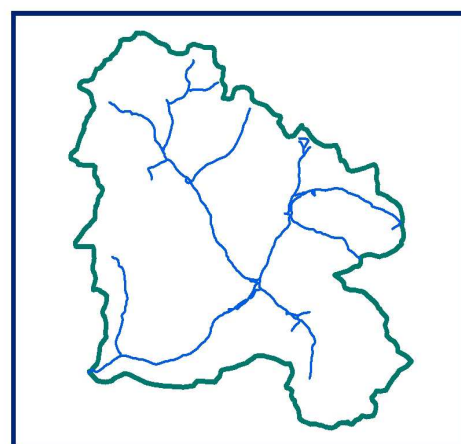
02 FEBRUARY 2012



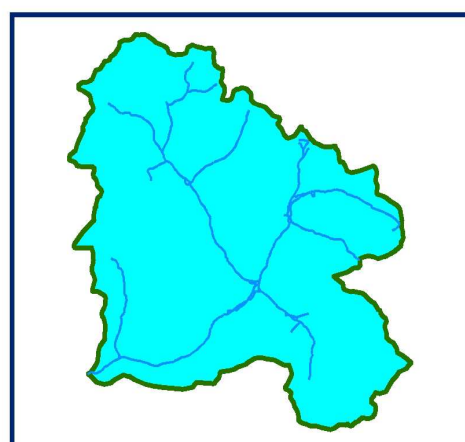
07 FEBRUARY 2012



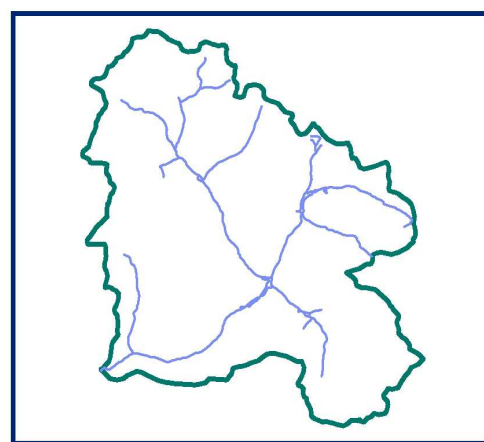
17 FEBRUARY 2012



DATA NOT AVAILABLE



26 FEBRUARY 2012



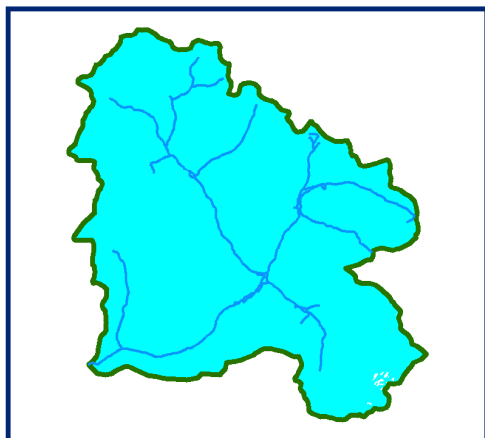
DATA NOT AVAILABLE



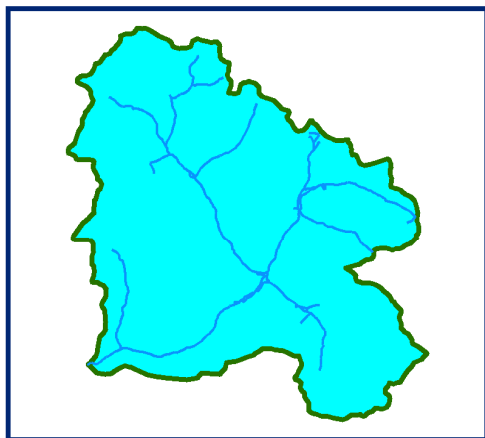
SNOW



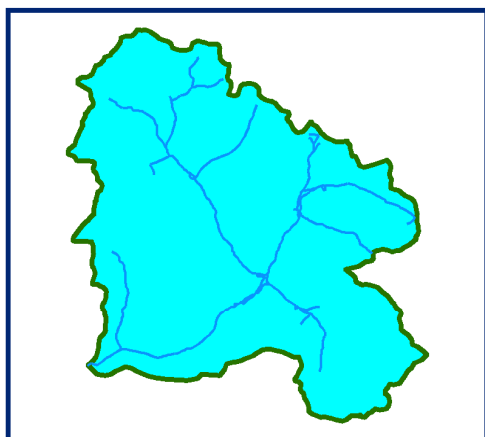
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
07 FEBRUARY 2012



DATA USED
17 FEBRUARY 2012



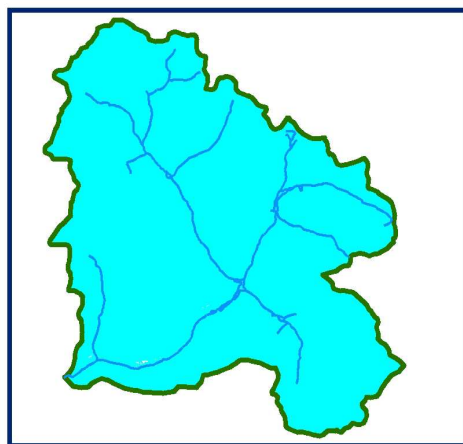
DATA USED
26 FEBRUARY 2012



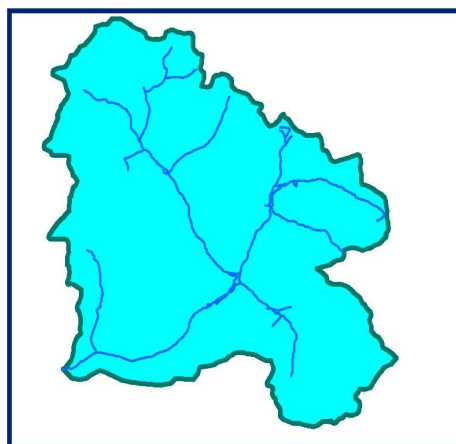
SNOW



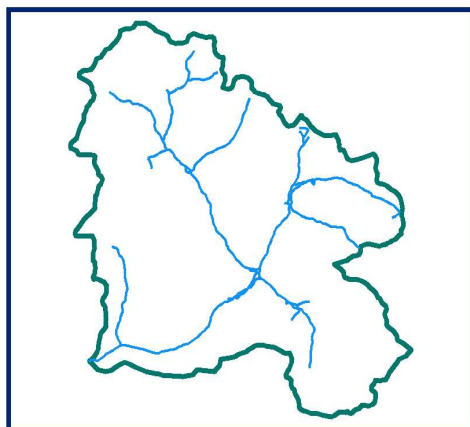
SNOW COVER MAP : BHAGA BASIN



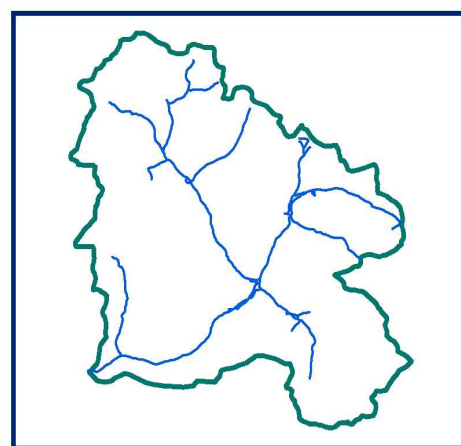
02 MARCH 2012



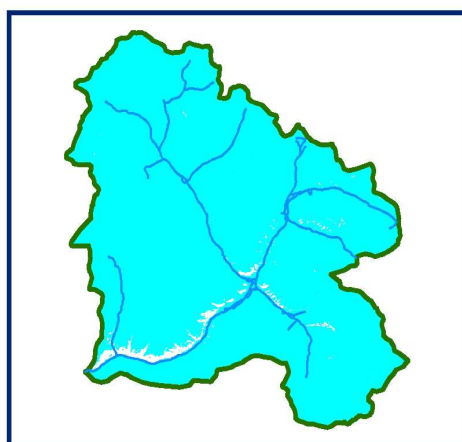
07 MARCH 2012



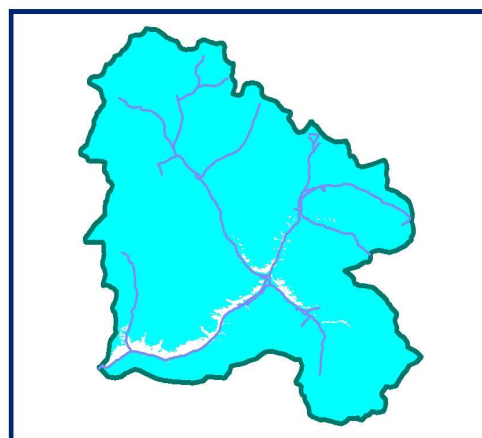
DATA NOT AVAILABLE



DATA NOT AVAILABLE



24 MARCH 2012



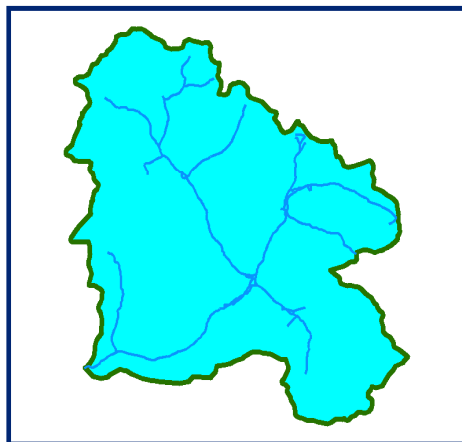
29 MARCH 2012



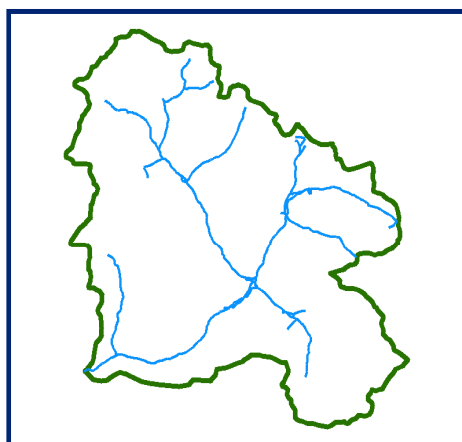
SNOW



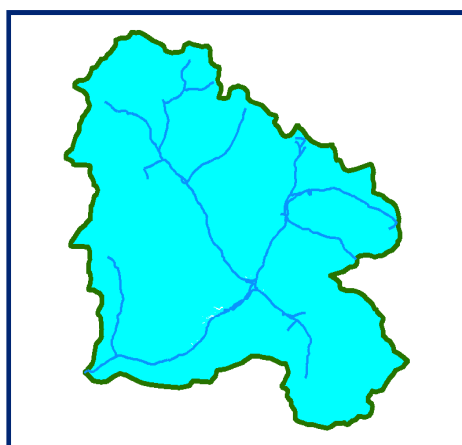
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
02 MARCH 2012
07 MARCH 2012



DATA NOT AVAILABLE



DATA USED
21 MARCH 2012
23 MARCH 2012
29 MARCH 2012



SNOW



SNOW COVER MAP : BHAGA BASIN



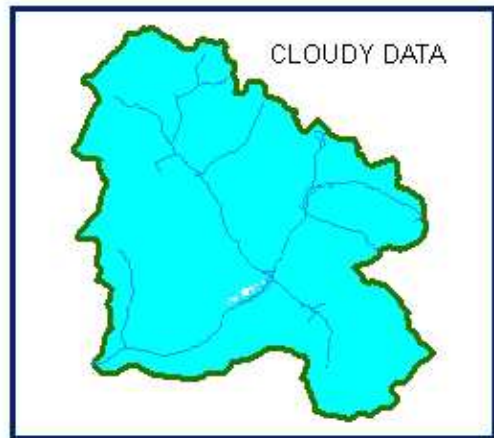
02 APRIL 2012



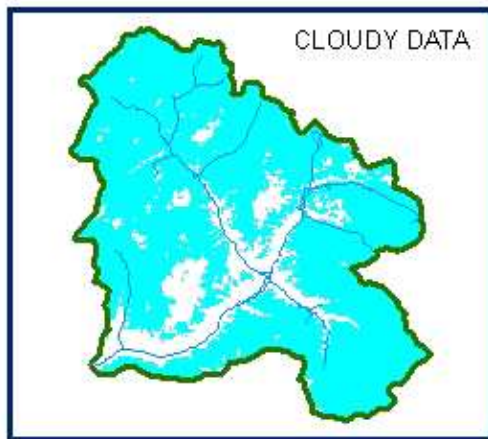
07 APRIL 2012



15 APRIL 2012



19 APRIL 2012



22 APRIL 2012



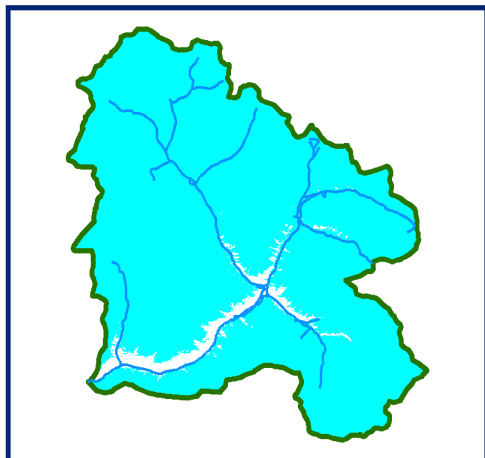
24 APRIL 2012



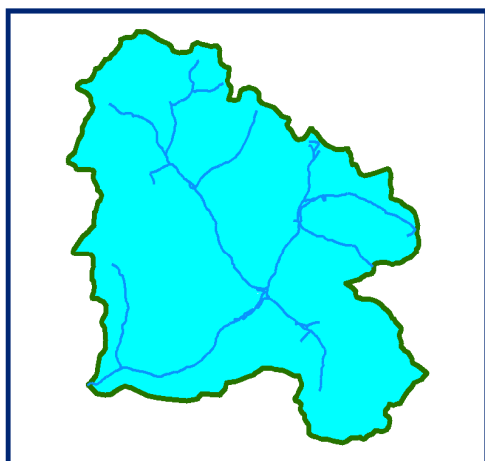
SNOW



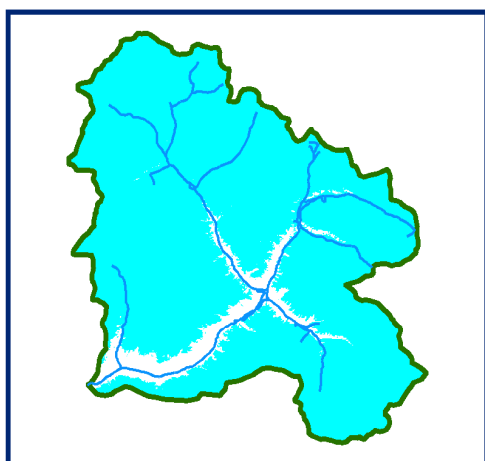
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
02 APRIL 2012
05 APRIL 2012
07 APRIL 2012



DATA USED
12 APRIL 2012
15 APRIL 2012
19 APRIL 2012



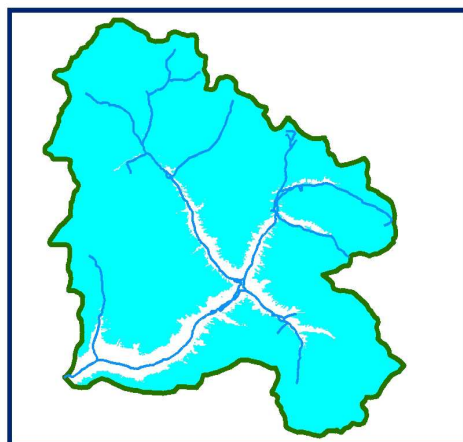
DATA USED
24 APRIL 2012



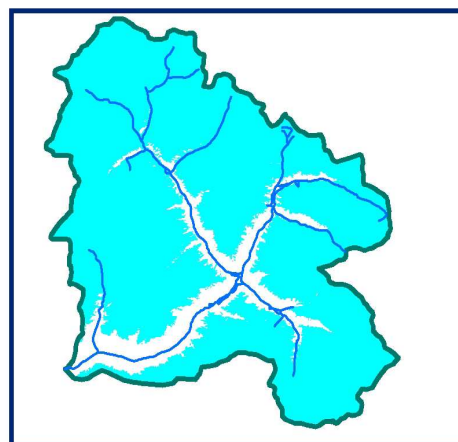
SNOW



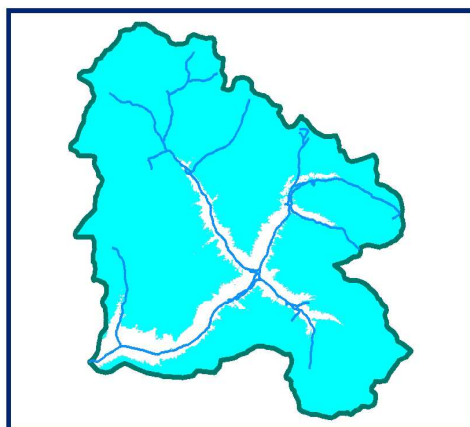
SNOW COVER MAP : BHAGA BASIN



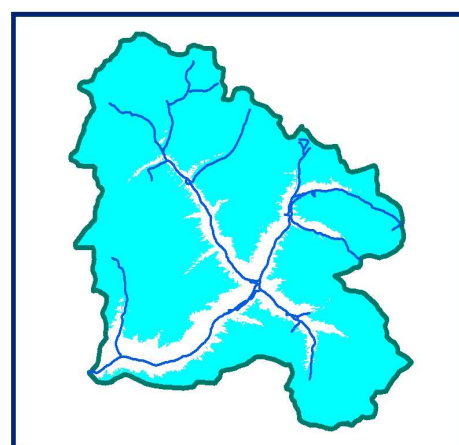
03 MAY 2012



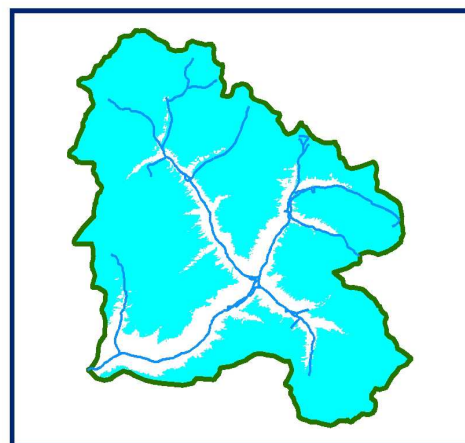
09 MAY 2012



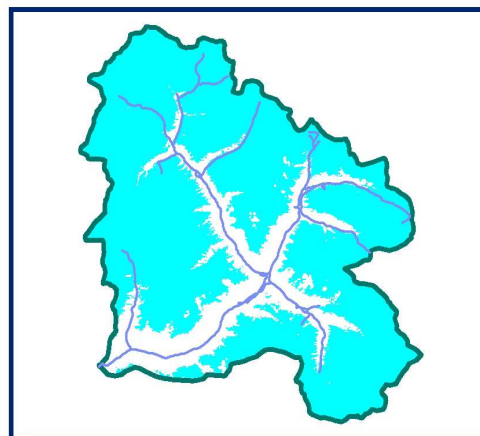
13 MAY 2012



18 MAY 2012



23 MAY 2012



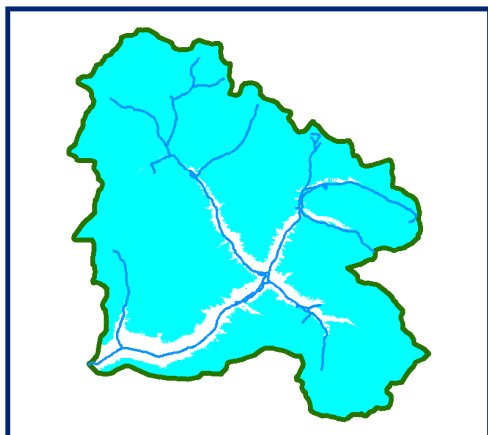
28 MAY 2012



SNOW



10 DAILY SNOW COVER MAP : BHAGA BASIN

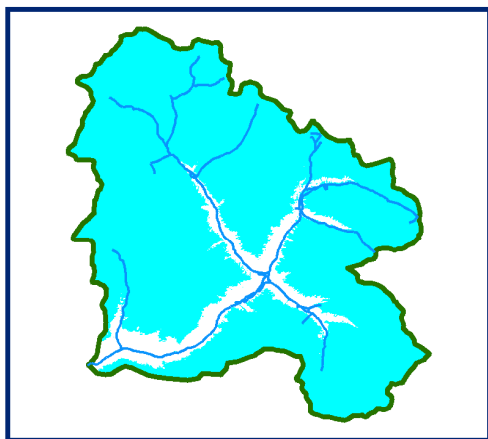


DATA USED

03 MAY 2012

04 MAY 2012

08 MAY 2012

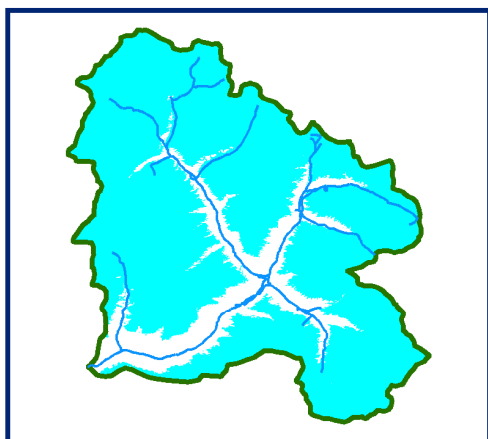


DATA USED

13 MAY 2012

15 MAY 2012

18 MAY 2012



DATA USED

23 MAY 2012

25 MAY 2012

30 MAY 2012



SNOW



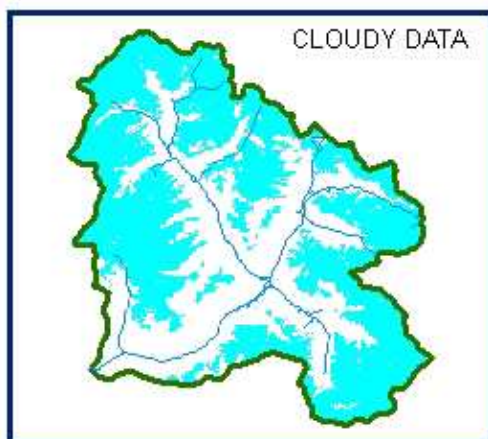
SNOW COVER MAP : BHAGA BASIN



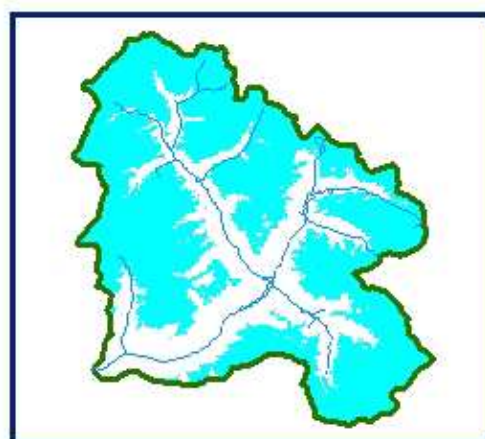
01 JUNE 2012



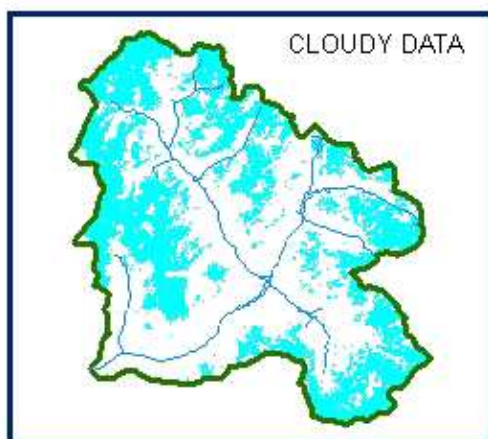
04 JUNE 2012



14 JUNE 2012



16 JUNE 2012



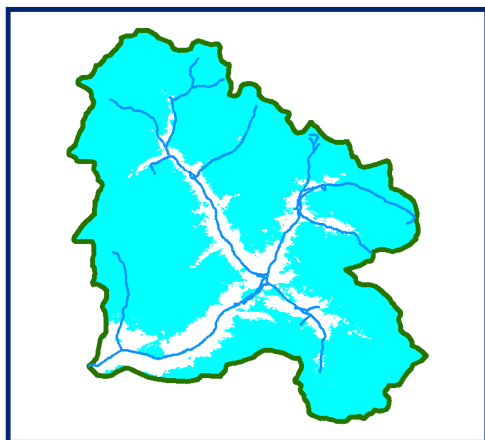
23 JUNE 2012



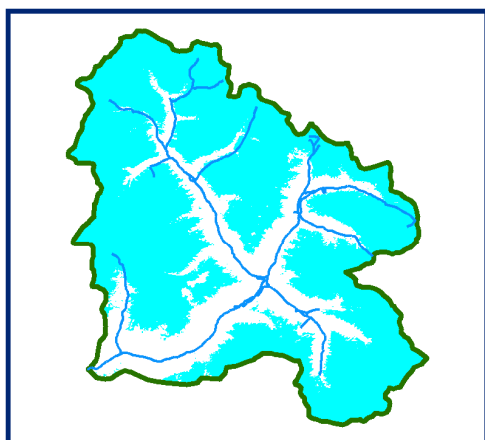
30 JUNE 2012



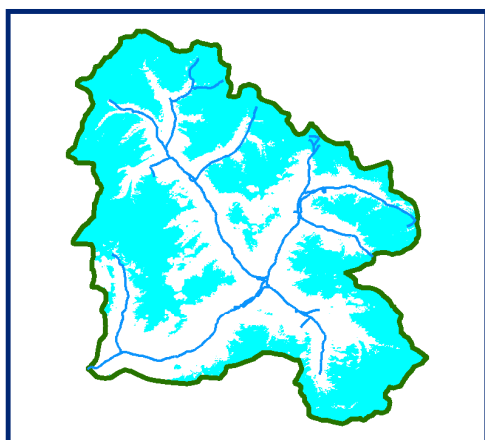
10 DAILY SNOW COVER MAP : BHAGA BASIN



DATA USED
01 JUNE 2012
02 JUNE 2012



DATA USED
14 JUNE 2012
16 JUNE 2012



DATA USED
30 JUNE 2012



SNOW



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 2011							
1	3-Oct-11	756.83	17	4	25-Oct-11	3560.74	80
2	12-Oct-11	1341.47	30	5	27-Oct-11	2673.29	60
3	15-Oct-11	1307.63	29	6	31-Oct-11	1596.68	36
November 2011							
7	1-Nov-11	1706.55	38	11	20-Nov-11	2310.8	51
8	6-Nov-11	1653.05	37	12	29-Nov-11	1859.07	42
9	13-Nov-11	3170.51	71	13	30-Nov-11	1655.68	37
10	18-Nov-11	2687.23	60				
December 2011							
14	2-Dec-11	2054.5	46	19	21-Dec-11	3036.97	68
15	12-Dec-11	2054.29	46	20	26-Dec-11	2163.74	49
16	14-Dec-11	2070.54	47	21	30-Dec-11	2054.87	46
17	16-Dec-11	2090.7	47	22	31-Dec-11	1906.04	43
18	18-Dec-11	1583.07	36				
January 2012							
23	14-Jan-12	4446.61	100	26	28-Jan-12	4445.52	100
24	23-Jan-12	4445.11	100	27	29-Jan-12	4434.99	100
25	24-Jan-12	4443.09	100				
February 2012							
28	2-Feb-12	4418.95	99	30	17-Feb-12	4445.92	100
29	7-Feb-12	4435.96	100	31	26-Feb-12	4438.84	100
March 2012							
32	2-Mar-12	4395.56	99	37	23-Mar-12	3344.46	75
33	7-Mar-12	4440.41	100	38	24-Mar-12	3344.23	75
34	11-Mar-12	4400.54	99	39	29-Mar-12	3999.38	90
35	12-Mar-12	4422.78	99	40	31-Mar-12	4033.53	90
36	21-Mar-12	4221.7	95				
April 2012							
41	2-Apr-12	3738.44	84	46	19-Apr-12	4237.88	95
42	4-Apr-12	3911.1	88	47	22-Apr-12	3137.33	71
43	5-Apr-12	3824.43	86	48	24-Apr-12	3638.43	82
44	7-Apr-12	3077.03	69	49	28-Apr-12	4169.8	94
45	12-Apr-12	4116.52	92				

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
May 2012							
50	1-May-12	4000.09	90	58	18-May-12	3609.83	81
51	3-May-12	3563.41	80	59	20-May-12	2857	64
52	4-May-12	3453.27	78	60	22-May-12	3444.18	77
53	6-May-12	2236.33	50	61	23-May-12	3162.82	71
54	8-May-12	3749.05	84	62	25-May-12	2910.98	65
55	13-May-12	4051.55	91	63	28-May-12	2934.1	66
56	15-May-12	3182.44	71	64	30-May-12	2739.27	62
57	16-May-12	3026.4	68				
June-2012							
65	1-June-12	3514.14	79	68	16-June-12	2326.06	52
66	3-June-12	2201.39	49	69	27-June-12	1190.19	26
67	4-June-12	2324.37	52	70	30-June-12	1834.26	41

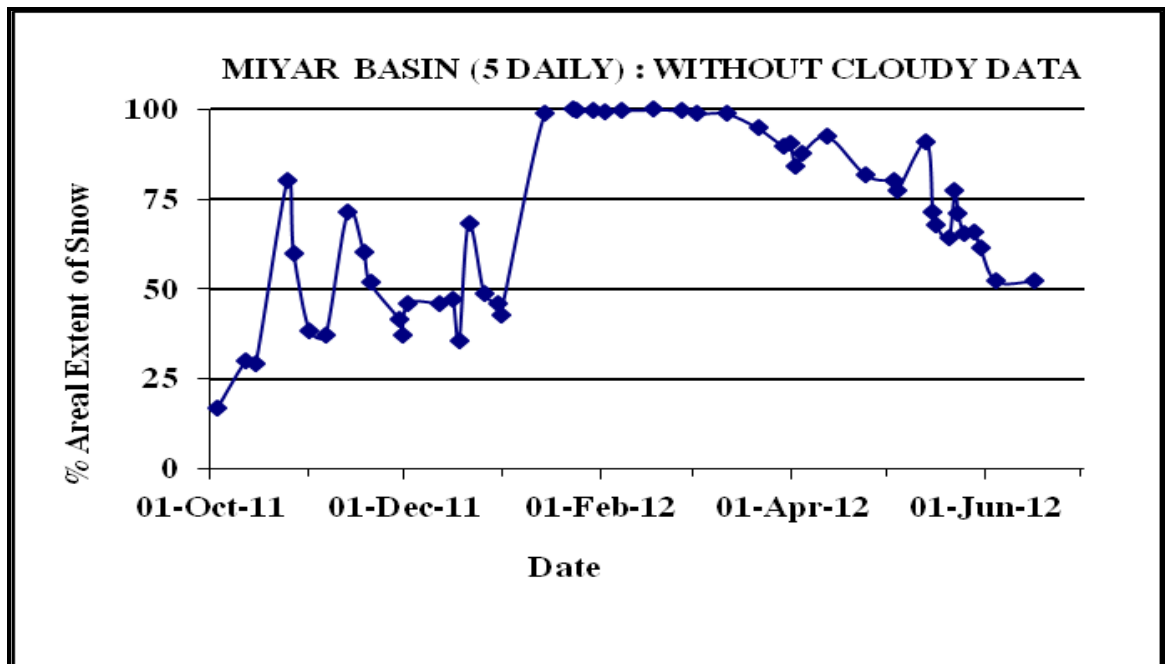
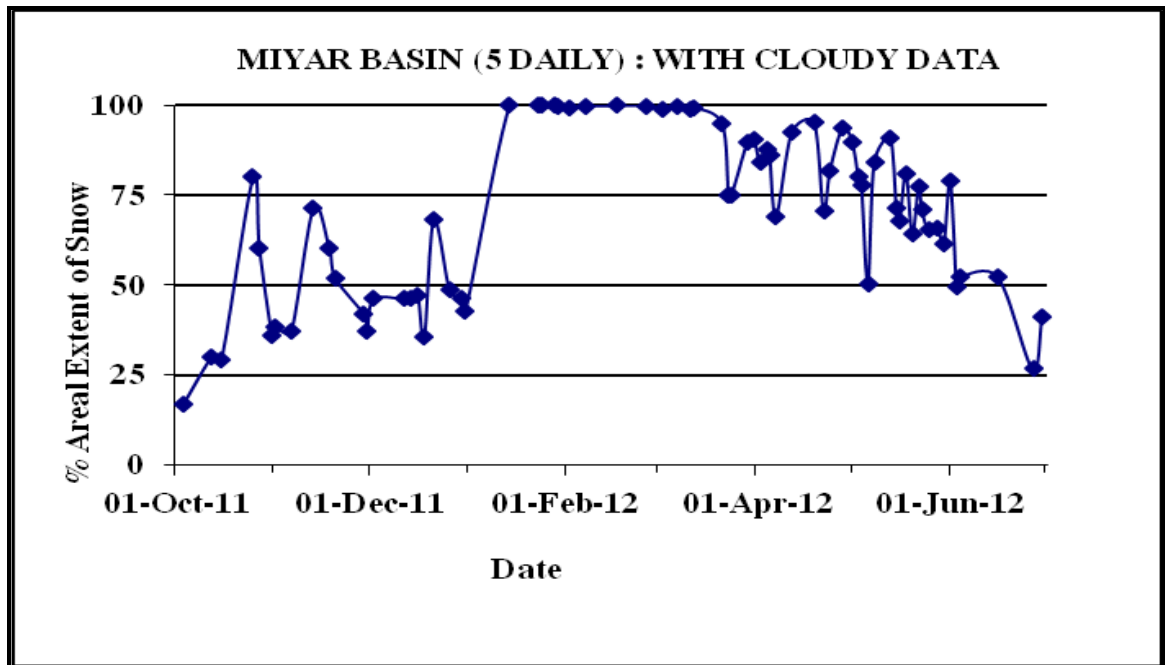
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: MIYAR

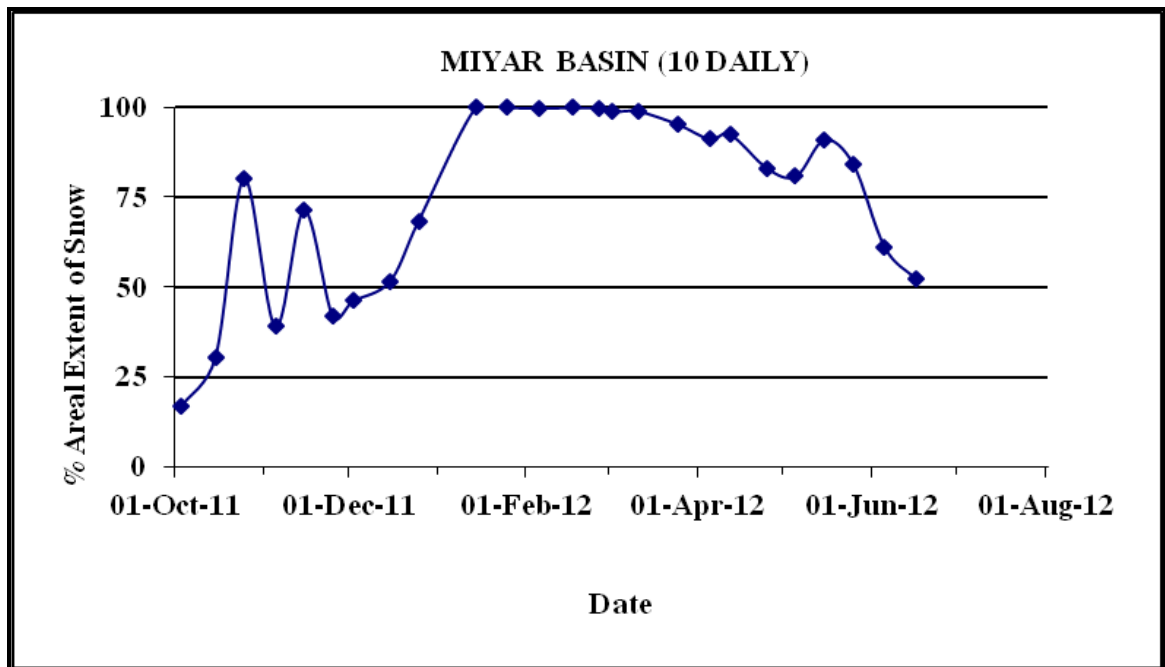
BASIN AREA: 4449 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	3-Oct-11	756.83	17	3	25-Oct-11	3567.92	80
2	15-Oct-11	1358.89	31				
November 2011							
4	5-Nov-11	1737.04	39	6	25-Nov-11	1334.16	30
5	15-Nov-11	3179.07	71				
December 2011							
7	2-Dec-11	2054.5	46	9	25-Dec-11	3044.52	69
8	15-Dec-11	2298.46	52				
January 2012							
10	14-Jan-12	4446.61	100				
11	25-Jan-12	4446.08	100				
February-2012							
12	5-Feb-12	4439.12	100	14	26-Feb-12	4438.84	100
13	17-Feb-12	4445.92	100				
March 2012							
15	2-Mar-12	4395.56	99	17	25-Mar-12	4235.31	95
16	11-Mar-12	4400.54	99				
April-2012							
18	5-Apr-12	4054.78	91	19	25-Apr-12	3694.19	83
May-2012							
20	5-May-12	3600.05	81	21	15-May-12	4052.62	91
22	25-May-12	3750.59	84				
June-2012							
23	5-June-12	2723.52	61	25	30-June-12	1834.26	41
24	16-June-12	2326.06	52				

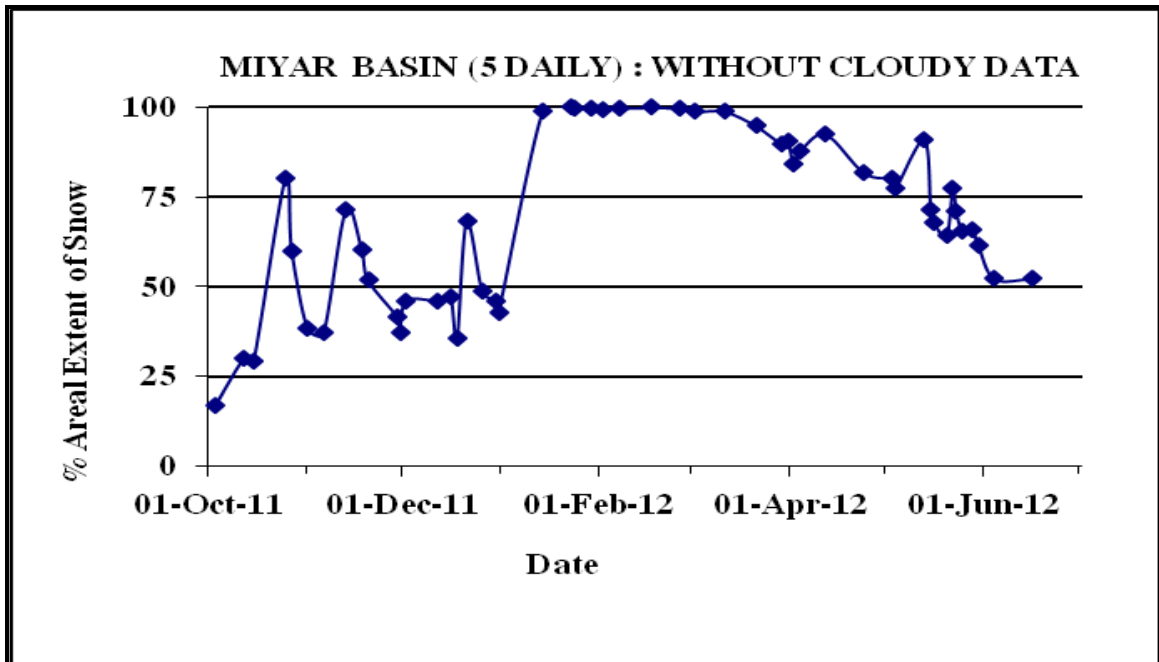
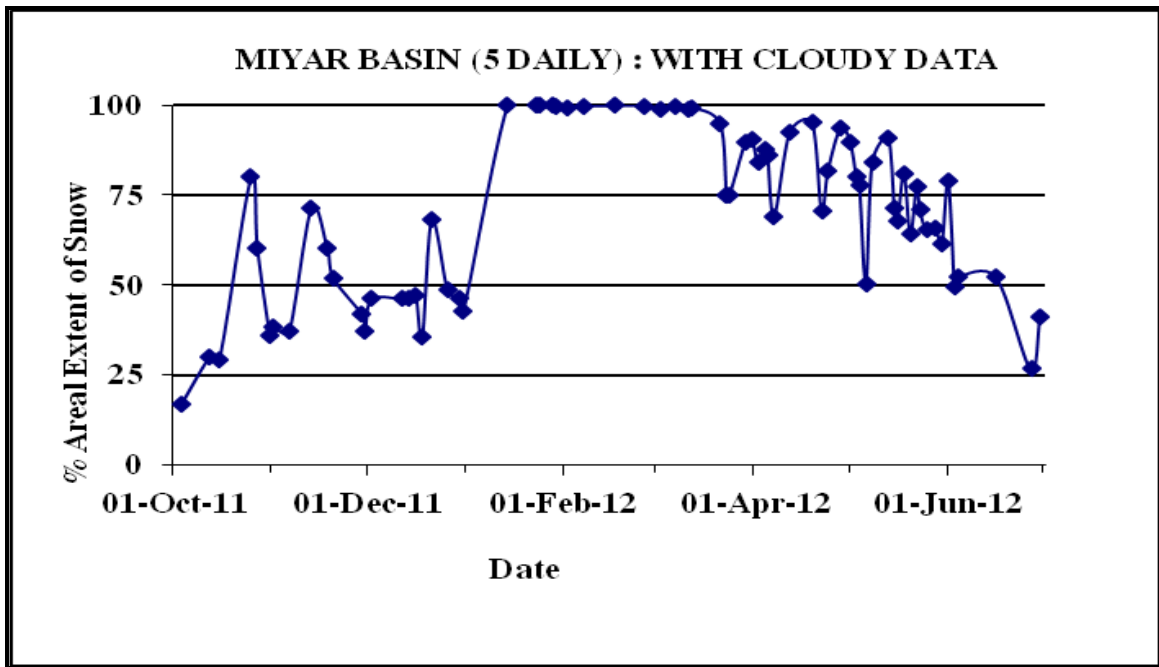
SNOW COVER DEPLETION CURVE



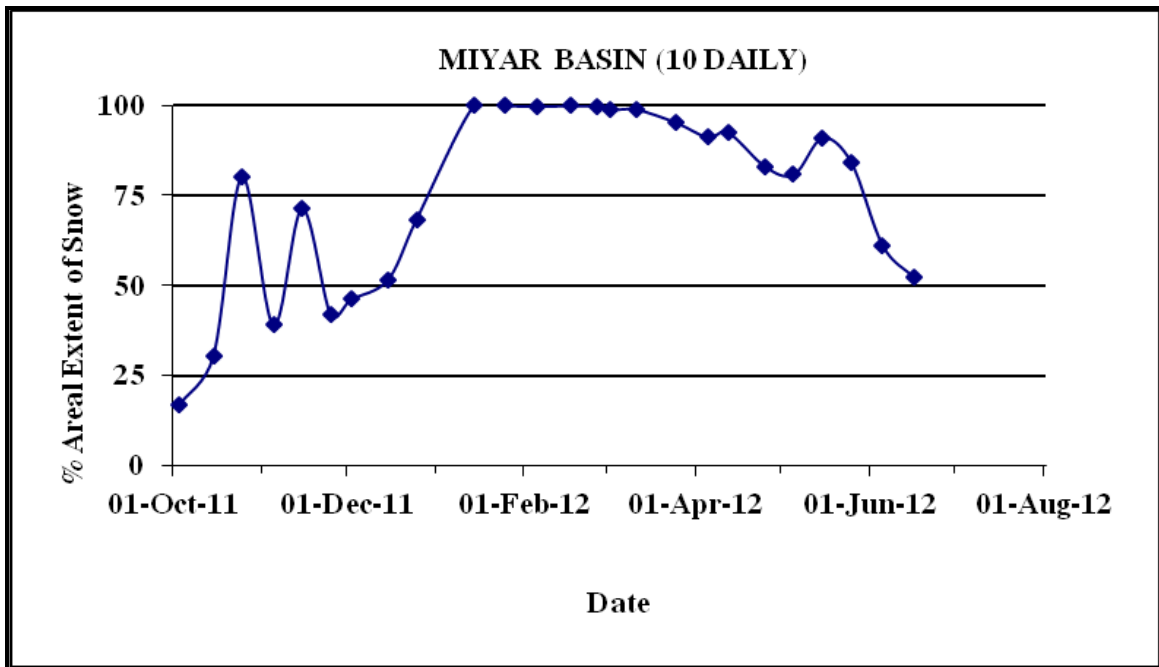
SNOW COVER DEPLETION CURVE



SNOW COVER DEPLETION CURVE

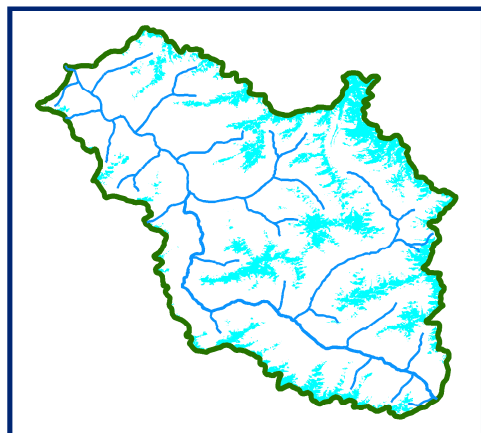


SNOW COVER DEPLETION CURVE

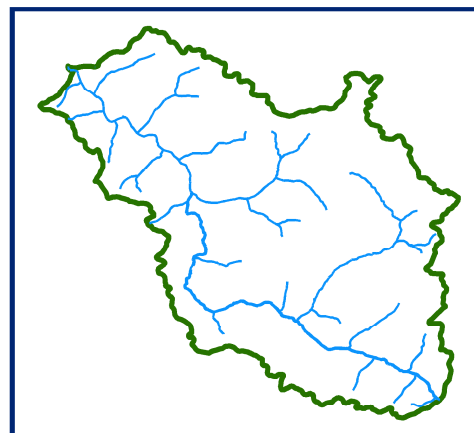


SNOW COVER MAP

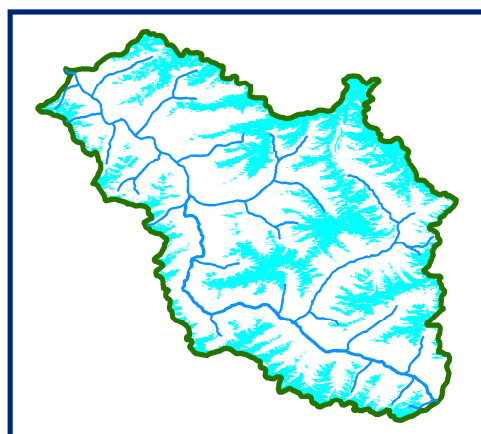
SNOW COVER MAP : MIYAR BASIN



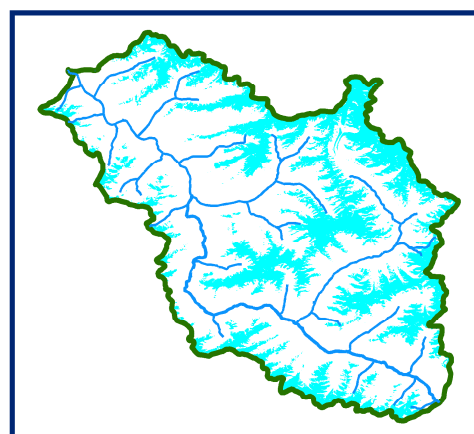
03 OCTOBER 2011



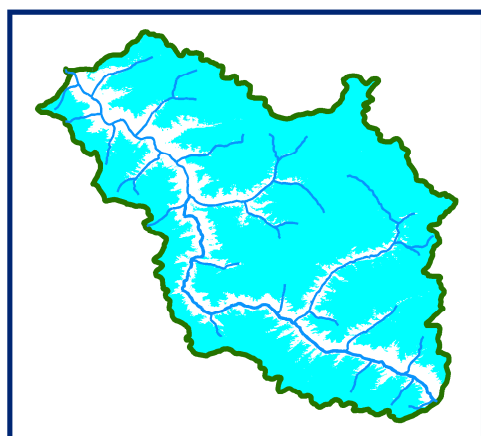
DATA NOT AVAILABLE



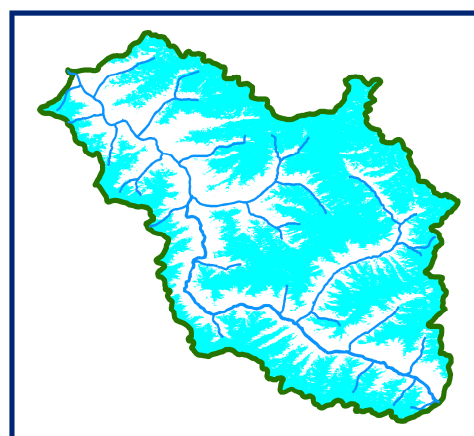
12 OCTOBER 2011



15 OCTOBER 2011



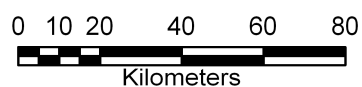
25 OCTOBER 2011



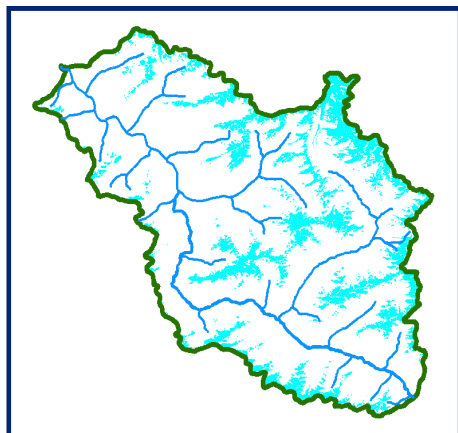
27 OCTOBER 2011



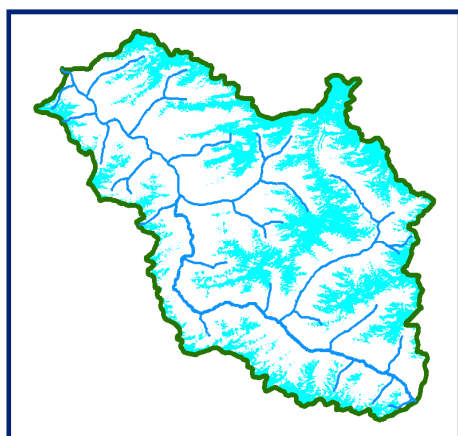
SNOW



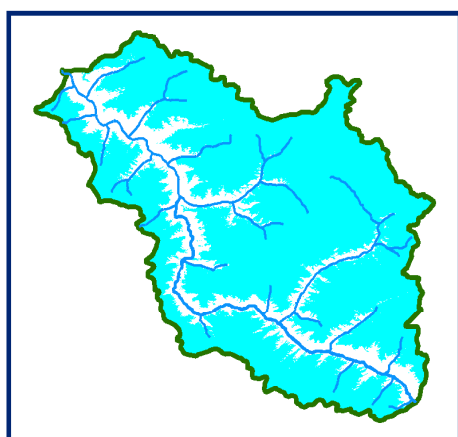
10 DAILY SNOW COVER MAP : MIYAR BASIN



DATA USED
03 OCTOBER 2011




DATA USED
12 OCTOBER 2011
15 OCTOBER 2011



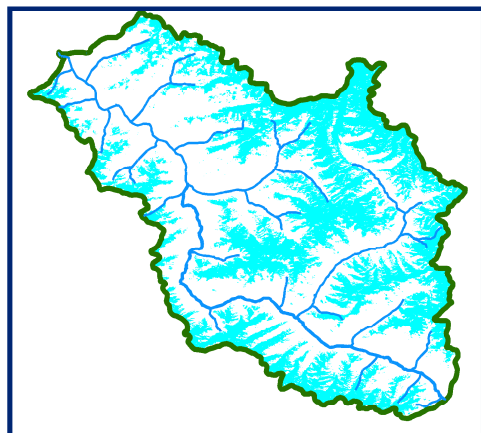
DATA USED
25 OCTOBER 2011
27 OCTOBER 2011



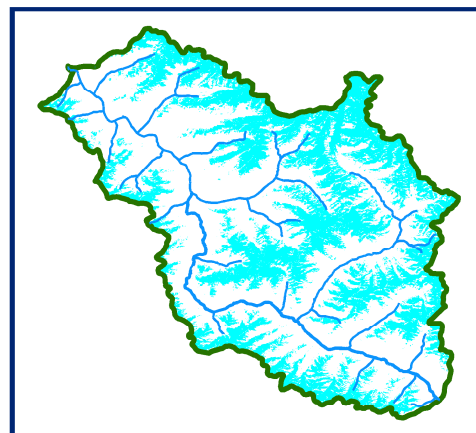
SNOW

0 5 10 20 30 40

Kilometers

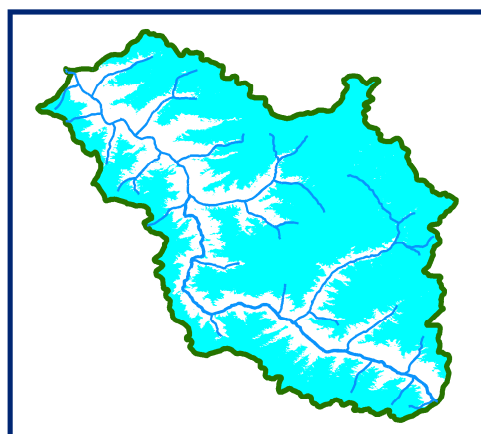
SNOW COVER MAP : MIYAR BASIN



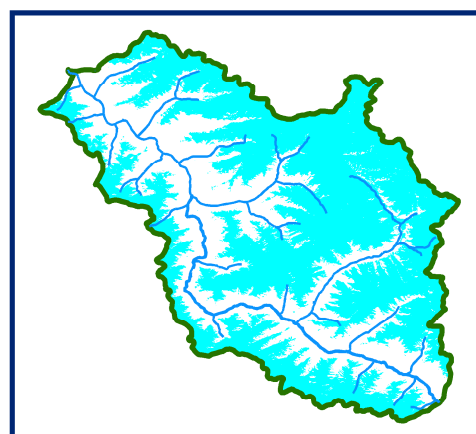
01 NOVEMBER 2011



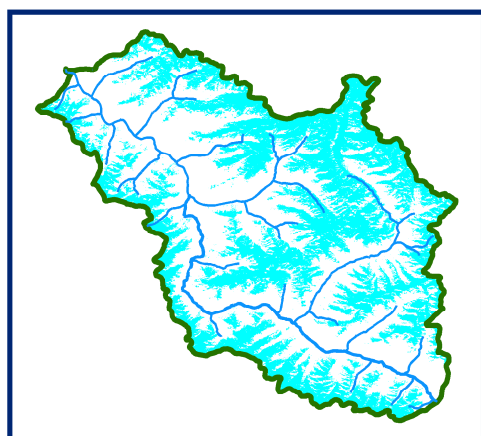
06 NOVEMBER 2011



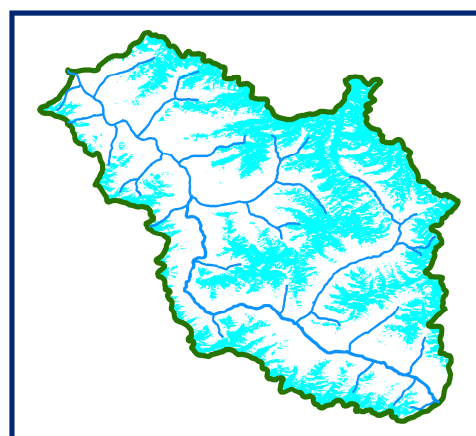
13 NOVEMBER 2011



18 NOVEMBER 2011



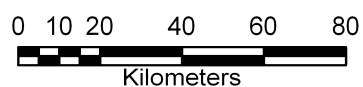
29 NOVEMBER 2011



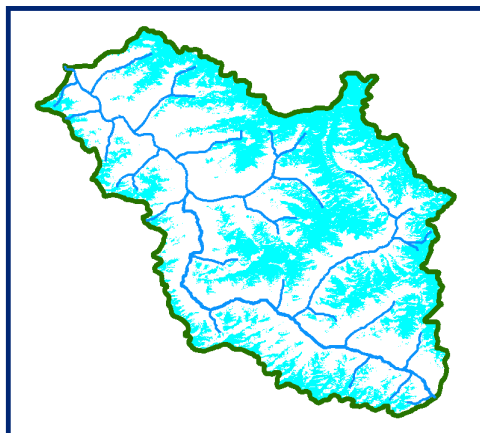
30 NOVEMBER 2011



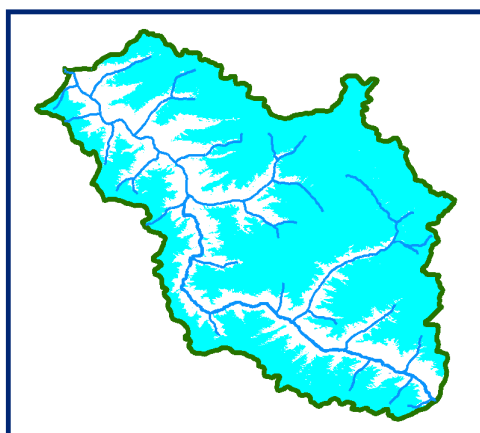
SNOW



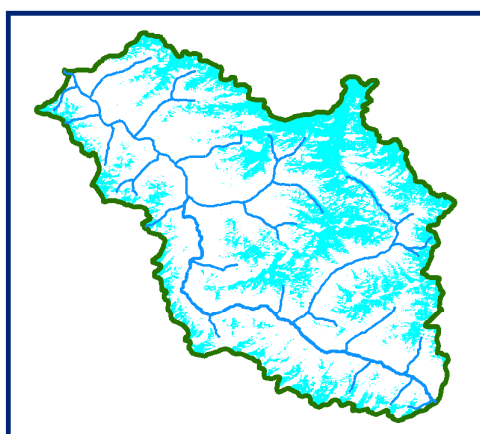
10 DAILY SNOW COVER MAP : MIYAR BASIN



DATA USED
01 NOVEMBER 2011
06 NOVEMBER 2011




DATA USED
13 NOVEMBER 2011
18 NOVEMBER 2011
20 NOVEMBER 2011



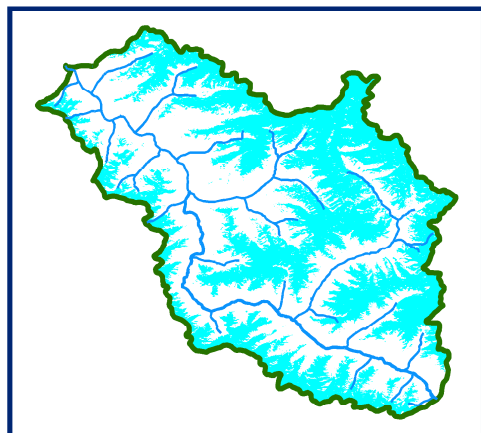
DATA USED
29 NOVEMBER 2011
30 NOVEMBER 2011



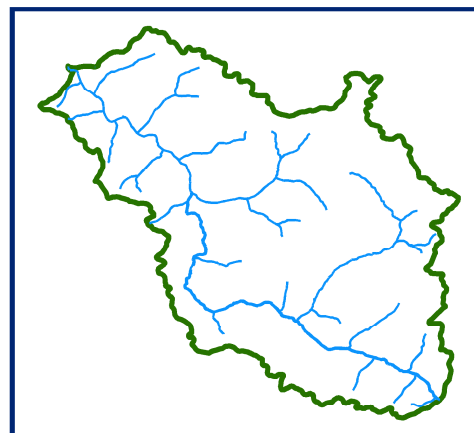
SNOW

0 5 10 20 30 40

Kilometers

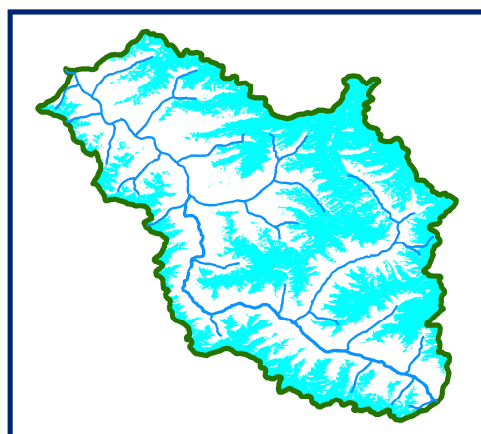
SNOW COVER MAP : MIYAR BASIN



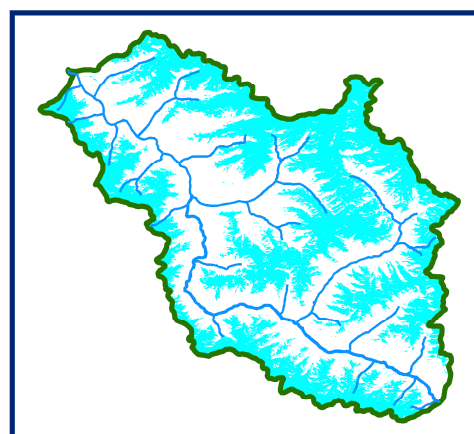
02 DECEMBER 2011



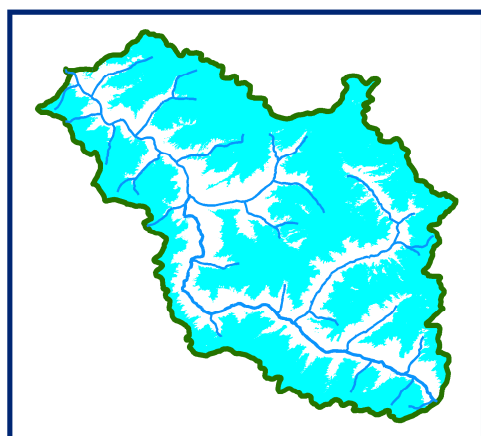
DATA NOT AVAILABLE



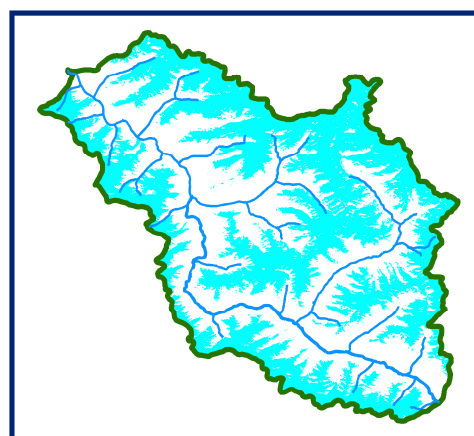
12 DECEMBER 2011



16 DECEMBER 2011



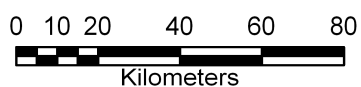
21 DECEMBER 2011



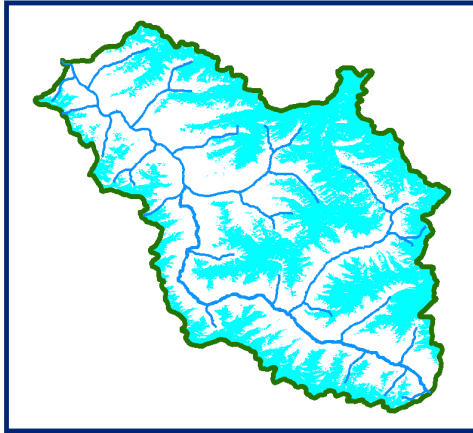
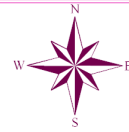
26 DECEMBER 2011



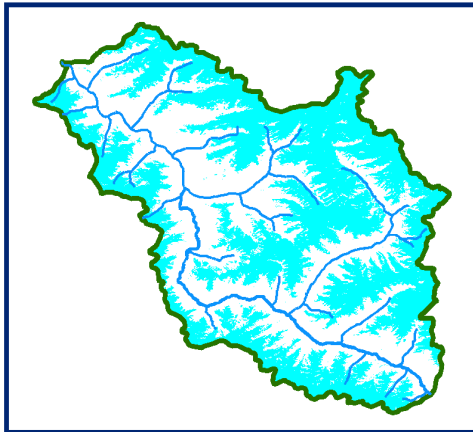
SNOW



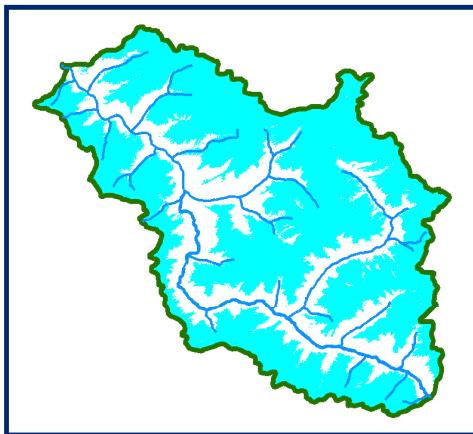
10 DAILY SNOW COVER MAP : MIYAR BASIN



DATA USED
02 DECEMBER 2011




DATA USED
12 DECEMBER 2011
16 DECEMBER 2011
18 DECEMBER 2011



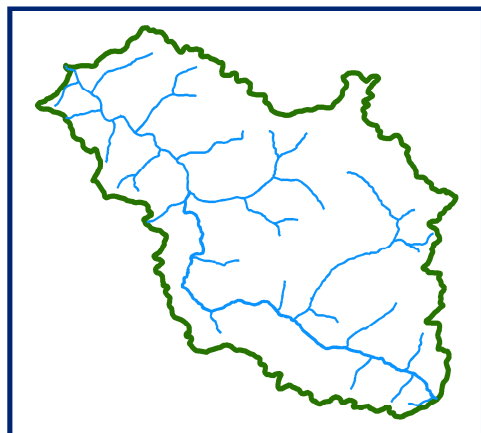
DATA USED
21 DECEMBER 2011
26 DECEMBER 2011
31 DECEMBER 2011



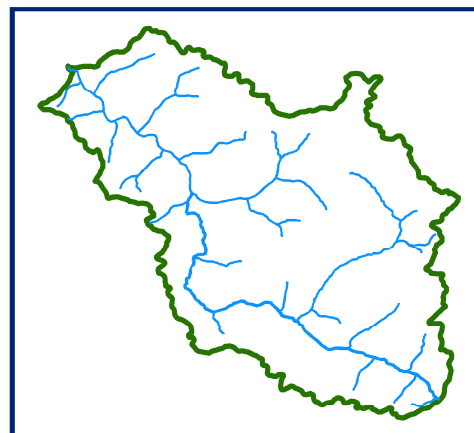
SNOW

0 5 10 20 30 40

Kilometers

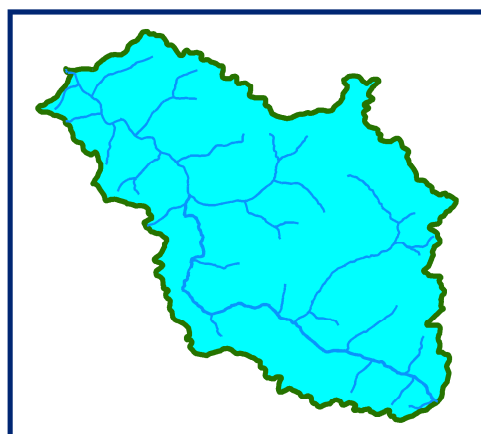
SNOW COVER MAP : MIYAR BASIN



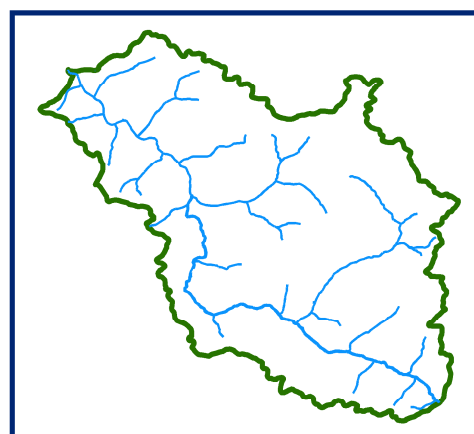
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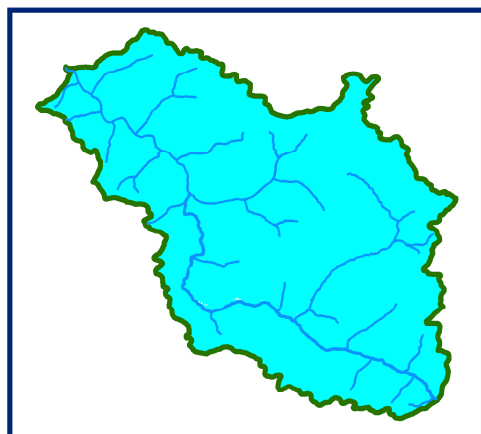
DATA NOT AVAILABLE



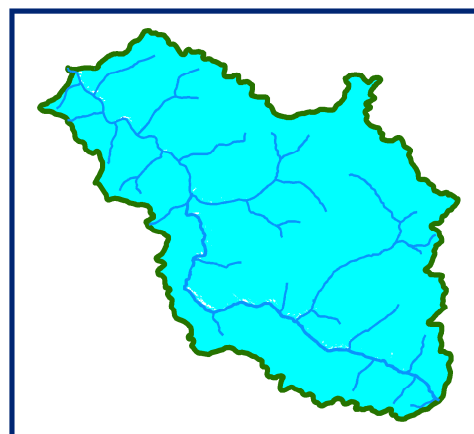
14 JANUARY 2012



DATA NOT AVAILABLE



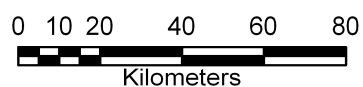
23 JANUARY 2012



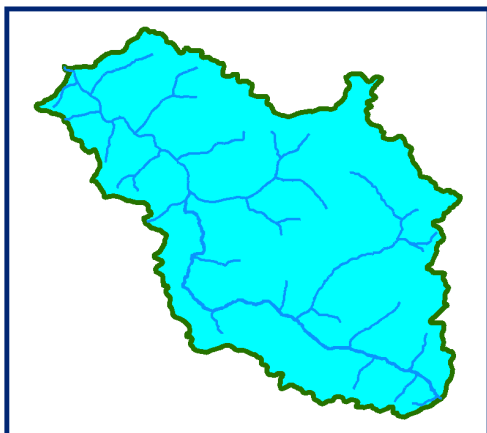
29 JANUARY 2012



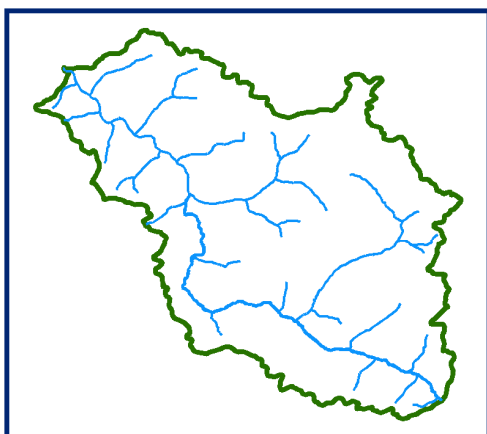
SNOW



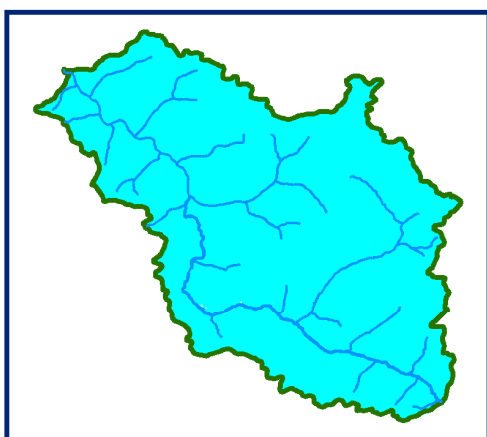
10 DAILY SNOW COVER MAP : MIYAR BASIN



DATA USED
14 JANUARY 2012




DATA NOT AVAILABLE



DATA USED
23 JANUARY 2012
24 JANUARY 2012
29 JANUARY 2012

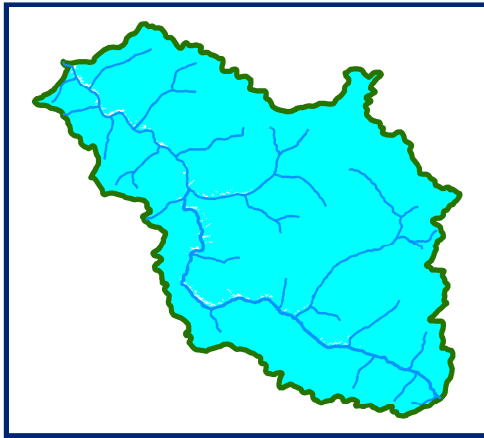


SNOW

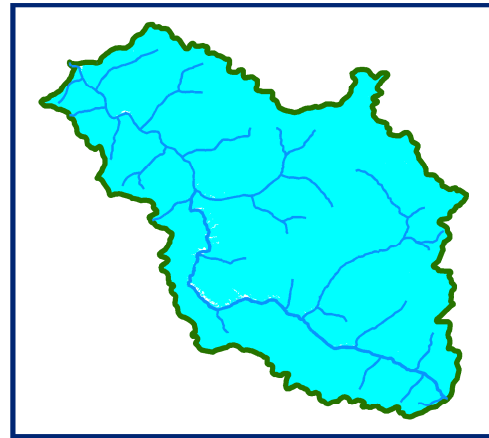
0 5 10 20 30 40

Kilometers

SNOW COVER MAP

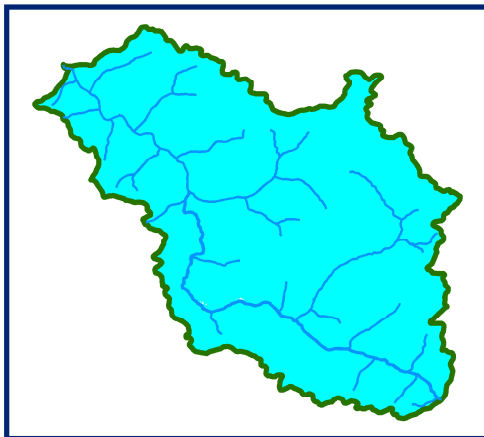
: MIYAR BASIN



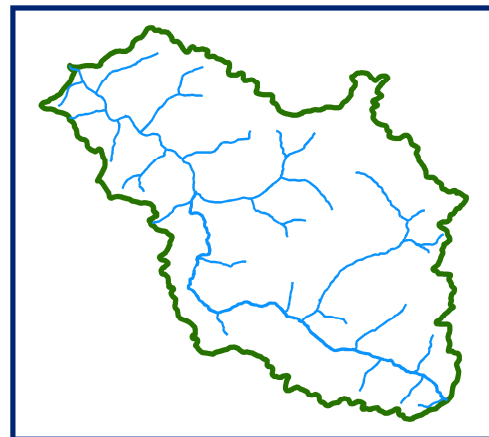
02 FEBRUARY 2012



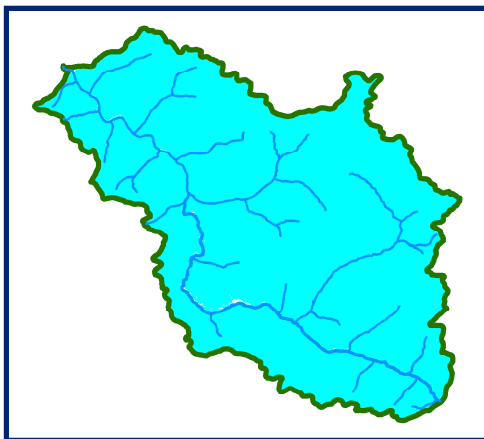
07 FEBRUARY 2012



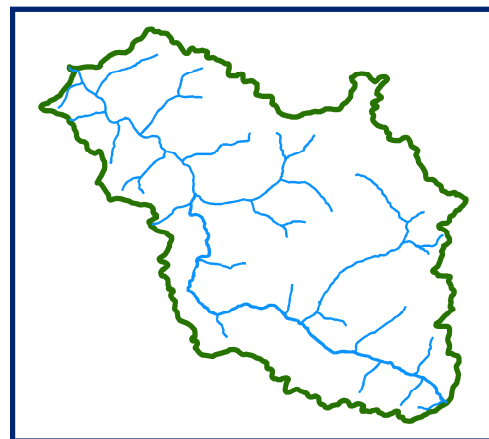
17 FEBRUARY 2012



DATA NOT AVAILABLE



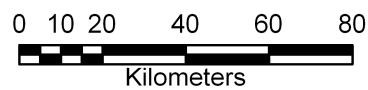
26 FEBRUARY 2011



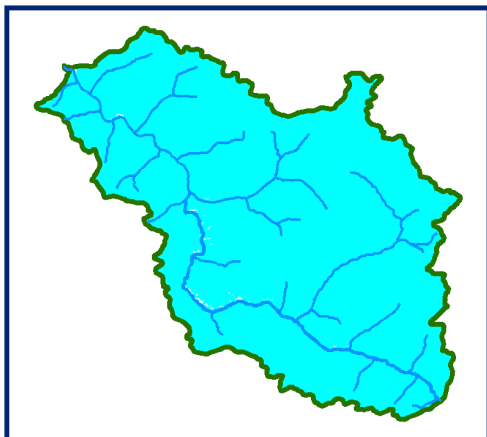
DATA NOT AVAILABLE



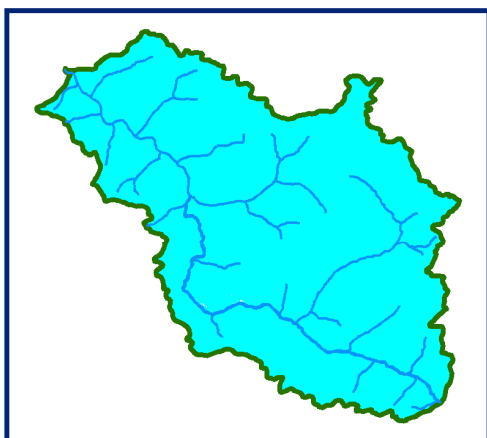
SNOW



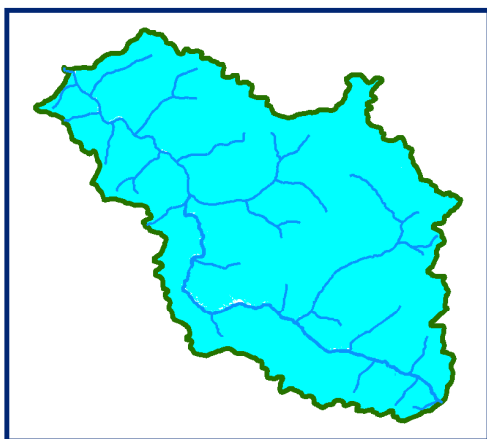
10 DAILY SNOW COVER MAP : MIYAR BASIN



DATA USED
02 FEBRUARY 2012
07 FEBRUARY 2012



DATA USED
17 FEBRUARY 2012



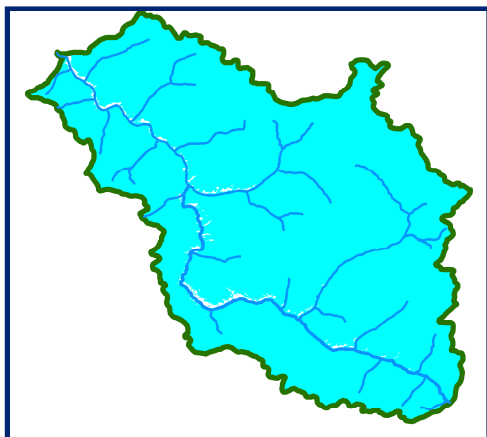
DATA USED
26 FEBRUARY 2012



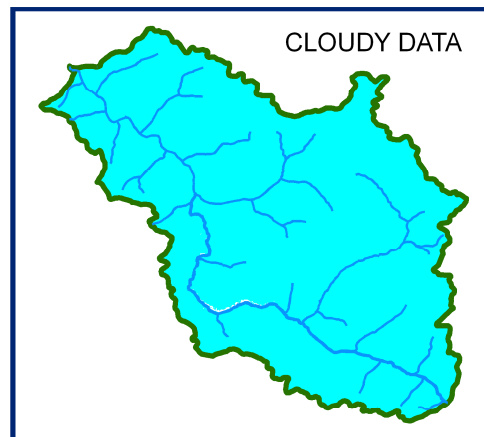
SNOW

0 5 10 20 30 40
Kilometers

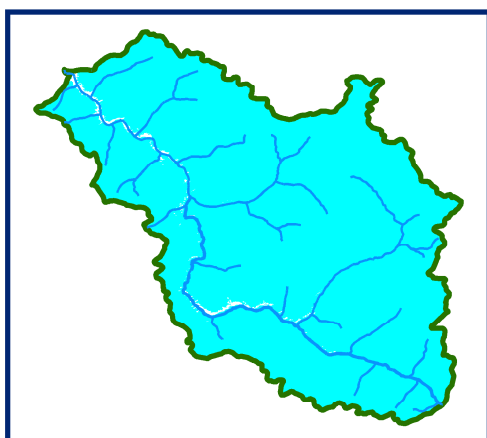
SNOW COVER MAP : MIYAR BASIN



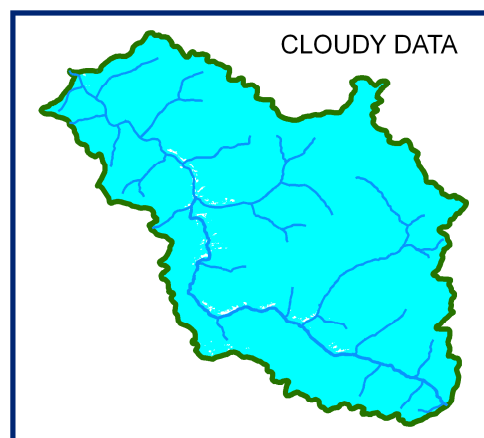
02 MARCH 2012



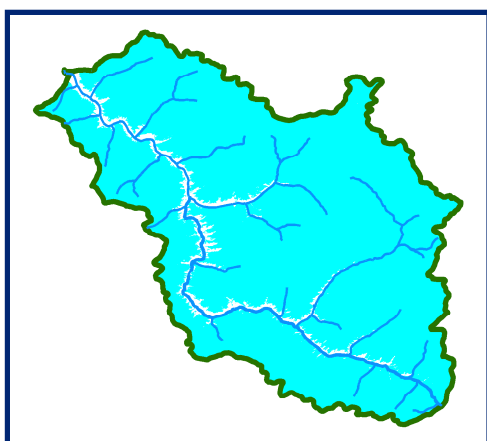
07 MARCH 2012



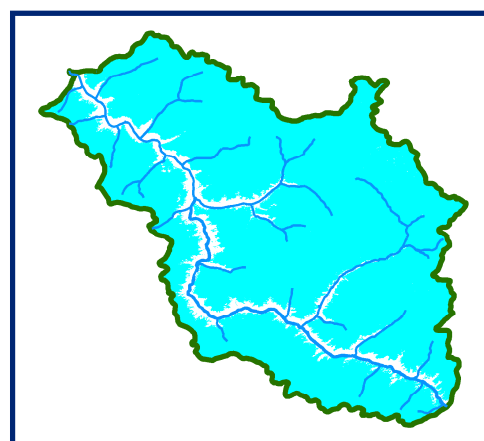
11 MARCH 2012



12 MARCH 2012



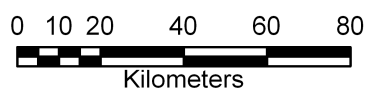
21 MARCH 2012



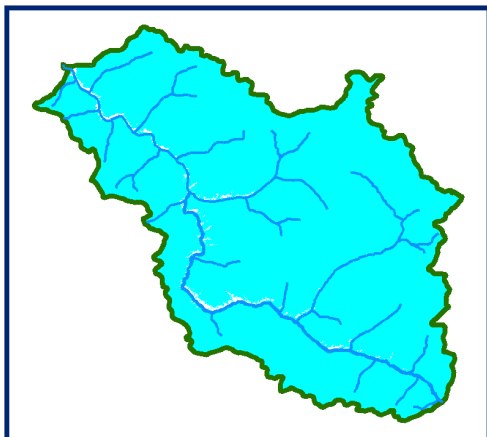
29 MARCH 2012



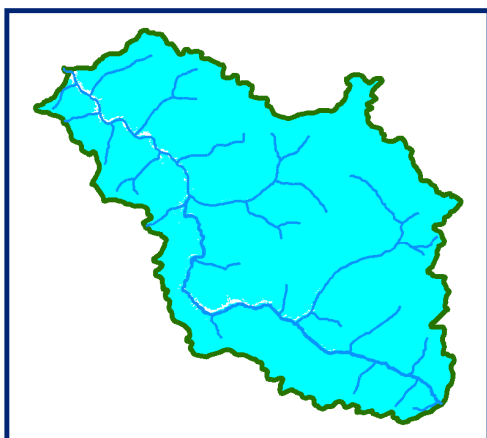
SNOW



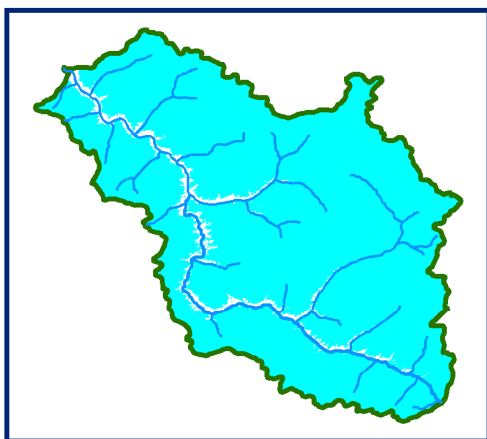
10 DAILY SNOW COVER MAP : MIYAR BASIN



DATA USED
02 MARCH 2012




DATA USED
11 MARCH 2012



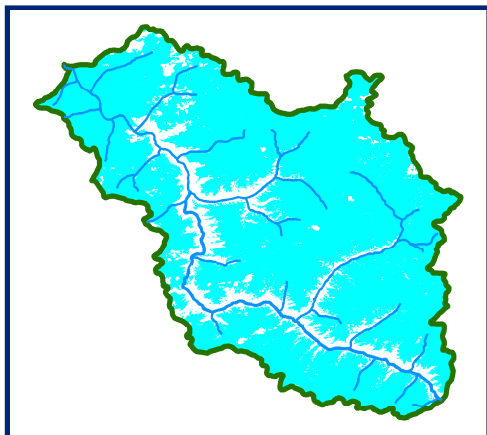
DATA USED
21 MARCH 2012
29 MARCH 2012
31 MARCH 2012



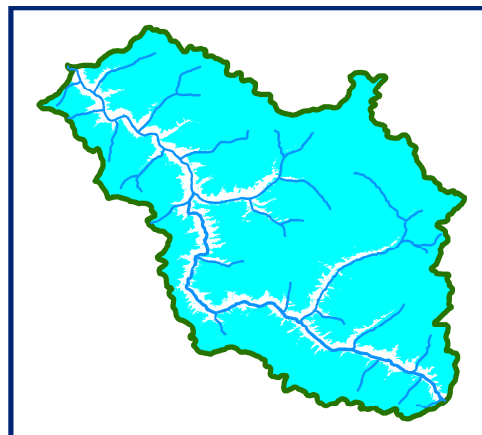
SNOW

0 5 10 20 30 40

Kilometers

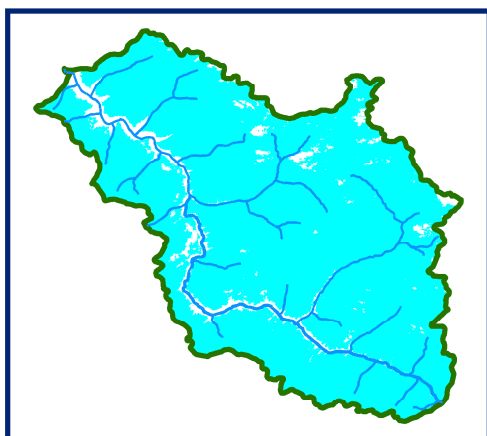
SNOW COVER MAP : MIYAR BASIN



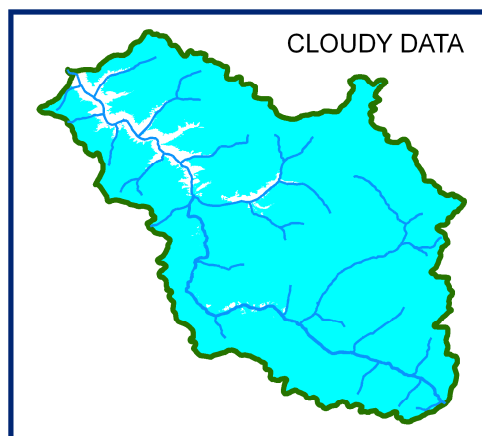
02 APRIL 2012



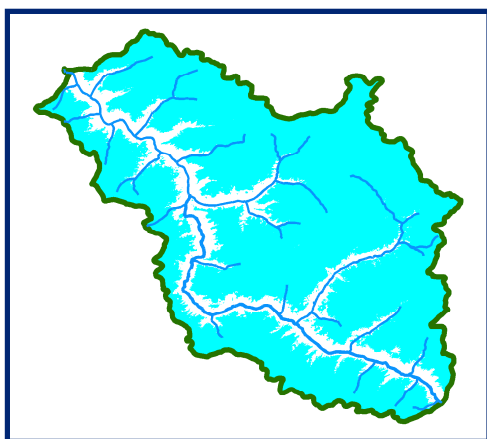
04 APRIL 2012



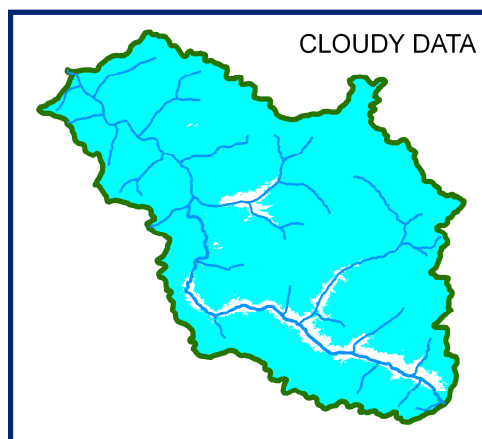
12 APRIL 2012



19 APRIL 2012



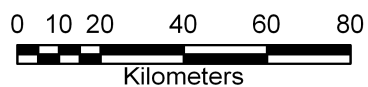
24 APRIL 2012



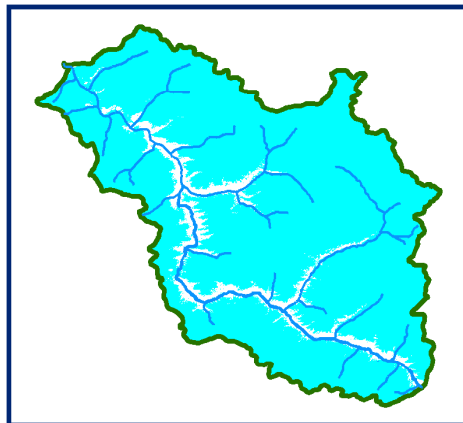
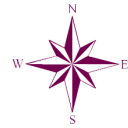
28 APRIL 2012



SNOW



10 DAILY SNOW COVER MAP : MIYAR BASIN

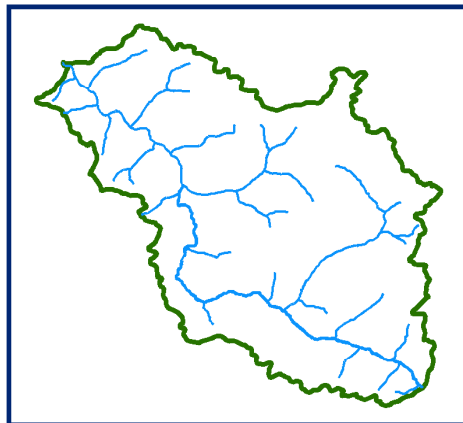


DATA USED

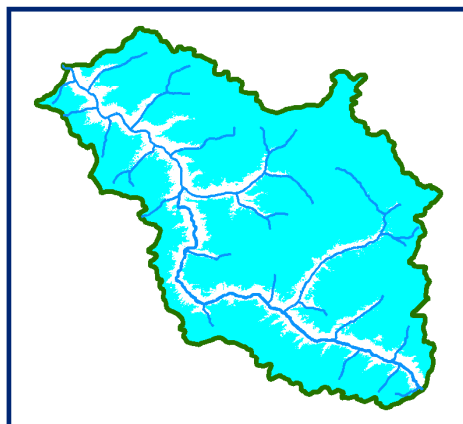
02 APRIL 2012

04 APRIL 2012

05 APRIL 2012



DATA NOT AVAILABLE



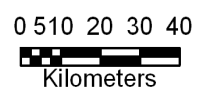
DATA USED

22 APRIL 2012

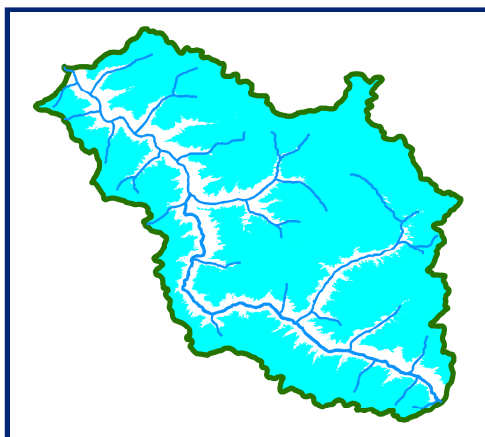
24 APRIL 2012



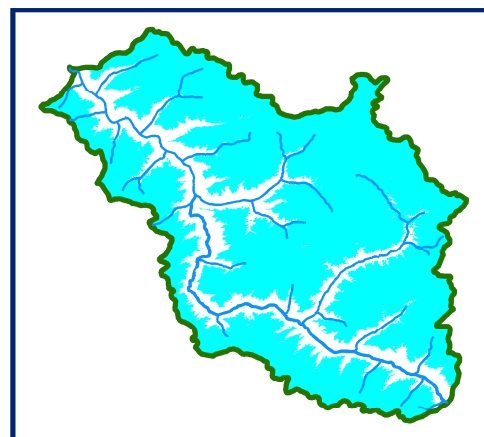
SNOW



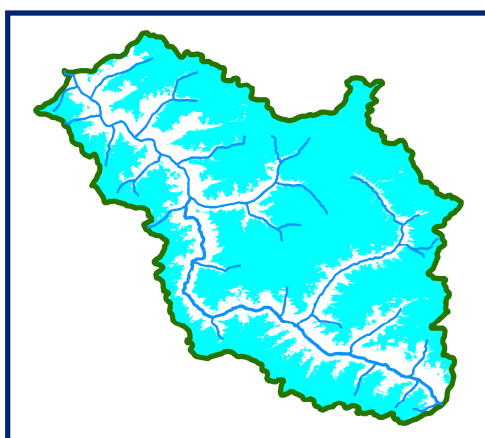
SNOW COVER MAP : MIYR BASIN



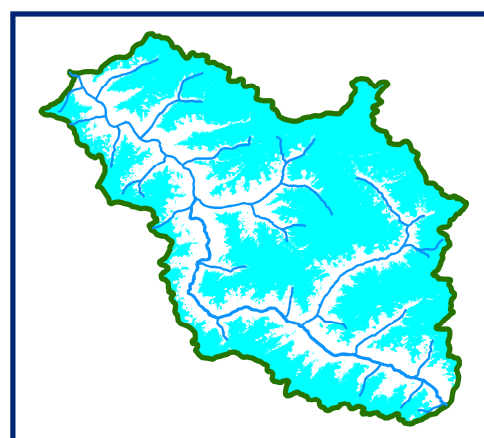
03 MAY 2012



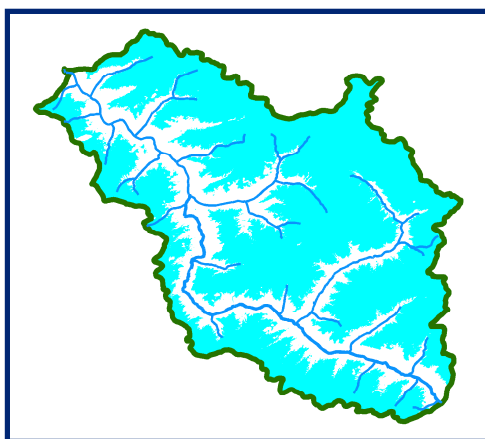
04 MAY 2012



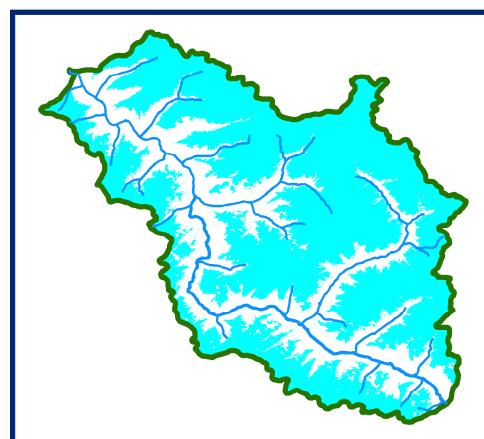
15 MAY 2012



20 MAY 2012



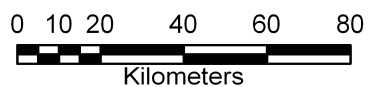
23 MAY 2012



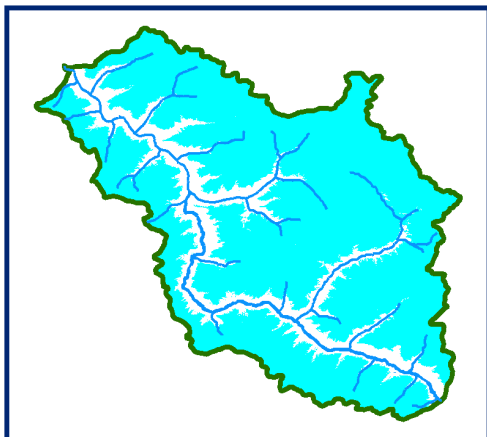
28 MAY 2012



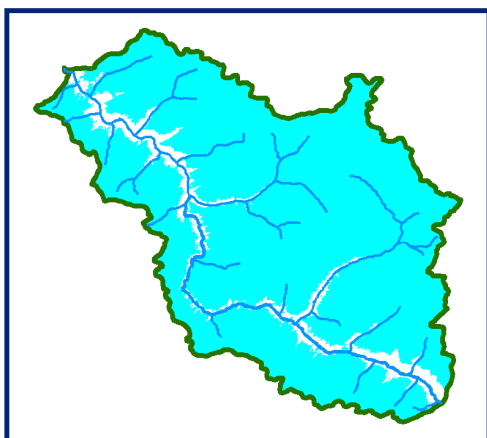
SNOW



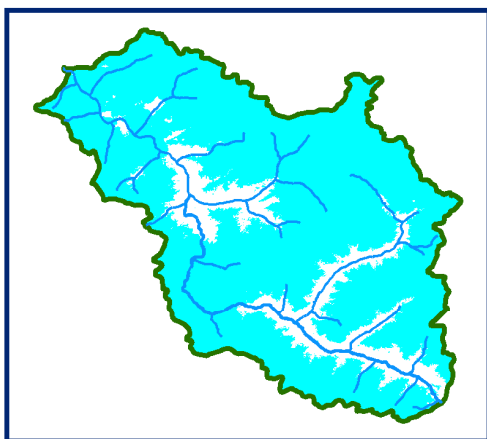
10 DAILY SNOW COVER MAP : MIYAR BASIN



DATA USED
03 MAY 2012
04 MAY 2012




DATA USED
13 MAY 2012
15 MAY 2012
20 MAY 2012



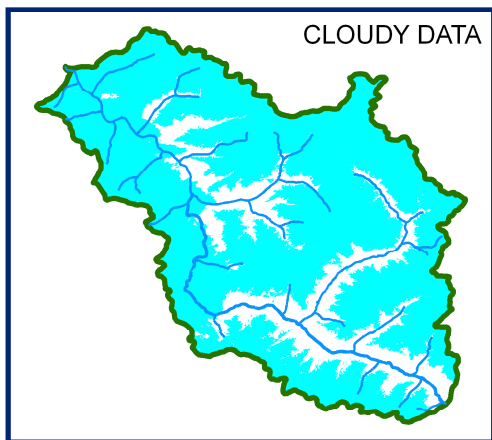
DATA USED
22 MAY 2012
23 MAY 2012
28 MAY 2012



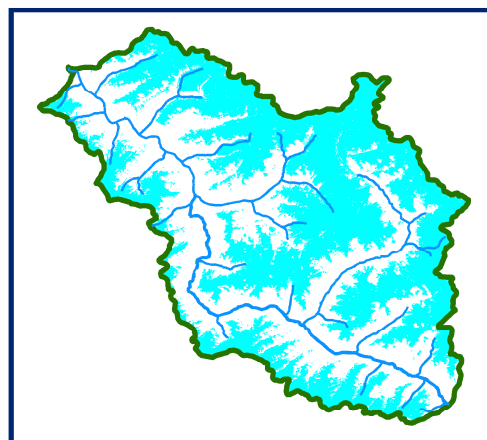
SNOW

0 5 10 20 30 40

Kilometers

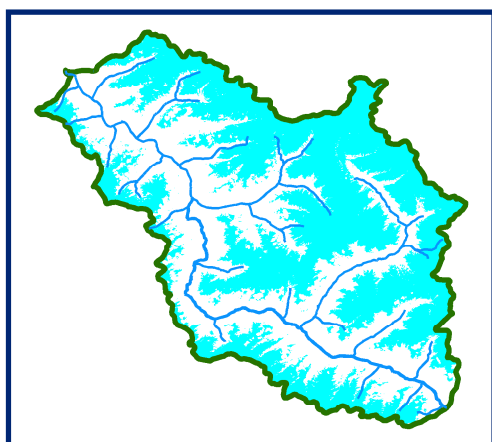
SNOW COVER MAP : MIYAR BASIN



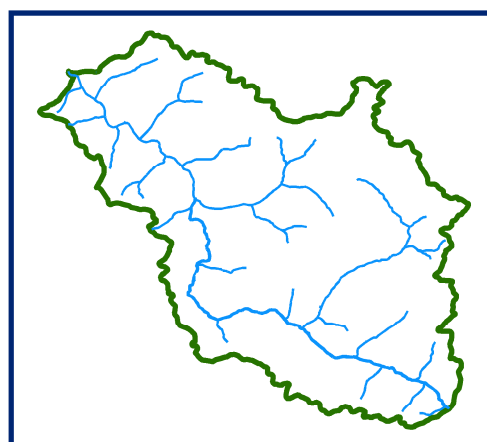
01 JUNE 2012



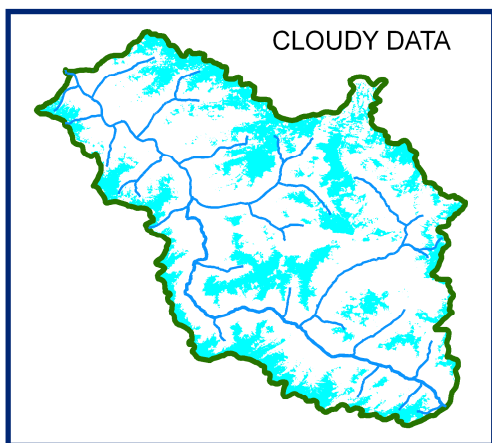
04 JUNE 2012



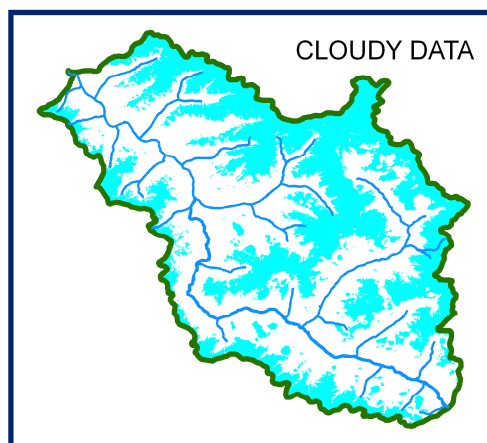
16 JUNE 2012



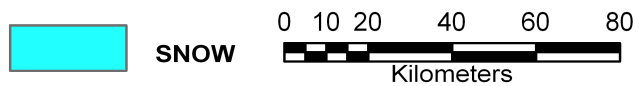
DATA NOT AVAILABLE



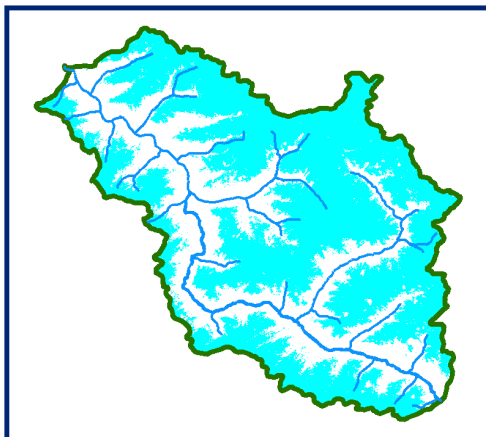
27 JUNE 2012



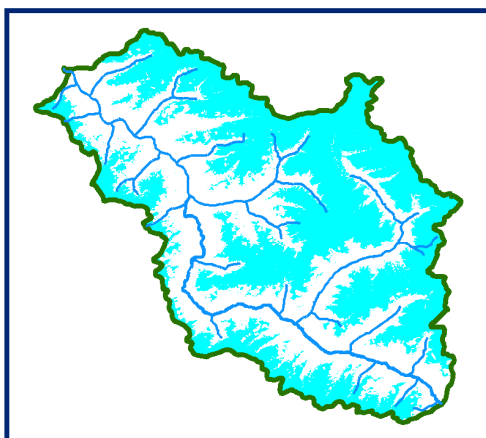
30 JUNE 2012



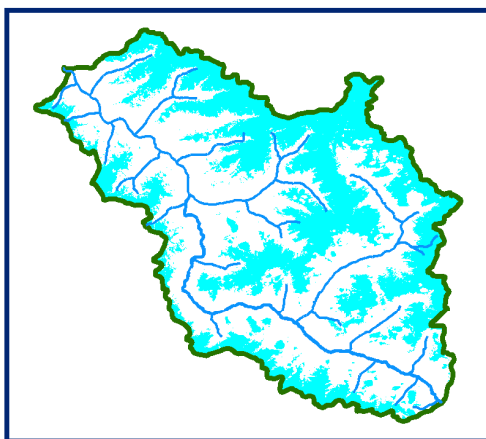
10 DAILY SNOW COVER MAP : MIYAR BASIN



DATA USED
03 JUNE 2012
04 JUNE 2012



DATA USED
16 JUNE 2012



DATA USED
30 JUNE 2012



SNOW

0 5 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 2011							
1	3-Oct-11	435.02	20				
2	15-Oct-11	756.74	34				
3	27-Oct-11	1172.37	53				
November 2011							
4	1-Nov-11	857.04	39	7	20-Nov-11	1127.96	51
5	6-Nov-11	877.69	40	8	29-Nov-11	978.22	44
6	13-Nov-11	1475.72	67				
December 2011							
9	2-Dec-11	1052.01	47	13	21-Dec-11	1838.66	83
10	12-Dec-11	1557.6	70	14	26-Dec-11	1052.01	47
11	14-Dec-11	1317.06	59	15	30-Dec-11	1322.62	60
12	18-Dec-11	772.22	35	16	31-Dec-11	1251.81	56

January 2012							
17	23-Jan-12	2186.87	99	19	28-Jan-12	2147.45	97
18	24-Jan-12	2168.07	98	20	29-Jan-12	2147.51	97
February 2012							
21	2-Feb-12	2092.68	94	23	26-Feb-12	2115.92	95
22	17-Feb-12	2179.68	98				
March 2012							
24	2-Mar-12	2042.23	92	27	21-Mar-12	1914.65	86
25	7-Mar-12	2099.41	95	28	23-Mar-12	1667.43	75
26	11-Mar-12	2048.1	92	29	31-Mar-12	1836.62	83
April-2012							
30	2-Apr-12	1421.63	64	34	12-Apr-12	1763.9	80
31	4-Apr-12	1798.35	81	35	19-Apr-12	1770.5	80
32	5-Apr-12	1814.3	82	36	24-Apr-12	1696.44	76
33	7-Apr-12	1429.23	64				

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
May-2012							
37	1-May-12	2197.99	99	44	16-May-12	1424.87	75
38	3-May-12	1693.19	76	45	18-May-12	1565.93	56
39	4-May-12	1641.09	74	46	20-May-12	1389.86	65
40	6-May-12	1096.93	49	47	23-May-12	1661.26	75
41	8-May-12	1621.56	73	48	25-May-12	1240.12	56
42	13-May-12	1683.13	76	49	28-May-12	1450.42	95
43	15-May-12	1421.89	63				
June-2012							
50	1-June-12	2105.6	95	54	23-June-12	768.77	35
51	3-June-12	945.3	43	55	27-June-12	749.34	34
52	4-June-12	1166.69	53	56	30-June-12	1016.56	46
53	16-June-12	1136.54	51				

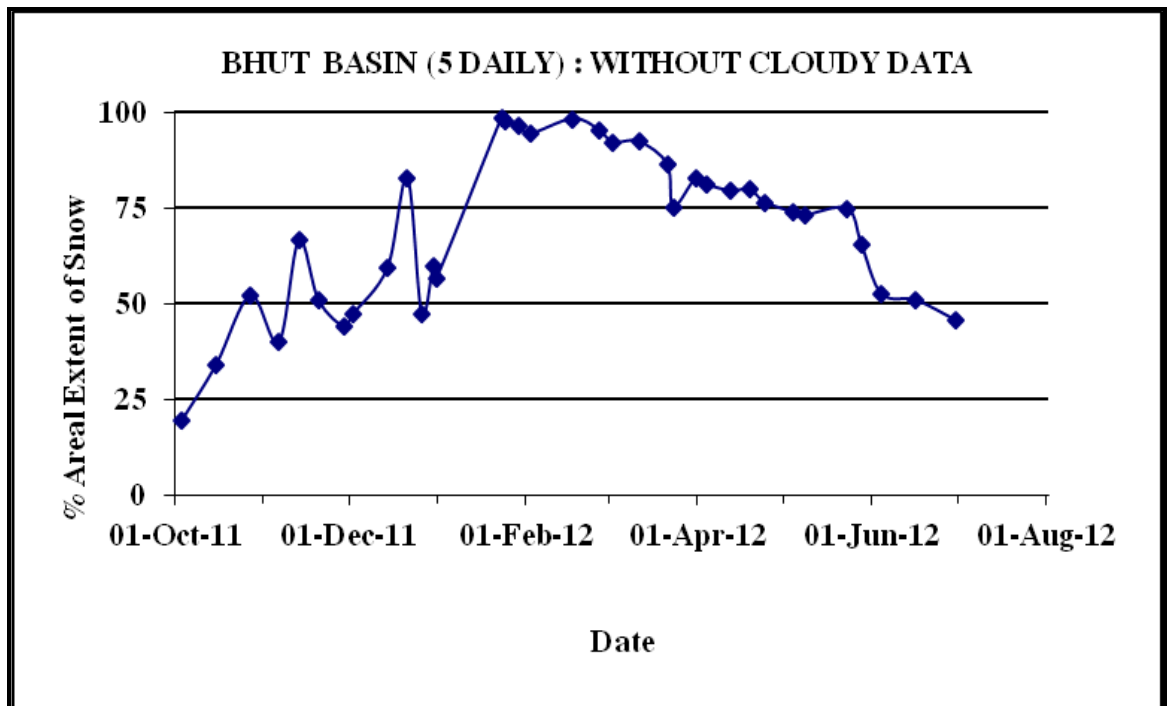
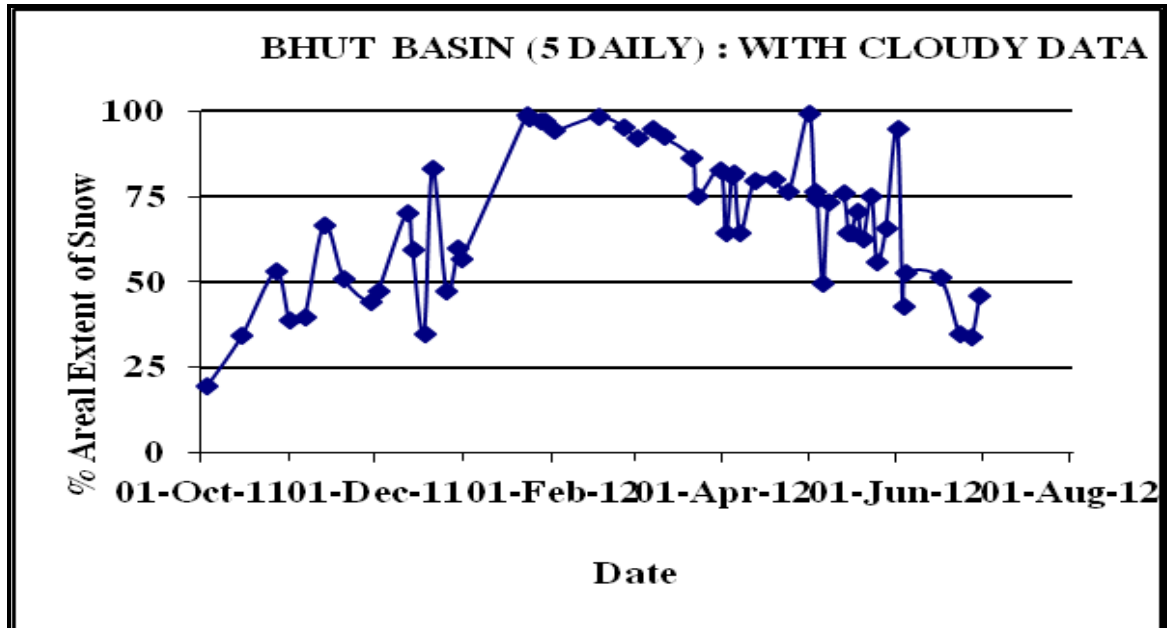
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: BHUT

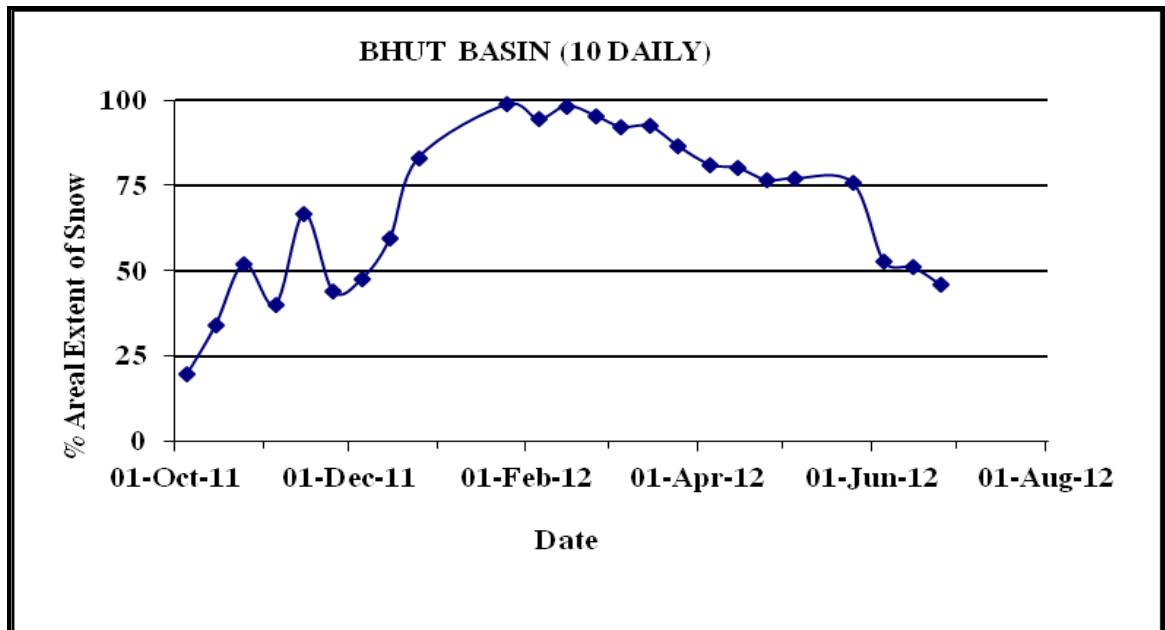
BASIN AREA: 2218 Sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October-2011							
1	5-Oct-11	435.02	20	3	25-Oct-11	1538.05	52
2	15-Oct-11	881.41	34				
November 2011							
4	5-NOV-11	877.69	40	6	25-Nov-11	978.22	44
5	15-Nov-11	1480.1	67				
December 2011							
7	5-Dec-11	1052.01	47	9	25-Dec-11	1841.99	83
8	14-Dec-11	1317.06	59				
January 2012							
10	25-Jan-12	2190.04	99				
February 2012							
11	5-Feb-12	2092.68	94	13	25-Feb-12	2115.92	95
12	15-Feb-12	2179.68	98				
March 2012							
14	5-Mar-12	2042.23	94	16	25-Mar-12	1917.04	95
15	15-Mar-12	2048.1	98				
April-2012							
17	5-Apr-12	1798.35	81	19	24-Apr-12	1696.44	76
18	15-Apr-12	1852.32	80				
May-2012							
20	5-May-12	1708.42	77	21	25-May-12	1680.77	76
June-2012							
22	5-Jun-12	1166.69	53	24	25-Jun-12	1016.56	46
23	15-June-12	1136.54	51				

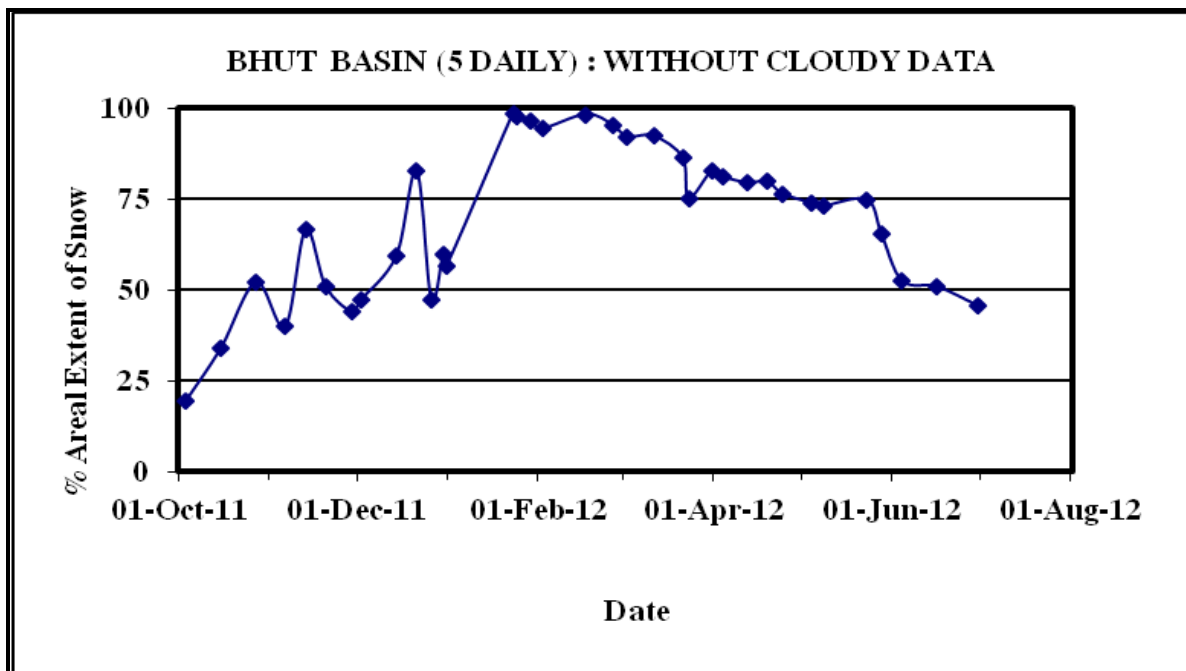
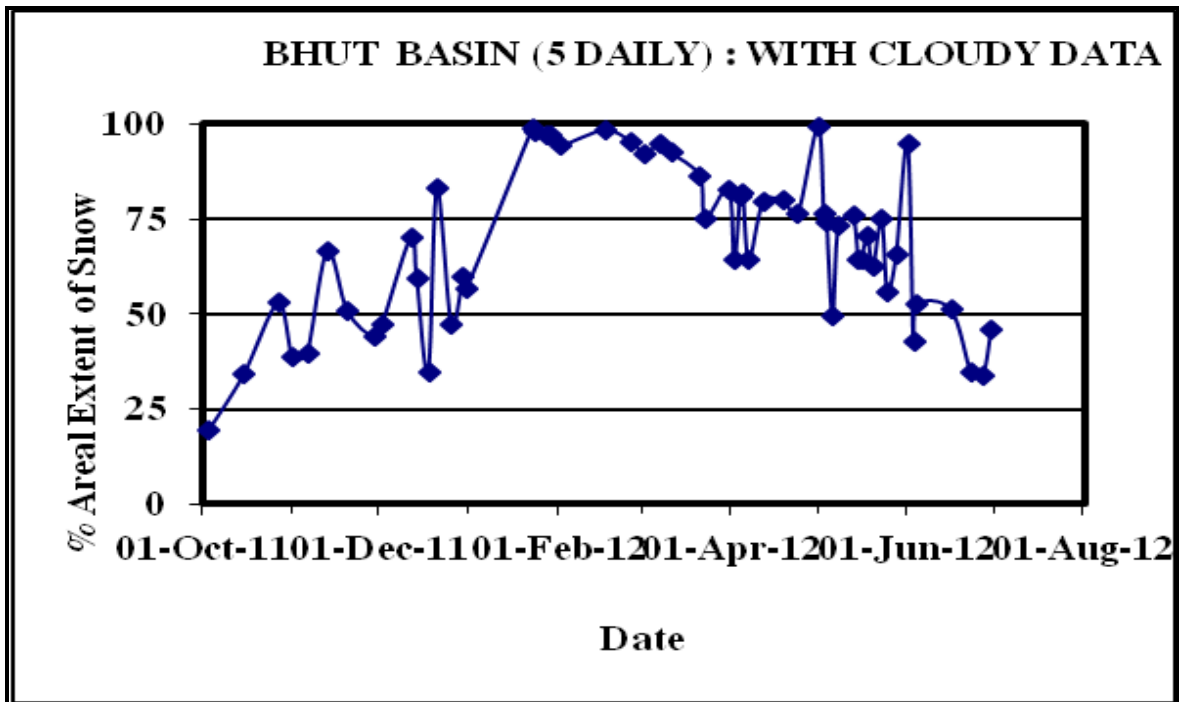
SNOW COVER DEPLETION CURVE



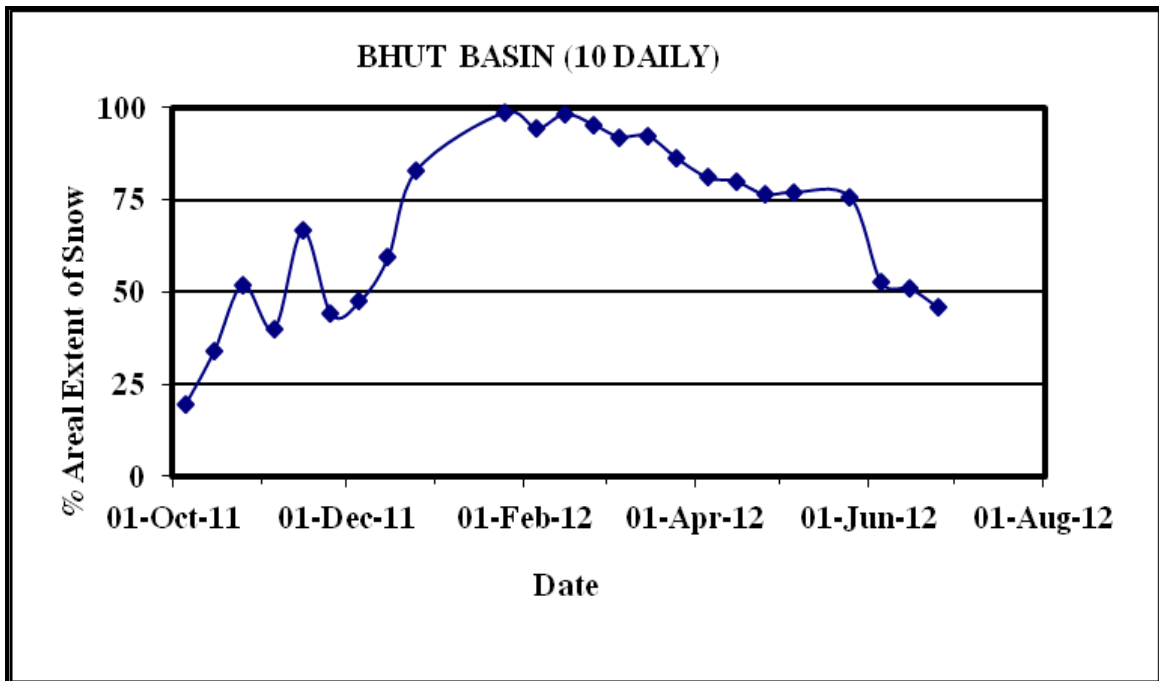
SNOW COVER DEPLETION CURVE



SNOW COVER DEPLETION CURVE

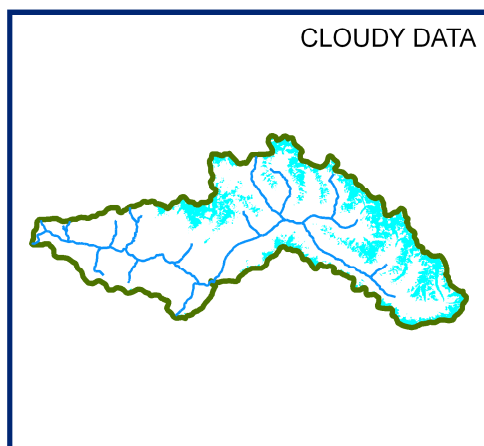


SNOW COVER DEPLETION CURVE

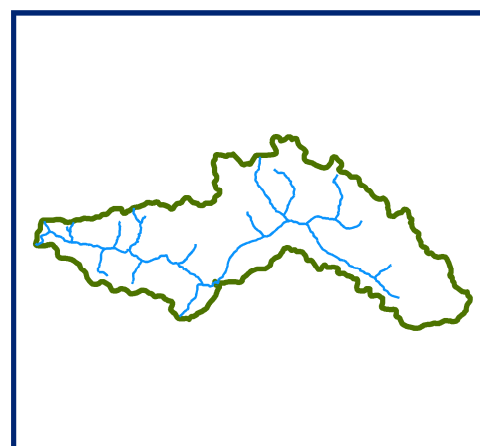


SNOW COVER MAP

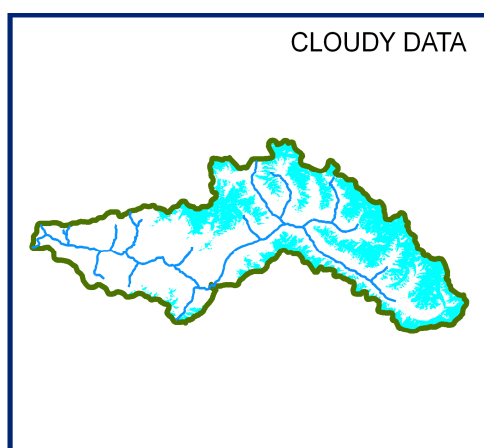
SNOW COVER MAP : BHUT BASIN



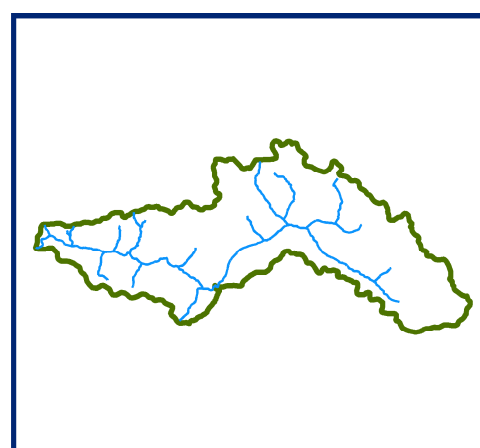
03 OCTOBER 2011



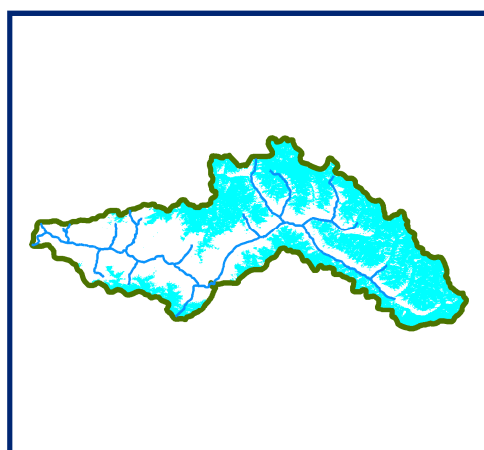
DATA NOT AVAILABLE



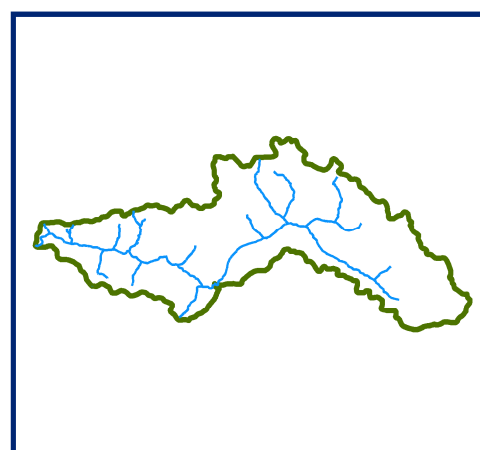
15 OCTOBER 2011



DATA NOT AVAILABLE



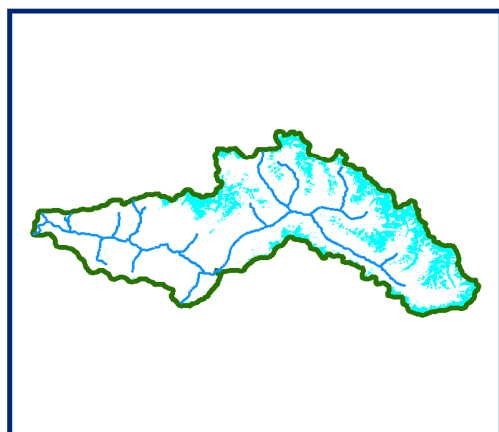
27 OCTOBER 2011



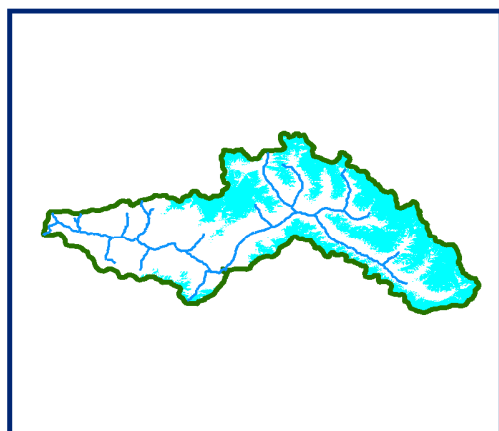
DATA NOT AVAILABLE



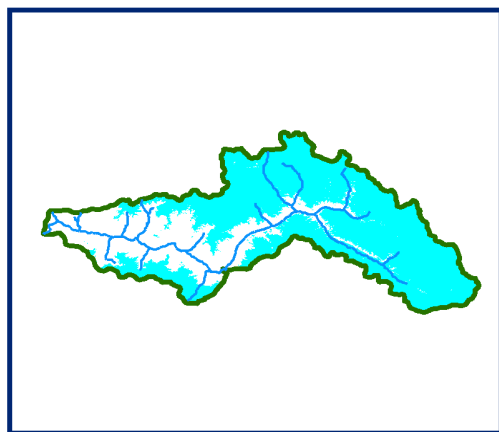
10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED
03 OCTOBER 2011




DATA USED
12 OCTOBER 2011
15 OCTOBER 2011



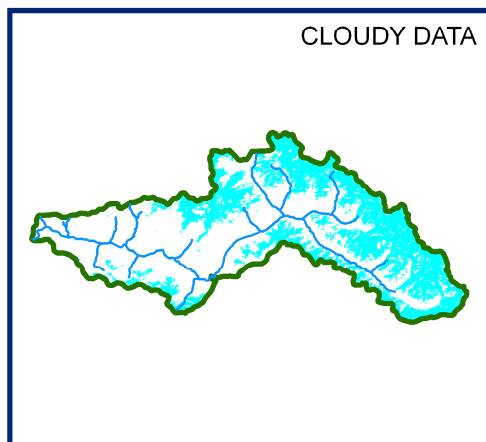
DATA USED
25 OCTOBER 2011
27 OCTOBER 2011



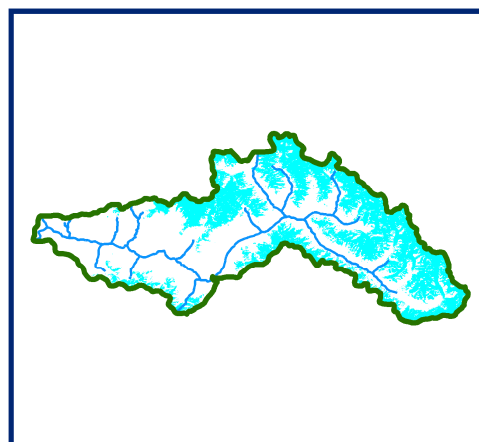
SNOW

0 5 10 20 30 40

Kilometers

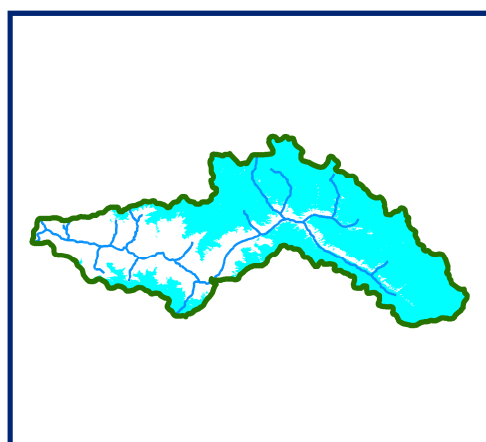
SNOW COVER MAP : BHUT BASIN



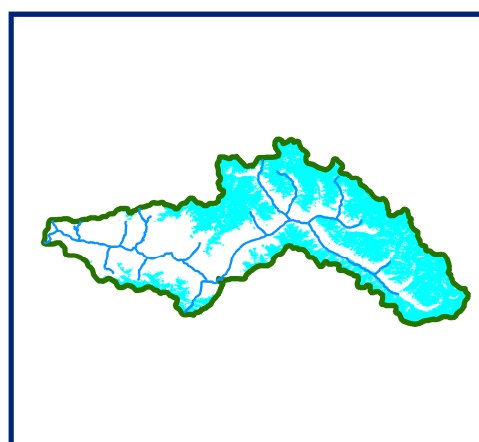
01 NOVEMBER 2011



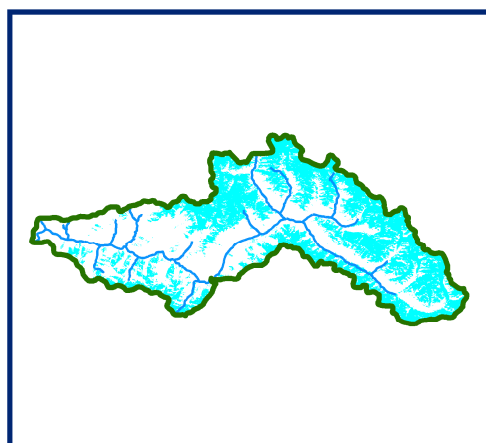
06 NOVEMBER 2011



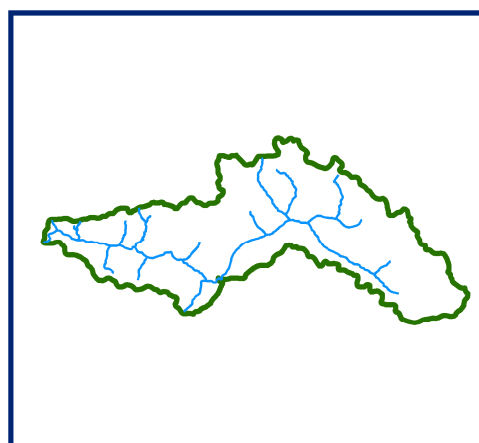
13 NOVEMBER 2011



20 NOVEMBER 2011



29 NOVEMBER 2011



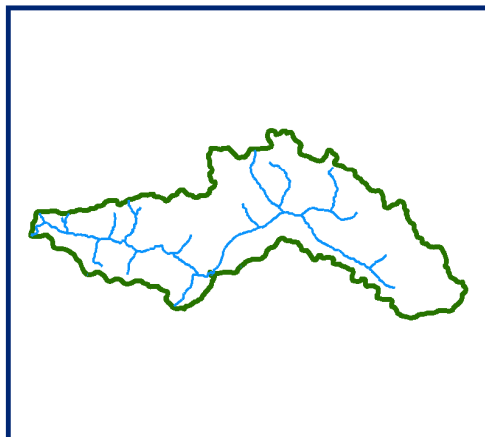
DATA NOT AVAILABLE



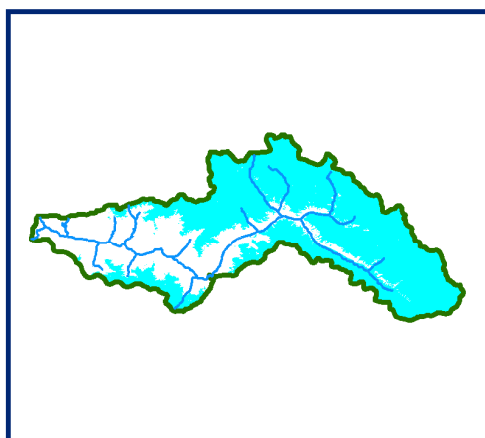
SNOW



10 DAILY SNOW COVER MAP : BHUT BASIN

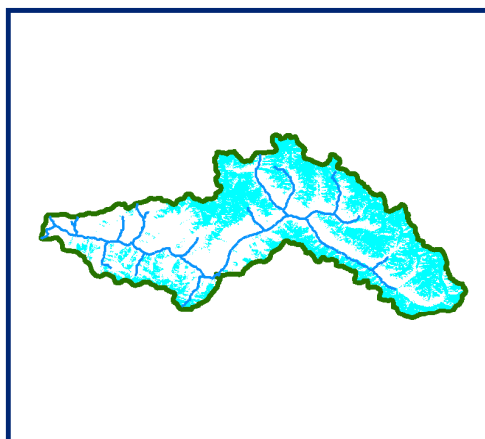


DATA NOT AVILABLE



DATA USED

13 NOVEMBER 2011
18 NOVEMBER 2011
20 NOVEMBER 2011



DATA USED

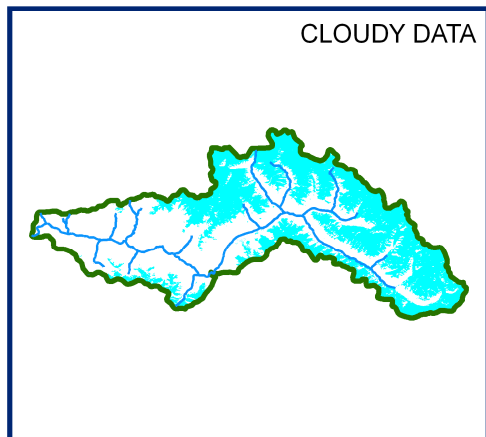
29 NOVEMBER 2011



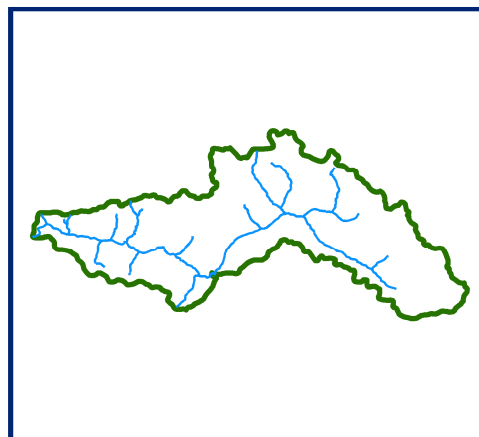
SNOW

0 5 10 20 30 40
Kilometers

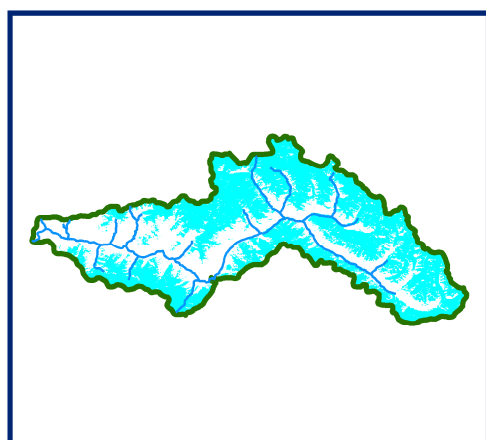
SNOW COVER MAP : BHUT BASIN



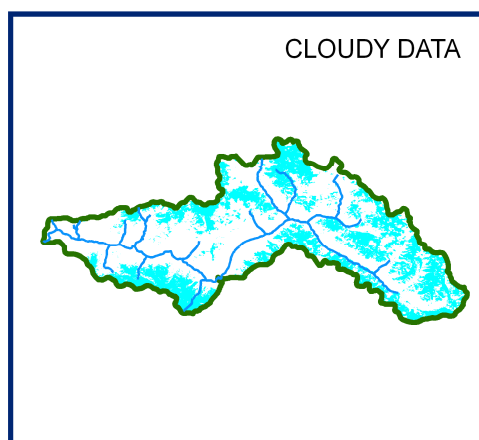
02 DECEMBER 2011



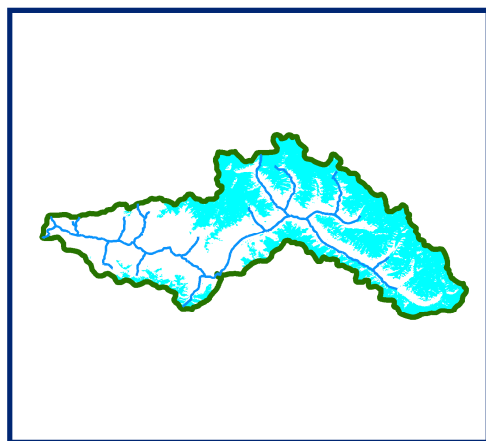
DATA NOT AVAILABLE



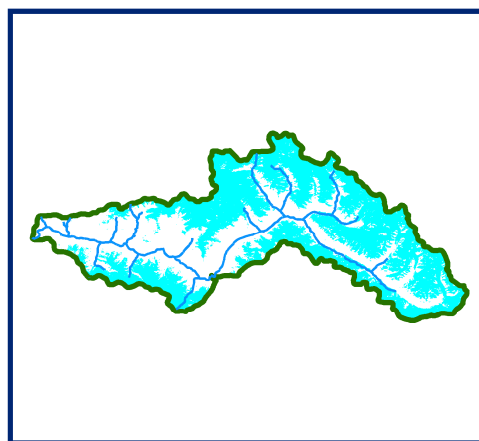
14 DECEMBER 2011



18 DECEMBER 2011



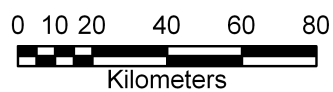
26 DECEMBER 2011



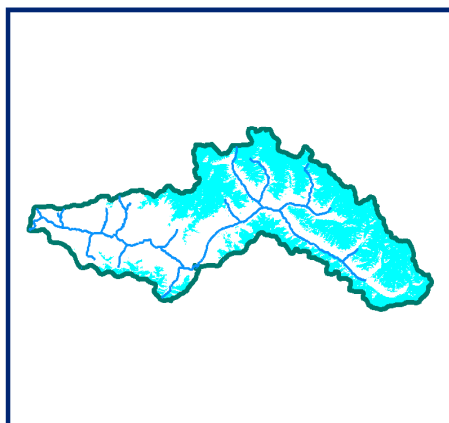
31 DECEMBER 2011



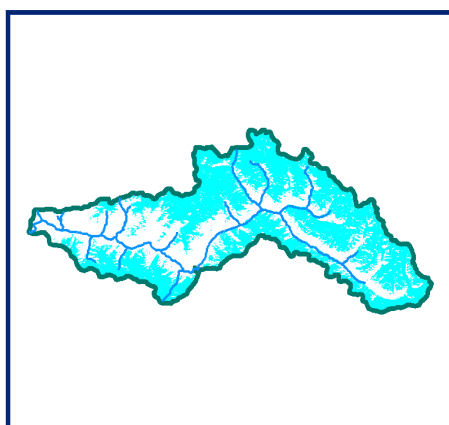
SNOW



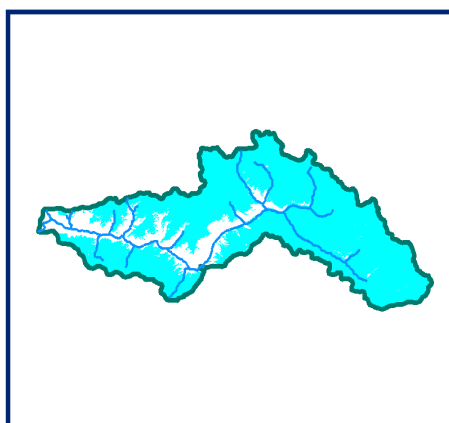
10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED
02 DECEMBER 2011




DATA USED
14 DECEMBER 2011



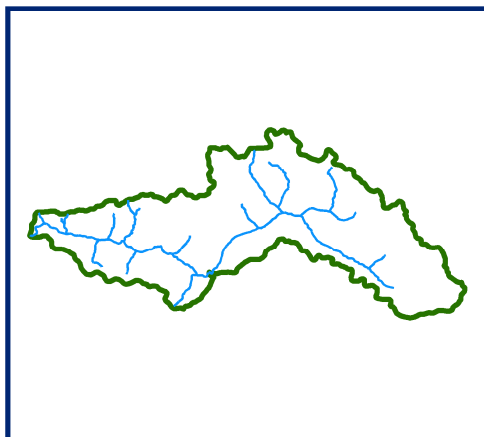
DATA USED
21 DECEMBER 2011
30 DECEMBER 2011
31 DECEMBER 2011



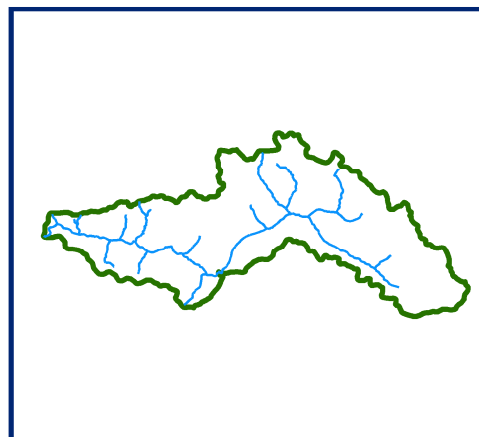
SNOW

0 5 10 20 30 40

Kilometers

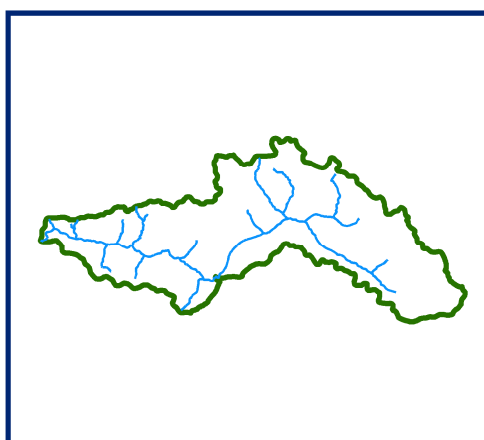
SNOW COVER MAP : BHAGA BASIN



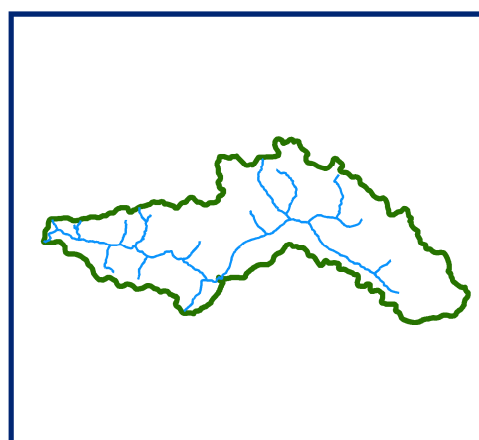
DATA NOT AVAILABLE



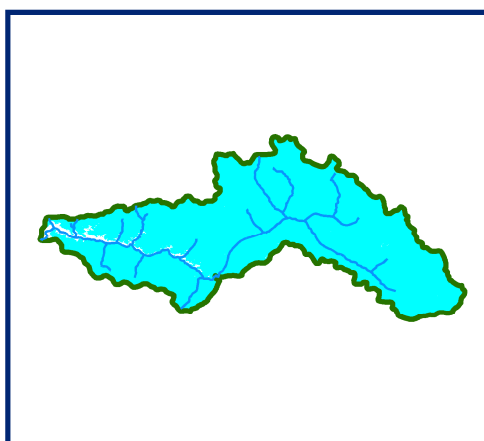
DATA NOT AVAILABLE



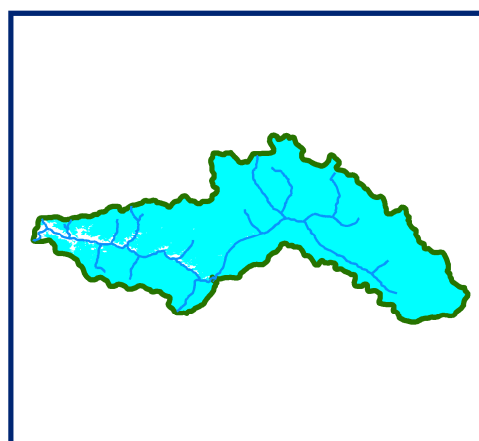
DATA NOT AVAILABLE



DATA NOT AVAILABLE



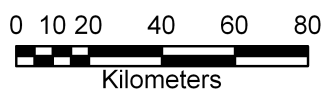
24 JANUARY 2012



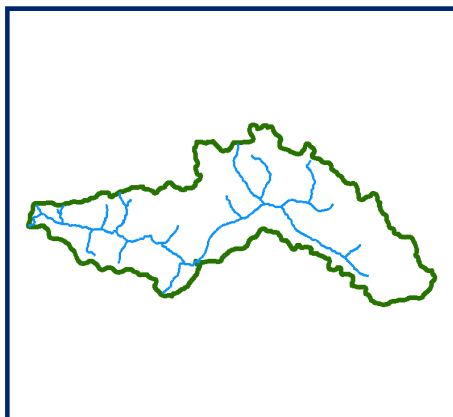
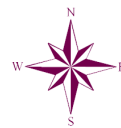
29 JANUARY 2012



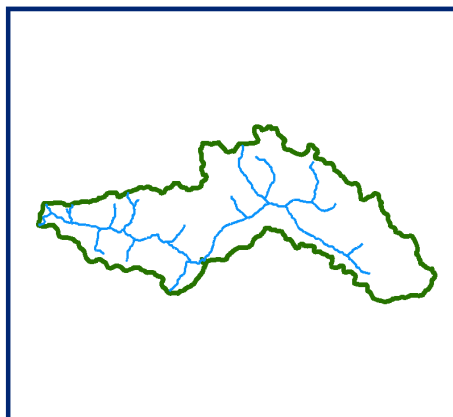
SNOW



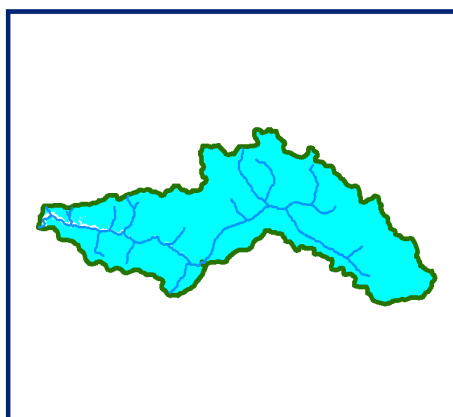
10 DAILY SNOW COVER MAP : BHUT BASIN



DATA NOT AVAILABLE



DATA NOT AVAILABLE



DATA USED

23 JANUARY 2012

24 JANUARY 2012

29 JANUARY 2012



SNOW

0 5 10 20 30 40

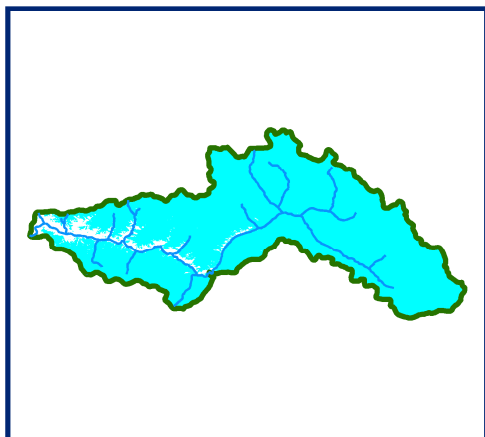
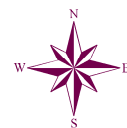


Kilometers

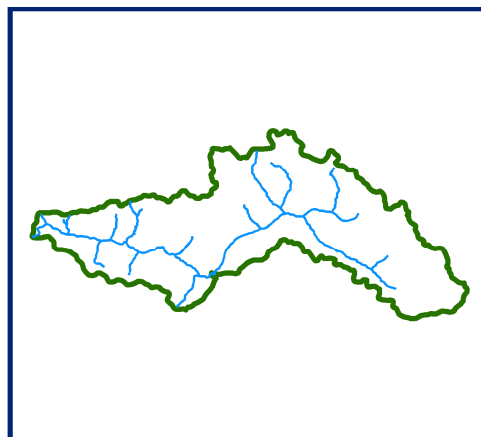
SNOW COVER MAP

:

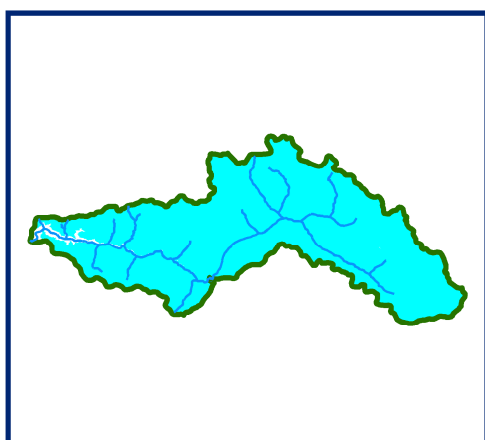
BHUT BASIN



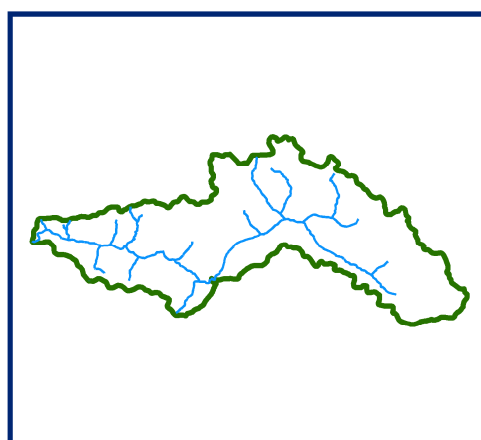
02 FEBRUARY 2012



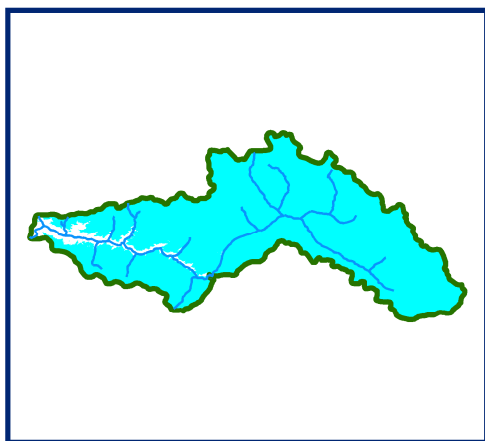
DATA NOT AVAILABLE



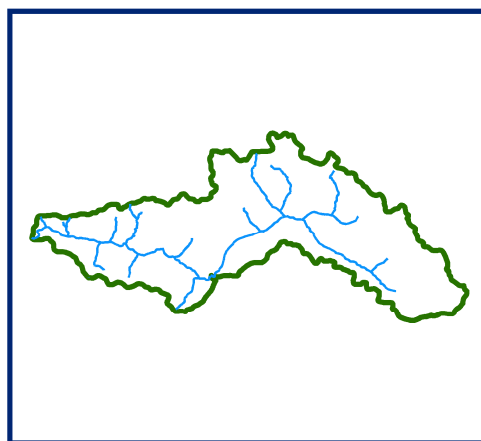
17 FEBRUARY 2012



DATA NOT AVAILABLE



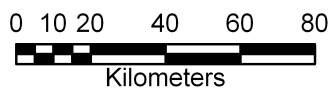
26 FEBRUARY 2012



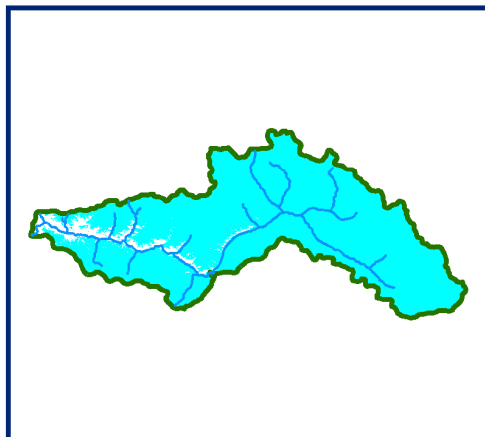
DATA NOT AVAILABLE



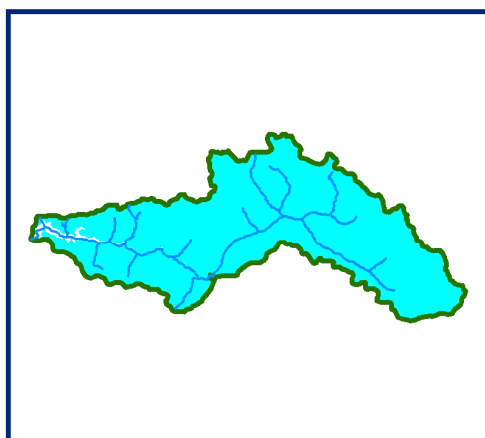
SNOW



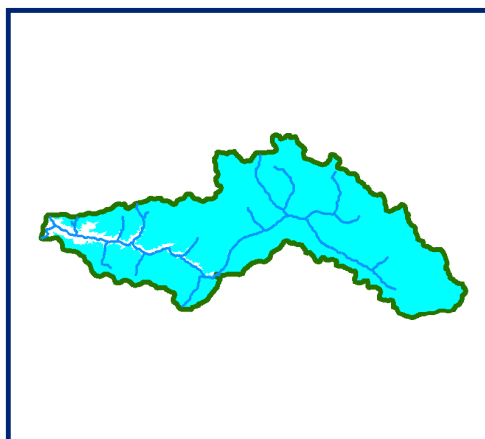
10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED
02 FEBRUARY 2012




DATA USED
17 FEBRUARY 2012



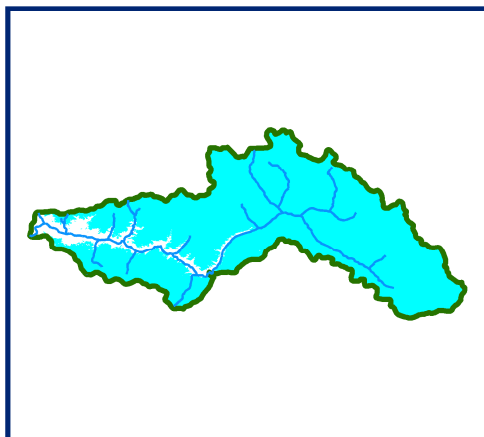
DATA USED
26 FEBRUARY 2012



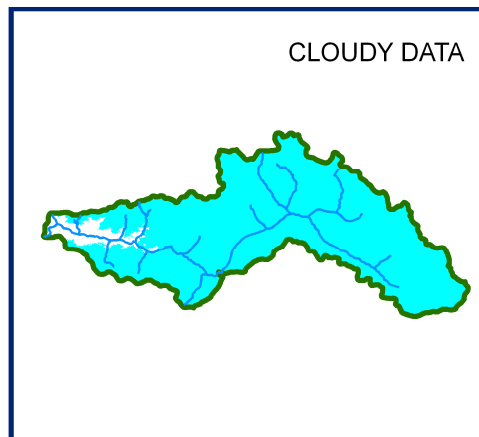
SNOW

0 5 10 20 30 40

Kilometers

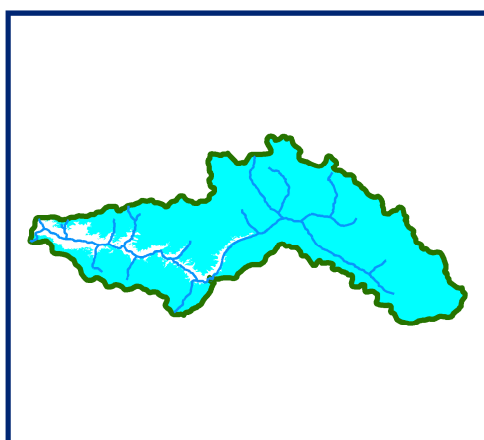
SNOW COVER MAP : BHUT BASIN



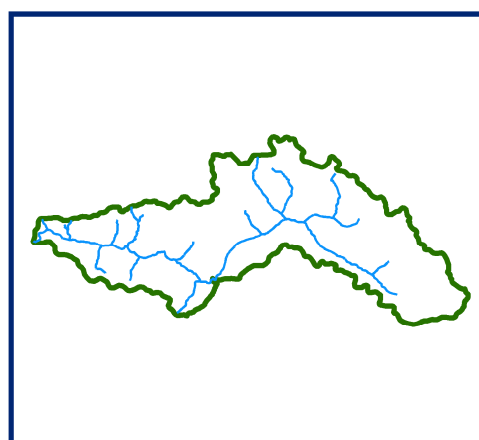
02 MARCH 2012



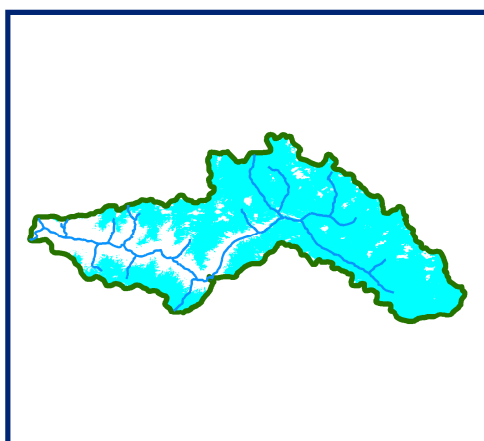
07 MARCH 2012



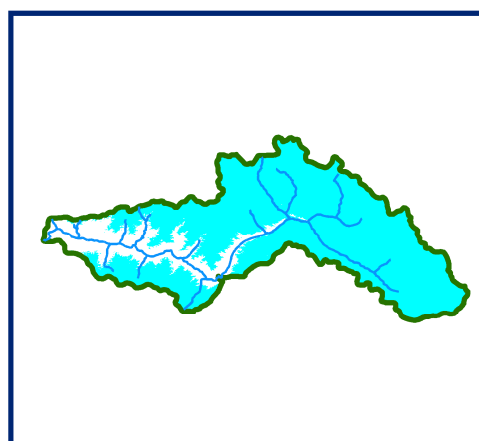
11 MARCH 2012



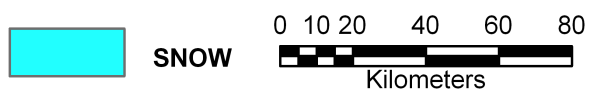
DATA NOT AVAILABLE



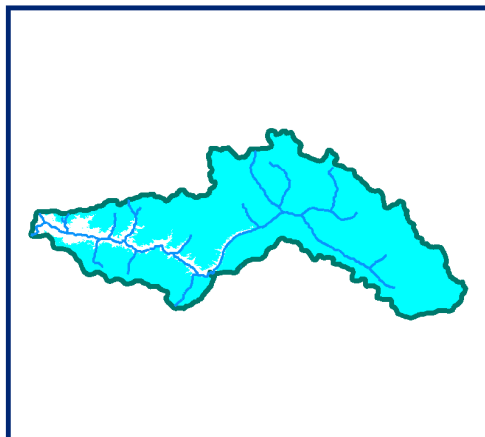
23 MARCH 2012



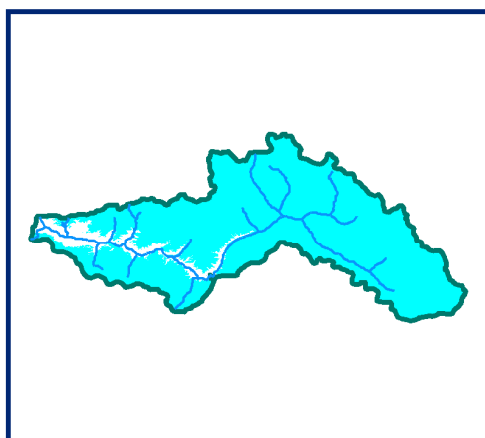
31 MARCH 2012



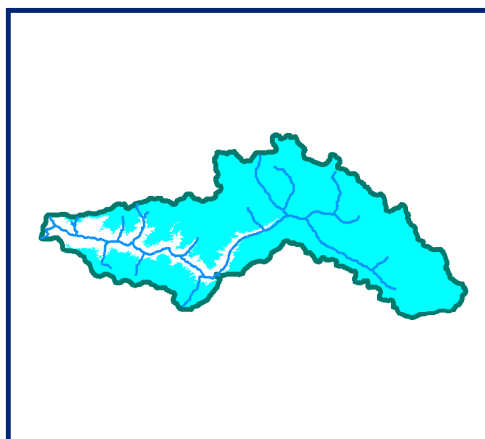
10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED
02 MARCH 2012




DATA USED
11 MARCH 2012



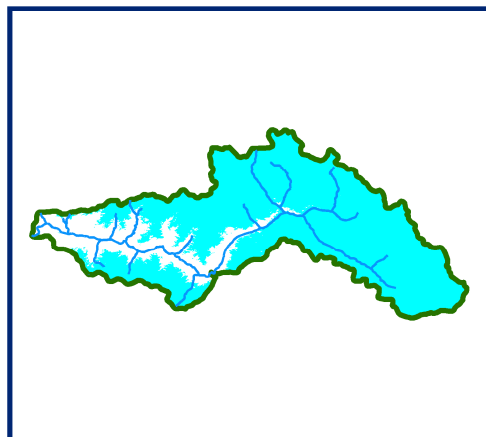
DATA USED
21 MARCH 2012
30 MARCH 2012
31 MARCH 2012



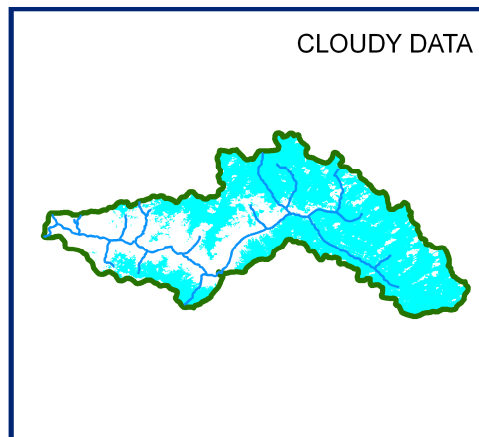
SNOW

0 5 10 20 30 40

Kilometers

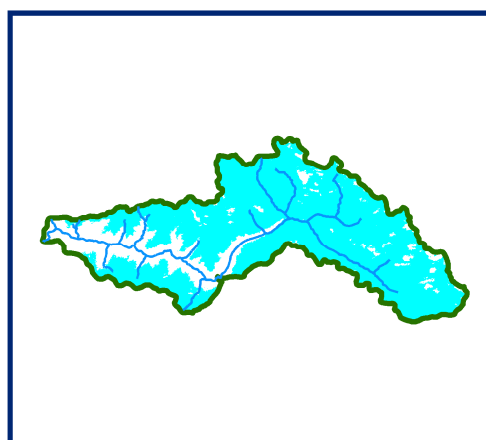
SNOW COVER MAP : BHUT BASIN



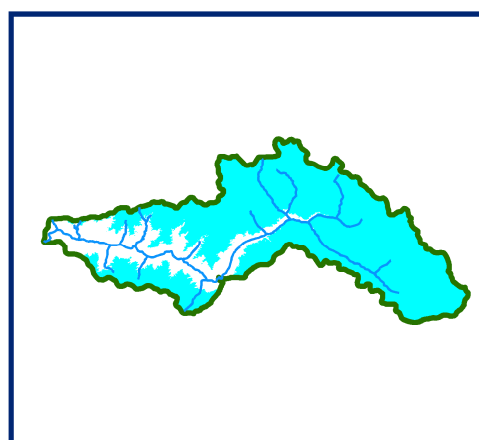
04 APRIL 2012



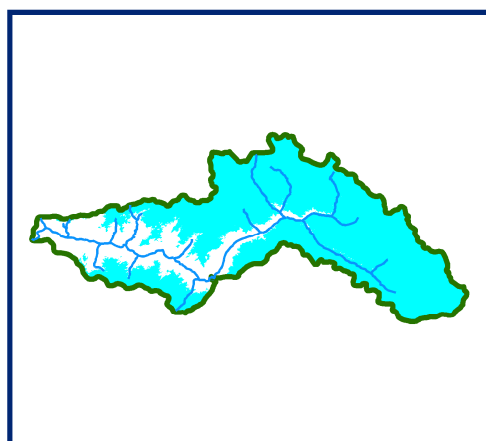
07 APRIL 2012



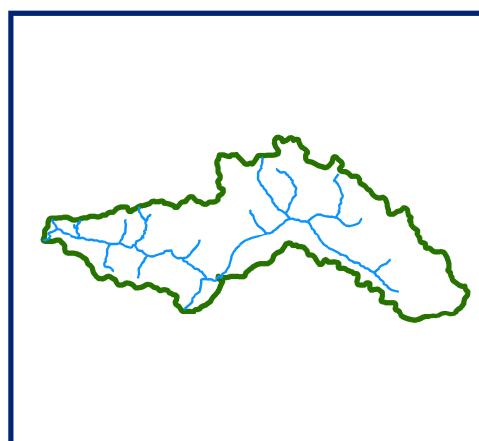
12 APRIL 2012



19 APRIL 2012



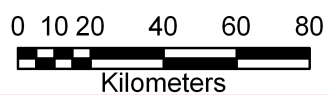
24 APRIL 2012



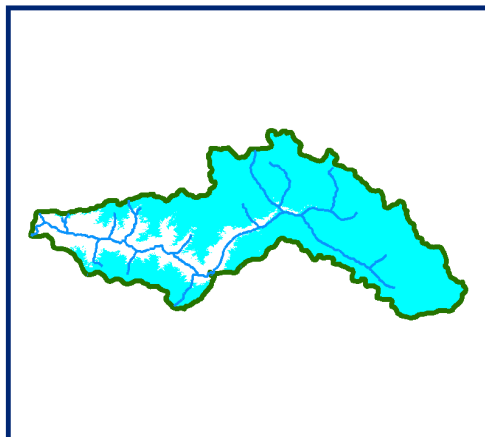
DATA NOT AVAILABLE



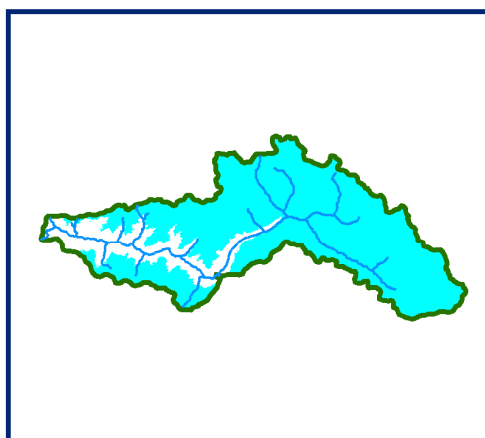
SNOW



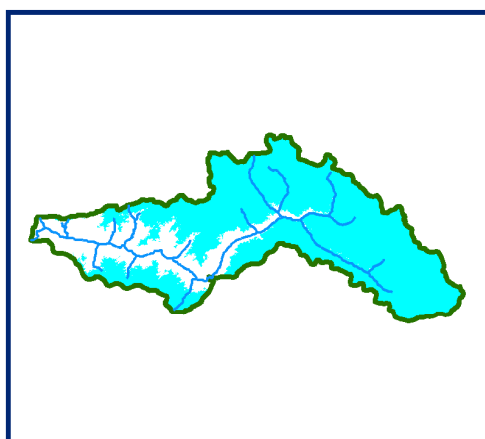
10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED
04 APRIL 2012




DATA USED
12 APRIL 2012
19 APRIL 2012



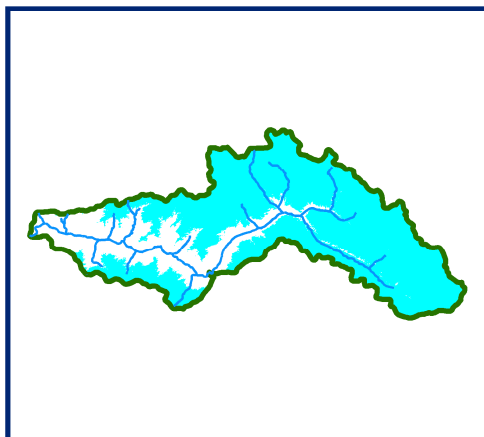
DATA USED
24 APRIL 2012



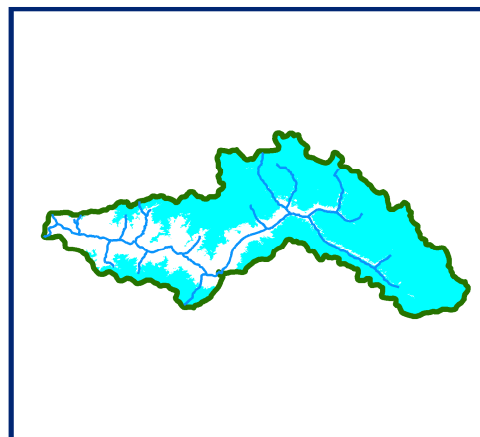
SNOW

0 5 10 20 30 40

Kilometers

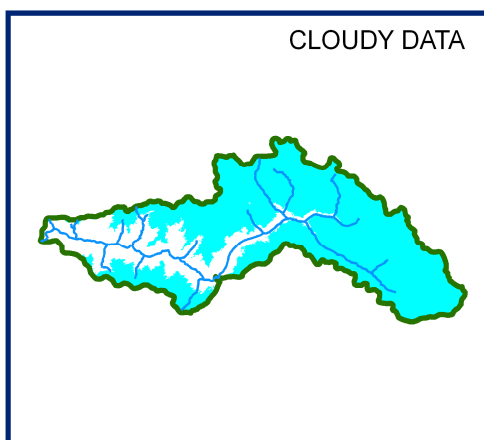
SNOW COVER MAP : BHUT BASIN



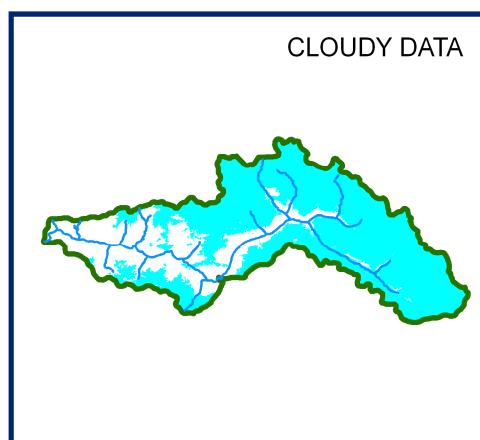
04 MAY 2012



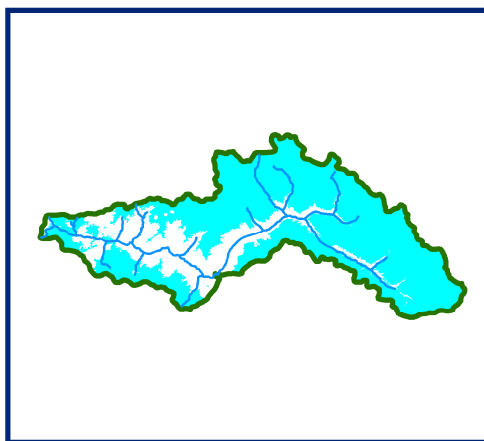
08 MAY 2012



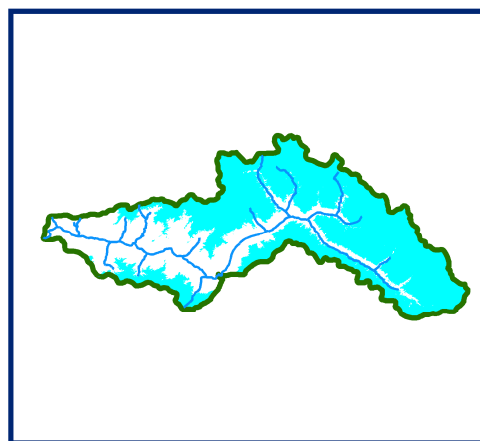
13 MAY 2012



18 MAY 2012



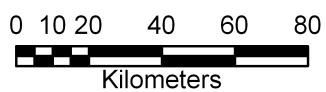
23 MAY 2012



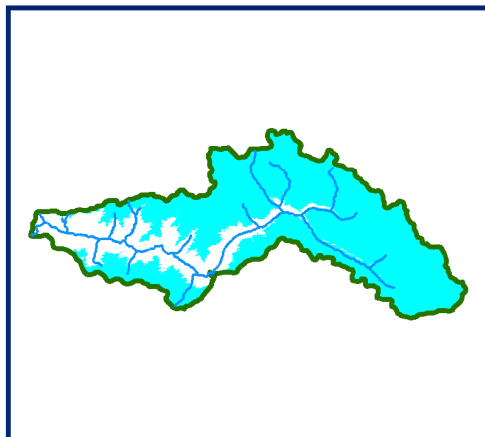
28 MAY 2012



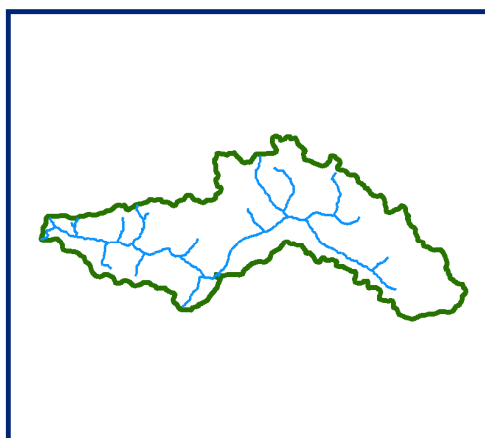
SNOW



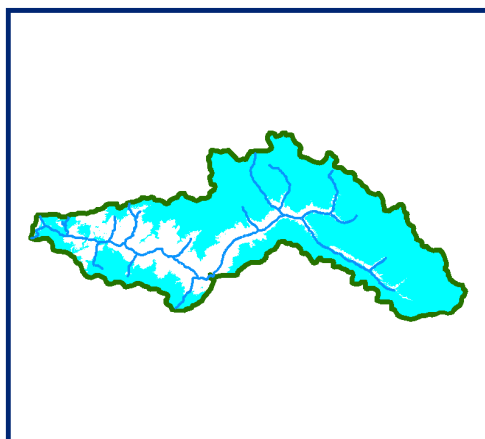
10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED
03 MAY 2012
08 MAY 2012



DATA NOT AVAILABLE



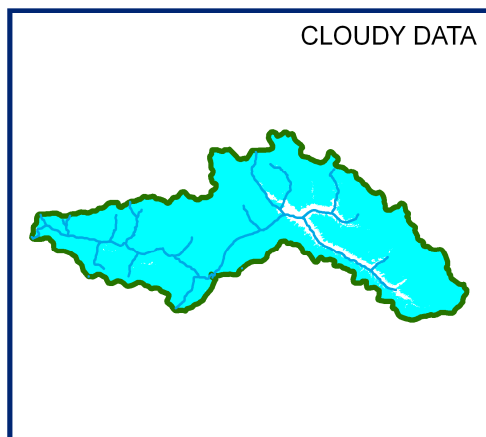
DATA USED
23 MAY 2012
28 MAY 2012



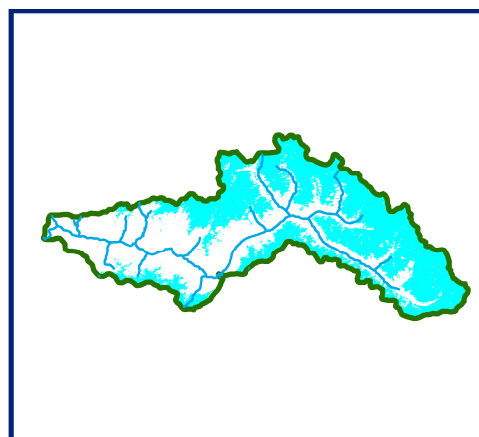
SNOW

0 5 10 20 30 40
Kilometers

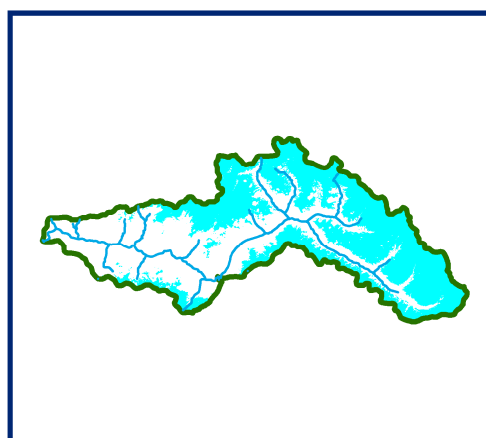
SNOW COVER MAP : BHUT BASIN



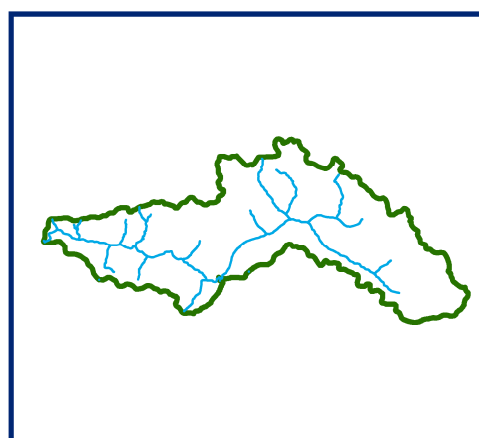
01 JUNE 2012



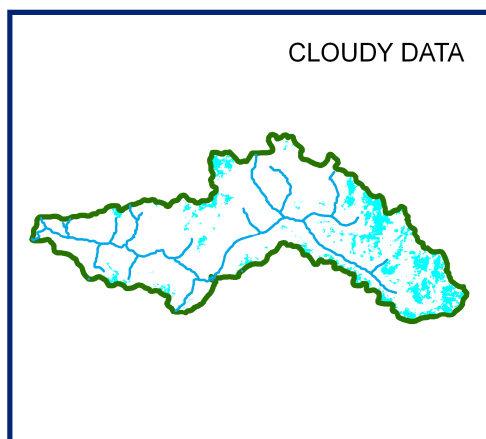
04 JUNE 2012



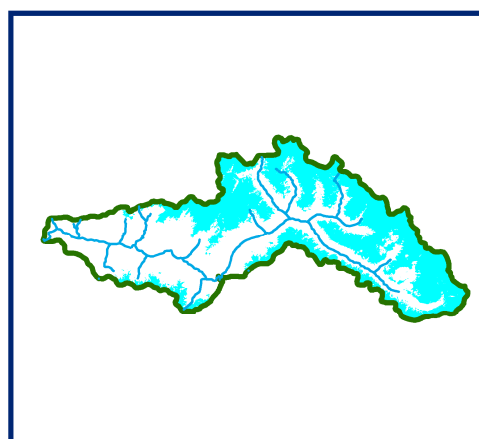
16 JUNE 2012



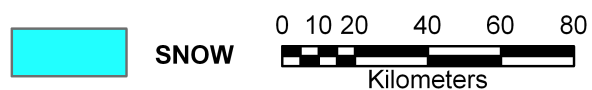
DATA NOT AVAILABLE



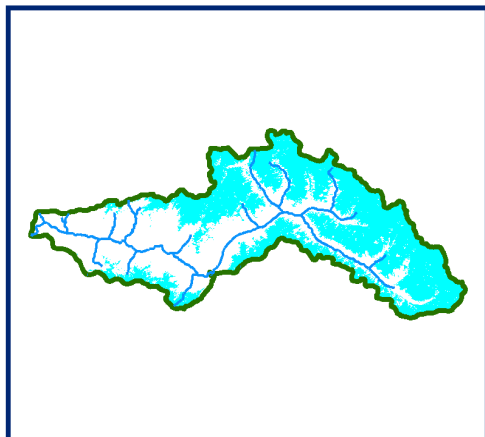
23 JUNE 2012



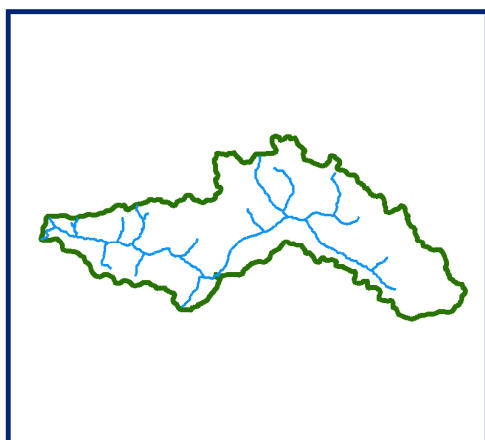
30 JUNE 2012



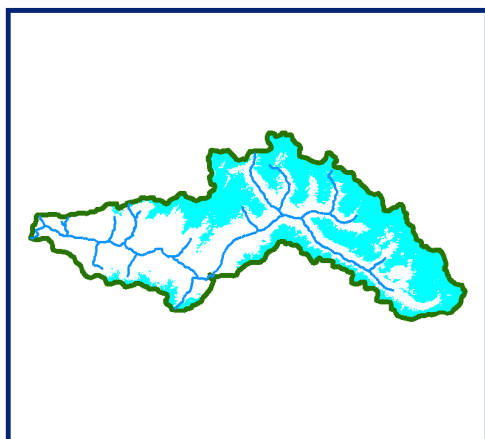
10 DAILY SNOW COVER MAP : BHUT BASIN



DATA USED
04 JUNE 2012



DATA NOT AVAILABLE



DATA USED
30 JUNE 2012



SNOW

0 5 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 2011							
1	2-Oct-11	705.81	15	3	15-Oct-11	1053.72	23
2	3-Oct-11	698.21	14	4	27-Oct-11	2301.3	49
November 2011							
5	1-Nov-11	1492.23	33	7	29-Nov-11	2016.66	43
6	20-Nov-11	2263.48	48				
December 2011							
8	13-Dec-11	3632.43	78	11	21-Dec-11	4281.99	92
9	14-Dec-11	3378.41	72	12	30-Dec-11	3440.71	74
10	16-Dec-11	3492.76	75	13	31-Dec-11	3334.56	71
January 2012							
14	24-Jan-12	4603.11	99	15	28-Jan-12	4579.14	98
February 2012							
16	2-Feb-12	4480.92	96	18	17-Feb-12	4605.56	99
17	7-Feb-12	4564.09	98	19	26-Feb-12	4537.3	97
March 2012							
20	2-Mar-12	4389.29	94	24	24-Mar-12	3593.76	77
21	7-Mar-12	4414.13	95	25	30-Mar-12	4051.71	87
22	11-Mar-12	4500.9	96	26	31-Mar-12	3943.62	84
23	21-Mar-12	4170.68	89				
April 2012							
27	2-Apr-12	2815.93	60	31	12-Apr-12	3933.62	84
28	4-Apr-12	3828.15	82	32	19-Apr-12	3877.25	83
29	5-Apr-12	3945.35	84	33	24-Apr-12	3633.04	78
30	7-Apr-12	2591.31	55				
May 2012							
34	3-May-12	3631.64	78	39	22-May-12	3605.47	77
35	8-May-12	3451.58	74	40	23-May-12	3523.29	75
36	13-May-12	3527.27	76	41	29-May-12	2759.4	59
37	15-May-12	2944.8	63	42	30-May-12	2643.42	57
38	18-May-12	2952.26	63				

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
June 2012							
43	1-June-12	3905.36	84	47	22-June-12	1714.21	37
44	3-June-12	2365.65	51	48	27-June-12	15020.72	33
45	4-June-12	2439.12	52				
46	16-June-12	2216.18	47				

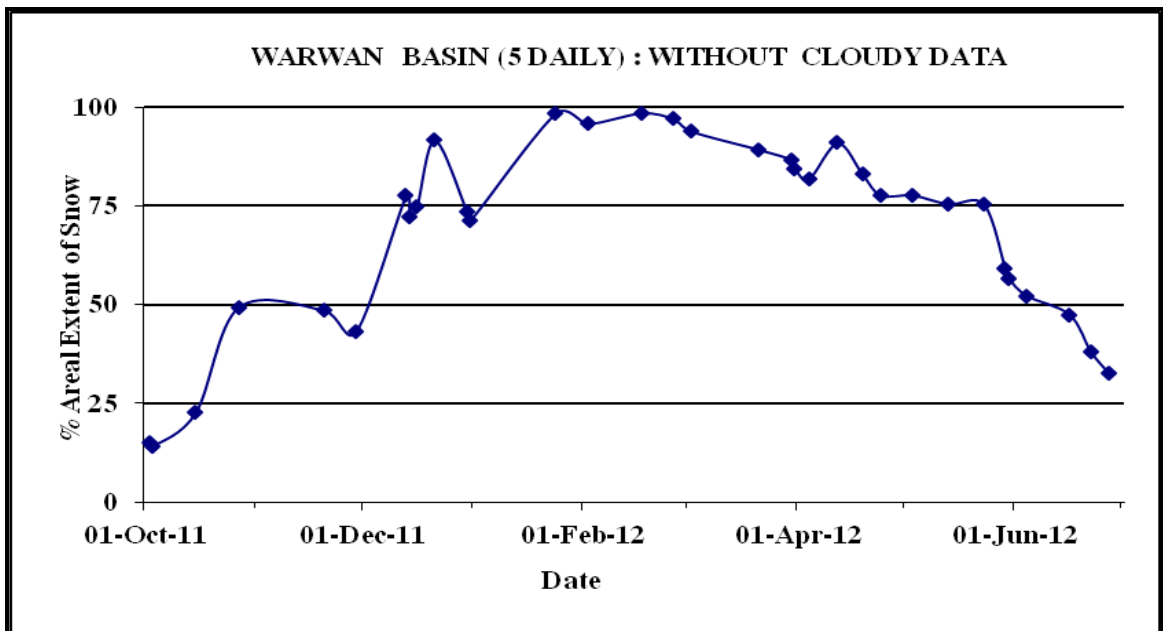
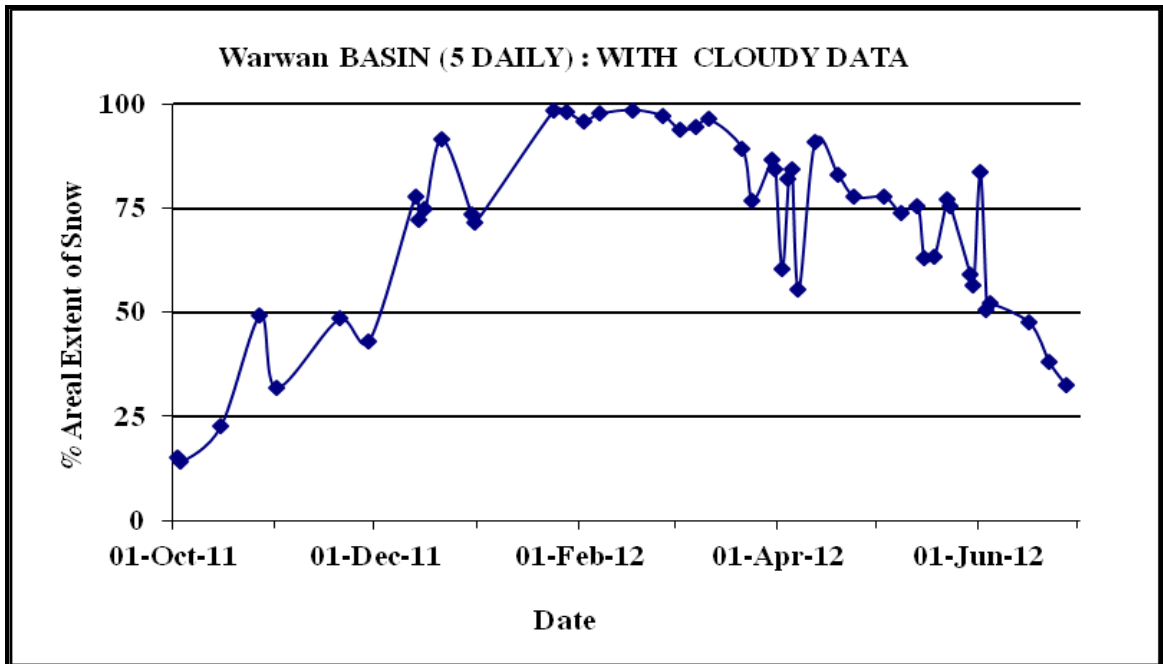
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: WARWAN

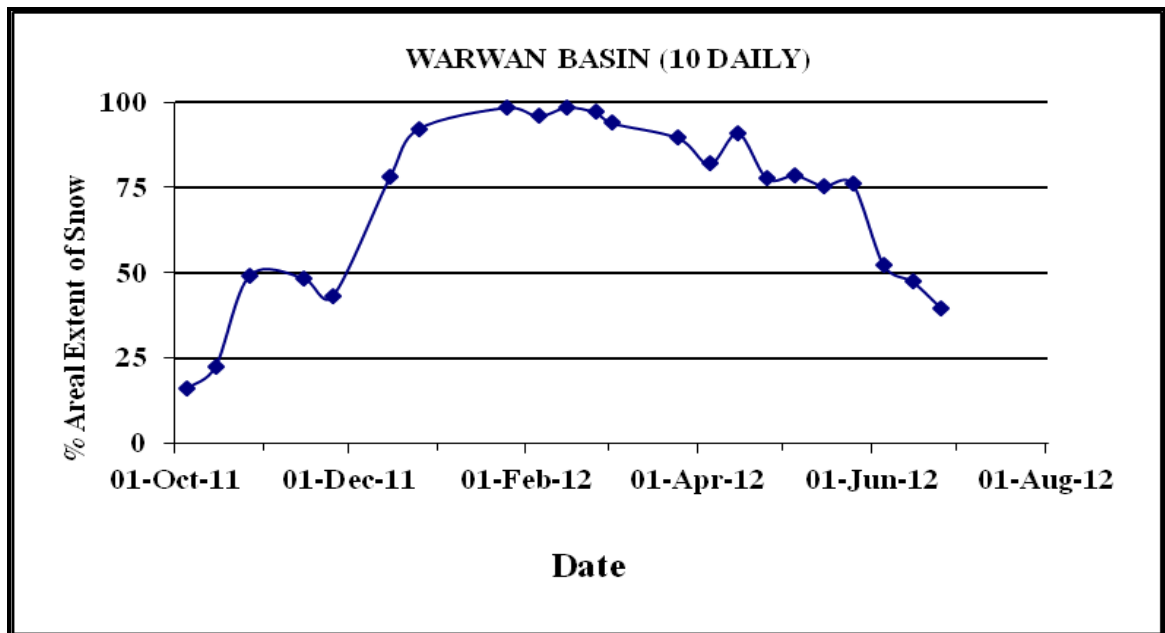
BASIN AREA: 4670 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	5-Oct-11	753.03	16	3	27-Oct-11	2301.3	49
2	15-Oct-11	1053.72	23				
November 2011							
4	20-Nov-11	2263.48	48	5	29-Nov-11	2016.66	43
December 2011							
6	15-Dec-11	3195.39	68	7	25-Dec-11	4310.3	92
January 2012							
8	24-Jan-12	4603.11	99				
February 2012							
9	2-Feb-12	4480.92	96	11	26-Feb-12	4537.3	97
10	17-Feb-12	4605.56	99				
March 2012							
12	2-Mar-12	4389.29	94	13	25-Mar-12	4184.81	90
April 2012							
14	4-Apr-12	3828.15	82	16	24-Apr-12	3633.04	78
15	19-Apr-12	3877.25	83				
May-2012							
17	5-May-12	3672.67	79	19	25-May-12	3561.71	76
18	13-May-12	3527.27	76				
June 2012							
20	4-Jun-12	2439.12	52	22	25-Jun-12	1855.08	40
21	16-Jun-12	2216.18	47				

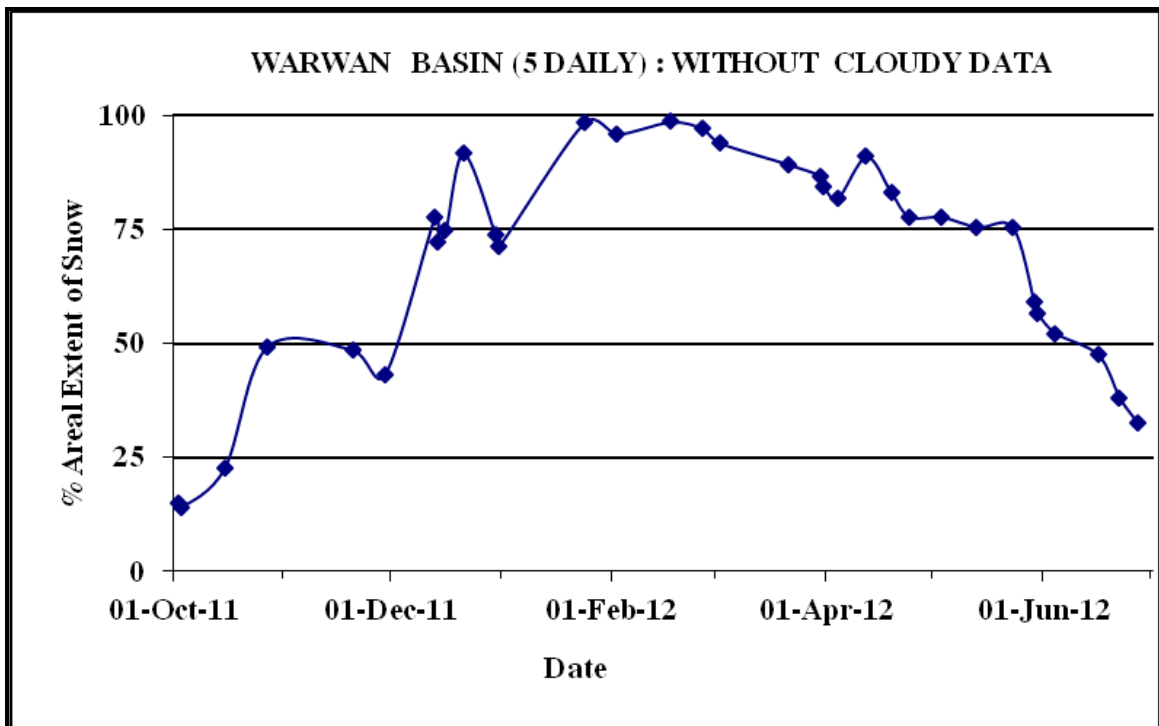
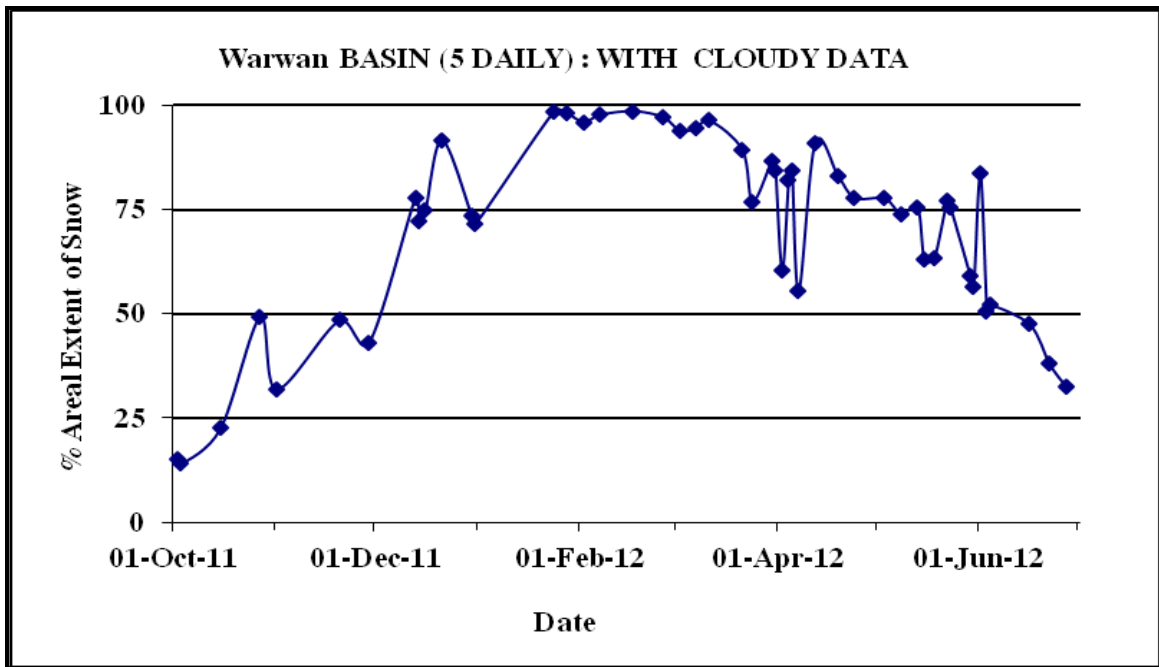
SNOW COVER DEPLETION CURVE



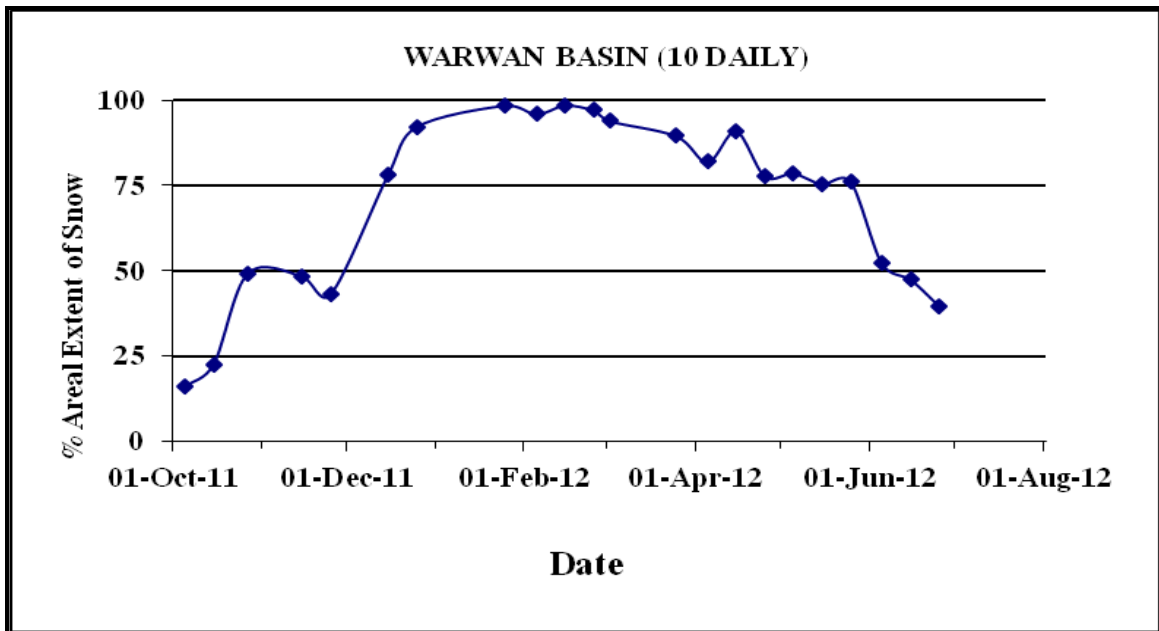
SNOW COVER DEPLETION CURVE



SNOW COVER DEPLETION CURVE



SNOW COVER DEPLETION CURVE

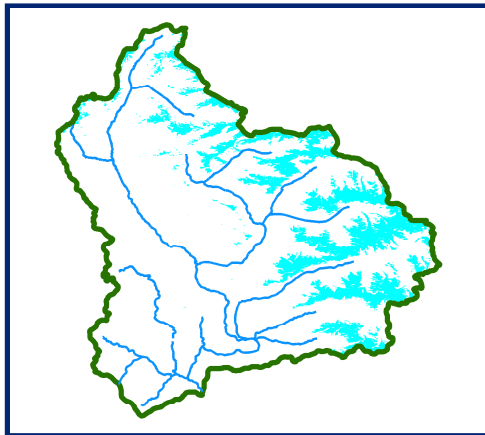


WARWAN BASIN

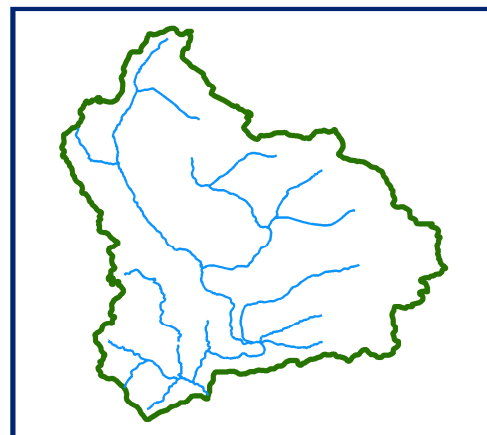
SNOW COVER MAP

:

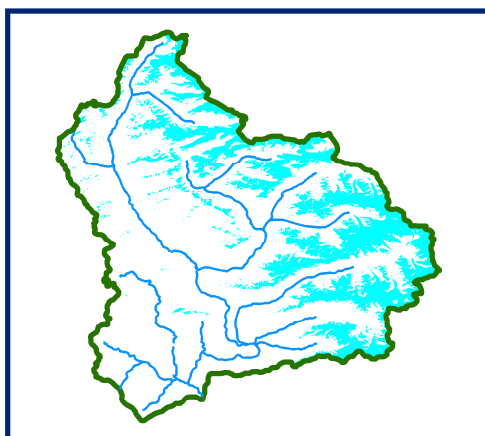
WARWAN BASIN



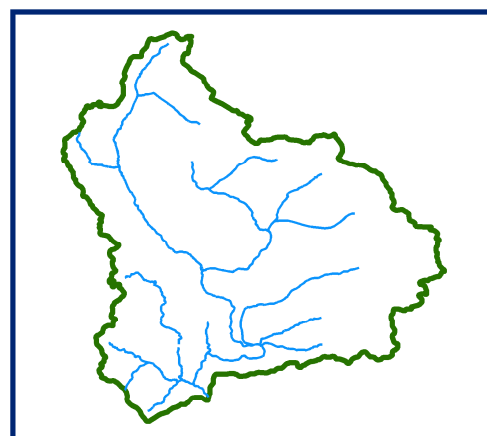
02 OCTOBER 2011



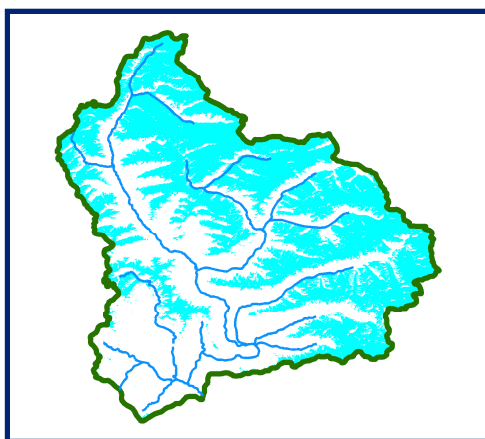
DATA NOT AVAILABLE



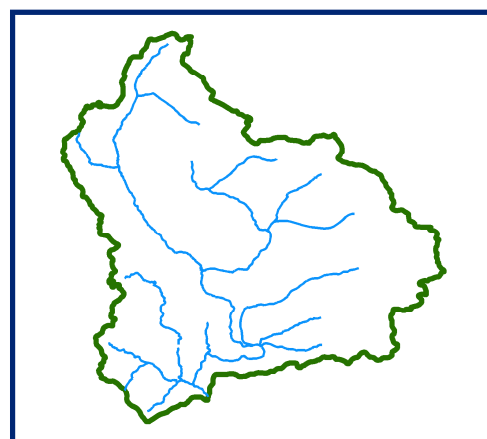
15 OCTOBER 2011



DATA NOT AVAILABLE



27 OCTOBER 2011



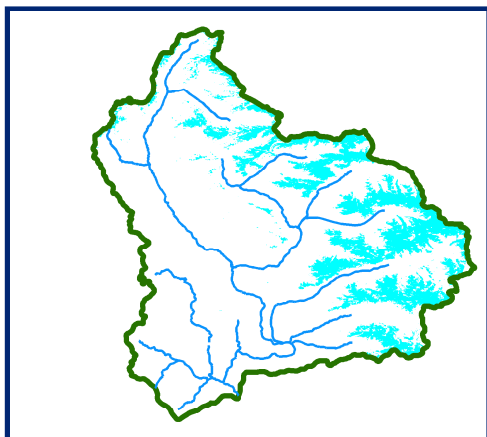
DATA NOT AVAILABLE



SNOW



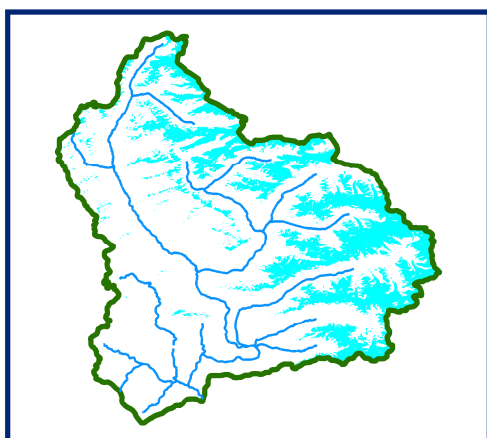
SNOW COVER MAP : WARWAN BASIN



DATA USED

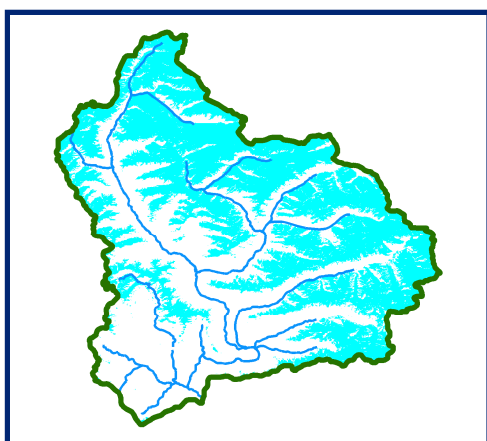
02 OCTOBER 2011

03 OCTOBER 2011



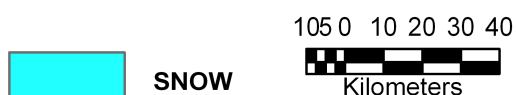
DATA USED

15 OCTOBER 2011



DATA USED

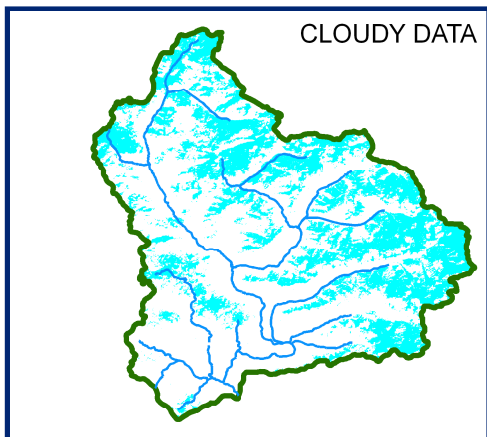
27 OCTOBER 2011



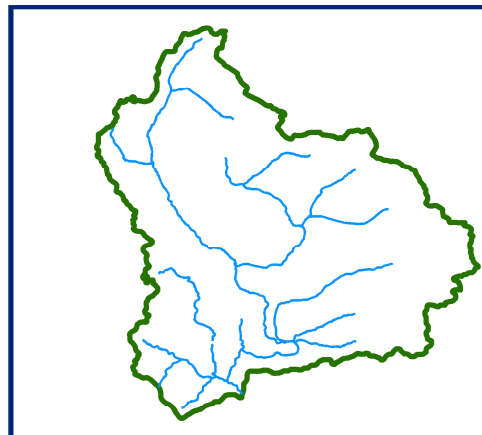
SNOW COVER MAP

:

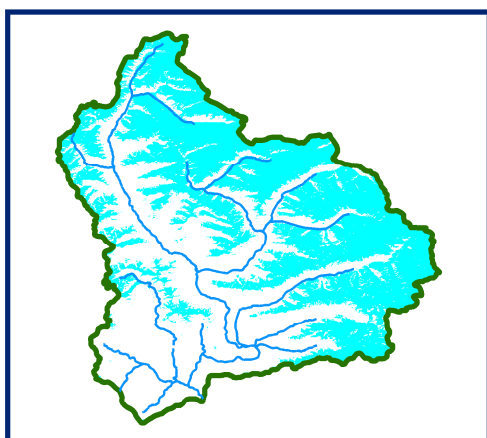
WARWAN BASIN



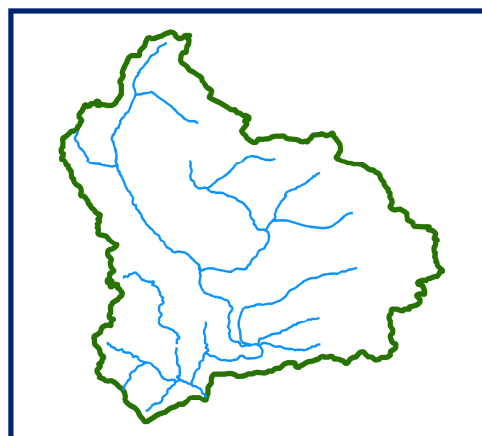
01 NOVEMBER 2011



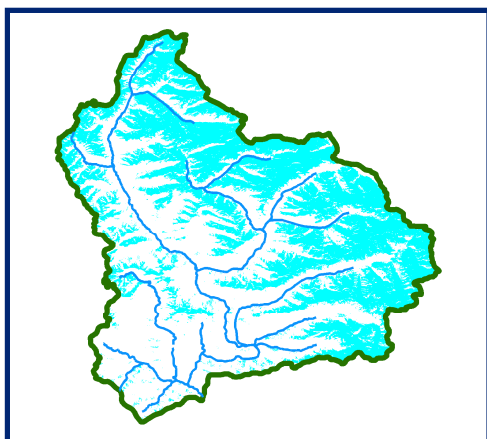
DATA NOT AVAILABLE



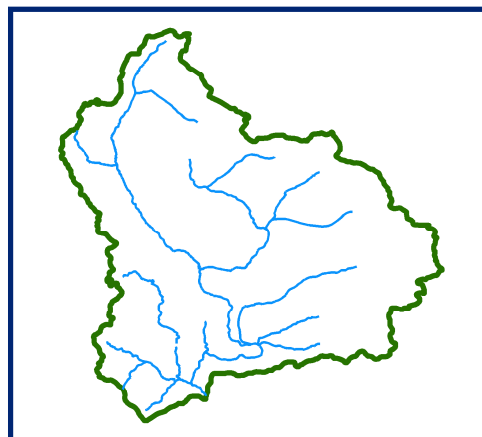
20 NOVEMBER 2011



DATA NOT AVAILABLE



29 NOVEMBER 2011



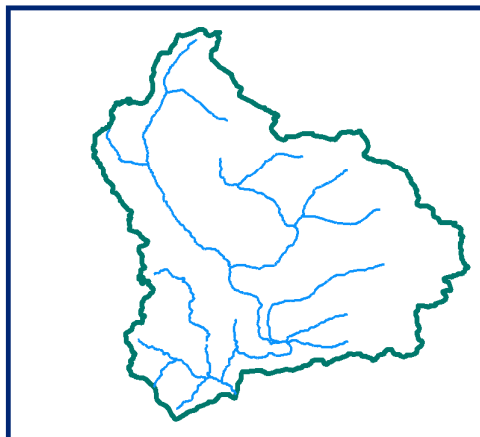
DATA NOT AVAILABLE



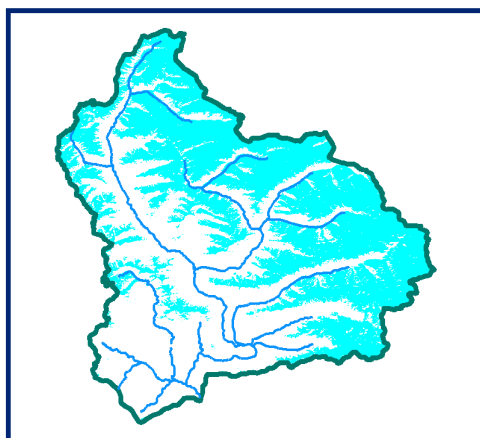
SNOW



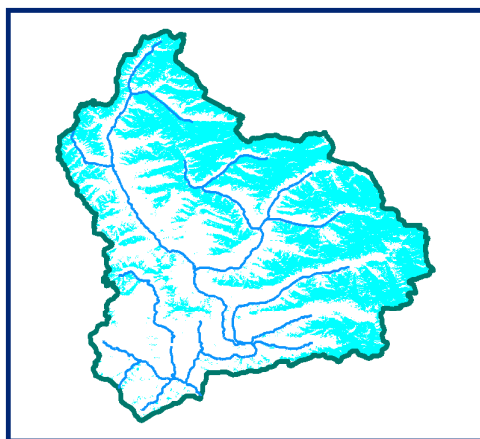
10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA NOT AVAILABLE



DATA USED
20 NOVEMBER 2011



DATA USED
29 NOVEMBER 2011



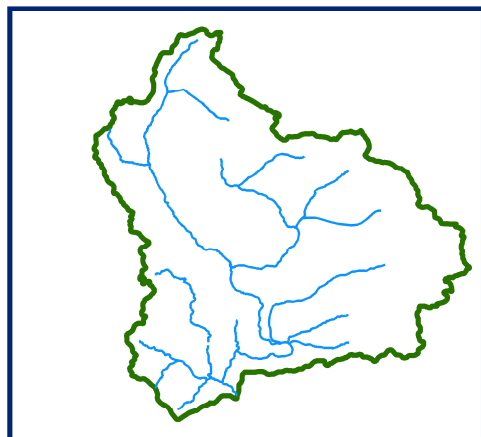
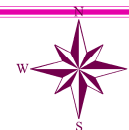
SNOW

0 5 10 20 30 40
Kilometers

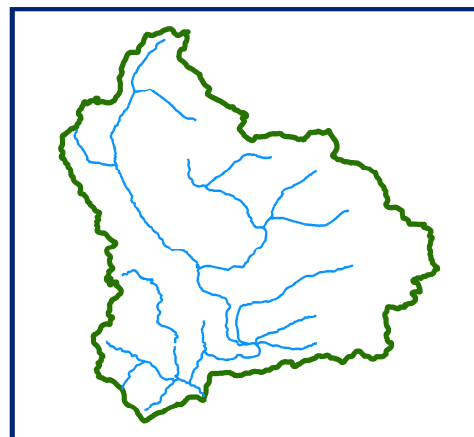
SNOW COVER MAP

:

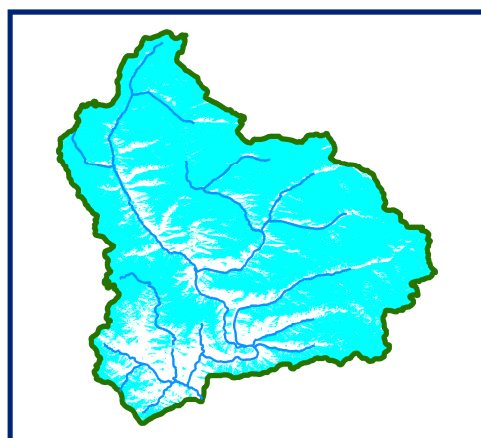
WARWAN BASIN



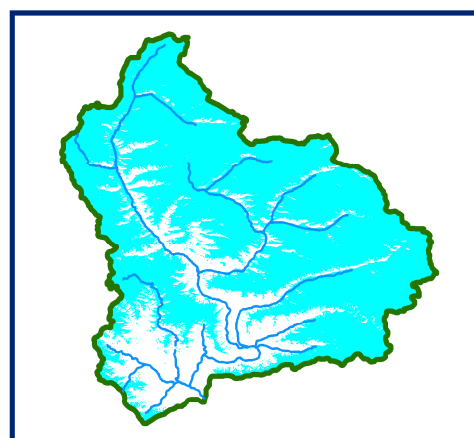
DATA NOT AVAILABLE



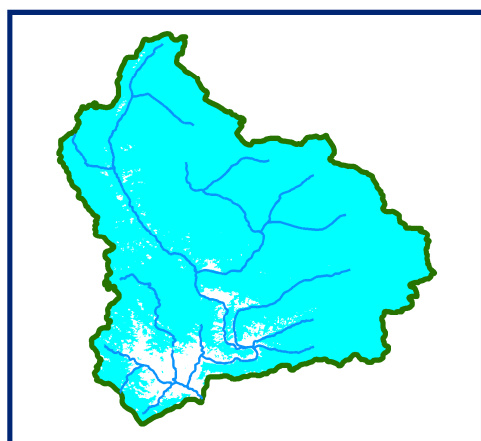
DATA NOT AVAILABLE



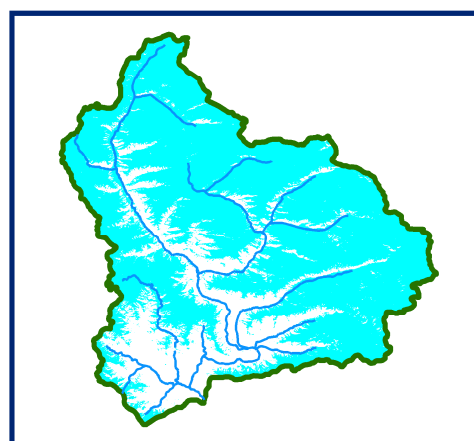
13 DECEMBER 2011



16 DECEMBER 2011



21 DECEMBER 2011



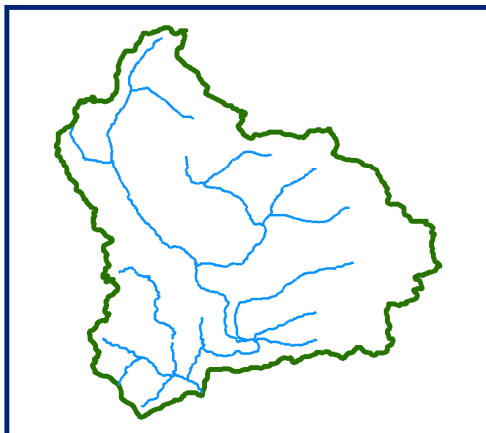
30 DECEMBER 2011



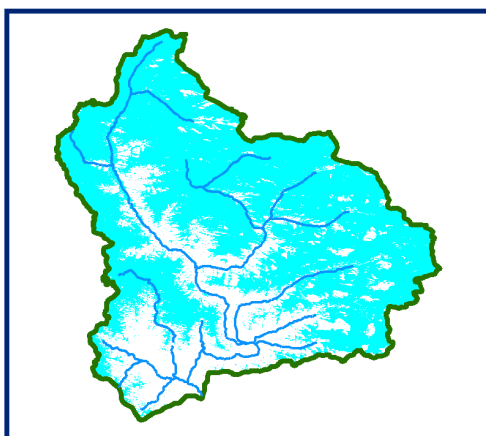
SNOW

0 5 10 20 30 40
Kilometers

10 DAILY SNOW COVER MAP : WARWAN BASIN

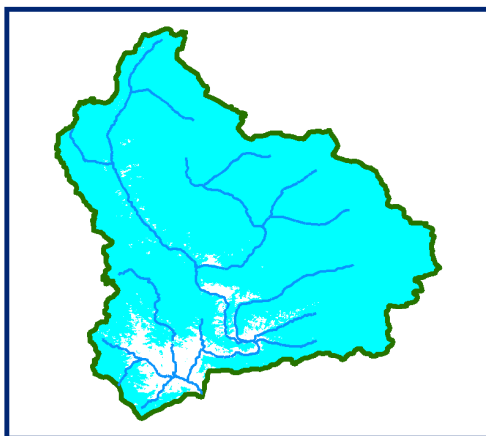


DATA NOT AVAILABLE



DATA USED

13 DECEMBER 2011
14 DECEMBER 2011
16 DECEMBER 2011



DATA USED

21 DECEMBER 2011
30 DECEMBER 2011
31 DECEMBER 2011



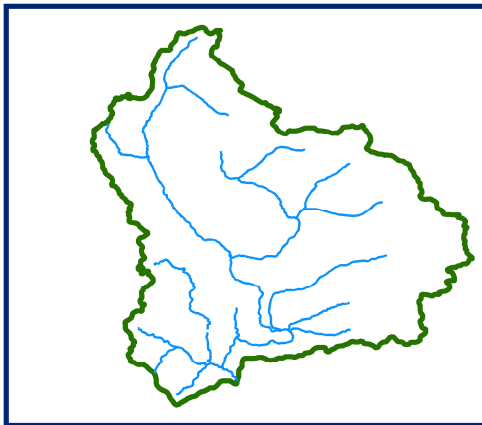
SNOW

0 5 10 20 30 40
Kilometers

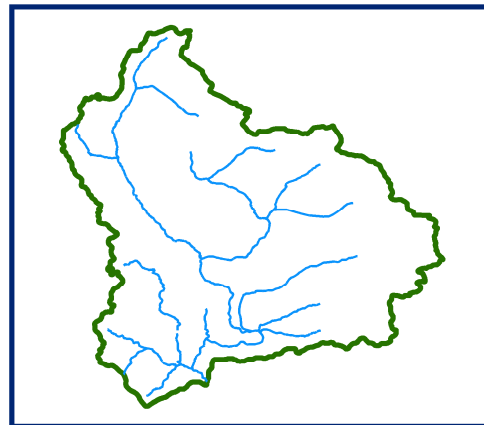
SNOW COVER MAP

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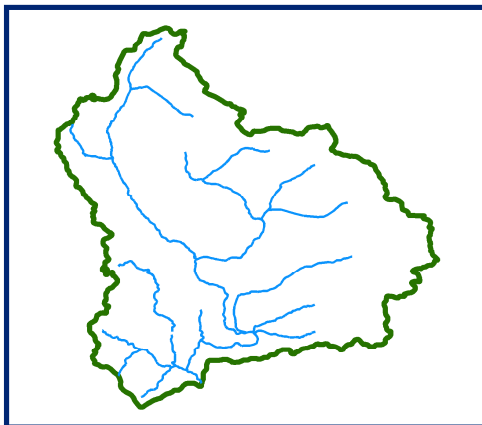
WARWAN BASIN



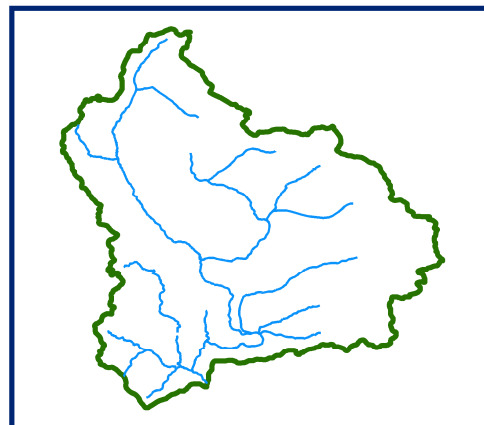
DATA NOT AVAILABLE



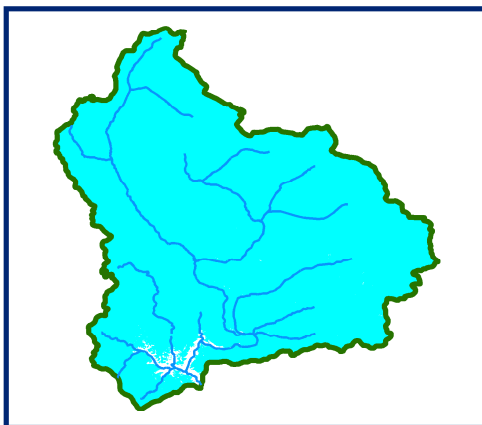
DATA NOT AVAILABLE



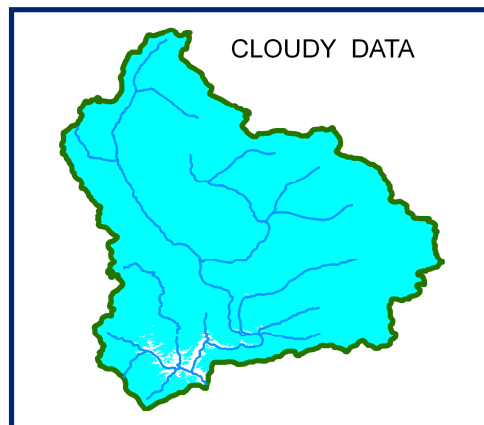
DATA NOT AVAILABLE



DATA NOT AVAILABLE



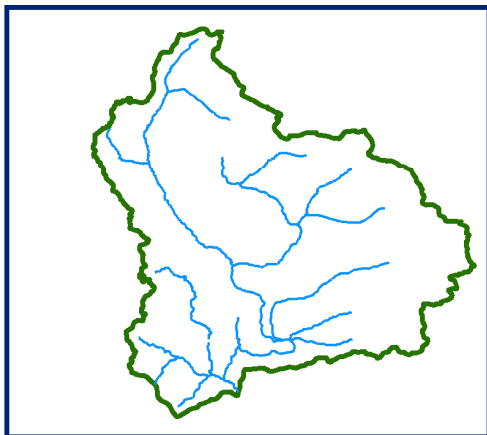
24 JANUARY 2012



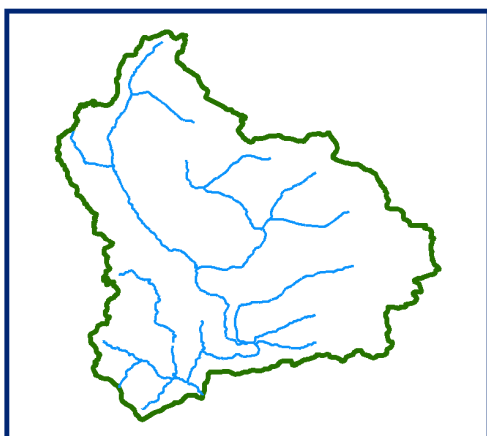
28 JANUARY 2012



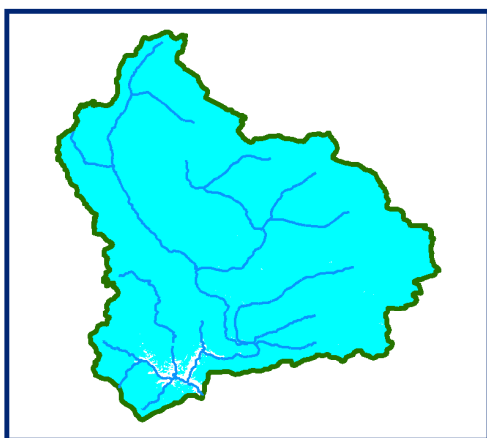
10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA NOT AVAILABLE




DATA NOT AVAILABLE



DATA USED
24 JANUARY 2012



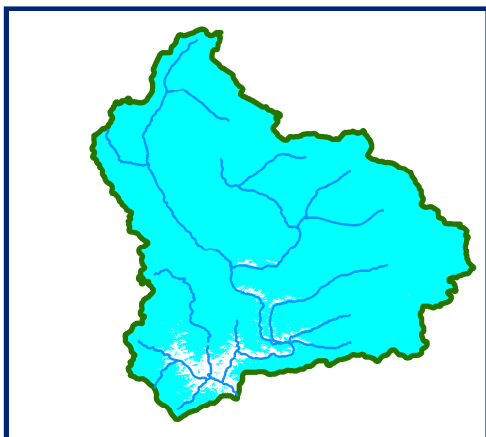
SNOW

0 5 10 20 30 40

Kilometers

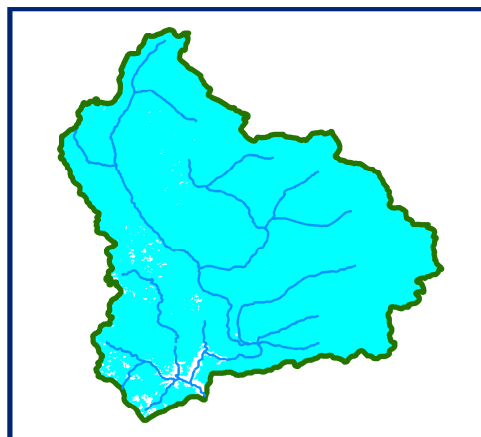
SNOW COVER MAP

:

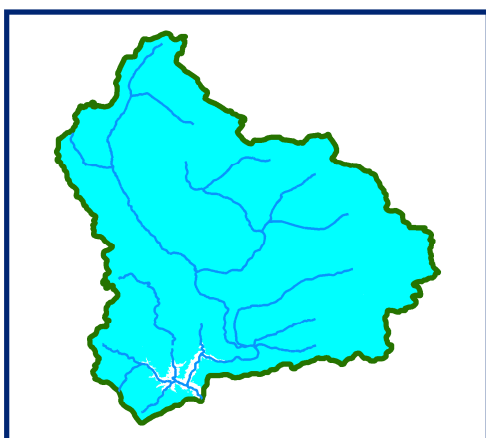
WARWAN BASIN



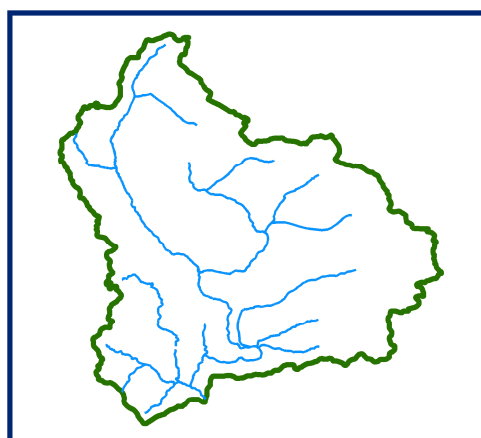
02 FEBRUARY 2012



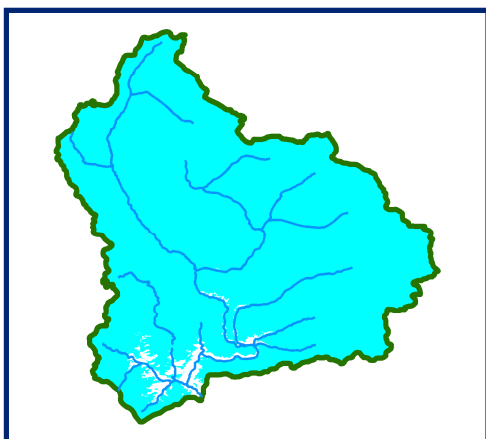
07 FEBRUARY 2012



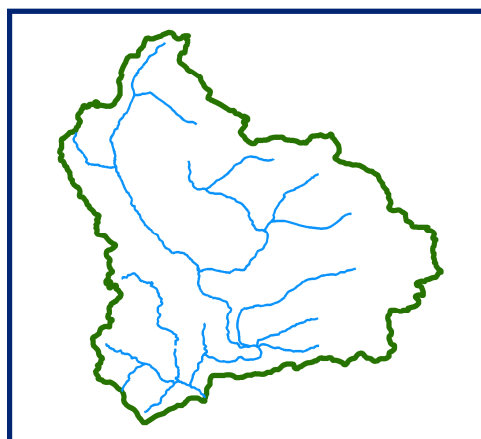
17 FEBRUARY 2012



DATA NOT AVAILABLE



26 FEBRUARY 2012



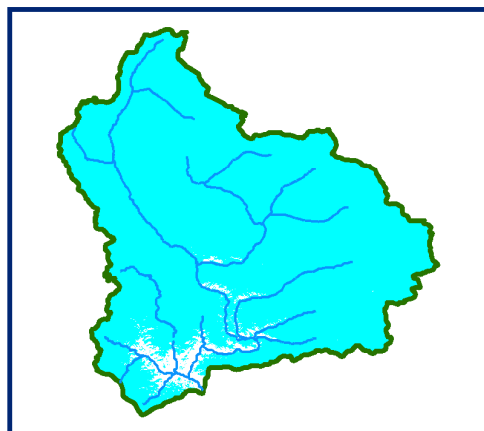
DATA NOT AVAILABLE



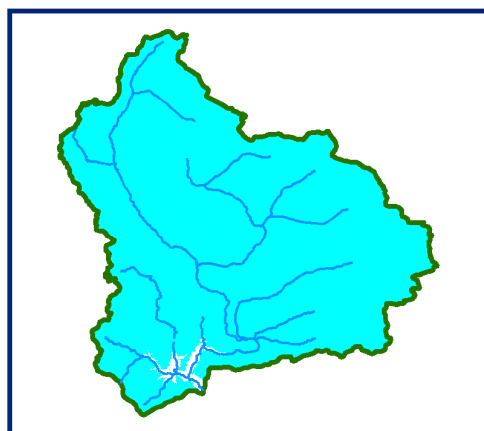
SNOW



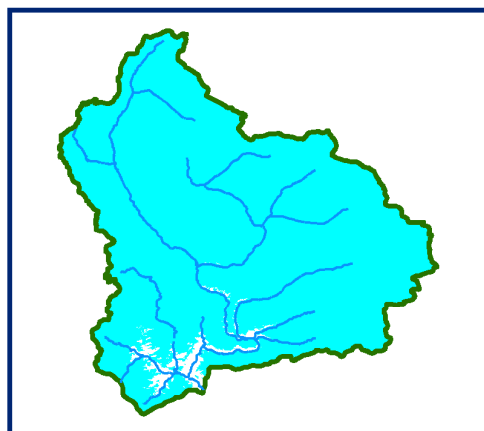
10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA USED
02 FEBRUARY 2012



DATA USED
17 FEBRUARY 2012



DATA USED
26 FEBRUARY 2012



SNOW

0 5 10 20 30 40

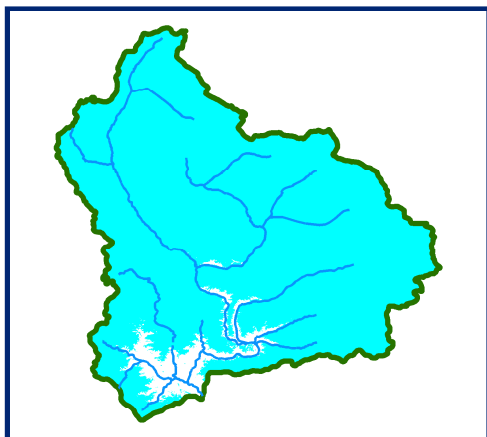


Kilometers

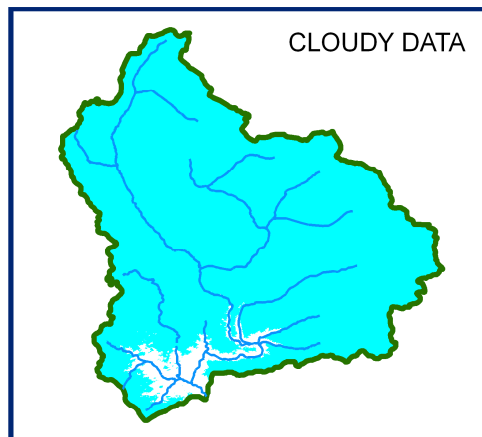
SNOW COVER MAP

:

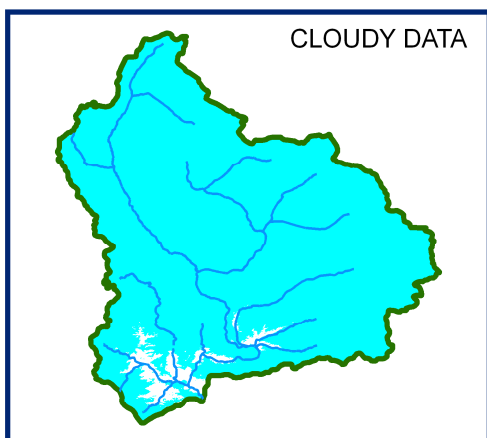
WARWAN BASIN



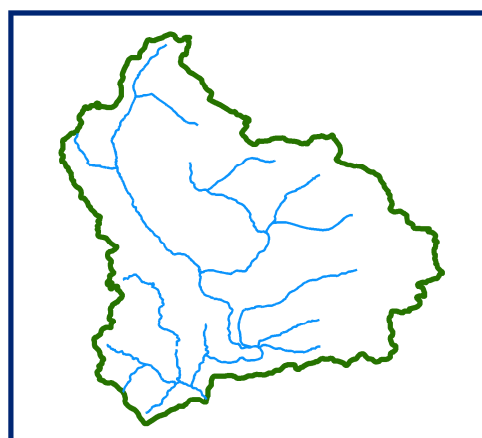
02 MARCH 2012



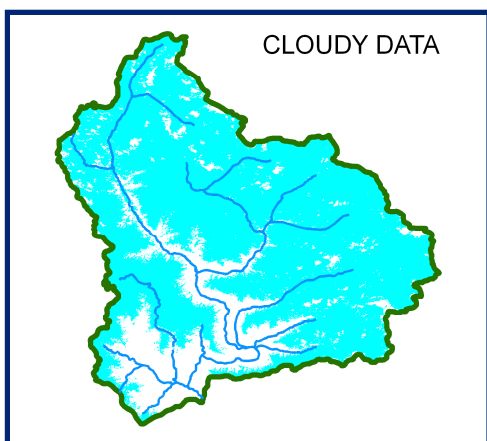
07 MARCH 2012



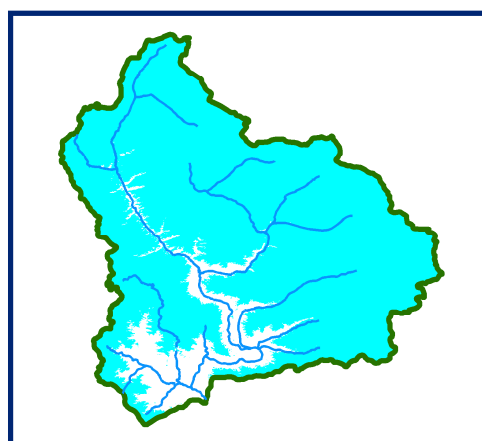
11 MARCH 2012



DATA NOT AVAILABLE



24 MARCH 2012



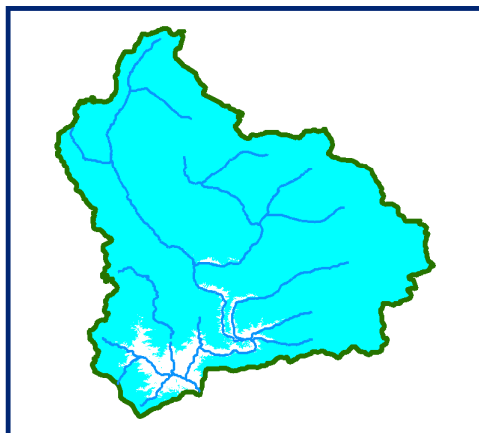
30 MARCH 2012



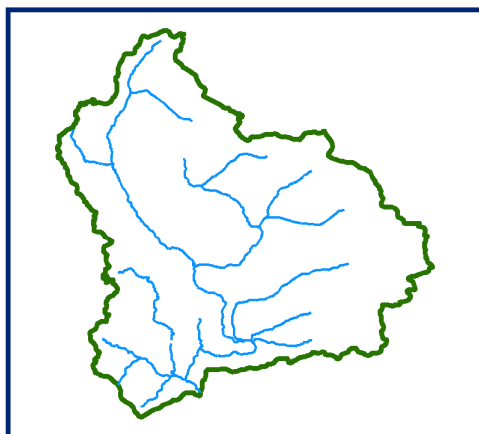
SNOW



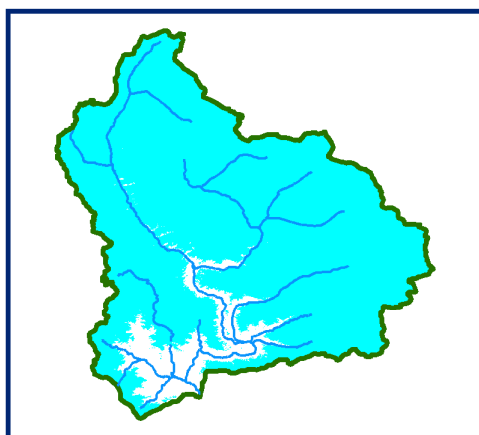
10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA USED
02 MARCH 2012




DATA NOT AVAILABLE



DATA USED
21 MARCH 2012
23 MARCH 2012
30 MARCH 2012



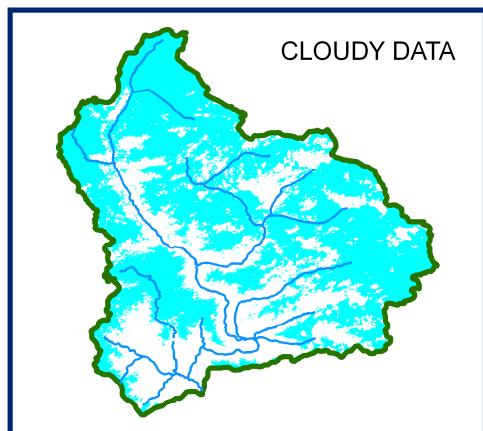
SNOW

0 5 10 20 30 40

Kilometers

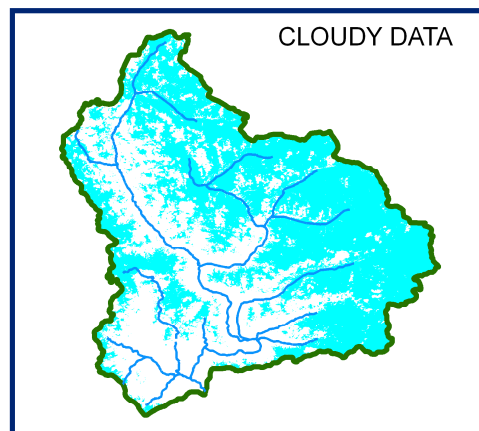
SNOW COVER MAP

:

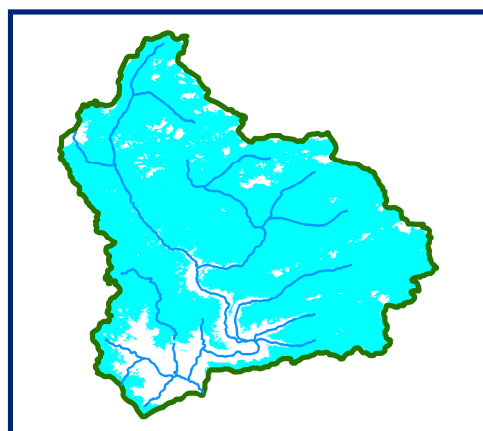
WARWAN BASIN



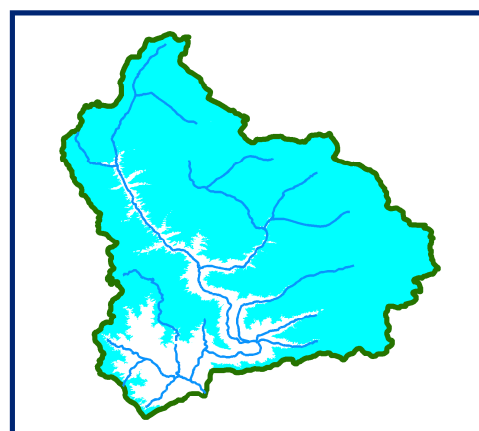
02 APRIL 2012



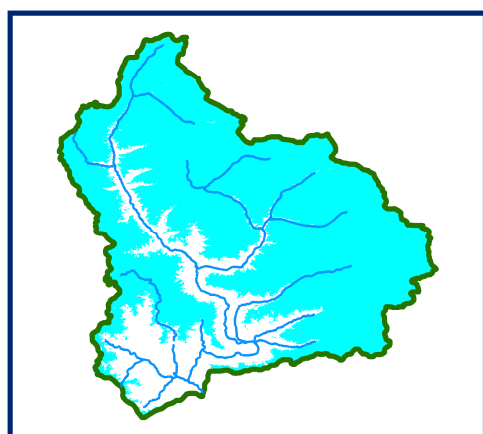
07 APRIL 2012



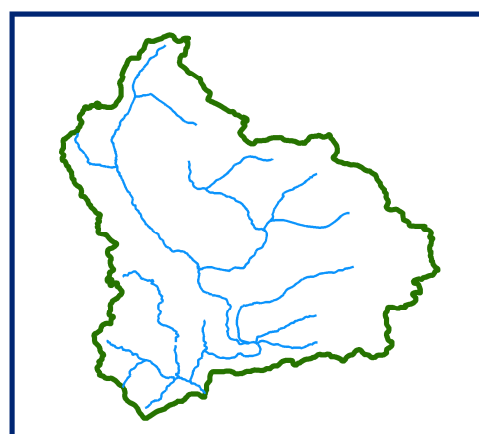
12 APRIL 2012



19 APRIL 2012



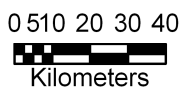
24 APRIL 2012



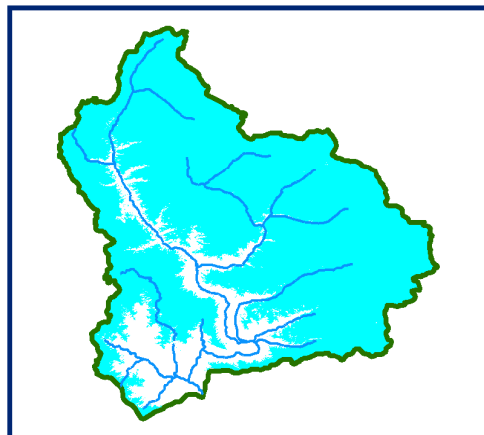
DATA NOT AVAILABLE



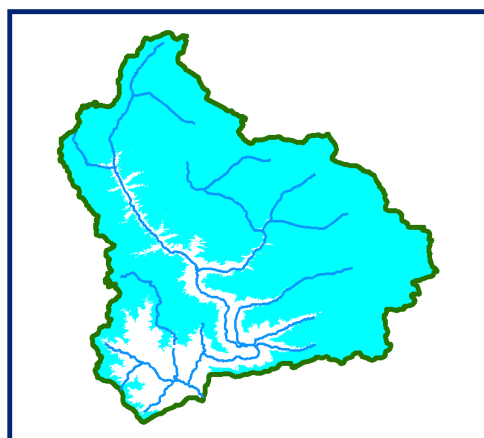
SNOW



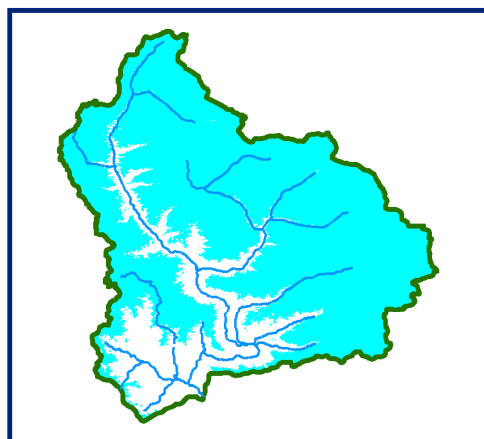
10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA USED
04 APRIL 2012




DATA USED
19 APRIL 2012



DATA USED
24 APRIL 2012



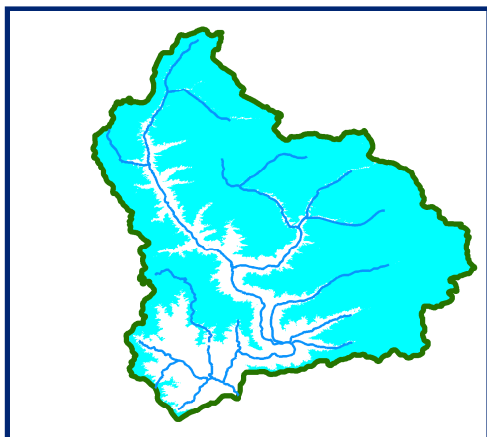
SNOW

0 5 10 20 30 40

Kilometers

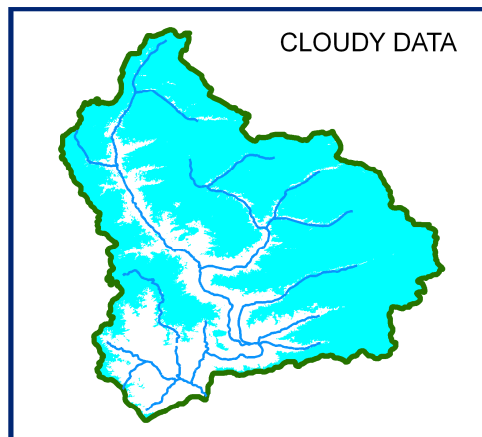
SNOW COVER MAP

:

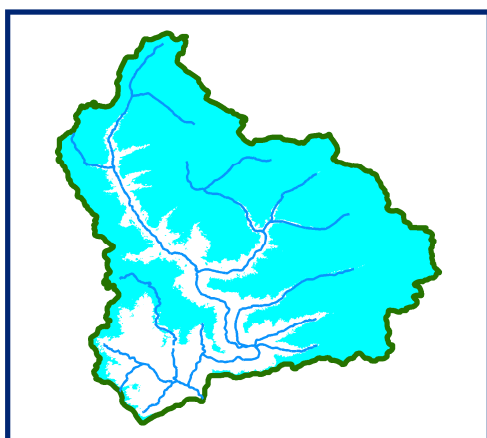
WARWAN BASIN



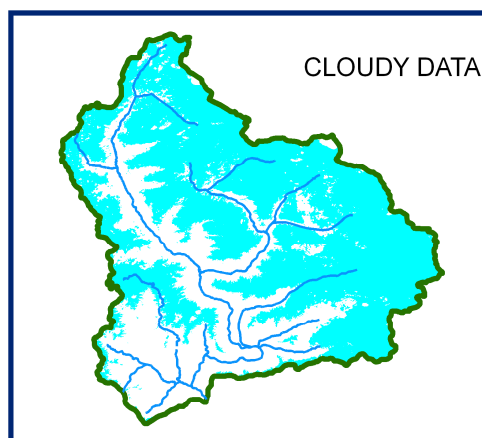
03 MAY 2012



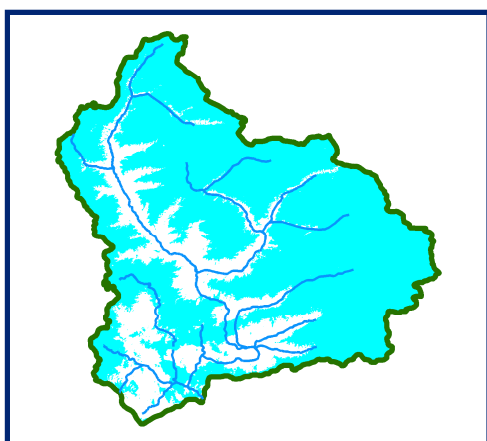
08 MAY 2012



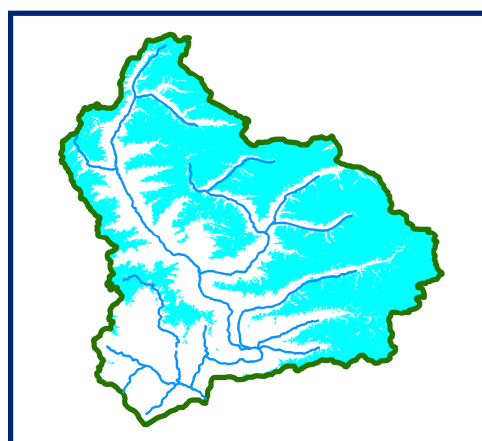
13 MAY 2012



18 MAY 2012



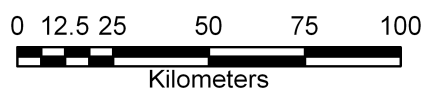
23 MAY 2012



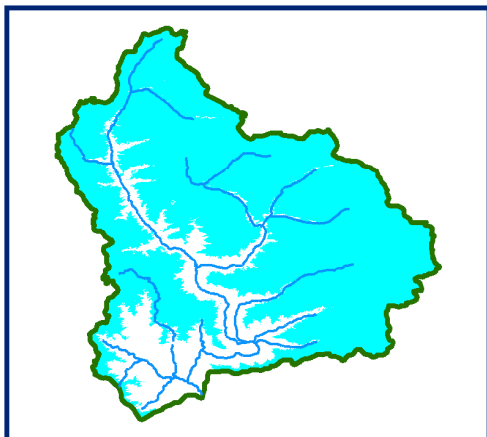
30 MAY 2012



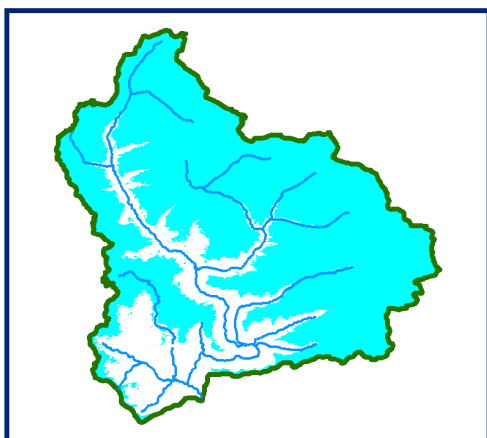
SNOW



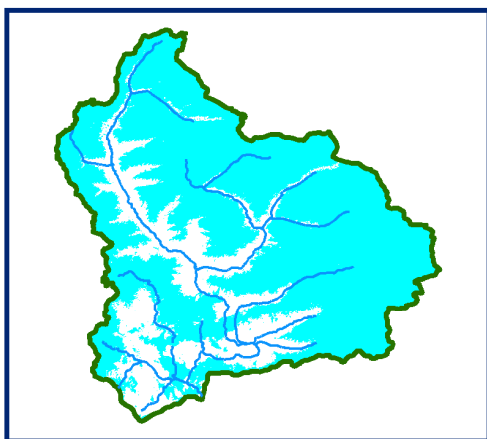
10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA USED
03 MAY 2012
08 MAY 2012




DATA USED
13 MAY 2012



DATA USED
23 MAY 2012
29 MAY 2012
30 MAY 2012



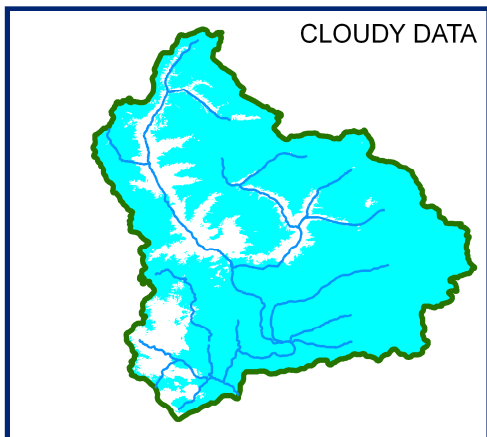
SNOW

0 5 10 20 30 40

Kilometers

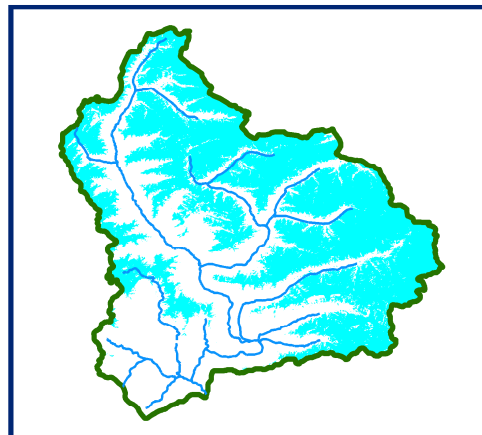
SNOW COVER MAP

:

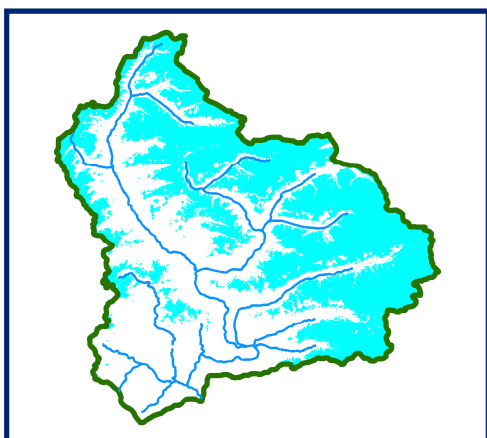
WARWAN BASIN



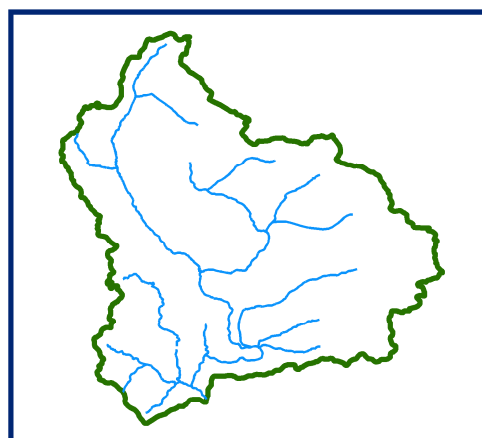
01 JUNE 2012



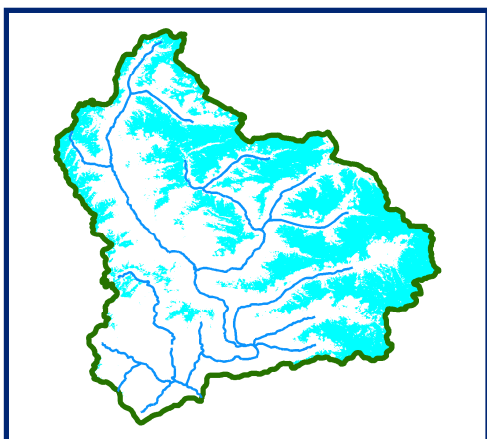
04 JUNE 2012



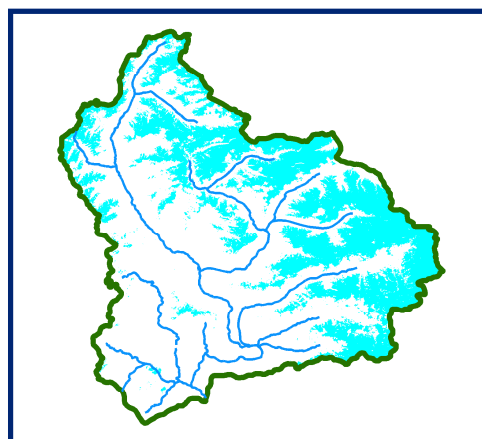
16 JUNE 2012



DATA NOT AVAILABLE



22 JUNE 2012



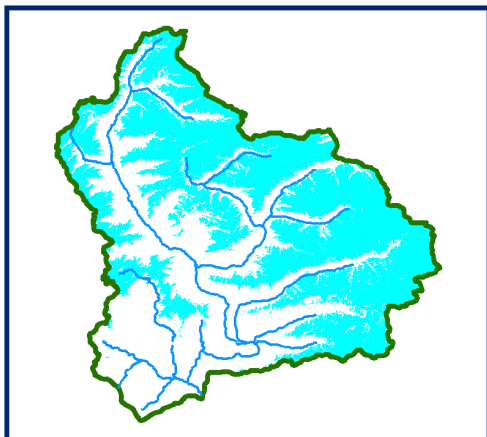
27 JUNE 2012



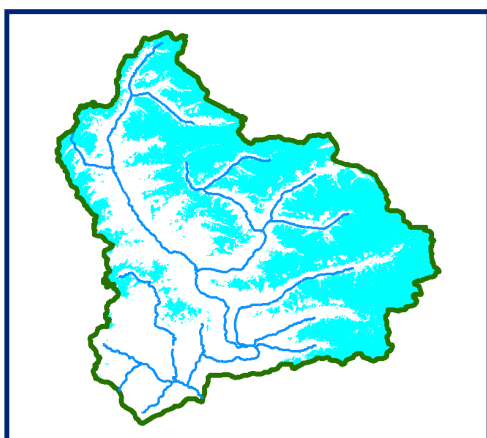
SNOW



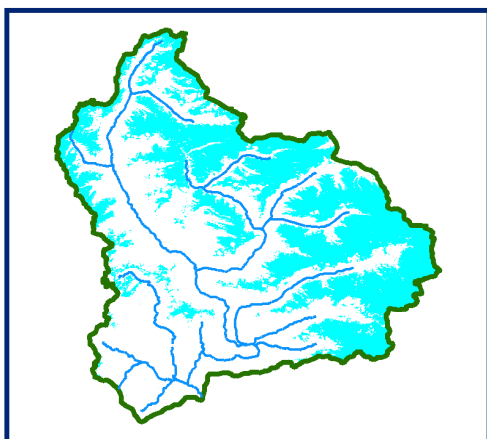
10 DAILY SNOW COVER MAP : WARWAN BASIN



DATA USED
04 JUNE 2012




DATA USED
16 JUNE 2012



DATA USED
22 JUNE 2012
27 JUNE 2012



SNOW

0 5 10 20 30 40

Kilometers