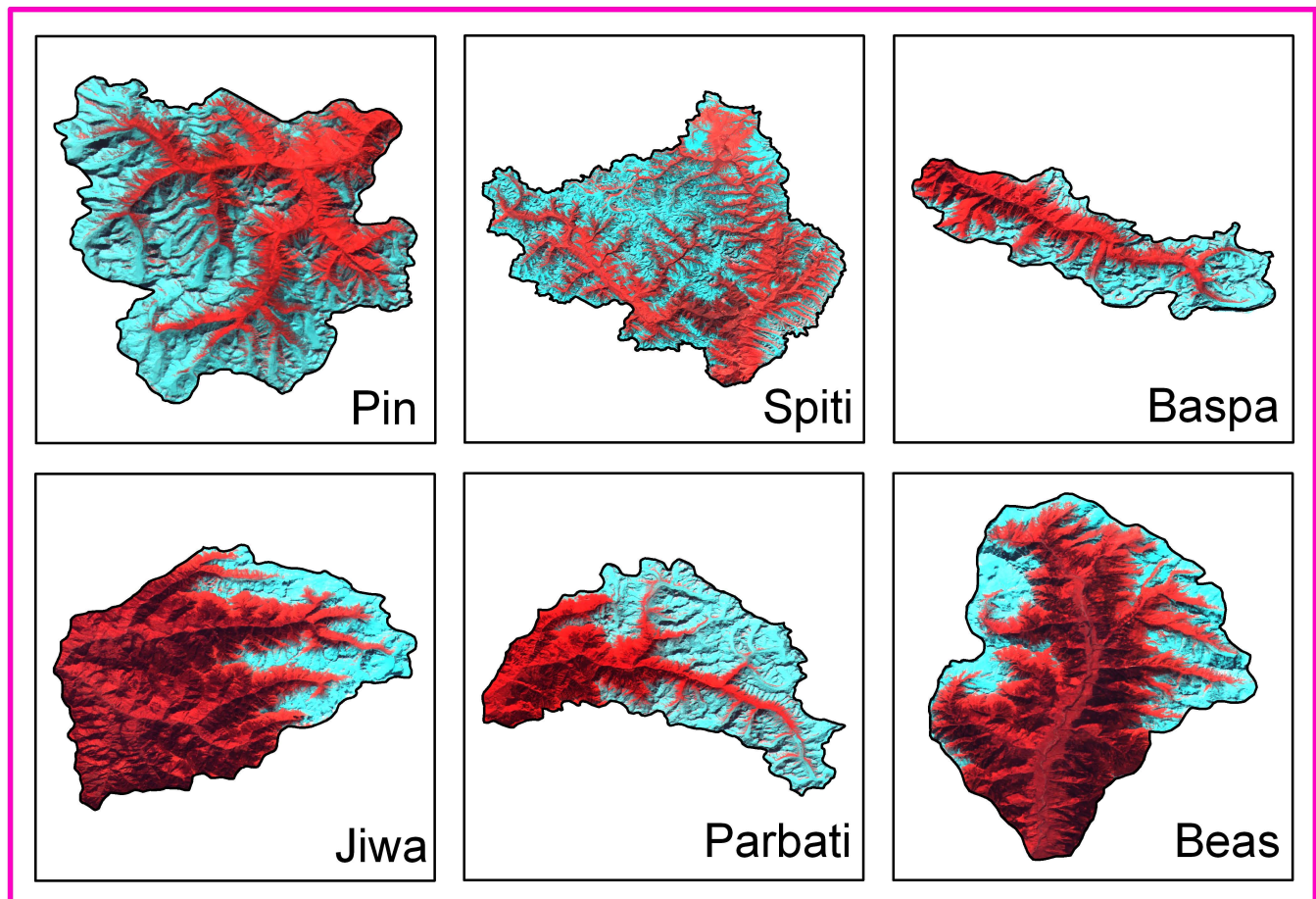


SNOW COVER ATLAS OF SATLUJ BASIN

Sub basins: Pin, Spiti, Baspa, Jiwa, Parbati and Beas

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

Year : 2010-11



State Centre on Climate Change
(State Council for Science Technology & Environment, Shimla),
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and

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April, 2012

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

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Month and year of publication	April 2012
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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	This atlas gives subbasin-wise distribution of snow cover in the Satluj basin from October 2010 to June 2011. The subbasins included in this report are Pin, Spiti, Baspa, Jiwa, Parbati and Beas. 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 curves. It is expected that this data will be useful for hydrological and climatological applications.
Key words	Snow cover, NDSI, AWiFS, depletion curve, Pin, Spiti, Baspa, Jiwa, Parbati and Beas basins.
Security Classification	Unrestricted
Distribution	As per list

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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:

The study area comprises of distribution of snow cover in Pin, Spiti, Baspa, Jiwa, Baspa, Parbati and Beas sub basins of Satluj basin. The location map of these sub basins is as per Figure 1.

3. Data used:

AWiFS data from October 2010 to June 2011 was 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:

$$\text{Normalized Difference Snow Index (NDSI)} = (\text{band 2} - \text{band 5}) / (\text{band 2} + \text{band 5}) \quad \dots(1)$$

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 curve is given from October 2010 to June 2011. Snow ablation pattern varies from basin to basin, depending on area altitude distribution in the basins. For example, in the Jiwa river basin, which is located in lower altitude zone and contains few glaciers has shown and ablation of snow through out the winter season. However, in case of Pin basin, located in high altitude region and large area is covered by glaciers has shown little or no ablation from January to April. For a period between October to December, snow ablation was observed in all basins.

Acknowledgements

This investigation was carried out under Snow and Glacier Studies Project, a joint initiative of Ministry of Environment and Forest (MoEF) and Department of Space (DOS). The authors are grateful to Shri A. S. Kiran Kumar, Director, Space Applications Centre, Ahmedabad for continuous guidance and encouragement during the investigation. Authors would like to thank Dr. J. S. Parihar, Deputy Director, EPSA, SAC for their suggestions and comments on the manuscript. The authors are also thankful to Sh. Sudripta Roy, IAS, Additional Chief Secretary (Env. S&T) Government of Himachal Pradesh and Dr. Nagin Nanda, IFS ,Secretary –cum-Director (Environment) and Member Secretary (SCSTE) for their guidance from time to time and permission to undertake the study.

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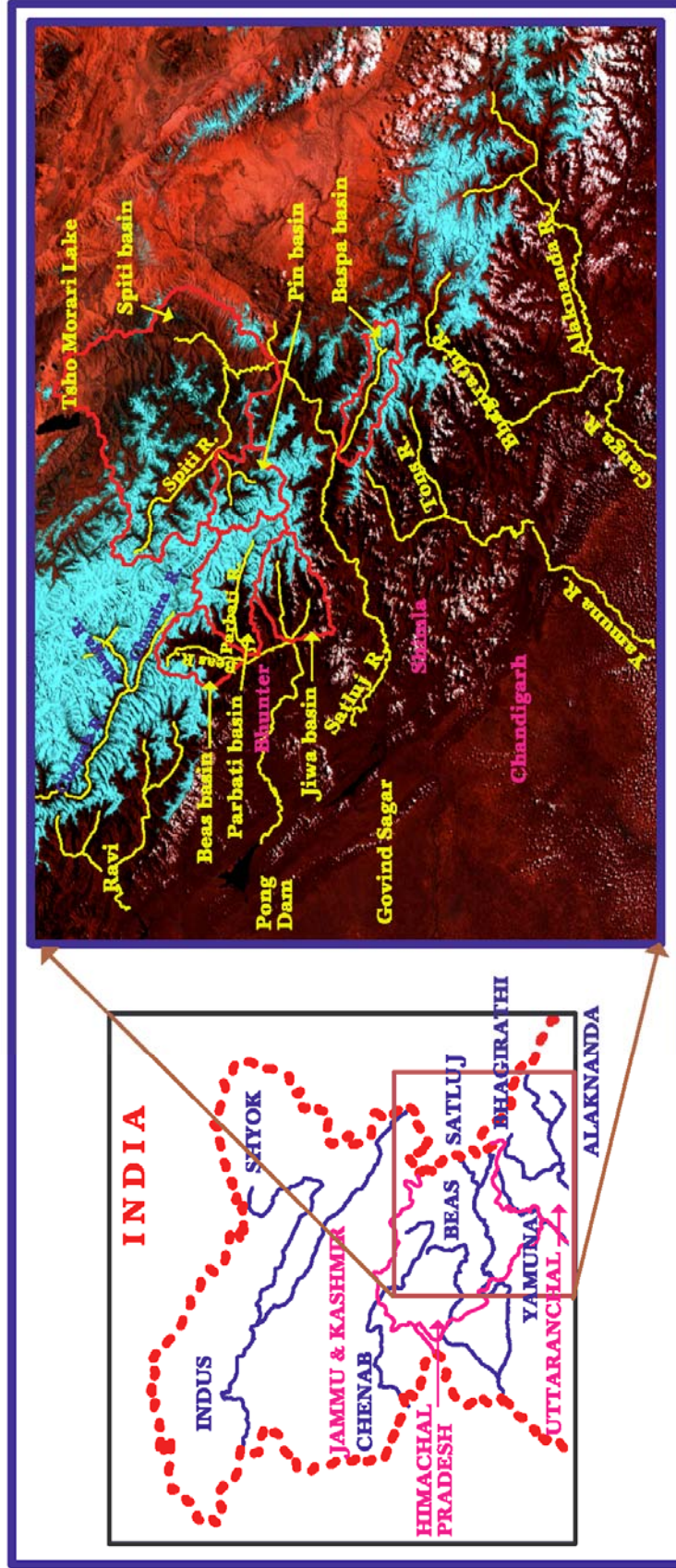


Figure 1: Location map of Pin, Spiti, Baspa, Jiwa, Parbati and Beas sub-basins (Part of Satluj basin)

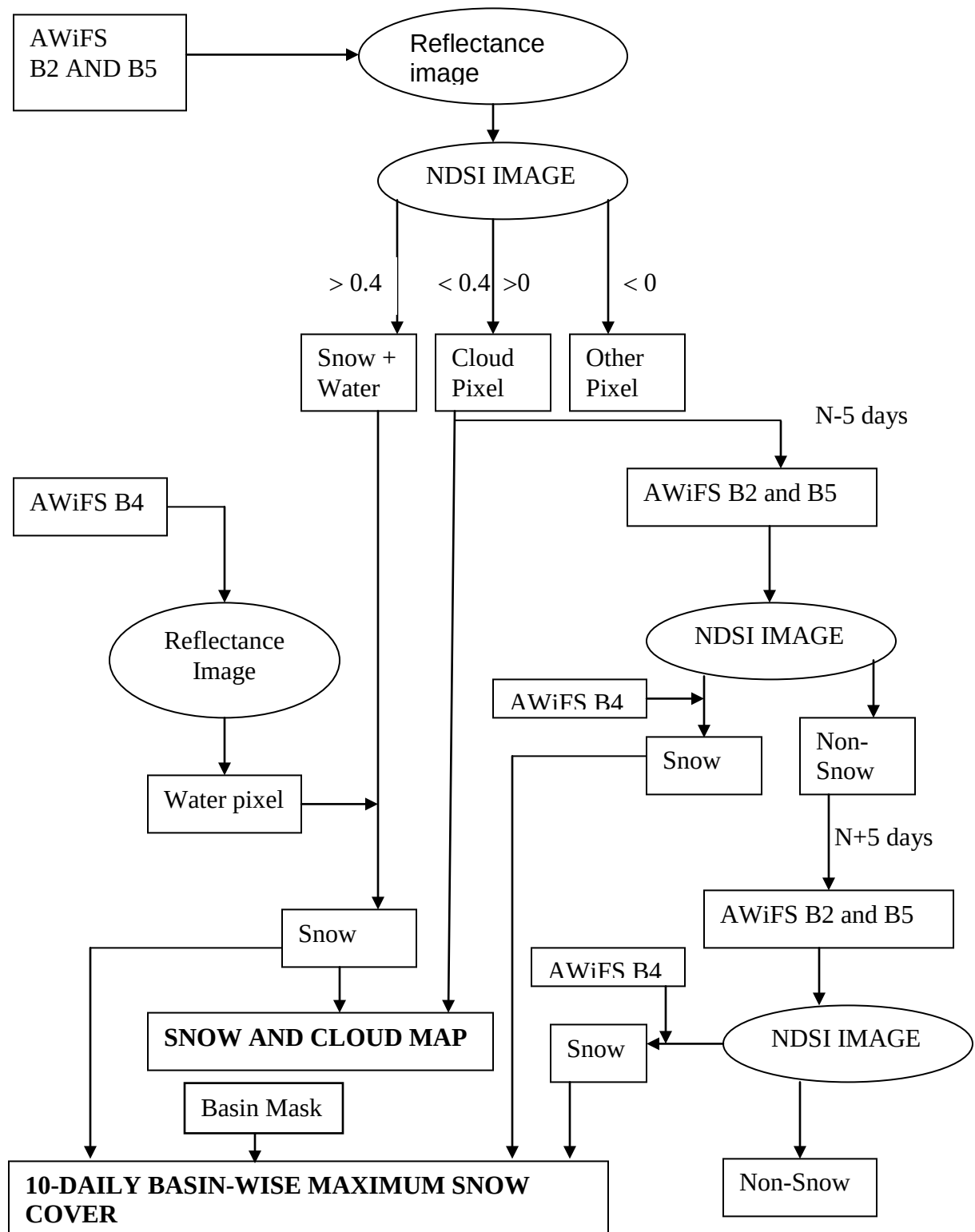


Figure 2: Algorithm for snow cover mapping using AWiFS data

PIN BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: PIN

BASIN AREA: 1266 sq km

S. No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2010							
1.	03 Oct 2010	743.15	59	3.	18 Oct 2010	606.18	48
2.	08 Oct 2010	689.00	54	4.	27 Oct 2010	1099.72	87
November 2010							
1.	06 Nov 2010	919.12	73	3.	20 Nov 2010	963.25	76
2.	15 Nov 2010	805.82	64	4.	30 Nov 2010	786.16	62
December 2010							
1.	05 Dec 2010	740.21	58	4.	19 Dec 2010	716.15	57
2.	09 Dec 2010	738.25	58	5.	24 Dec 2010	714.55	56
3.	14 Dec 2010	718.37	57	6.	29 Dec 2010	1242.52	98
January 2011							
1.	02 Jan 2011	1271.32	100	5.	26 Jan 2011	1261.30	100
2.	03 Jan 2011	1271.45	100	6.	27 Jan 2011	1270.27	100
3.	07 Jan 2011	999.43	79	7.	31 Jan 2011	1270.68	100
4.	12 Jan 2011	1269.30	100				
February 2011							
1.	01 Feb 2011	1287.06	100				
March 2011							
1.	15 March 2011	1271.32	100	3.	30 March 2011	1265.91	100
2.	16 March 2011	1272.07	100				
April 2011							
1.	08 April 2011	1264.59	100	4.	18 April 2011	1246.92	98
2.	09 April 2011	1257.24	99	5.	23 April 2011	1231.07	97
3.	13 April 2011	1236.37	98	6.	28 April 2011	1171.54	93
May 2011							
1.	02 May 2011	1123.87	89	4.	17 May 2011	976.66	77
2.	03 May 2011	1102.69	87	5.	22 May 2011	825.65	65
3.	12 May 2011	1006.19	79	6.	26 May 2011	726.26	57
June 2011							
1.	10 June 2011	480.22	38	3.	20 June 2011	480.29	38
2.	19 June 2011	504.08	40				

AREAL EXTENT OF SNOW (10 DAILY)

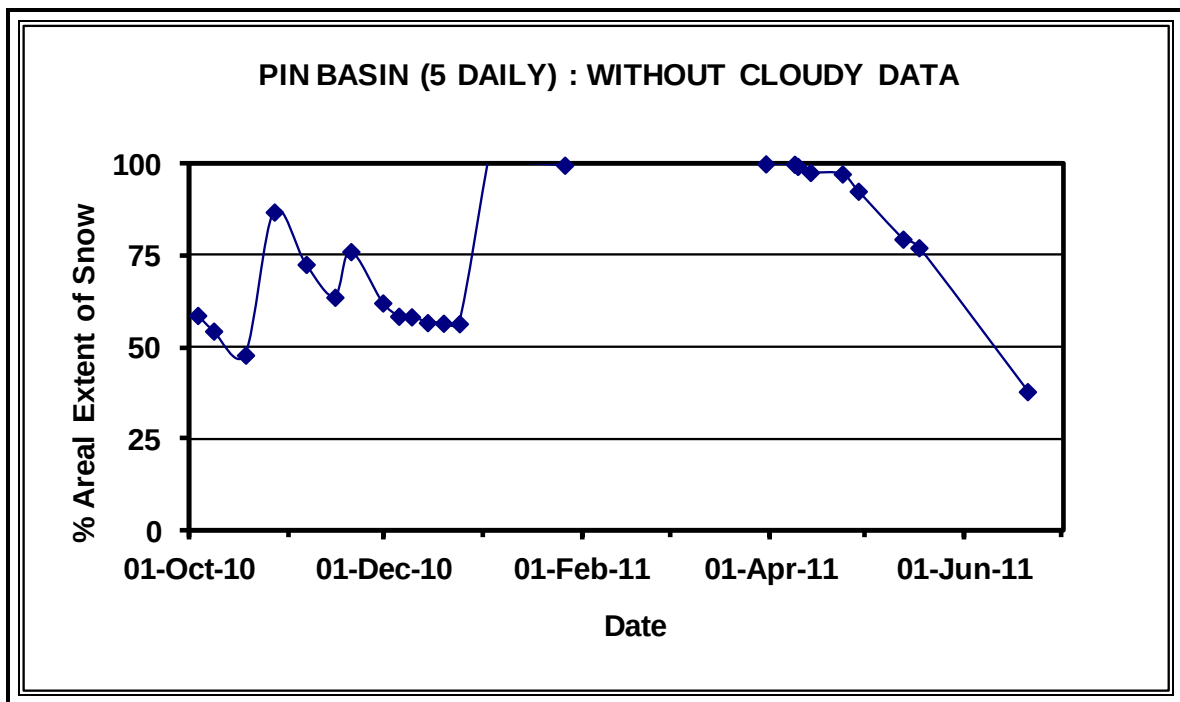
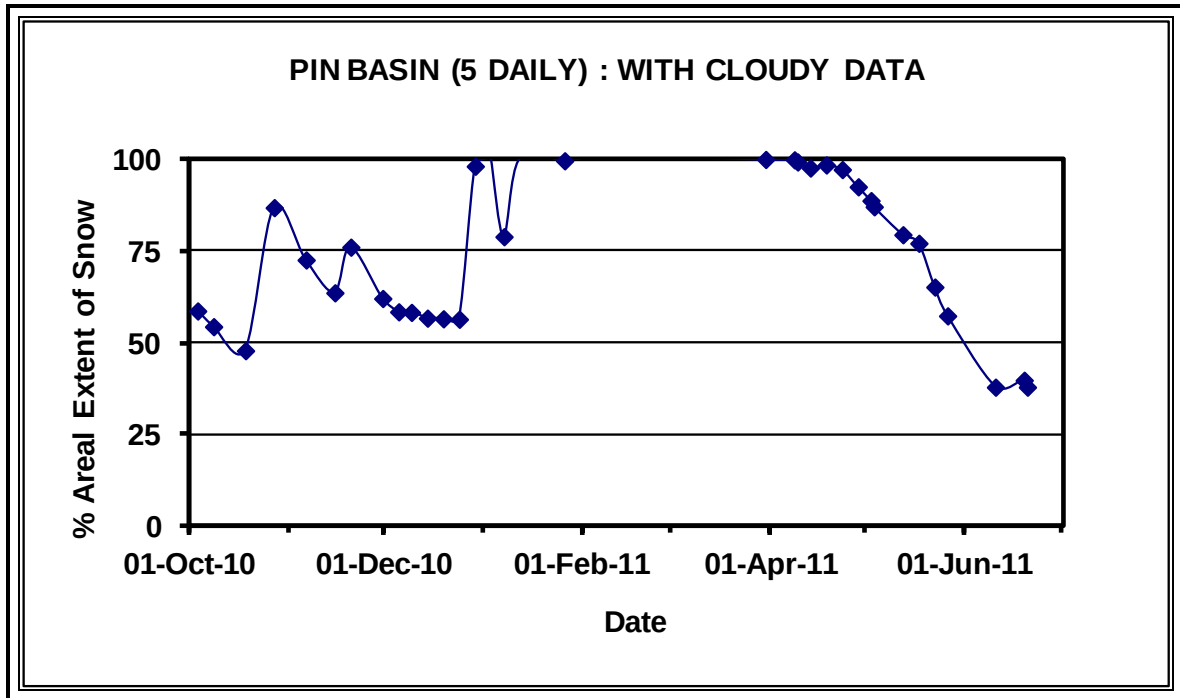
BASIN NAME: PIN

BASIN AREA: 1266 sq km

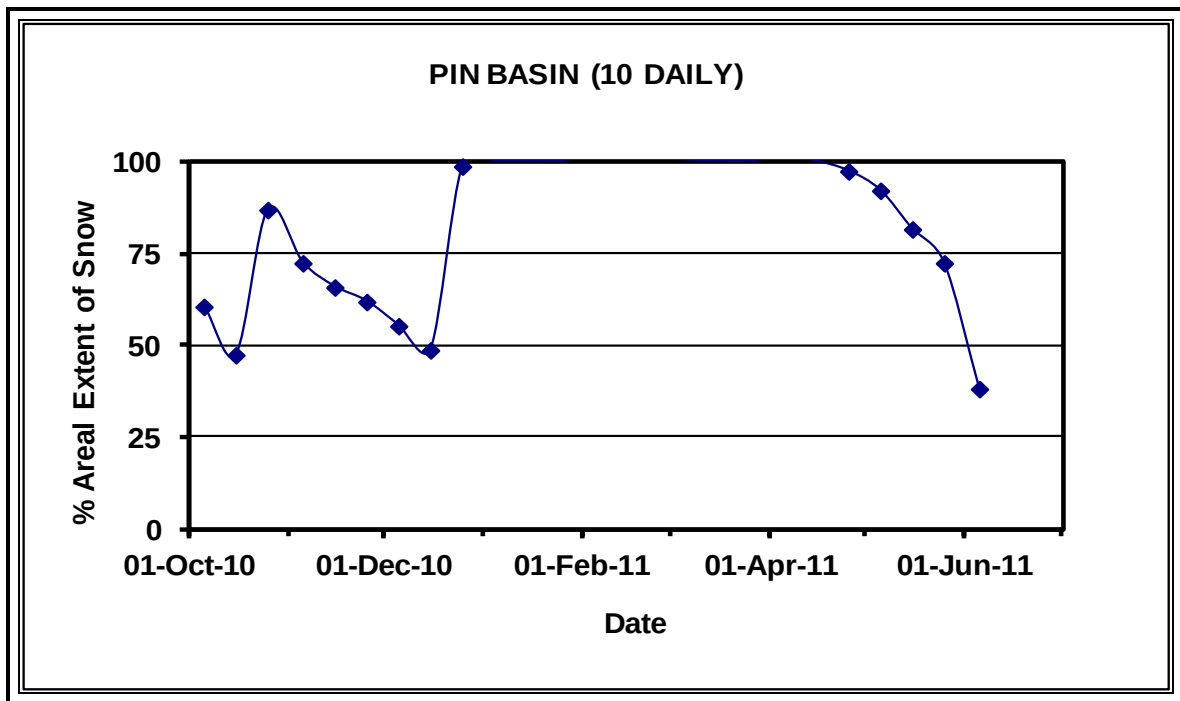
S No	Date	Snow cover (sq km)	Snow cover (%)	Cloud cover	S No	Date	Snow cover (sq km)	Snow cover (%)	Cloud cover
October 2010									
1.	03 Oct 2010	766	60	Clear	3.	18 Oct 2010	606	48	Clear
2.	08 Oct 2010			Clear	4.	27 Oct 2010	1100	87	Clear
November 2010									
1.	06 Nov 2010	919	73	Clear	4.	30 Nov 2010	786	62	Clear
2.	15 Nov 2010	832	66	Clear					
3.	20 Nov 2010			Clear					
December 2010									
1.	05 Dec 2010	707	56	Clear	5.	24 Dec 2010	715	56	Clear
2.	09 Dec 2010			Clear	6.	29 Dec 2010	1243	98	More
3.	14 Dec 2010	621	49	Clear					
4.	19 Dec 2010			Clear					
January 2011									
1.	02 Jan 2011	1270	100	Clear	4.	26 Jan 2011	1271	100	Clear
2.	03 Jan 2011			Clear	5.	27 Jan 2011			Clear
3.	12 Jan 2011	1269	100	Clear	6.	31 Jan 2011			Less
February 2011									
1.	01 Feb 2011	1287	100	Clear					
March 2011									
1.	15 Mar 2011	1272	100	Clear	3.	30 Mar 2011	1266	100	Clear
2.	16 Mar 2011			Clear					
April 2011									
1.	08 April 2011	1282	100	Clear	5.	23 April 2011	1235	98	Clear
2.	09 April 2011			Clear	6.	28 April 2011			Clear
3.	13 April 2011	1269	100	Clear					
4.	18 April 2011			Less					
May 2011									
1.	02 May 2011	1169	92	Less	5.	22 May 2011	911	72	Less
2.	03 May 2011			Less	6.	26 May 2011			Less
3.	12 May 2011	1041	82	Clear	7.				
4.	17 May 2011			Clear	8.				

S. No	Date	Snow cover (sq km)	Snow cover (%)	Cloud cover	S No	Date	Snow cover (sq km)	Snow cover (%)	Cloud cover
June 2011									
1.	10 June 2011	480	38	More					
2.	19 June 2011			More					
3.	20 June 2011			Less					

Snow cover depletion curve

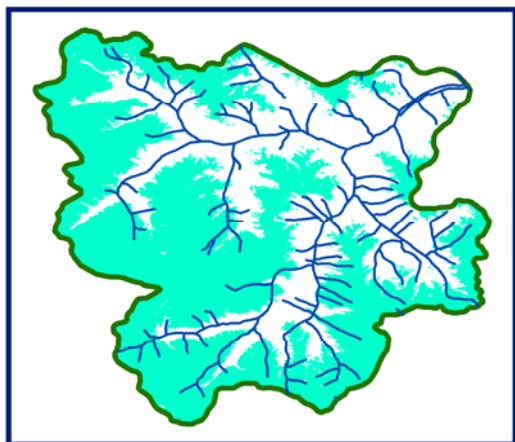


Snow cover depletion curve

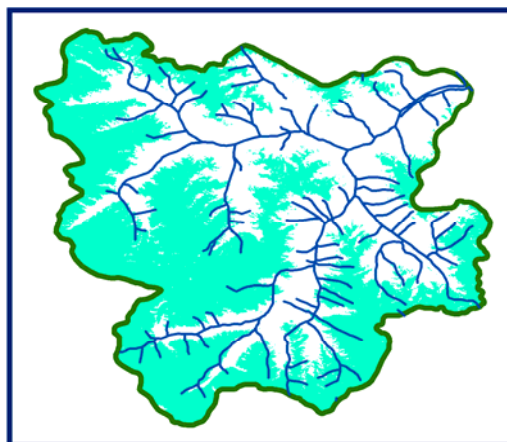


SNOW COVER MAP

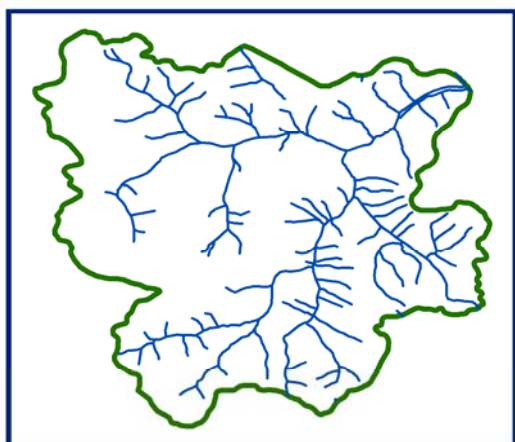
SNOW COVER MAP : PIN BASIN



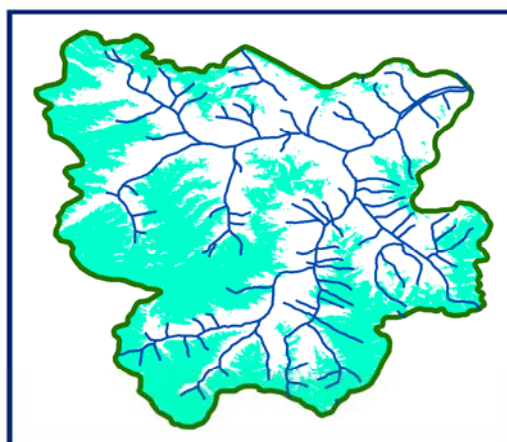
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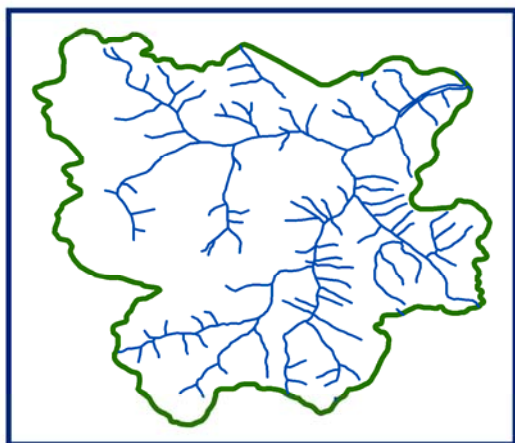
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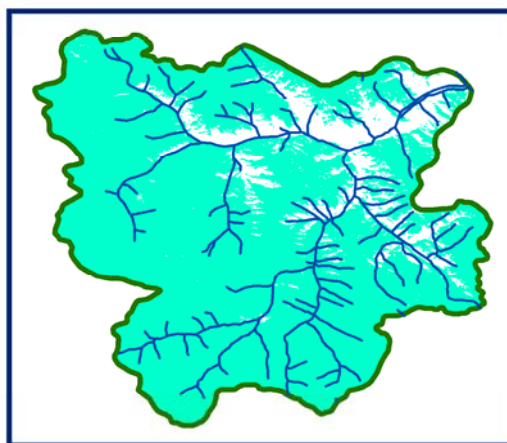
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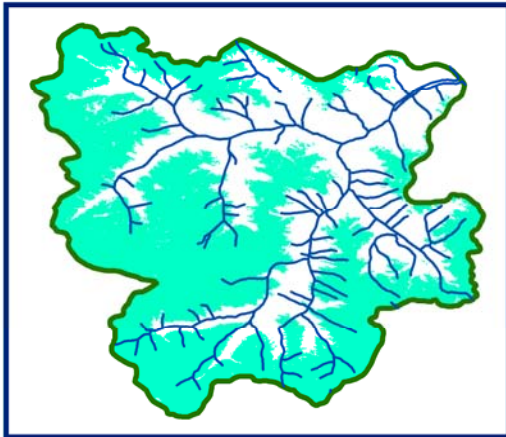
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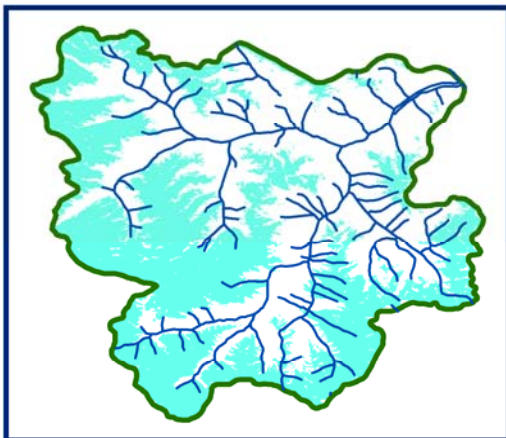


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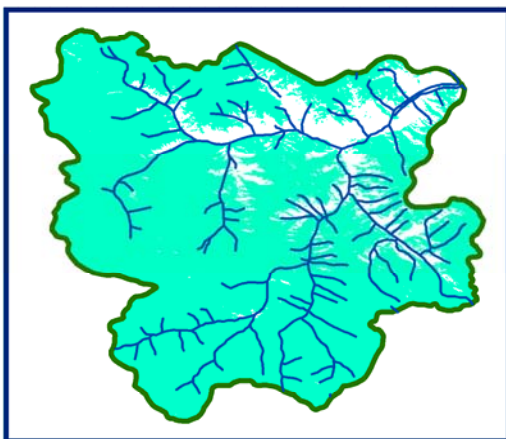
10 DAILY SNOW COVER MAP: PIN BASIN



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SNOW

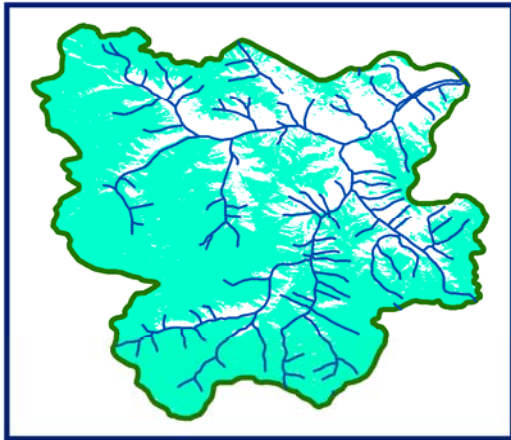
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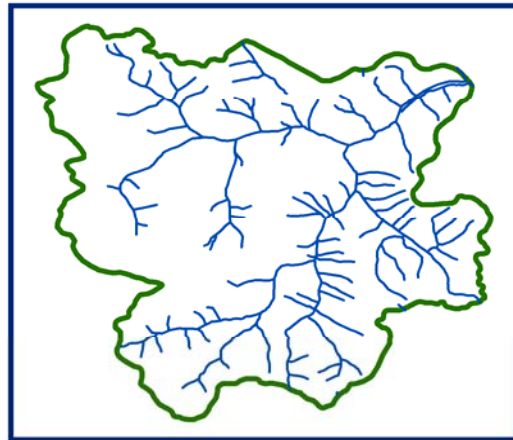
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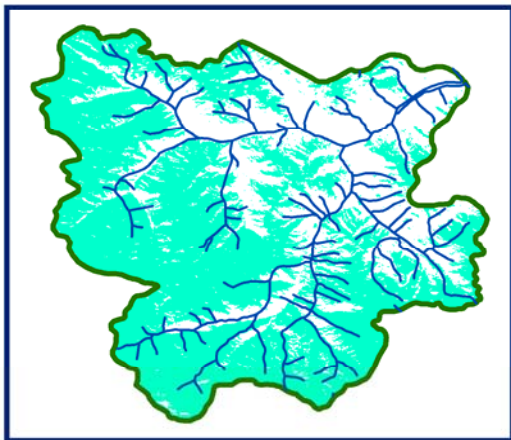
PIN BASIN



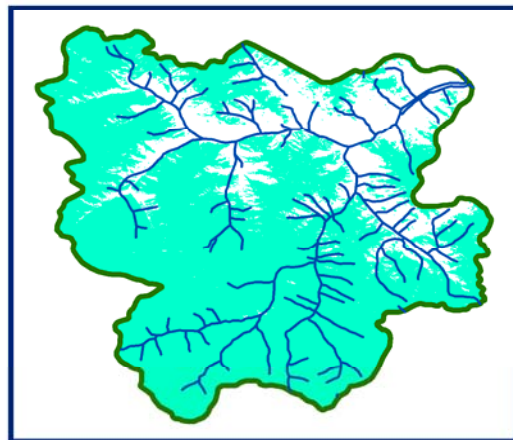
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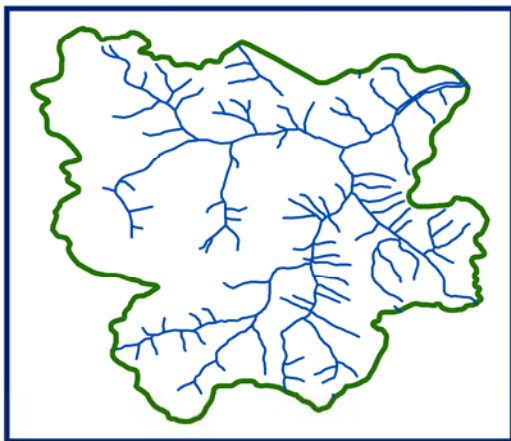
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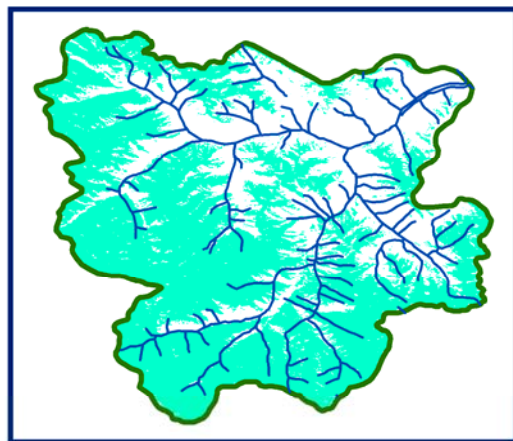
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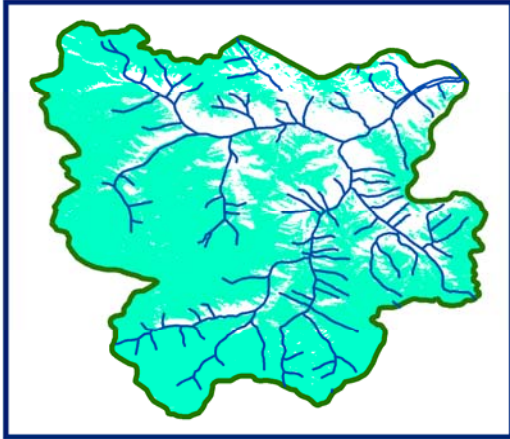


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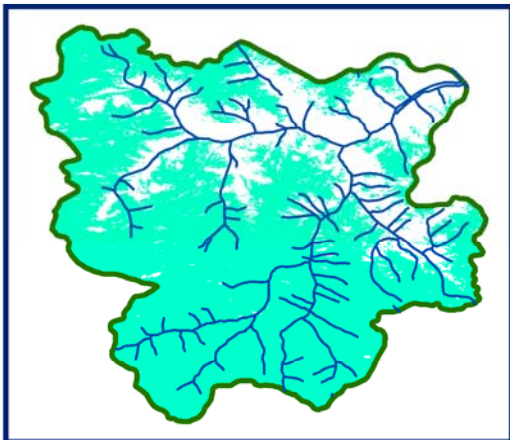


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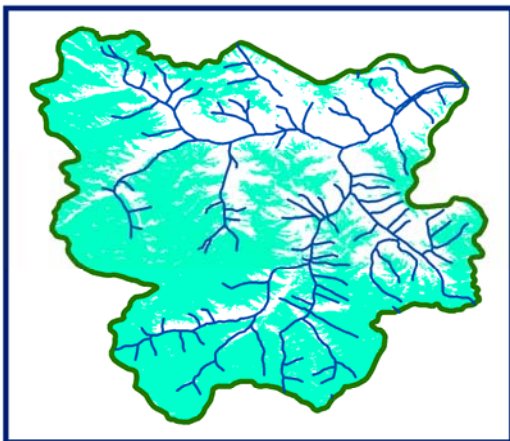
10 DAILY SNOW COVER MAP: PIN BASIN



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15 NOVEMBER 2011
20 NOVEMBER 2011



DATA USED
30 NOVEMBER 2011



SNOW

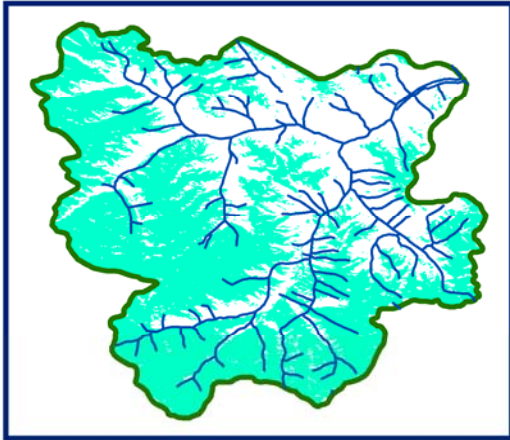
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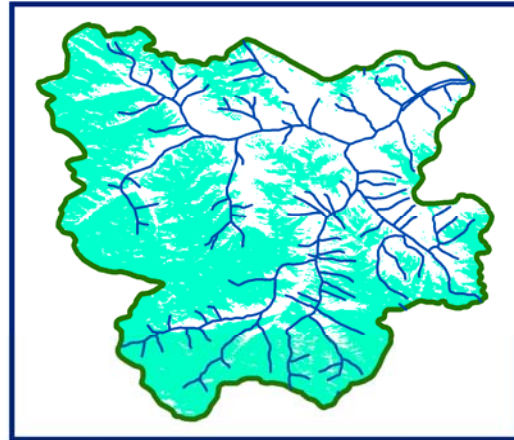
SNOW COVER MAP

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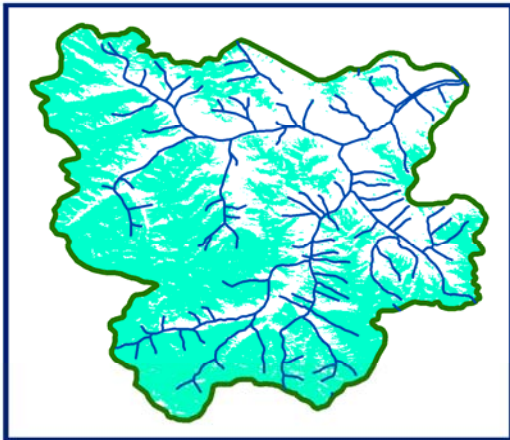
PIN BASIN



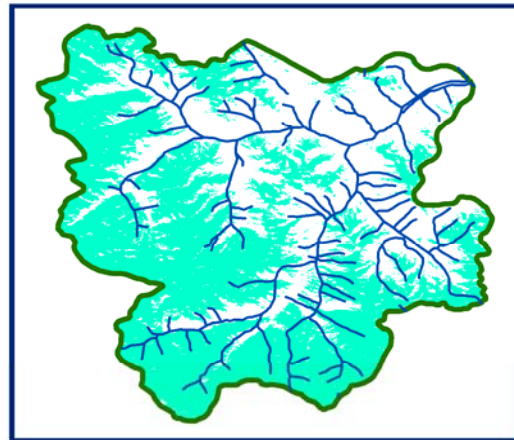
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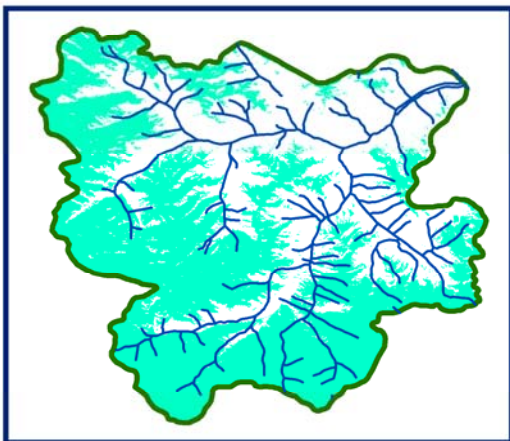
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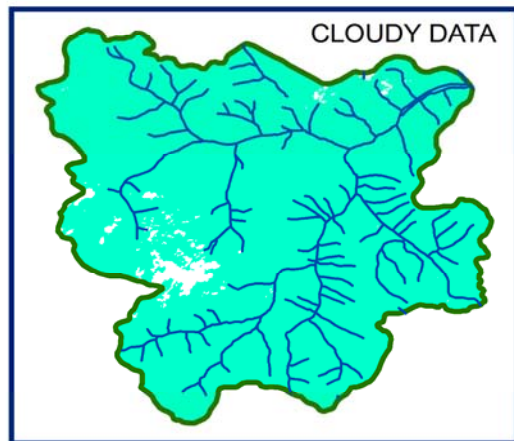
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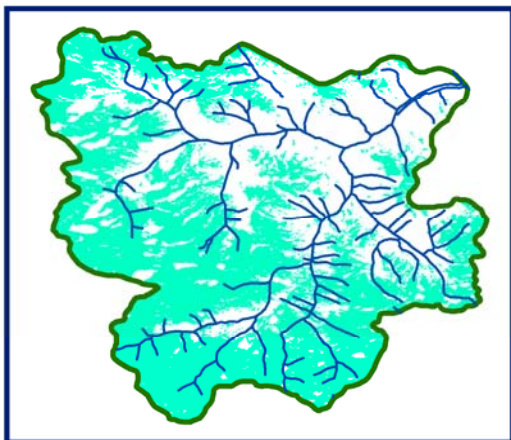


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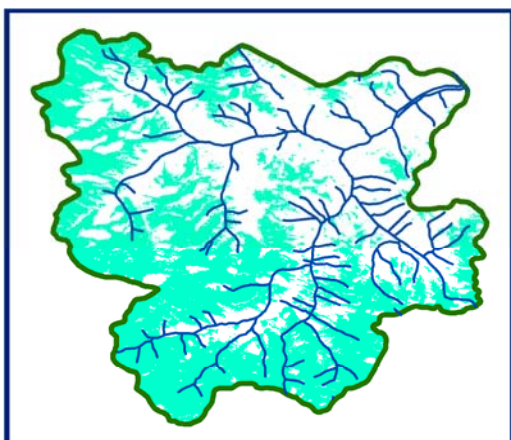


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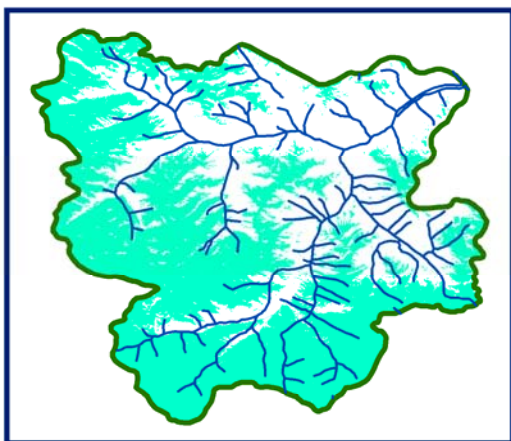
10 DAILY SNOW COVER MAP: PIN BASIN



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SNOW

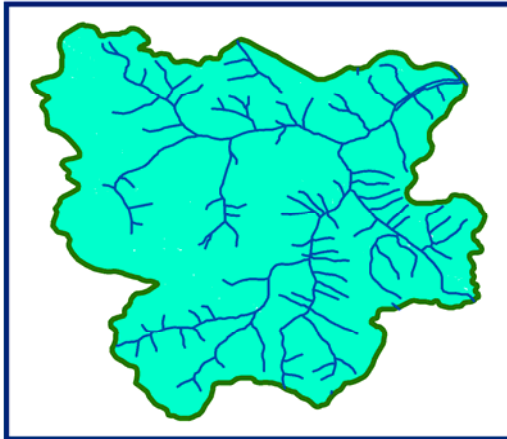
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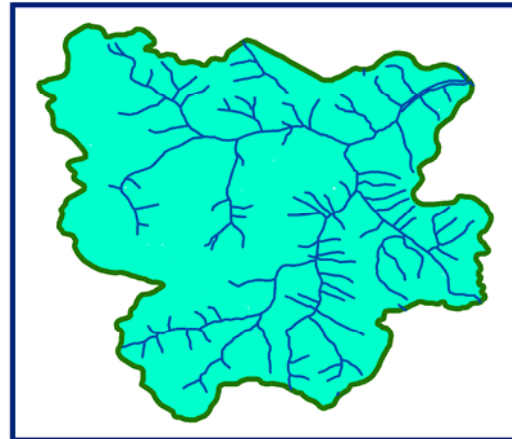
SNOW COVER MAP

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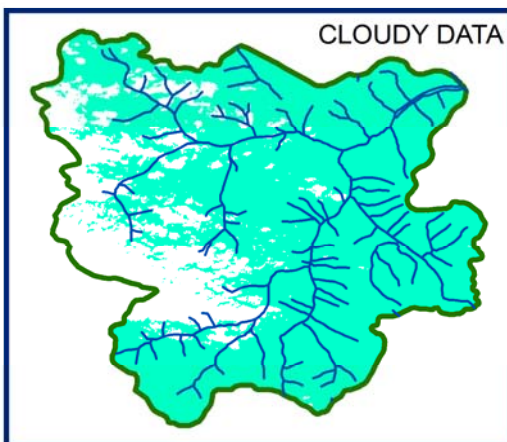
PIN BASIN



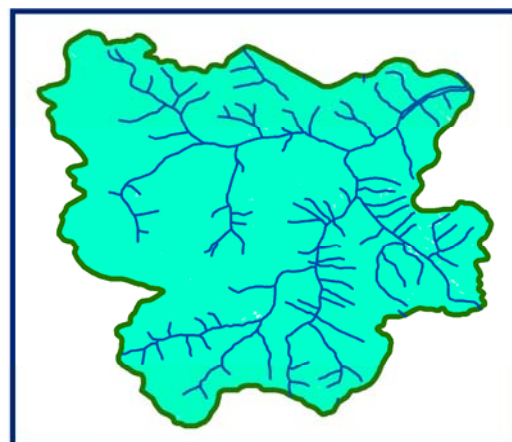
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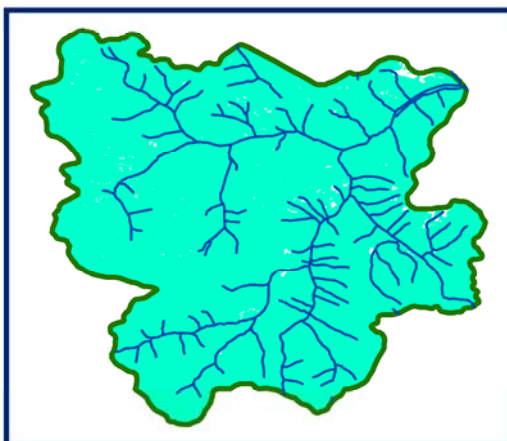
03 JANUARY 2011



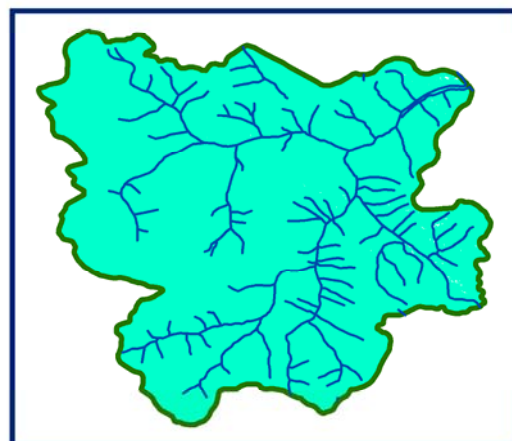
07 JANUARY 2011



12 JANUARY 2011



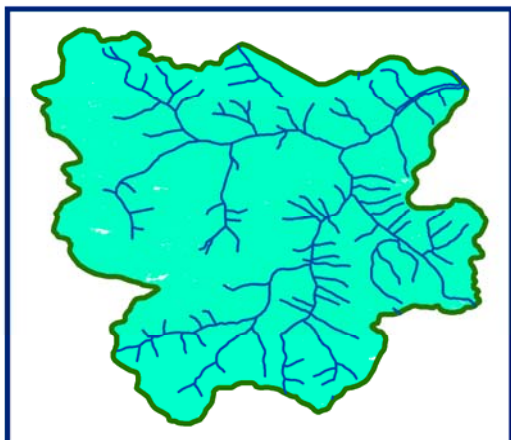
26 JANUARY 2011



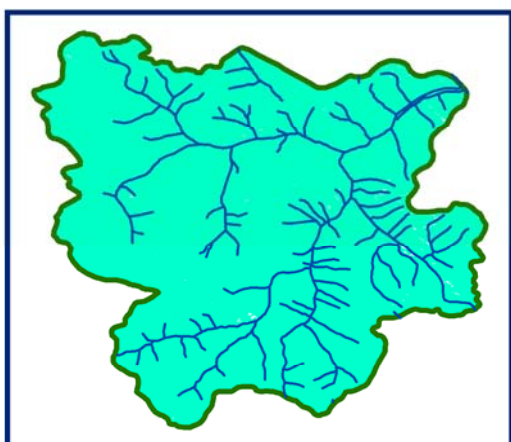
31 JANUARY 2011



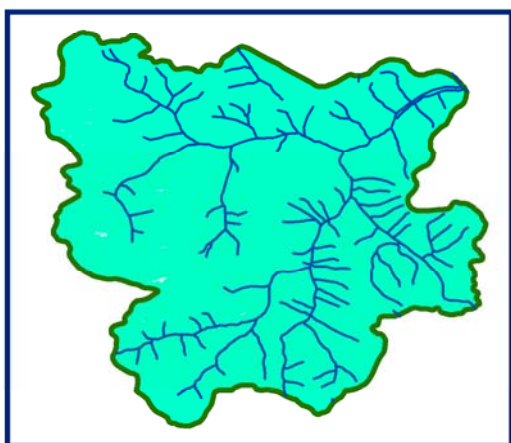
10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED
02 JANUARY 2011
03 JANUARY 2011



DATA USED
12 JANUARY 2011



DATA USED
26 JANUARY 2011
27 JANUARY 2011
31 JANUARY 2011

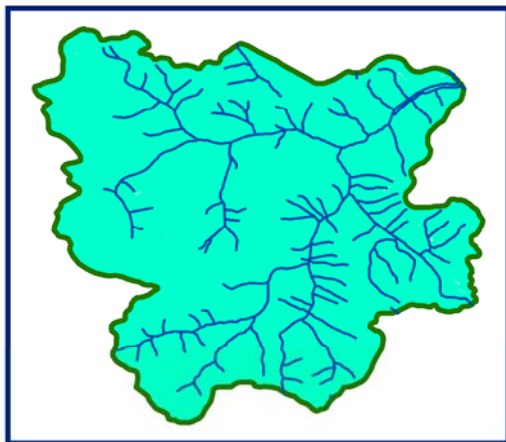


SNOW

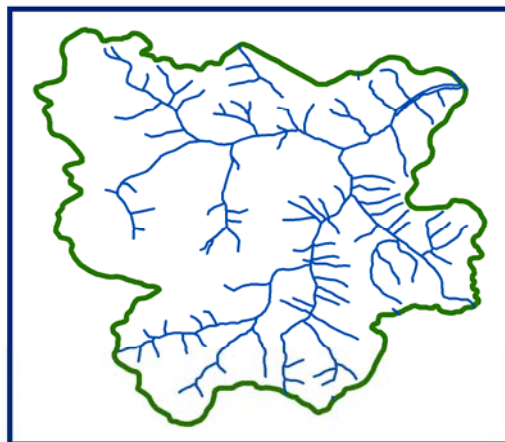
0 2 4 8 12 16

Kilometers

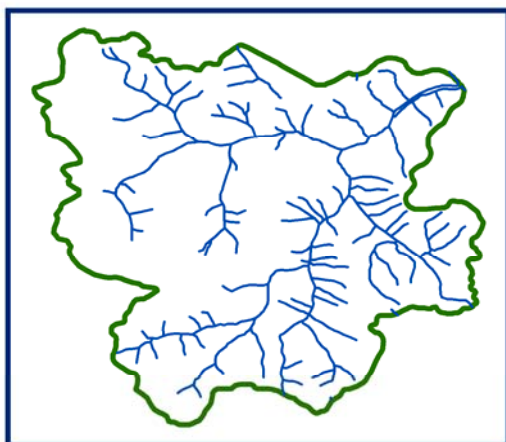
SNOW COVER MAP : PIN BASIN



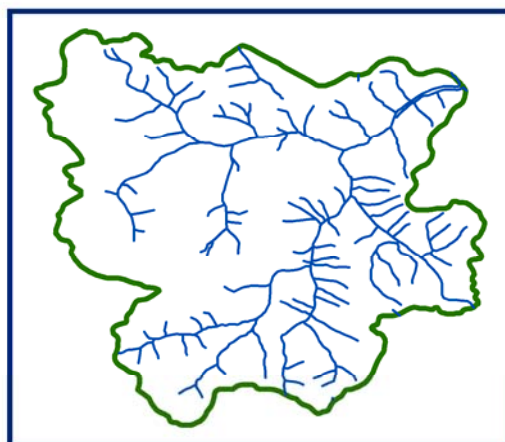
01 FEBRUARY 2011



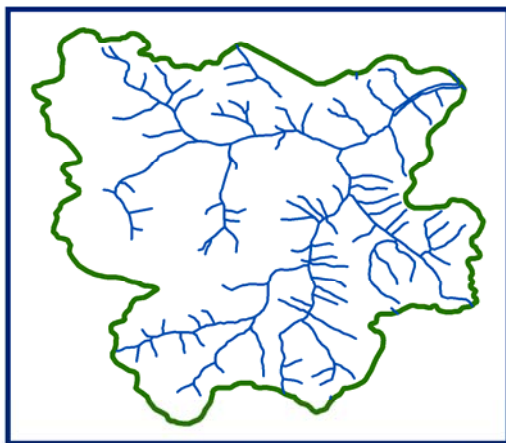
DATA NOT AVAILABLE



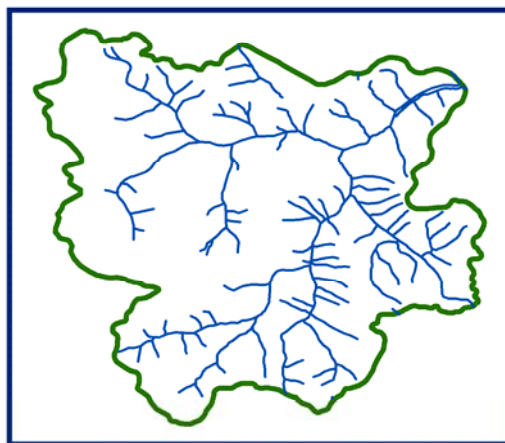
DATA NOT AVAILABLE



DATA NOT AVAILABLE



DATA NOT AVAILABLE



DATA NOT AVAILABLE

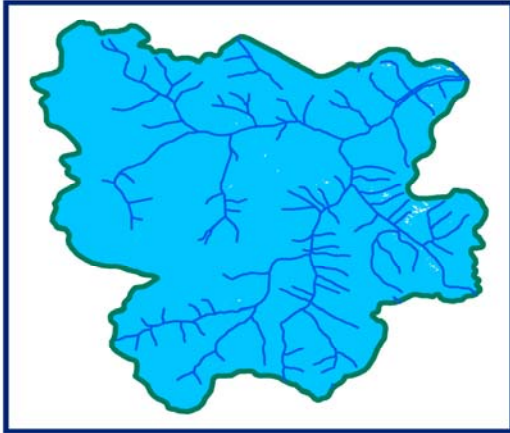


SNOW

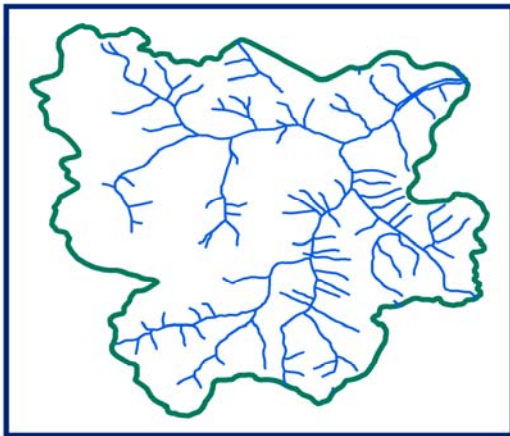
0.5 6 9 12

Kilometers

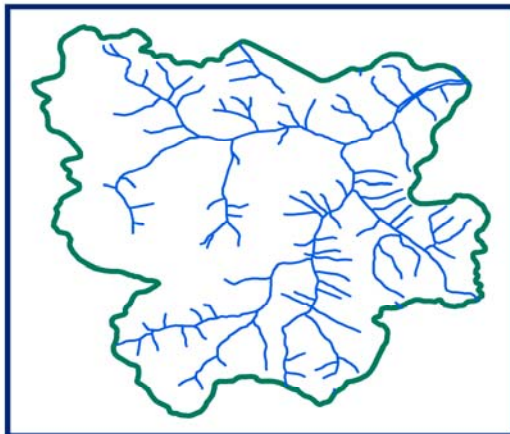
10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED
5 FEBRUARY 2011



DATA USED
DATA NOT AVAILABLE



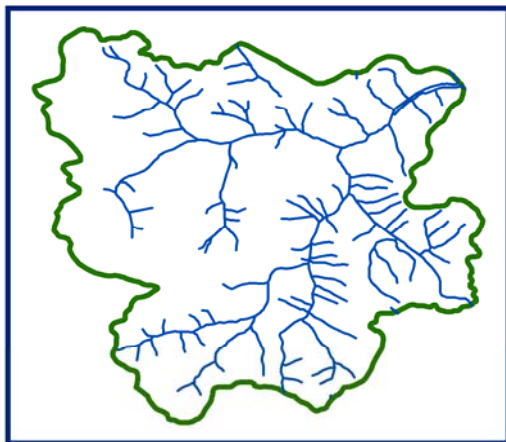
DATA USED
DATA NOT AVAILABLE



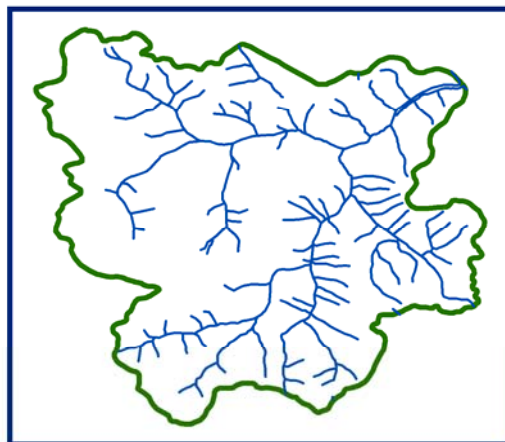
0 2 4 8 12 16

Kilometers

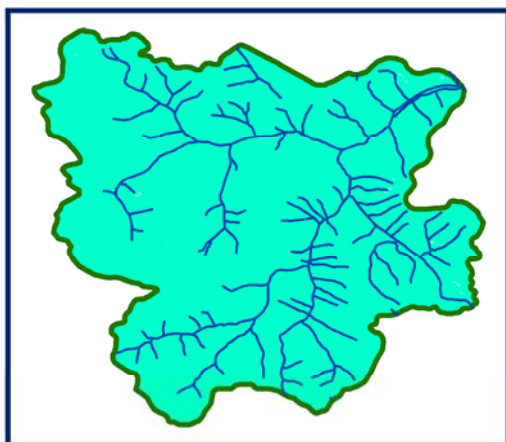
SNOW COVER MAP : PIN BASIN



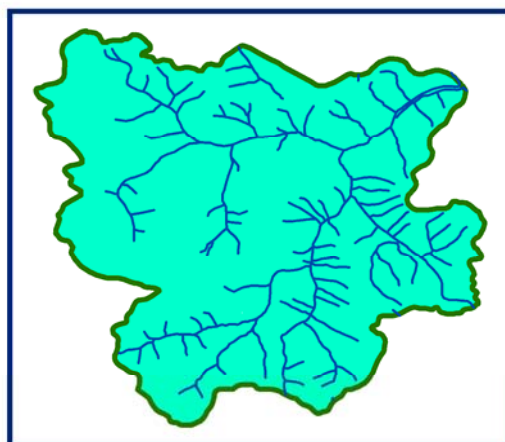
DATA NOT AVAILABLE



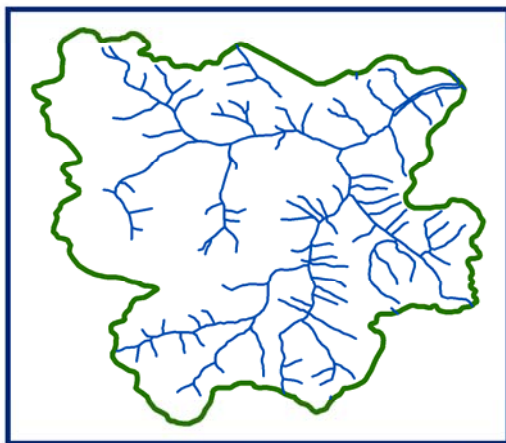
DATA NOT AVAILABLE



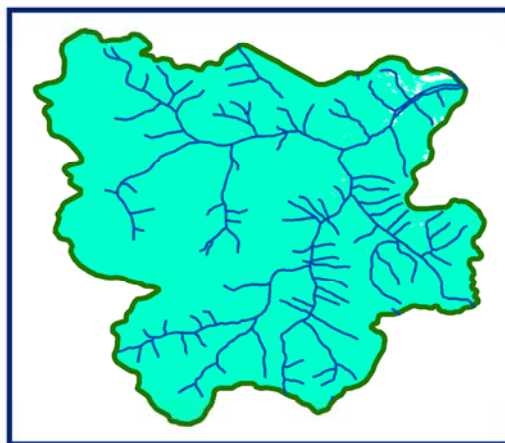
15 MARCH 2011



16 MARCH 2011



DATA NOT AVAILABLE



30 MARCH 2011

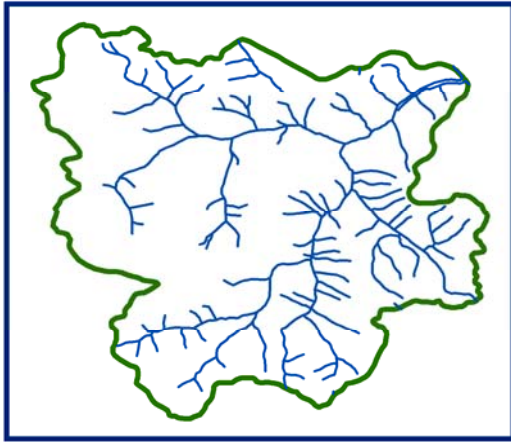


SNOW

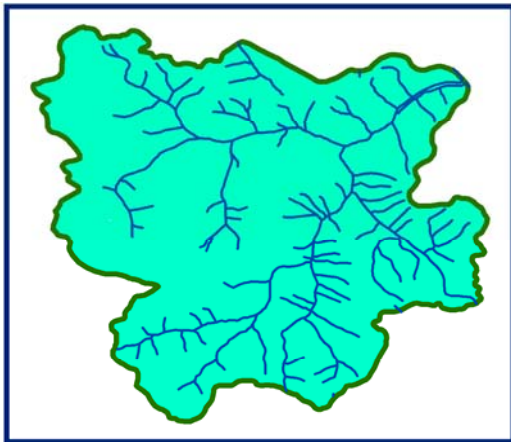
0.5 6 9 12

Kilometers

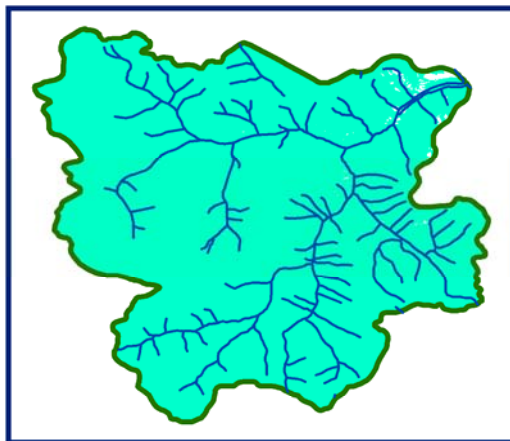
10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED
DATA NOT AVAILABLE

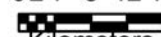


DATA USED
15 MARCH 2011
16 MARCH 2011



DATA USED
30 MARCH 2011

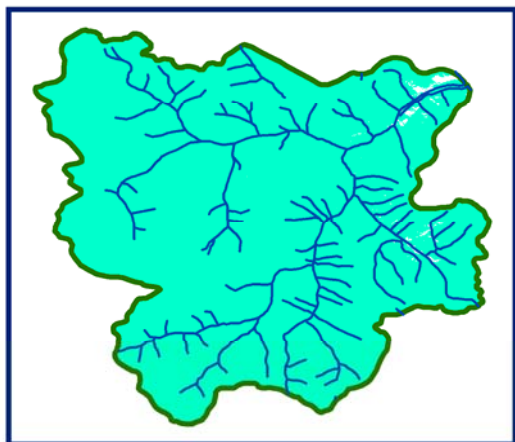
 SNOW

0 2 4 8 12 16

Kilometers

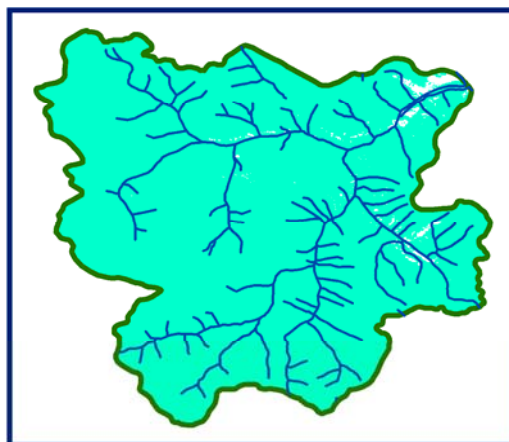
SNOW COVER MAP

:

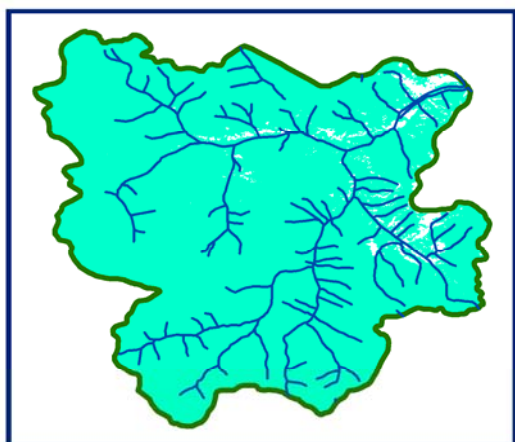
PIN BASIN



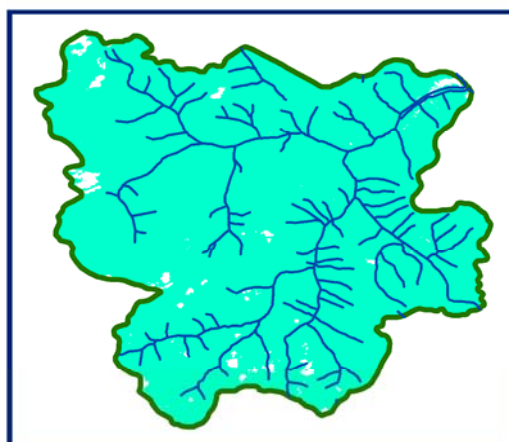
08 APRIL 2011



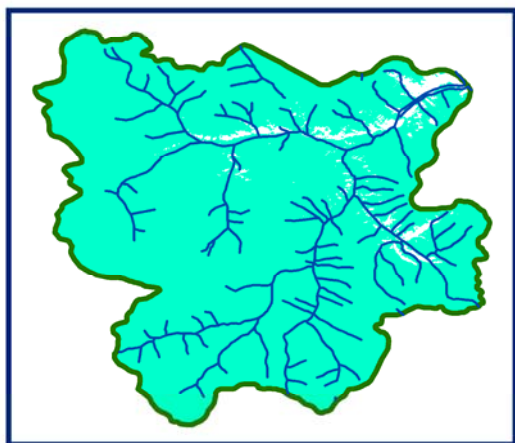
09 APRIL 2011



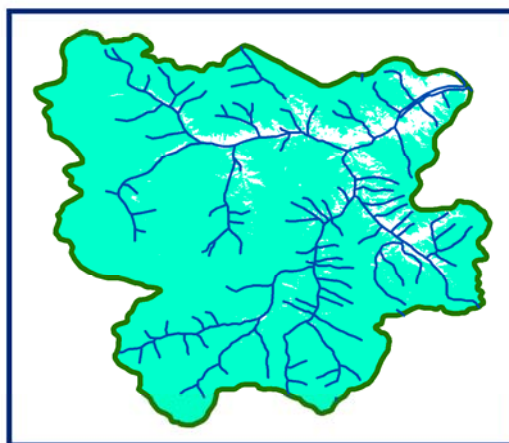
13 APRIL 2011



18 APRIL 2011



23 APRIL 2011



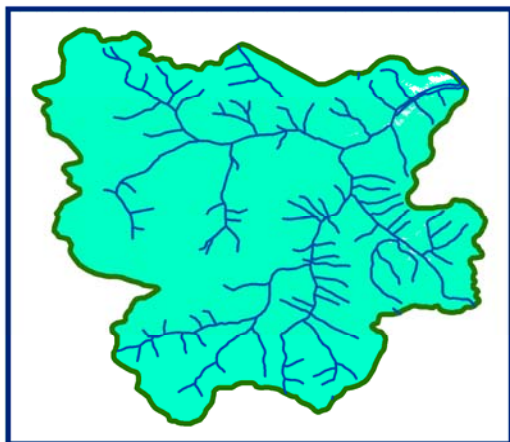
28 APRIL 2011



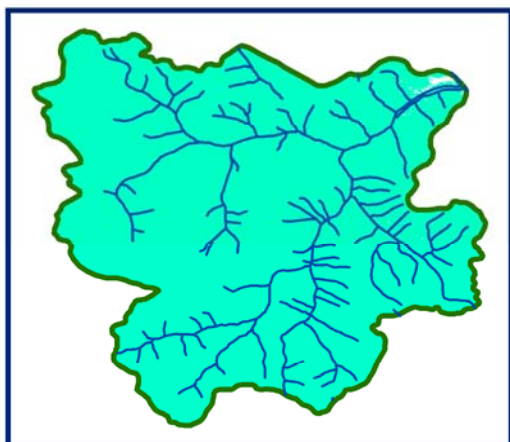
SNOW

0 2 4 8 12 16
Kilometers

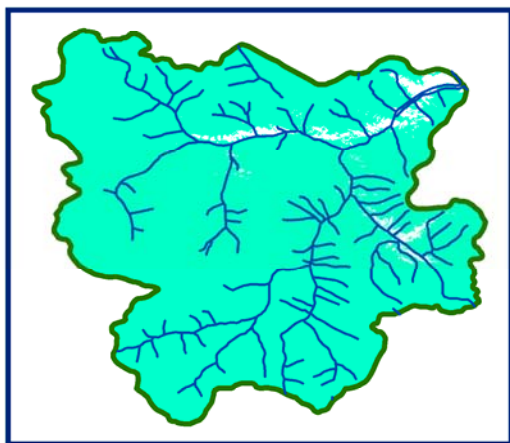
10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED
08 APRIL 2011
09 APRIL 2011



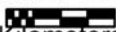
DATA USED
13 APRIL 2011
18 APRIL 2011



DATA USED
23 APRIL 2011
28 APRIL 2011



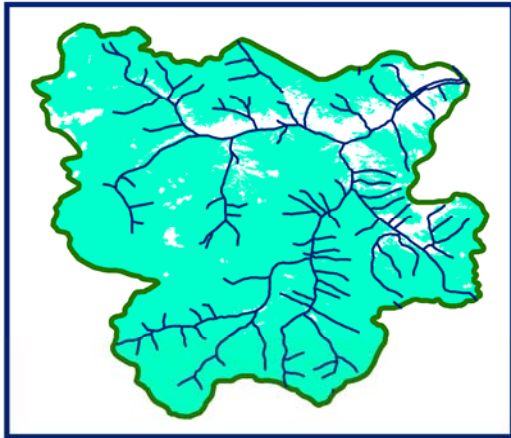
SNOW

0.5 6 9 12

Kilometers

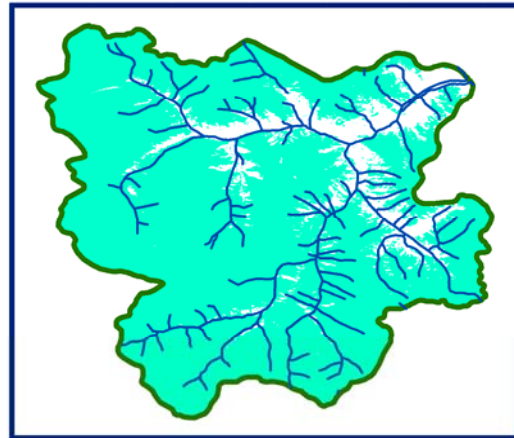
SNOW COVER MAP

:

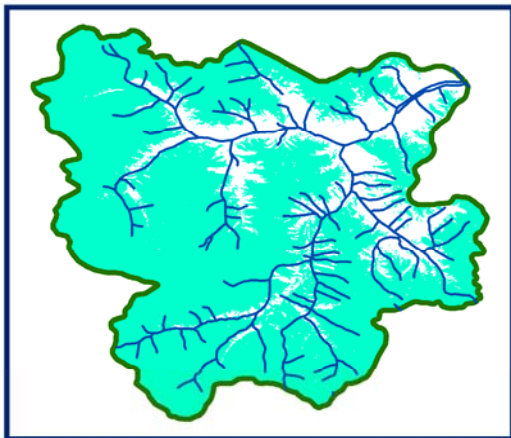
PIN BASIN



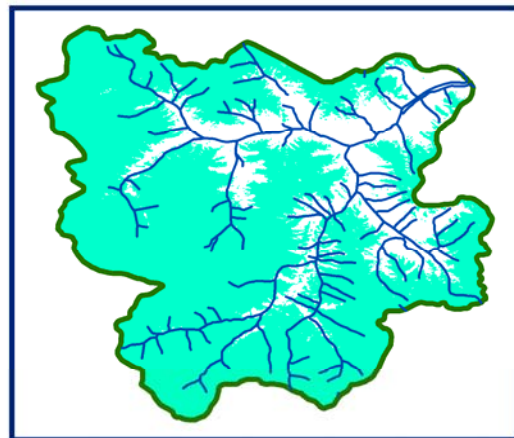
02 MAY 2011



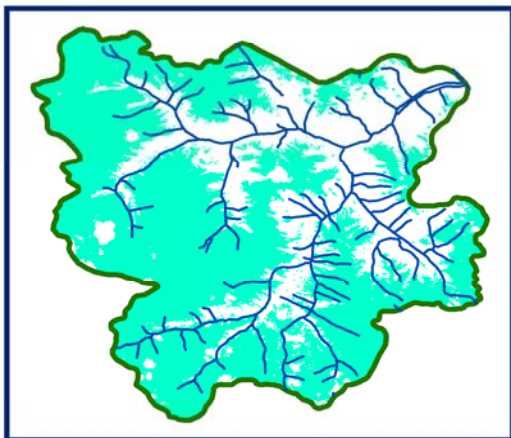
03 MAY 2011



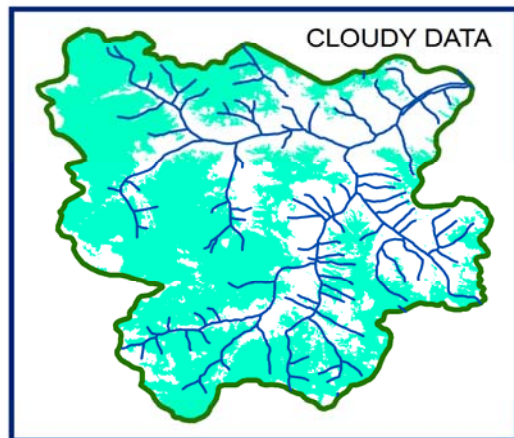
12 MAY 2011



17 MAY 2011



22 MAY 2011

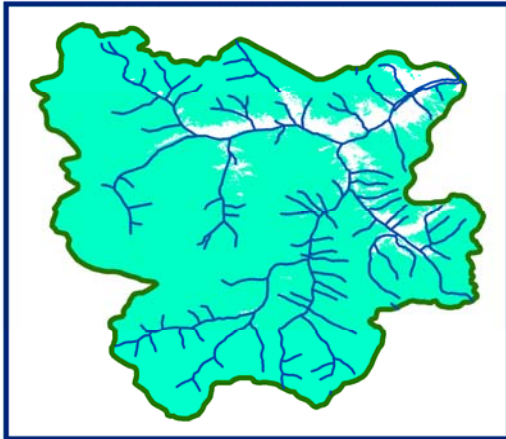


26 MAY 2011

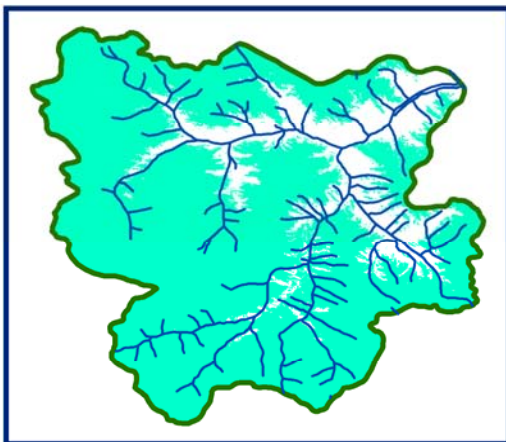


0 2 4 8 12 16
Kilometers

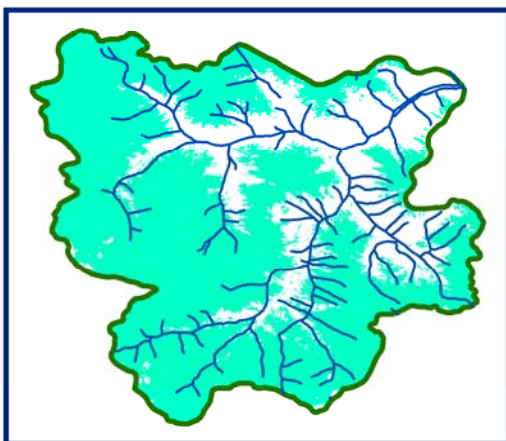
10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED
02 MAY 2011
03 MAY 2011



DATA USED
12 MAY 2011
17 MAY 2011



DATA USED
22 MAY 2011
26 MAY 2011

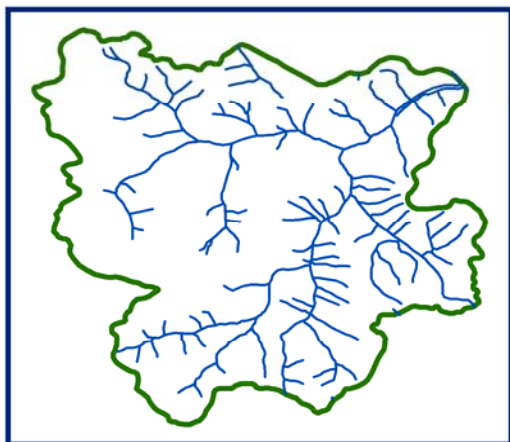


SNOW

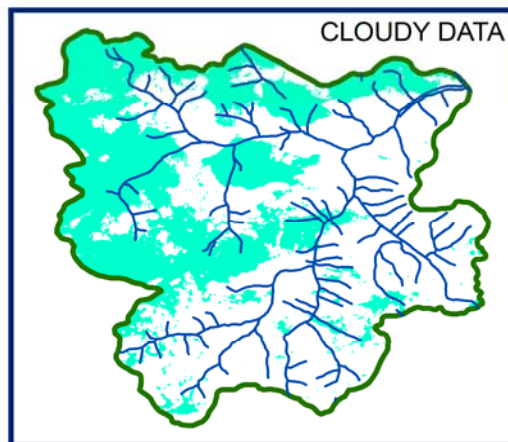
0 2 4 8 12 16

Kilometers

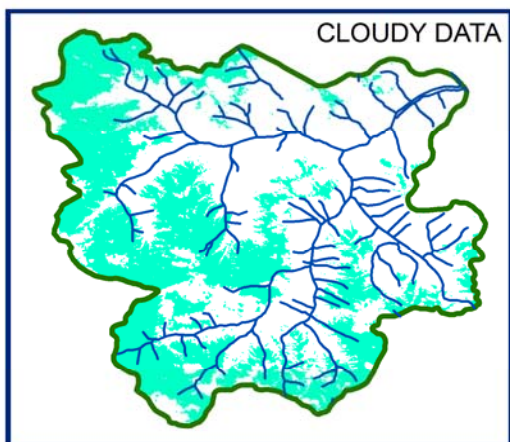
SNOW COVER MAP : BASPA BASIN



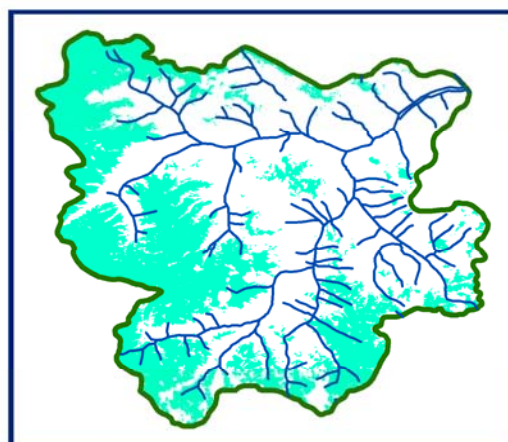
DATA NOT AVAILABLE



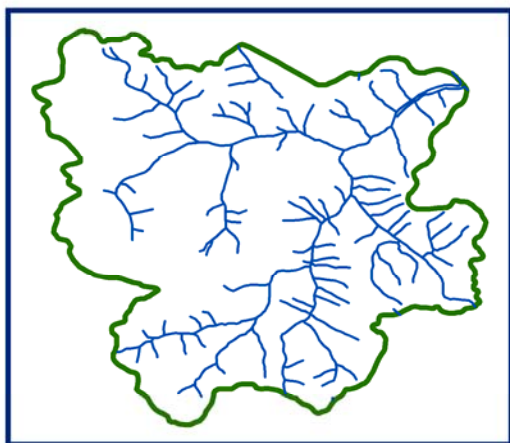
10 JUNE 2011



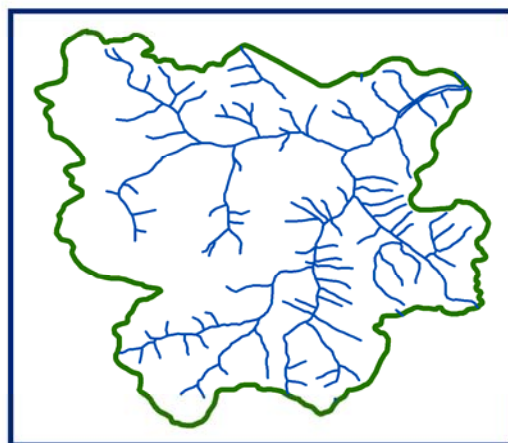
19 JUNE 2011



20 JUNE 2011



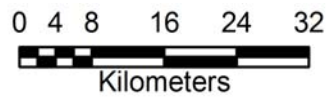
DATA NOT AVAILABLE



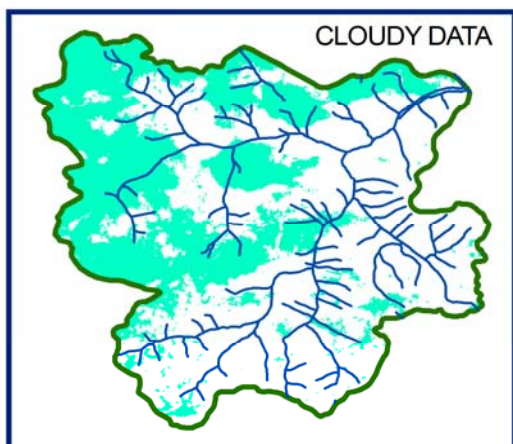
DATA NOT AVAILABLE



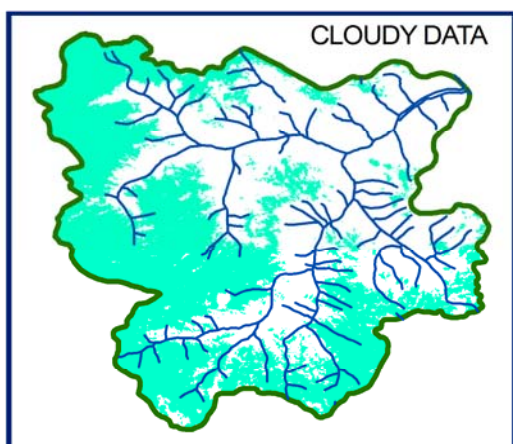
SNOW



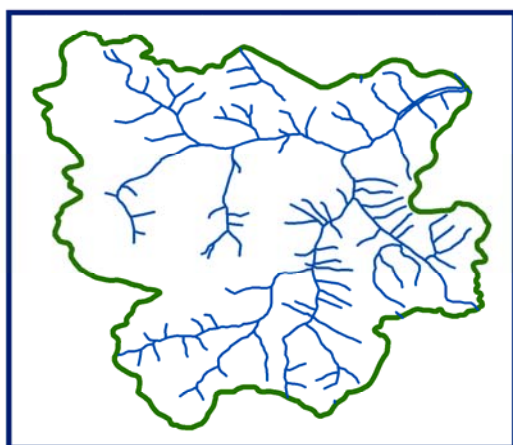
10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED
10 JUNE 2011



DATA USED
15 JUNE 2011
20 JUNE 2011



DATA USED
DATA NOT AVAILABLE



SNOW

0 2 4 8 12 16

Kilometers

SPITI BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: SPITI

BASIN AREA: 8871 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2010							
1.	03 Oct 2010	2477.70	28	3.	18 Oct 2010	2107.53	24
2.	08 Oct 2010	2345.14	26	4.	27 Oct 2010	3930.22	44
November 2010							
1.	06 Nov 2010	2928.22	33	3.	20 Nov 2010	3017.72	34
2.	15 Nov 2010	2447.91	28	4.	30 Nov 2010	2222.15	25
December 2010							
1.	05 Dec 2010	2066.86	23	4.	19 Dec 2010	2300.60	26
2.	09 Dec 2010	2071.23	23	5.	24 Dec 2010	2022.65	23
3.	14 Dec 2010	2318.41	26	6.	29 Dec 2010	6988.55	79
January 2011							
1.	03 Jan 2011	8831.74	100	3.	31 Jan 2011	7876.67	89
2.	27 Jan 2011	7793.06	88				
February 2011							
1.	01 Feb 2011	7665.06	86				
March 2011							
1.	15 March 2011	7548.34	85	3.	30 March 2011	6807.00	77
2.	16 March 2011	8019.71	90				
April 2011							
1.	08 April 2011	6757.64	76	4.	18 April 2011	6601.96	74
2.	09 April 2011	6554.34	74	5.	23 April 2011	6242.26	70
3.	13 April 2011	5581.88	63	6.	28 April 2011	5503.71	62
May 2011							
1.	02 May 2011	5579.25	63	4.	17 May 2011	3726.38	42
2.	03 May 2011	4873.02	55	5.	22 May 2011	2600.37	29
3.	12 May 2011	4000.93	45	6.	26 May 2011	2324.85	26
June 2011							
1.	10 June 2011	3800.36	44	3.	20 June 2011	1562.17	18
2.	19 June 2011	1188.98	13				

AREAL EXTENT OF SNOW (10 DAILY)

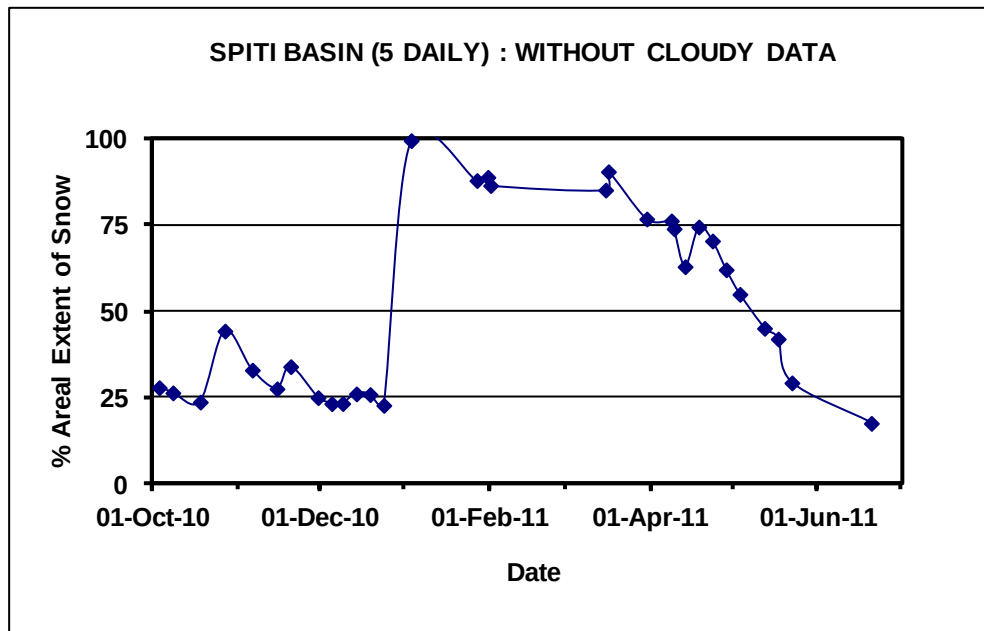
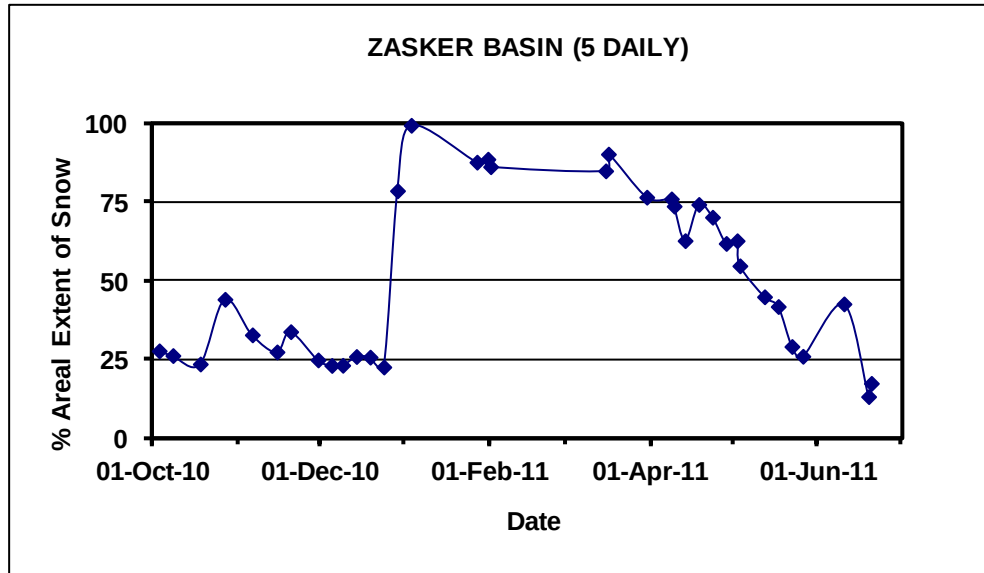
BASIN NAME: SPITI

BASIN AREA: 8871 sq km

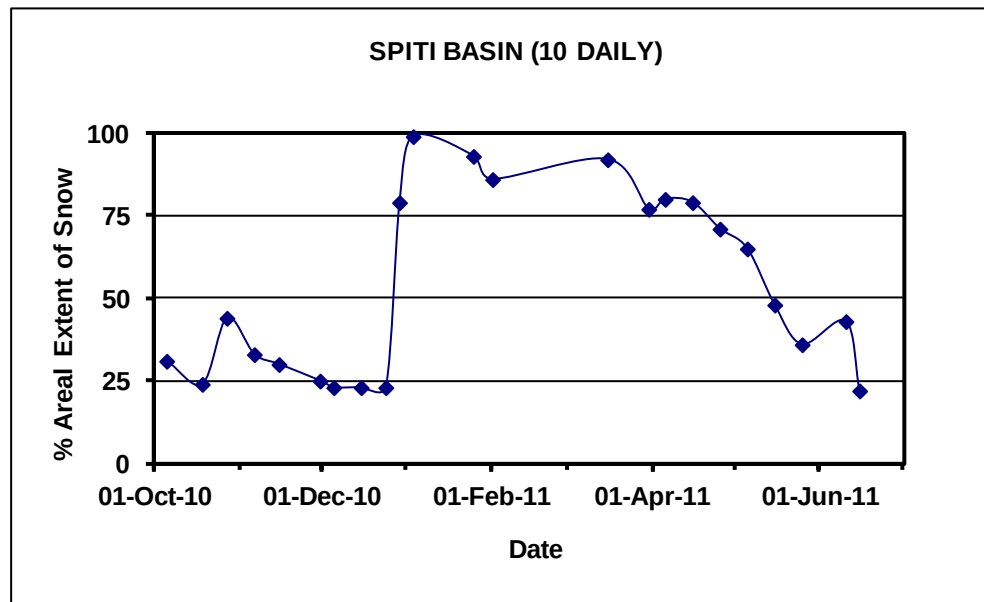
S No	Date	Snow cover (sq. km)	Snow cover (%)	Snow cover	S No	Date	Snow cover (sq km)	Snow cover (%)	Snow cover
October 2010									
1.	03 Oct 2010	2741.20	31	Clear	3.	18 Oct 2010	2107.53	24	Clear
2.	08 Oct 2010			Less	4.	27 Oct 2010	3930.22	44	Less
November 2010									
1.	06 Nov 2010	2928.22	33	Clear	4.	30 Nov 2010	2222.15	25	Clear
2.	15 Nov 2010	2679.81	30	Clear					
3.	20 Nov 2010			Clear					
December 2010									
1.	05 Dec 2010	2062.91	23	Clear	5.	24 Dec 2010	2022.65	23	Clear
2.	09 Dec 2010			Clear	6.	29 Dec 2010	6988.55	79	More
3.	14 Dec 2010	2058.61	23	Clear					
4.	19 Dec 2010			Clear					
January 2011									
1.	03 Jan 2011	8831.74	100	Clear					
2.	27 Jan 2011	8217.50	93	Clear					
3.	31 Jan 2011			Clear					
February 2011									
1.	01 Feb 2011	7665.06	86	Clear					
March 2011									
1.	15 Mar 2011	8193.06	92	Clear					
2.	16 Mar 2011			Less					
3.	30 Mar 2011	6807.00	77	Less					
April 2011									
1.	08 April 2011	7081.84	80	Clear	5.	23 April 2011	6334.68	71	Clear
2.	09 April 2011			Clear	6.	28 April 2011			Clear
3.	13 April 2011	7031.99	79	Less					
4.	18 April 2011			Less					
May 2011									
1.	02 May 2011	5760.13	65	More	5.	22 May 2011	3192.10	36	Less
2.	03 May 2011			Clear	6.	26 May 2011			More

3.	12 May 2011	4270.34	48	Clear	7.				
4.	17 May 2011			Less	6.				
June 2011									
1.	10 June 2011	3800.36	43	More					
2.	19 June 2011	1941.22	22	More					
3.	20 June 2011			Less					

Snow cover depletion curve



Snow cover depletion curve

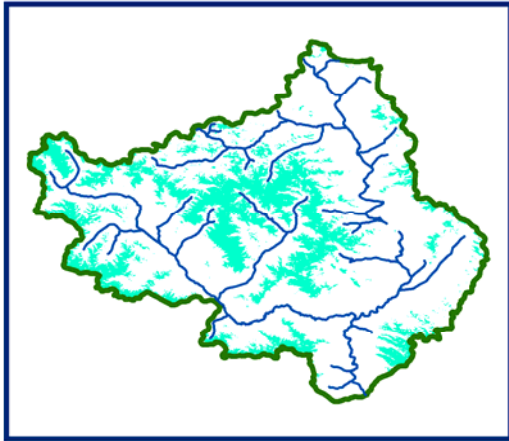


SNOW COVER MAP

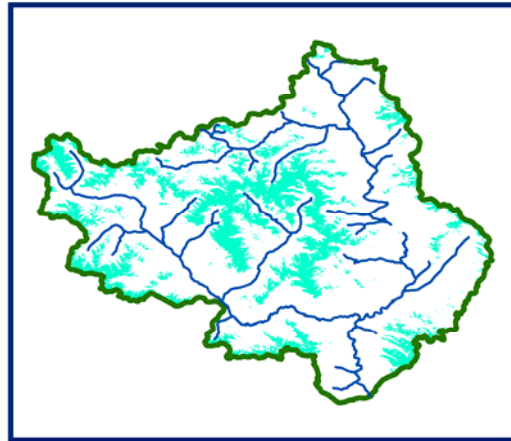
SNOW COVER MAP

:

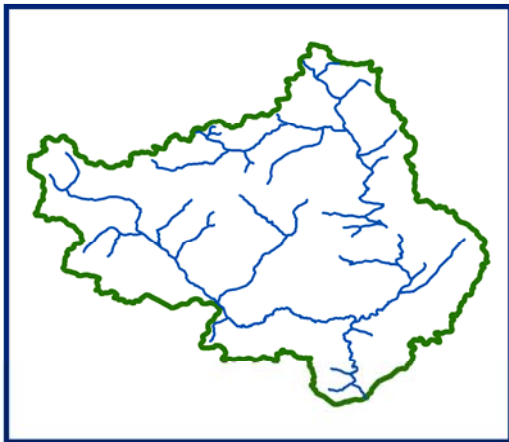
SPITI BASIN



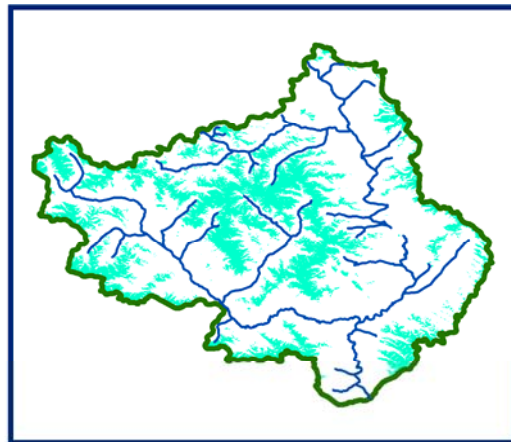
03 OCTOBER 2010



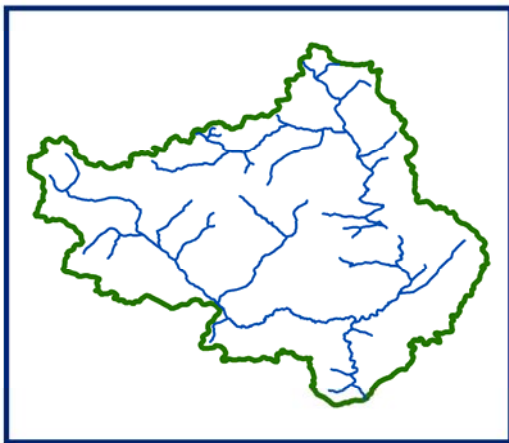
08 OCTOBER 2010



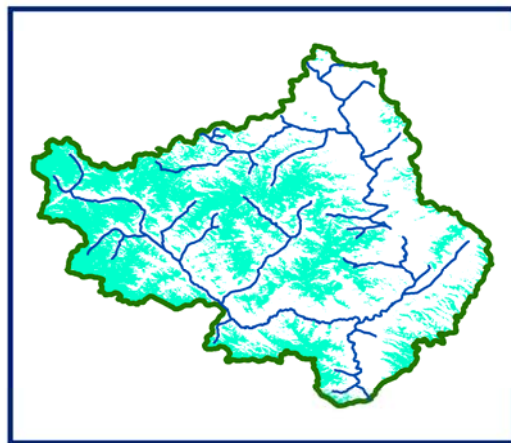
DATA NOT AVAILABLE



18 OCTOBER 2010



DATA NOT AVAILABLE

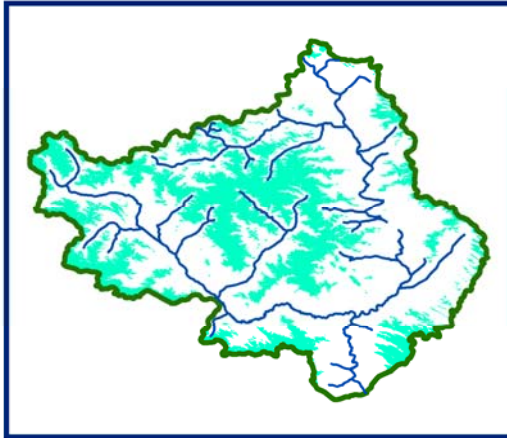


27 OCTOBER 2010

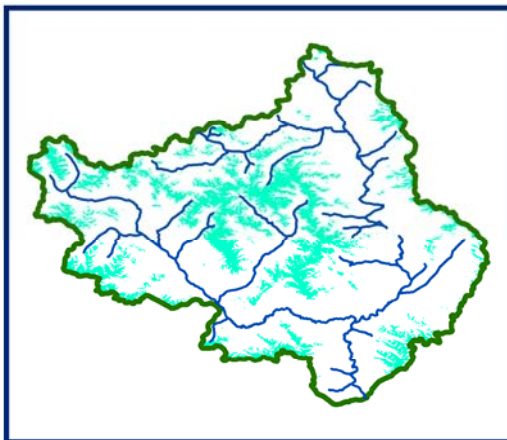


0510203040
Kilometers

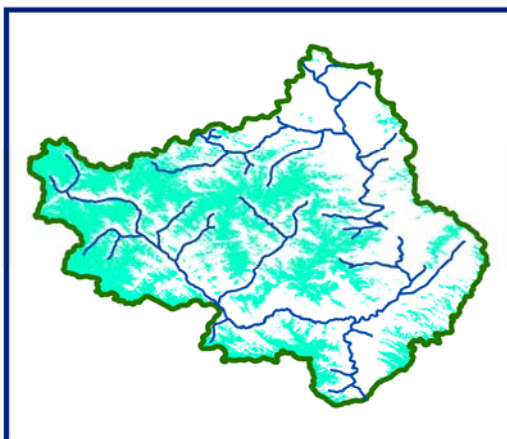
10 DAILY SNOW COVER MAP: SPITI BASIN



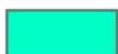
DATA USED
03 OCTOBER 2010
08 OCTOBER 2010



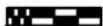
DATA USED
18 OCTOBER 2010



DATA USED
27 OCTOBER 2010



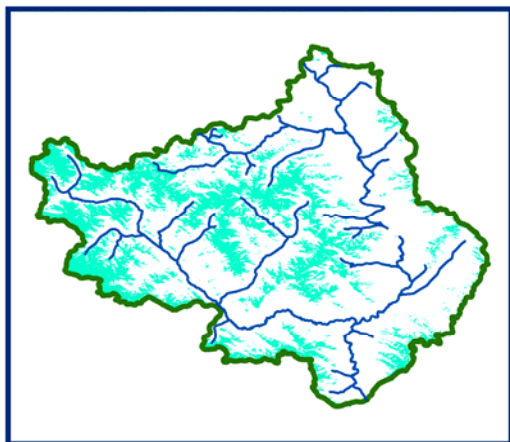
SNOW

048162432

Kilometers

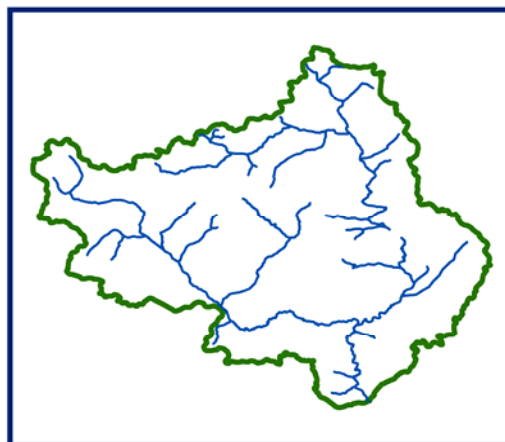
SNOW COVER MAP

:

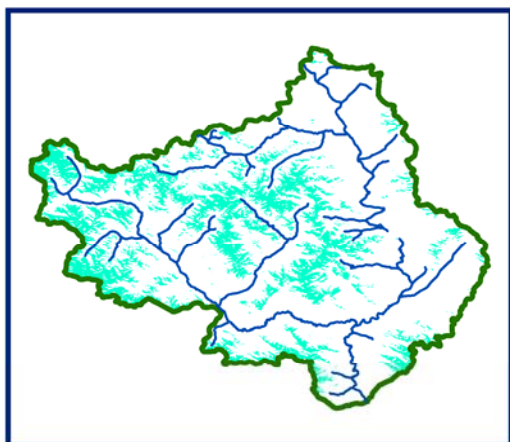
SPITI BASIN



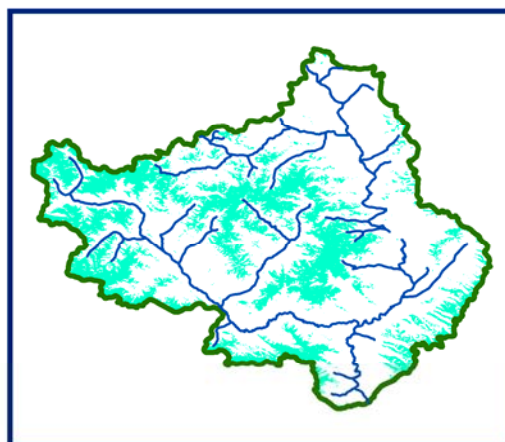
06 NOVEMBER 2010



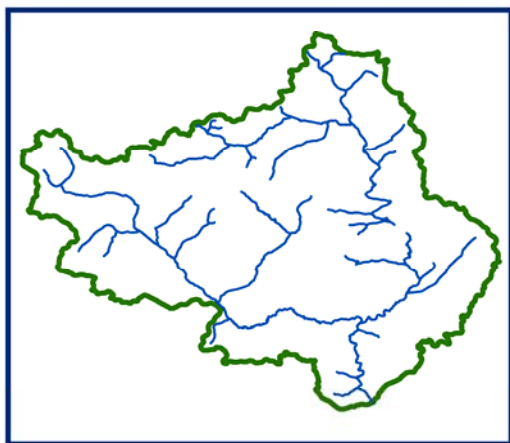
DATA NOT AVAILABLE



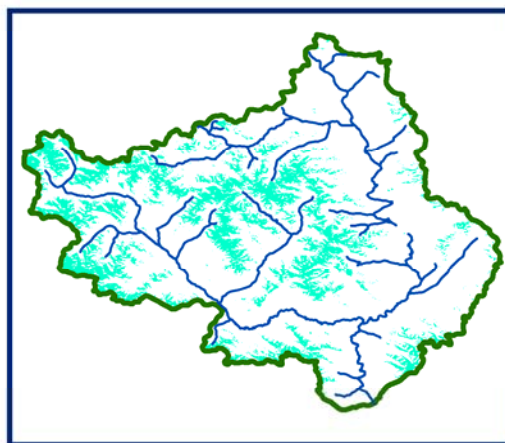
15 NOVEMBER 2010



20 NOVEMBER 2010



DATA NOT AVAILABLE



30 NOVEMBER 2010



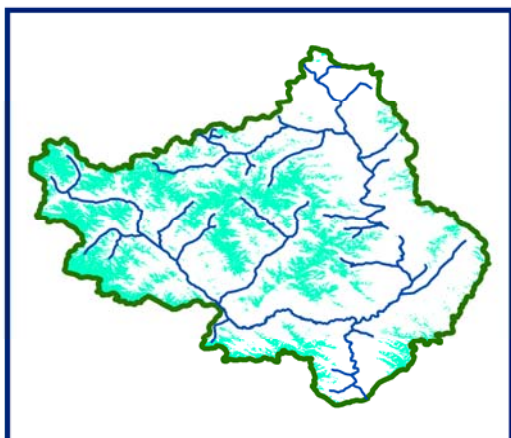
SNOW

0510203040

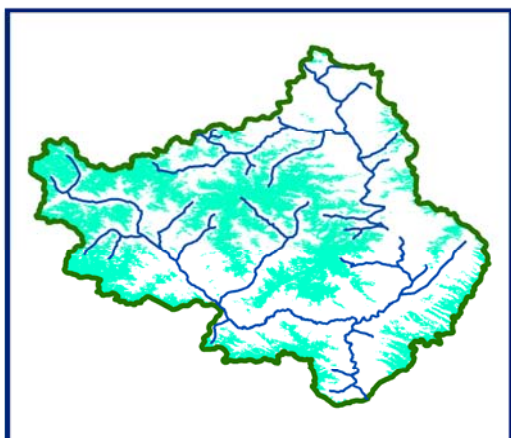


Kilometers

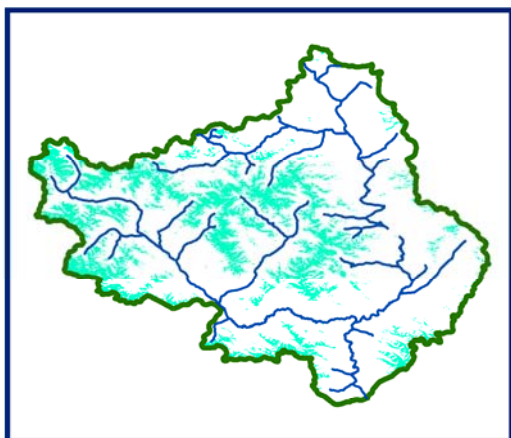
10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED
06 NOVEMBER 2010



DATA USED
15 NOVEMBER 2010
20 NOVEMBER 2010



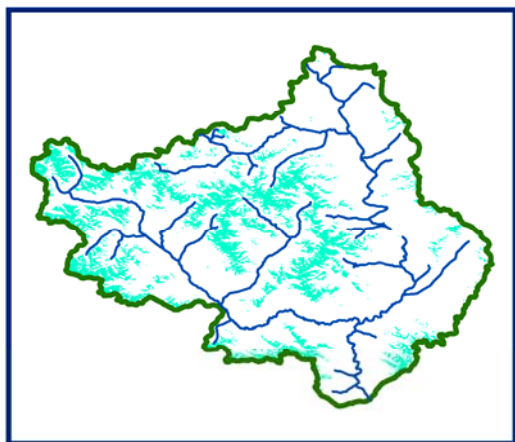
DATA USED
30 NOVEMBER 2010



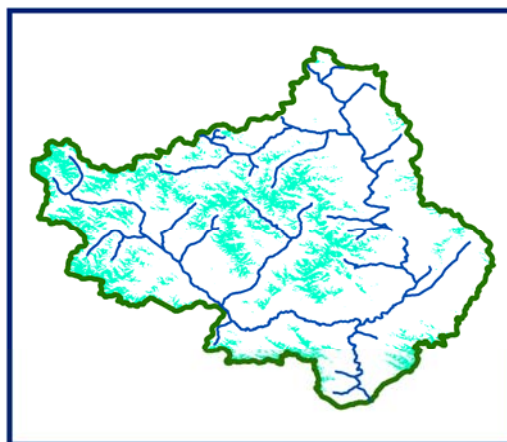
048162432

Kilometers

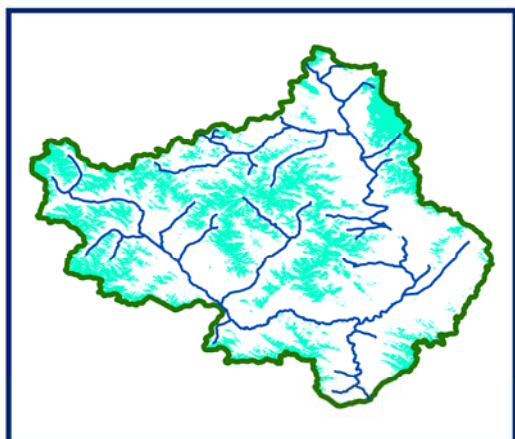
SNOW COVER MAP : SPITI BASIN



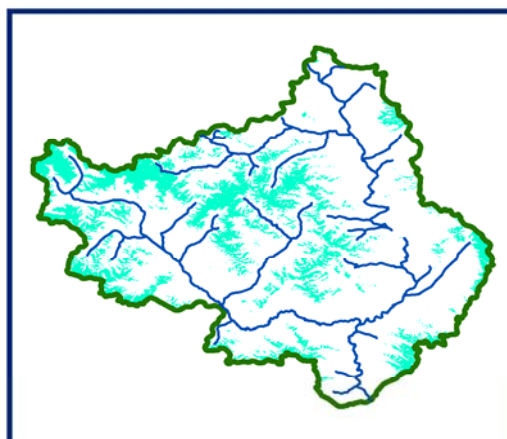
05 DECEMBER 2010



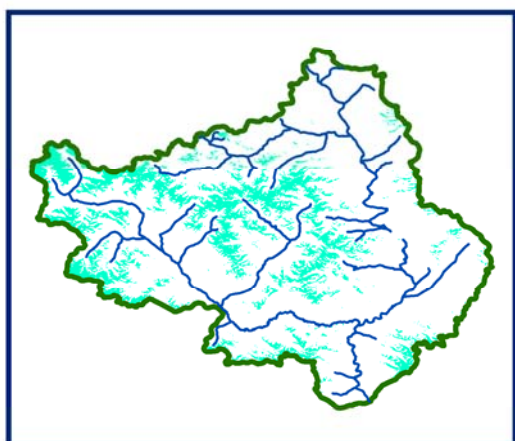
09 DECEMBER 2010



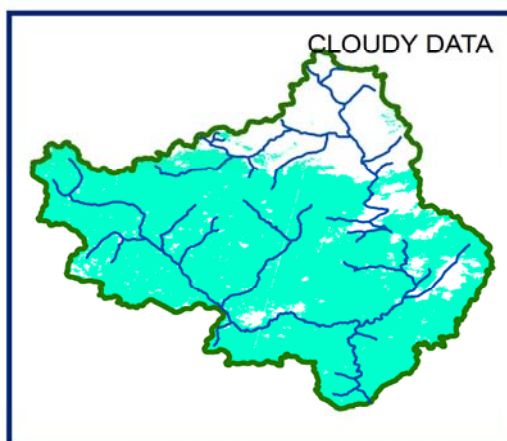
14 DECEMBER 2010



19 DECEMBER 2010



24 DECEMBER 2010



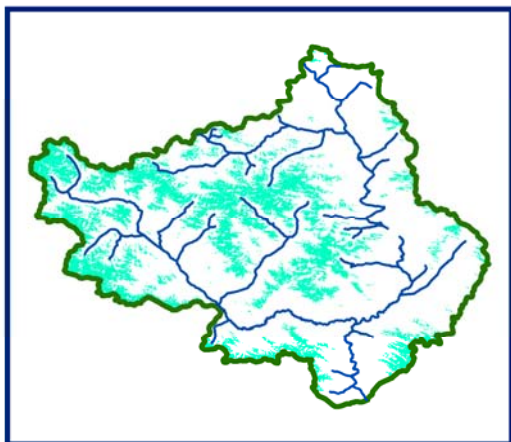
29 DECEMBER 2010



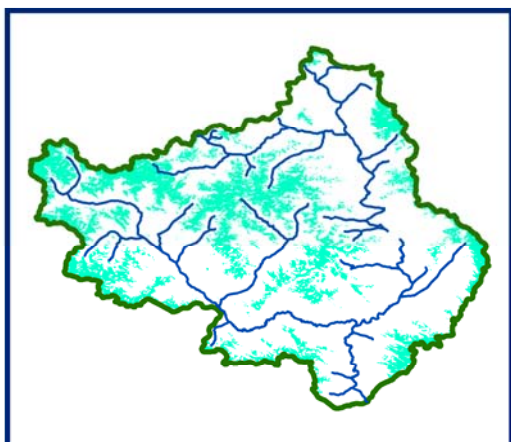
SNOW

0.9182736
Kilometers

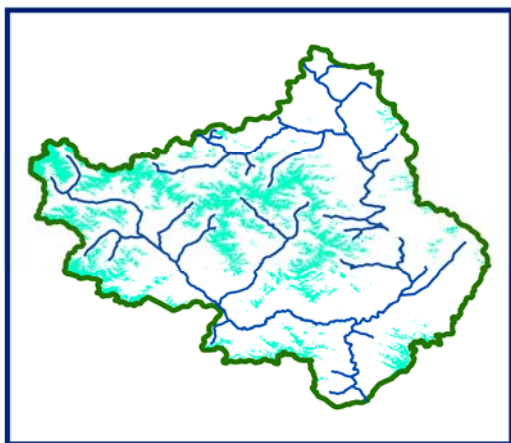
10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED
05 DECEMBER 2010
09 DECEMBER 2010



DATA USED
14 DECEMBER 2010
19 DECEMBER 2010



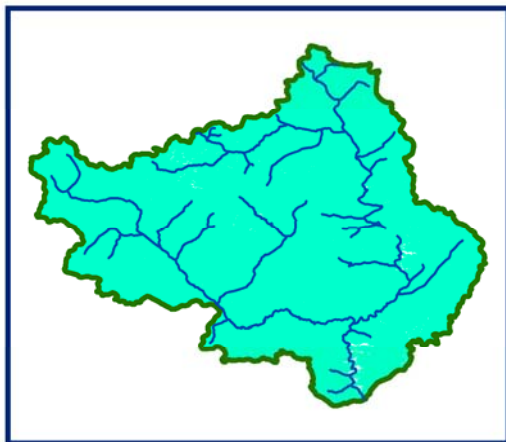
DATA USED
24 DECEMBER 2010



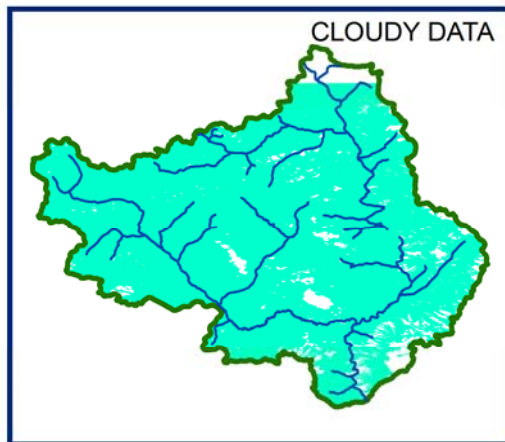
SNOW

0.5 182736
Kilometers

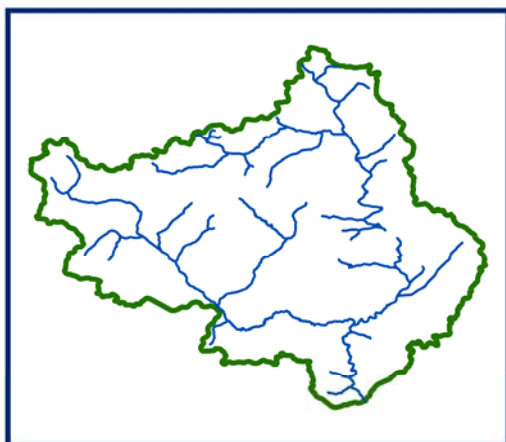
SNOW COVER MAP : SPITI BASIN



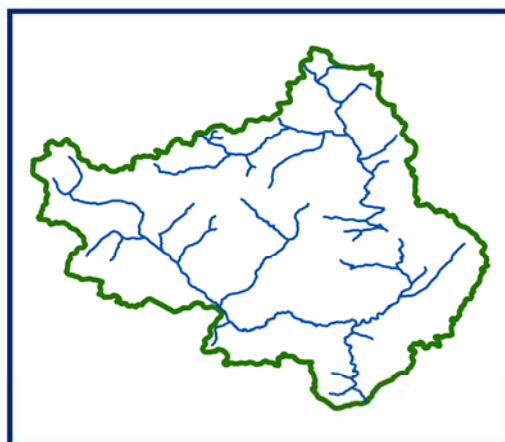
03 JANAUARY 2011



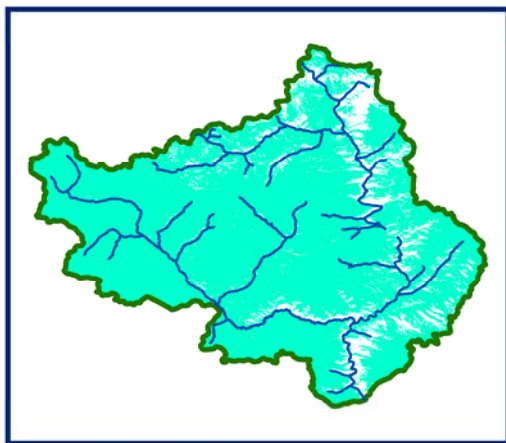
07 JANAUARY 2011



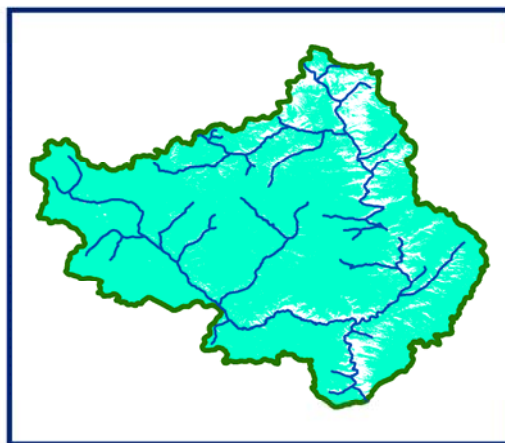
DATA NOT AVAILABLE



DATA NOT AVAILABLE



27 JANAUARY 2011



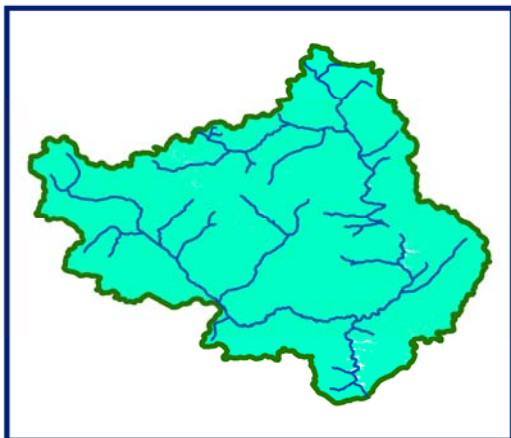
31 JANAUARY 2011



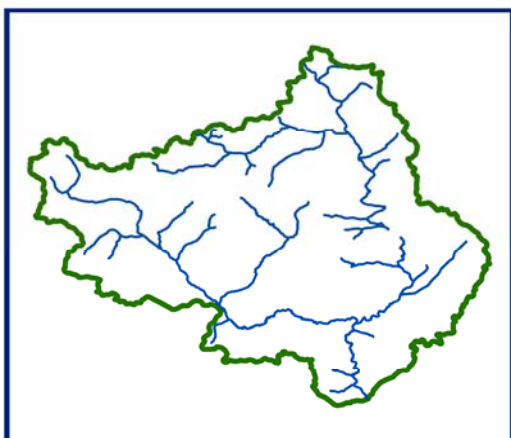
SNOW

0.9182736
Kilometers

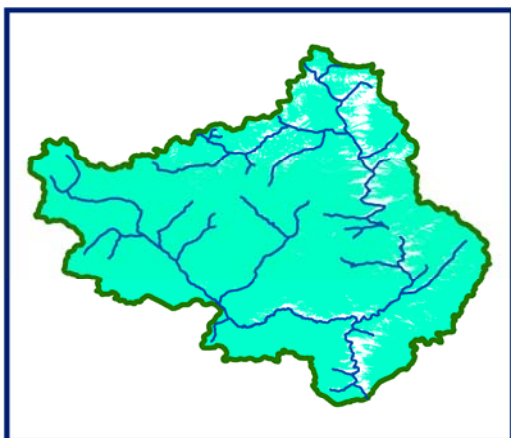
10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED
03 JANUARY 2011



DATA USED
DATA NOT AVAILABLE



DATA USED
27 JANUARY 2011
31 JANUARY 2011

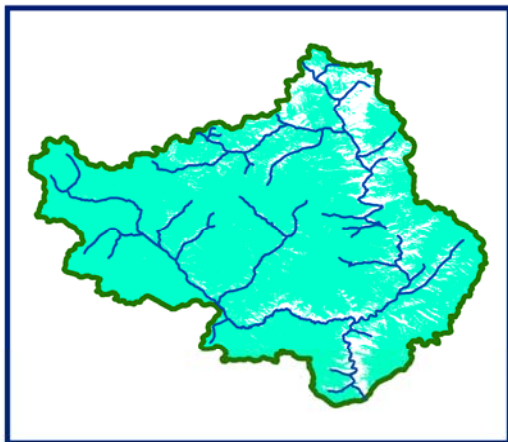


SNOW

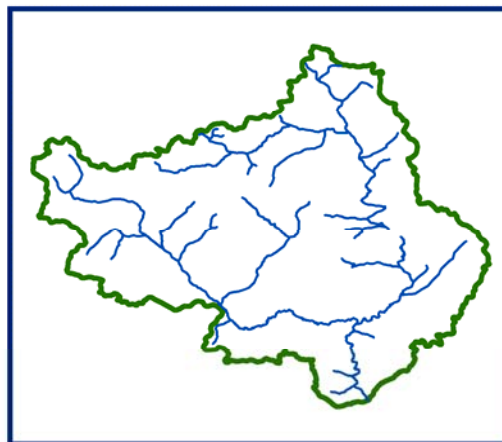
0.5182736

Kilometers

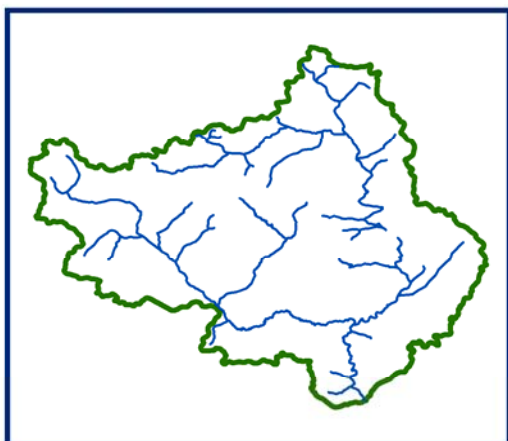
SNOW COVER MAP : SPITI BASIN



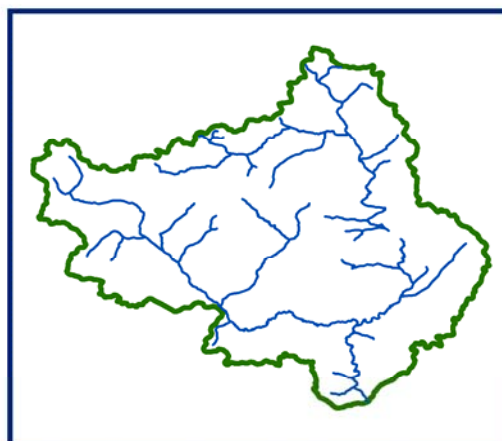
01 FEBRUARY 2011



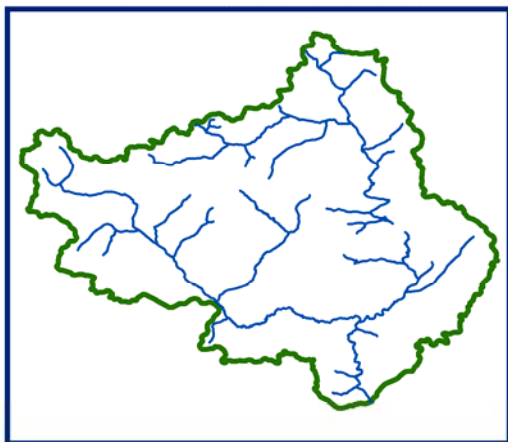
DATA NOT AVAILABLE



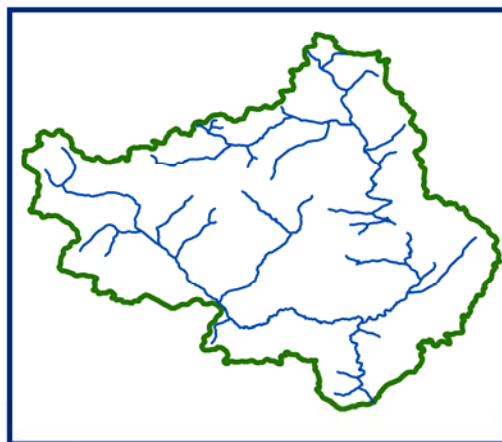
DATA NOT AVAILABLE



DATA NOT AVAILABLE



DATA NOT AVAILABLE



DATA NOT AVAILABLE



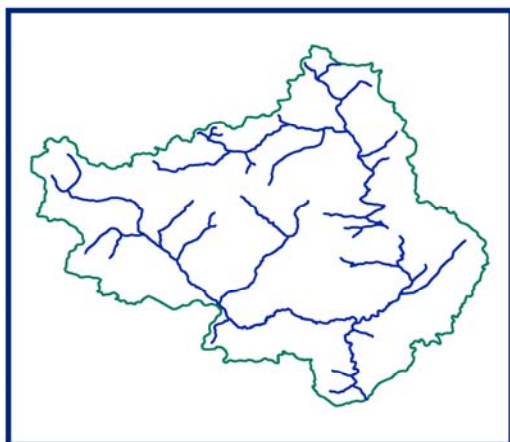
SNOW

0510203040
Kilometers

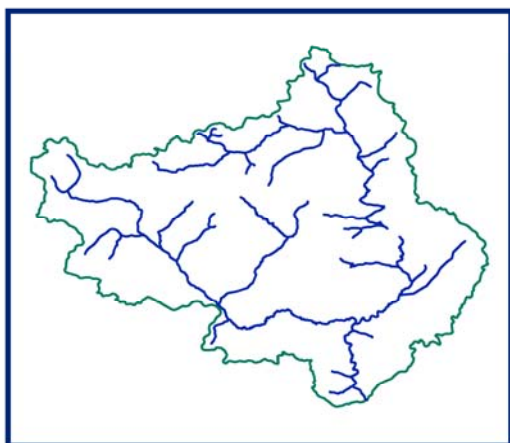
10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED
5 February, 2011



DATA USED
DATA NOT AVAILABLE



DATA USED
DATA NOT AVAILABLE

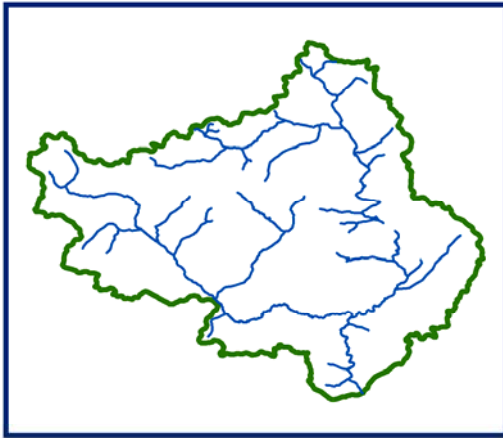


SNOW

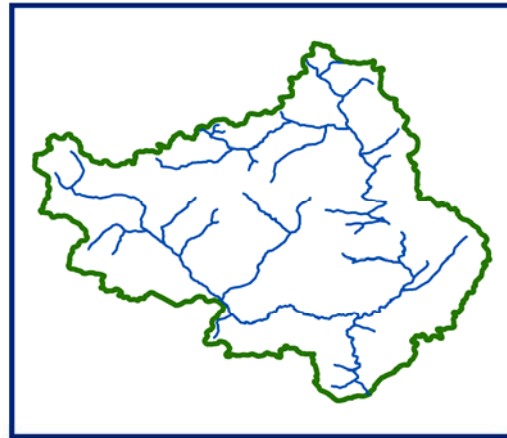
0510203040

Kilometers

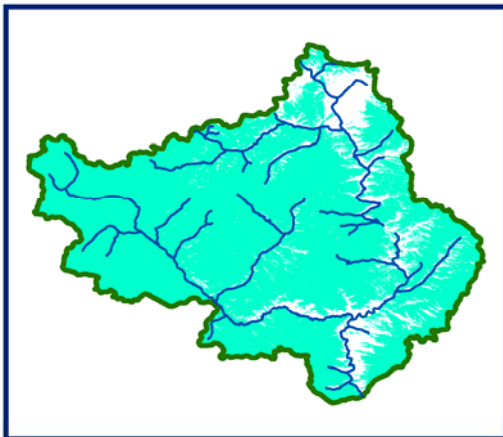
SNOW COVER MAP : SPITI BASIN



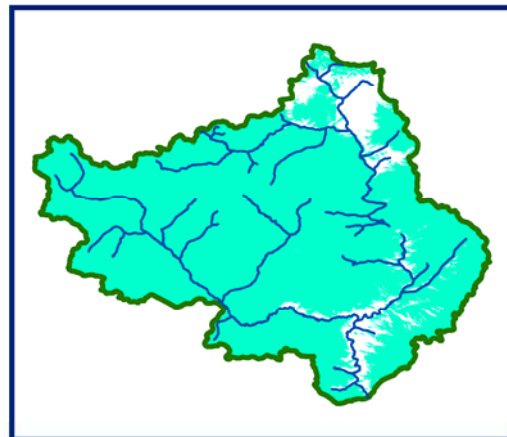
DATA NOT AVAILABLE



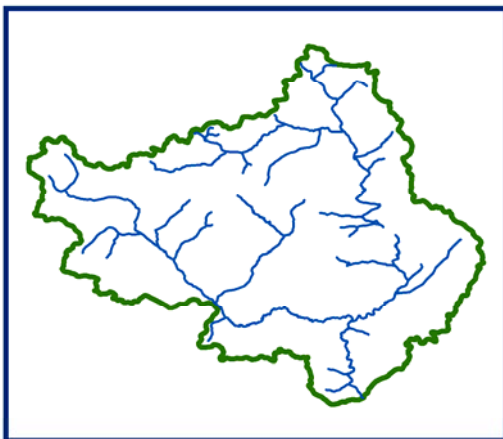
DATA NOT AVAILABLE



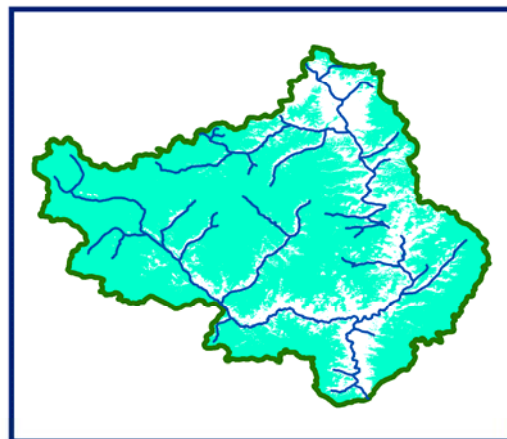
15 MARCH 2011



16 MARCH 2011



DATA NOT AVAILABLE



30 MARCH 2011

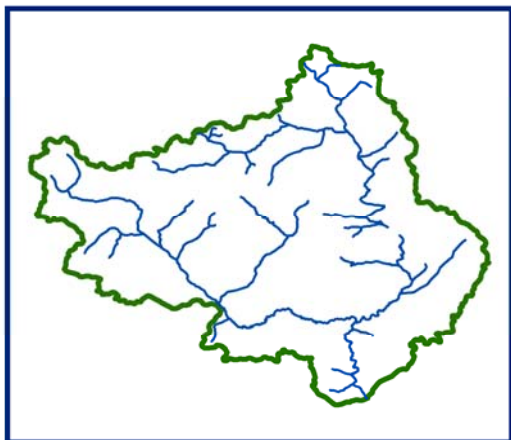


SNOW

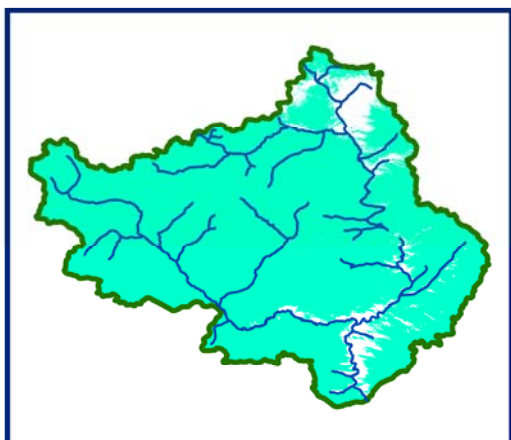
0510203040

Kilometers

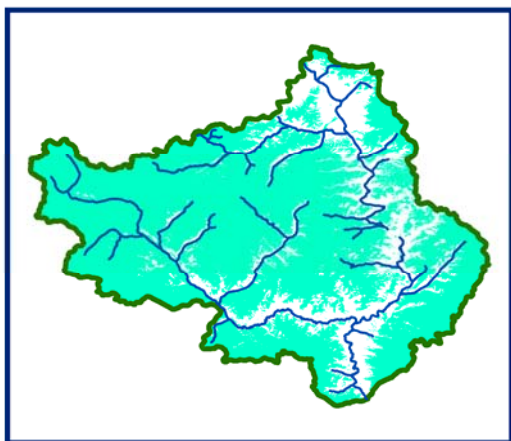
10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED
DATA NOT AVAILABLE



DATA USED
15 MARCH 2011
16 MARCH 2011



DATA USED
30 MARCH 2011



SNOW

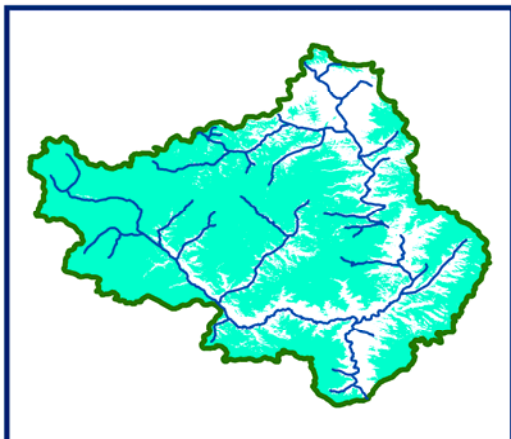
048162432

Kilometers

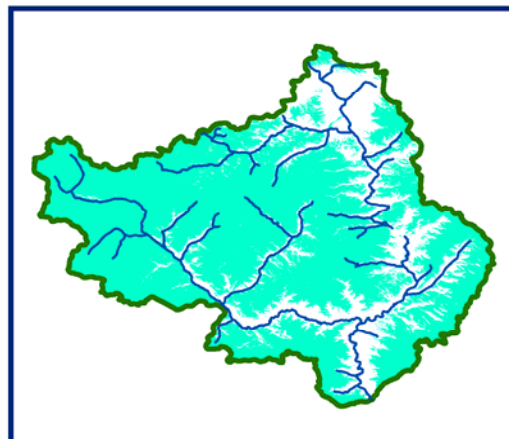
SNOW COVER MAP

:

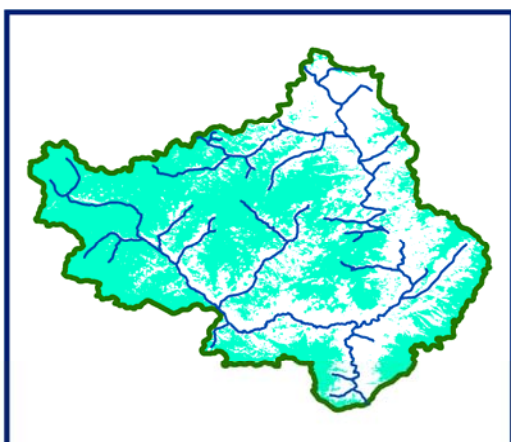
SPITI BASIN



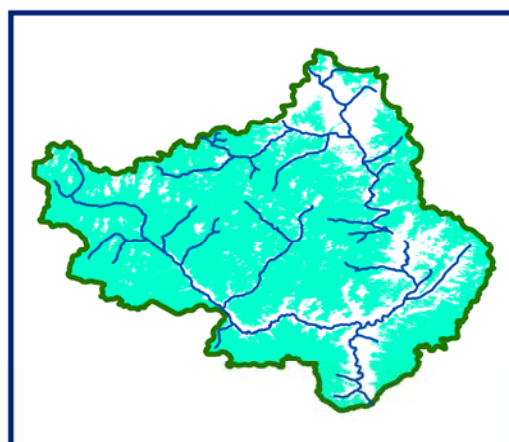
08 APRIL 2011



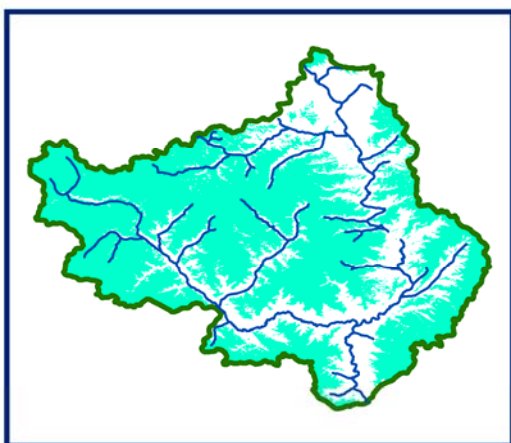
09 APRIL 2011



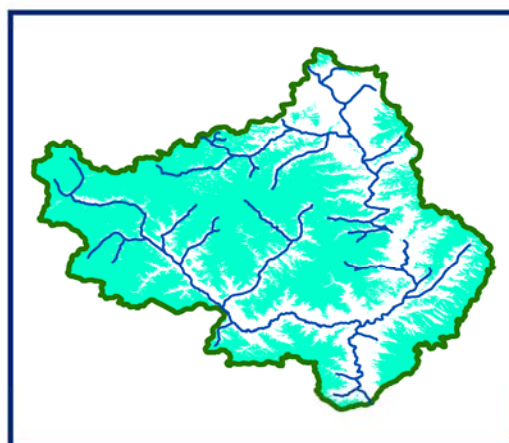
13 APRIL 2011



18 APRIL 2011



23 APRIL 2011



28 APRIL 2011

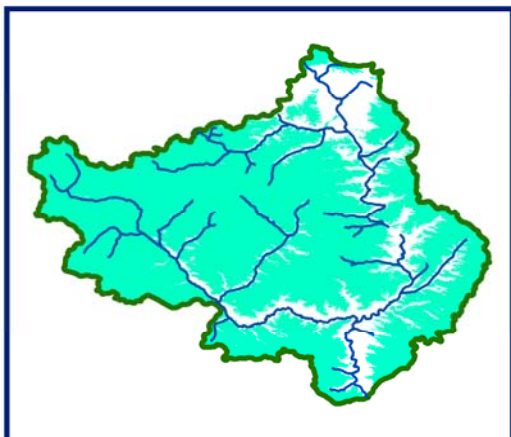


SNOW

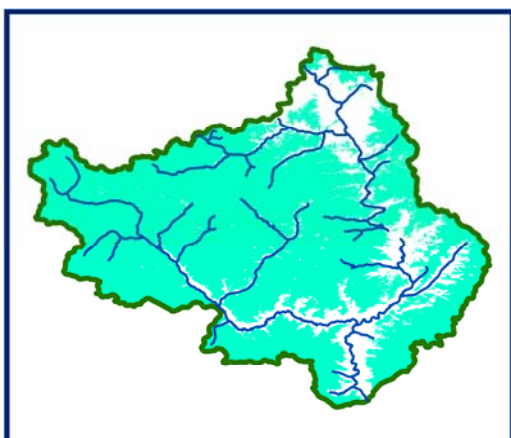
0510203040

Kilometers

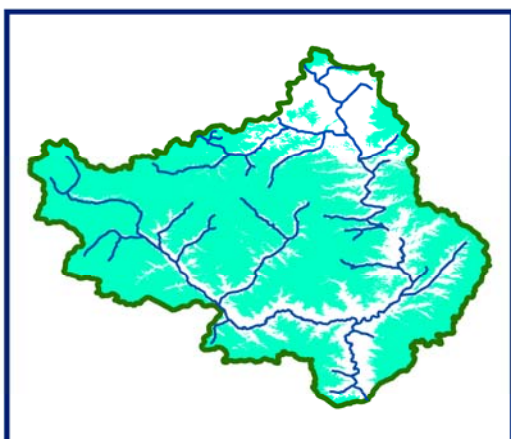
10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED
08 APRIL 2011
09 APRIL 2011



DATA USED
13 APRIL 2011
18 APRIL 2011



DATA USED
23 APRIL 2011
28 APRIL 2011



SNOW

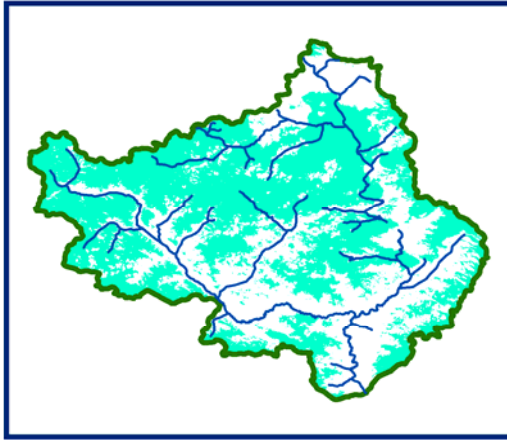
0510203040

Kilometers

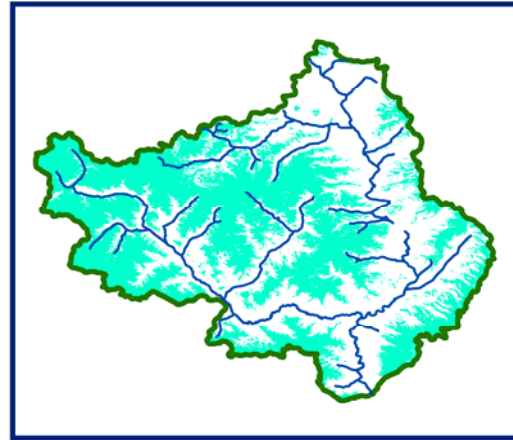
SNOW COVER MAP

:

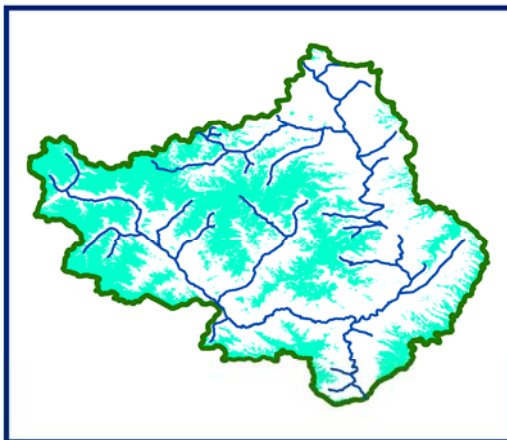
SPITI BASIN



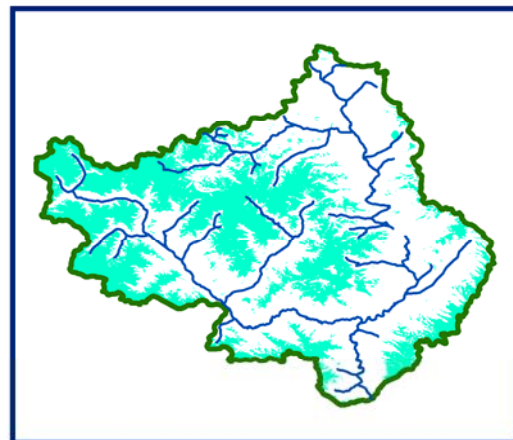
02 MAY 2011



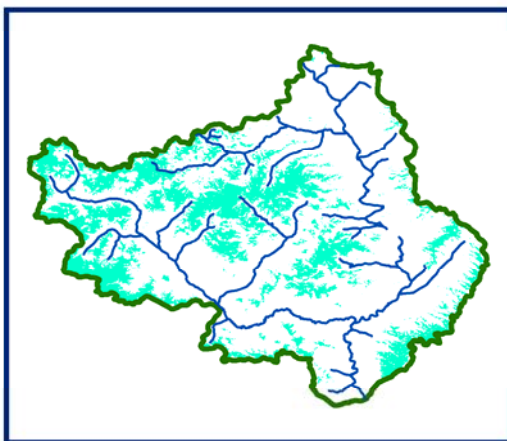
03 MAY 2011



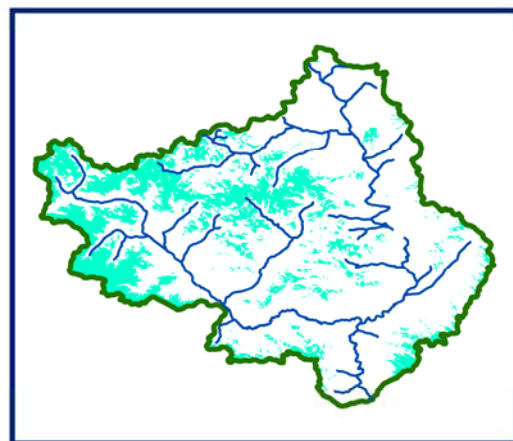
12 MAY 2011



17 MAY 2011



22 MAY 2011



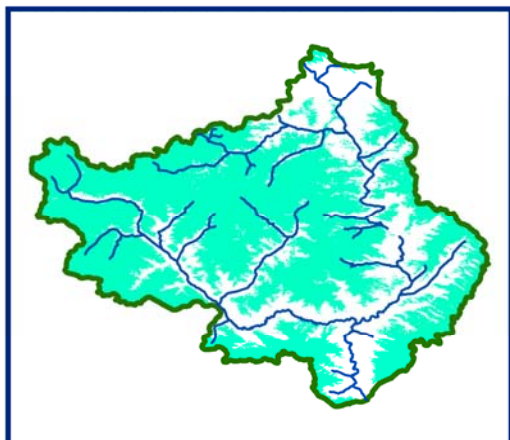
26 MAY 2011



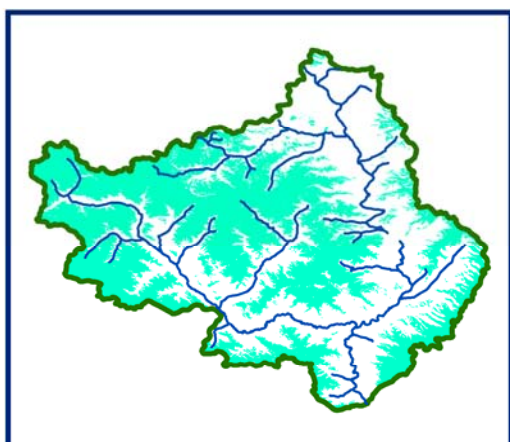
SNOW

0.9182736
Kilometers

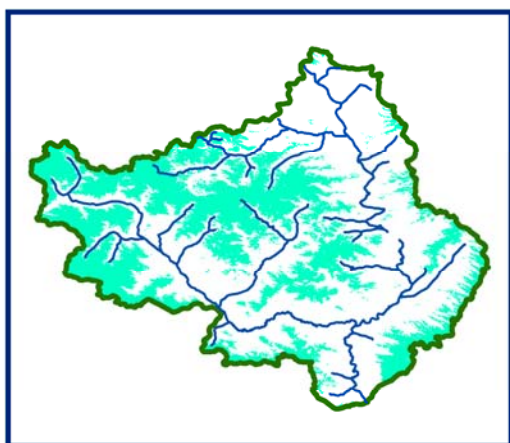
10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED
02 MAY 2011
03 MAY 2011



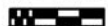
DATA USED
12 MAY 2011
17 MAY 2011



DATA USED
22 MAY 2011
26 MAY 2011



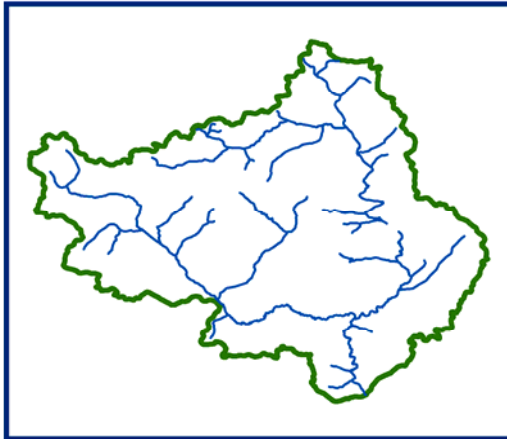
SNOW

048162432

Kilometers

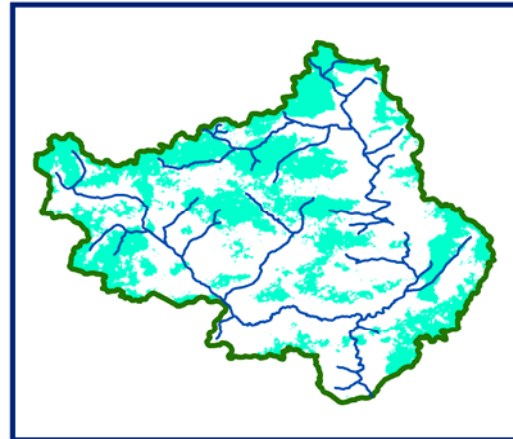
SNOW COVER MAP

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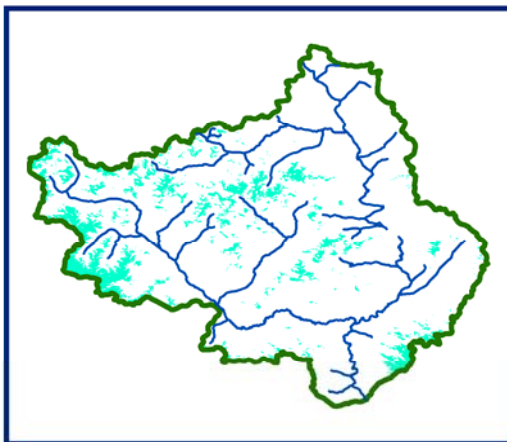
SPITI BASIN



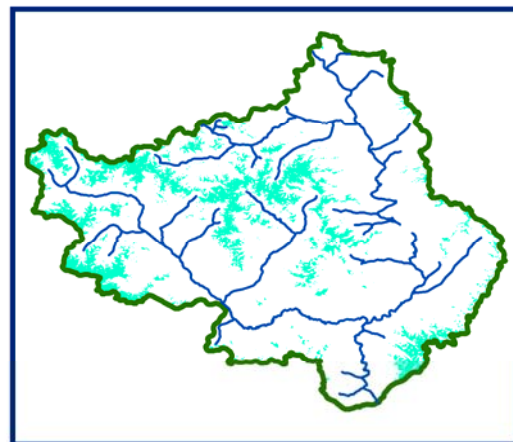
DATA NOT AVAILABLE



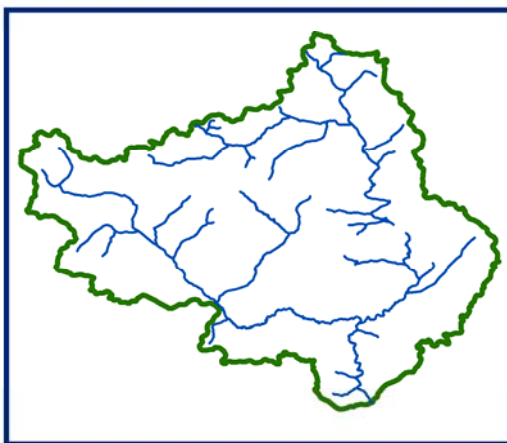
10 JUNE 2010



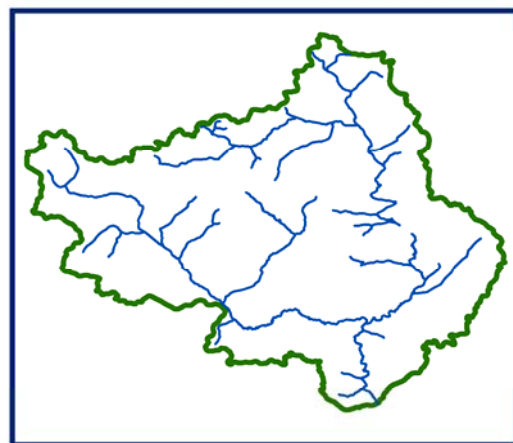
19 JUNE 2010



20 JUNE 2010



DATA NOT AVAILABLE



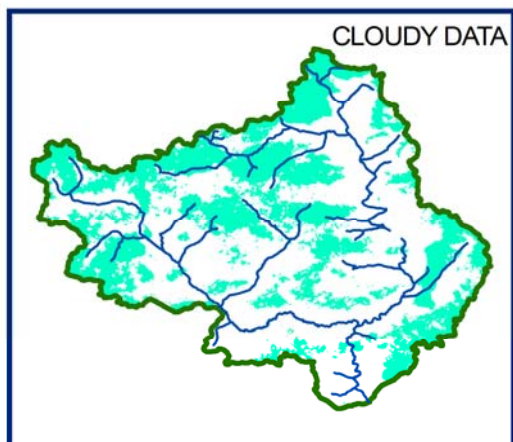
DATA NOT AVAILABLE



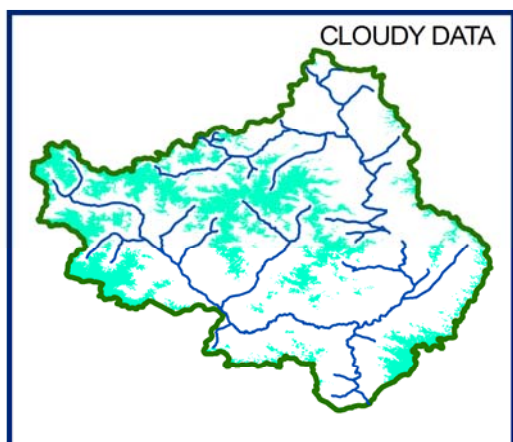
SNOW

0.9182736
Kilometers

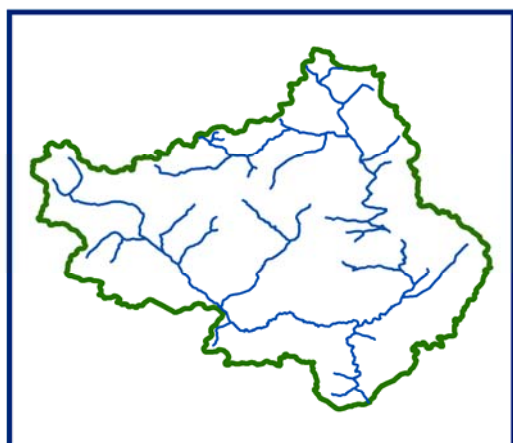
10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED
10 JUNE 2011



DATA USED
19 JUNE 2011
20 JUNE 2011



DATA USED
DATA NOT AVAILABLE



SNOW

0510203040

Kilometers

BASPA BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: BASPA

BASIN AREA: 1096 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2010							
1.	03 Oct 2010	582.22	53	3.	18 Oct 2010	507.34	46
2.	08 Oct 2010	679.19	62	4.	27 Oct 2010	859.33	78
November 2010							
1.	06 Nov 2010	665.33	61	3.	20 Nov 2010	746.43	68
2.	15 Nov 2010	601.81	55	4.	30 Nov 2010	584.79	53
December 2010							
1.	05 Dec 2010	559.57	51	4.	19 Dec 2010	553.25	50
2.	09 Dec 2010	560.67	51	5.	24 Dec 2010	578.08	53
3.	14 Dec 2010	529.52	48	6.	29 Dec 2010	1067.60	97
January 2011							
1.	02 Jan 2011	1089.40	99	4.	12 Jan 2011	822.39	75
2.	03 Jan 2011	1088.08	99	5.	27 Jan 2011	1030.29	94
3.	07 Jan 2011	793.39	72	6.	31 Jan 2011	1057.02	96
February 2011							
1.	01 Feb 2011	1012.48	92				
March 2011							
1.	15 March 2011	1037.93	95	2.	30 March 2011	997.87	91
April 2011							
1.	08 April 2011	996.64	91	4.	18 April 2011	985.60	90
2.	09 April 2011	956.79	87	5.	23 April 2011	944.61	86
3.	13 April 2011	972.18	89	6.	28 April 2011	879.61	80
May 2011							
1.	03 May 2011	837.48	76	4.	22 May 2011	509	46
2.	12 May 2011	777.63	71	5.	26 May 2011	390.48	36
3.	17 May 2011	729.01	67				
June 2011							
1.	19 June 2011	440.47	40	2.	20 June 2011	122.73	11

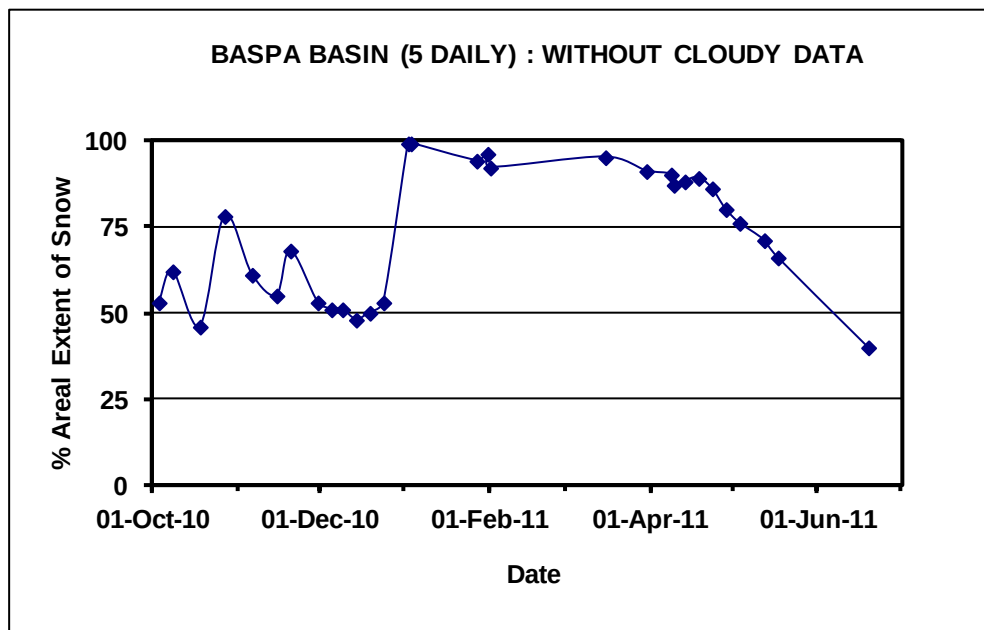
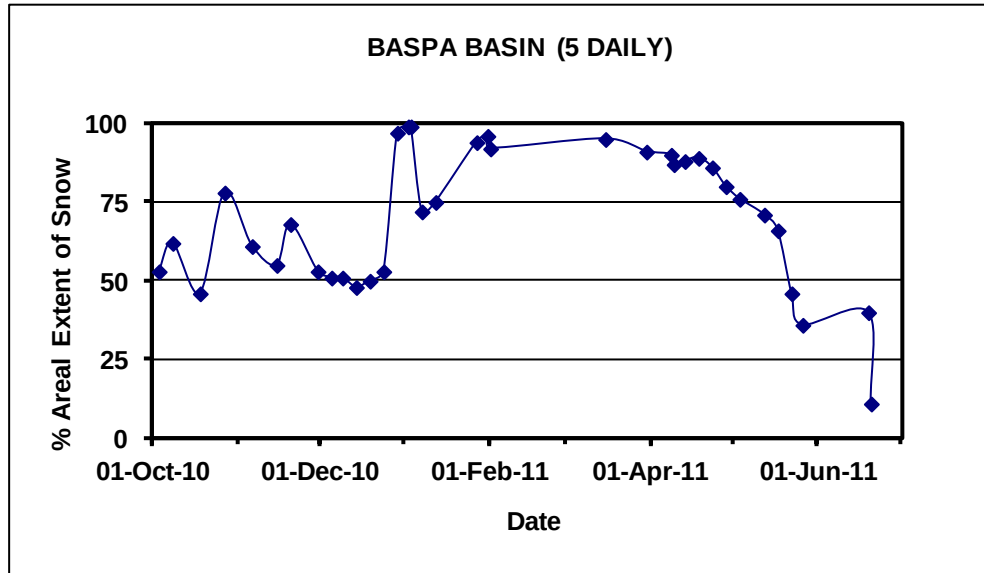
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: BASPA

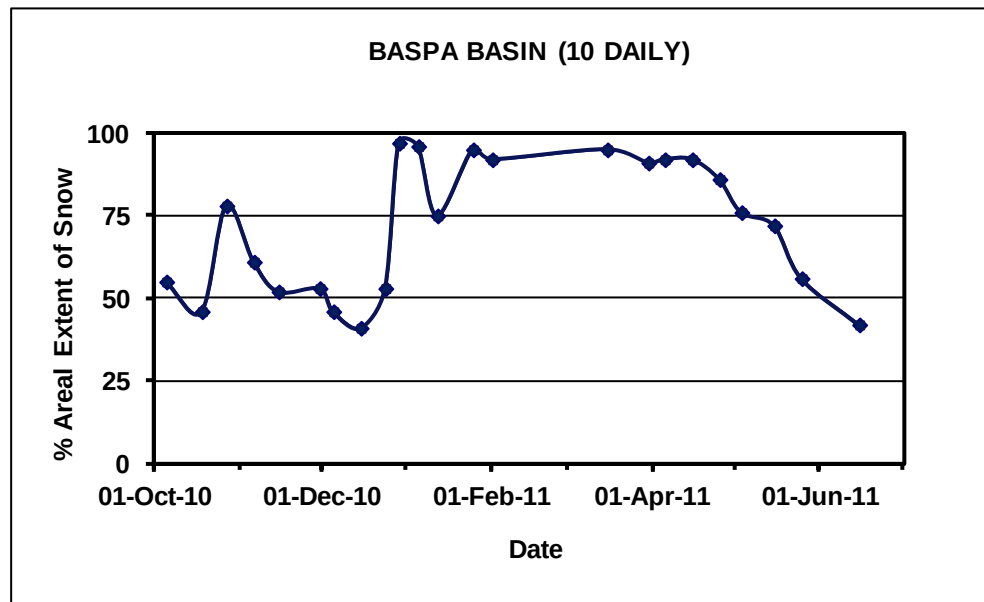
BASIN AREA: 1096 sq km

S. No	Date	Snow cover (sq km)	Snow cover (%)	Cloud cover	S No	Date	Snow cover (sq km)	Snow cover (%)	Cloud cover
October 2010									
1.	03 Oct 2010	600.80	55	clear	3.	18 Oct 2010	507.34	46	clear
2.	08 Oct 2010			Less	4.	27 Oct 2010	859.33	78	clear
November 2010									
1.	06 Nov 2010	665.33	61	clear	4.	30 Nov 2010	584.79	53	clear
2.	15 Nov 2010	572.86	52	clear					
3.	20 Nov 2010			clear					
December 2010									
1.	05 Dec 2010	500.34	46	clear	5.	24 Dec 2010	578.08	53	Clear
2.	09 Dec 2010			clear	6.	29 Dec 2010	1067.60	97	More
3.	14 Dec 2010	453.25	41	clear					
4.	19 Dec 2010			clear					
January2011									
1.	02 Jan 2011	1054.36	96	Clear	3.	12 Jan 2011	822.39	75	More
2.	03 Jan 2011			Clear	4.	27 Jan 2011	1039.36	95	Clear
.					5.	31 Jan 2011			Clear
February 2011									
1.	01 Feb 2011	1012.48	92	Clear					
March 2011									
1.	15 March 2011	1037.50	95	Clear	2.	30 March 2011	997.87	91	Clear
April 2011									
1.	08 April 2011	1003.18	92	clear	5.	23 April2011	946.98	86	clear
2.	09 April 2011			clear	6.	28 April2011			clear
3.	13 April 2011	1003.64	92	clear					
4.	18 April2011			clear					
May 2011									
1.	03 May 2011	837.48	76	Clear	4.	22 May 2011	614.45	56	less
2.	12 May 2011	792.57	72	Clear	5.	26 May 2011			More
3.	17 May 2011			clear					
June 2011									
1.	19 June 2011	462.98	42	less					
2.	20 June 2011			More					

Snow cover depletion curve

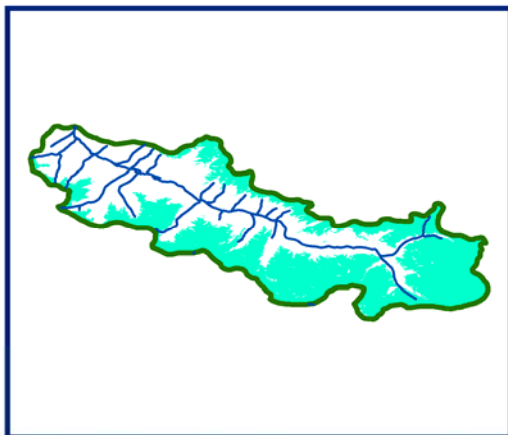


Snow cover depletion curve

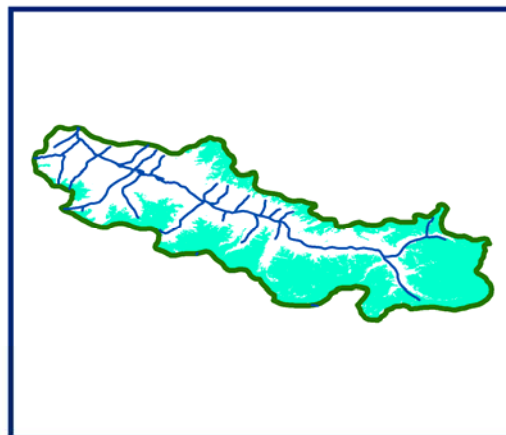


SNOW COVER MAP

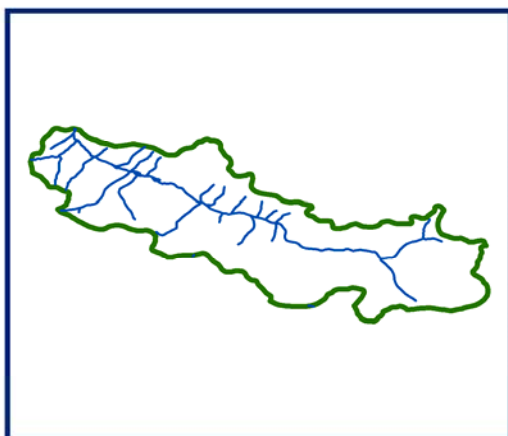
SNOW COVER MAP : BASPA BASIN



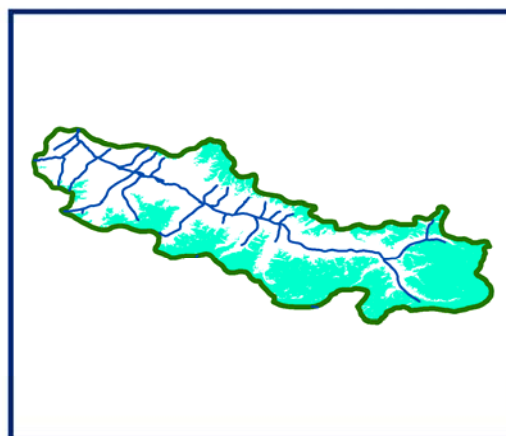
03 OCTOBER 2010



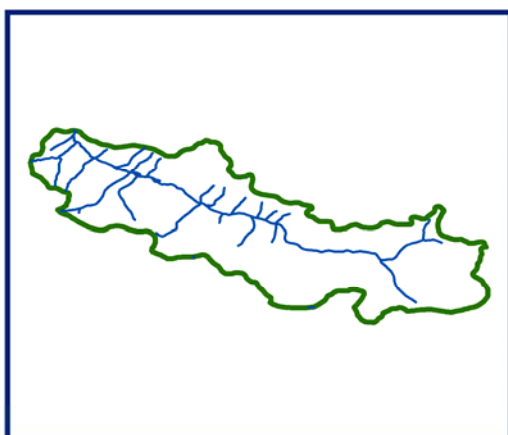
08 OCTOBER 2010



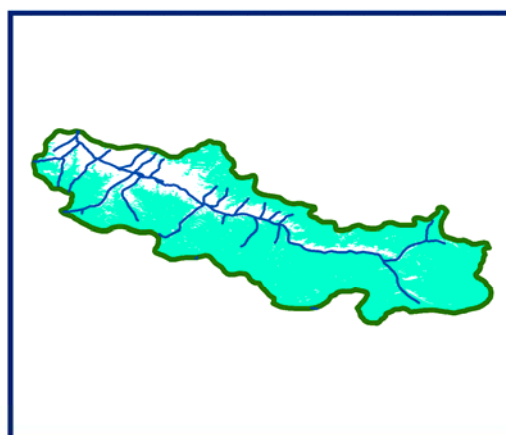
DATA NOT AVAILABLE



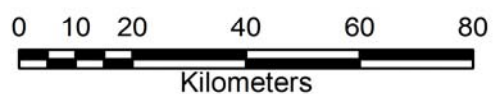
18 OCTOBER 2010



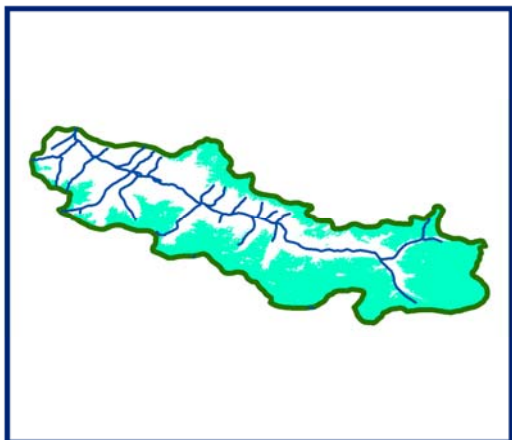
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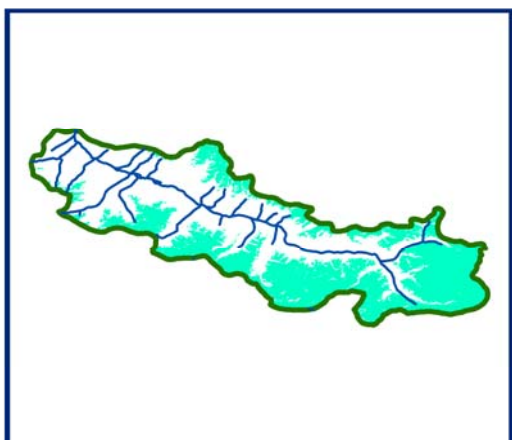
27 OCTOBER 2010



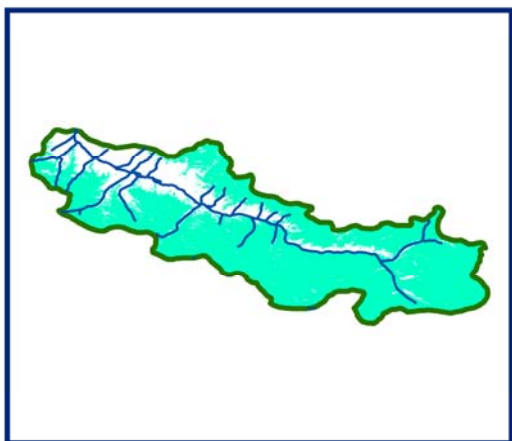
10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED
03 OCTOBER 2011
08 OCTOBER 2011



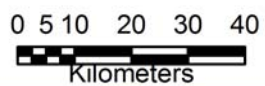
DATA USED
18 OCTOBER 2011



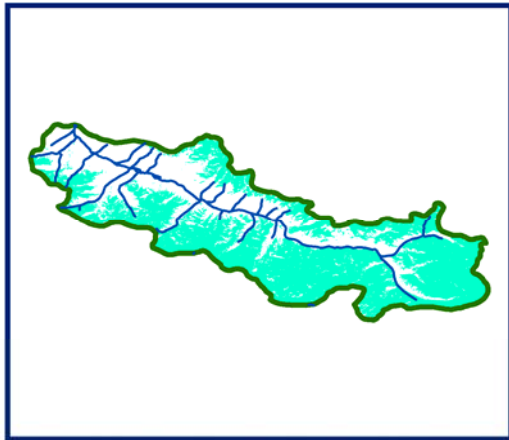
DATA USED
27 OCTOBER 2011



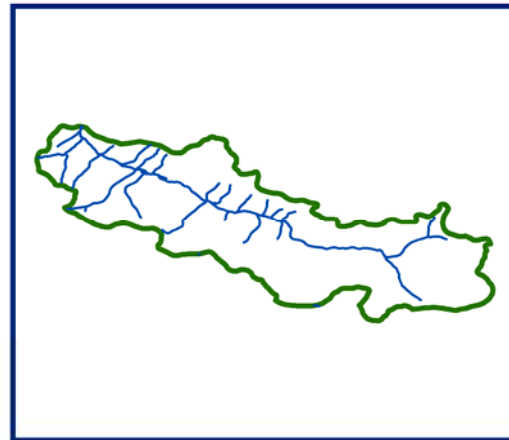
SNOW



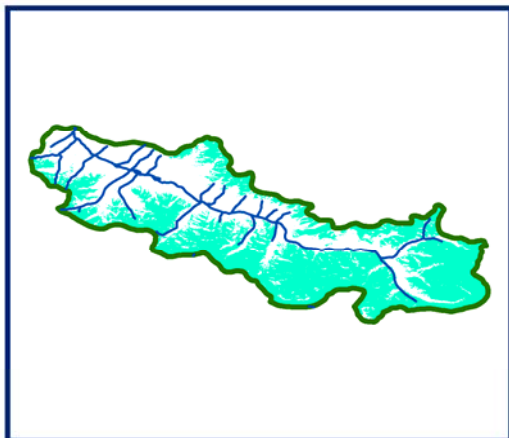
SNOW COVER MAP : BASPA BASIN



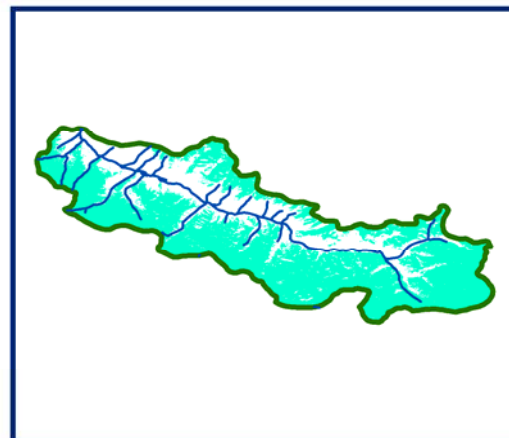
06 NOVEMBER 2010



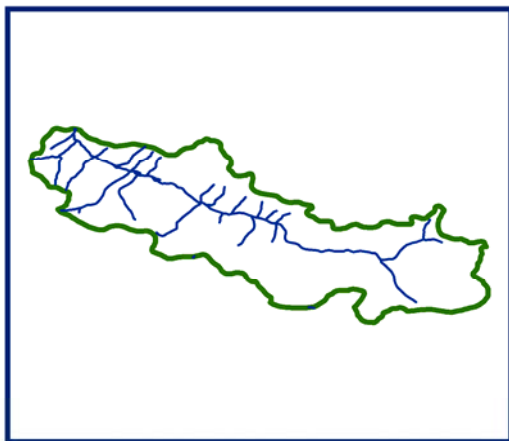
DATA NOT AVAILABLE



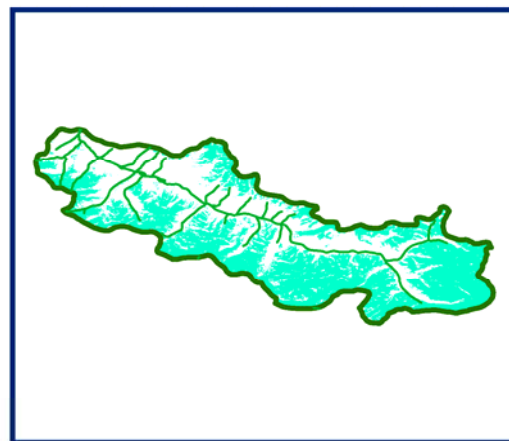
15 NOVEMBER 2010



20 NOVEMBER 2010



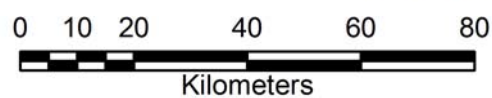
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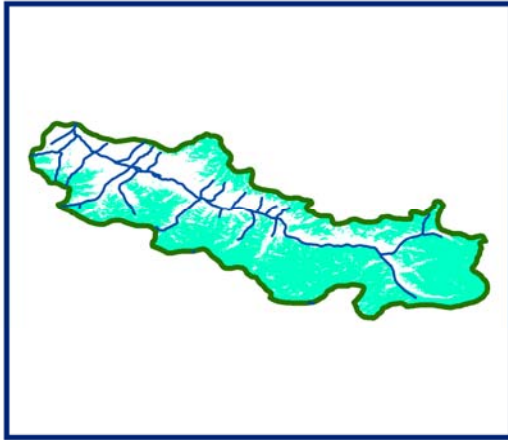
30 NOVEMBER 2010



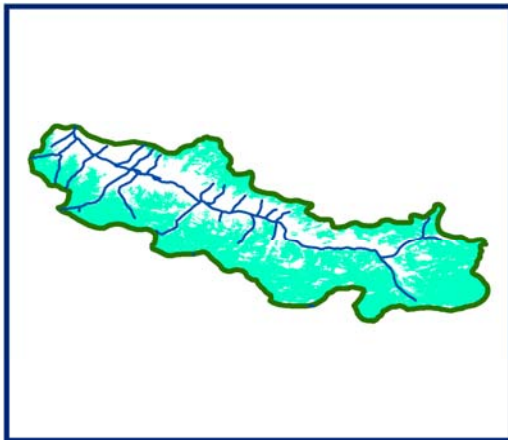
SNOW



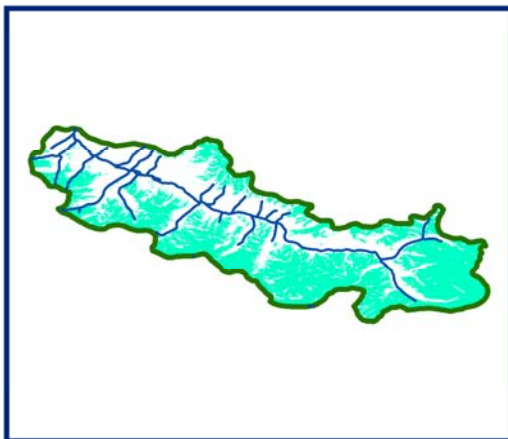
10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED
06 NOVEMBER 2011



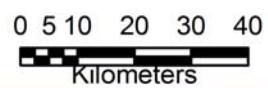
DATA USED
15 NOVEMBER 2011
20 NOVEMBER 2011



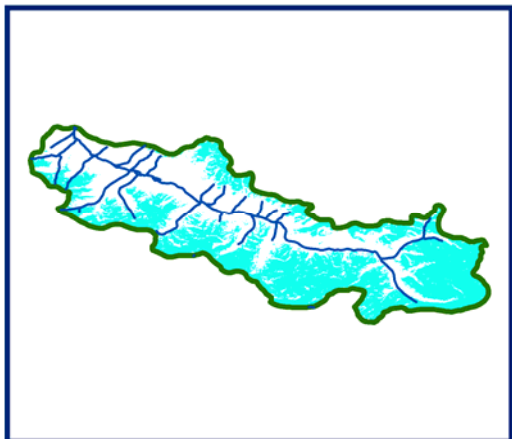
DATA USED
30 NOVEMBER 2011



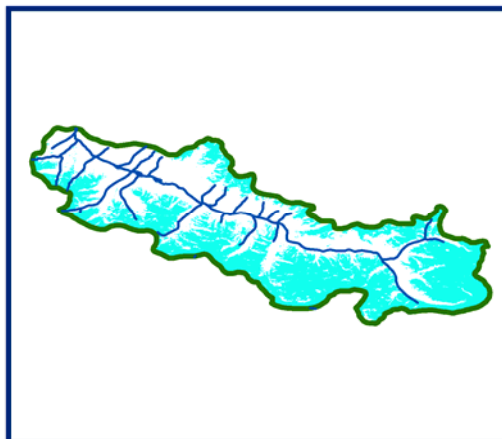
SNOW



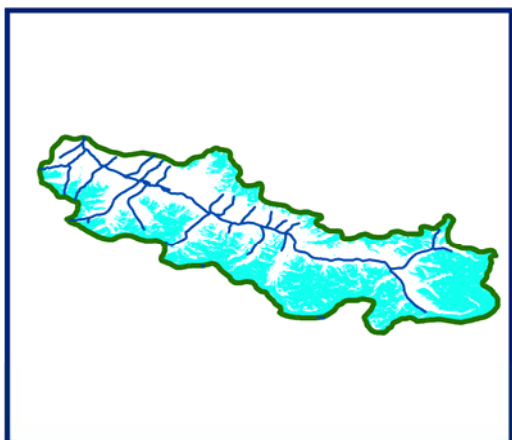
SNOW COVER MAP : BASPA BASIN



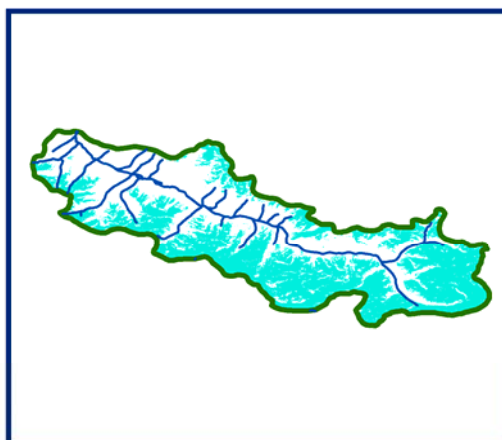
05 DECEMBER 2010



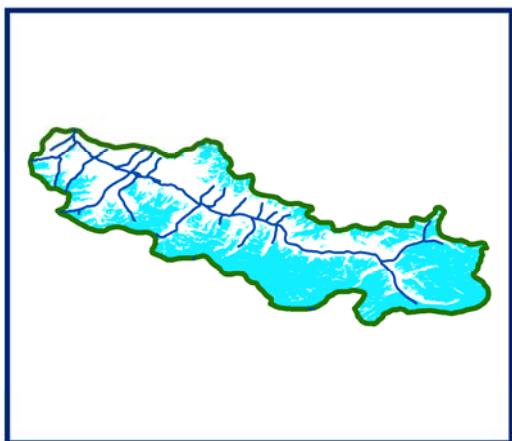
09 DECEMBER 2010



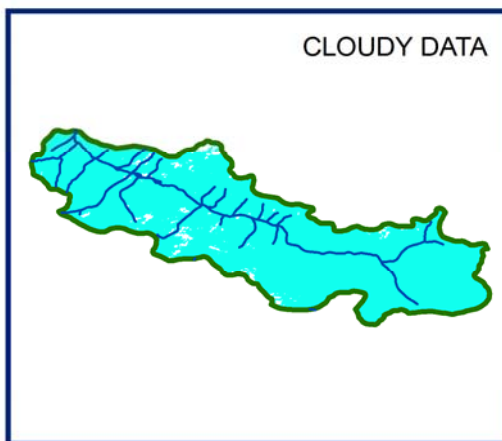
14 DECEMBER 2010



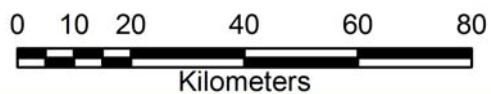
19 DECEMBER 2010



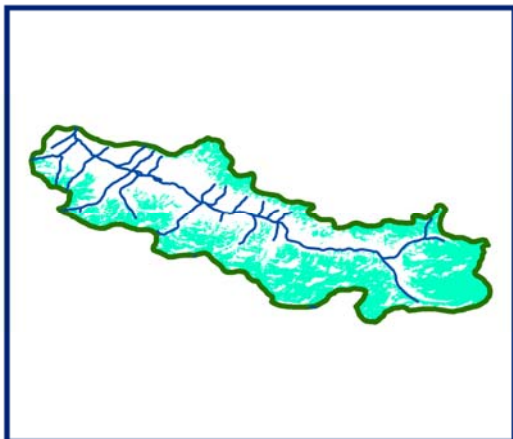
24 DECEMBER 2010



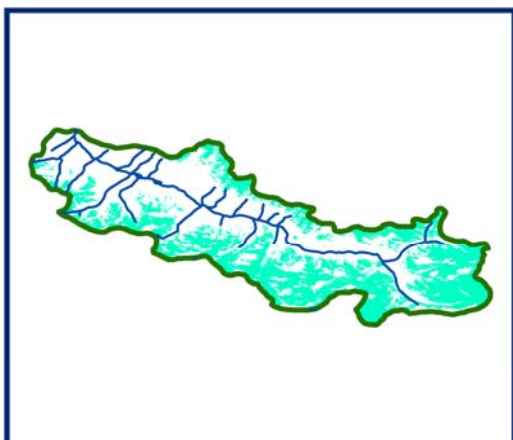
29 DECEMBER 2010



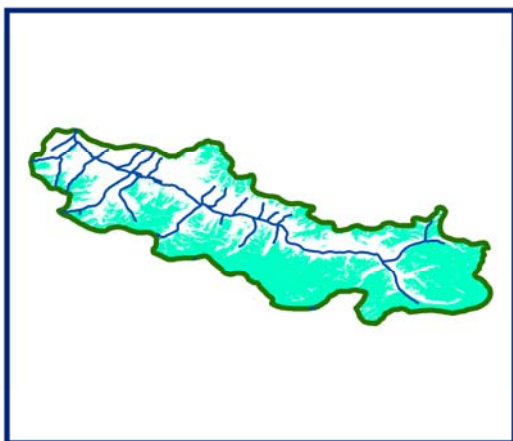
10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED
05 DECEMBER 2011
09 DECEMBER 2011



DATA USED
14 DECEMBER 2011
19 DECEMBER 2011



DATA USED
24 DECEMBER 2011



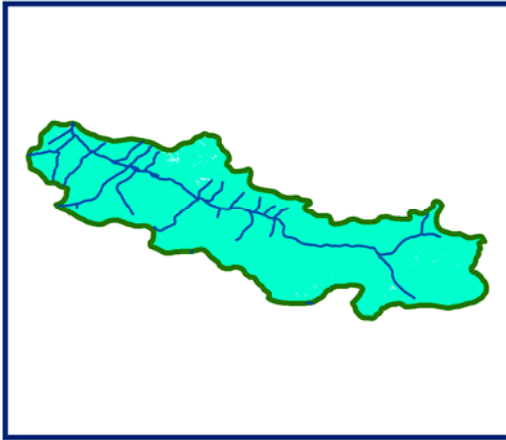
SNOW

0 5 10 20 30 40
Kilometers

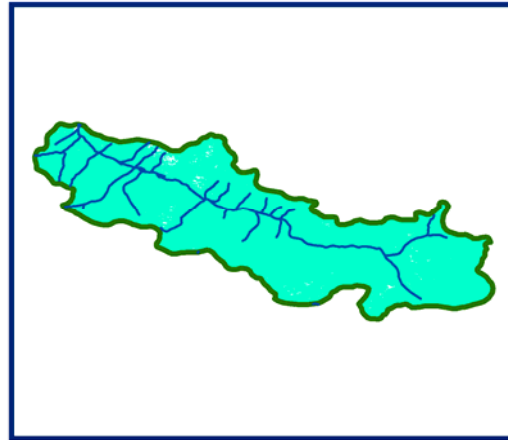
SNOW COVER MAP

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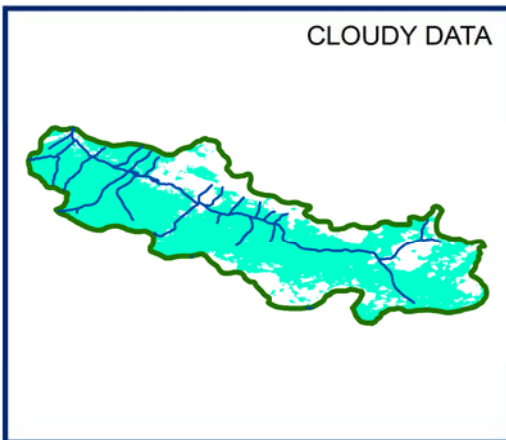
BASPA BASIN



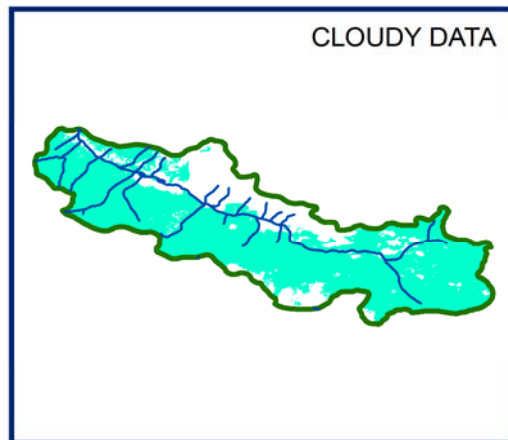
02 JANAUARY 2011



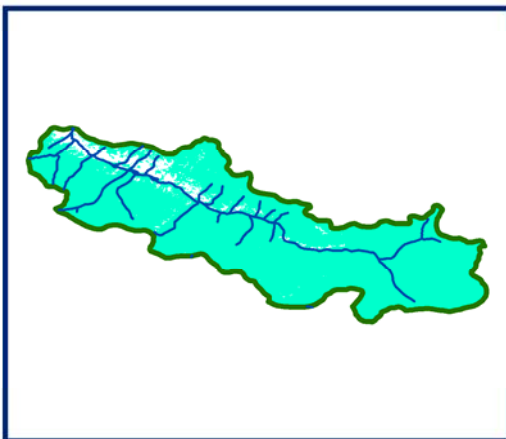
03 JANAUARY 2011



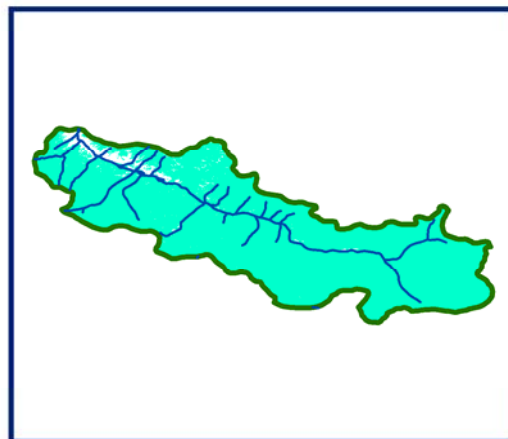
07 JANAUARY 2011



12 JANAUARY 2011



27 JANAUARY 2011

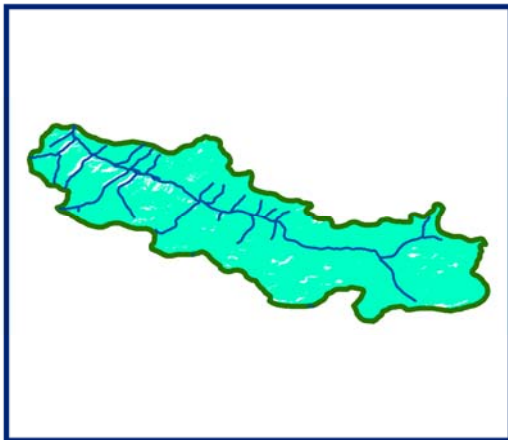


31 JANAUARY 2011

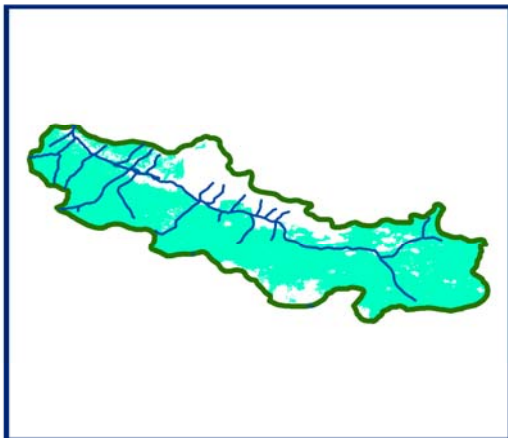


0.5 101520
Kilometers

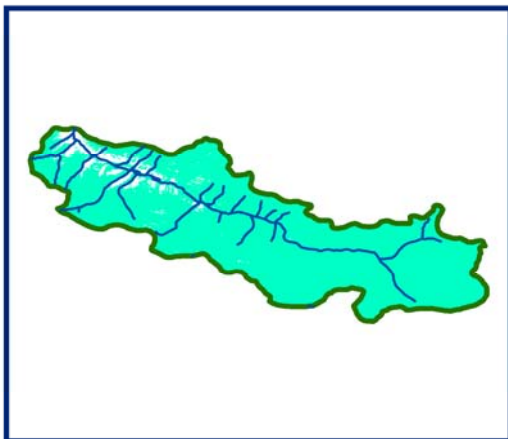
10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED
02 JANUARY 2011
03 JANUARY 2011



DATA USED
12 JANUARY 2011



DATA USED
27 JANUARY 2011
31 JANUARY 2011



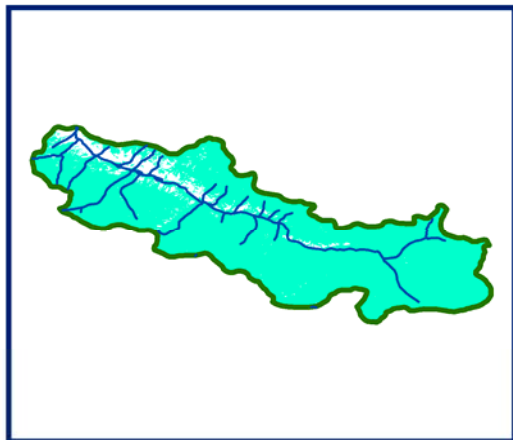
SNOW



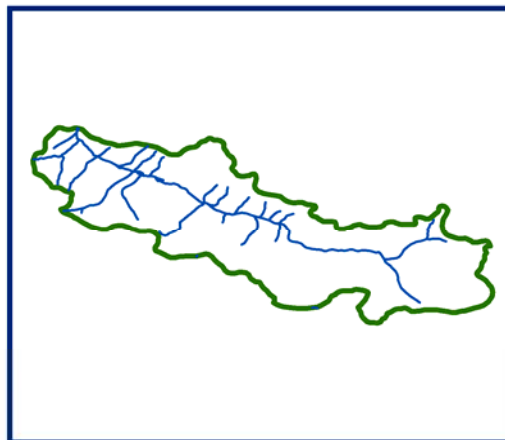
SNOW COVER MAP

:

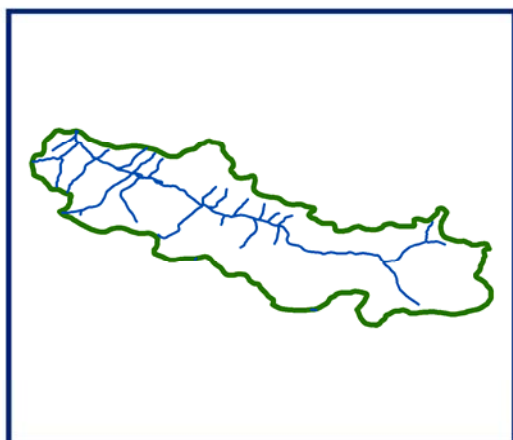
BASPA BASIN



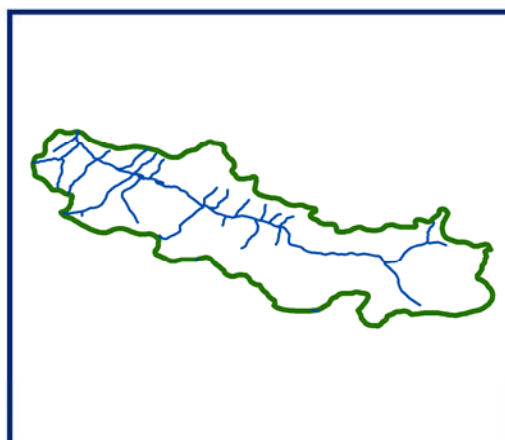
01 FEBRUARY 2011



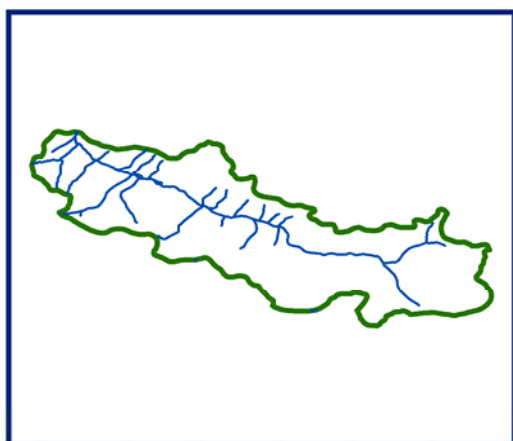
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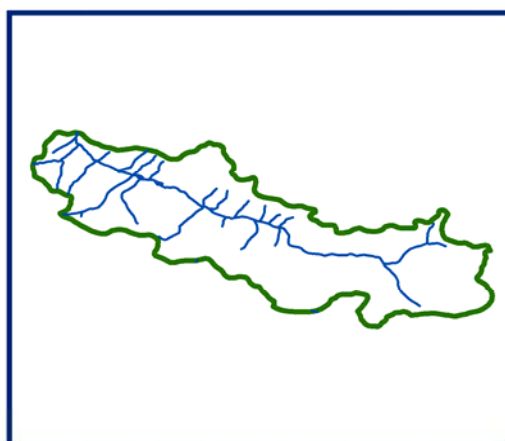
DATA NOT AVAILABLE



DATA NOT AVAILABLE



DATA NOT AVAILABLE



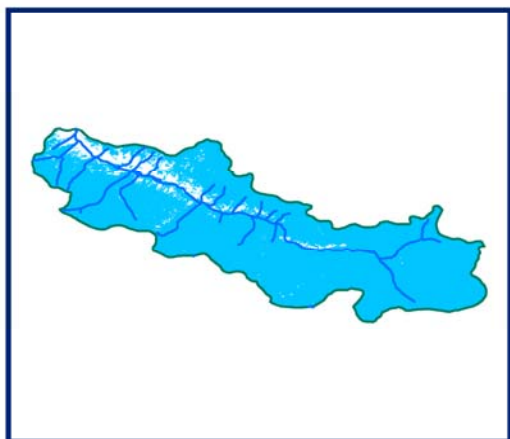
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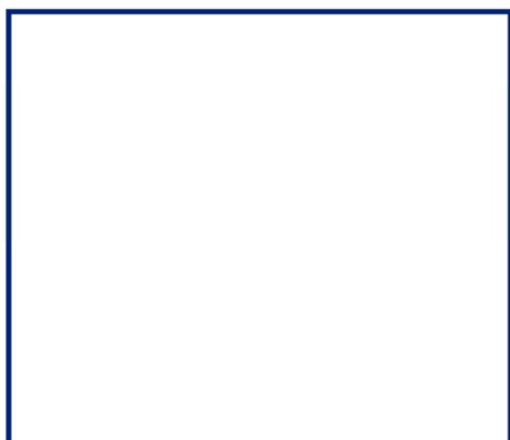
SNOW

0.5 101520
Kilometers

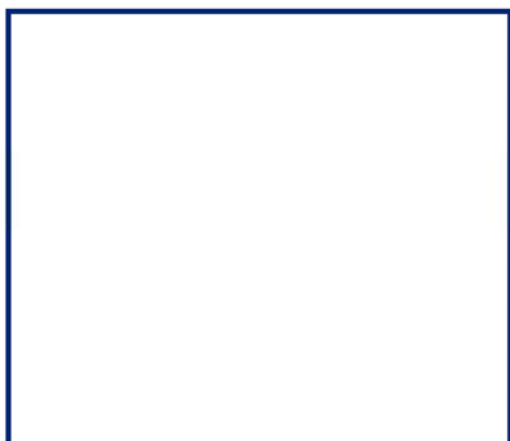
10 DAILY SNOW COVER MAP: BASPA BASIN



5 February, 2011



DATA USED
data not available



DATA USED
data not available



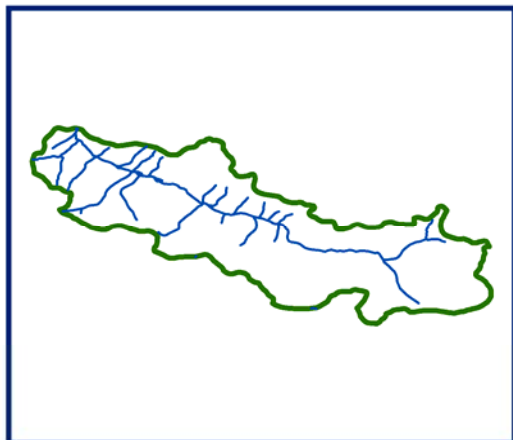
SNOW



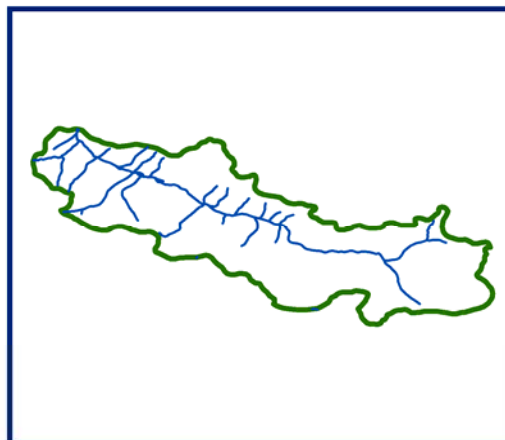
SNOW COVER MAP

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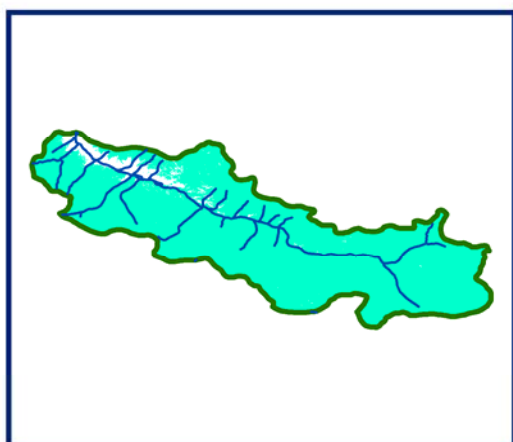
BASPA BASIN



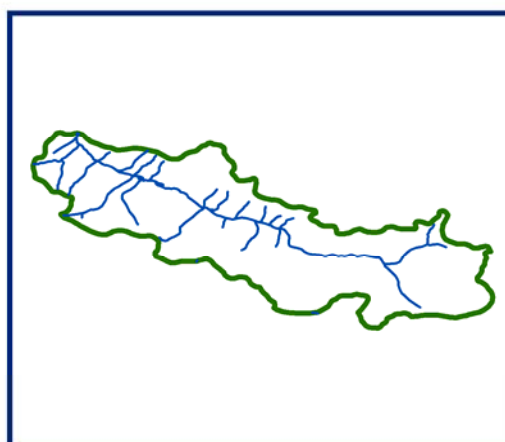
DATA NOT AVAILABLE



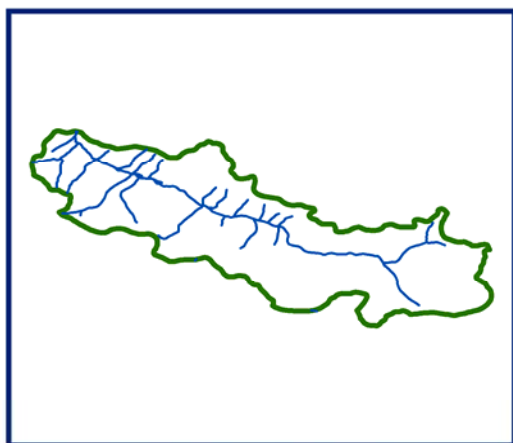
DATA NOT AVAILABLE



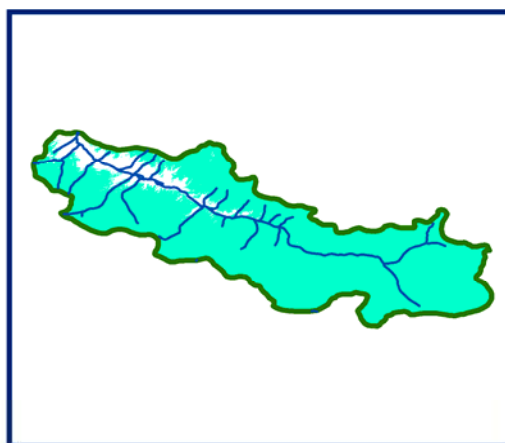
15 MARCH 2011



DATA NOT AVAILABLE



DATA NOT AVAILABLE

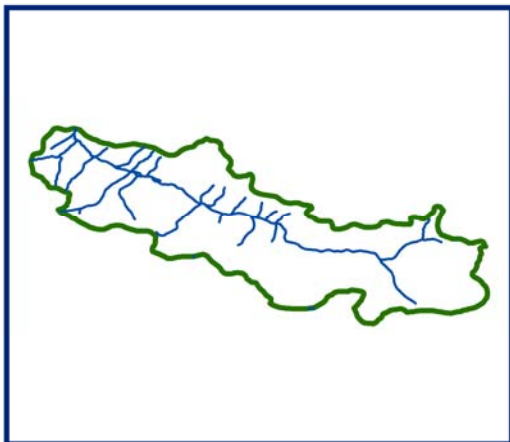


30 MARCH 2011

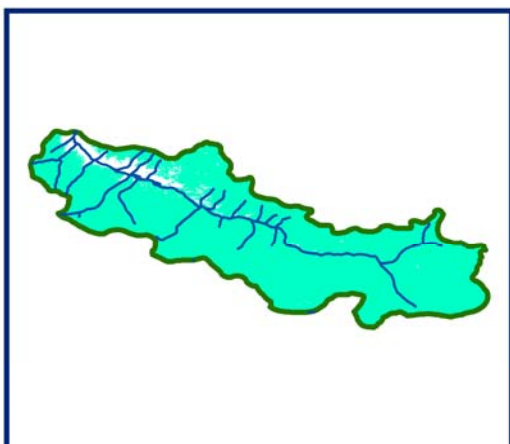


0.5 101520
Kilometers

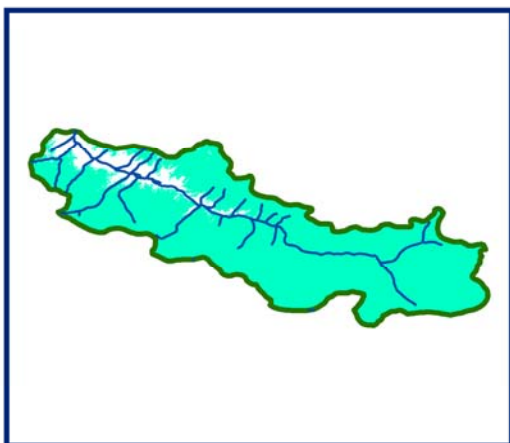
10 DAILY SNOW COVER MAP: BASPA BASIN



DATA NOT AVAILABLE



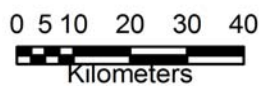
**DATA USED
15 MARCH 2011**



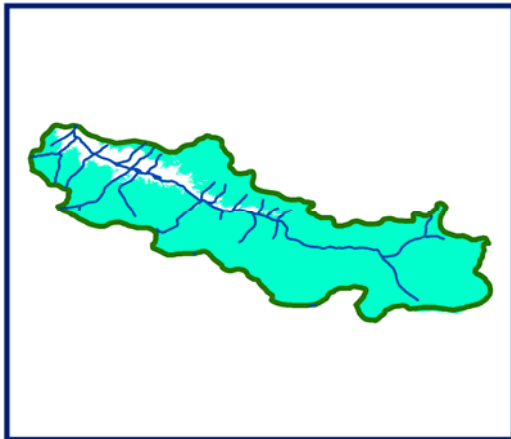
**DATA USED
30 MARCH 2011**



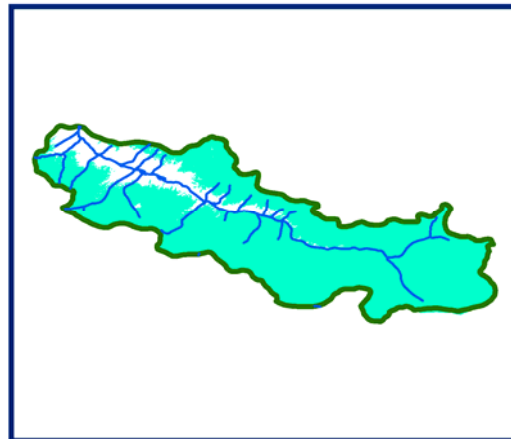
SNOW



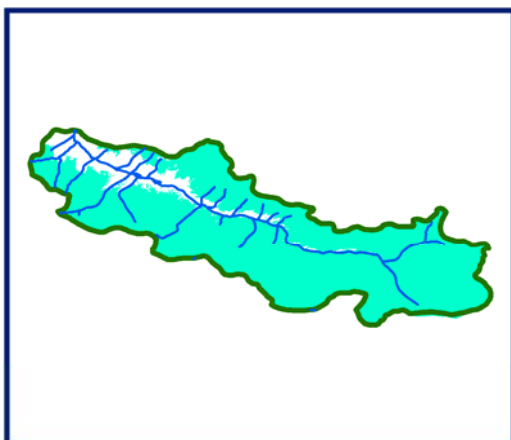
SNOW COVER MAP : BASPA BASIN



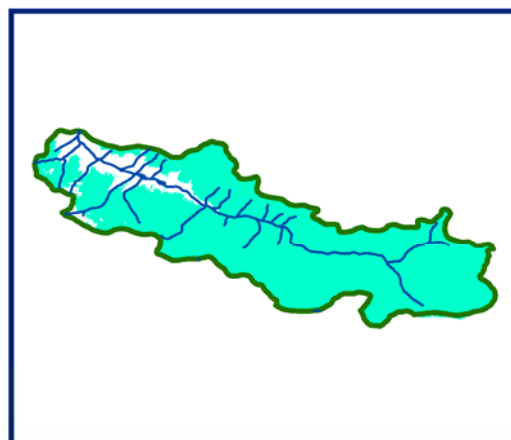
08 APRIL 2011



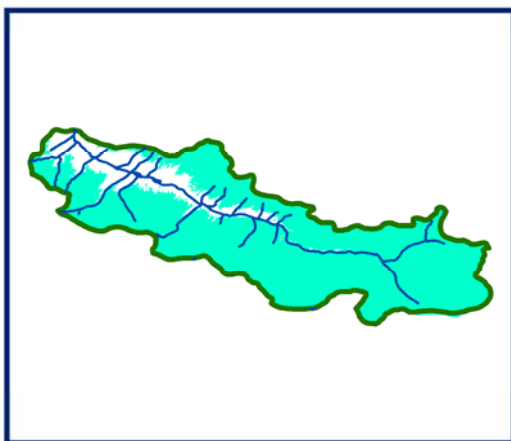
09 APRIL 2011



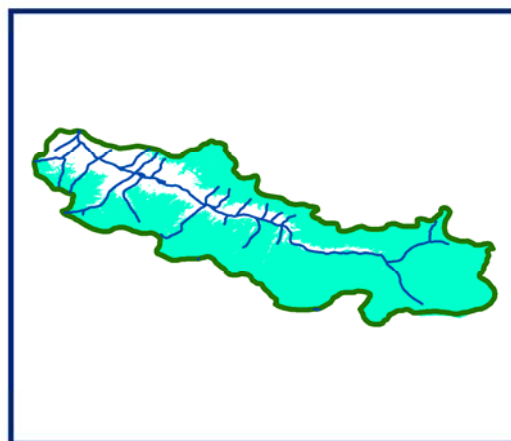
13 APRIL 2011



18 APRIL 2011



23 APRIL 2011



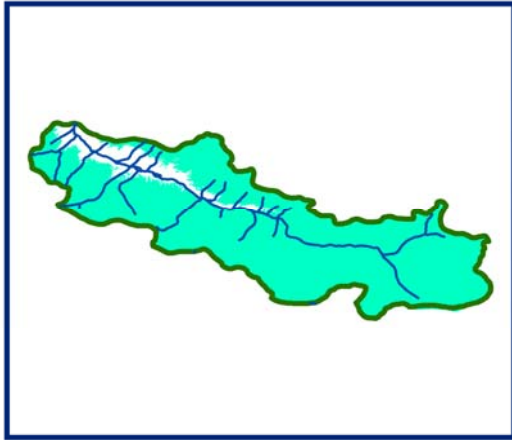
28 APRIL 2011

 SNOW

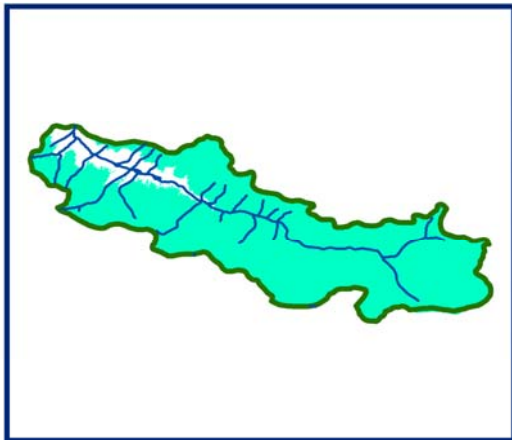
0 5 10 20 30 40

Kilometers

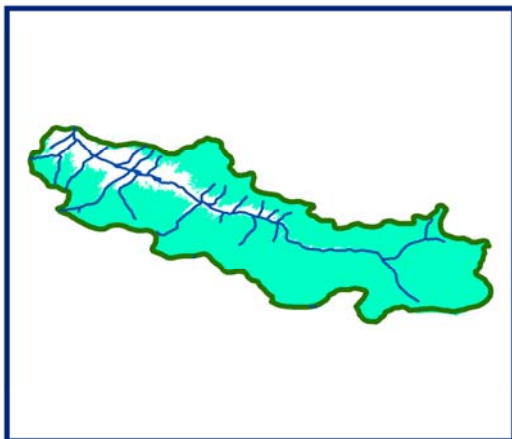
10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED
08 APRIL 2011
09 APRIL 2011



DATA USED
13 APRIL 2011
18 APRIL 2011



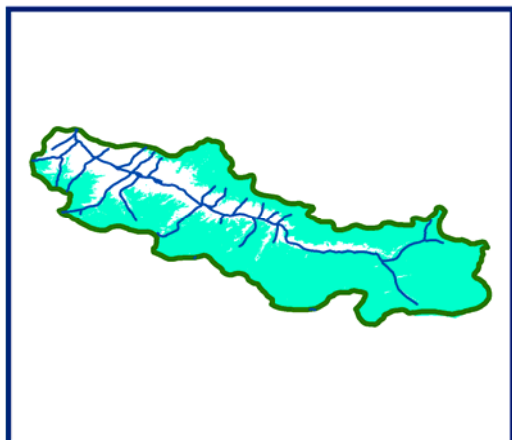
DATA USED
23 APRIL 2011
28 APRIL 2011



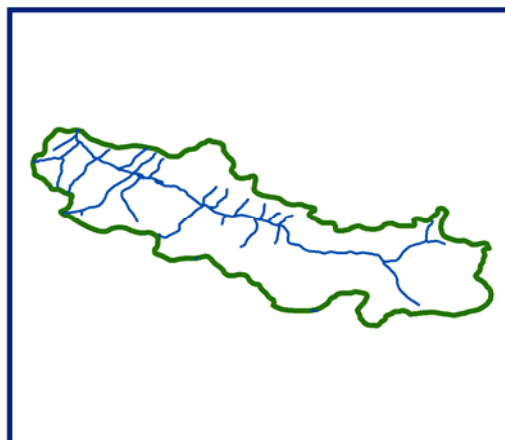
SNOW

0 5 10 20 30 40
Kilometers

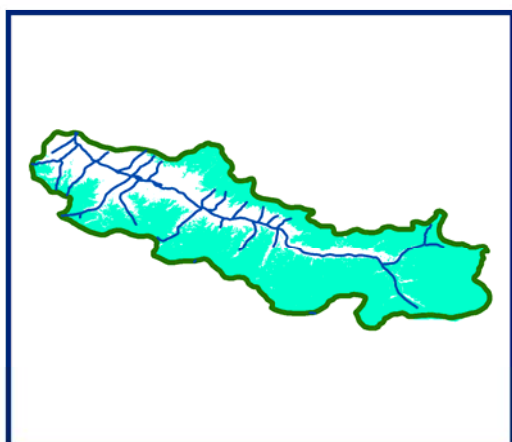
SNOW COVER MAP : BASPA BASIN



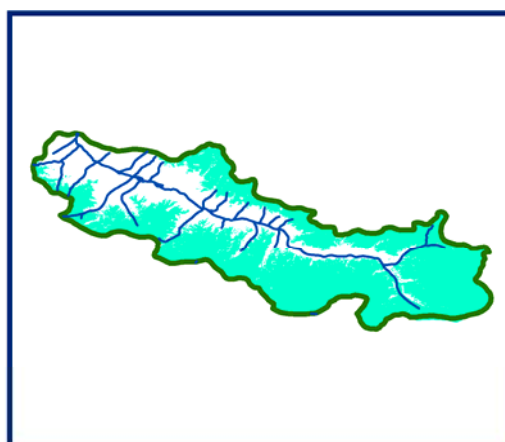
03 MAY 2011



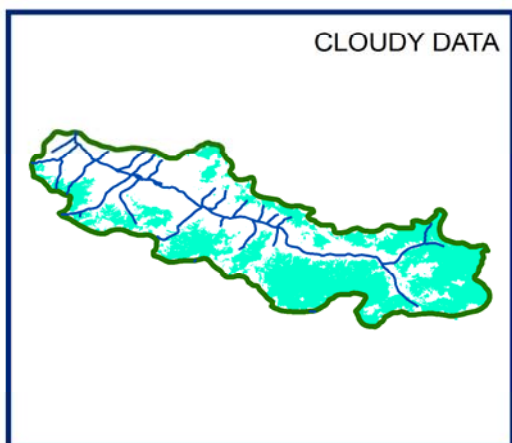
DATA NOT AVAILABLE



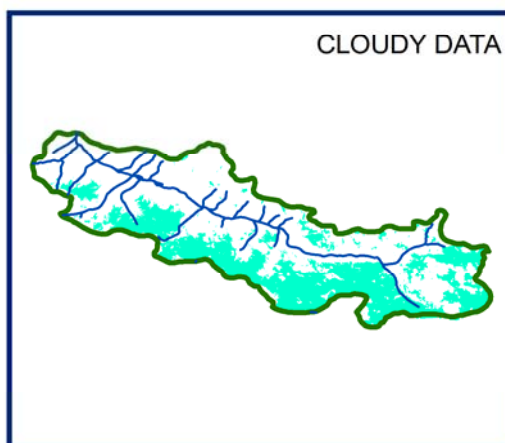
12 MAY 2011



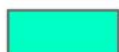
17 MAY 2011



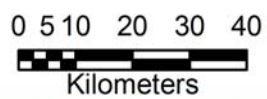
22 MAY 2011



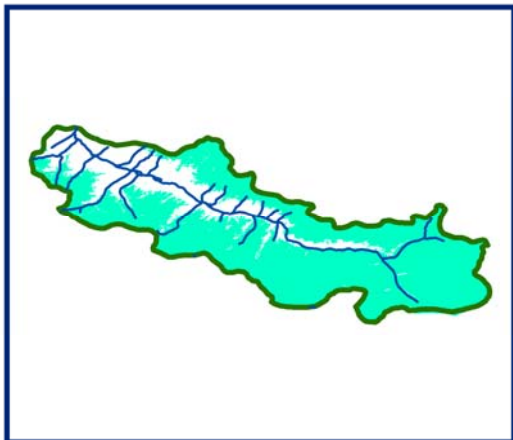
26 MAY 2011



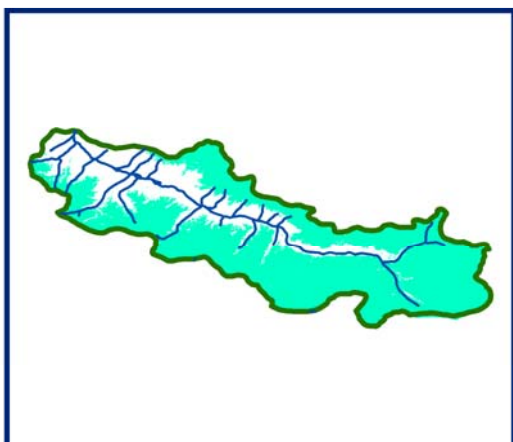
SNOW



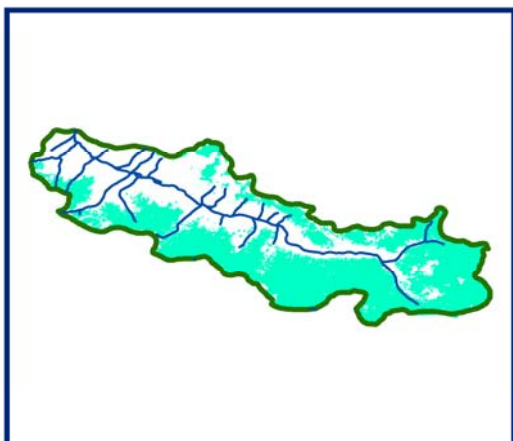
10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED
03 MAY 2011



DATA USED
12 MAY 2011
17 MAY 2011



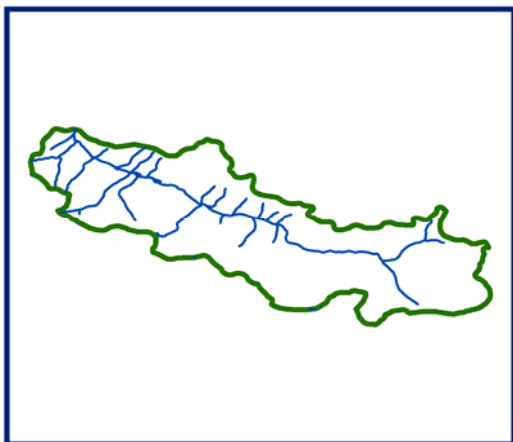
DATA USED
22 MAY 2011
26 MAY 2011



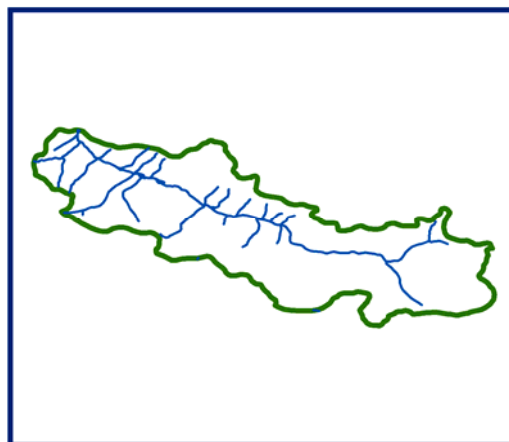
SNOW

0 5 10 20 30 40
Kilometers

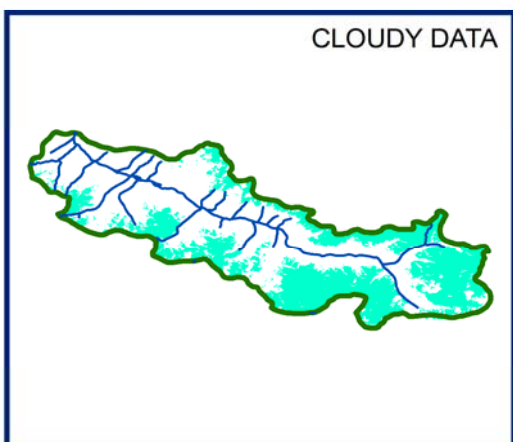
SNOW COVER MAP : BASPA BASIN



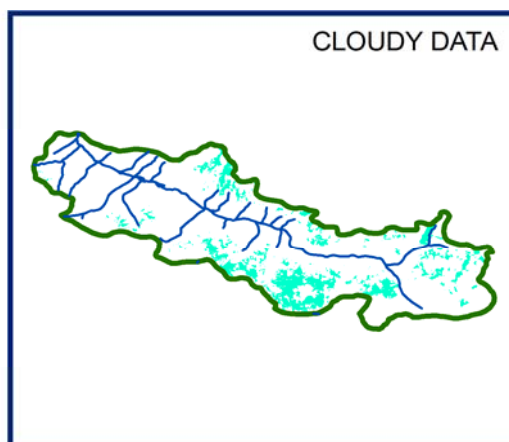
DATA NOT AVAILABLE



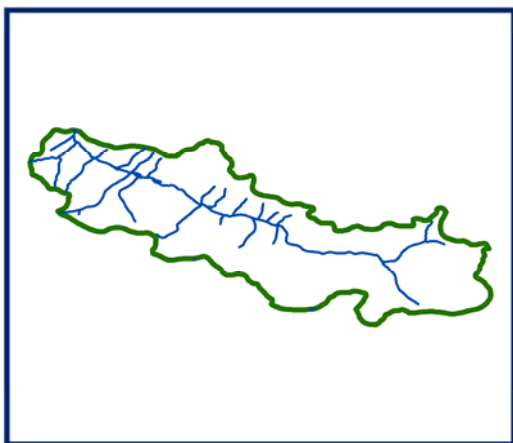
DATA NOT AVAILABLE



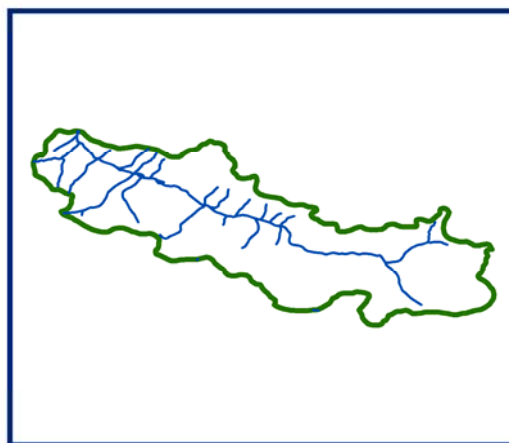
19 JUNE 2011



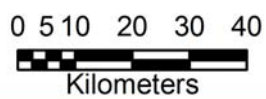
20 JUNE 2011



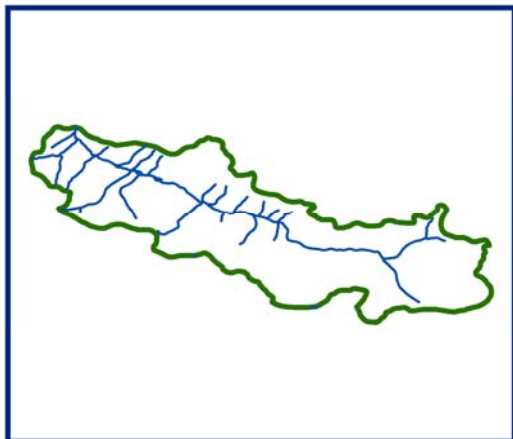
DATA NOT AVAILABLE



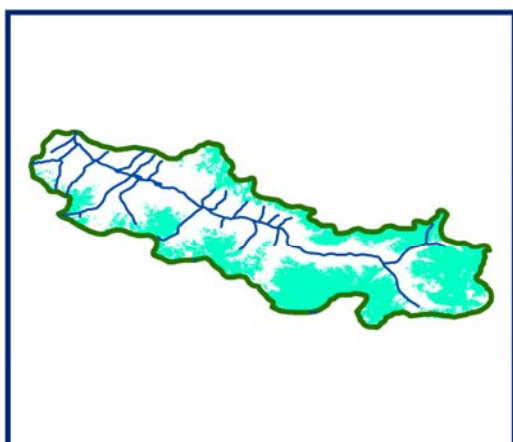
DATA NOT AVAILABLE



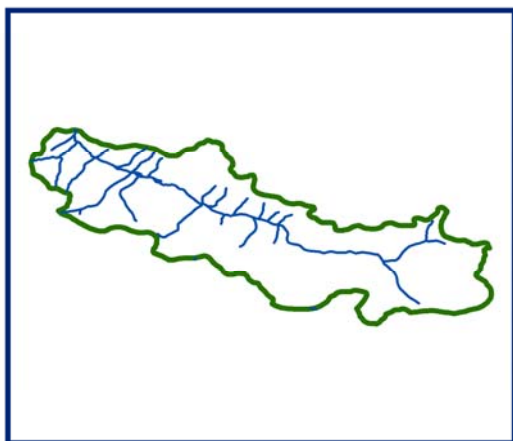
10 DAILY SNOW COVER MAP: BASPA BASIN



DATA NOT AVAILABLE



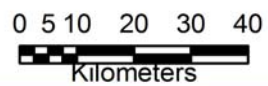
DATA USED
19 JUNE 2011
20 JUNE 2011



DATA NOT AVAILABLE



SNOW



JIWA BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: JIWA

BASIN AREA: 1445 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2010							
1.	03 Oct 2010	161.12	11	3.	18 Oct 2010	154.33	11
2.	08 Oct 2010	169.87	12	4.	27 Oct 2010	474.98	33
November 2010							
1.	06 Nov 2010	325.56	23	3.	20 Nov 2010	542.81	38
2.	15 Nov 2010	253.45	18	4.	30 Nov 2010	308.48	21
December 2010							
1.	05 Dec 2010	287.98	20	4.	19 Dec 2010	312.35	22
2.	09 Dec 2010	263.38	18	5.	24 Dec 2010	306.33	21
3.	14 Dec 2010	274.88	19	6.	29 Dec 2010	1259.44	87
January 2011							
1.	02 Jan 2011	1135.74	79	4.	12 Jan 2011	770.81	53
2.	03 Jan 2011	835.05	58	5.	26 Jan 2011	648.82	45
3.	07 Jan 2011	472.58	33	6.	27 Jan 2011	603.11	42
				7.	31 Jan 2011	634.33	44
February 2011							
March 2011							
1.	10 March 2011	669.65	46	3.	16 March 2011	632.13	44
2.	15 March 2011	643.52	45	4.	30 March 2011	701.51	49
April 2011							
1.	08 April 2011	596.66	41	4.	18 April 2011	375.48	26
2.	09 April 2011	557.79	39	5.	23 April 2011	556.94	39
3.	13 April 2011	449.08	31	6.	28 April 2011	450.49	31
May 2011							
1.	02 May 2011	428.92	30	4.	17 May 2011	424.56	29
2.	03 May 2011	443.56	31	5.	21 May 2011	336.37	23
3.	12 May 2011	382.46	26	6.	22 May 2011	127.04	9
				4.	26 May 2011	172.59	12
June 2011							
1.	10 June 2011	98.55	7	3.	19 June 2011	143.81	10
2.	14 June 2011	182.60	13	4.	20 June 2011	149.02	10

AREAL EXTENT OF SNOW (10 DAILY)

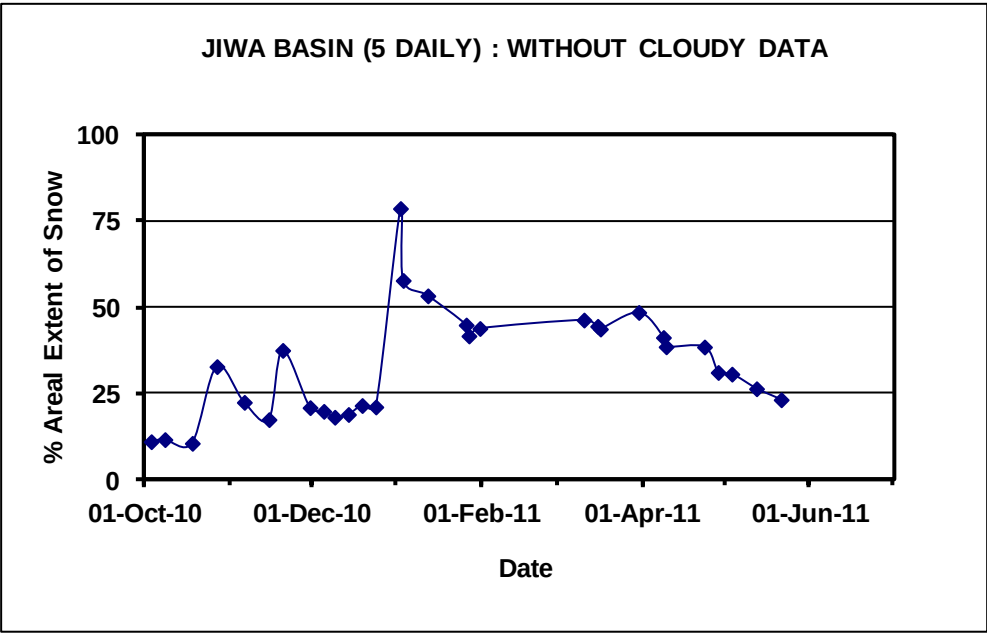
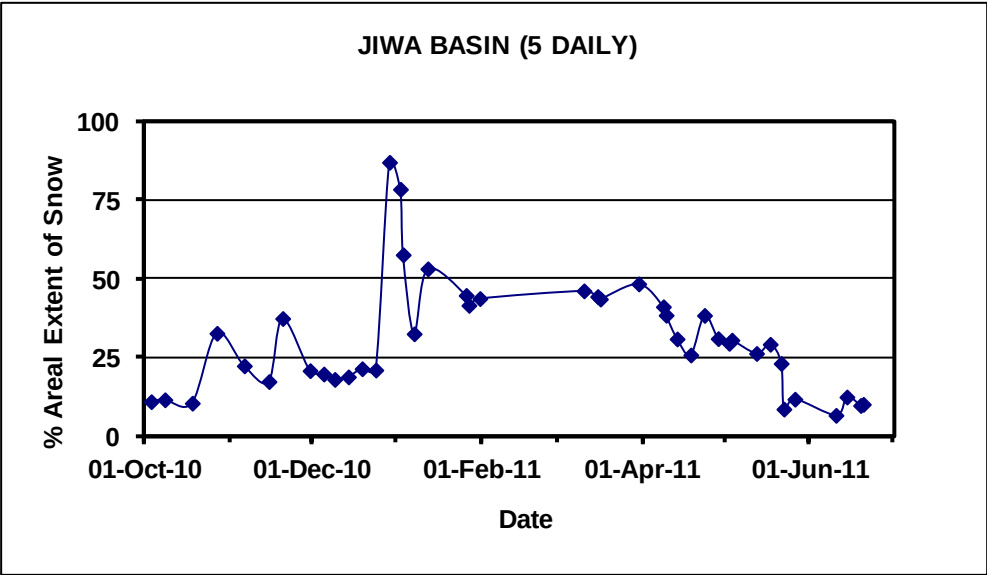
BASIN NAME: JIWA

BASIN AREA: 1445 sq km

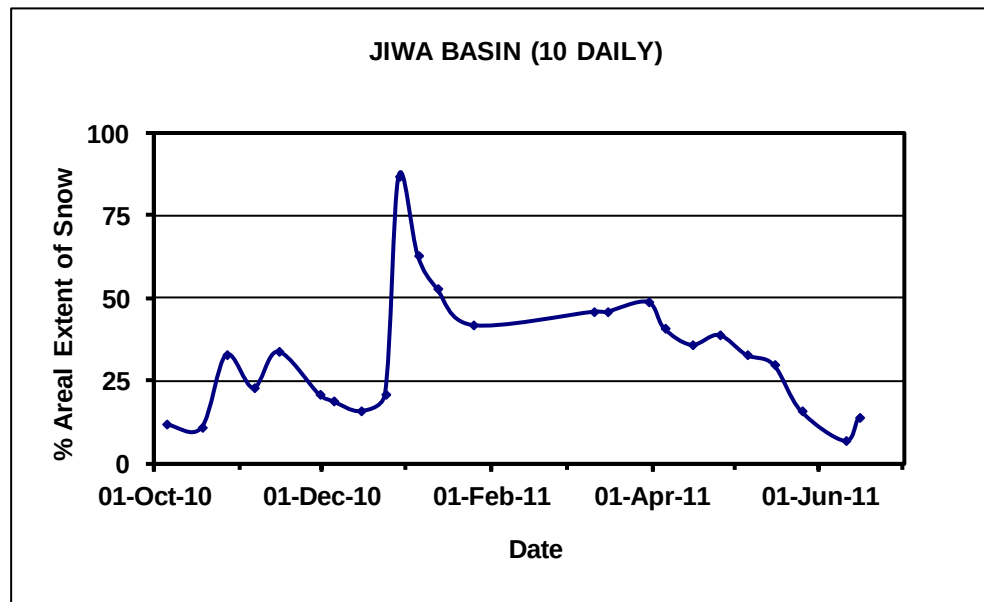
S No	Date	Snow cover (sq km)	Snow cover (%)	Cloud cover	S No	Date	Snow cover (sq km)	Snow cover (%)	Cloud cover
October 2010									
1.	03 Oct 2010	180.42	12	Less		18 Oct 2010	154.33	11	Less
2.	08 Oct 2010			Clear		27 Oct 2010	474.98	33	Clear
November 2010									
1.	06 Nov 2010	325.56		Clear	4.	30 Nov 2010	308.48	21	Clear
2.	15 Nov 2010	486.42	34	Clear					
3.	20 Nov 2010			Clear					
December 2010									
1.	05 Dec 2010	273.09	19	Clear	5.	24 Dec 2010	306.33	21	Clear
2.	09 Dec 2010			Clear	6.	29 Dec 2010	1259.44	87	More
3.	14 Dec 2010	230.39	16	Clear					
4.	19 Dec 2010			Clear					
January 2011									
1.	02 Jan 2011	907.00	63	Clear	4.	26 Jan 2011	607.03	42	Less
2.	03 Jan 2011			Clear	5.	27 Jan 2011			Clear
3.	12 Jan 2011	770.81	53	Clear	6.	31 Jan 2011			Less
February 2011									
1.									
March 2011									
1.	10 mar 2011	669.65	46	Less	4.	30 mar 2011	701.51	49	Clear
2.	15 mar 2011	658.85	46	Clear					
3.	16 mar 2011			Clear					
April 2011									
1.	08 April 2011	597.69	41	Less	5.	23 April 2011	557.84	39	Clear
2.	09 April 2011			Clear	6.	28 April 2011			Less
3.	13 April 2011	526.15	36	More					
4.	18 April 2011			More					
May 2011									
1.	02 May 2011	470.94	33	Less	5.	21 May 2011	232.84	16	Clear
2.	03 May 2011			Clear	6.	22 May 2011			More
3.	12 May 2011	427.27	30	Less	7.	26 May 2011			Less
4..	17 May 2011			More					
June 2011									
1.	10 June 2011	98.55	7	More					

2.	14 June 2011	203.93	14	More					
3.	19 June 2011			Less					
4.	20 June 2011			More					

Snow cover depletion curve



Snow cover depletion curve

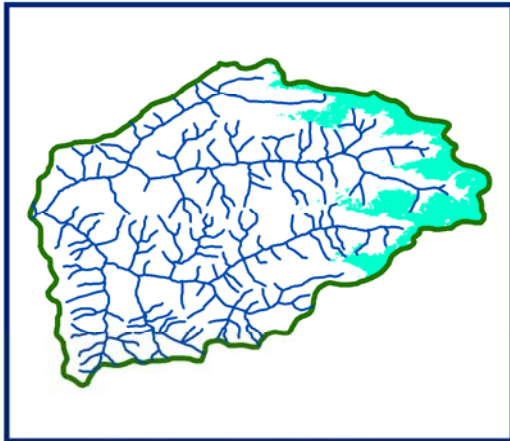


SNOW COVER MAP

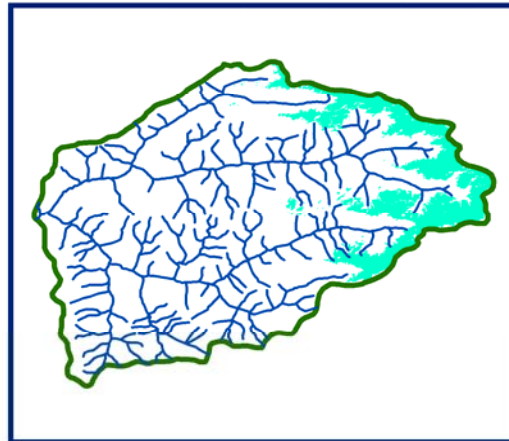
SNOW COVER MAP

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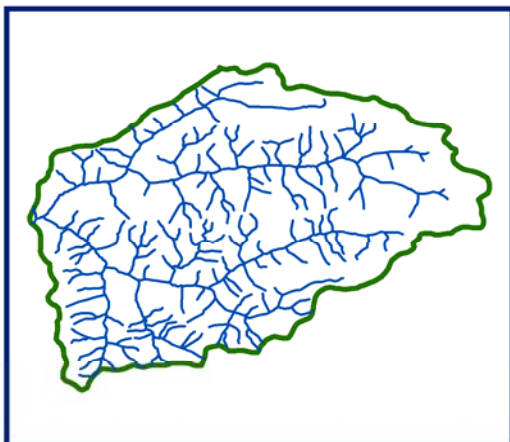
JIWA BASIN



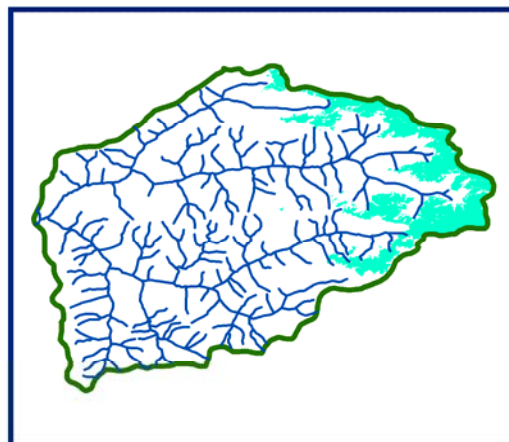
03 OCTOBER 2011



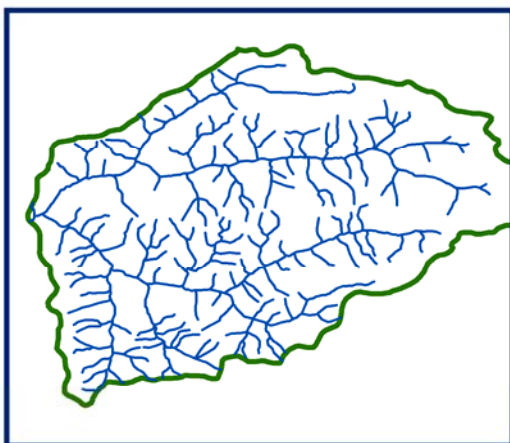
08 OCTOBER 2011



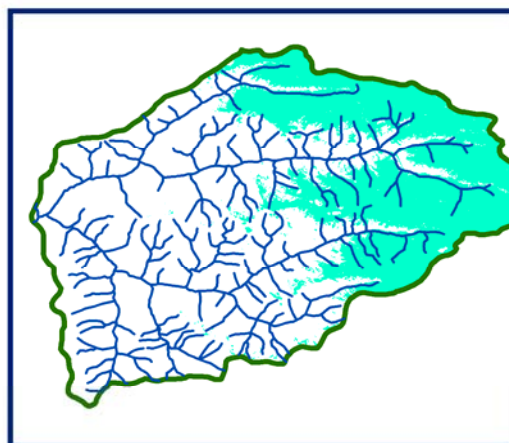
DATA NOT AVAILABLE



18 OCTOBER 2011



DATA NOT AVAILABLE



27 OCTOBER 2011

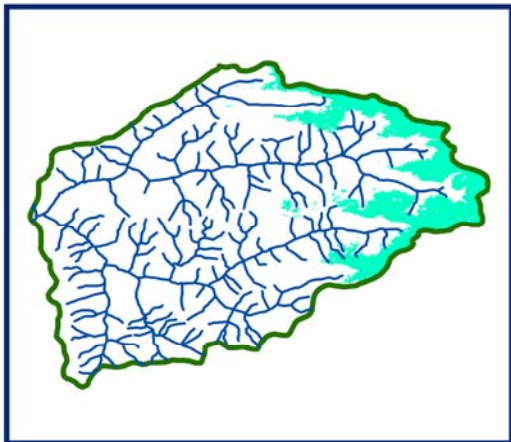


SNOW

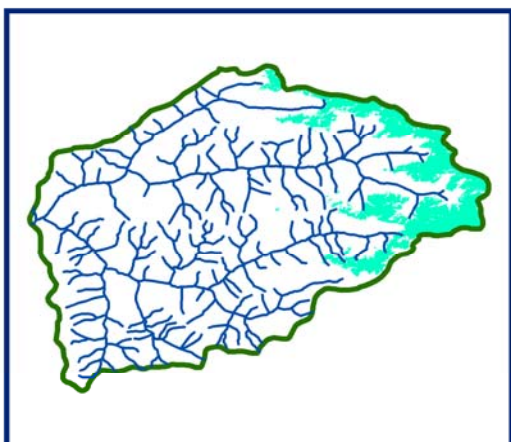
03.57 14 21 28

Kilometers

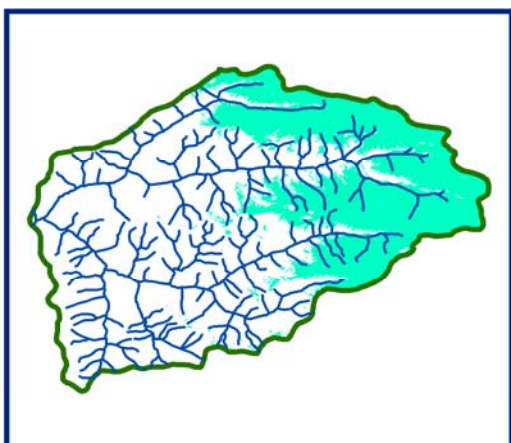
10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED
03 OCTOBER 2010
08 OCTOBER 2010



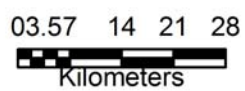
DATA USED
18 OCTOBER 2010



DATA USED
27 OCTOBER 2010



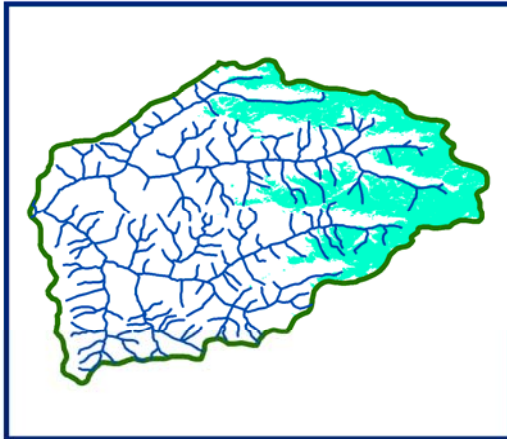
SNOW



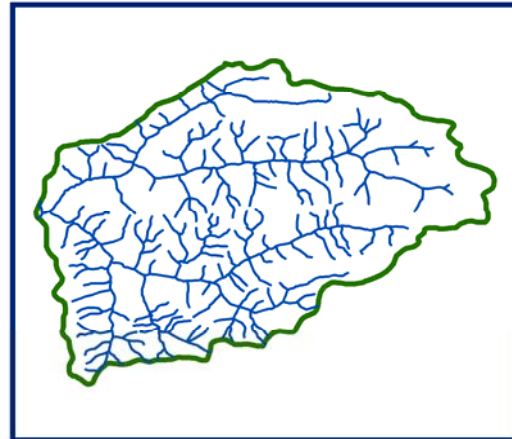
SNOW COVER MAP

:

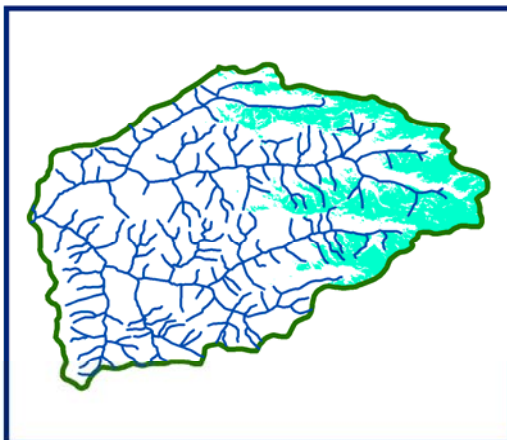
JIWA BASIN



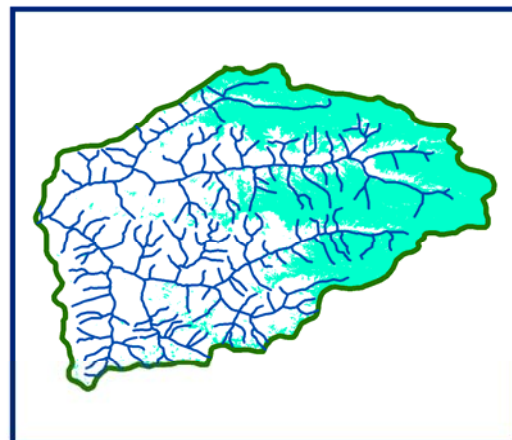
06 NOVEMBER 2011



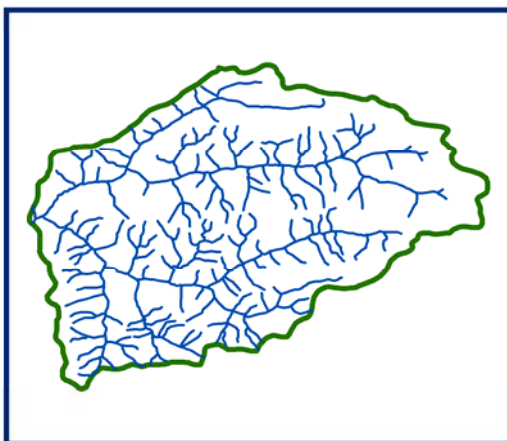
DATA NOT AVAILABLE



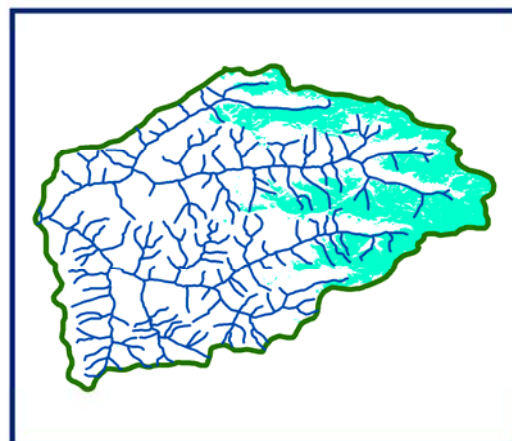
15 NOVEMBER 2011



20 NOVEMBER 2011



DATA NOT AVAILABLE

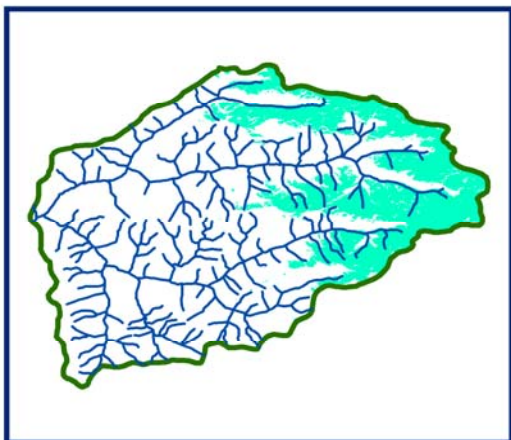


30 NOVEMBER 2011

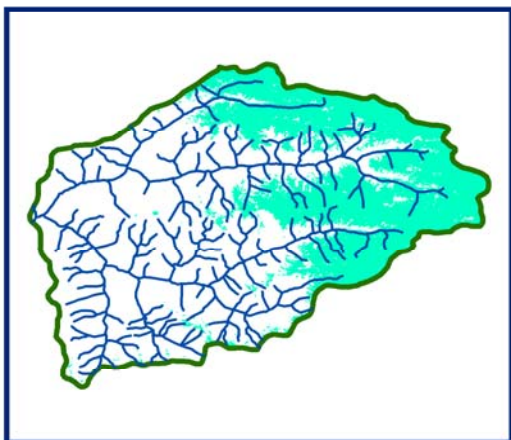


03.57 14 21 28
Kilometers

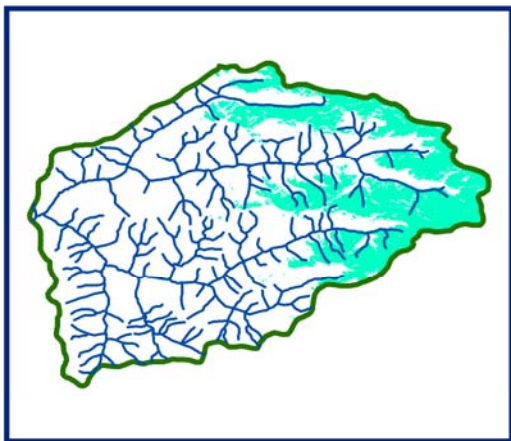
10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED
06 NOVEMBER 2010



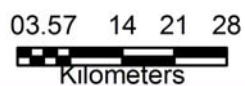
DATA USED
15 NOVEMBER 2010
20 NOVEMBER 2010



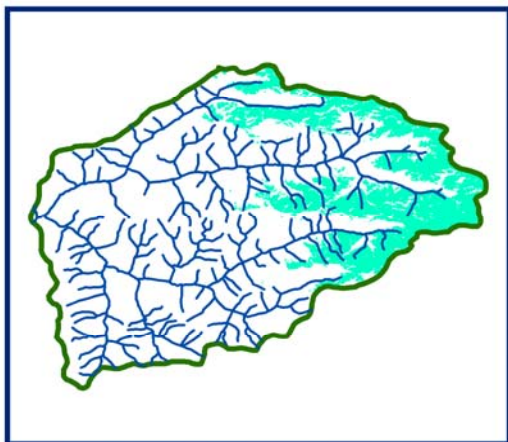
DATA USED
30 NOVEMBER 2010



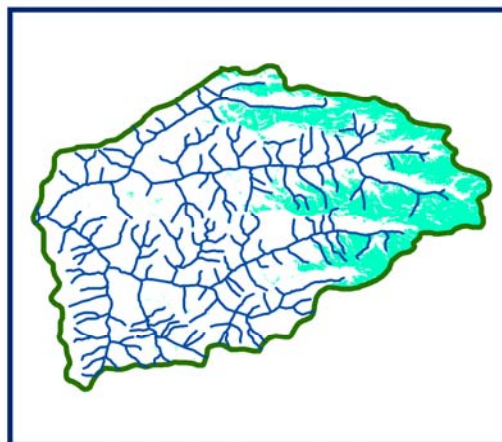
SNOW



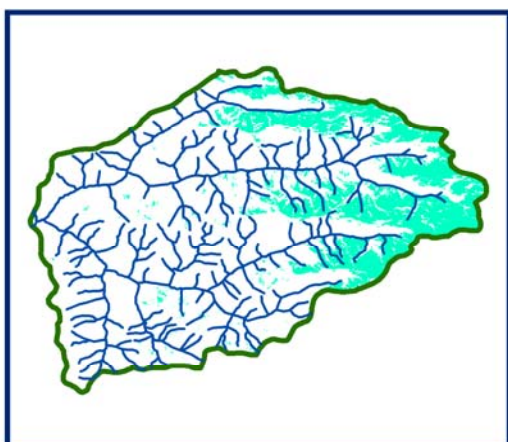
SNOW COVER MAP : JIWA BASIN



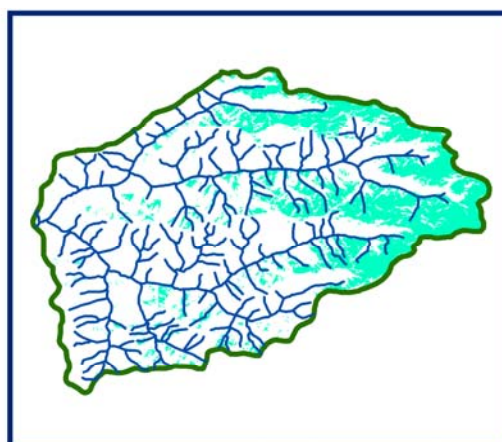
05 DECEMBER 2011



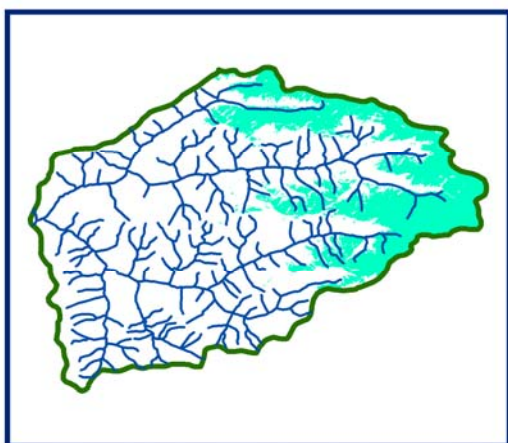
09 DECEMBER 2011



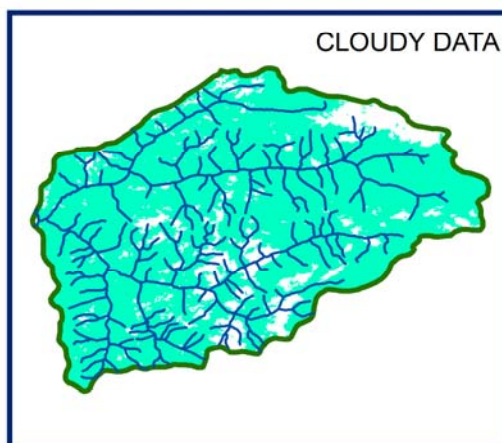
14 DECEMBER 2011



19 DECEMBER 2011



24 DECEMBER 2011



29 DECEMBER 2011

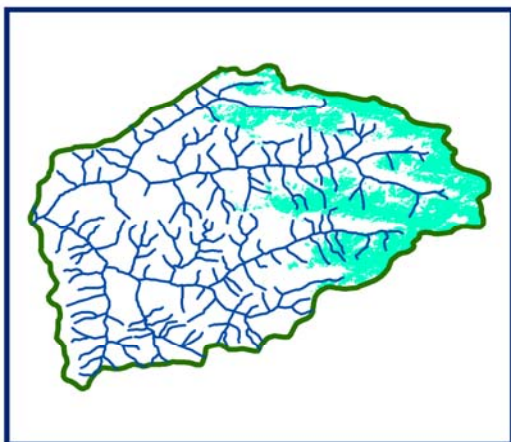


SNOW

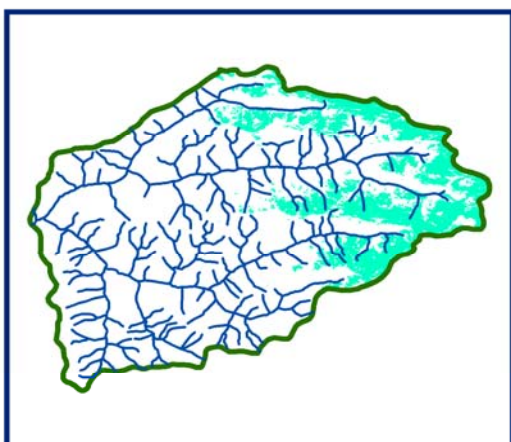
03.57 14 21 28

Kilometers

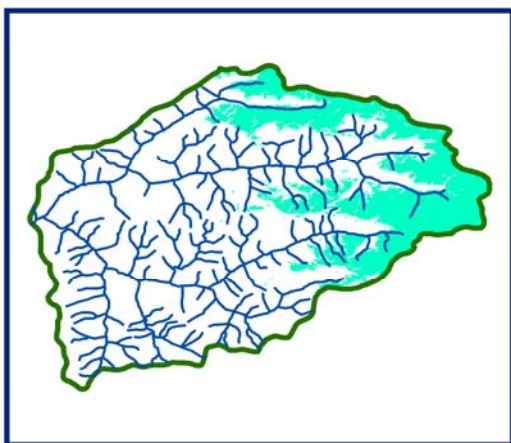
10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED
05 DECEMBER 2010
09 DECEMBER 2010



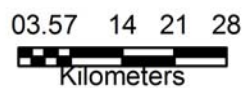
DATA USED
14 DECEMBER 2010
19 DECEMBER 2010



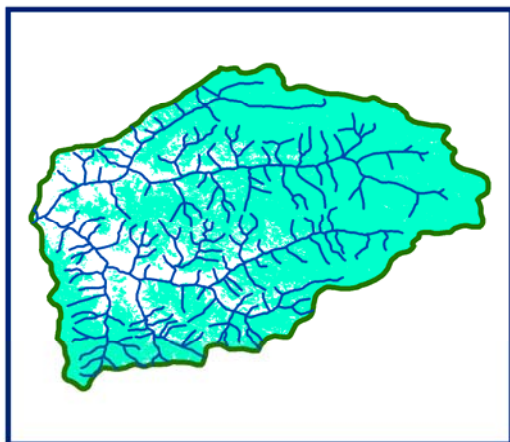
DATA USED
24 DECEMBER 2010



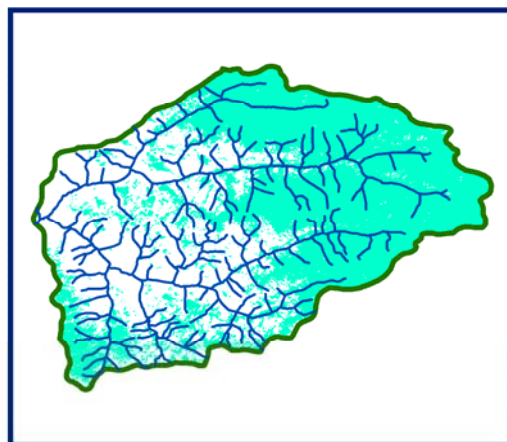
SNOW



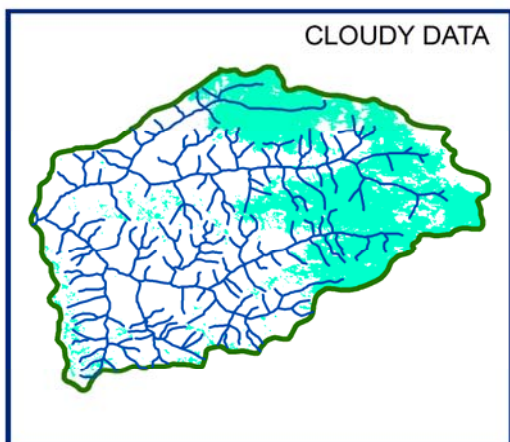
SNOW COVER MAP : JIWA BASIN



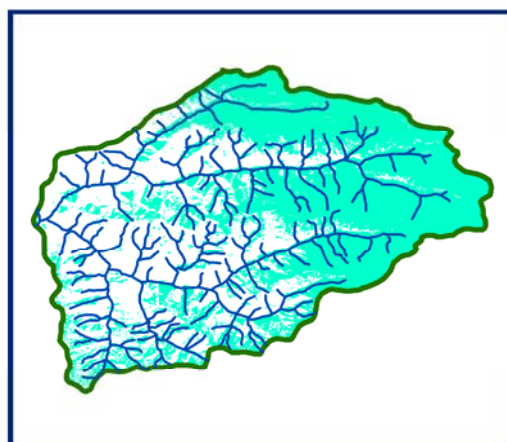
02 JANAUARY 2011



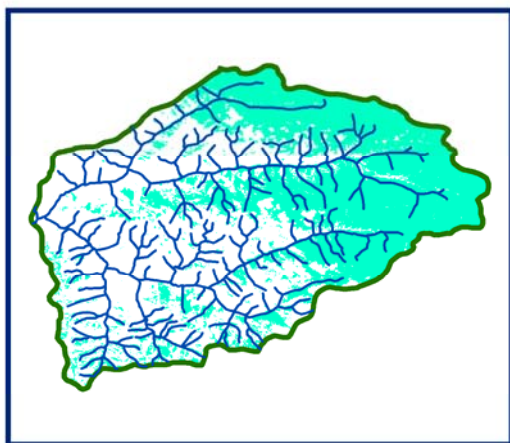
03 JANAUARY 2011



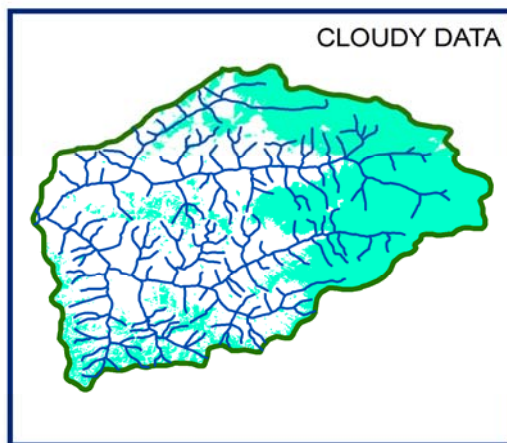
07 JANAUARY 2011



12 JANAUARY 2011



26 JANAUARY 2011



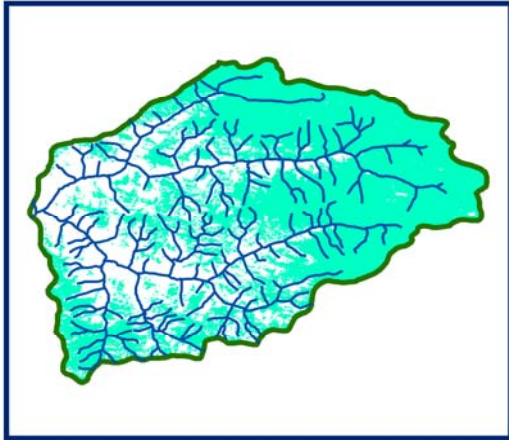
31 JANAUARY 2011



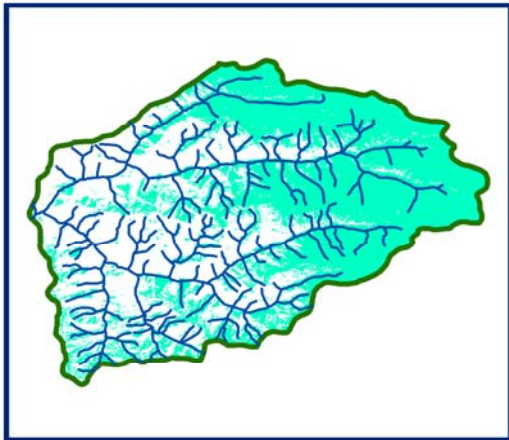
SNOW

024 8 1216
Kilometers

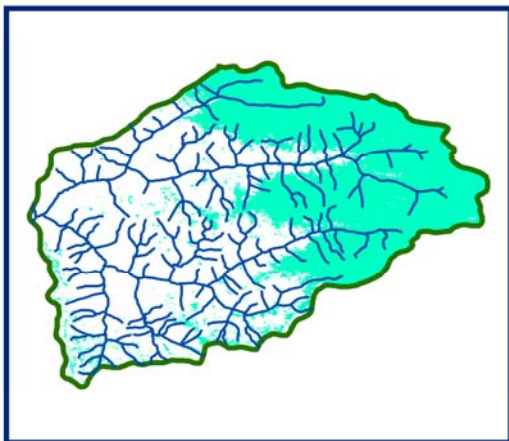
10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED
02 JANUARY 2011
03 JANUARY 2011

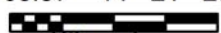


DATA USED
12 JANUARY 2011

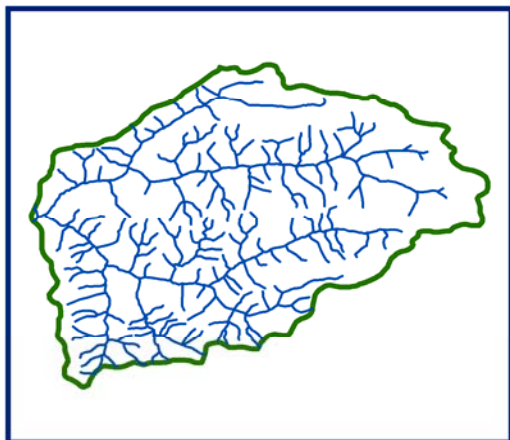


DATA USED
27 JANUARY 2011
31 JANUARY 2011

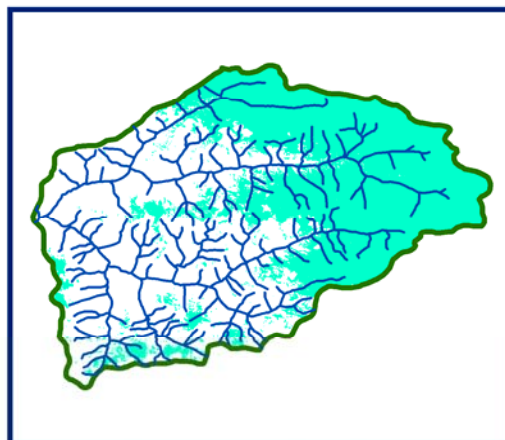
 SNOW

03.57 14 21 28

Kilometers

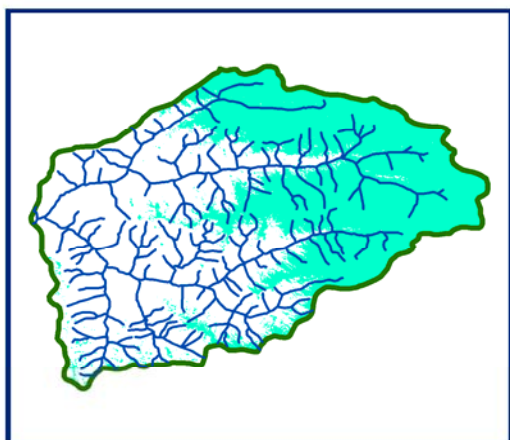
SNOW COVER MAP : JIWA BASIN



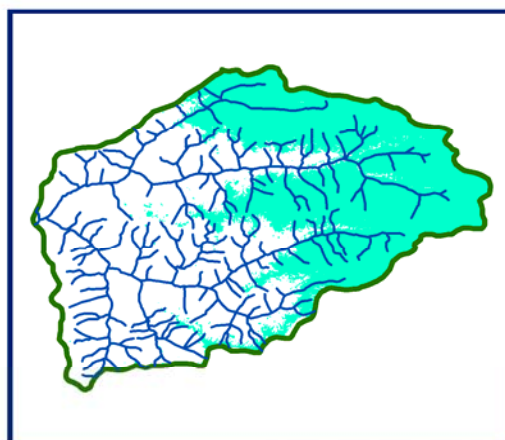
DATA NOT AVAILABLE



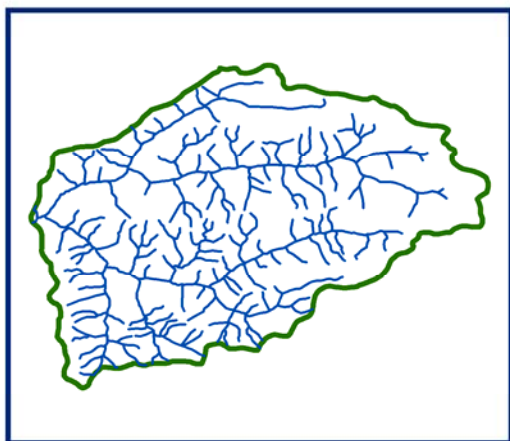
10 MARCH 2011



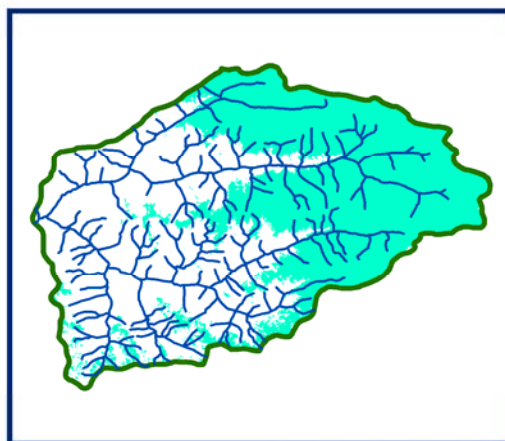
15 MARCH 2011



16 MARCH 2011



DATA NOT AVAILABLE



30 MARCH 2011



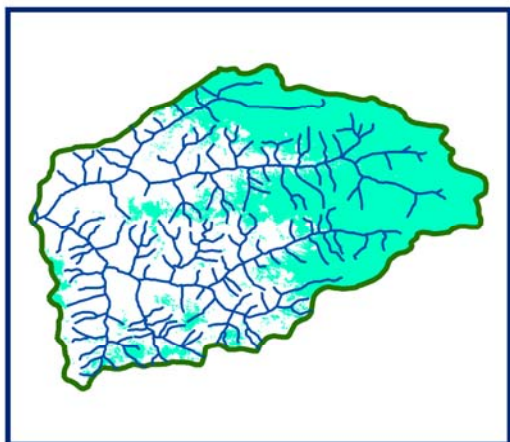
SNOW

024 8 1216

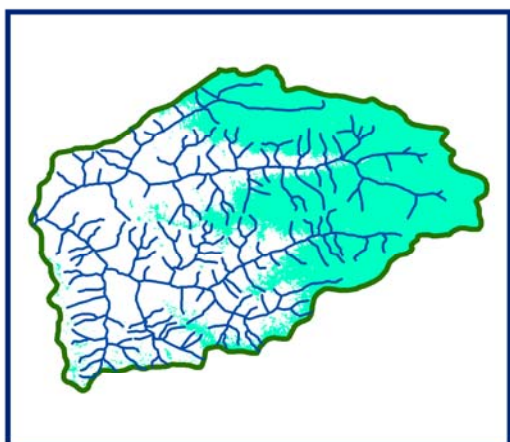


Kilometers

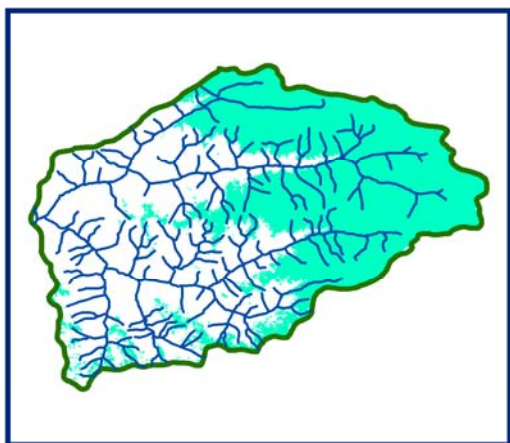
10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED
10 MARCH 2011



DATA USED
15 MARCH 2011
16 MARCH 2011



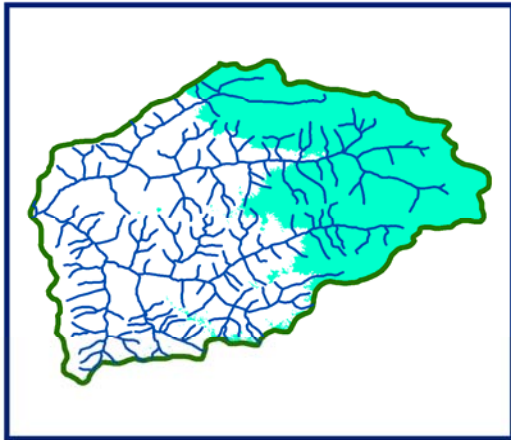
DATA USED
30 MARCH 2011



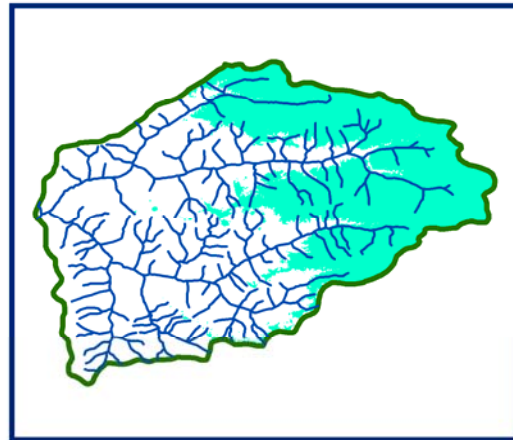
SNOW COVER MAP

:

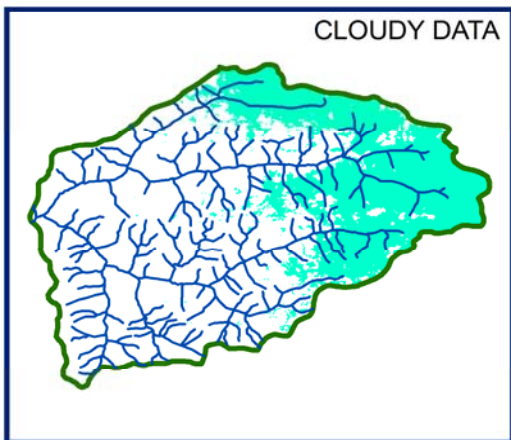
JIWA BASIN



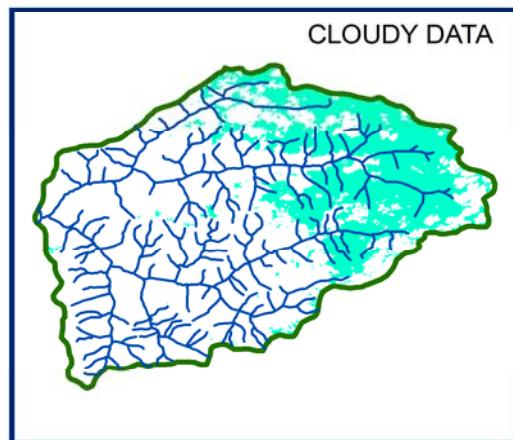
08 APRIL 2011



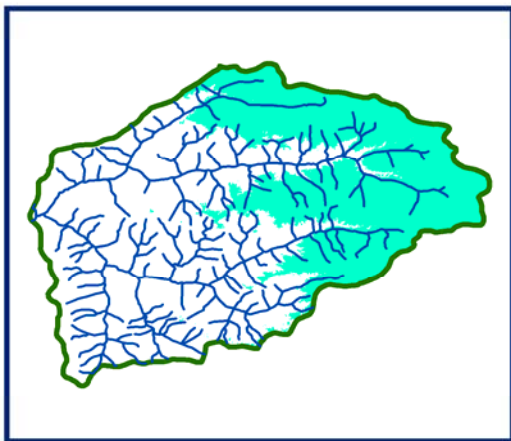
09 APRIL 2011



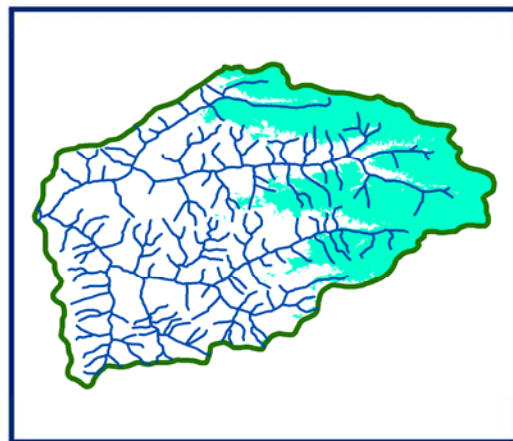
13 APRIL 2011



18 APRIL 2011



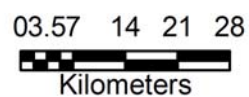
23 APRIL 2011



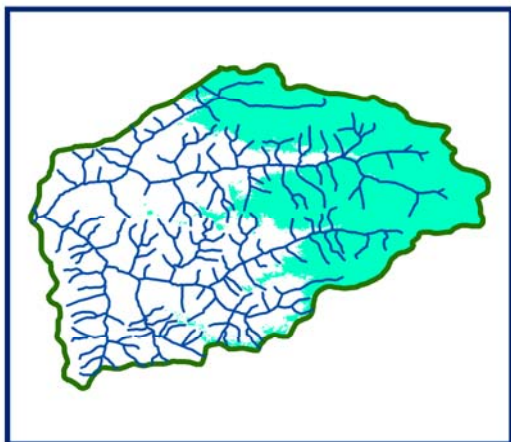
28 APRIL 2011



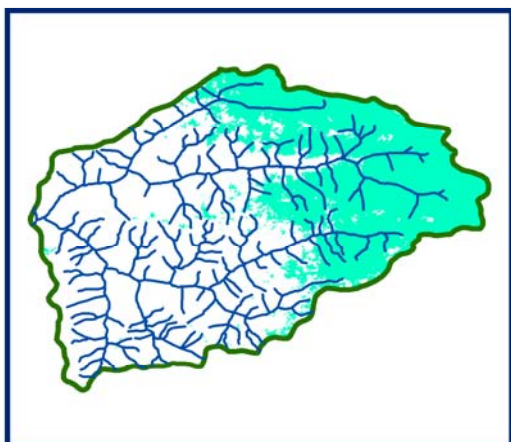
SNOW



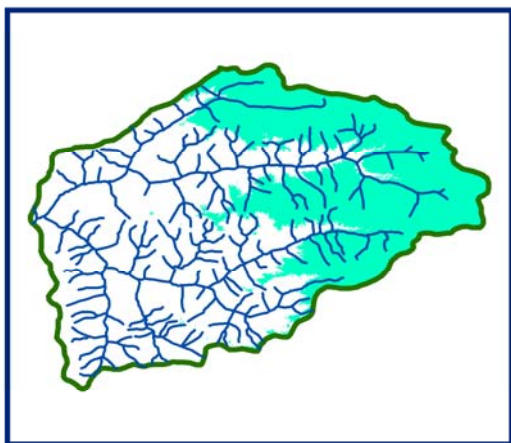
10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED
08 APRIL 2011
09 APRIL 2011



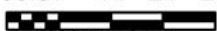
DATA USED
13 APRIL 2011
18 APRIL 2011



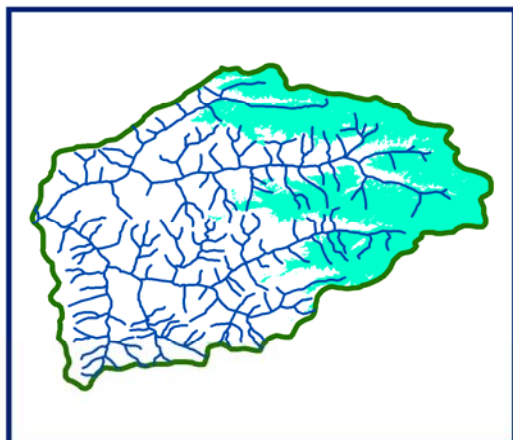
DATA USED
23 APRIL 2011
28 APRIL 2011



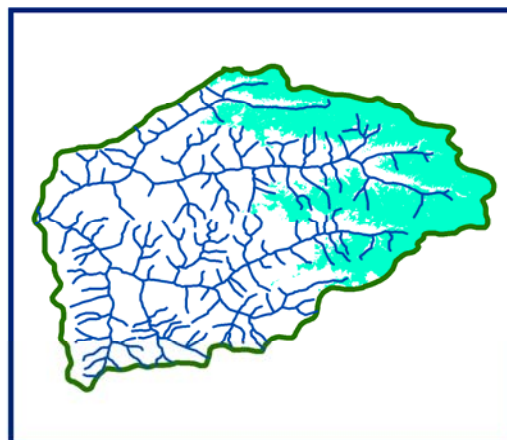
SNOW

03.57 14 21 28

Kilometers

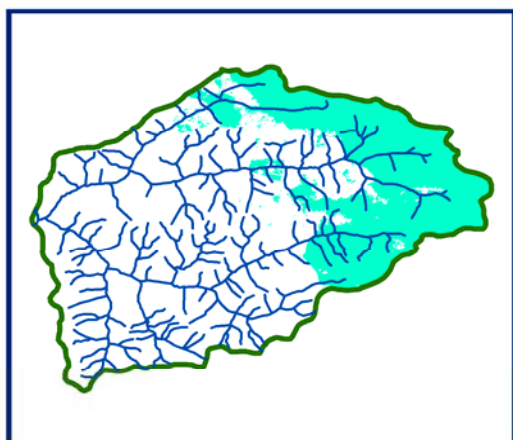
SNOW COVER MAP : JIWA BASIN



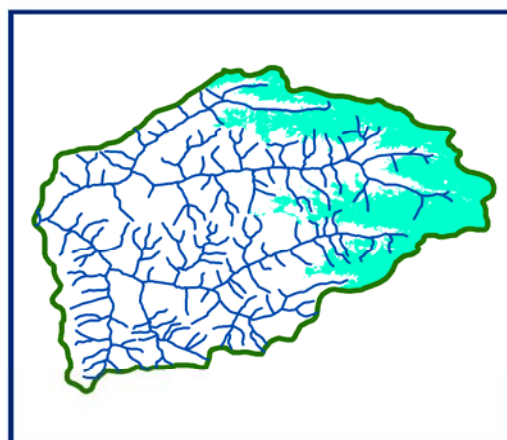
03 MAY 2011



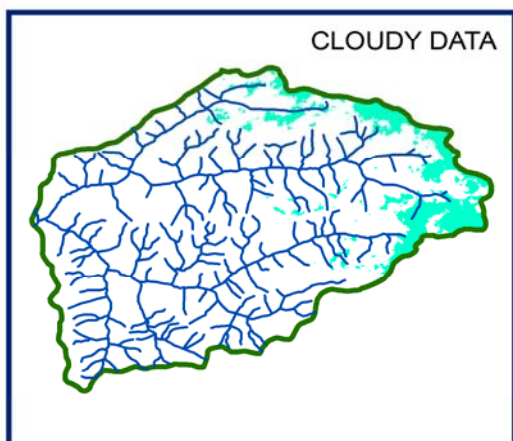
12 MAY 2011



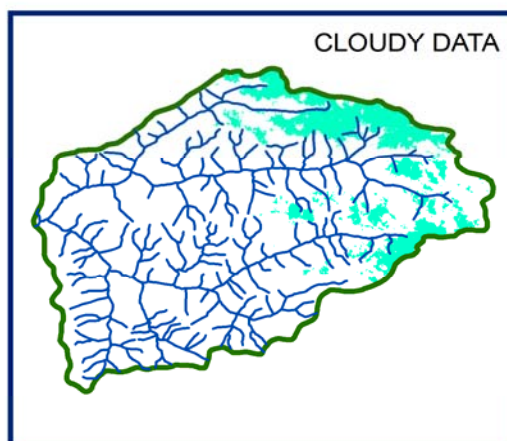
17 MAY 2011



21 MAY 2011



22 MAY 2011



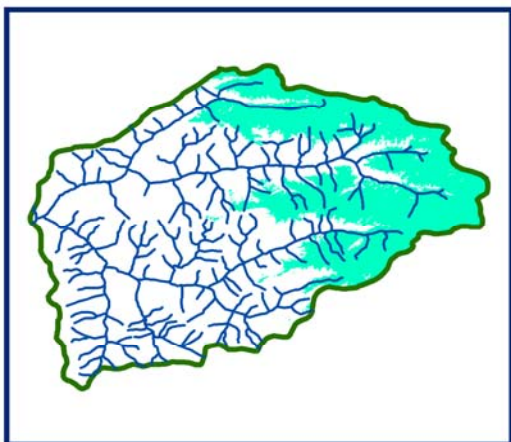
26 MAY 2011



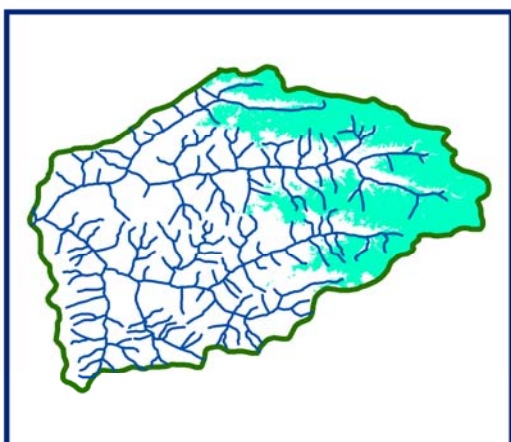
SNOW



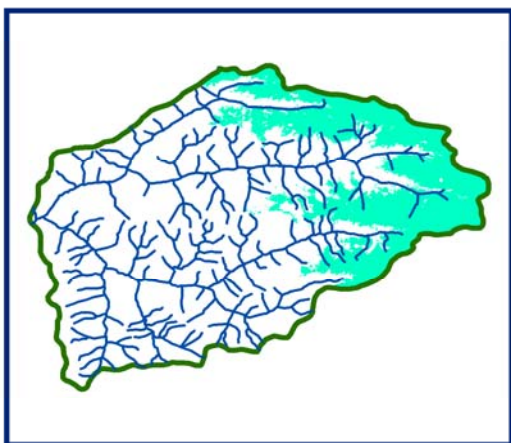
10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED
02 MAY 2011



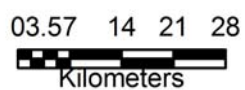
DATA USED
12 MAY 2011



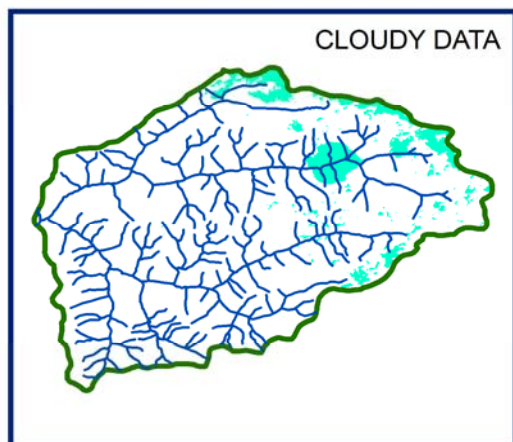
DATA USED
21 MAY 2011



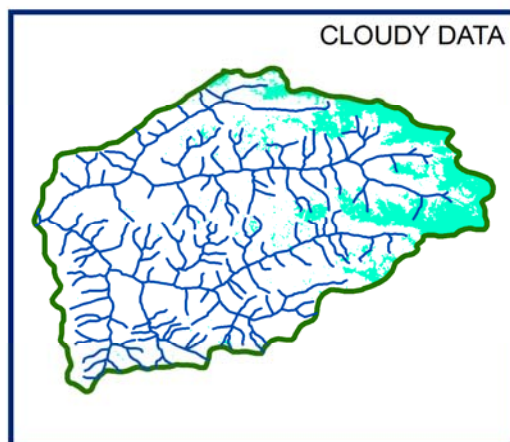
SNOW



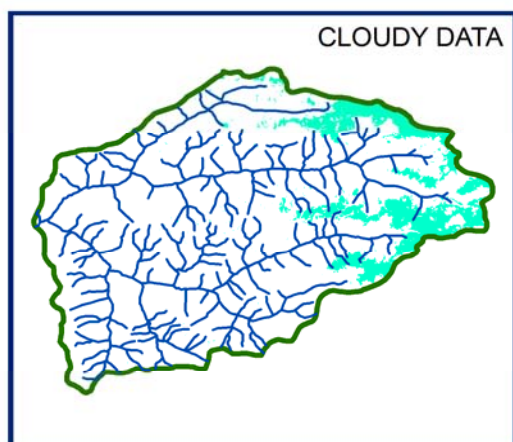
SNOW COVER MAP : JIWA BASIN



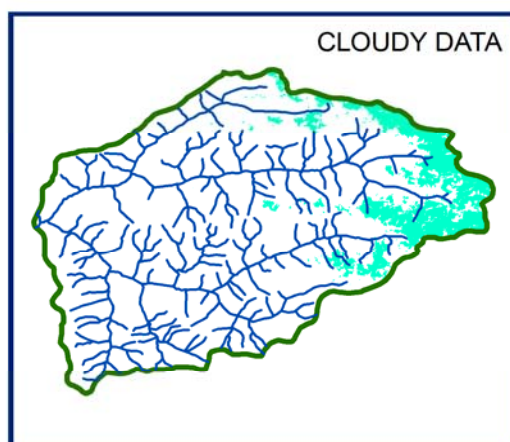
10 JUNE 2011



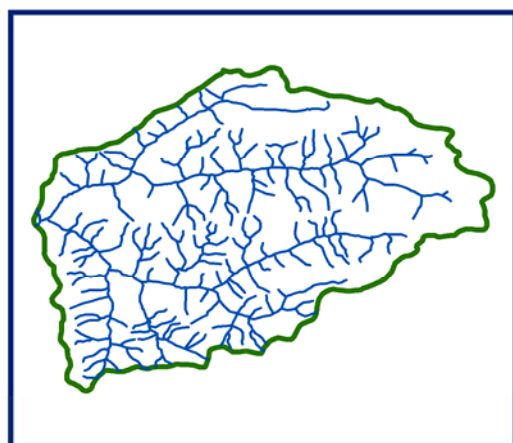
14 JUNE 2011



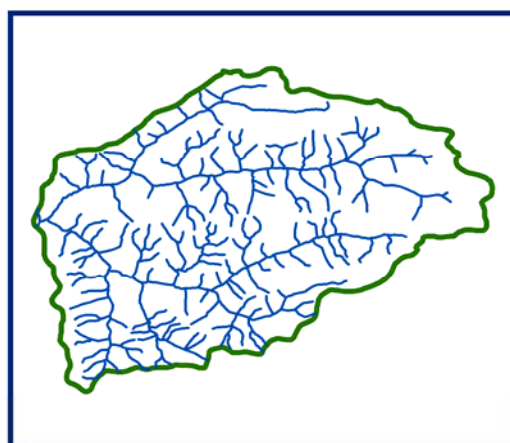
19 JUNE 2011



20 JUNE 2011



DATA NOT AVAILABLE



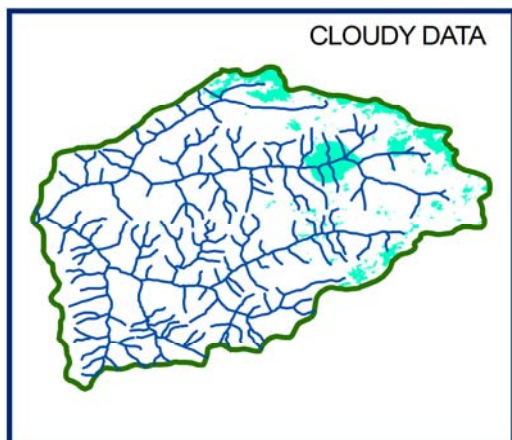
DATA NOT AVAILABLE



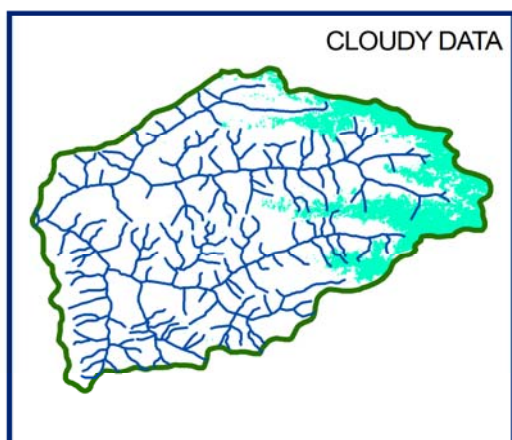
SNOW



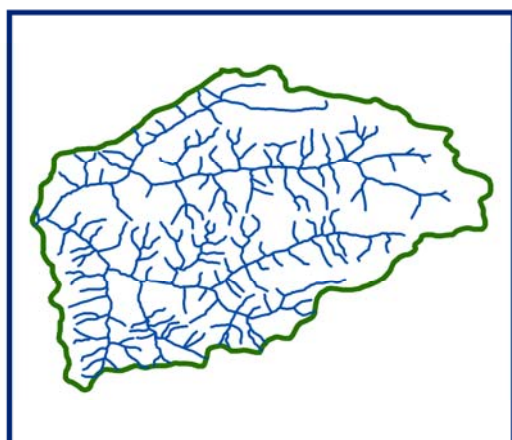
10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED
10 JUNE 2011



DATA USED
19 JUNE 2011
20 JUNE 2011



DATA USED
DATA NOT AVAILABLE



SNOW



PARBATI BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: PARBATI

BASIN AREA: 1773 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2010							
1.	03 Oct 2010	772.86	44	3.	18 Oct 2010	674.78	38
2.	08 Oct 2010	735.95	42	4.	27 Oct 2010	1258.59	71
November 2010							
1.	06 Nov 2010	1005.46	57	3.	20 Nov 2010	1326.88	75
2.	15 Nov 2010	853.29	48	4.	30 Nov 2010	928.59	52
December 2010							
1.	05 Dec 2010	871.88	49	4.	19 Dec 2010	935.78	53
2.	09 Dec 2010	854.30	48	5.	24 Dec 2010	1082.35	61
3.	14 Dec 2010	844.54	48	6.	29 Dec 2010	1333.29	75
January 2011							
1.	02 Jan 2011	1676.15	95	5.	26 Jan 2011	1492.17	84
2.	03 Jan 2011	1555.38	88	6.	27 Jan 2011	1418.81	80
3.	07 Jan 2011	859.68	48	7.	31 Jan 2011	1355.74	76
4.	12 Jan 2011	1495.50	84				
February 2011							
March 2011							
1.	10 March 2011	1569.29	89	3.	16 March 2011	1455.01	82
2.	15 March 2011	1483.73	84	4.	30 March 2011	1404.23	79
April 2011							
1.	08 April 2011	1399.96	79	4.	18 April 2011	1247.81	70
2.	09 April 2011	1358.34	77	5.	23 April 2011	1362.12	77
3.	13 April 2011	1312.14	74	6.	28 April 2011	1273.95	72
May 2011							
1.	02 May 2011	1353.47	76	4.	21 May 2011	1116.16	63
2.	12 May 2011	1190.23	67	5.	22 May 2011	847.24	48
3.	17 May 2011	1259.23	71	6.	26 May 2011	818.75	46
June 2011							
1.	10 June 2011	658.50	37	3.	19 June 2011	680.49	39
2.	14 June 2011	884.55	50	4.	20 June 2011	753.28	43

AREAL EXTENT OF SNOW (10 DAILY)

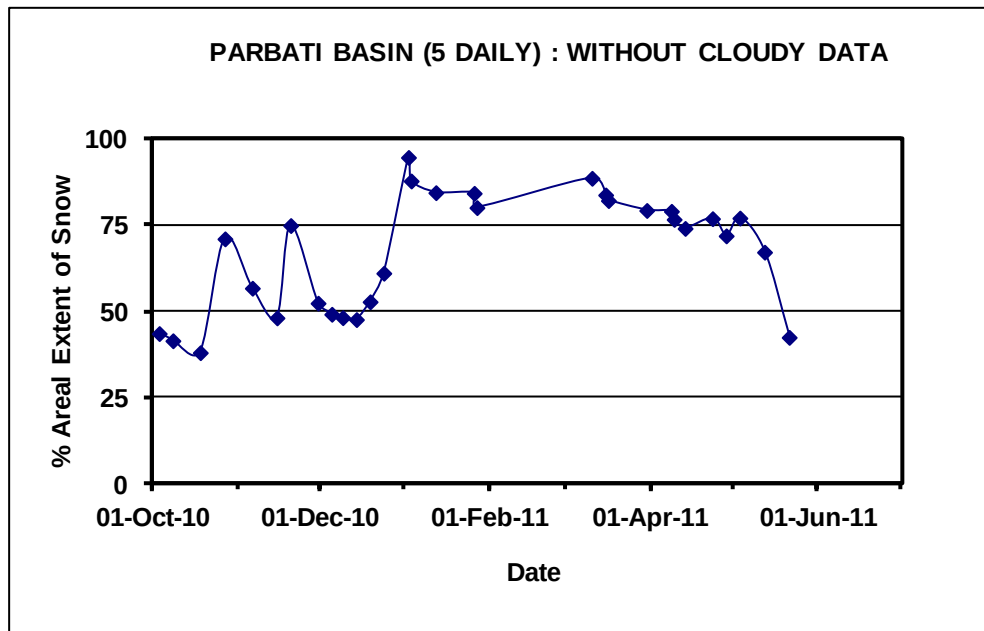
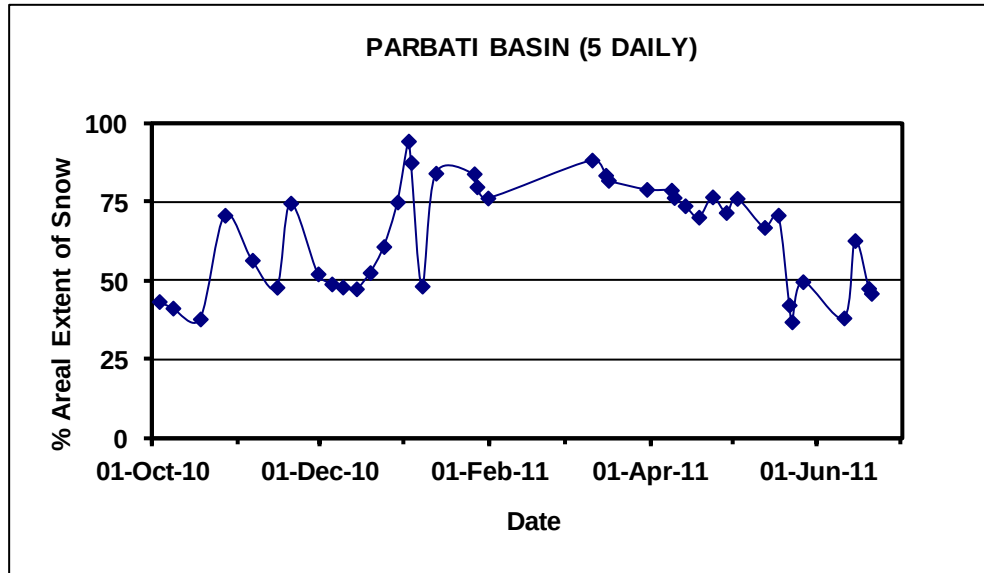
BASIN NAME: PARBATI

BASIN AREA: 1773 sq km

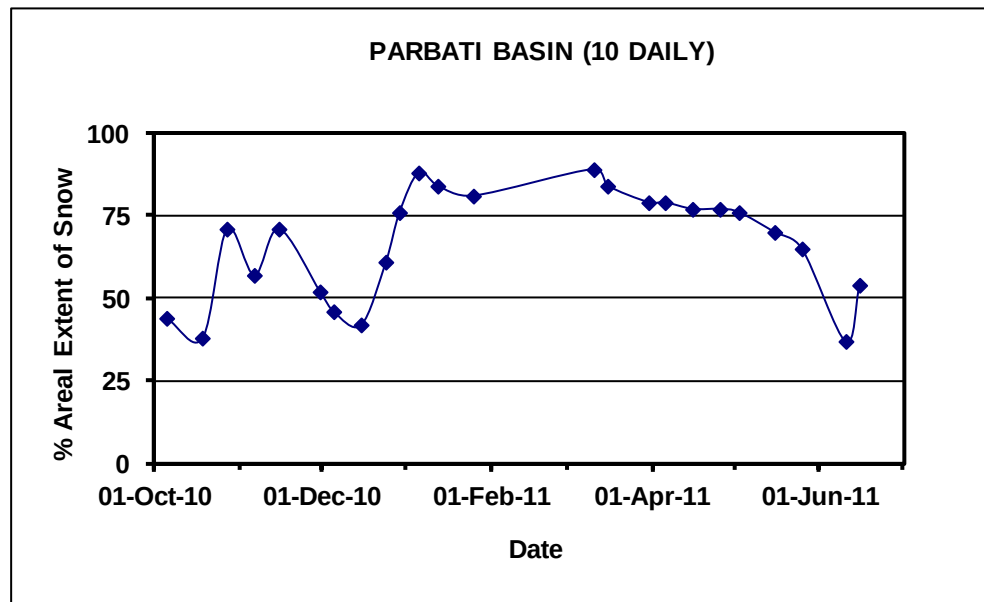
S No	Date	Snow cover (sq km)	Snow cover (%)	Cloud cover	S No	Date	Snow cover (sq km)	Snow cover (%)	Cloud cover
October 2010									
1.	03 Oct 2010	776.40	44	Less	3.	18 Oct 2010	674.78	38	Clear
2.	08 Oct 2010			Clear	4.	27 Oct 2010	1258.59	71	Clear
November 2010									
1.	06 Nov 2010	1005.46	57	Clear	4.	30 Nov 2010	928.59	52	Clear
2.	15 Nov 2010	1252.95	71	Clear					
3.	20 Nov 2010			Clear					
December 2010									
1.	05 Dec 2010	820.95	46	Clear	5.	24 Dec 2010	1082.35	61	Clear
2.	09 Dec 2010			Clear	6.	29 Dec 2010	1333.29	76	More
3.	14 Dec 2010	742.46	42	Clear					
4.	19 Dec 2010			Clear					
January 2011									
1.	02 Jan 2011	1555.60	88	Clear	5.	26 Jan 2011	1433.66	81	Clear
2.	03 Jan 2011			Clear	6.	27 Jan 2011			Clear
					7.	31 Jan 2011			Less
3.	12 Jan 2011	1495.50	84	Clear					
February 2011									
1.									
March 2011									
1.	10 Mar 2011	1569.29	89	Clear	4.	30 Mar 2011	1404.23	79	Clear
2.	15 Mar 2011	1484.63	84	Clear					
3.	16 Mar 2011			Clear					
April 2011									
1.	08 April 2011	1401.37	79	Less	5.	23 April 2011	1363.53	77	Clear
2.	09 April 2011			Clear	6.	28 April 2011			Clear
3.	13 April 2011	1365.30	77	Less					
4..	18 April 2011			Less					
May 2011									
1.	02 May 2011	1353.47	76	Less	4.	21 May 2011	1152.24	65	Clear
2.	12 May 2011	1245.20	70	Clear	5.	22 May 2011			More
3.	17 May 2011			More	6.	26 May 2011			More
June 2011									

1.	10 June2011	658.50	37	More					
2.	14 June 2011	958.11	54	Less					
3.	19 June 2011			More					
4.	20 June 2011			Less					

Snow cover depletion curve



Snow cover depletion curve

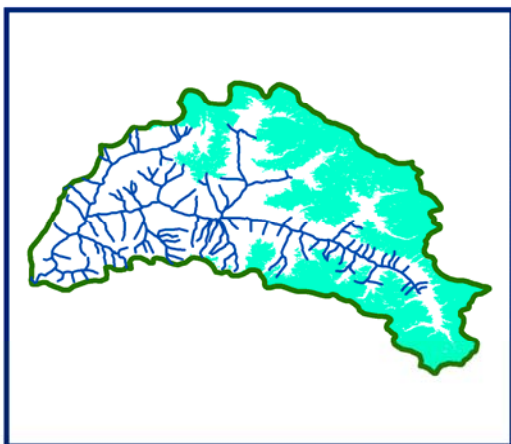


SNOW COVER MAP

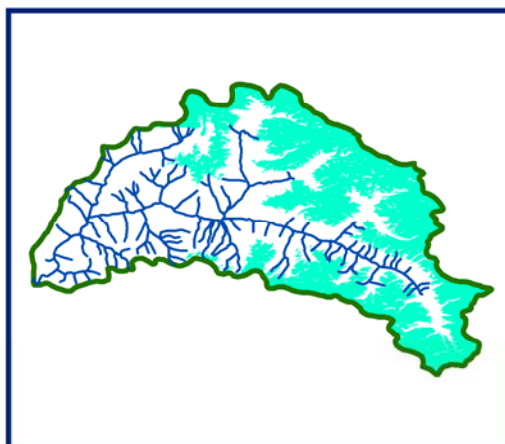
SNOW COVER MAP

:

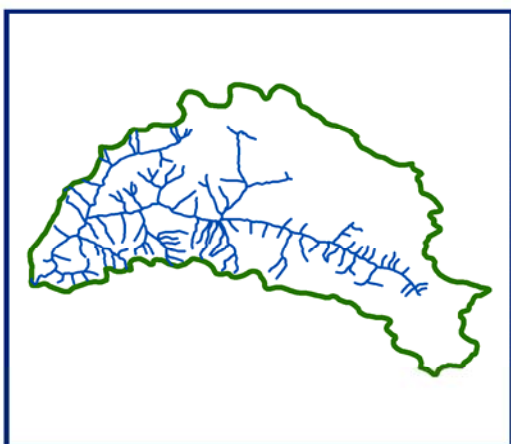
PARBATI BASIN



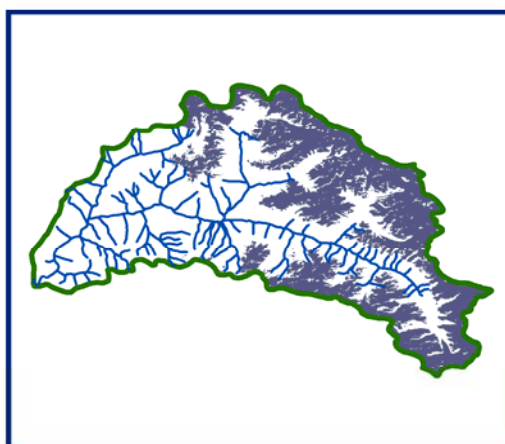
03 OCTOBER 2010



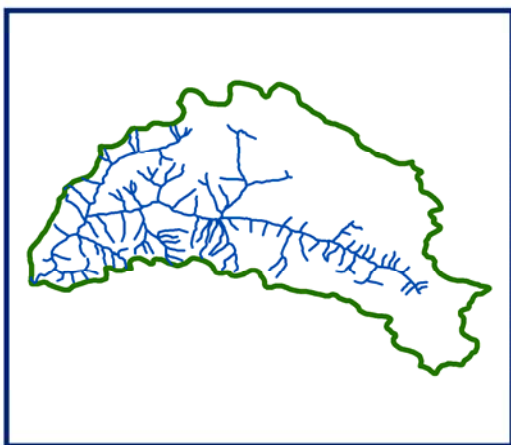
08 OCTOBER 2010



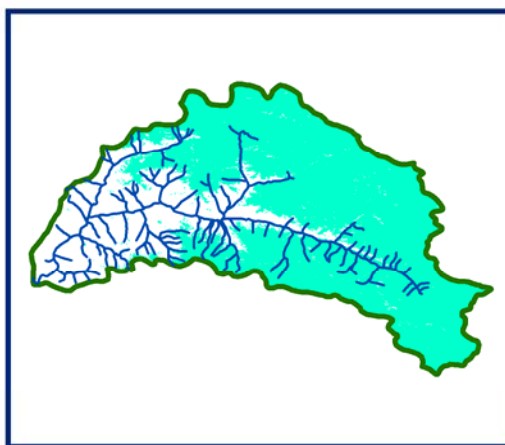
DATA NOT AVAILABLE



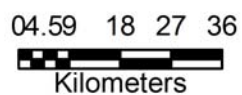
18 OCTOBER 2010



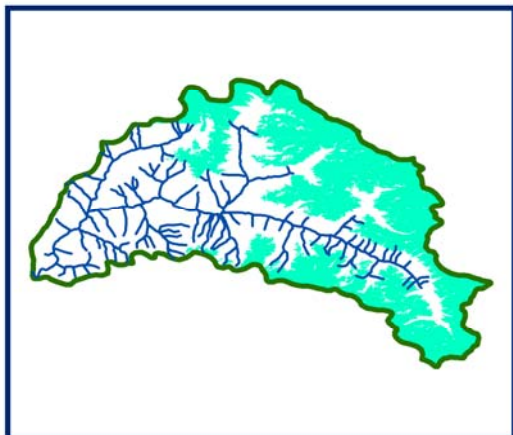
DATA NOT AVAILABLE



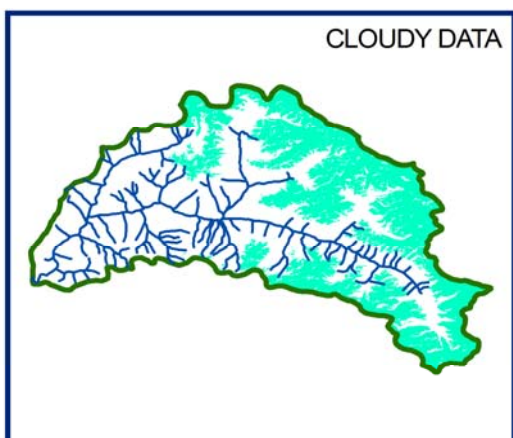
27 OCTOBER 2010



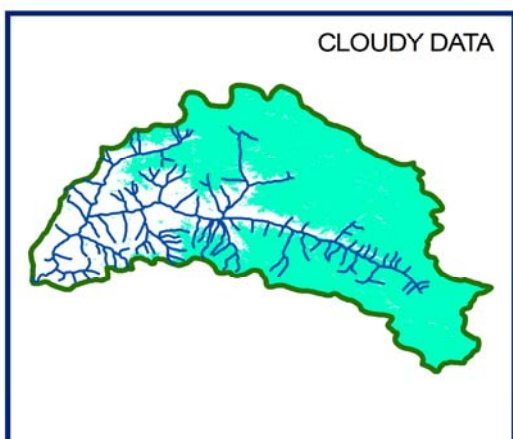
10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED
03 OCTOBER 2010
08 OCTOBER 2010



DATA USED
18 OCTOBER 2010



DATA USED
27 OCTOBER 2010

 SNOW

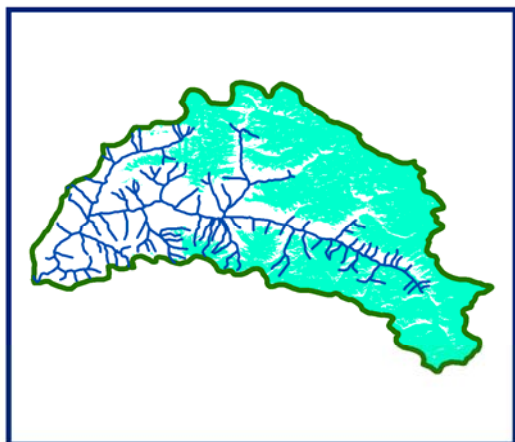
04.59 18 27 36

Kilometers

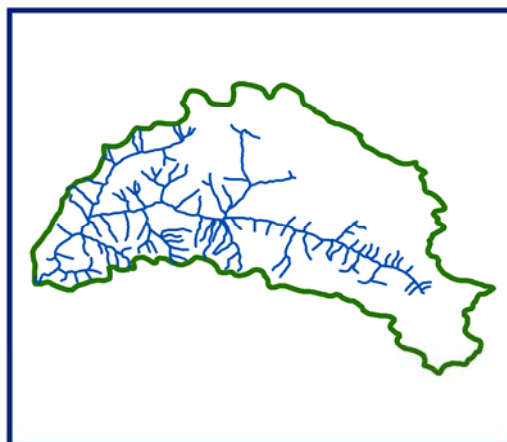
SNOW COVER MAP

:

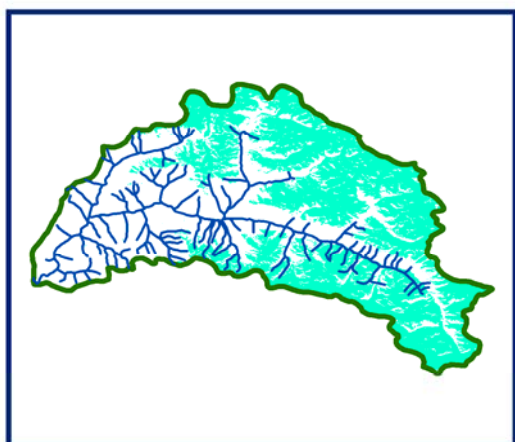
PARBATI BASIN



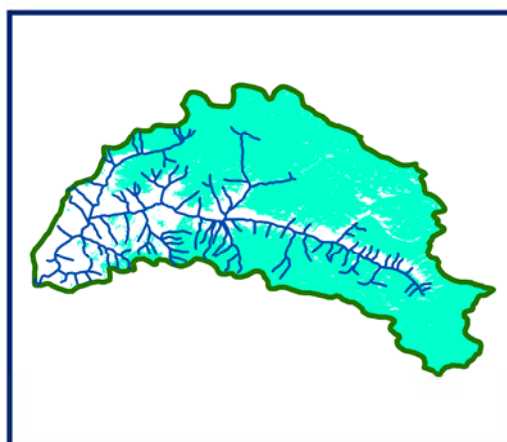
06 NOVEMBER 2010



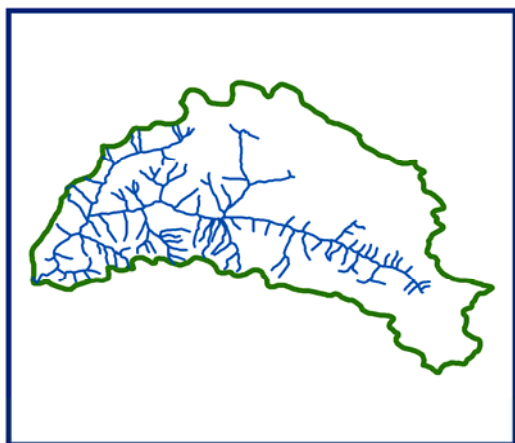
DATA NOT AVAILABLE



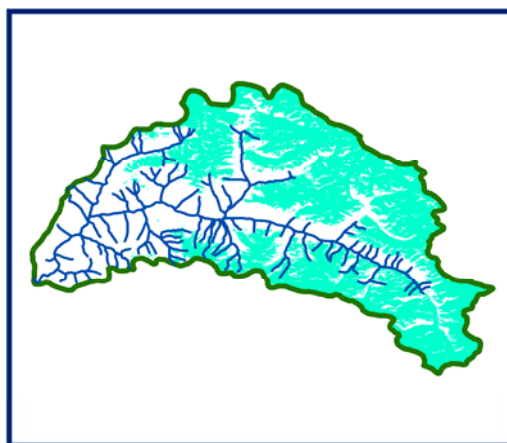
15 NOVEMBER 2010



20 NOVEMBER 2010



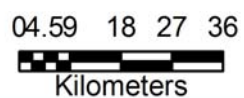
DATA NOT AVAILABLE



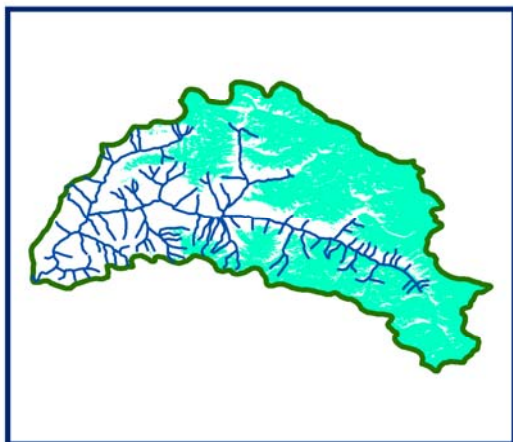
30 NOVEMBER 2010



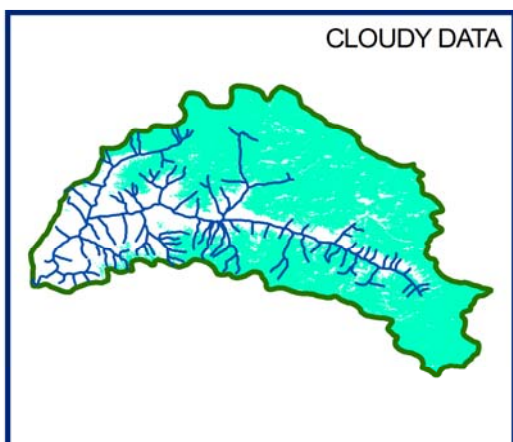
SNOW



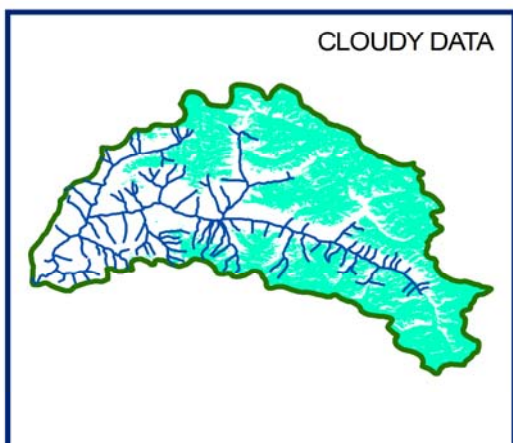
10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED
06 NOVEMBER 2010



DATA USED
15 NOVEMBER 2010
20 NOVEMBER 2010



DATA USED
30 NOVEMBER 2010

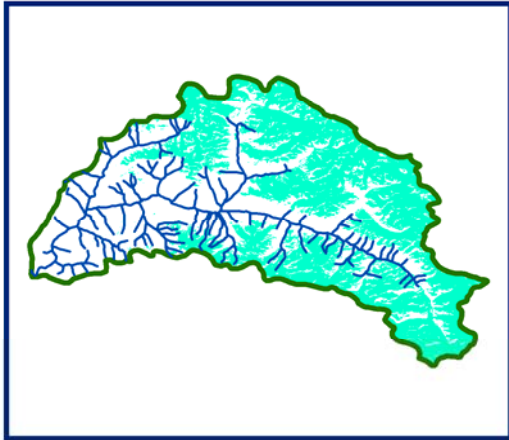


04.59 18 27 36
Kilometers

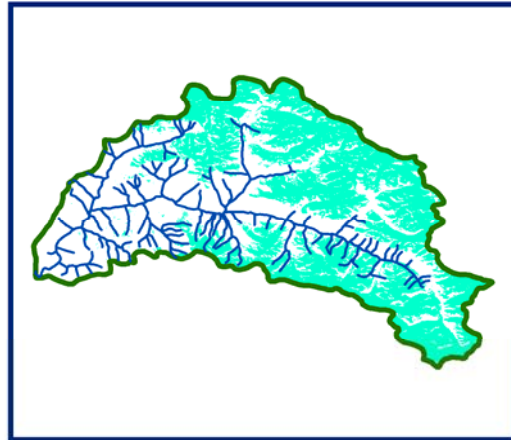
SNOW COVER MAP

:

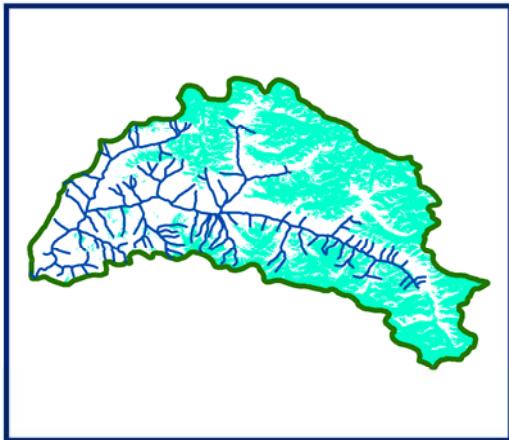
PARBATI BASIN



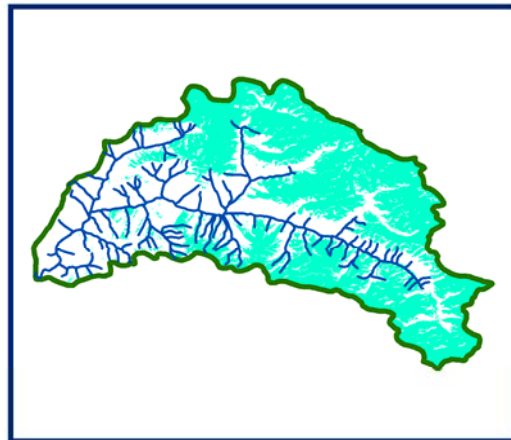
05 DECEMBER 2010



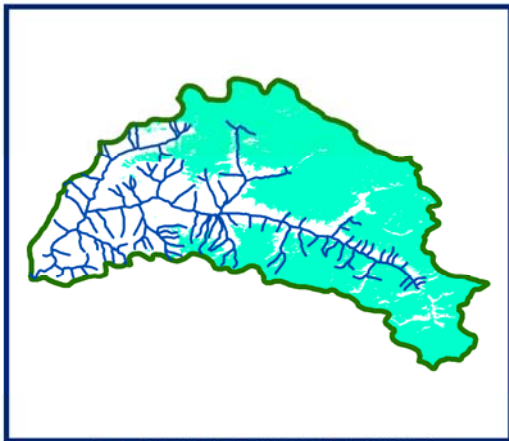
09 DECEMBER 2010



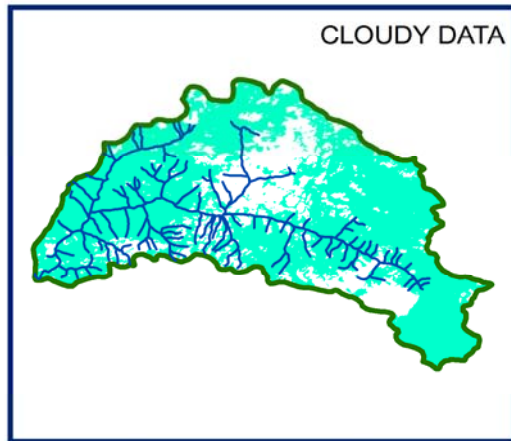
14 DECEMBER 2010



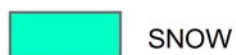
19 DECEMBER 2010



24 DECEMBER 2010

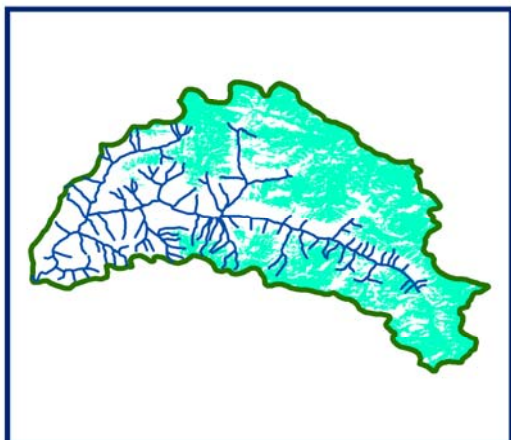


29 DECEMBER 2010

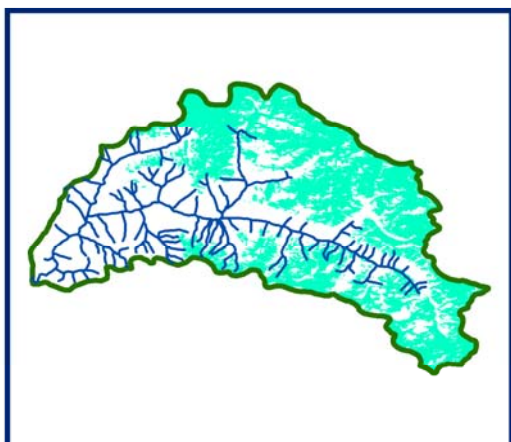


04.59 18 27 36
Kilometers

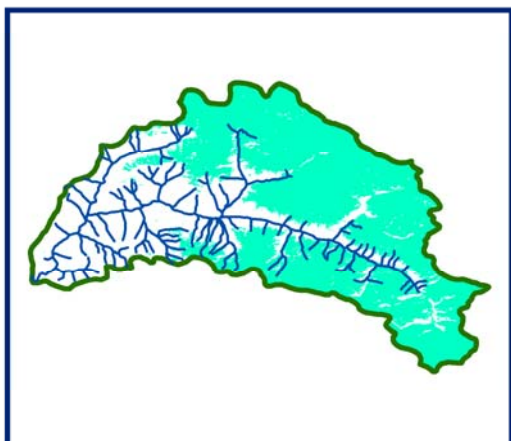
10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED
05 DECEMBER 2010
09 DECEMBER 2010



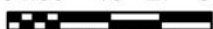
DATA USED
14 DECEMBER 2010
19 DECEMBER 2010



DATA USED
24 DECEMBER 2010



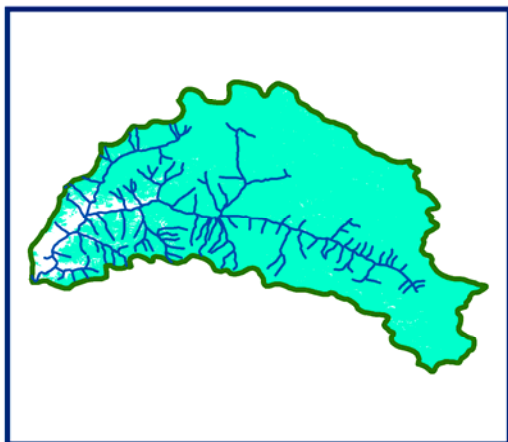
SNOW

04.59 18 27 36

Kilometers

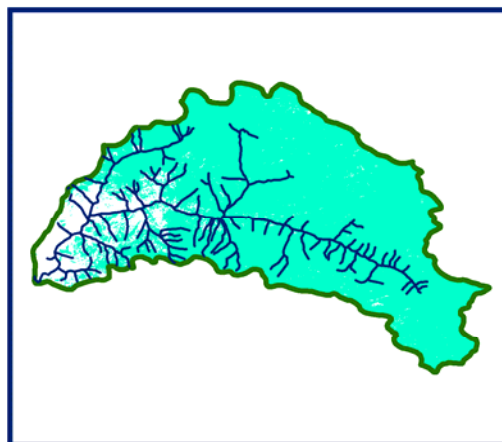
SNOW COVER MAP

:

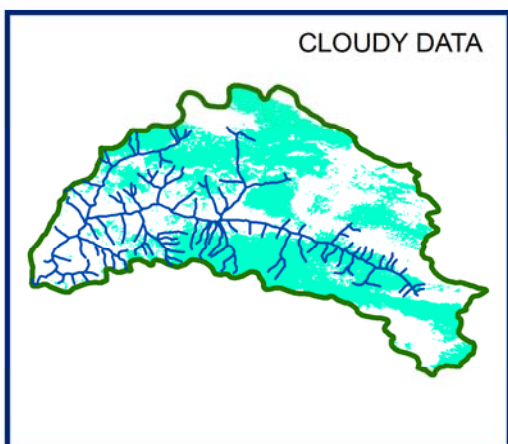
PARBATI BASIN



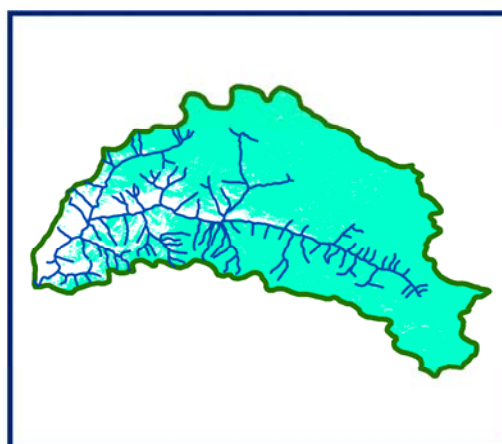
02 JANUARY 2011



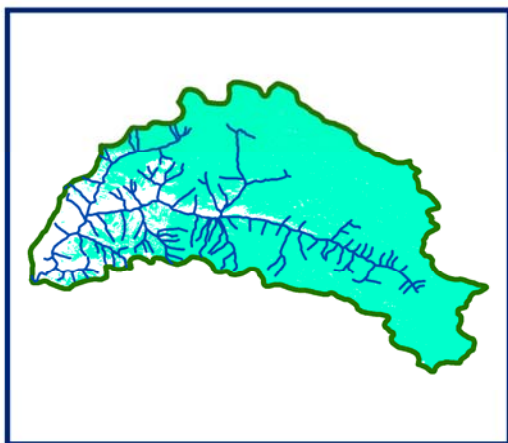
03 JANUARY 2011



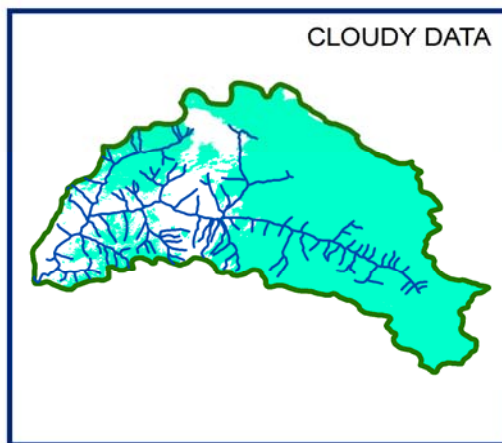
07 JANUARY 2011



12 JANUARY 2011



26 JANUARY 2011



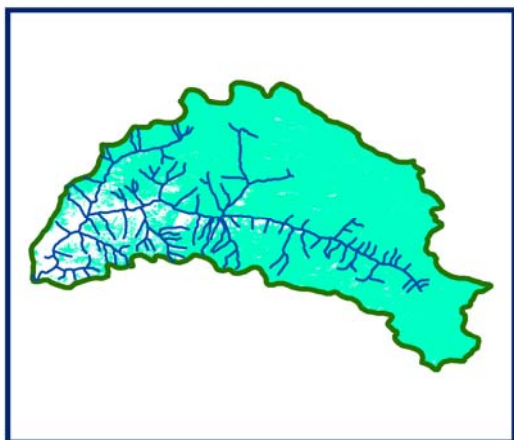
31 JANUARY 2011



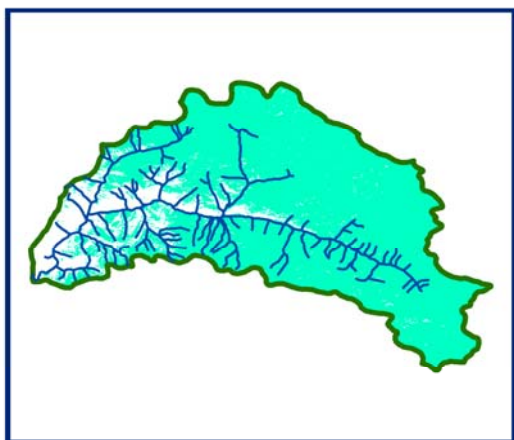
SNOW

0.5 101520
Kilometers

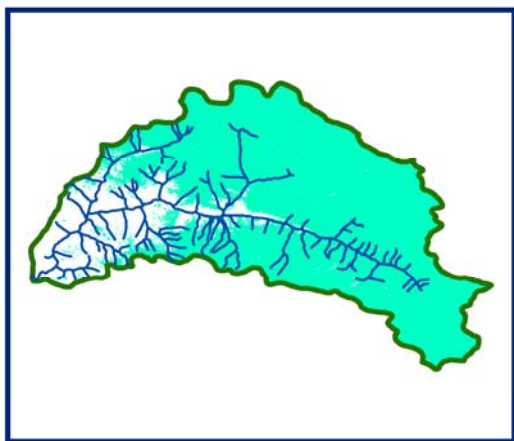
10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED
02 JANUARY 2011
03 JANUARY 2011



DATA USED
12 JANUARY 2011



DATA USED
26 JANUARY 2011
27 JANUARY 2011
31 JANUARY 2011

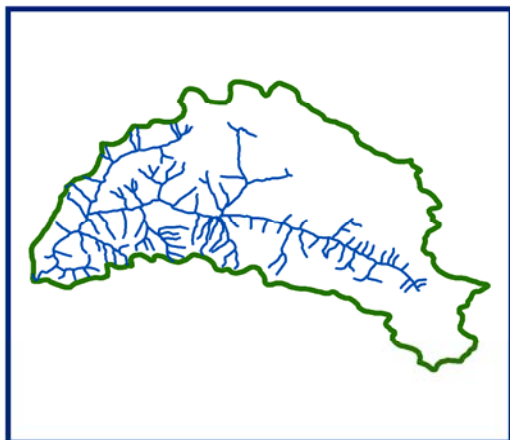


SNOW

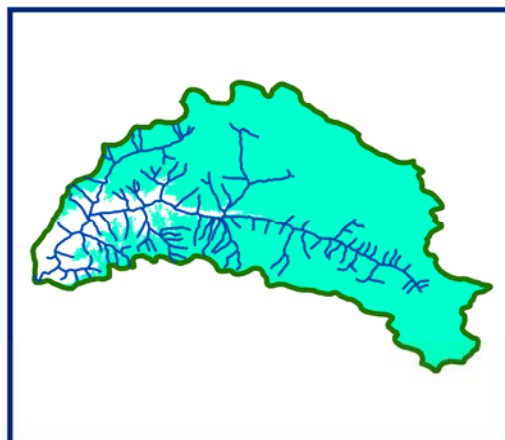
04.59 18 27 36

Kilometers

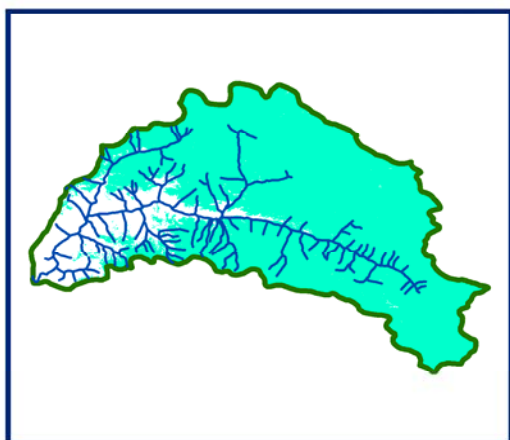
SNOW COVER MAP : PARBATI BASIN



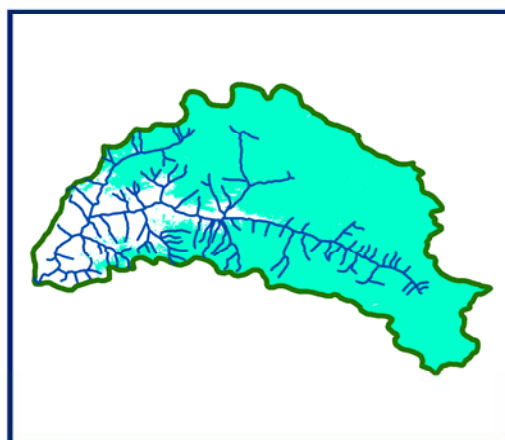
DATA NOT AVAILABLE



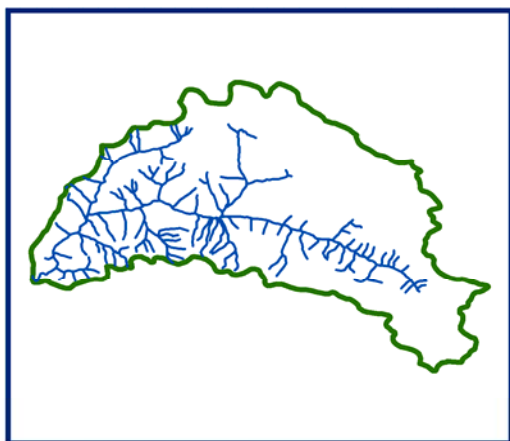
10 MARCH 2011



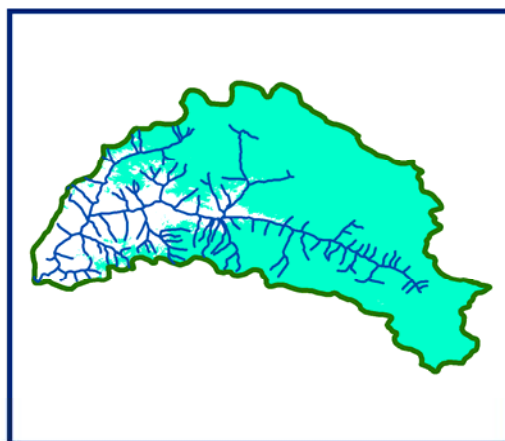
15 MARCH 2011



16 MARCH 2011



DATA NOT AVAILABLE



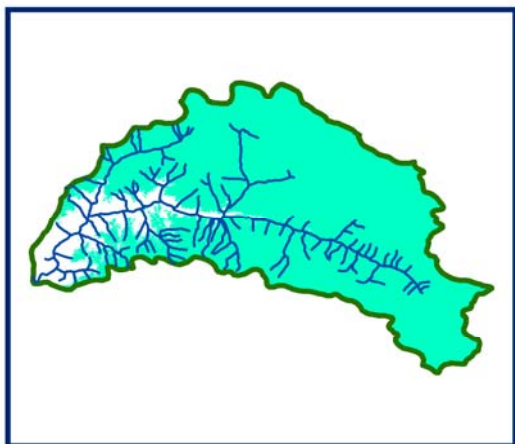
30 MARCH 2011



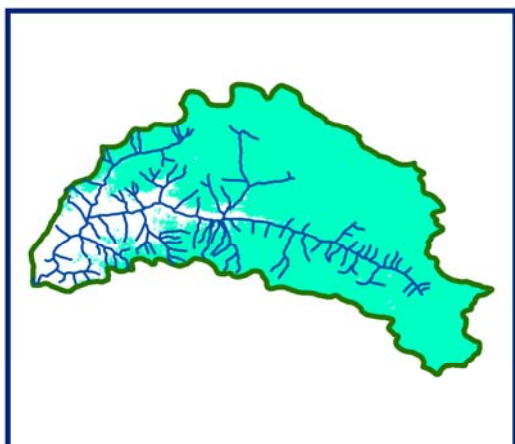
SNOW

0.5 101520
Kilometers

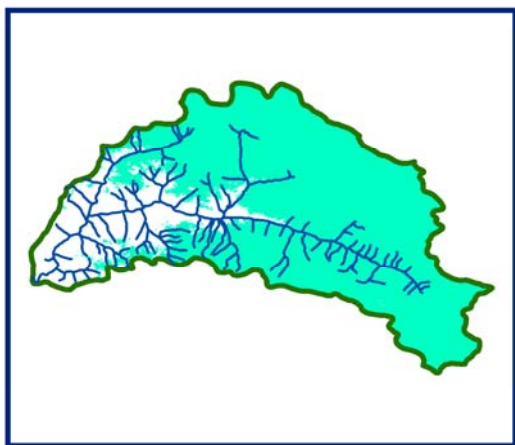
10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED
10 MARCH 2011



DATA USED
15 MARCH 2011
16 MARCH 2011



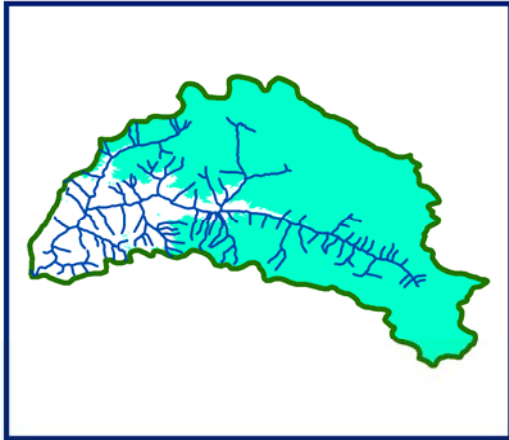
DATA USED
30 MARCH 2011



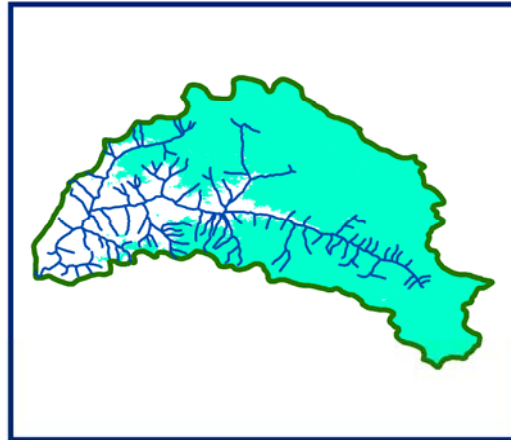
SNOW COVER MAP

:

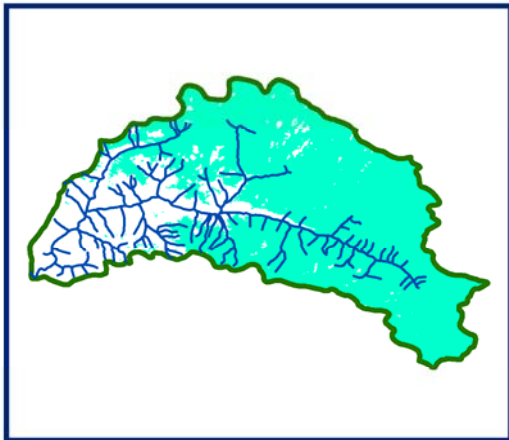
PARBATI BASIN



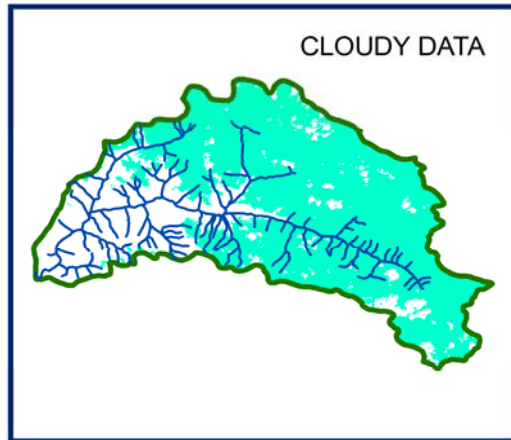
08 APRIL 2011



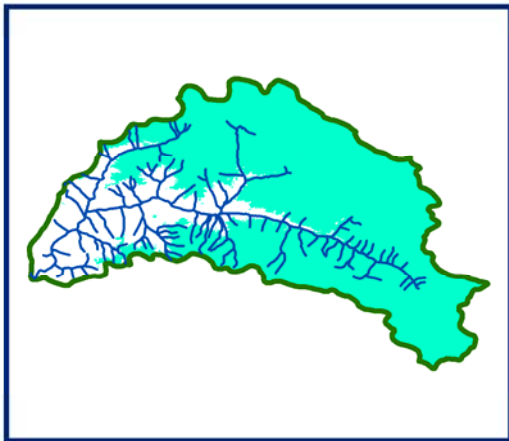
09 APRIL 2011



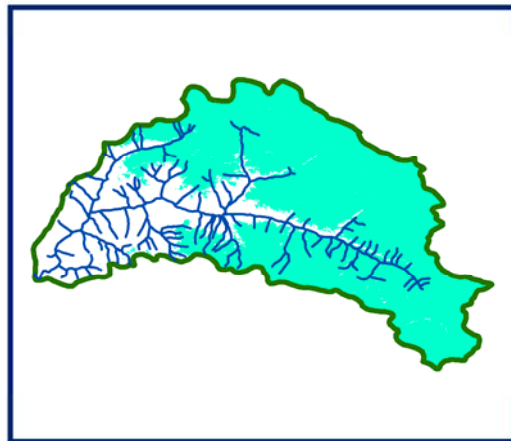
13 APRIL 2011



18 APRIL 2011



23 APRIL 2011



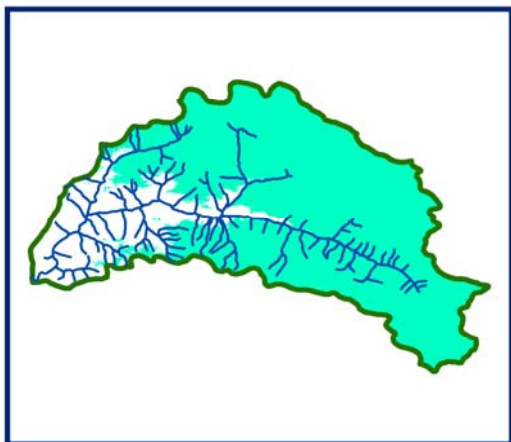
28 APRIL 2011



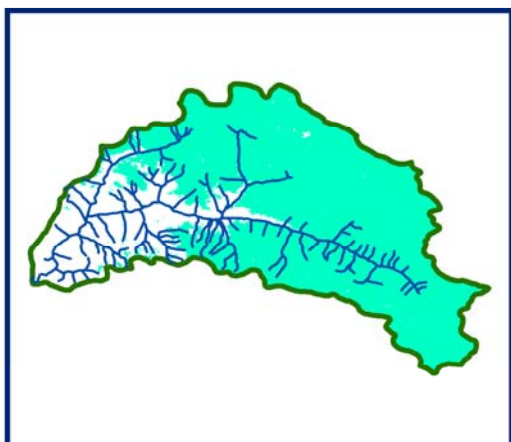
SNOW

04.59 18 27 36
Kilometers

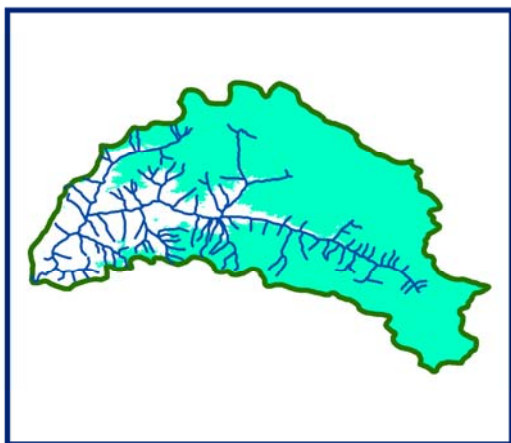
10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED
08 APRIL 2011
09 APRIL 2011



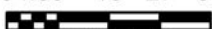
DATA USED
13 APRIL 2011
18 APRIL 2011



DATA USED
23 APRIL 2011
28 APRIL 2011



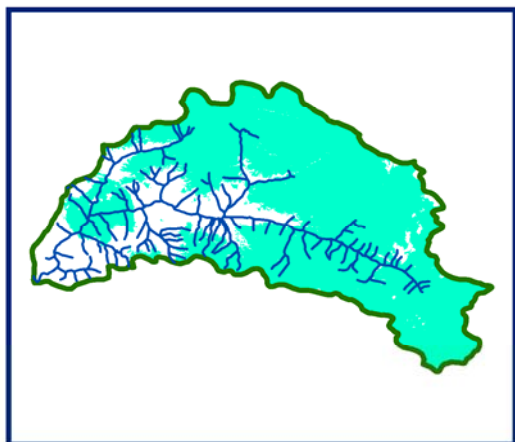
SNOW

04.59 18 27 36

Kilometers

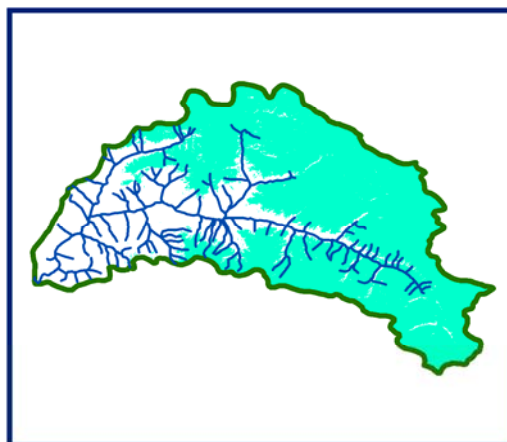
SNOW COVER MAP

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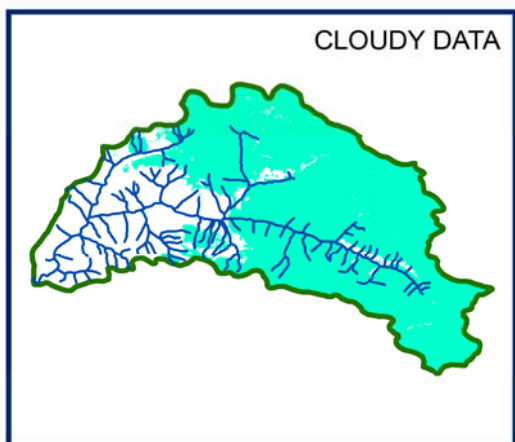
PARBATI BASIN



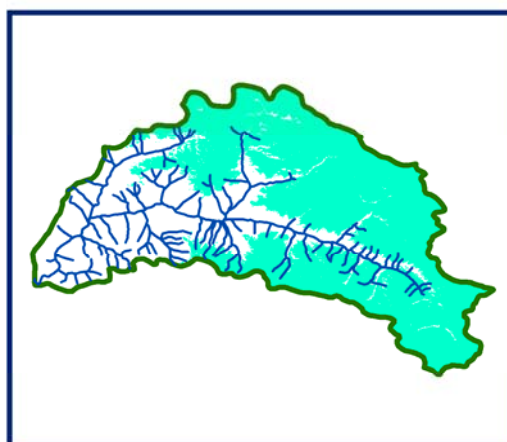
02 MAY 2011



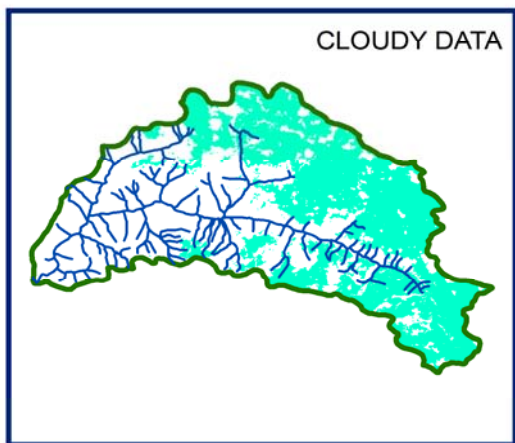
12 MAY 2011



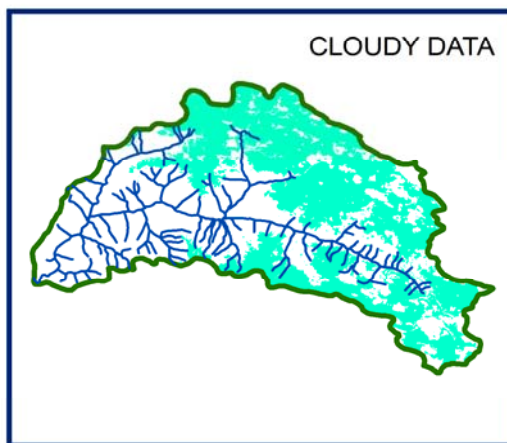
17 MAY 2011



21 MAY 2011



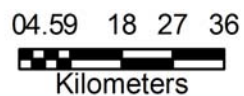
22 MAY 2011



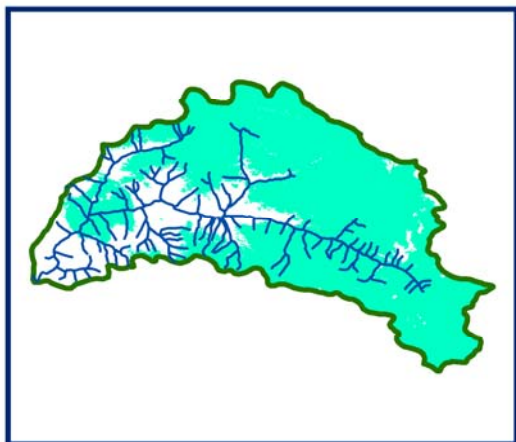
26 MAY 2011



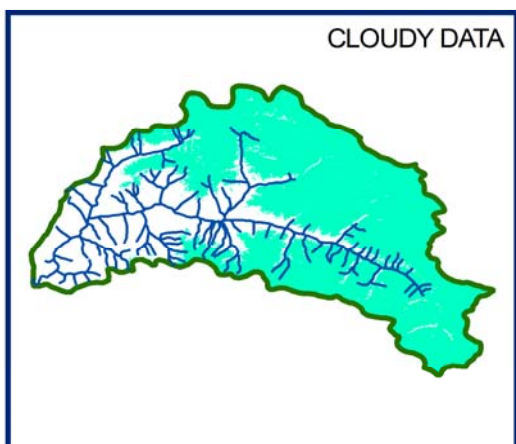
SNOW



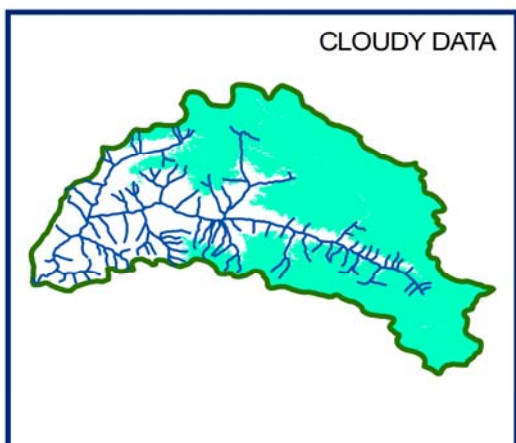
10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED
03 MAY 2011

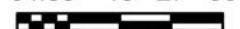


DATA USED
12 MAY 2011



DATA USED
21 MAY 2011
26 MAY 2011

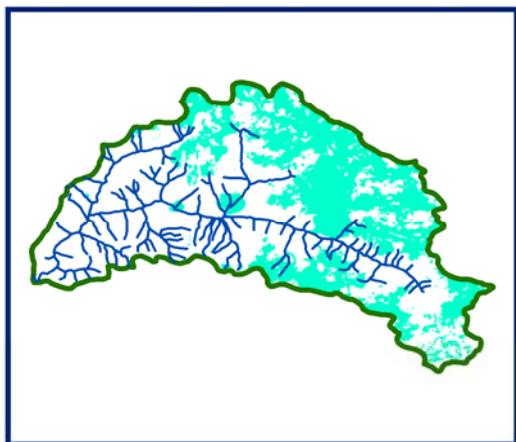
 SNOW

04.59 18 27 36

Kilometers

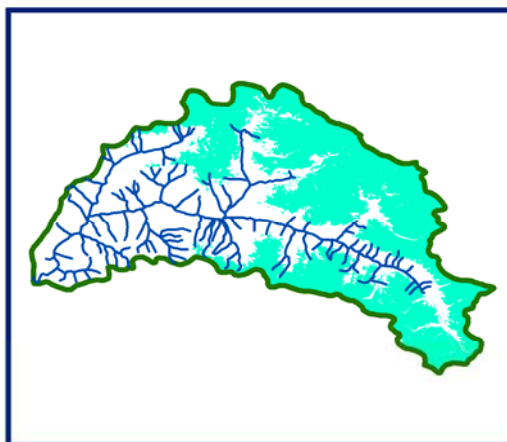
SNOW COVER MAP

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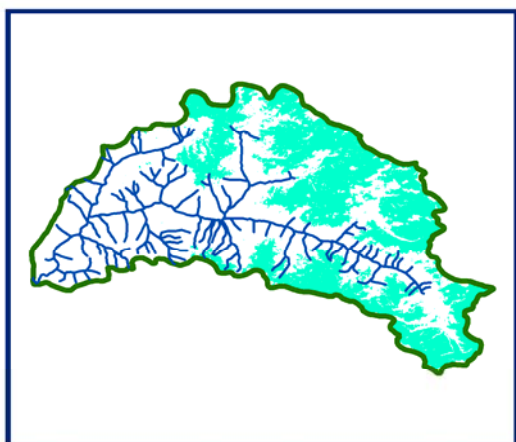
PARBATI BASIN



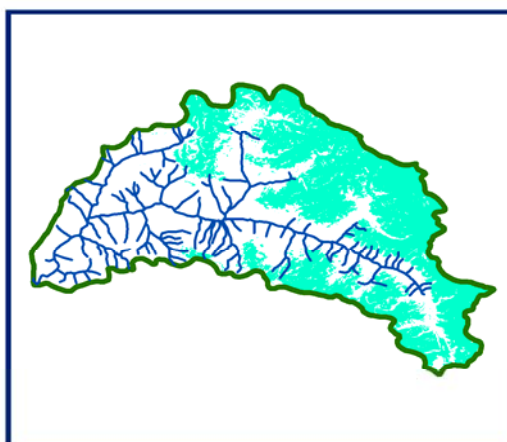
10 JUNE 2011



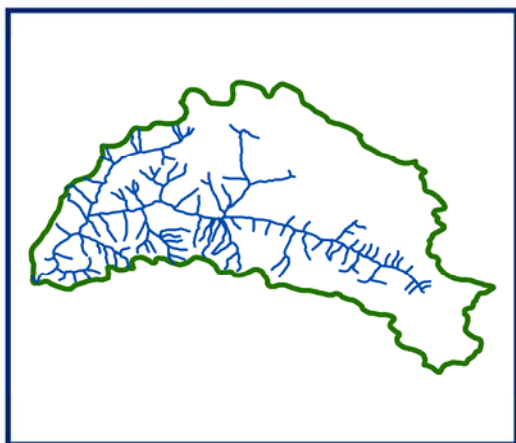
14 JUNE 2011



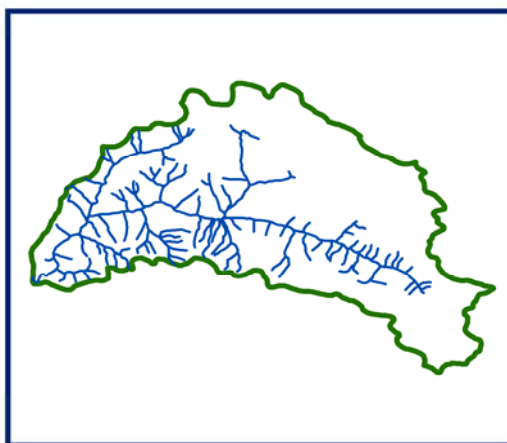
19 JUNE 2011



20 JUNE 2011



DATA NOT AVAILABLE



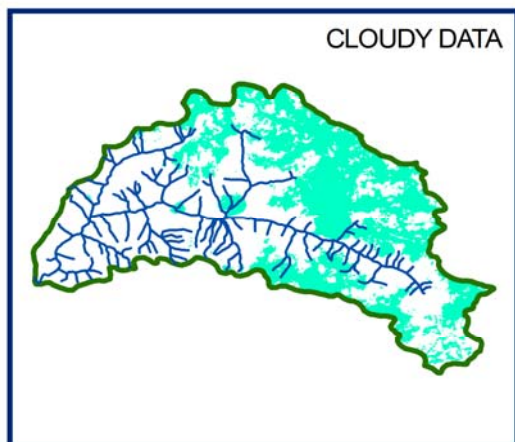
DATA NOT AVAILABLE



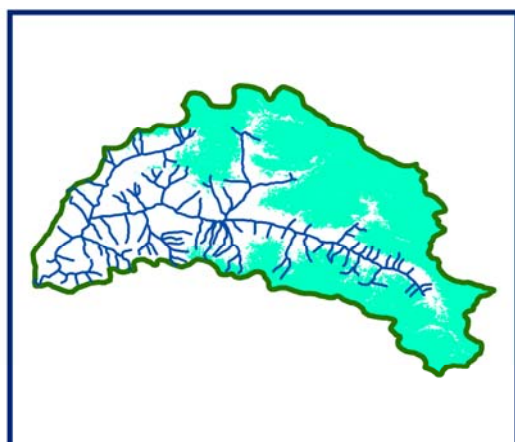
SNOW

04.59 18 27 36
Kilometers

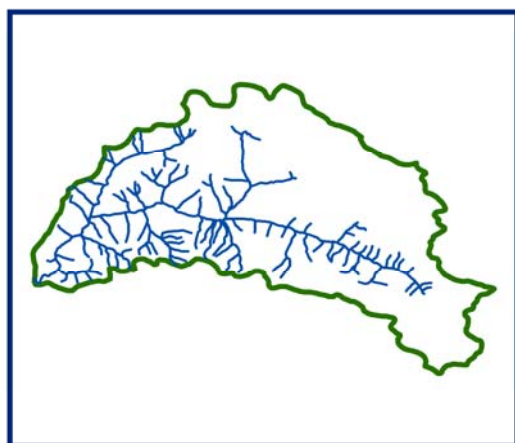
10 DAILY SNOW COVER MAP: PARBATI BASIN



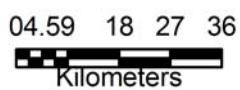
DATA USED
10 JUNE 2011



DATA USED
14 JUNE 2011
19 JUNE 2011
20 JUNE 2011



DATA USED
DATA NOT AVAILABLE



BEAS BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: BEAS

BASIN AREA: 1132 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2010							
1.	03 Oct 2010	82.33	7	3.	18 Oct 2010	65.49	6
2.	08 Oct 2010	87.16	8	4.	27 Oct 2010	489.38	43
November 2010							
1.	06 Nov 2010	254.13	22	3.	20 Nov 2010	656.99	58
2.	15 Nov 2010	195.89	17	4.	30 Nov 2010	313.26	28
December 2010							
1.	05 Dec 2010	273.23	24	4.	19 Dec 2010	249.14	22
2.	09 Dec 2010	285.59	25	5.	24 Dec 2010	340.85	30
3.	14 Dec 2010	273.38	24	6.	29 Dec 2010	744.80	66
January 2011							
1.	02 Jan 2011	1019.46	90	5.	26 Jan 2011	790.75	70
2.	03 Jan 2011	877.86	78	6.	27 Jan 2011	693.22	61
3.	07 Jan 2011	617.15	55	7.	31 Jan 2011	918.48	81
4.	12 Jan 2011	718.33	63				
February 2011							
.							
March 2011							
1.	10 March2011	939.71	83	3.	16 March2011	786.41	69
2.	15 March2011	853.05	75	4.	30 March2011	610.54	54
April 2011							
1.	08 April 2011	777.81	69	4.	18 April2011	456.66	40
2.	09 April 2011	627.54	55	5.	23 April2011	664.38	59
3.	13 April 2011	634.49	56	6.	28 April2011	559.42	49
May 2011							
1.	02 May 2011	585.68	52	4.	17 May 2011	378.90	33
2.	03 May 2011	511.14	45	5.	21 May 2011	337.84	30
3.	12 May 2011	446.76	39	6.	22 may 2011	299.30	26
				7.	26 May 2011	241.61	21
June 2011							
1.	10 June2011	157.08	14	4.	20 June 2011	75.52	7
2.	14 June 2011	211.94	19				
3.	19 June 2011	104.13	9				

AREAL EXTENT OF SNOW (10 DAILY)

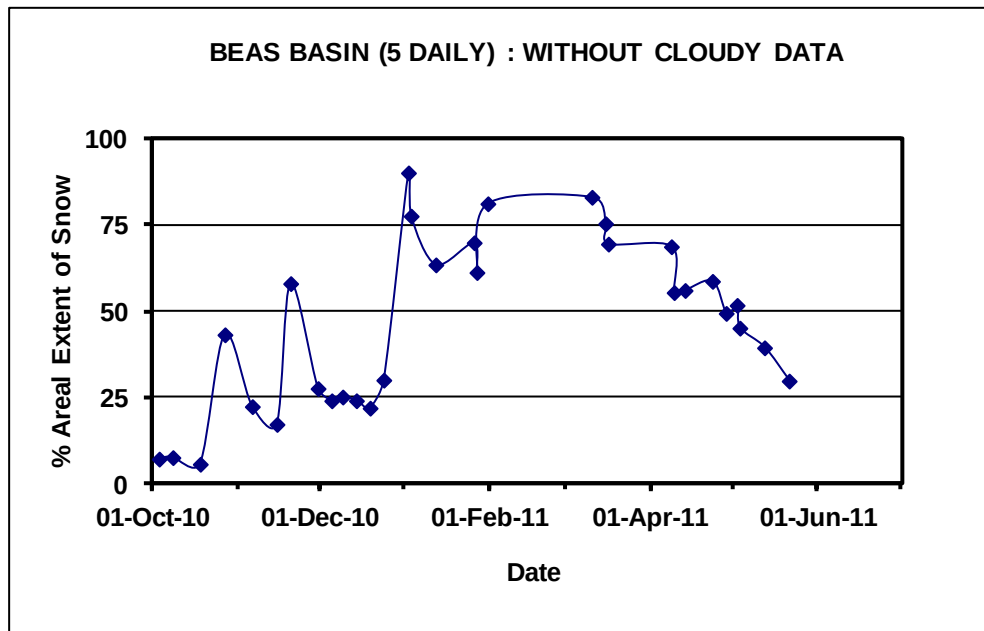
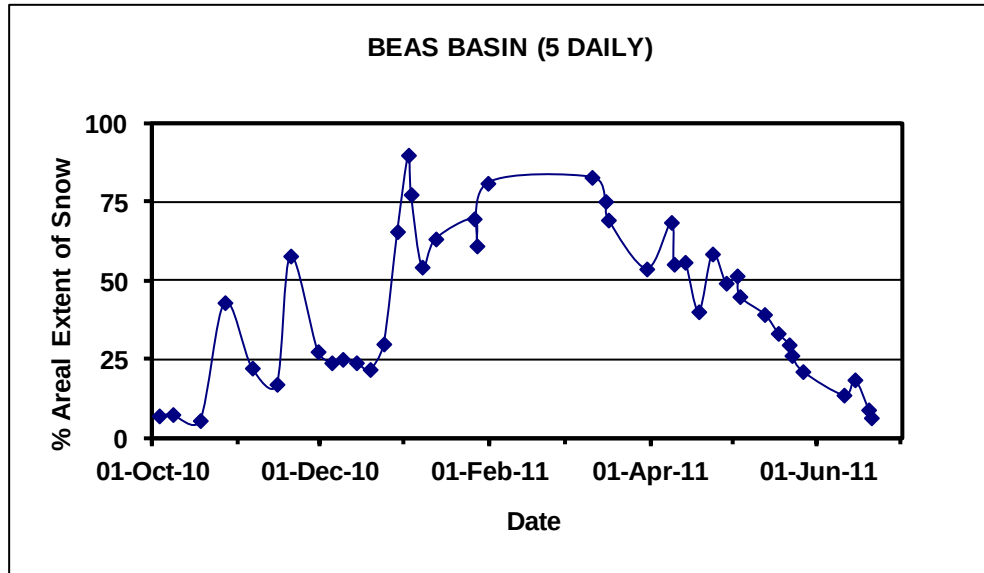
BASIN NAME: BEAS

BASIN AREA: 1132 sq km

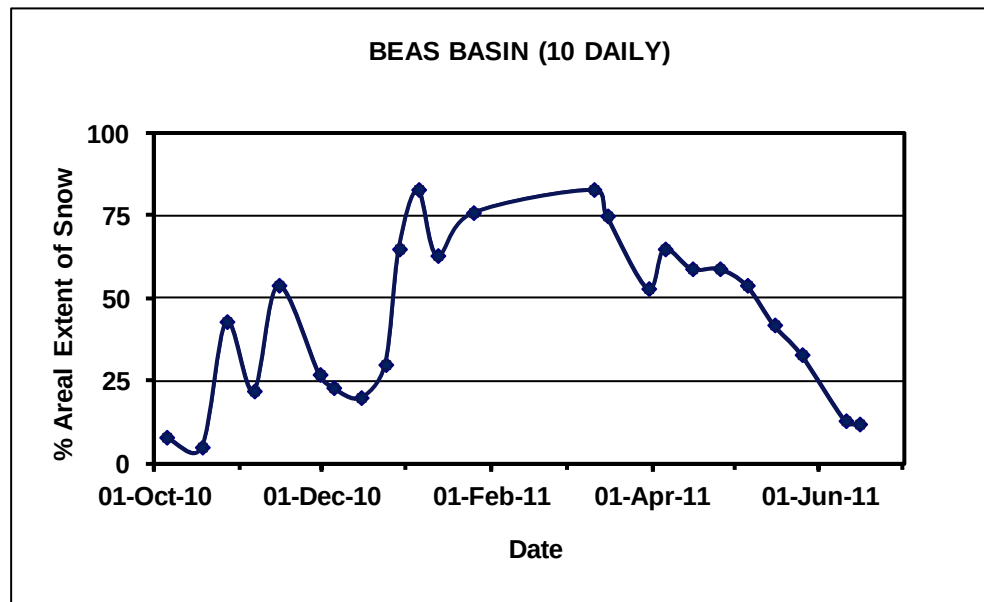
S No	Date	Snow cover (sq km)	Snow cover (%)	Cloud cover	S No	Date	Snow cover (sq km)	Snow cover (%)	Cloud cover
October 2010									
1.	03 Oct 2010	96.14	8	Less	3.	18 Oct 2010	65.49	6	Less
2.	08 Oct 2010			Less	4.	27 Oct 2010	489.38	43	Less
November 2010									
1.	06 Nov 2010	254.13	22	Clear	4.	30 Nov 2010	313.26	28	Clear
2.	15 Nov 2010	610.14	54	Clear					
3.	20 Nov 2010			Clear					
December 2010									
1.	05 Dec 2010	261.33	23	Clear	5.	24 Dec 2010	340.85	30	Clear
2.	09 Dec 2010			Clear	6.	29 Dec 2010	744.80	66	More
3.	14 Dec 2010	227.30	20	Clear					
4.	19 Dec 2010			Clear					
January 2011									
1.	02 Jan 2011	933.97	83	Clear	5.	26 Jan 2011	861.19	76	Less
2.	03 Jan 2011			Clear	6.	27 Jan 2011			Clear
					7.	31 Jan 2011			Clear
3.	12 Jan 2011	718.33	64	Clear					
February 2011									
1.									
March 2011									
1.	10 Mar 2011	939.71	83	Clear	4.	30 Mar 2011	610.54	54	Less
2.	15 Mar 2011	852.23	75	Clear					
3.	16 Mar 2011			Clear					
April 2011									
1.	08 April 2011	736.62	65	Less	5.	23 April 2011	667.32	59	Clear
2.	09 April 2011			Clear	6.	28 April 2011			clear
3.	13 April 2011	672.31	59	Less					
4.	18 April 2011			More					
May 2011									
1.	02 May 2011	615.35	54	Clear	5.	21 May 2011	368.51	33	Less
2.	03 May 2011			Clear	6.	22 May 2011			More
3.	12 May 2011	479.01	42	Clear	7.	26 May 2011			More
4.	17 May 2011			More					
June 2011									
1.	10 June 2011	157.08	14	More					

2.	14 June 2011	141.38	12	More					
3.	19 June 2011			More					
4.	20 June 2011			More					

Snow cover depletion curve



Snow cover depletion curve

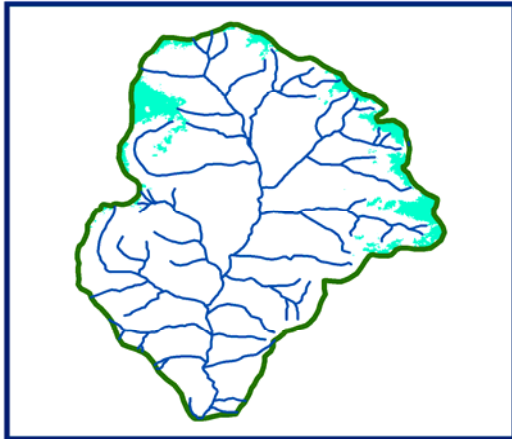


SNOW COVER MAP

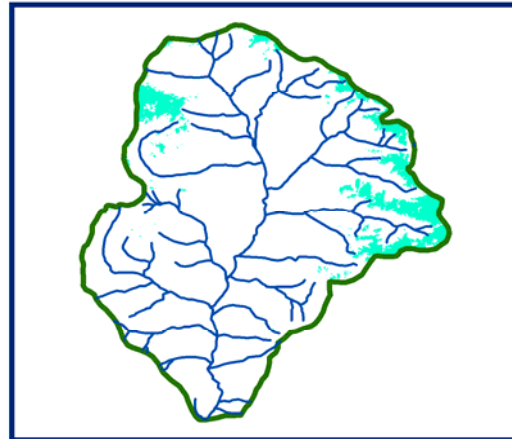
SNOW COVER MAP

:

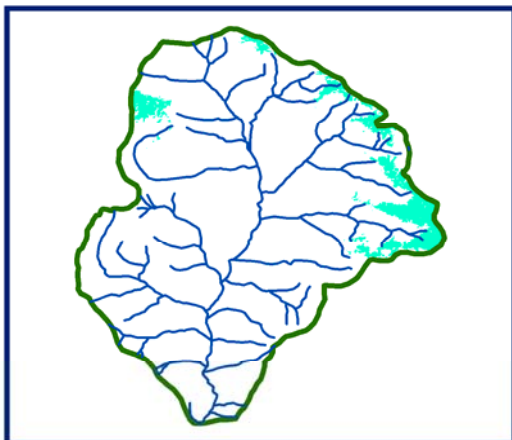
BEAS BASIN



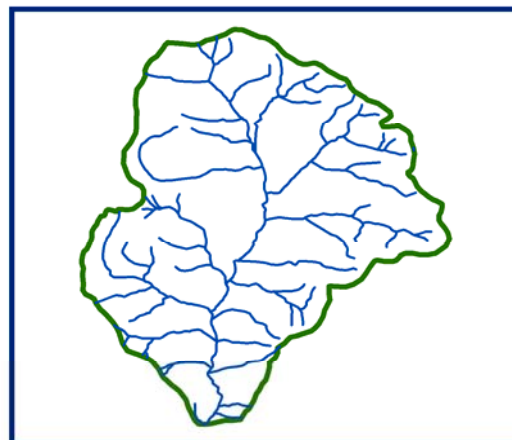
03 OCTOBER 2010



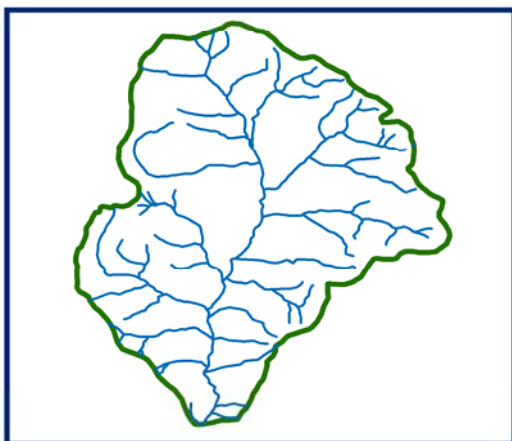
08 OCTOBER 2010



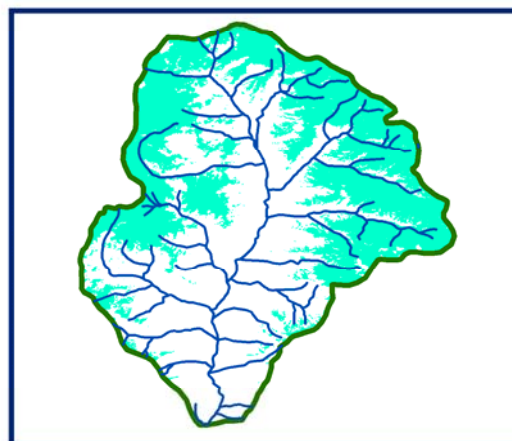
18 OCTOBER 2010



DATA NOT AVAILABLE



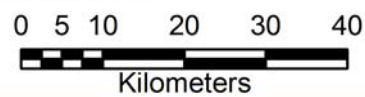
DATA NOT AVAILABLE



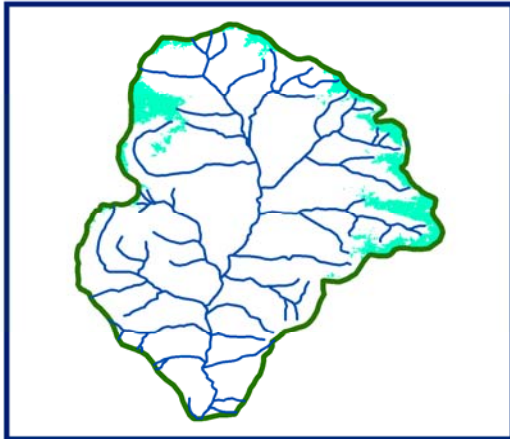
27 OCTOBER 2010



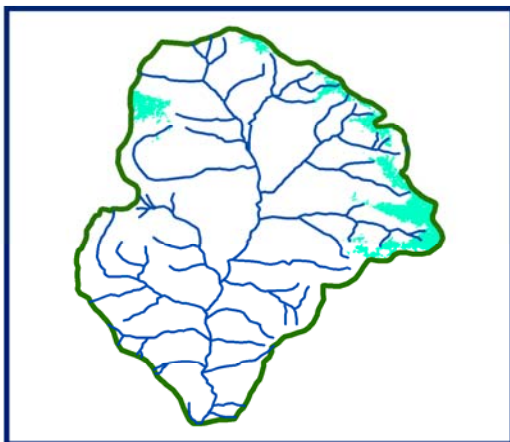
SNOW



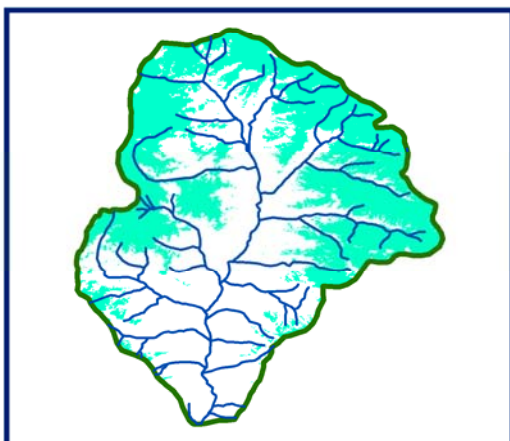
10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED
03 OCTOBER 2010
08 OCTOBER 2010



DATA USED
18 OCTOBER 2010



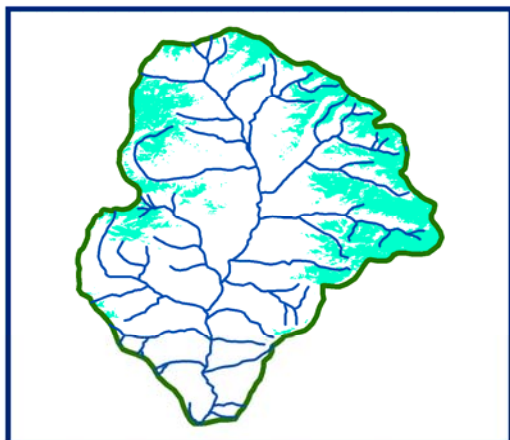
DATA USED
27 OCTOBER 2010



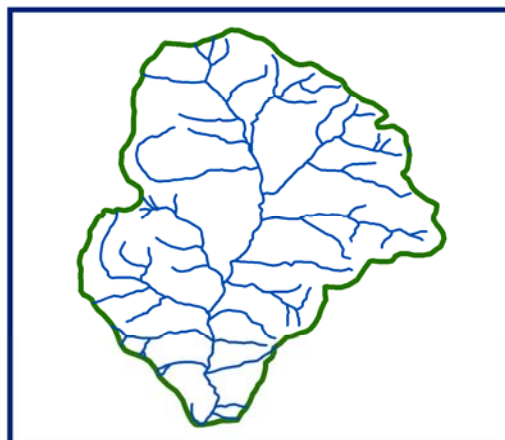
SNOW

03.57 14 21 28
Kilometers

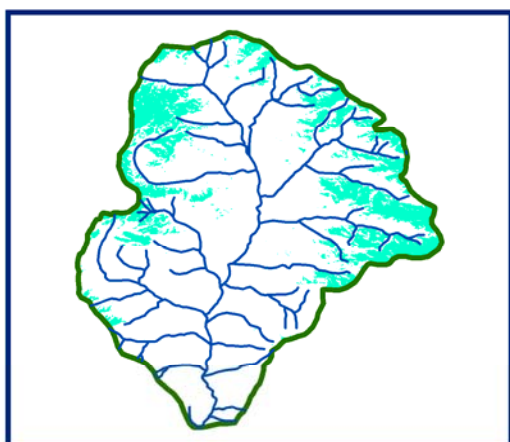
SNOW COVER MAP : BEAS BASIN



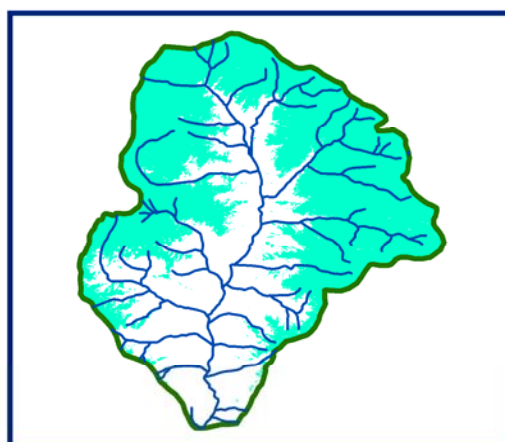
06 NOVEMBER 2010



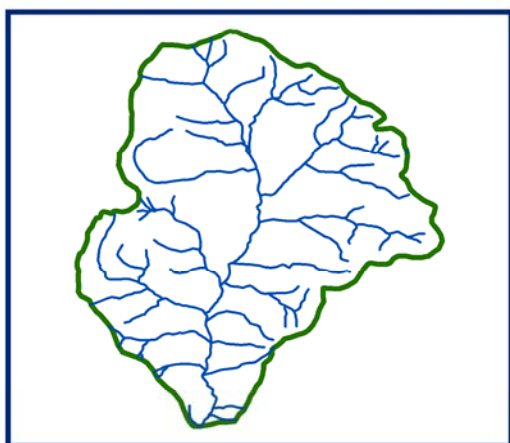
DATA NOT AVAILABLE



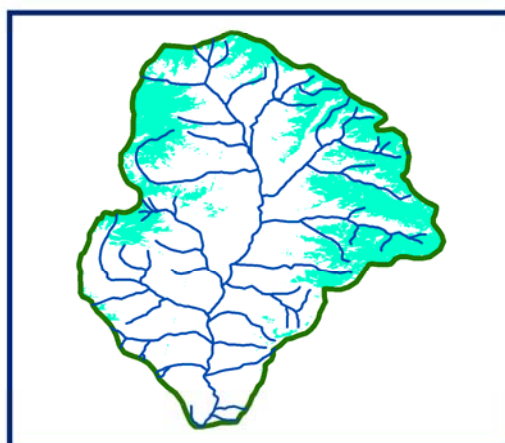
15 NOVEMBER 2010



20 NOVEMBER 2010



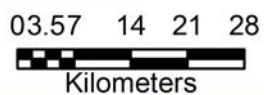
DATA NOT AVAILABLE



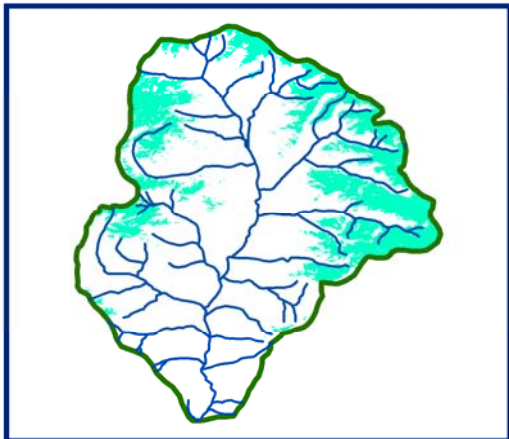
30 NOVEMBER 2010



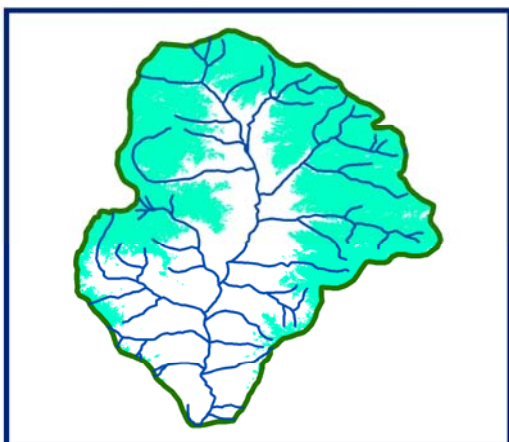
SNOW



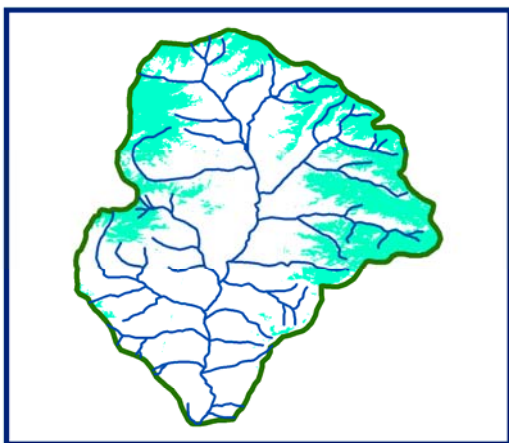
10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED
06 NOVEMBER 2010



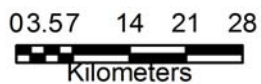
DATA USED
15 NOVEMBER 2010
20 NOVEMBER 2010



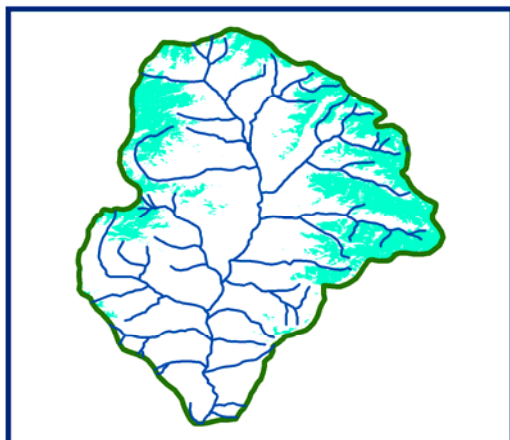
DATA USED
30 NOVEMBER 2010



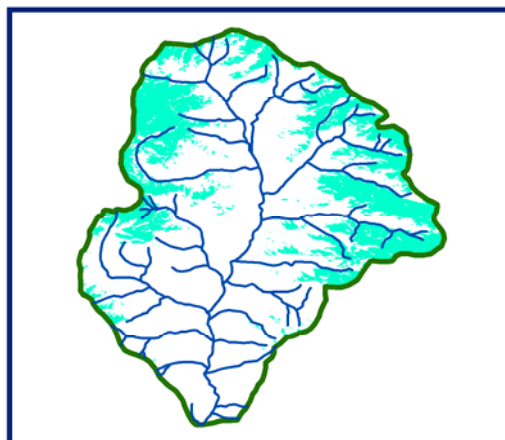
SNOW



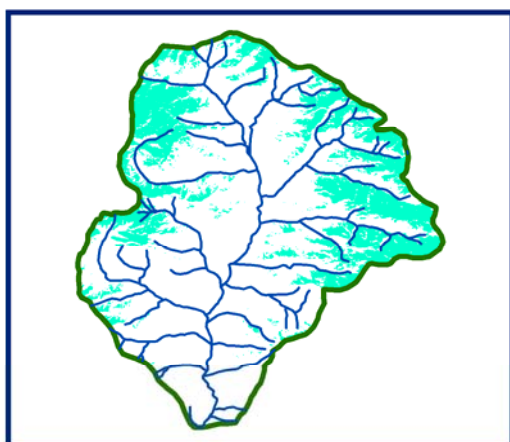
SNOW COVER MAP : BEAS BASIN



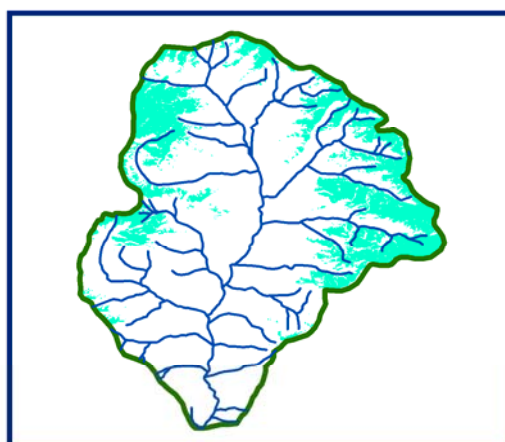
05 DECEMBER 2010



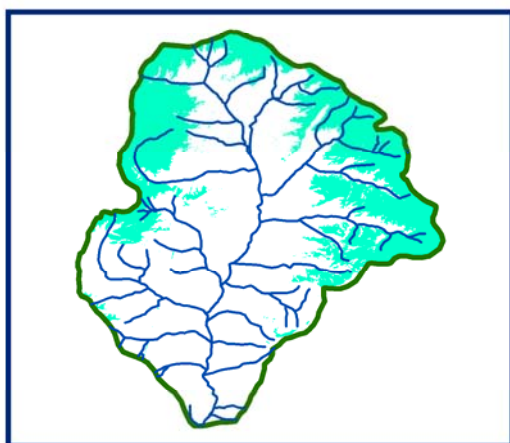
09 DECEMBER 2010



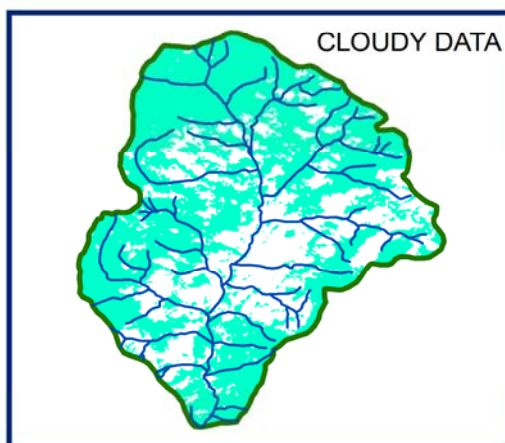
14 DECEMBER 2010



19 DECEMBER 2010



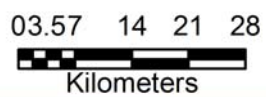
24 DECEMBER 2010



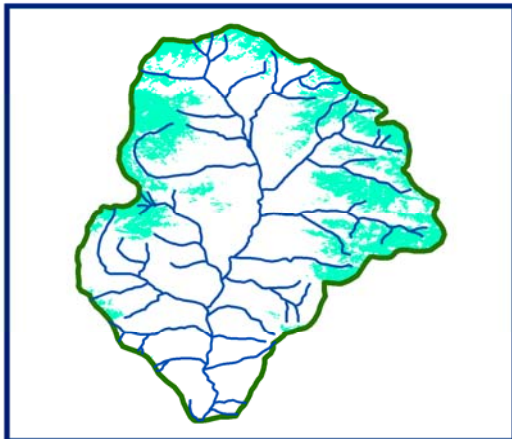
29 DECEMBER 2010



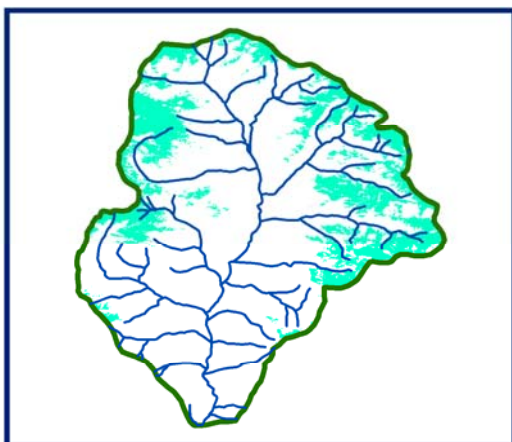
SNOW



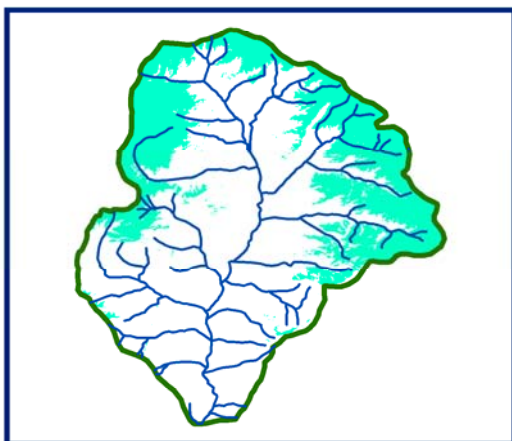
10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED
05 DECEMBER 2010
09 DECEMBER 2010



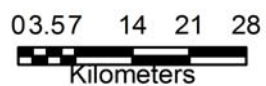
DATA USED
14 DECEMBER 2010
19 DECEMBER 2010



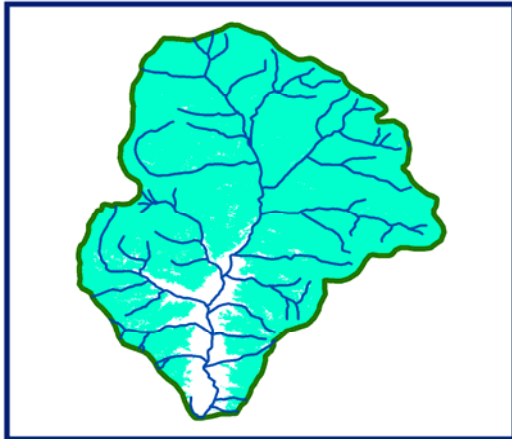
DATA USED
24 DECEMBER 2010



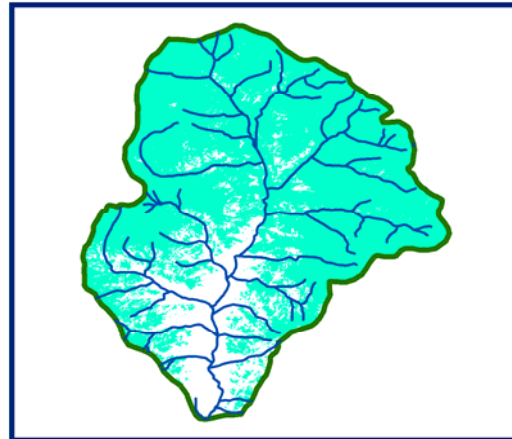
SNOW



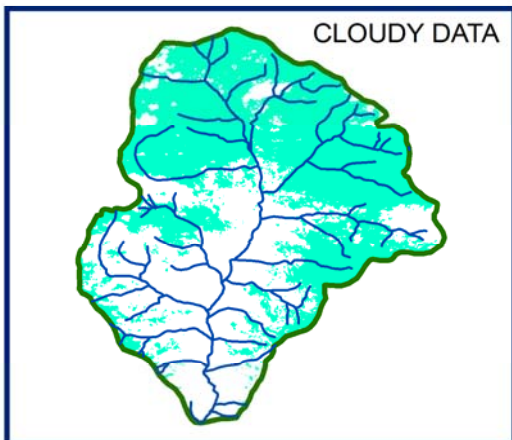
SNOW COVER MAP : BEAS BASIN



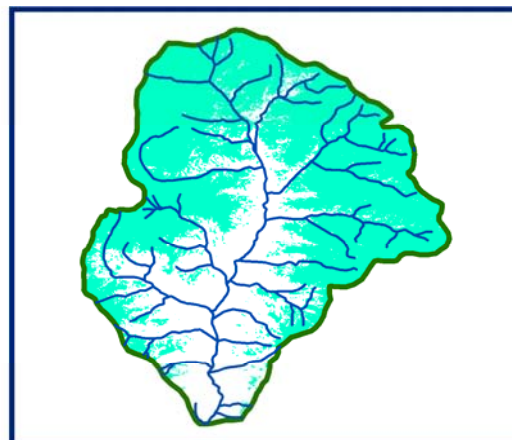
02 JANAUARY 2011



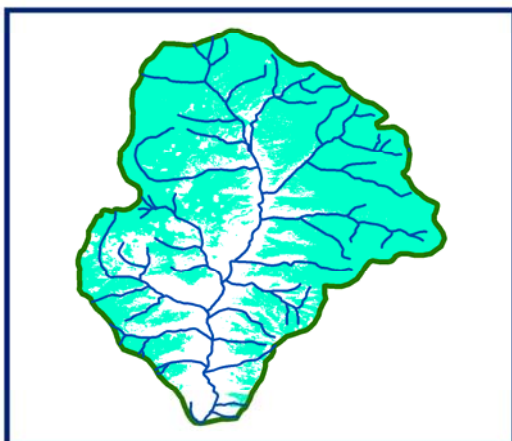
03 JANAUARY 2011



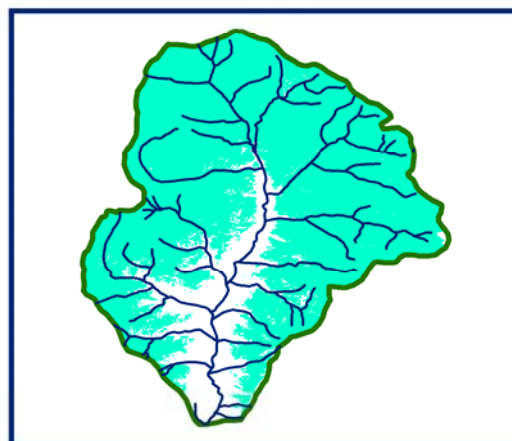
07 JANAUARY 2011



12 JANAUARY 2011



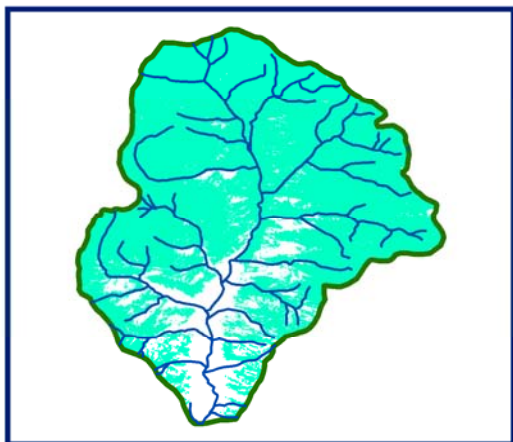
26 JANAUARY 2011



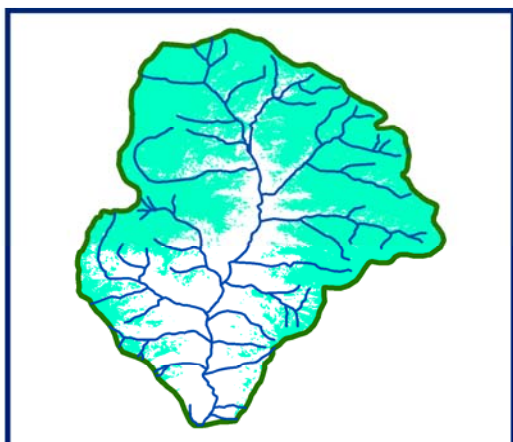
31 JANAUARY 2011



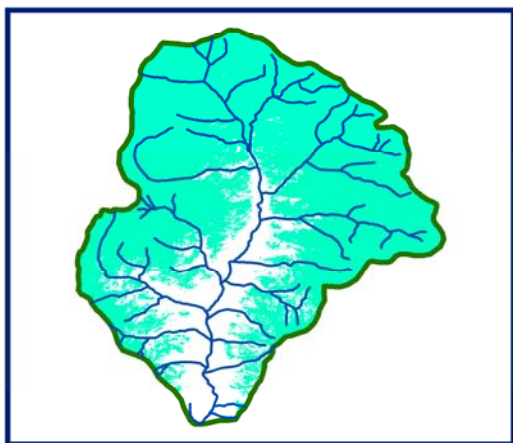
10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED
02 JANUARY 2011
03 JANUARY 2011



DATA USED
12 JANUARY 2011



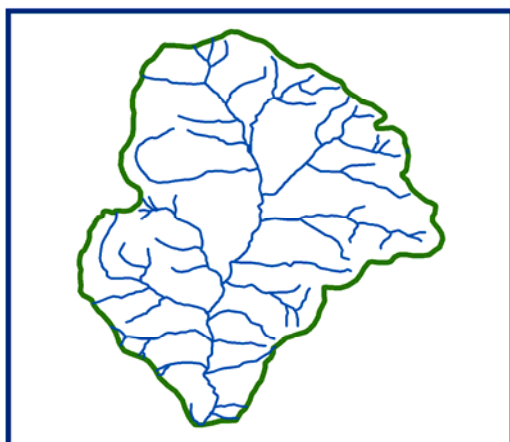
DATA USED
27 JANUARY 2011
31 JANUARY 2011



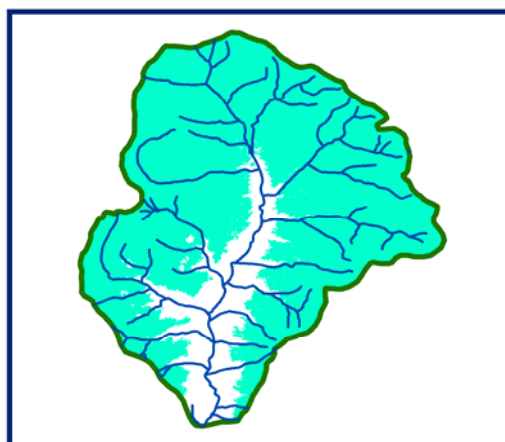
SNOW

03.57 14 21 28
Kilometers

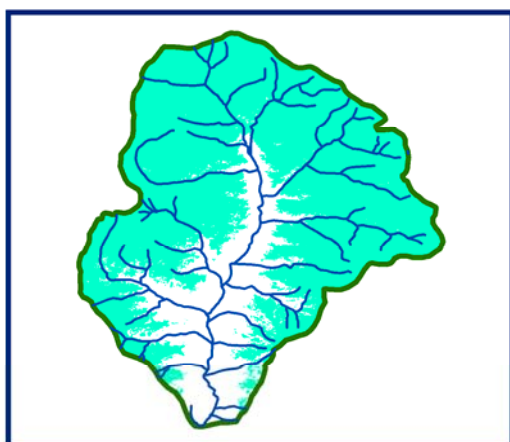
SNOW COVER MAP : BEAS BASIN



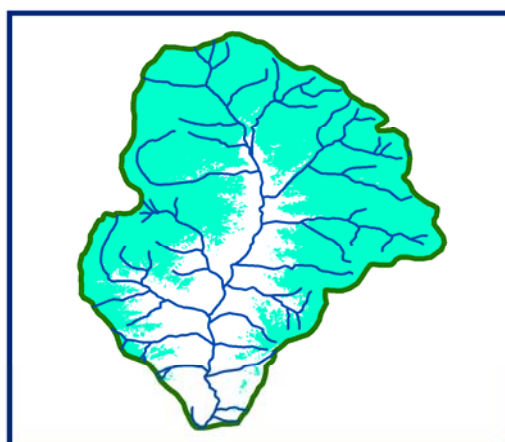
DATA NOT AVAILABLE



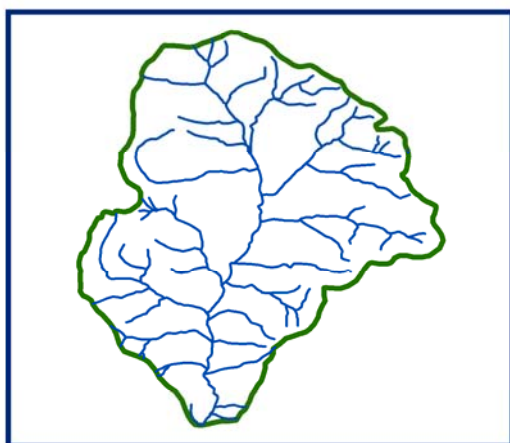
10 MARCH 2011



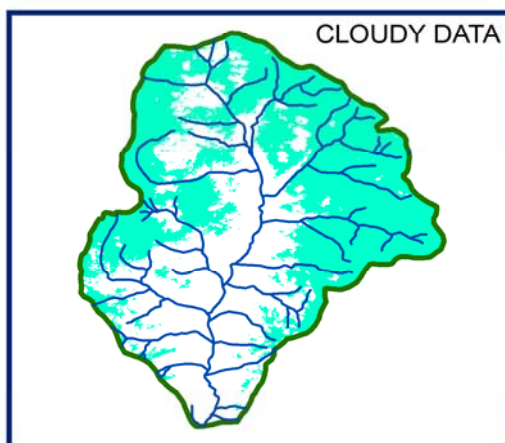
15 MARCH 2011



16 MARCH 2011



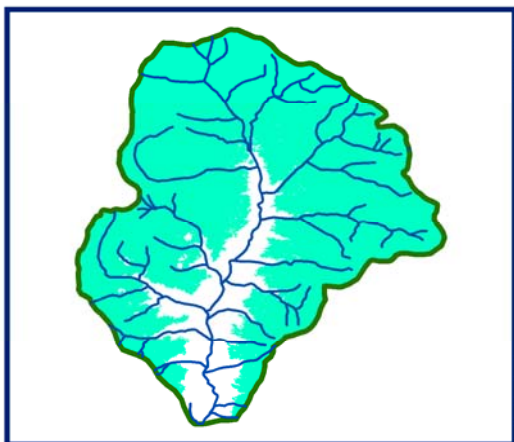
DATA NOT AVAILABLE



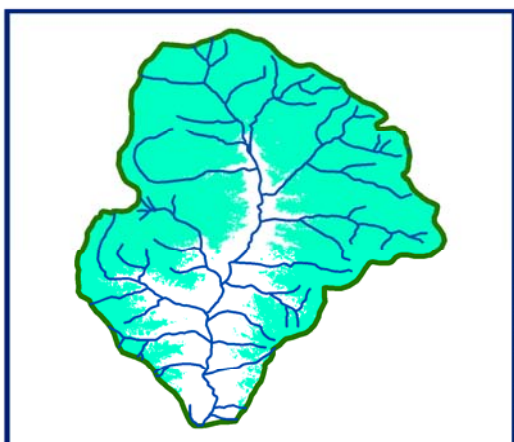
30 MARCH 2011



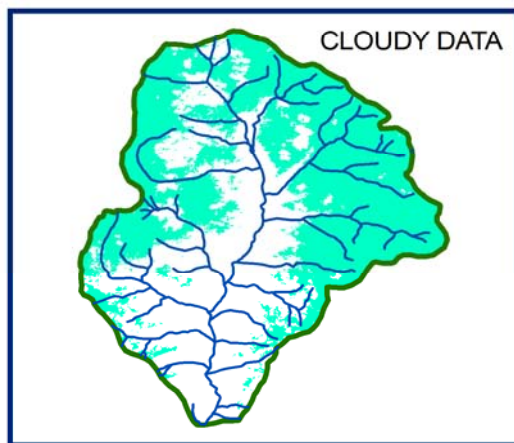
10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED
10 MARCH 2011



DATA USED
15 MARCH 2011
16 MARCH 2011



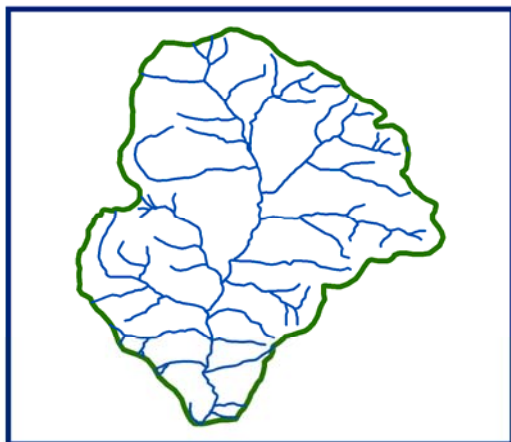
DATA USED
30 MARCH 2011



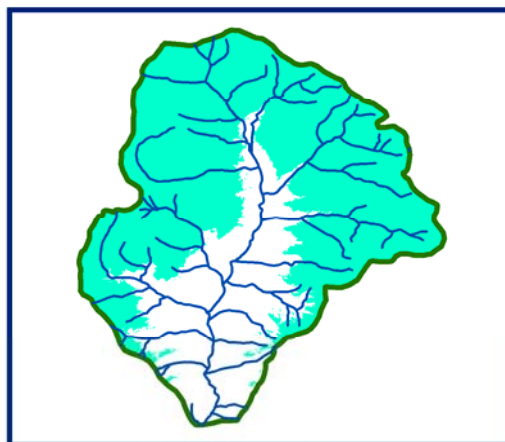
SNOW

03.57 14 21 28
Kilometers

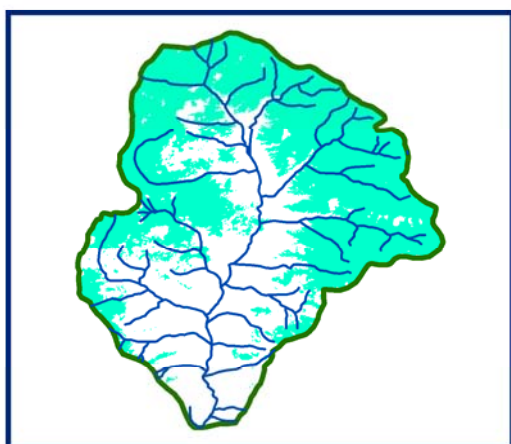
SNOW COVER MAP : BEAS BASIN



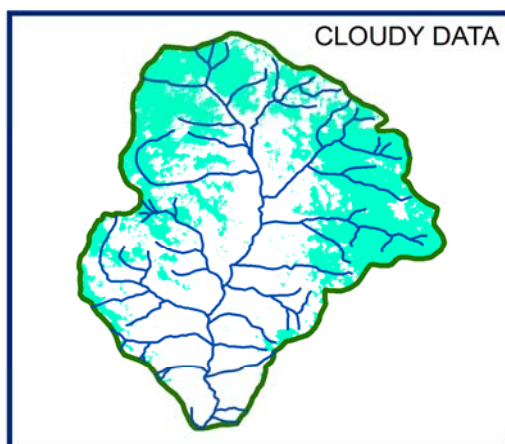
DATA NOT AVAILABLE



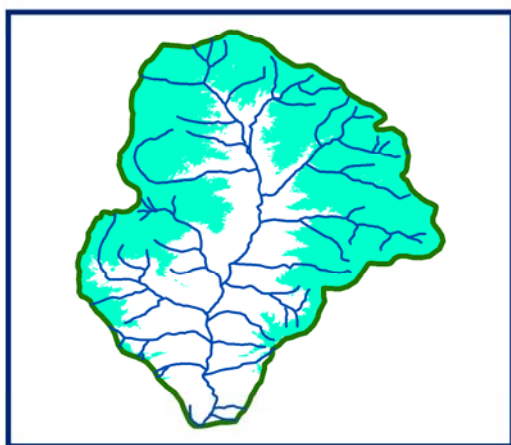
08 APRIL 2011



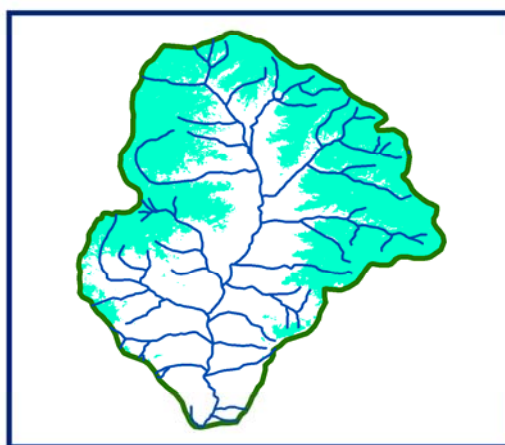
13 APRIL 2011



18 APRIL 2011



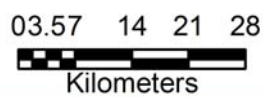
23 APRIL 2011



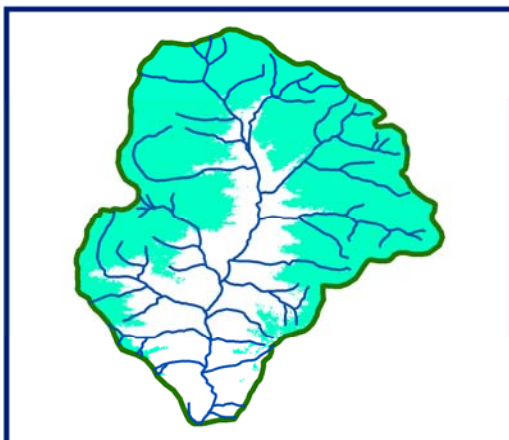
28 APRIL 2011



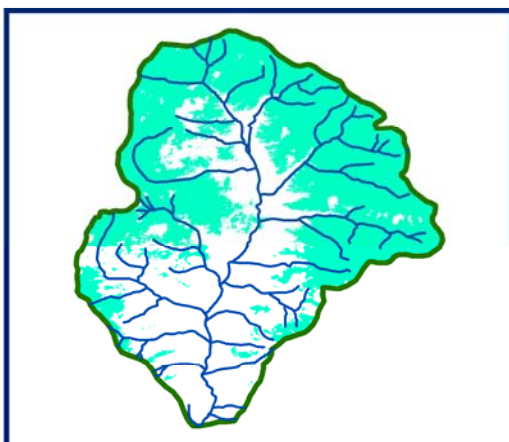
SNOW



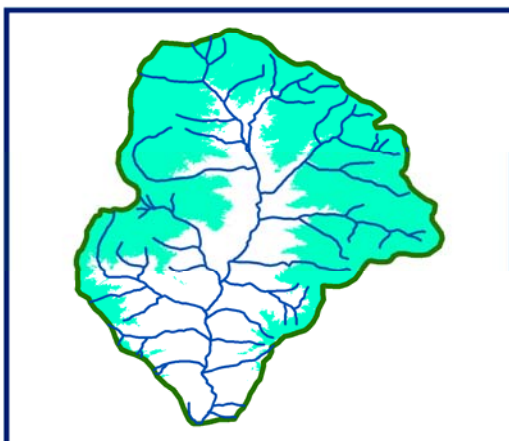
10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED
08 APRIL 2011
09 APRIL 2011



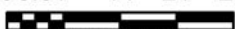
DATA USED
13 APRIL 2011



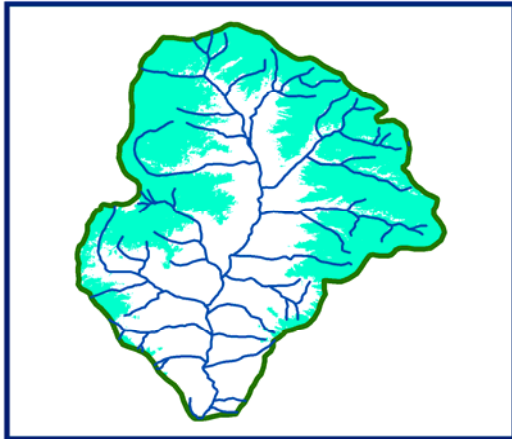
DATA USED
23 APRIL 2011
28 APRIL 2011



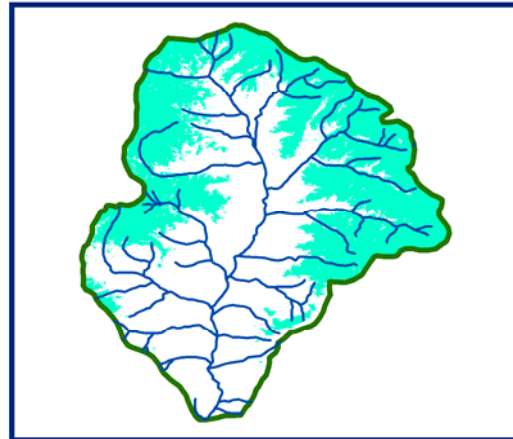
SNOW

03.57 14 21 28

Kilometers

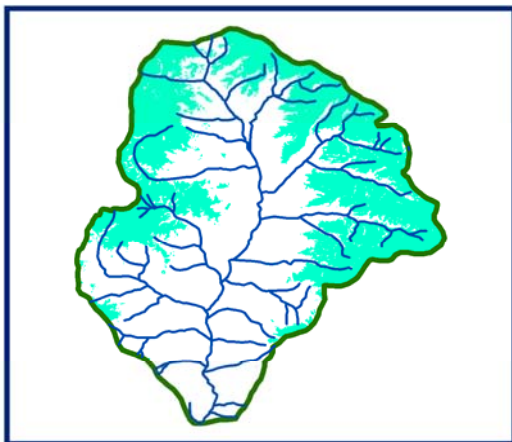
SNOW COVER MAP : BEAS BASIN



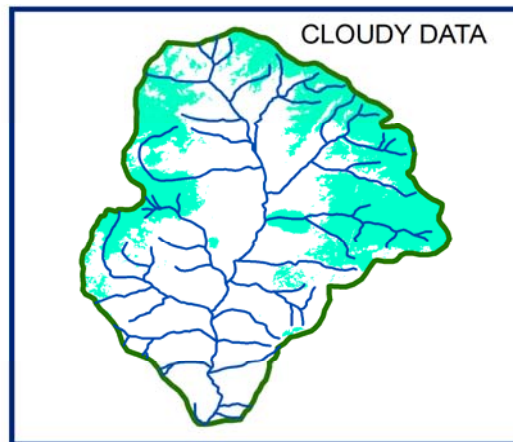
02 MAY 2011



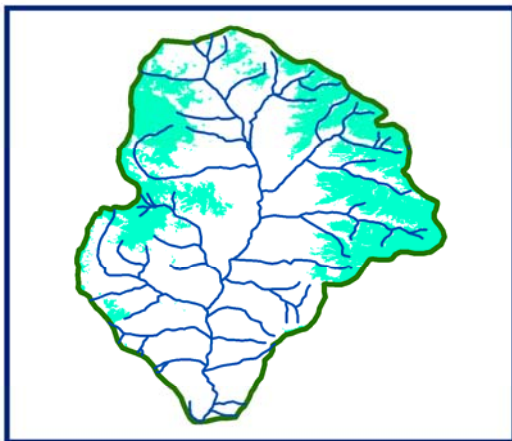
03 MAY 2011



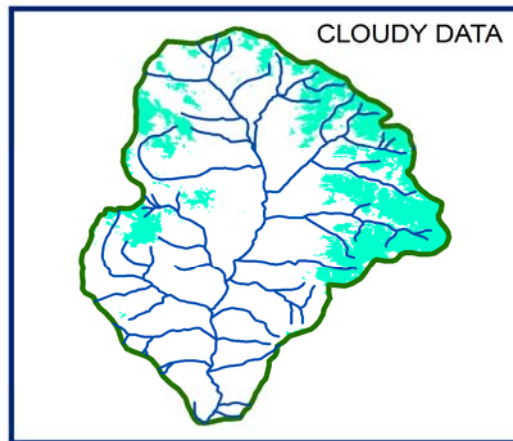
12 MAY 2011



17 MAY 2011



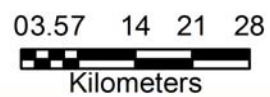
21 MAY 2011



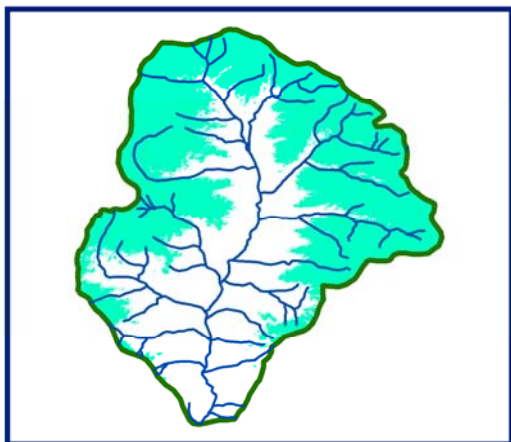
26 MAY 2011



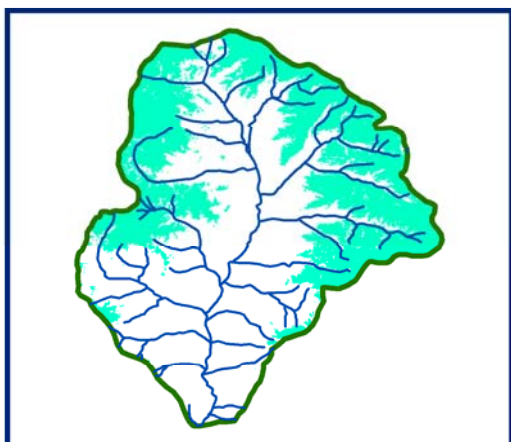
SNOW



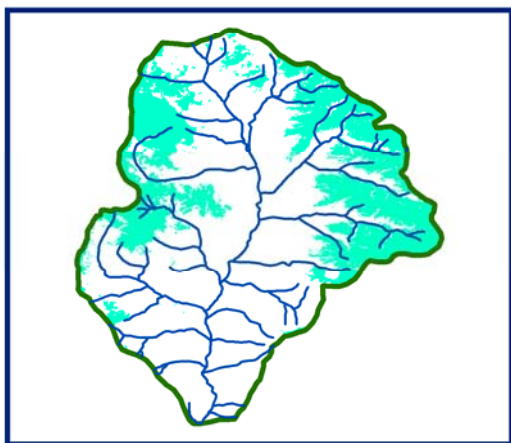
10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED
02 MAY 2011
03 MAY 2011



DATA USED
12 MAY 2011



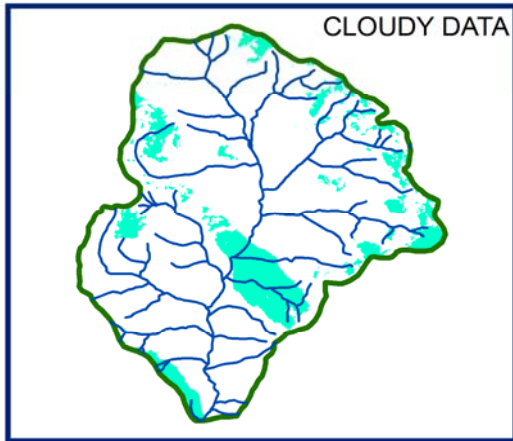
DATA USED
21 MAY 2011



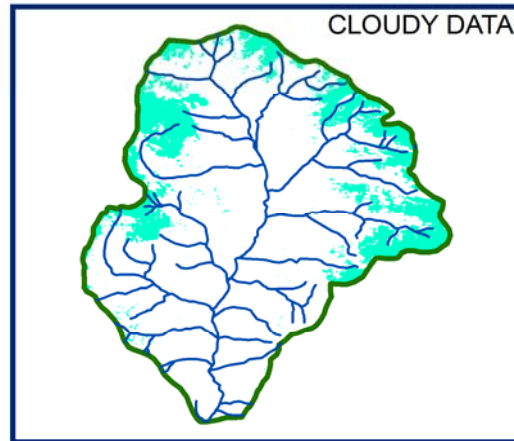
SNOW

03.57 14 21 28
Kilometers

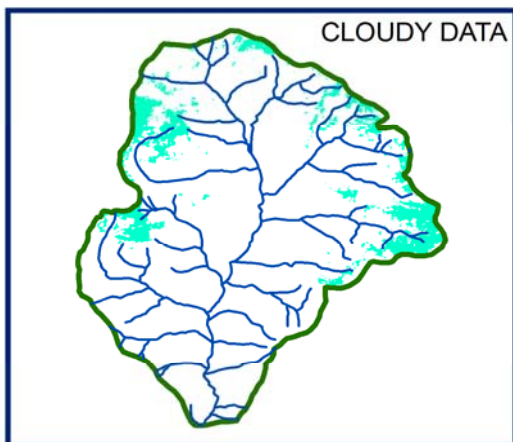
SNOW COVER MAP : BEAS BASIN



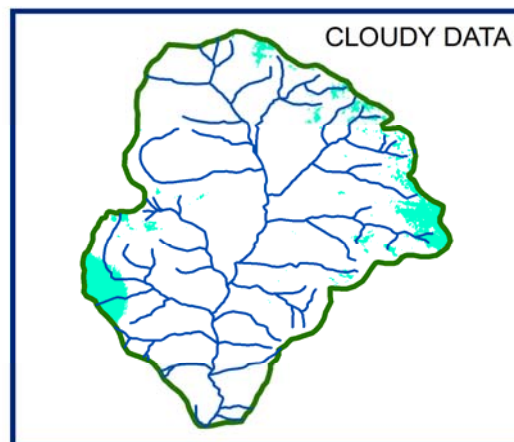
10 JUNE 2011



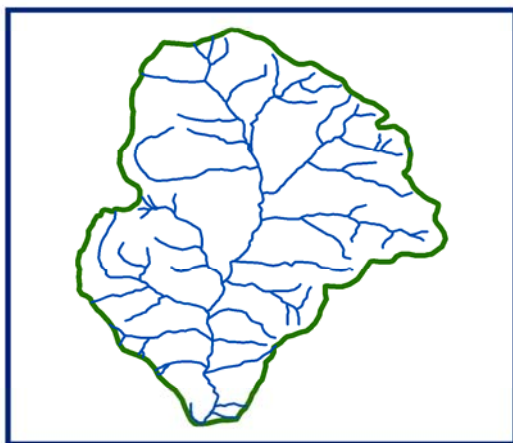
14 JUNE 2011



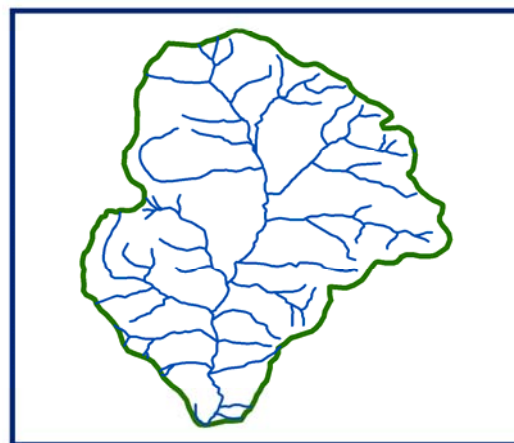
19 JUNE 2011



20 JUNE 2011



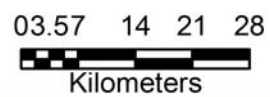
DATA NOT AVAILABLE



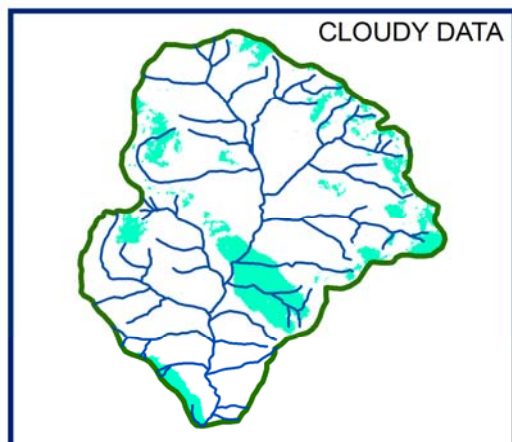
DATA NOT AVAILABLE



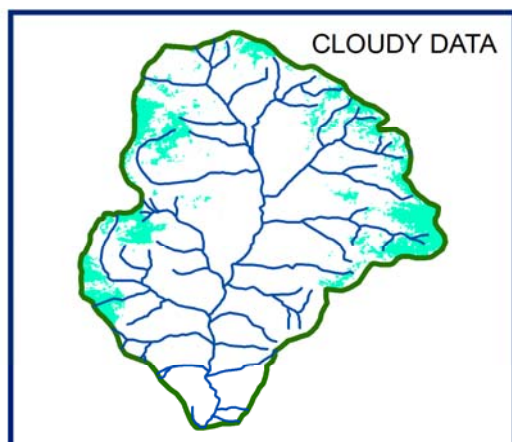
SNOW



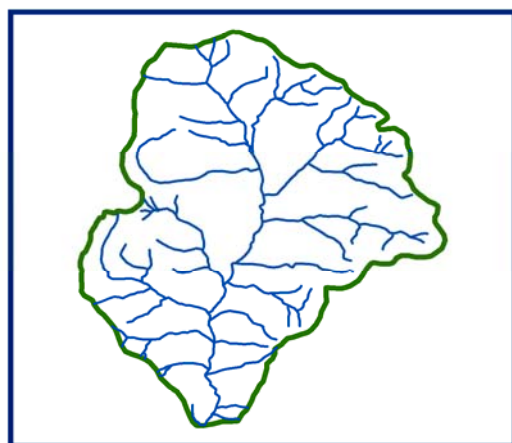
10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED
10 JUNE 2011



DATA USED
14 JUNE 2011
19 JUNE 2011
20 JUNE 2011



DATA USED
DATA NOT AVAILABLE



03.57 14 21 28
Kilometers