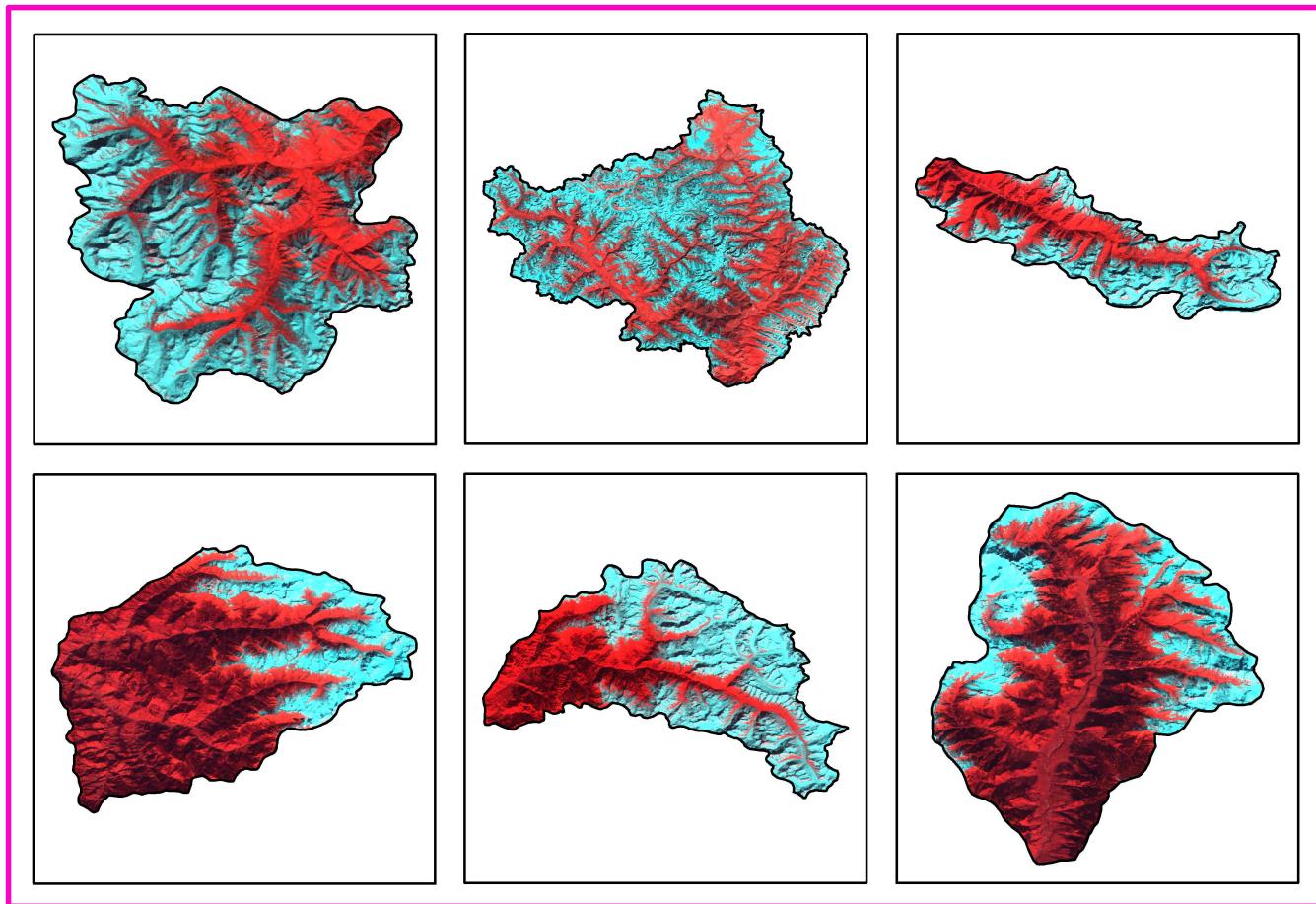


# SNOW COVER ATLAS OF SATLUJ BASIN

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 : 2008-09



Space Applications Centre (ISRO)  
Ahmedabad - 380015

January, 2011

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

Report Number	SAC/EPSA/MPSG/GSD/SGP/SN/ 70 /2011
Month and year of publication	January 2011
Title	Snow cover Atlas of the Satluj basin
Type of Report	Scientific Report
No. of pages	142
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Authors	B. P. Rathore, S. K. Singh, I. Bahuguna, A. S. Rajawat and Ajai
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Originating Unit	Geo-Sciences Division, Marine, Geo and Planetary Sciences Group, Earth, Ocean, Atmosphere, Planetary Sciences & Applications Area, Space Applications Centre (ISRO), Ahmedabad-15
Abstract	This atlas gives subbasin-wise distribution of snow cover in the Satluj basin from October 2008 to June 2009. 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 curve. 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 repetitivity. There are a series of other polar orbiting satellites, like Landsat, NOAA and MODIS etc., which have provided information on different aspects of

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

## **2. Study Area:**

This Atlas gives distribution of snow cover in six sub-basins of the Satluj basin. These are Pin, Spiti, Baspa, Jiwa, Parbati and Beas sub basins. Locations of these basins are shown in Figure 1.

## **3. Data used:**

AWiFS data from October 2008 to June 2009 were used in this study.

## **4. Normalised Difference Snow Index (NDSI):**

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

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

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

To estimate NDSI, DN numbers were converted into reflectance. This involves conversion of digital numbers into the radiance values, known as sensor calibration, and then estimation of

reflectance from these radiance values. Various parameters needed for estimating spectral reflectance are maximum and minimum radiances and mean solar exo-atmospheric spectral irradiances in the satellite sensor bands, satellite data acquisition time, solar declination, solar zenith and solar azimuth angles, mean Earth-Sun distance etc. (Markham and Barker, 1987; Srinivasulu and Kulkarni, 2004).

## **5. Snow cover monitoring algorithm**

An algorithm is developed to provide changes in the areal extent of snow (Kulkarni et. al., 2006). Snow extent is estimated at an interval of 5-days and 10-days, depending upon availabilities of AWiFS data. In 5-daily product, snow extent is generated scene-wise. In this product, snow and cloud extents are given. Estimate of cloud is important because, at times, snow is covered by cloud and this may be classified as non-snow area, leading to erroneous conclusions. In 10-daily product, three scenes are analyzed, if available. For example, 10 March product data of 5, 10 and 15 March was used. If any pixel is identified as snow on any one date then this pixel will be classified as snow on final product. This provides snow cover at an interval of 10 days, an important requirement in hydrological applications. Therefore, this product is generated basin-wise. Since this product is using three scenes, probability becomes high that at least in one scene, pixel may be cloud-free and this helps in overcoming problem associated with snow under cloud cover. If three consecutive scenes are not available, then all available scenes in 10 days window was used in the analysis. Differentiation between water and snow is difficult using NDSI image. In addition, separation of snow and water pixels is also difficult based on reflectance due to mountain shadow. Therefore, in the present algorithm, water bodies are marked in pre-winter season and are masked in the final products during winter. Flow diagram of the algorithm is given in Figure 2.

## **6. Results and discussions**

In this atlas, basin-wise snow cover statistics, maps, and seasonal depletion curve is given from October 2008 to June 2009. 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 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 Dr. R. R. Navalgund, Director, Space Applications Centre, Ahmedabad for continuous guidance and encouragement during the investigation. Authors would like to thank Dr. Ajai, Group Director, MPSG and Dr. A. S. Rajawat, Head, GSD for their suggestions and comments on the manuscript.

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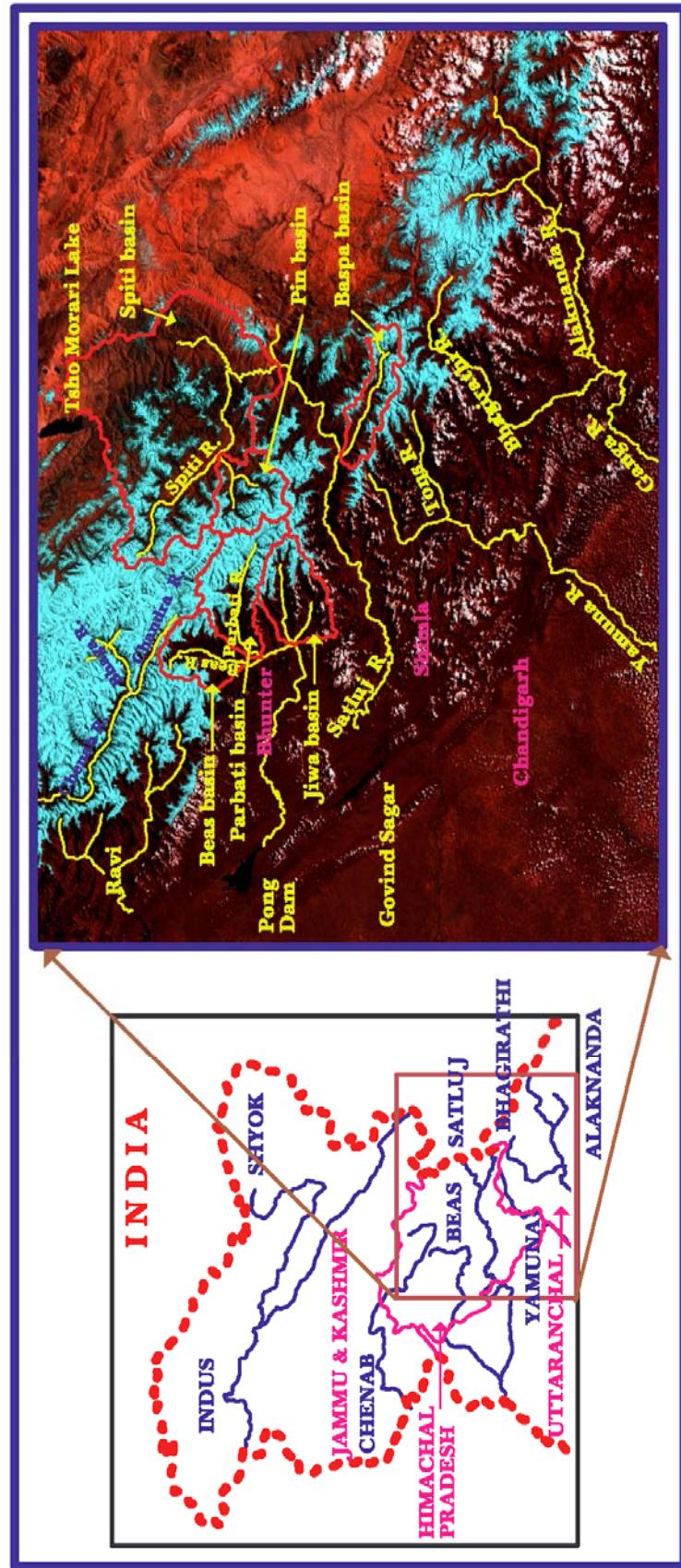
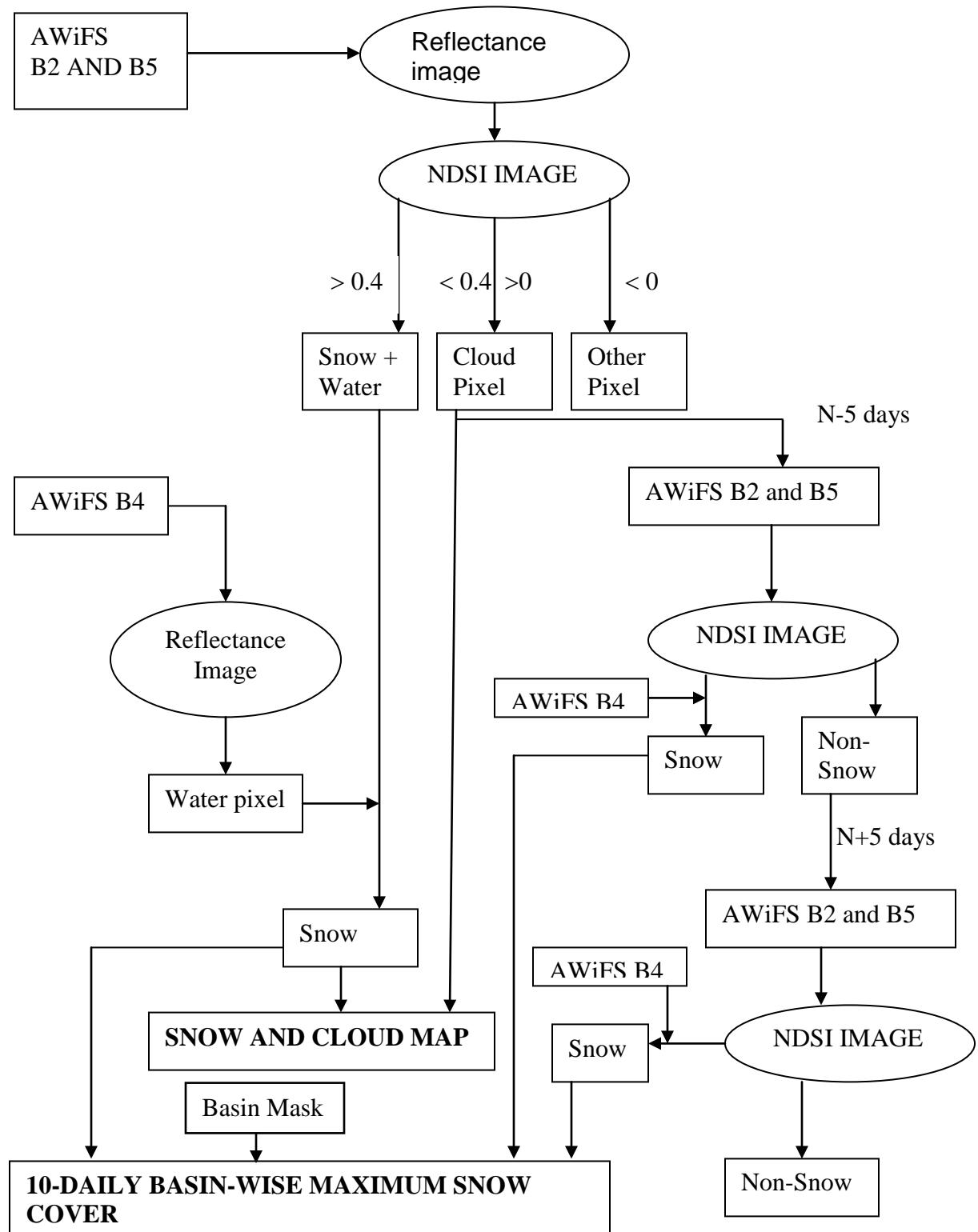


Figure 1: Location map of Pin, Spiti, Baspa, Jiwa, Parbati and Beas sub-basins (Part of Satluj basin)



**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 (%)
<b>October 2008</b>							
1	4-Oct-08	977.3	77	4	18-Oct-08	881.0	70
2	8-Oct-08	515.7	41	5	23-Oct-08	847.8	67
3	13-Oct-08	865.3	68	6	27-Oct-08	847.8	67
<b>November 2008</b>							
7	1-Nov-08	816.1	64	10	16-Nov-08	749.1	59
8	6-Nov-08	795.9	63	11	21-Nov-08	1266.0	100
9	11-Nov-08	764.3	60				
<b>December 2008</b>							
12	5-Dec-08	749.1	59	15	24-Dec-08	814.0	64
13	10-Dec-08	1006.2	79	16	29-Dec-08	1208.0	95
14	15-Dec-08	814.3	64				
<b>January 2009</b>							
17	8-Jan-09	1266.0	100	19	27-Jan-09	1207.7	95
18	12-Jan-09	1262.7	100				
<b>February 2009</b>							
20	1-Feb-09	1266.0	100	22	15-Feb-09	1266.0	100
21	5-Feb-09	1259.2	99	23	25-Feb-09	1266.0	100
<b>March 2009</b>							
24	1-Mar-09	1266.0	100	26	16-Mar-09	1240.9	98
25	11-Mar-09	1262.6	100				
<b>April 2009</b>							
27	4-Apr-09	1231.5	97	30	23-Apr-09	1266.0	100
28	14-Apr-09	1150.8	91	31	28-Apr-09	1144.0	90
29	18-Apr-09	1157.4	91				
<b>May 2009</b>							
32	12-May-09	1154.0	91	34	22-May-09	766.7	61
33	17-May-09	1050.4	83	35	27-May-09	870.9	69
<b>June 2009</b>							
36	10-Jun-09	726.4	57	38	25-Jun-09	657.9	52
37	20-Jun-09	749.6	59	39	29-Jun-09	605.8	48

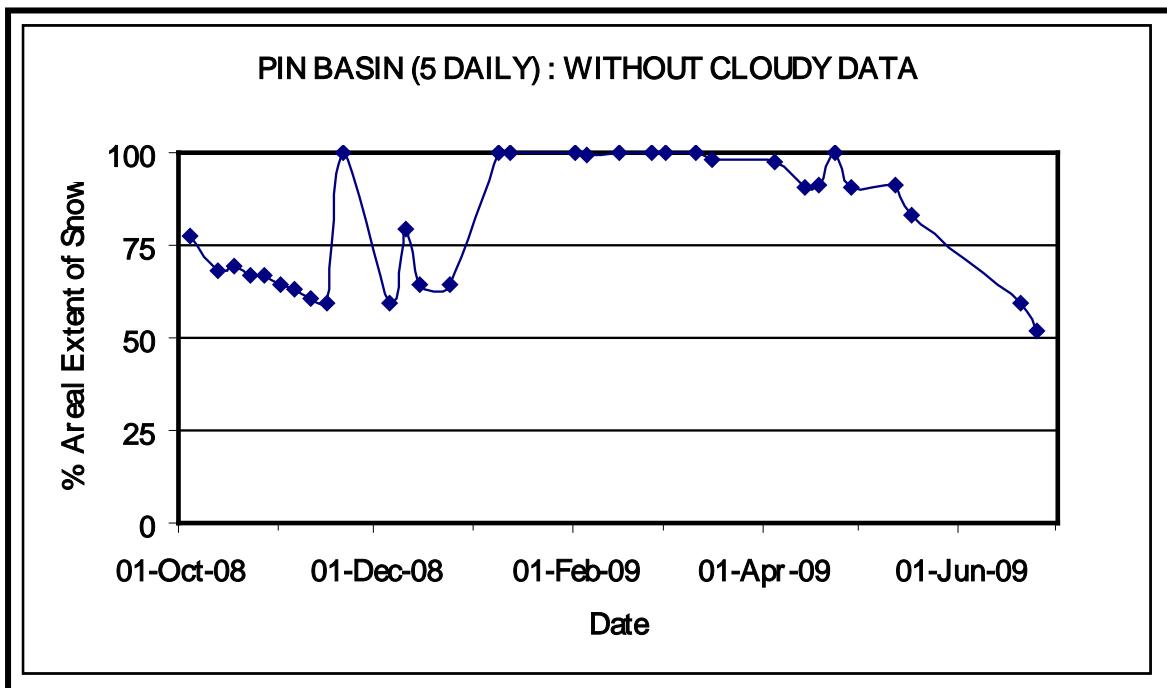
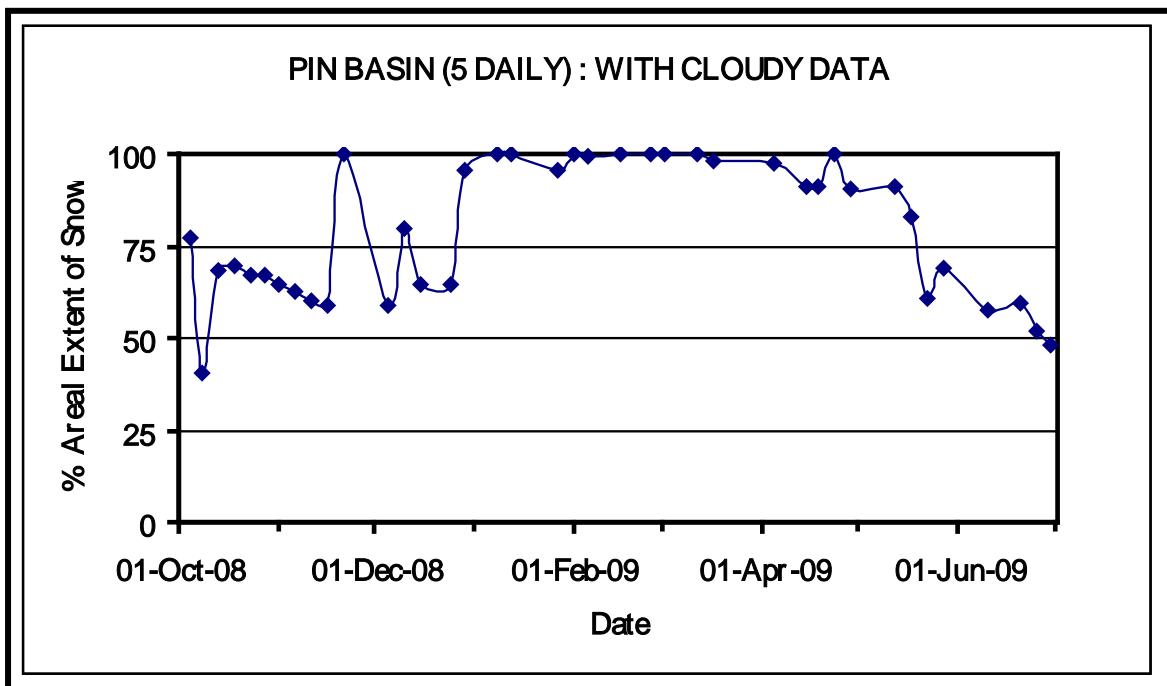
**AREAL EXTENT OF SNOW (10 DAILY)**

**BASIN NAME: PIN**

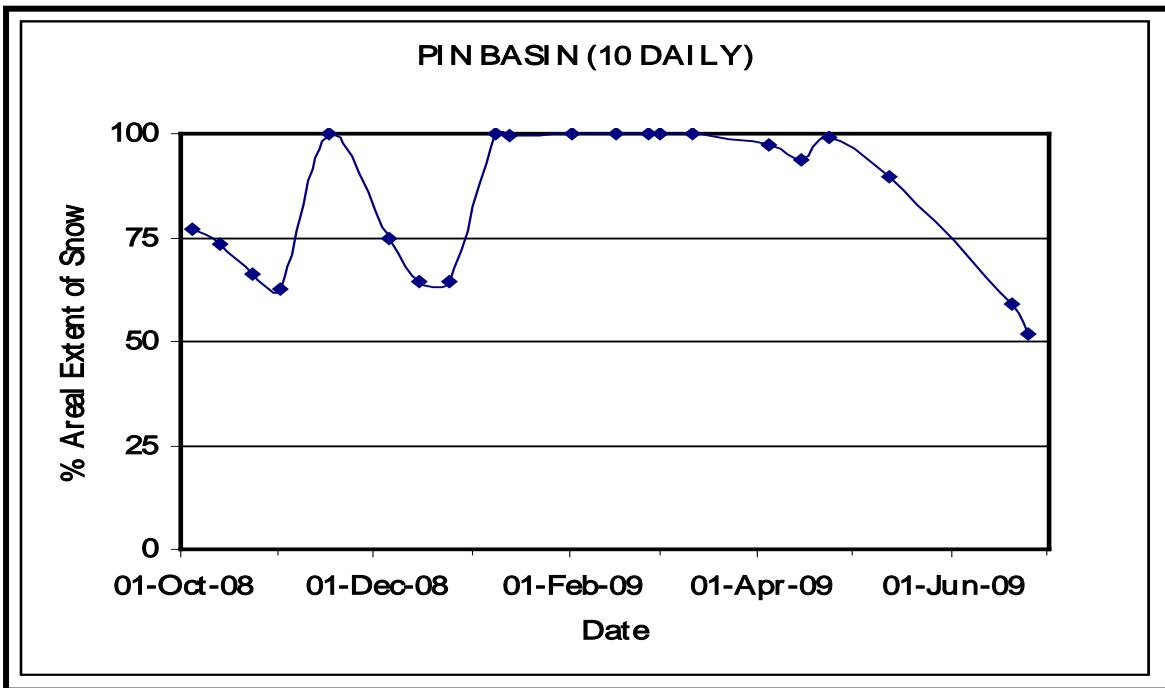
**BASIN AREA: 1266 sq km**

S. No	Date	Snow cover (sq km)	Snow cover (%)	S. No	Date	Snow cover (sq km)	Snow cover (%)
<b>October 2008</b>				<b>November 2008</b>			
1	4-Oct-08	977.3	77	4	1-Nov-08	794.4	63
2	13-Oct-08	930.5	73	5	16-Nov-08	1266.0	100
3	23-Oct-08	840.5	66				
<b>December 2008</b>				<b>January 2009</b>			
6	5-Dec-08	946.9	75	9	8-Jan-09	1266.0	100
7	15-Dec-08	814.3	64	10	12-Jan-09	1262.7	100
8	24-Dec-08	814.0	64				
<b>February 2009</b>				<b>March 2009</b>			
11	1-Feb-09	1266.0	100	14	1-Mar-09	1266.0	100
12	15-Feb-09	1266.0	100	15	11-Mar-09	1266.0	100
13	25-Feb-09	1266.0	100				
<b>April 2009</b>				<b>May 2009</b>			
16	4-Apr-09	1231.5	97	19	12-May-09	1137.2	90
17	14-Apr-09	1184.2	94				
18	23-Apr-09	1252.8	99				
<b>June 2009</b>							
20	20-Jun-09	749.6	59				
21	25-Jun-09	657.9	52				

### Snow cover depletion curve

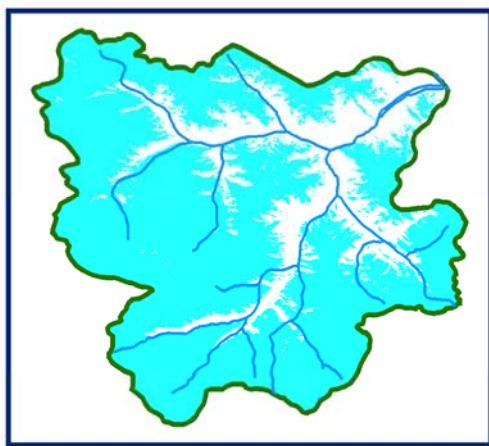


## Snow cover depletion curve

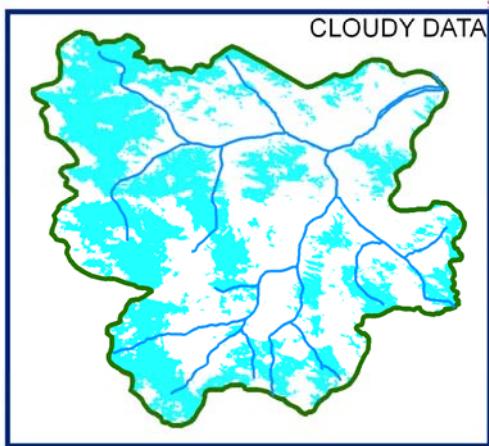


# *SNOW COVER MAP*

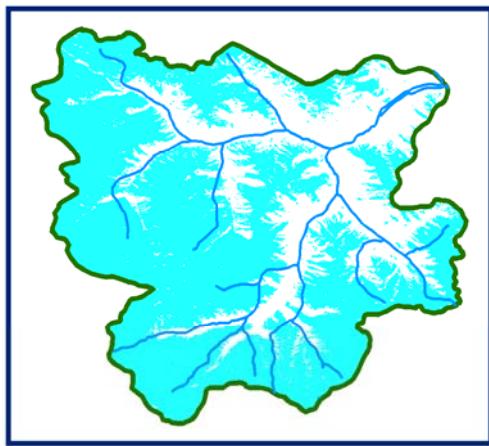
**SNOW COVER MAP : PIN BASIN**



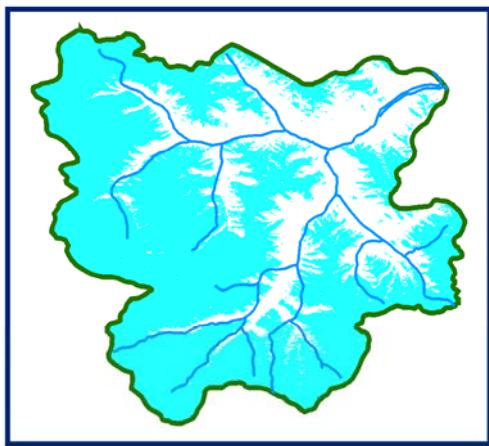
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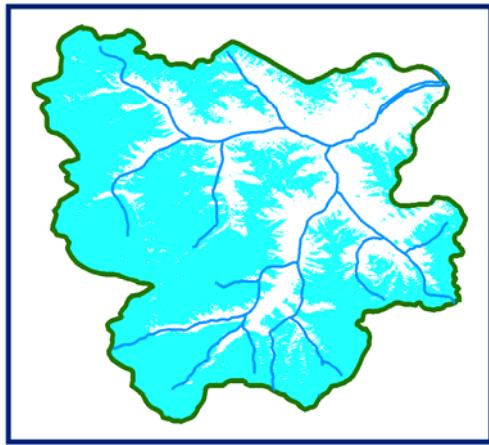
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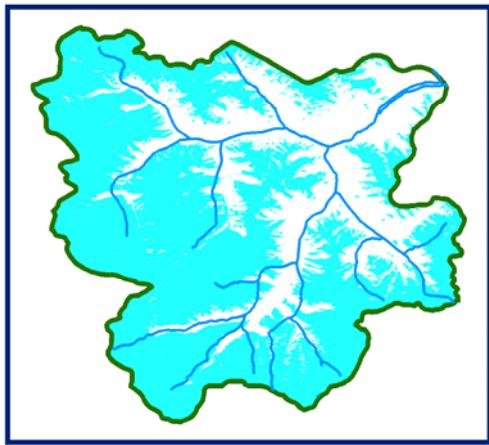
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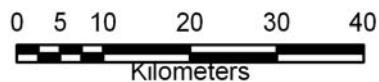
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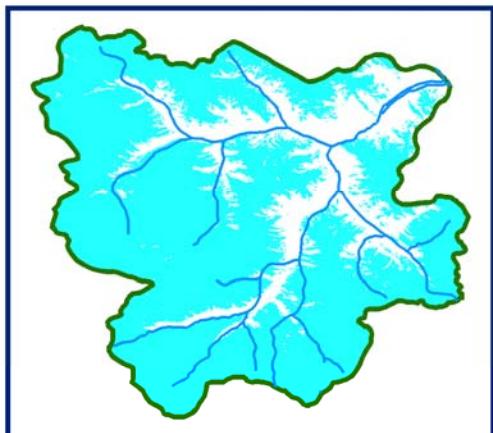
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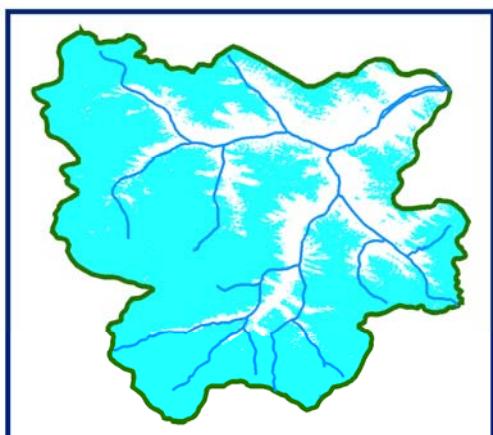
**SNOW**



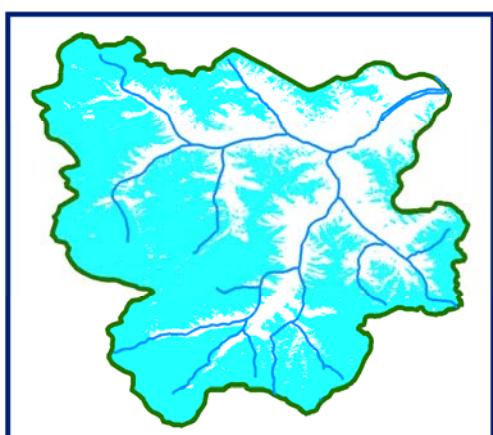
## 10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED  
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DATA USED  
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**18 OCTOBER 2008**



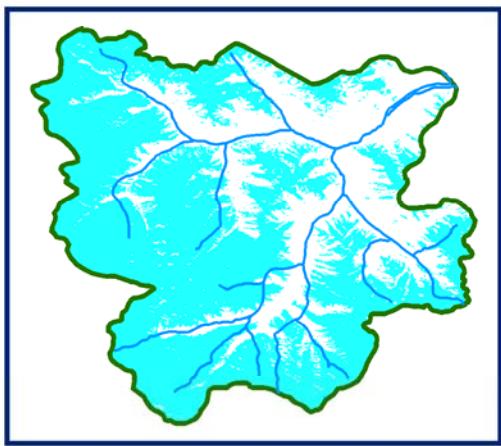
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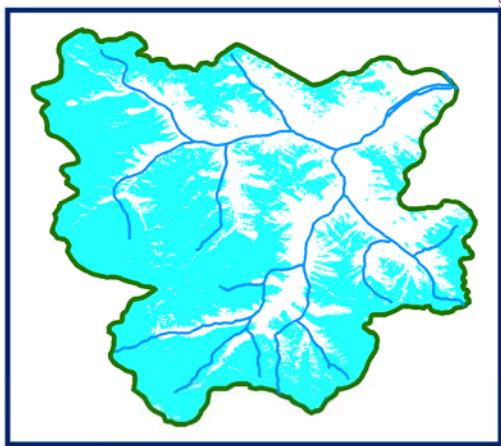
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Kilometers

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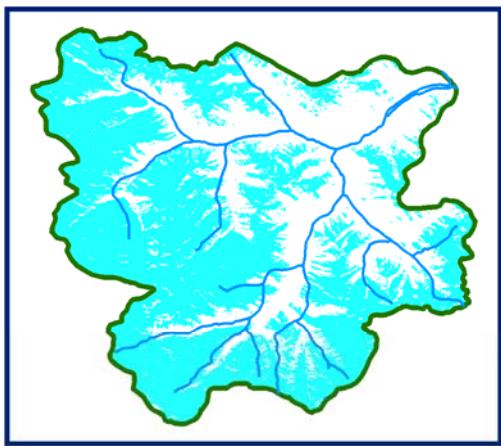
**SNOW COVER MAP : PIN BASIN**



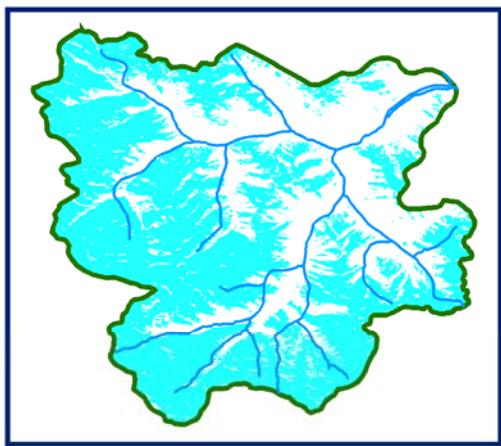
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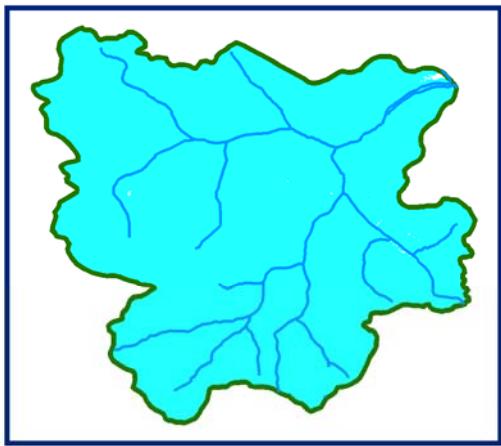
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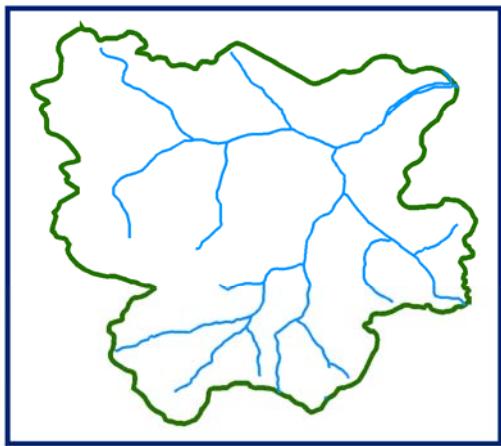
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**16 NOVEMBER 2008**



**21 NOVEMBER 2008**



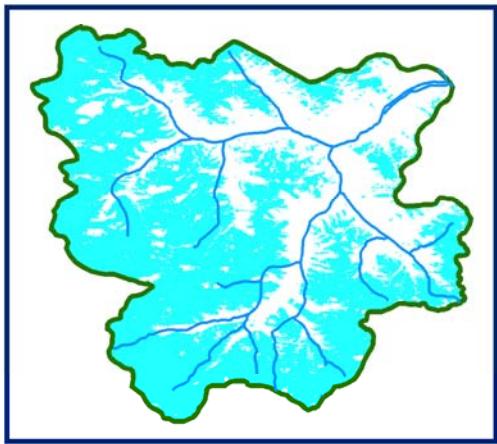
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**SNOW**

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Kilometers

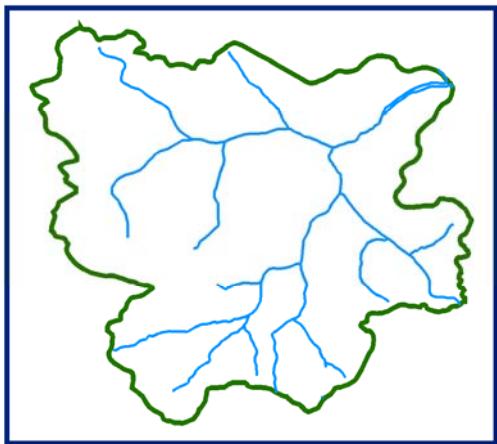
## 10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED  
**01 NOVEMBER 2008**  
**06 NOVEMBER 2008**



DATA USED  
**11 NOVEMBER 2008**  
**16 NOVEMBER 2008**  
**21 NOVEMBER 2008**



DATA USED  
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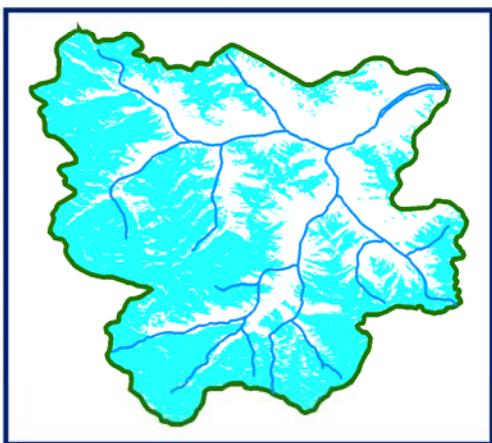


SNOW

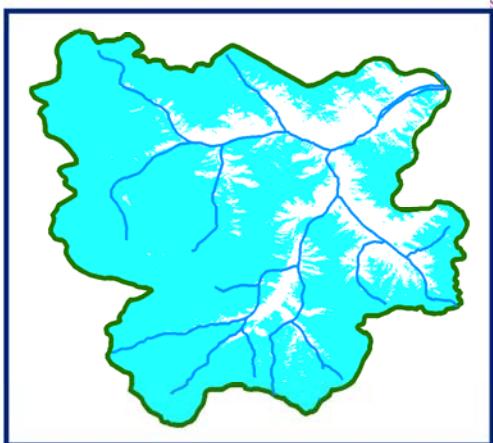


# SNOW COVER MAP

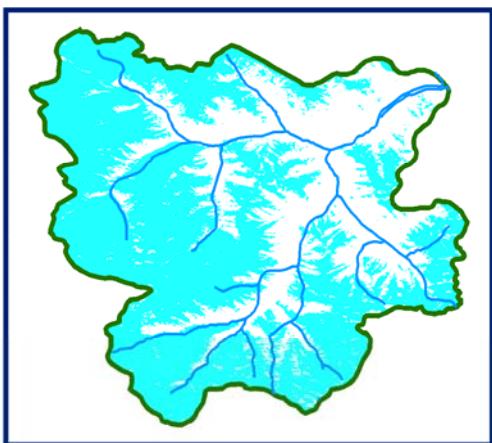
# PIN BASIN



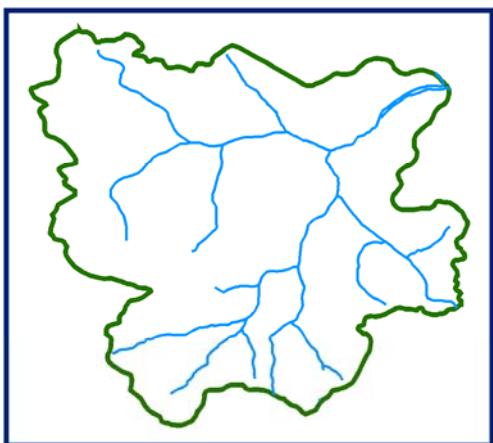
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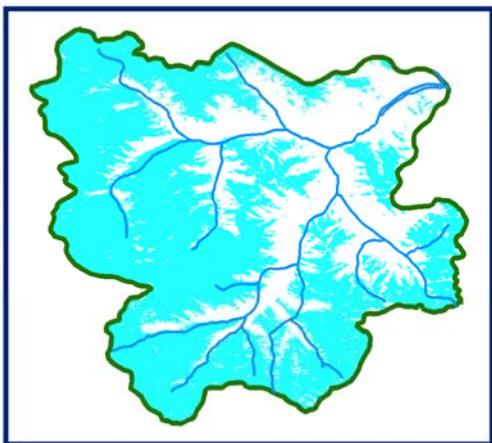
10 DECEMBER 2008



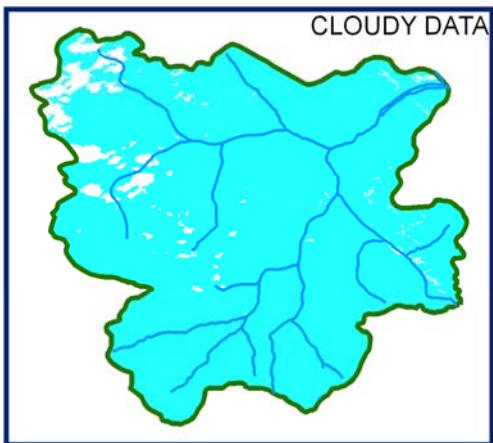
15 DECEMBER 2008



DATA NOT AVAILABLE



24 DECEMBER 2008



CLOUDY DATA  
29 DECEMBER 2008

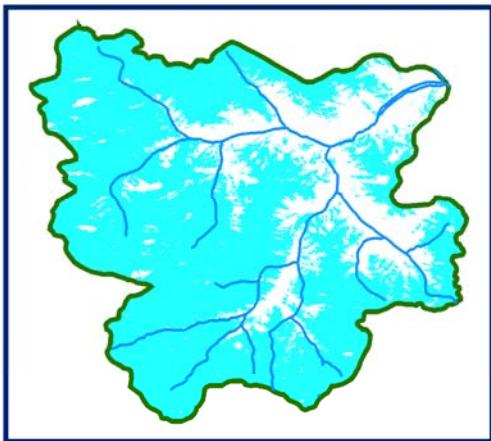


SNOW

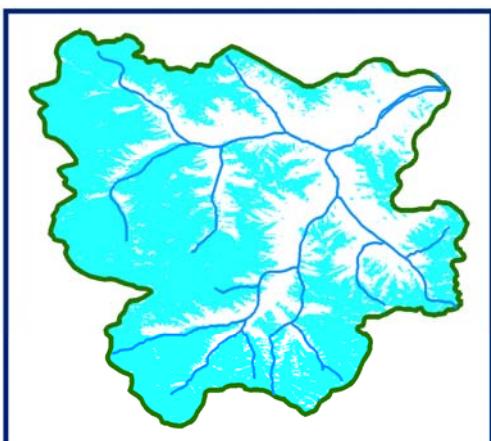


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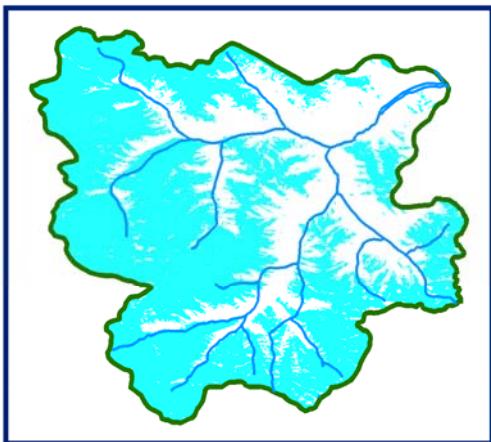
## 10 DAILY SNOW COVER MAP: PIN BASIN



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**10 DECEMBER 2008**



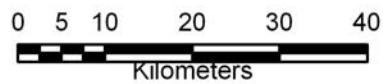
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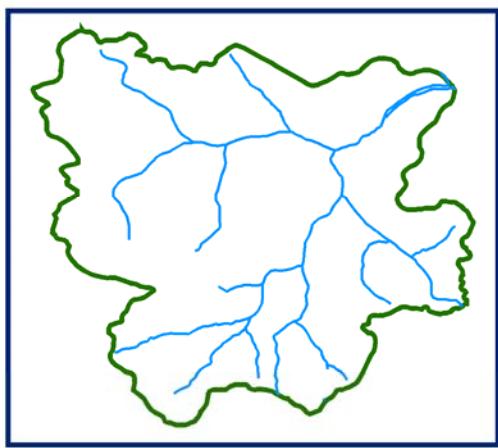
DATA USED  
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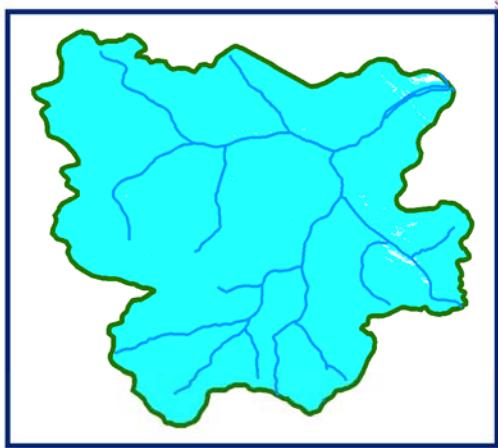
SNOW



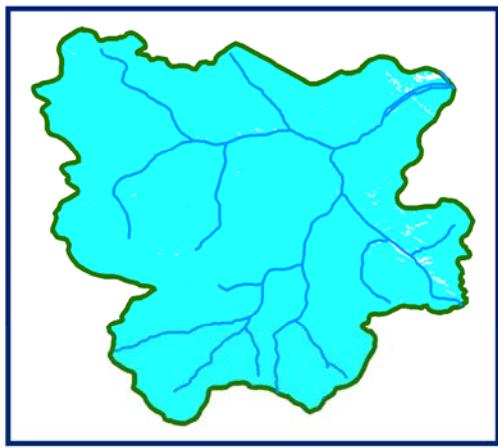
# SNOW COVER MAP : PIN BASIN



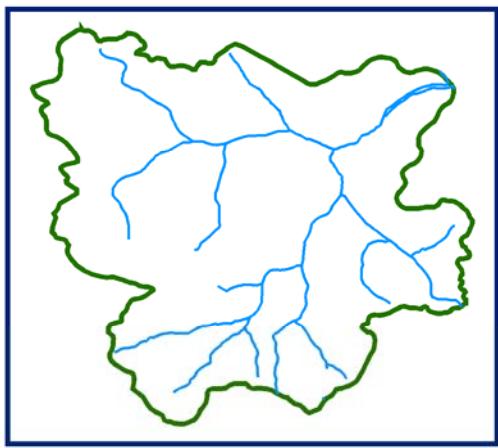
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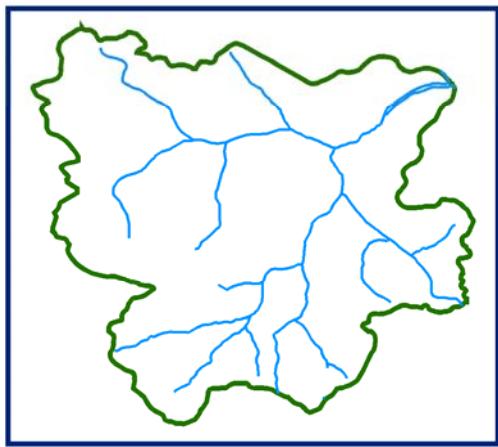
08 JANUARY 2009



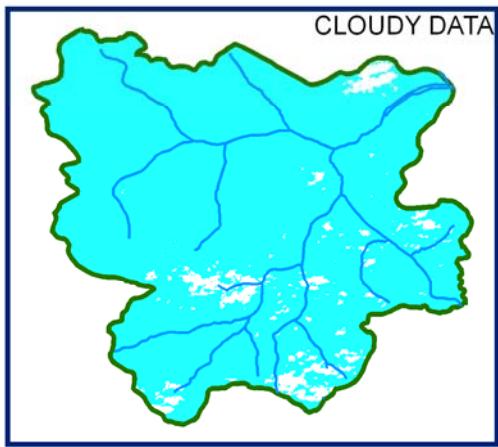
12 JANUARY 2009



DATA NOT AVAILABLE



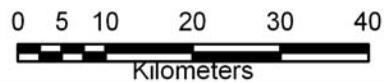
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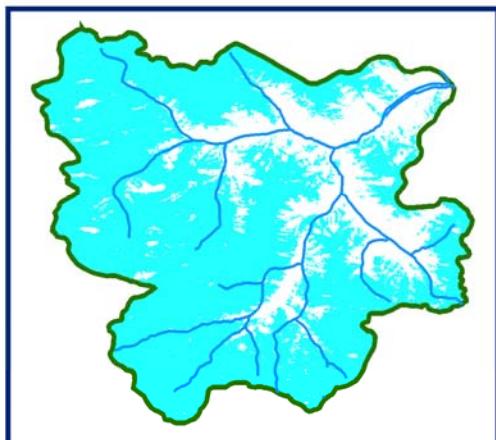
27 JANUARY 2009



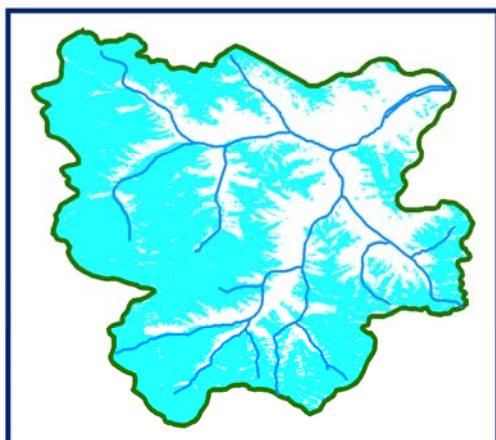
SNOW



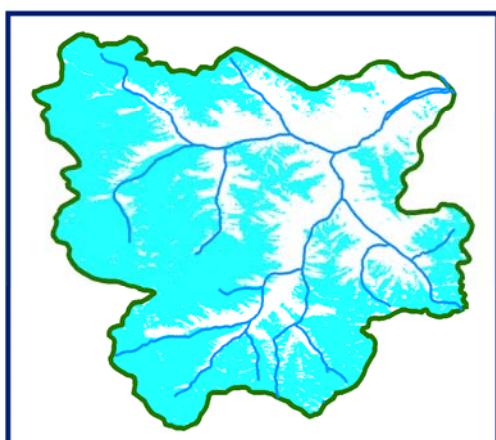
## 10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED  
**05 DECEMBER 2008**  
**10 DECEMBER 2008**



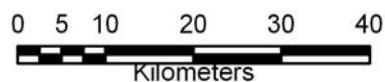
DATA USED  
**15 DECEMBER 2008**



DATA USED  
**24 DECEMBER 2008**

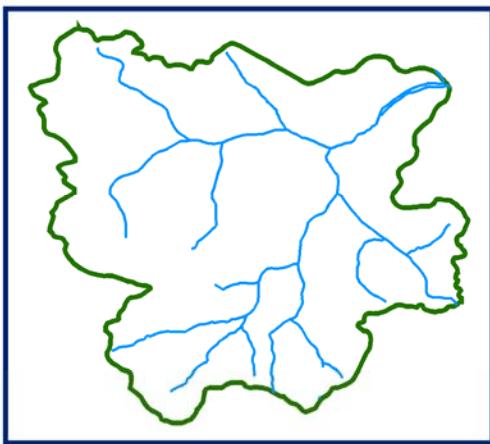


SNOW



# SNOW COVER MAP

# : PIN BASIN



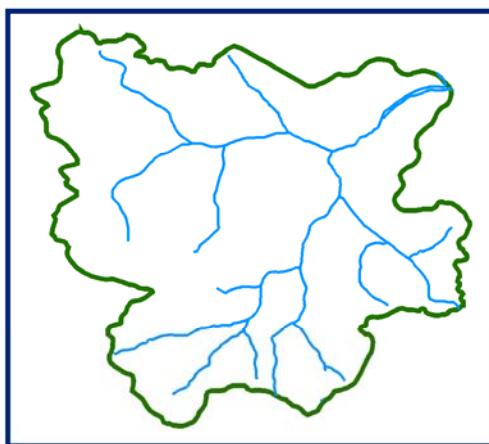
DATA NOT AVAILABLE



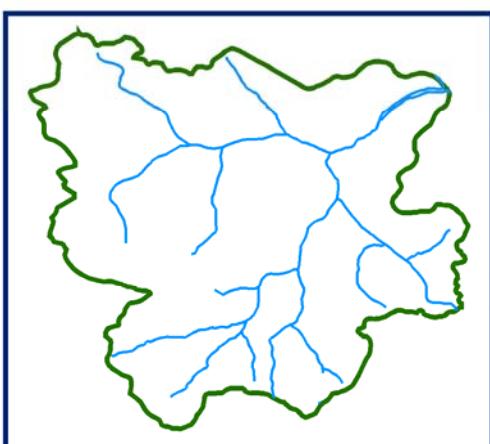
08 JANUARY 2009



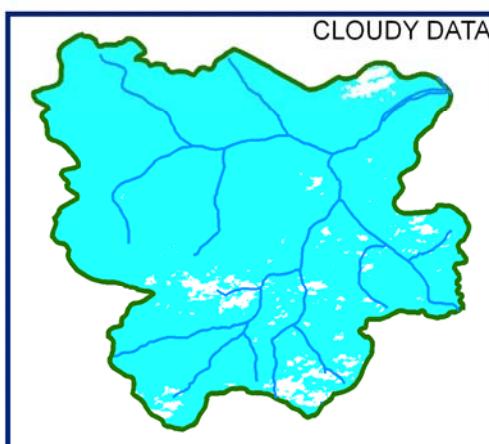
12 JANUARY 2009



DATA NOT AVAILABLE



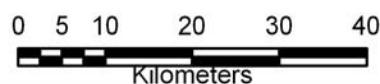
DATA NOT AVAILABLE



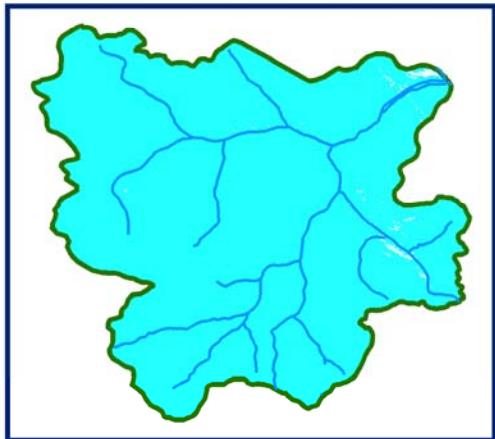
27 JANUARY 2009



SNOW



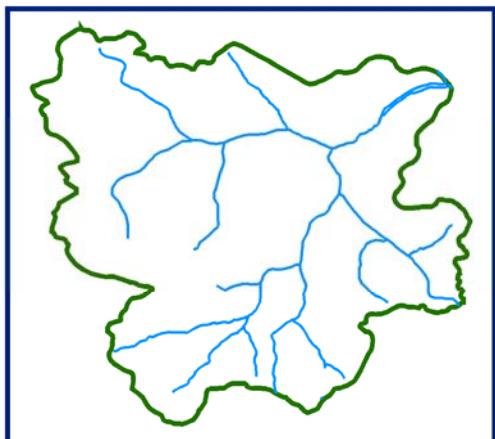
## 10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED  
**08 JANUARY 2009**



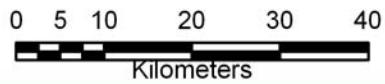
DATA USED  
**12 JANUARY 2009**



DATA USED  
**DATA NOT AVAILABLE**



SNOW



## SNOW COVER MAP

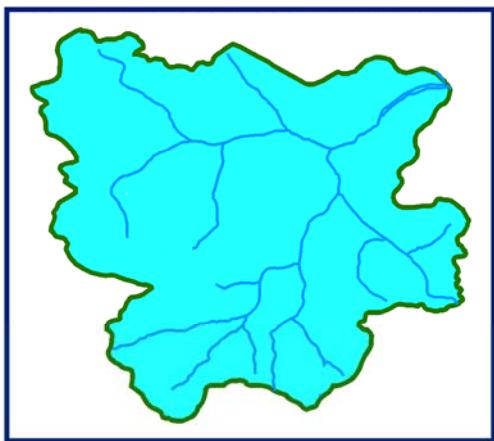
## : PIN BASIN



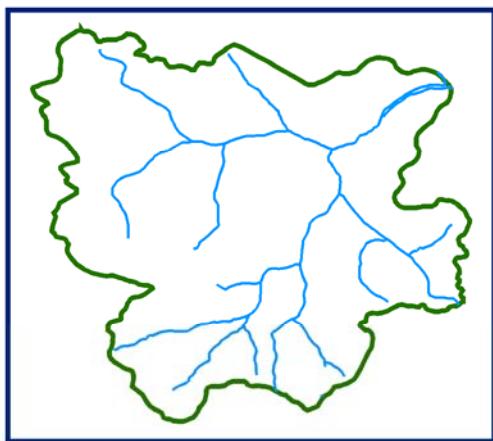
01 FEBRUARY 2009



05 FEBRUARY 2009



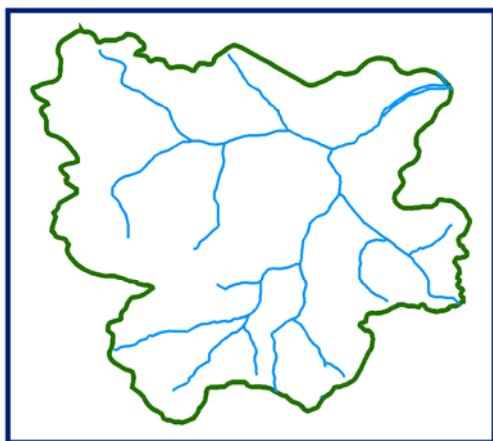
15 FEBRUARY 2009



DATA NOT AVAILABLE



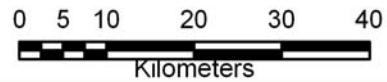
25 FEBRUARY 2009



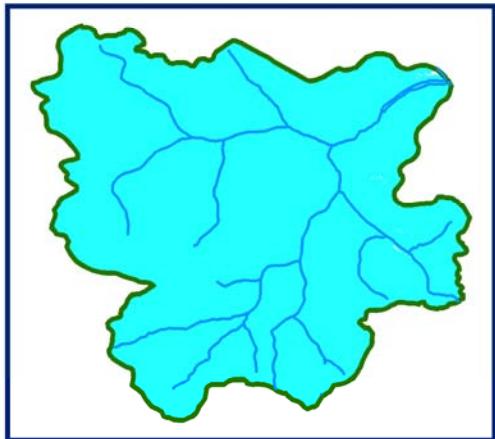
DATA NOT AVAILABLE



SNOW



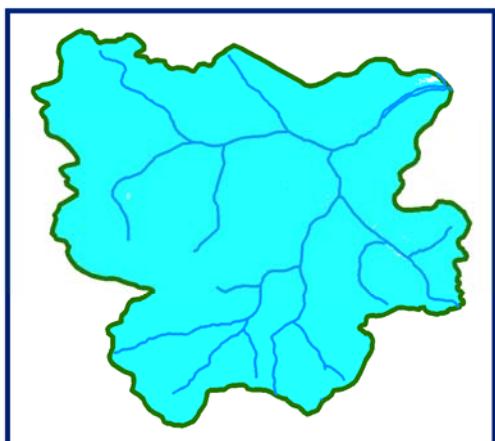
## 10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED  
**01 FEBRUARY 2009**  
**05 FEBRUARY 2009**



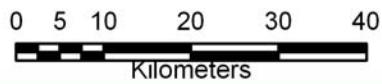
DATA USED  
**15 FEBRUARY 2009**



DATA USED  
**25 FEBRUARY 2009**

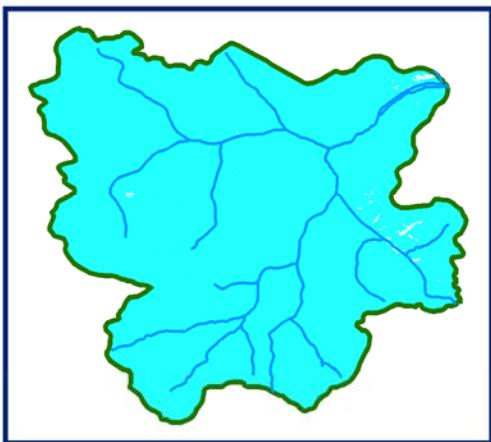


SNOW

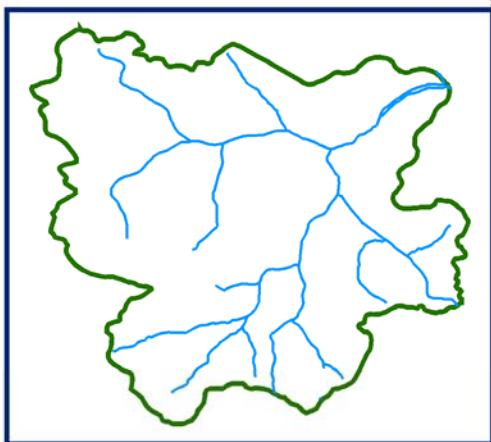


# SNOW COVER MAP

# : PIN BASIN



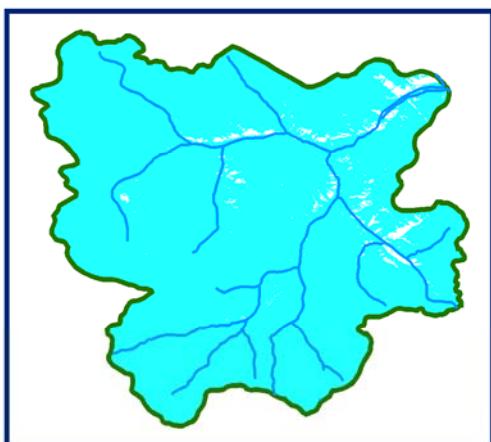
01 MARCH 2009



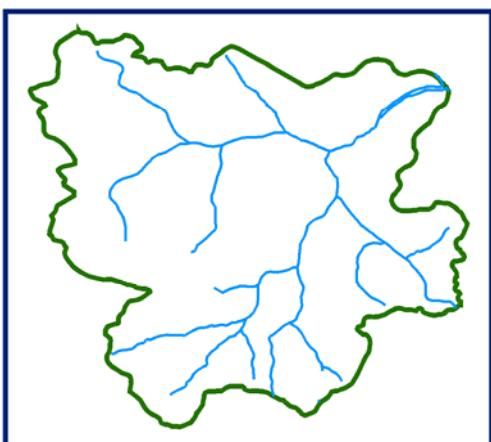
DATA NOT AVAILABLE



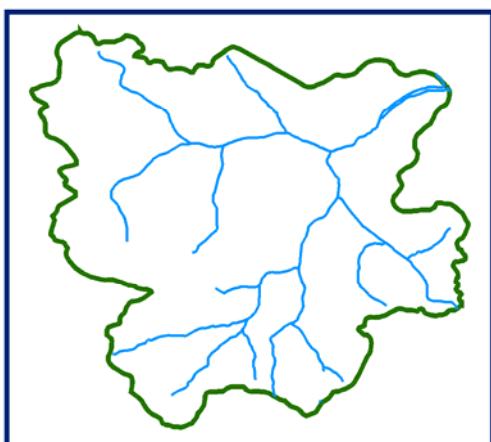
11 MARCH 2009



16 MARCH 2009



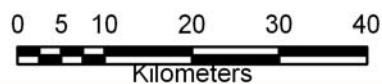
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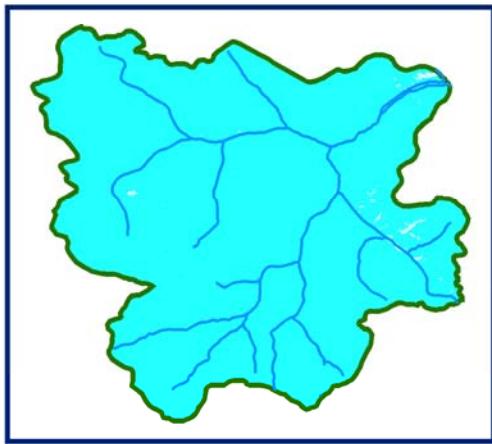
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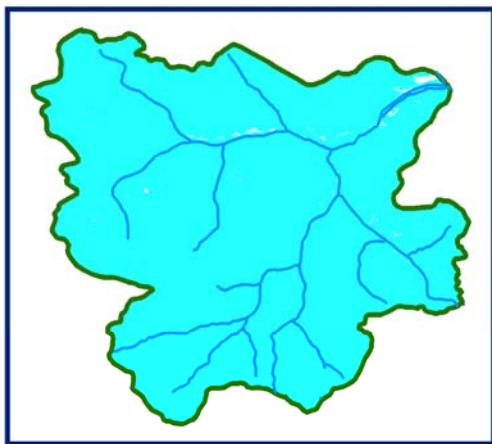
SNOW



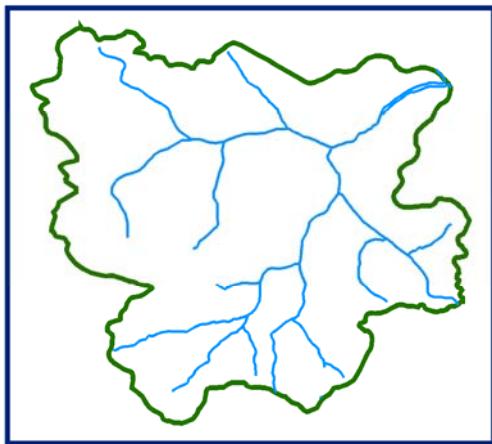
## 10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED  
**01 MARCH 2009**



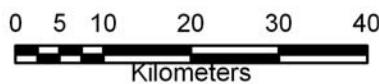
DATA USED  
**11 MARCH 2009**  
**16 MARCH 2009**



DATA USED  
**DATA NOT AVAILABLE**



SNOW

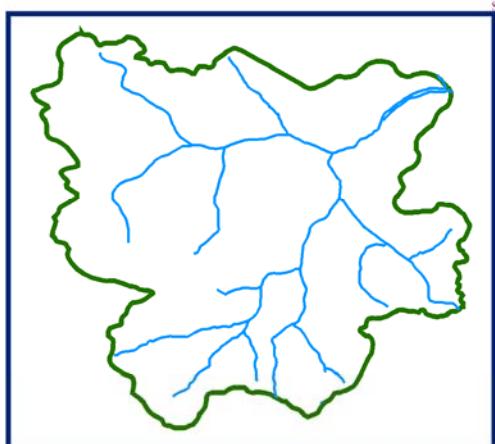


# SNOW COVER MAP

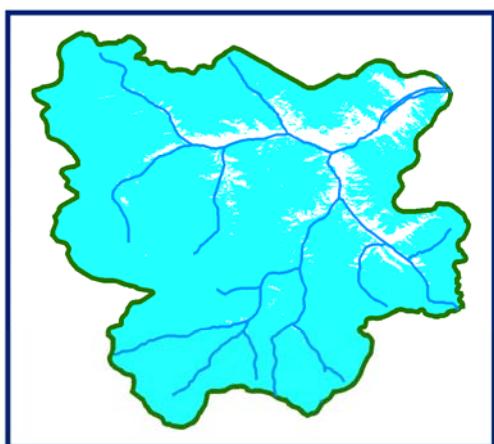
# PIN BASIN



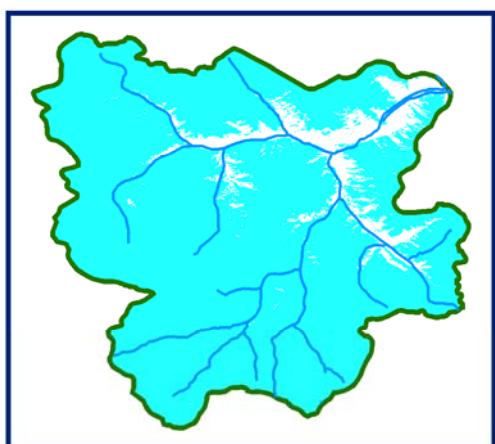
04 APRIL 2009



DATA NOT AVAILABLE



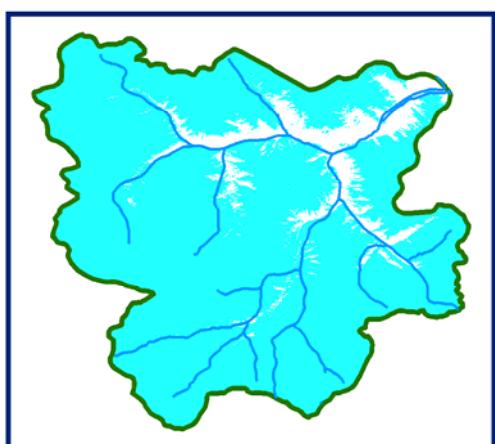
14 APRIL 2009



18 APRIL 2009



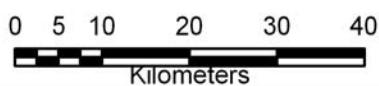
23 APRIL 2009



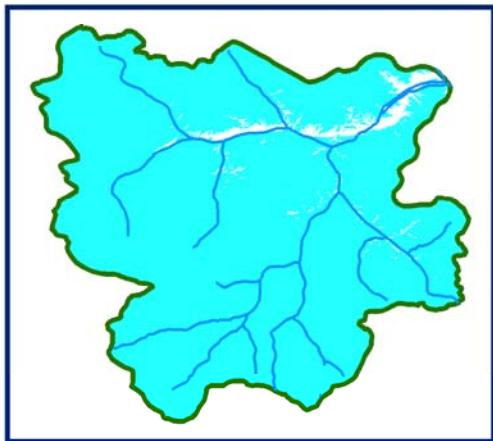
28 APRIL 2009



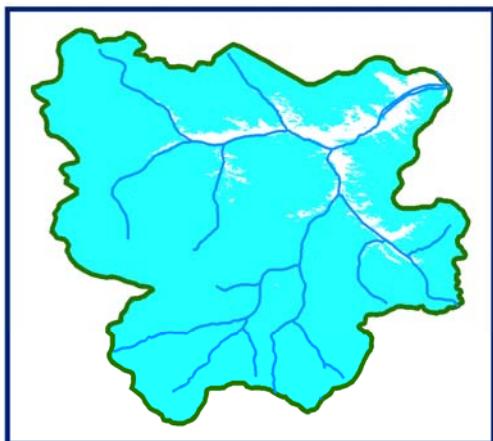
SNOW



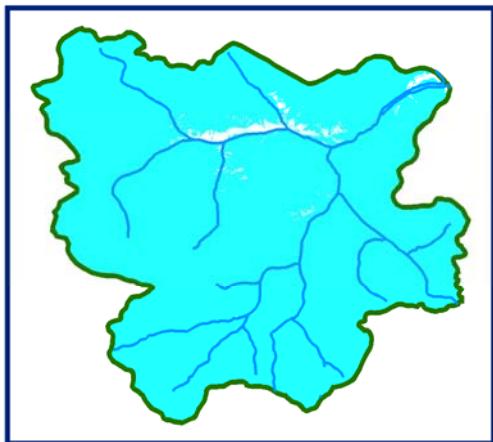
## 10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED  
**04 APRIL 2009**



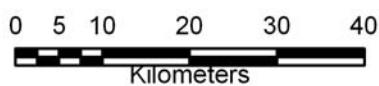
DATA USED  
**14 APRIL 2009**  
**18 APRIL 2009**



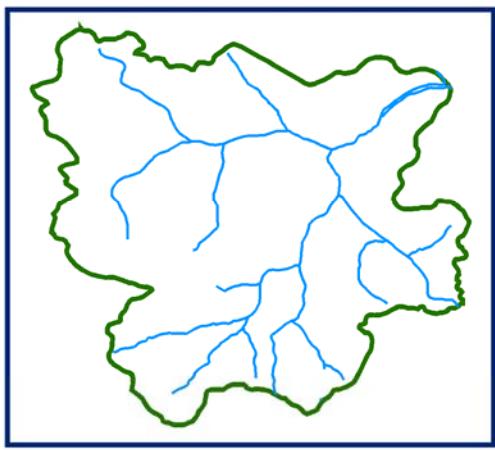
DATA USED  
**23 APRIL 2009**  
**28 APRIL 2009**



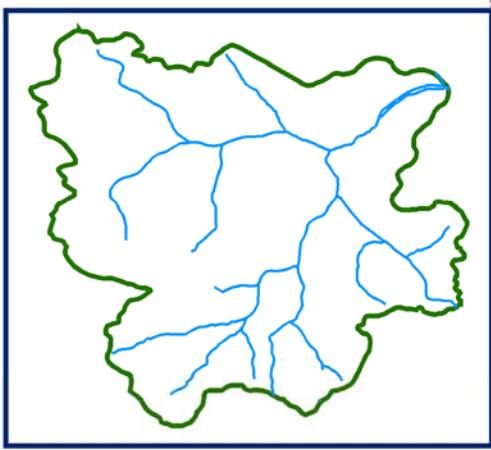
SNOW



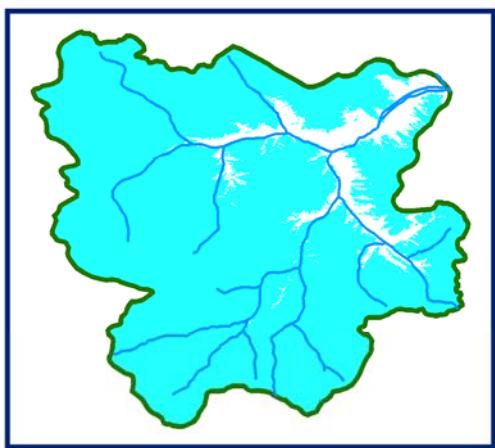
# SNOW COVER MAP : PIN BASIN



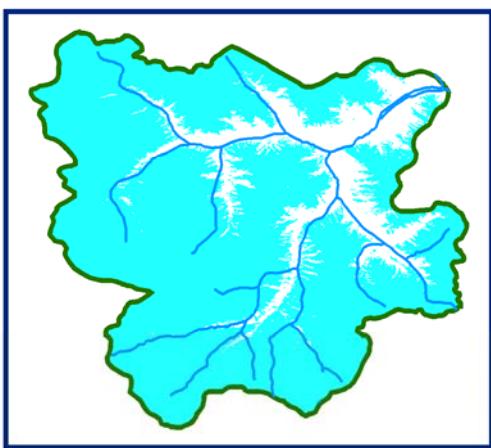
DATA NOT AVAILABLE



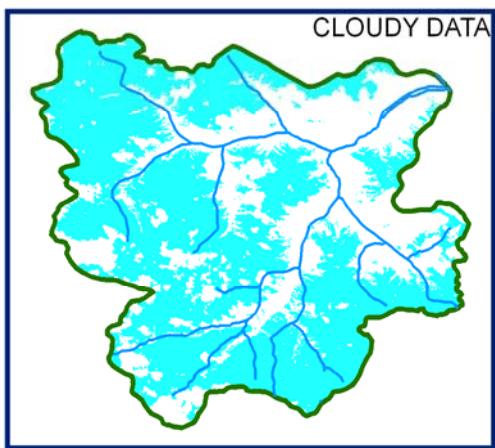
DATA NOT AVAILABLE



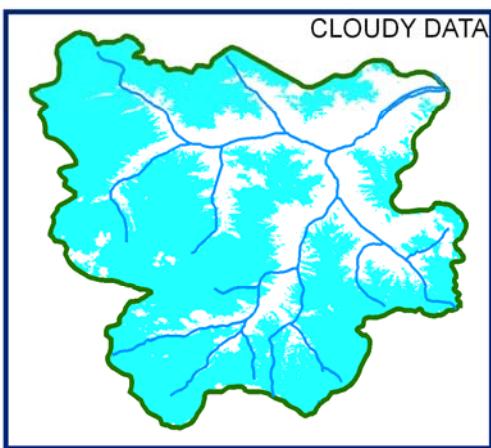
12 MAY 2009



17 MAY 2009



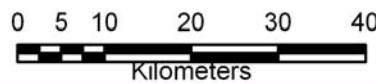
22 MAY 2009



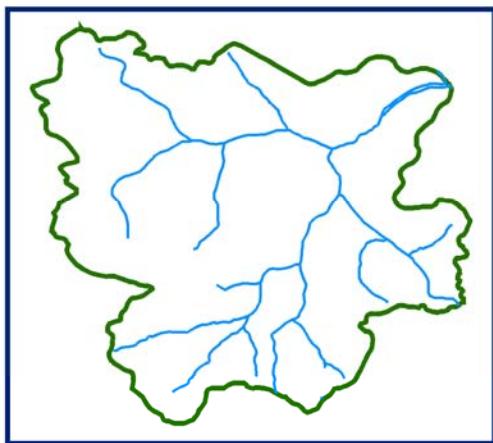
27 MAY 2009



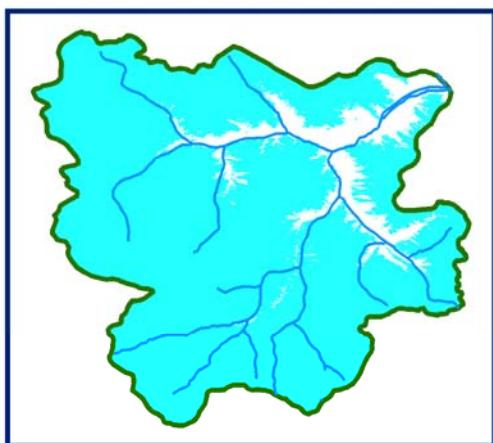
SNOW



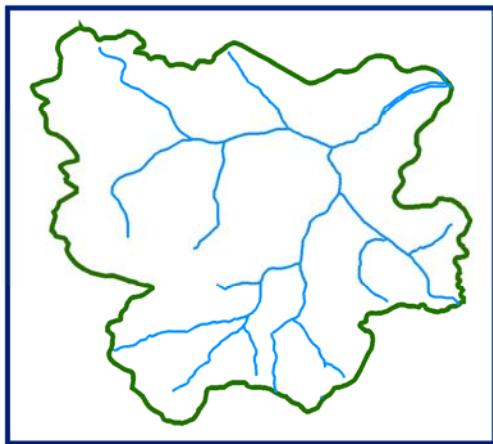
## 10 DAILY SNOW COVER MAP: PIN BASIN



**DATA USED  
DATA NOT AVAILABLE**



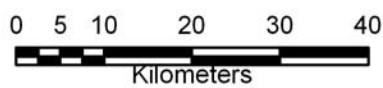
**DATA USED  
12 MAY 2009  
17 MAY 2009**



**DATA USED  
DATA NOT AVAILABLE**

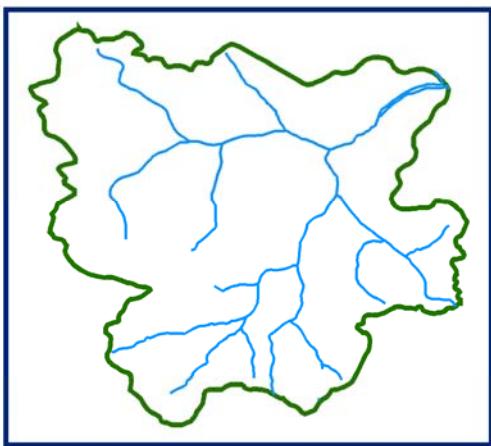


**SNOW**

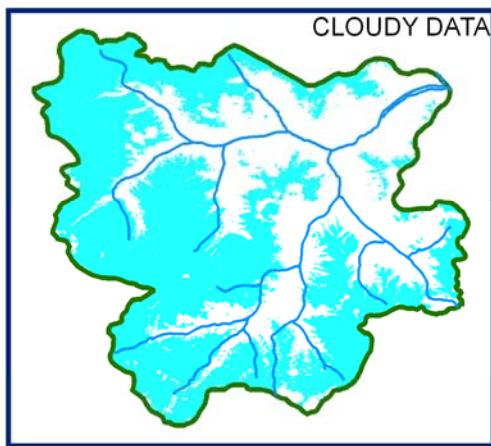


# SNOW COVER MAP

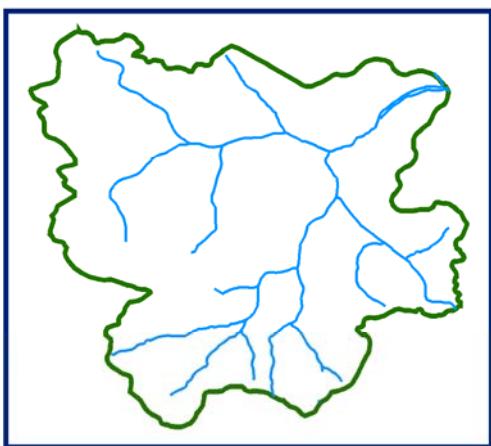
# : PIN BASIN



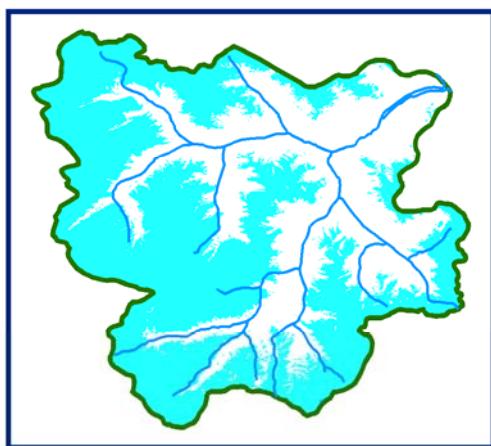
DATA NOT AVAILABLE



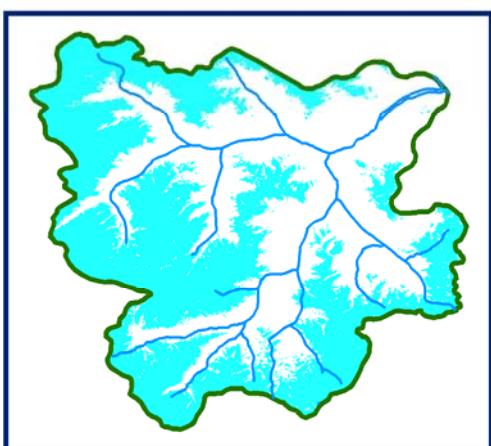
10 JUNE 2009



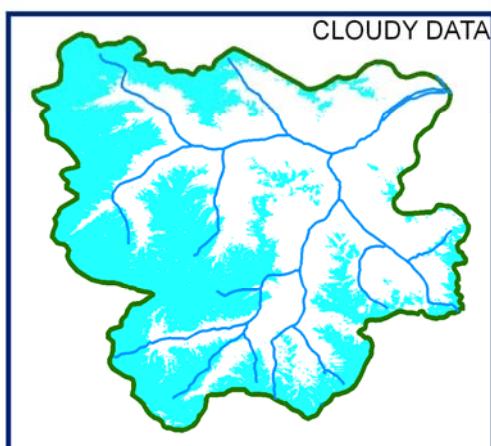
DATA NOT AVAILABLE



20 JUNE 2009



25 JUNE 2009



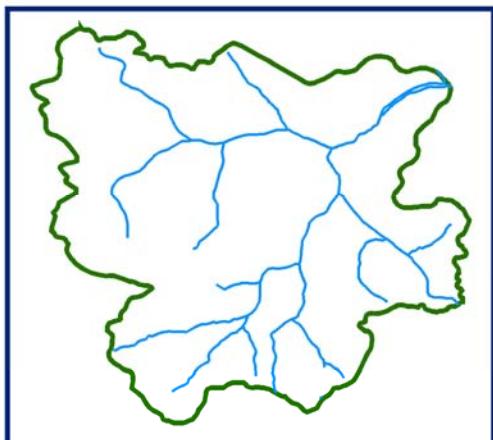
29 JUNE 2009



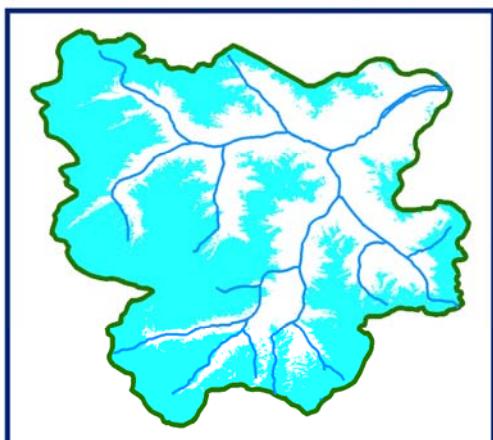
SNOW



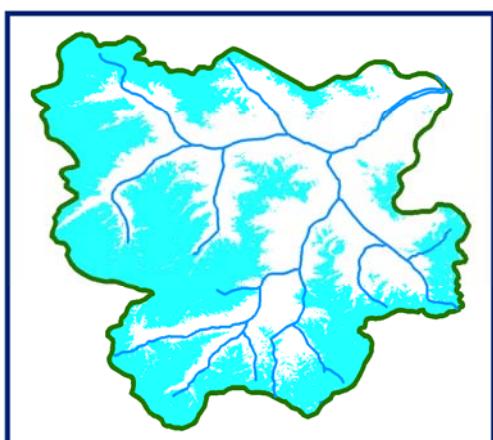
## 10 DAILY SNOW COVER MAP: PIN BASIN



DATA USED  
**DATA NOT AVAILABLE**



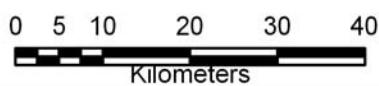
DATA USED  
**20 JUNE 2009**



DATA USED  
**25 JUNE 2009**



SNOW



*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 (%)
<b>October 2008</b>							
1	4-Oct-08	5468.2	62	3	23-Oct-08	4264.1	48
2	13-Oct-08	4624.5	52	4	27-Oct-08	4264.1	48
<b>November 2008</b>							
5	11-Nov-08	3729.5	42	7	21-Nov-08	7706.4	87
6	16-Nov-08	3383.1	38				
<b>December 2008</b>							
8	5-Dec-08	3383.1	38	10	15-Dec-08	3649.3	41
9	10-Dec-08	4662.2	53	11	24-Dec-08	3655.5	41
<b>January 2009</b>							
12	8-Jan-09	7458.0	84	13	27-Jan-09	8043.8	91
<b>February 2009</b>							
14	1-Feb-09	7708.9	87	16	25-Feb-09	7706.4	87
15	15-Feb-09	8407.2	95				
<b>March 2009</b>							
17	1-Mar-09	7394.9	83	19	16-Mar-09	6462.0	73
18	11-Mar-09	7067.1	80				
<b>April 2009</b>							
20	4-Apr-09	6193.3	70	23	23-Apr-09	6434.0	73
21	14-Apr-09	5498.1	62	24	28-Apr-09	5278.6	60
22	18-Apr-09	5511.8	62				
<b>May 2009</b>							
25	12-May-09	4612.6	52	27	22-May-09	2442.4	28
26	17-May-09	4418.3	50	28	27-May-09	3179.4	36
<b>June 2009</b>							
29	10-Jun-09	2470.4	28	31	25-Jun-09	2284.8	26
30	20-Jun-09	2656.3	30				

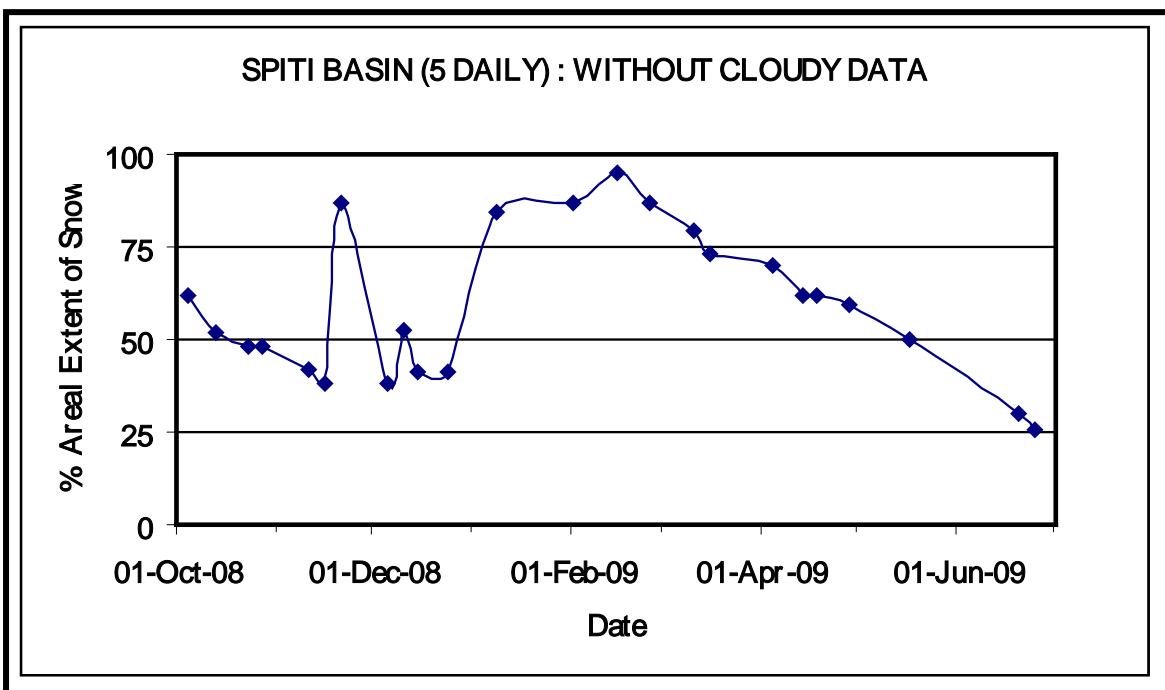
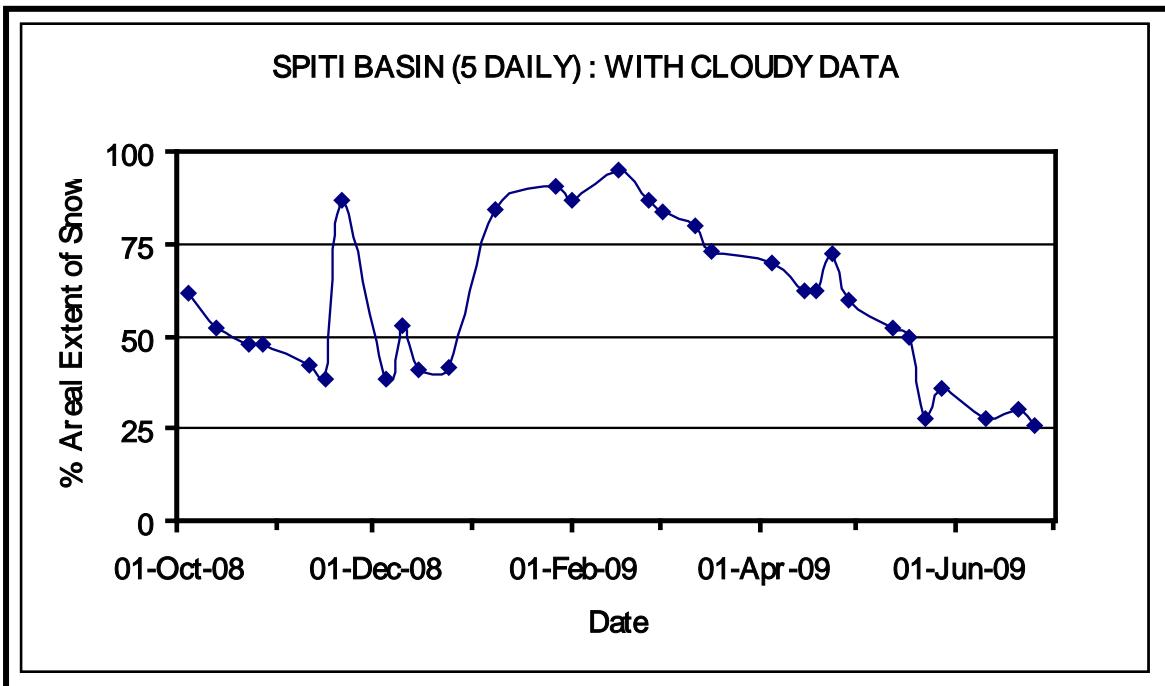
**AREAL EXTENT OF SNOW (10 DAILY)**

**BASIN NAME: SPITI**

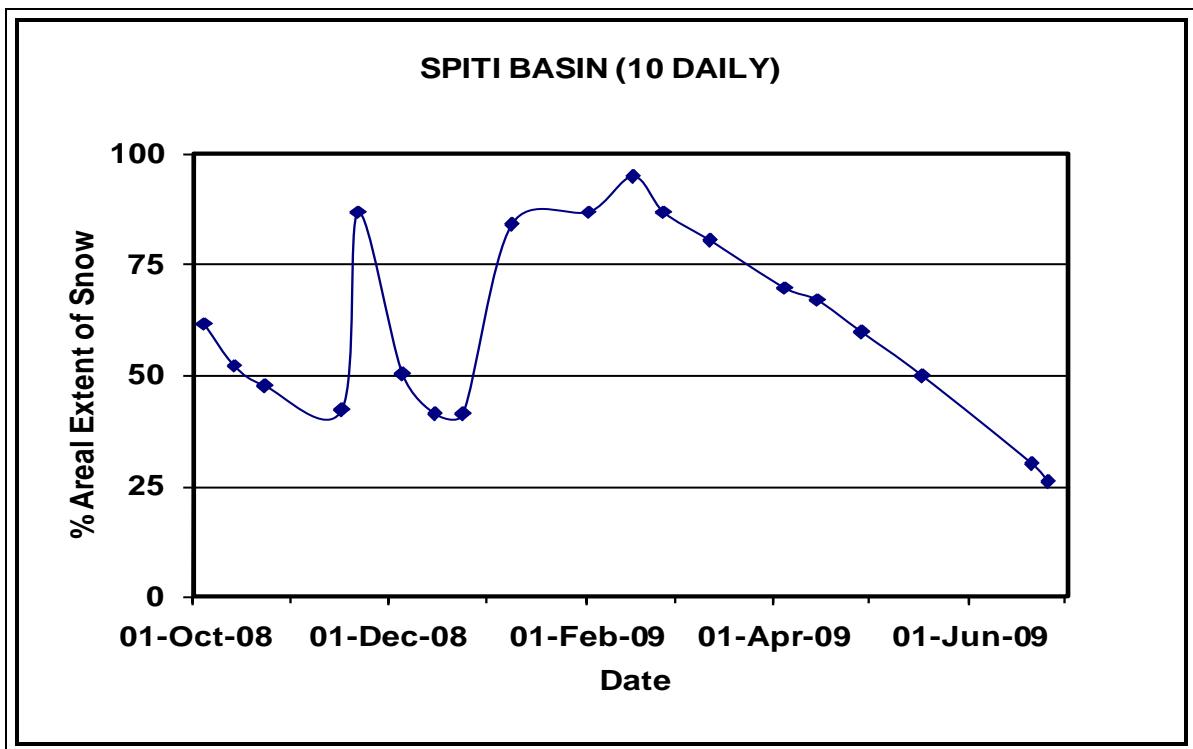
**BASIN AREA: 8871 sq km**

S. No	Date	Snow cover (sq km)	Snow cover (%)	S. No	Date	Snow cover (sq km)	Snow cover (%)
<b>October 2008</b>				<b>November 2008</b>			
1	4-Oct-08	5468.2	62	4	16-Nov-08	7727.5	87
2	13-Oct-08	4624.5	52				
3	23-Oct-08	4196.8	47				
<b>December 2008</b>				<b>January 2009</b>			
5	5-Dec-08	4447.6	50	8	8-Jan-09	7458.0	84
6	15-Dec-08	3649.3	41				
7	24-Dec-08	3655.5	41				
<b>February 2009</b>				<b>March 2009</b>			
9	1-Feb-09	7708.9	87	12	11-Mar-09	7126.6	80
10	15-Feb-09	8407.2	95				
11	25-Feb-09	7706.4	87				
<b>April 2009</b>				<b>May 2009</b>			
13	4-Apr-09	6193.3	70	16	17-May-09	4418.3	50
14	14-Apr-09	5951.8	67				
15	28-Apr-09	5278.6	60				
<b>June 2009</b>							
17	20-Jun-09	2656.3	30				
18	25-Jun-09	2284.8	26				

### Snow cover depletion curve



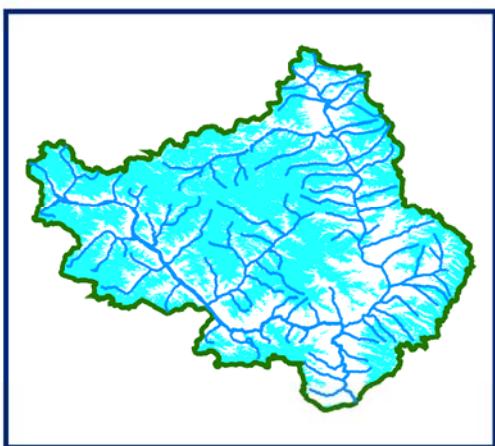
### Snow cover depletion curve



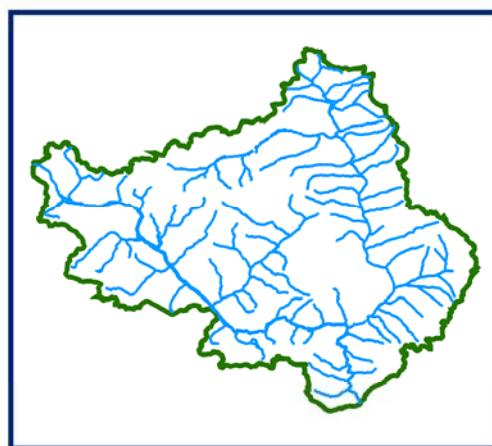
# *SNOW COVER MAP*

# SNOW COVER MAP

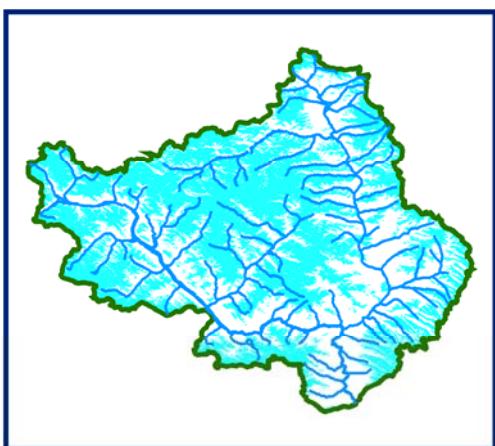
# : SPITI BASIN



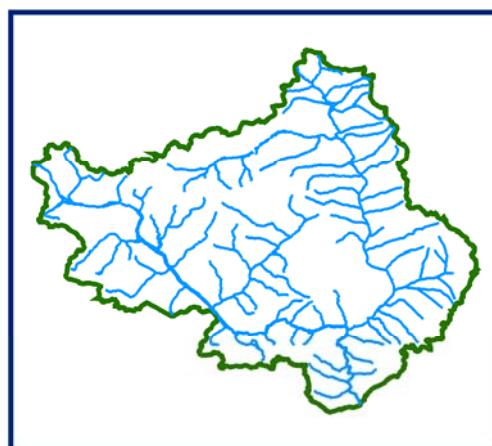
04 OCTOBER 2008



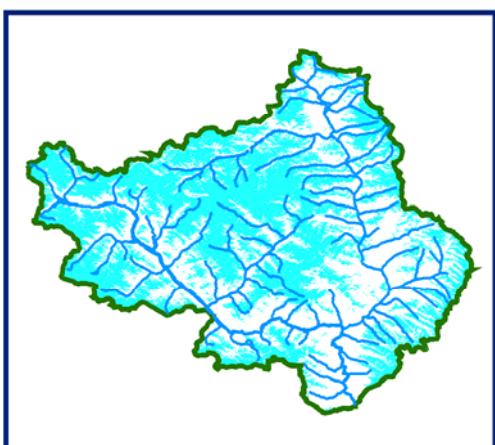
DATA NOT AVAILABLE



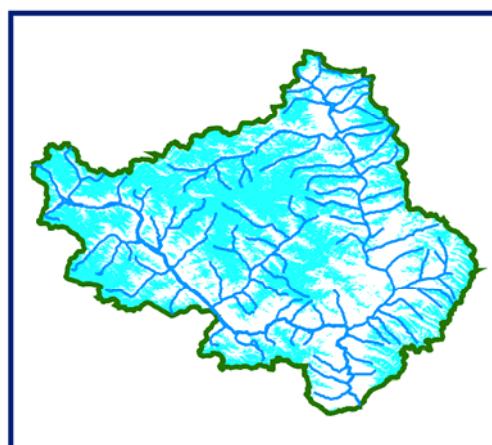
13 OCTOBER 2008



DATA NOT AVAILABLE



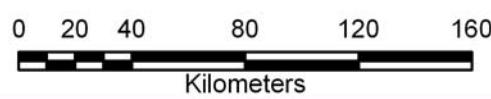
23 OCTOBER 2008



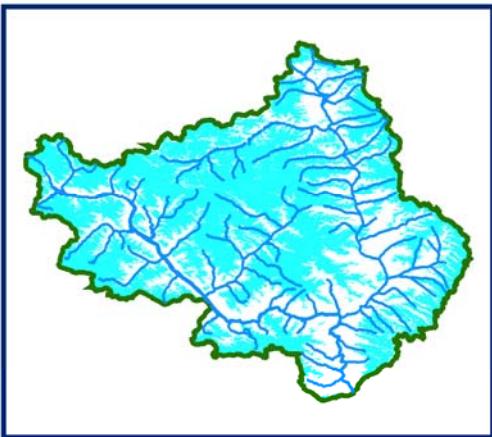
27 OCTOBER 2008



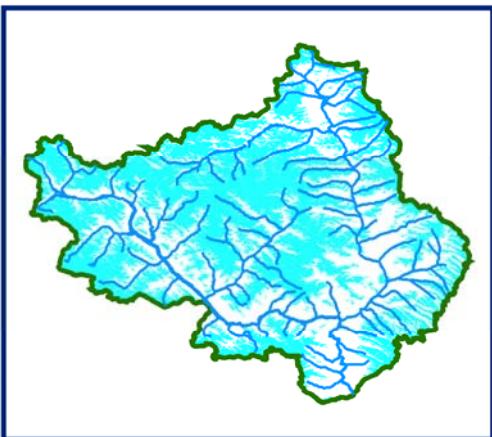
SNOW



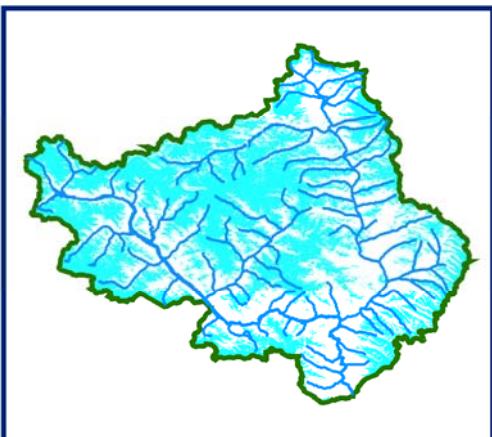
## 10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED  
**04 OCTOBER 2008**



DATA USED  
**13 OCTOBER 2008**



DATA USED  
**23 OCTOBER 2008**  
**27 OCTOBER 2008**

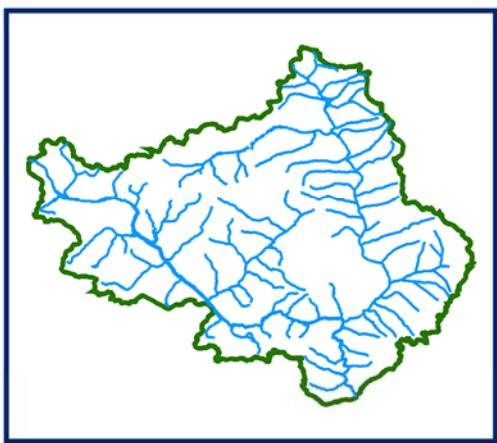


SNOW

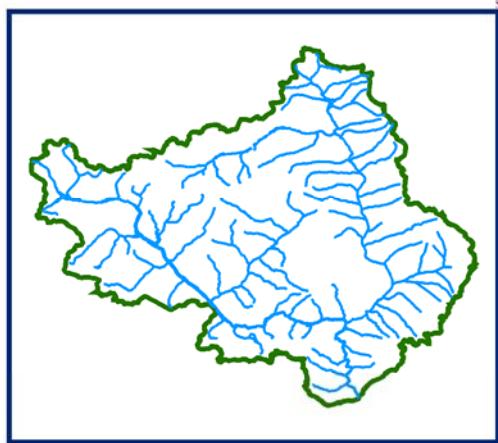


## SNOW COVER MAP

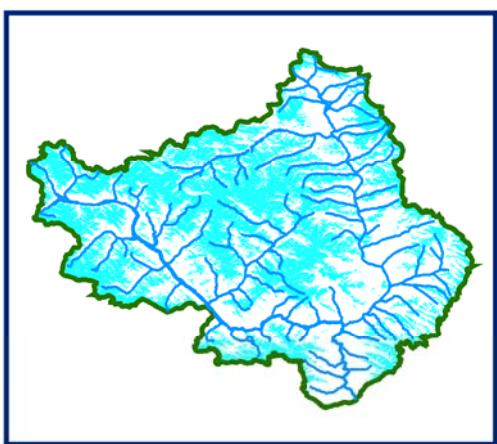
## SPITI BASIN



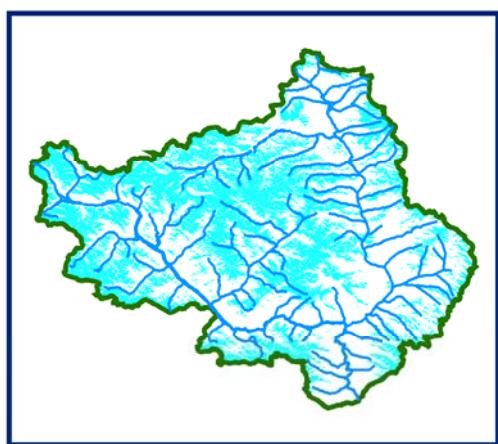
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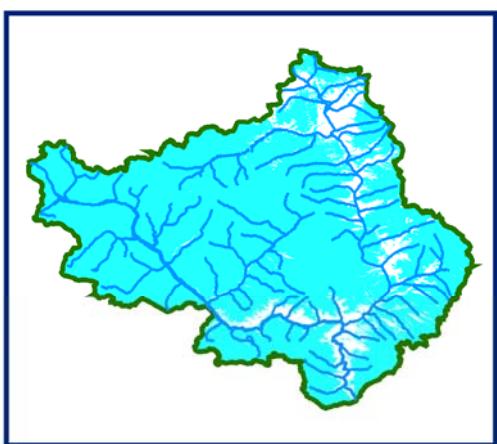
DATA NOT AVAILABLE



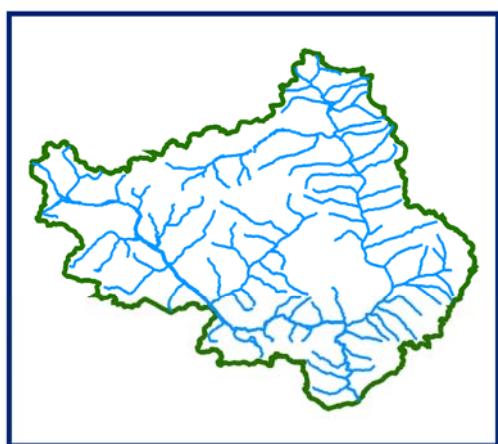
11 NOVEMBER 2008



16 NOVEMBER 2008



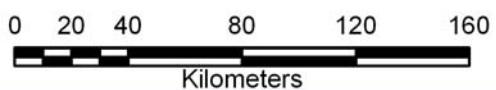
21 NOVEMBER 2008



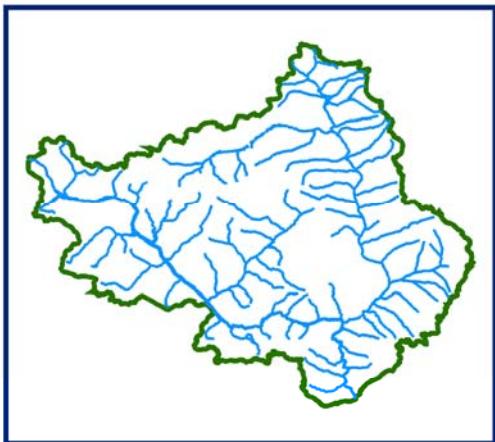
DATA NOT AVAILABLE



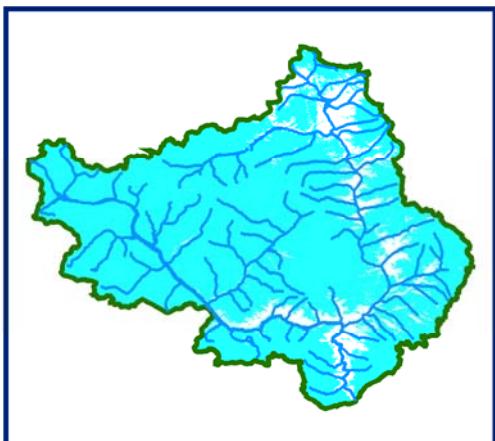
SNOW



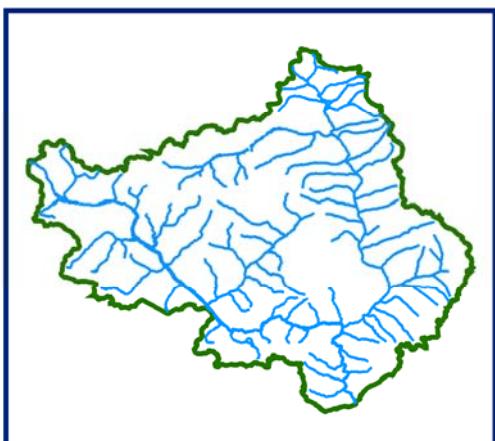
## 10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED  
**DATA NOT AVAILABLE**



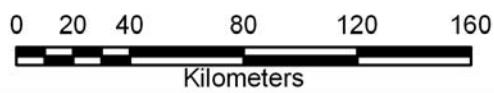
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**11 NOVEMBER 2008**  
**16 NOVEMBER 2008**  
**21 NOVEMBER 2008**



DATA USED  
**DATA NOT AVAILABLE**

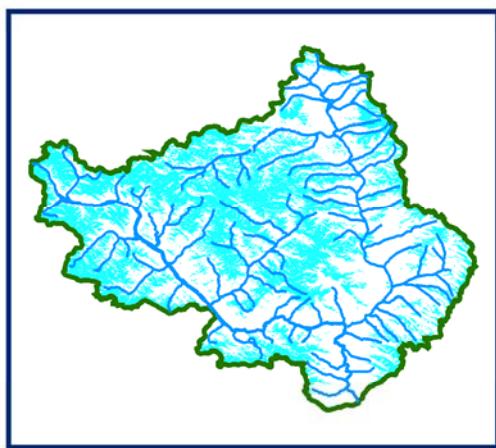


SNOW

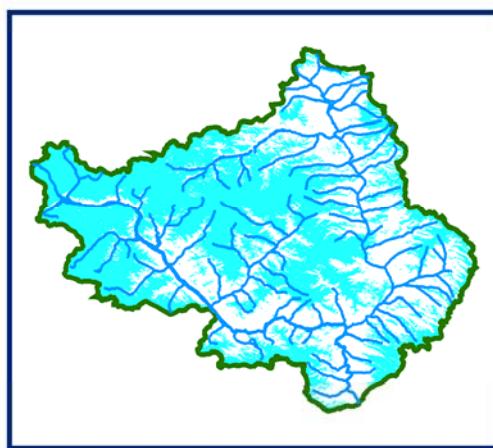


# SNOW COVER MAP

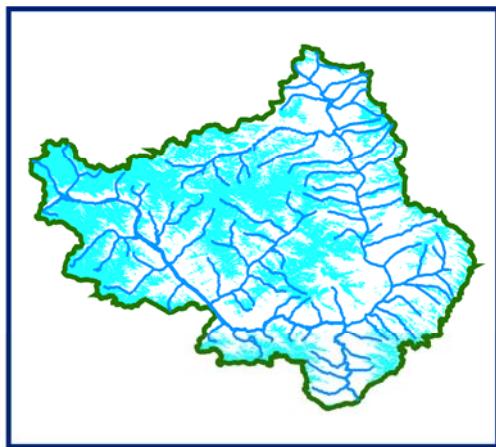
# : SPITI BASIN



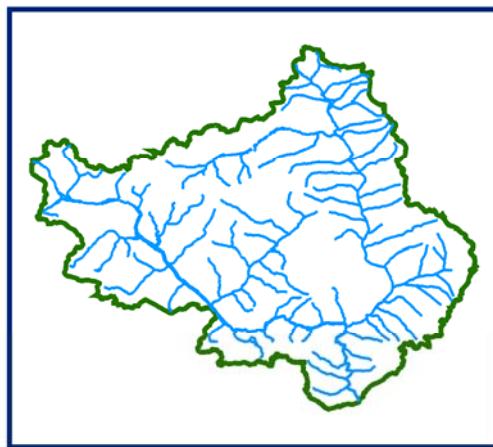
05 DECEMBER 2008



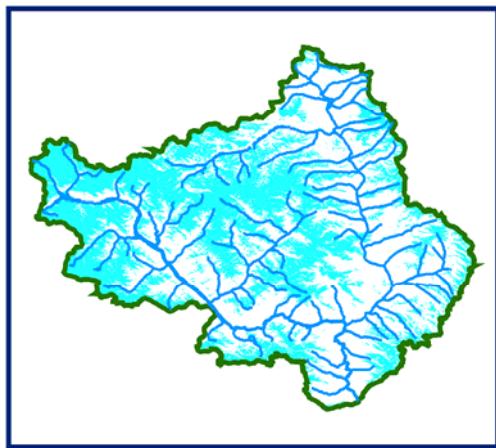
10 DECEMBER 2008



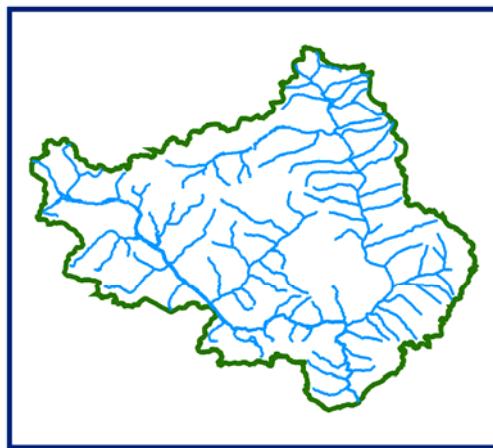
15 DECEMBER 2008



DATA NOT AVAILABLE



24 DECEMBER 2008



DATA NOT AVAILABLE



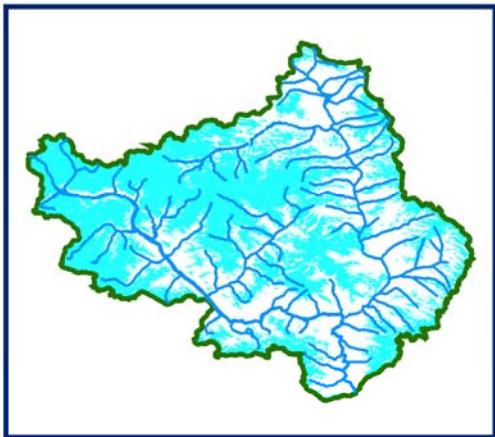
SNOW

0 20 40 80 120 160

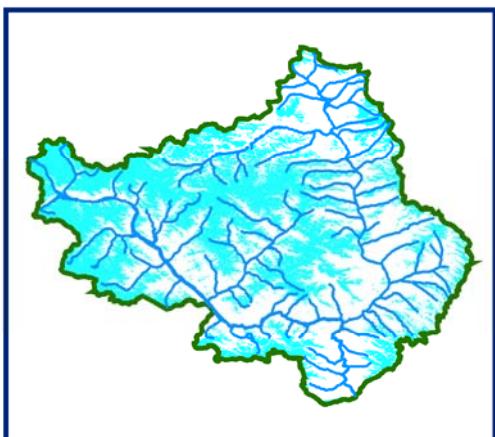


Kilometers

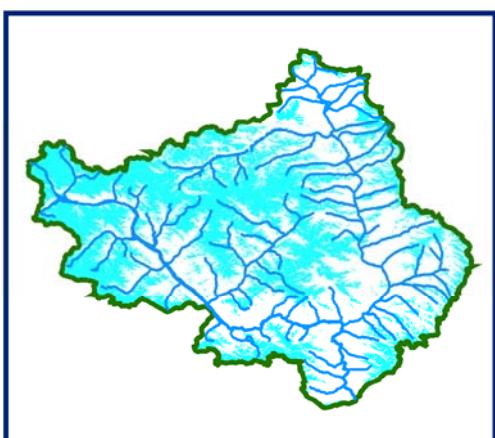
## 10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED  
**05 DECEMBER 2008**  
**10 DECEMBER 2008**



DATA USED  
**15 DECEMBER 2008**



DATA USED  
**24 DECEMBER 2008**

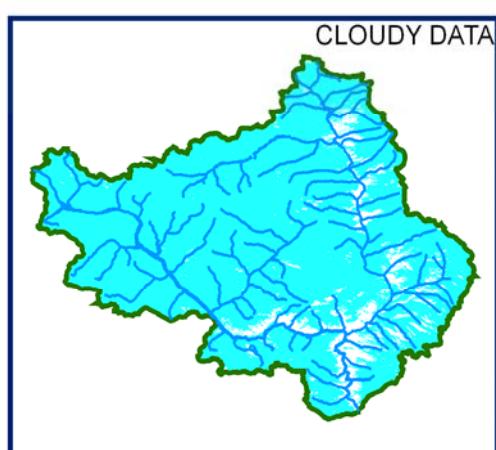
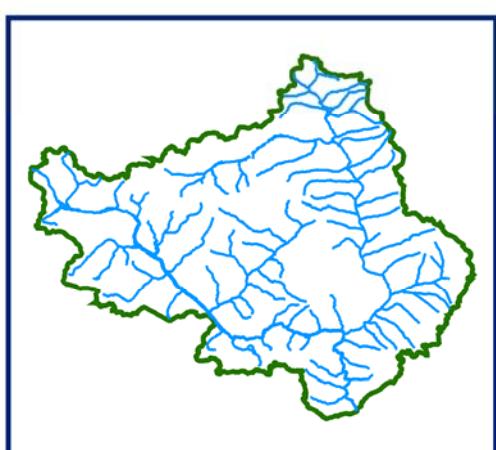
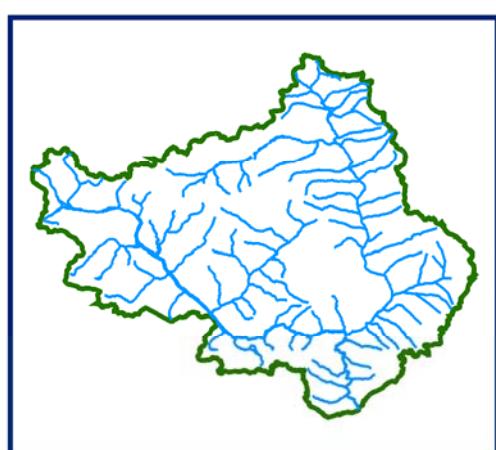
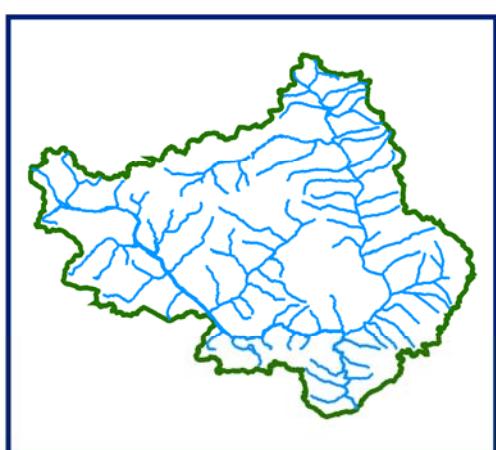
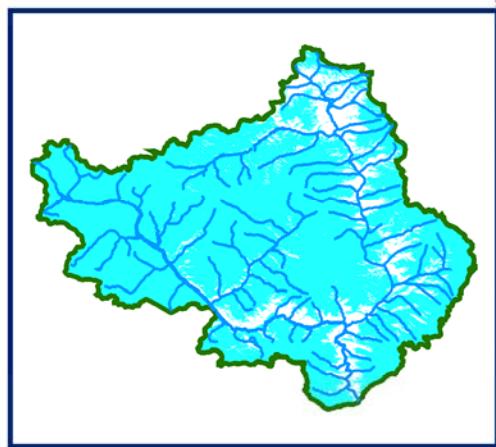
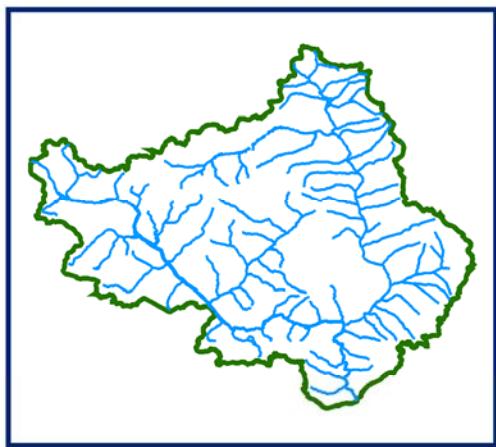


SNOW



# SNOW COVER MAP

# : SPITI BASIN



DATA NOT AVAILABLE

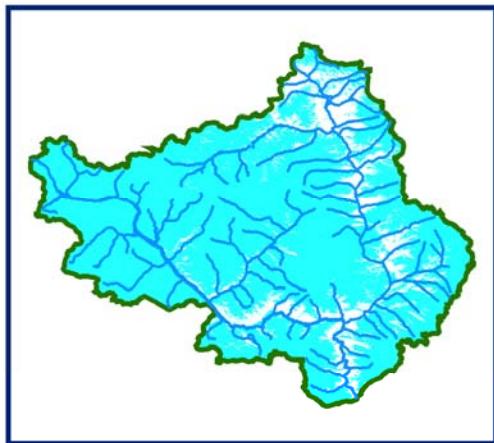
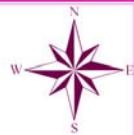
27 JANUARY 2009



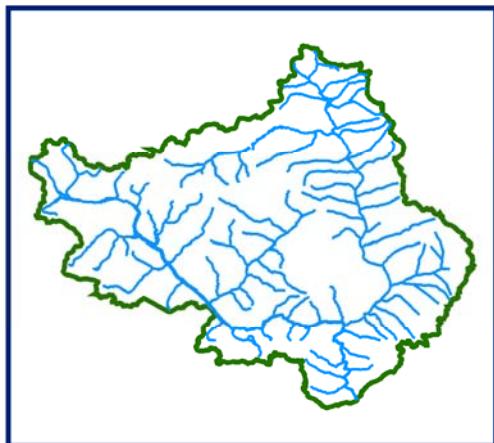
SNOW



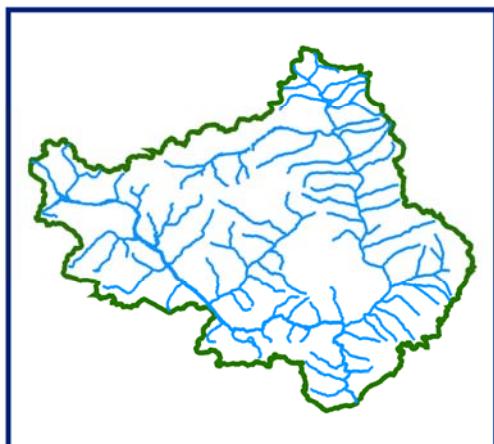
## 10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED  
08 JANUARY 2009



DATA USED  
DATA NOT AVAILABLE



DATA USED  
DATA NOT AVAILABLE

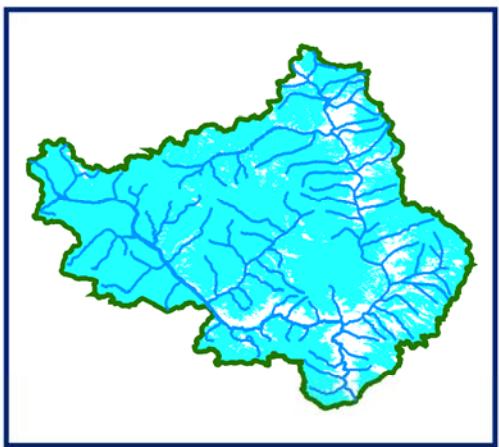


SNOW

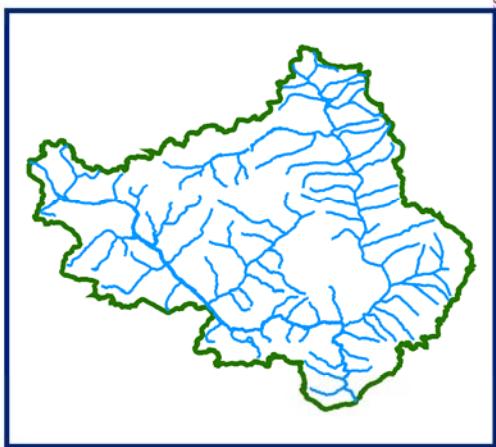


# SNOW COVER MAP

# : SPITI BASIN



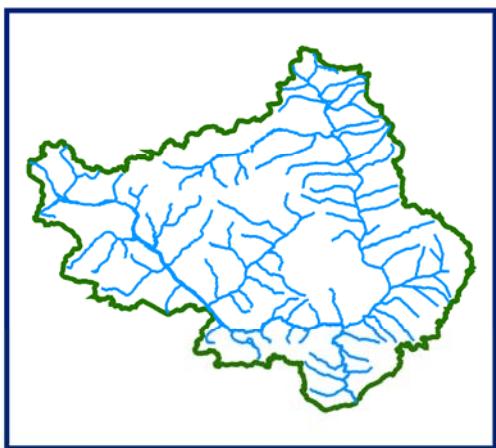
01 FEBRUARY 2009



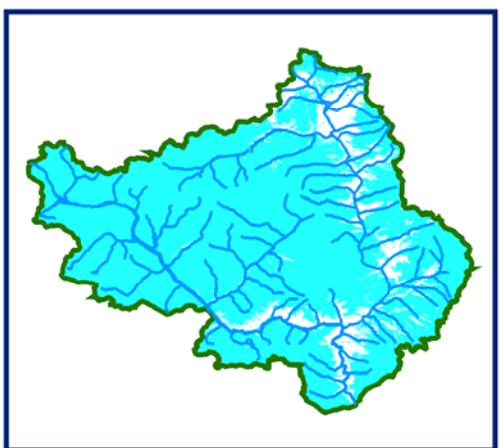
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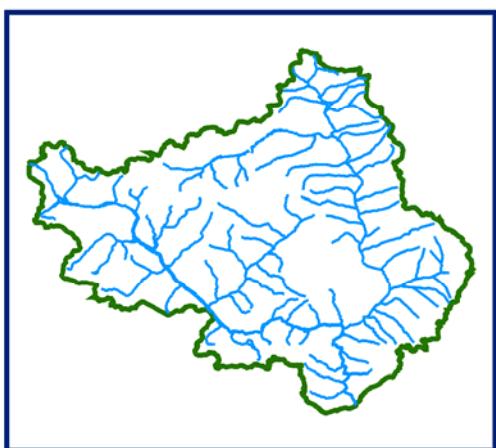
15 FEBRUARY 2009



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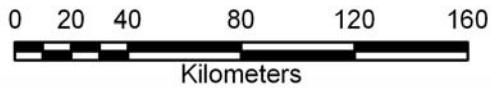
25 FEBRUARY 2009



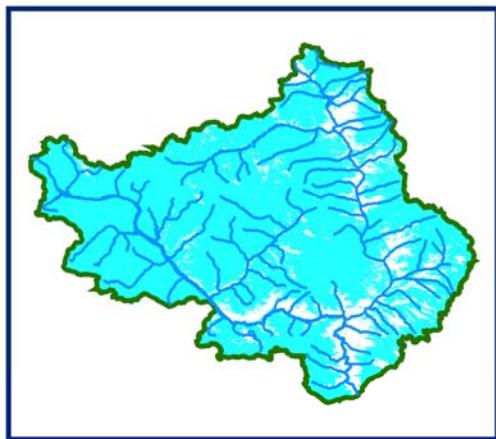
DATA NOT AVAILABLE



SNOW



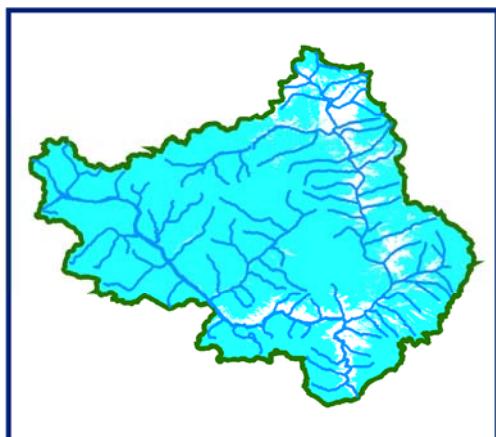
## 10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED  
**01 FEBRUARY 2009**



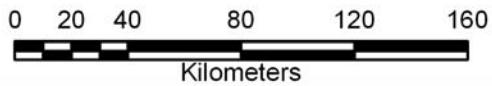
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**15 FEBRUARY 2009**



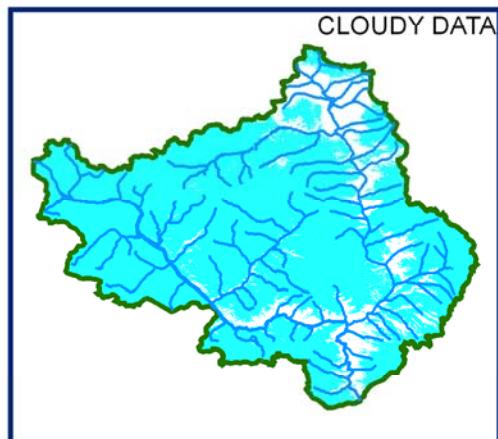
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**25 FEBRUARY 2009**



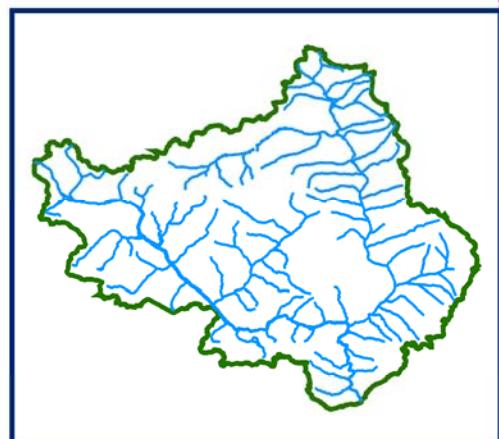
SNOW



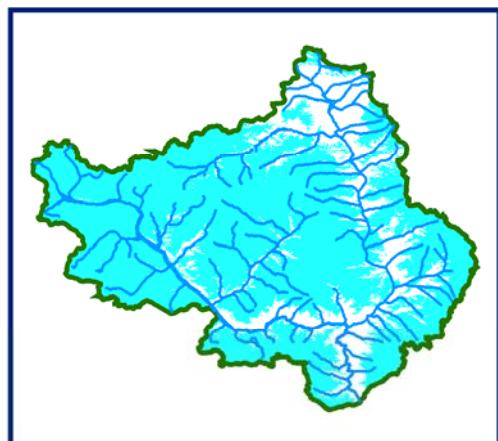
# SNOW COVER MAP : SPITI BASIN



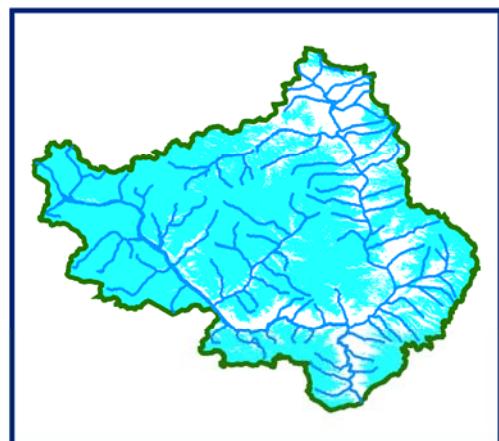
01 MARCH 2009



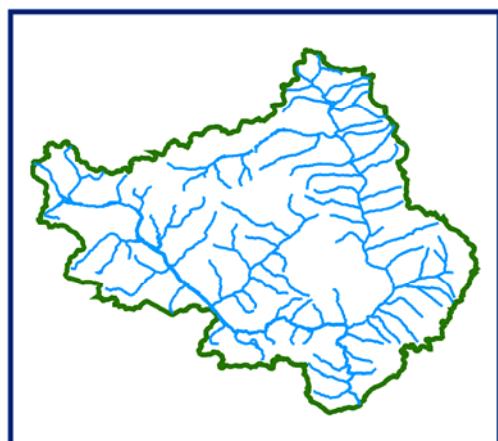
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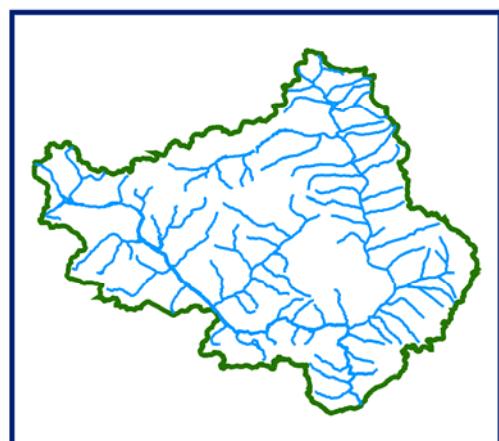
11 MARCH 2009



16 MARCH 2009



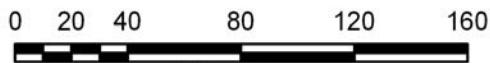
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DATA NOT AVAILABLE

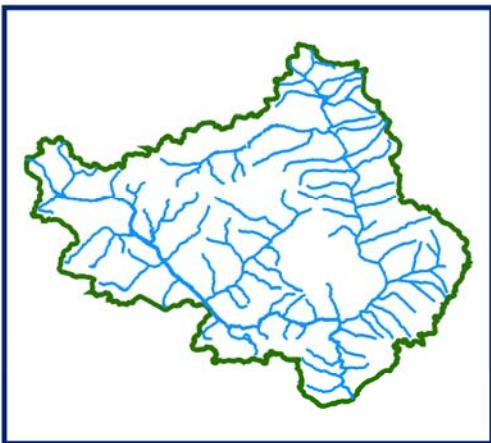


SNOW

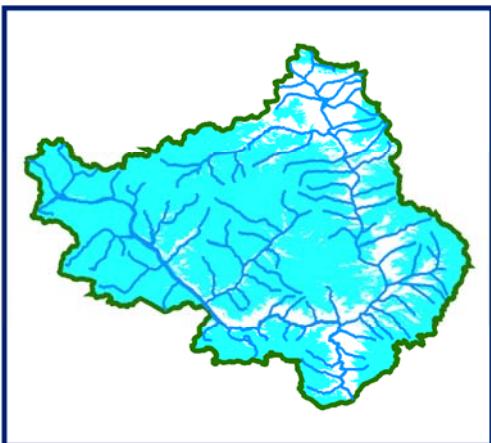


Kilometers

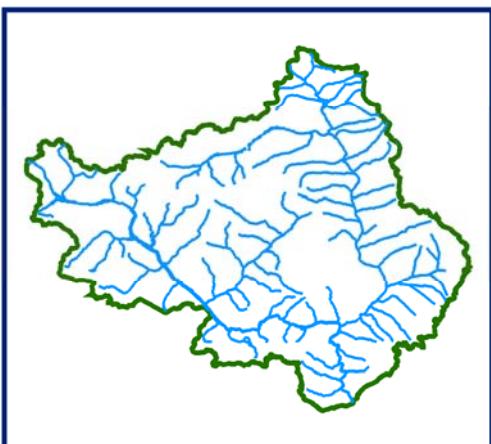
## 10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED  
DATA NOT AVAILABLE



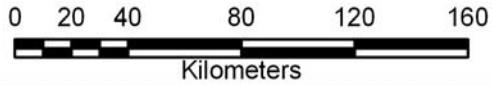
DATA USED  
11 MARCH 2009  
16 MARCH 2009



DATA USED  
DATA NOT AVAILABLE

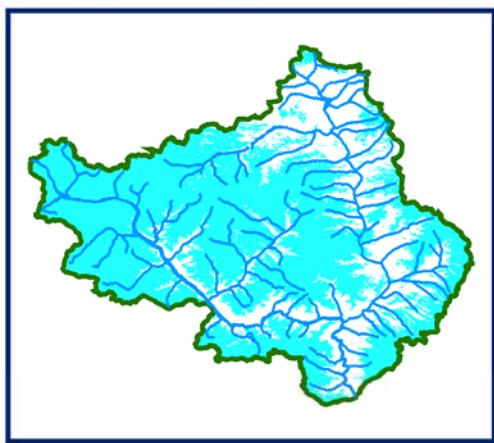


SNOW

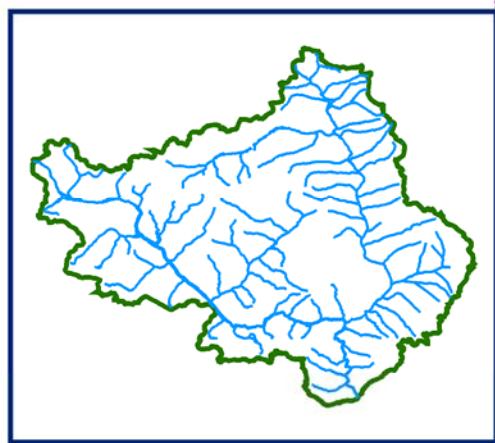


## SNOW COVER MAP

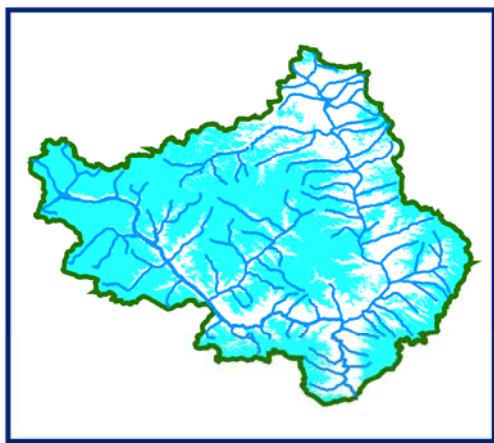
: SPITI BASIN



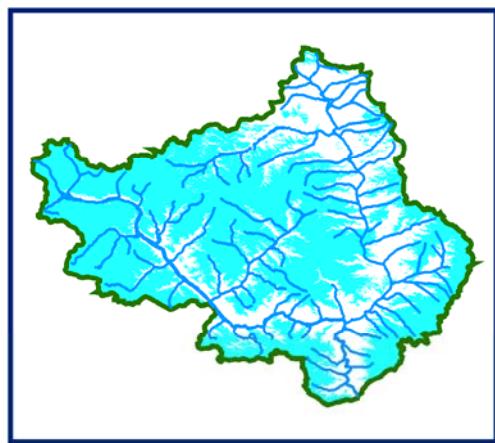
04 APRIL 2009



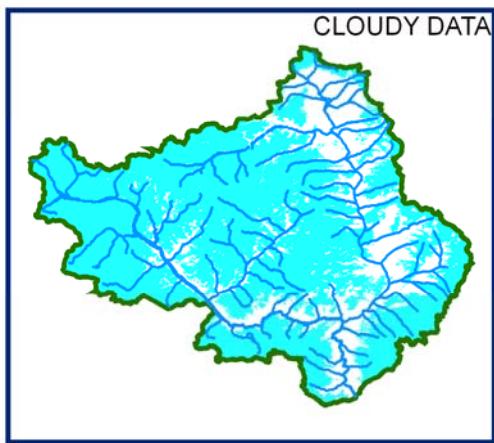
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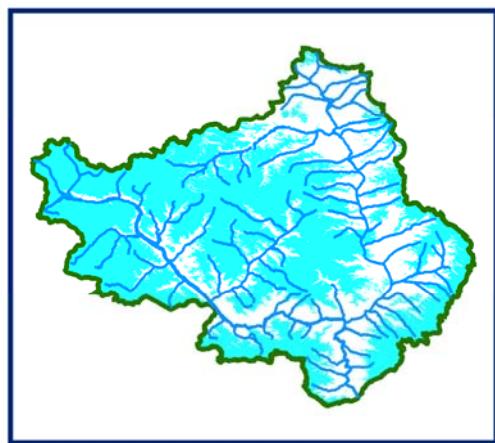
14 APRIL 2009



18 APRIL 2009



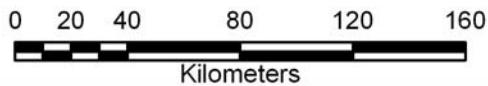
23 APRIL 2009



28 APRIL 2009



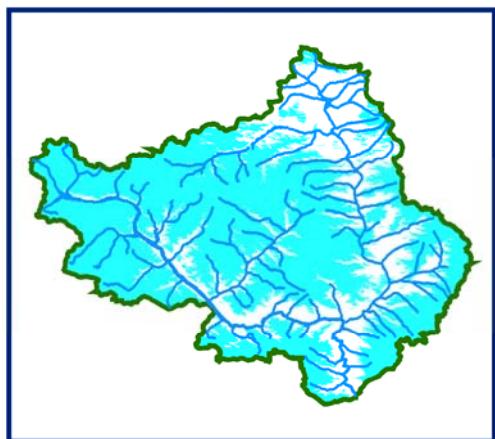
SNOW



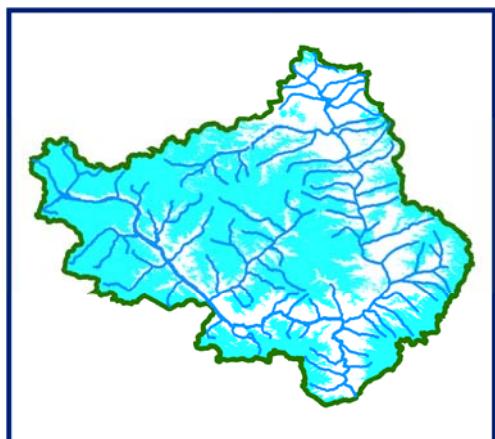
## 10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED  
**04 APRIL 2009**



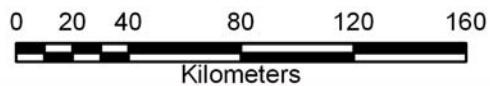
DATA USED  
**14 APRIL 2009**  
**18 APRIL 2009**



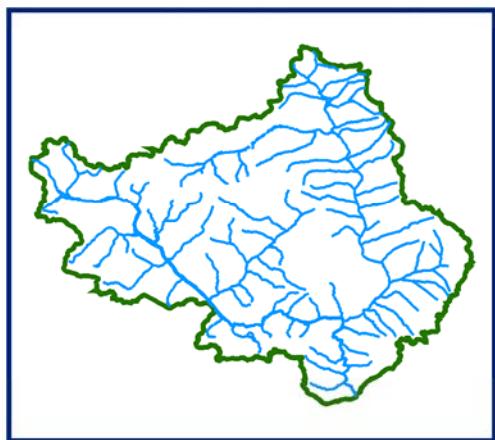
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**28 APRIL 2009**



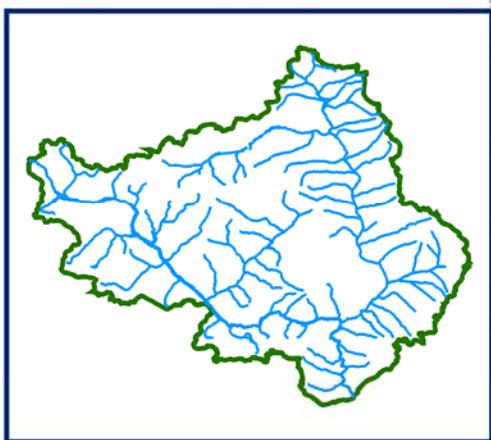
SNOW



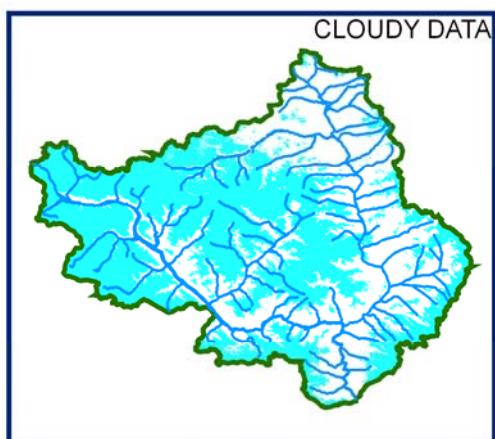
# SNOW COVER MAP : SPITI BASIN



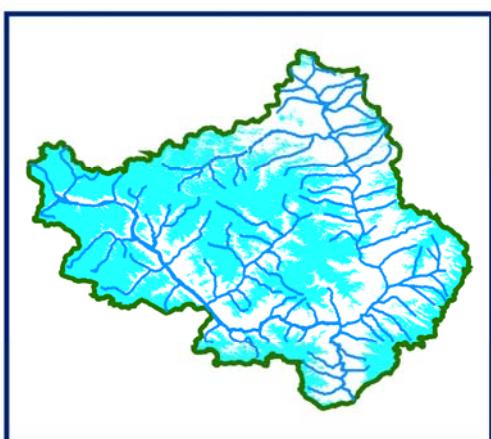
DATA NOT AVAILABLE



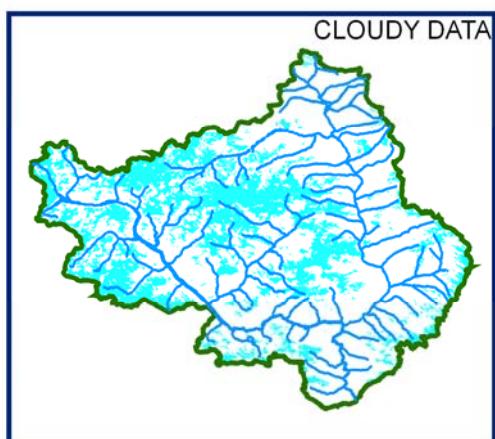
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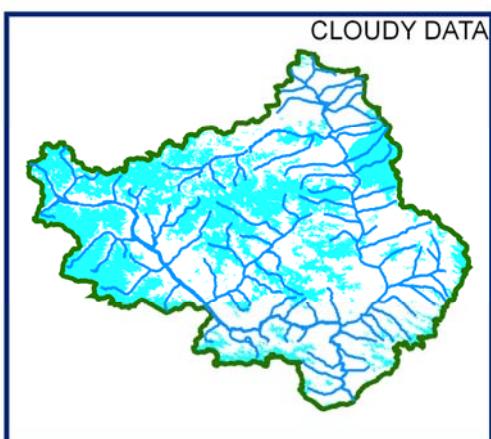
12 MAY 2009



17 MAY 2009



22 MAY 2009



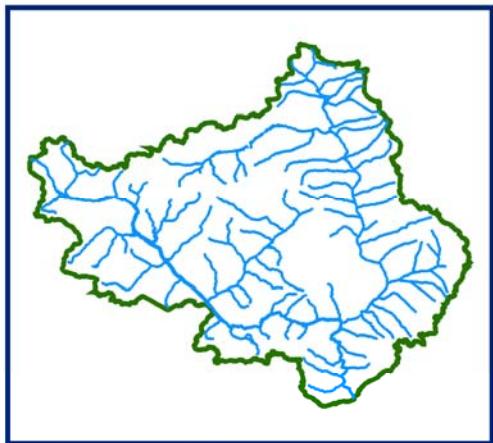
27 MAY 2009



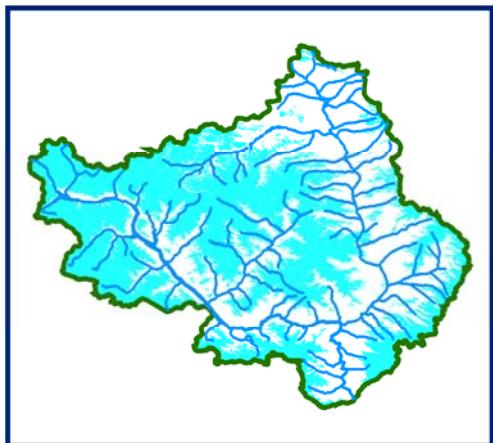
SNOW



## 10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED  
DATA NOT AVAILABLE



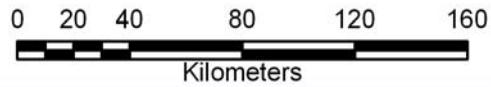
DATA USED  
17 MAY 2009



DATA USED  
DATA NOT AVAILABLE

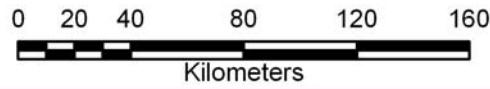
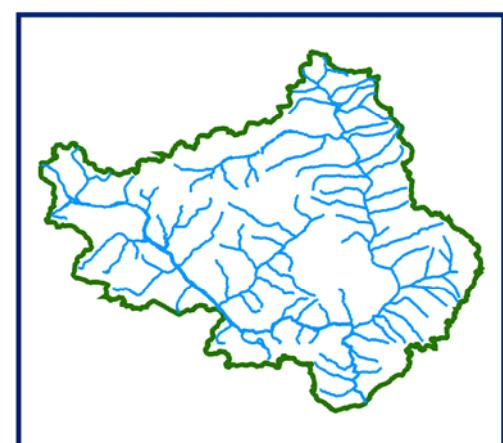
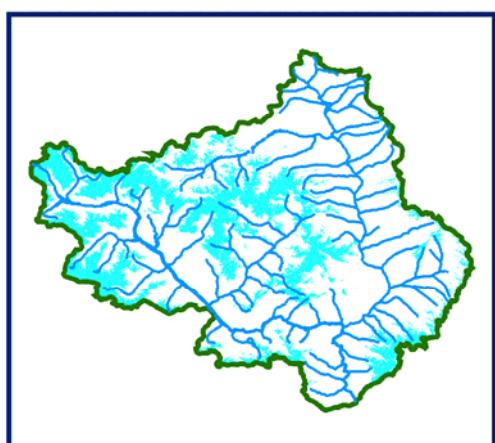
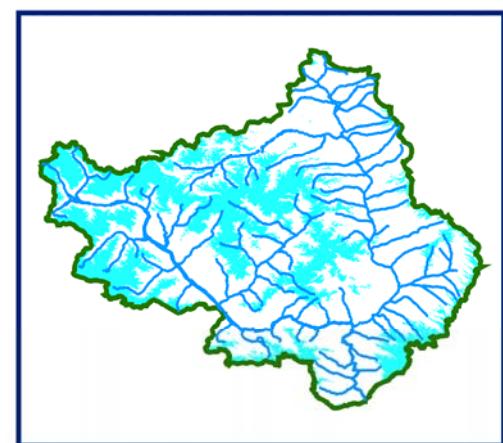
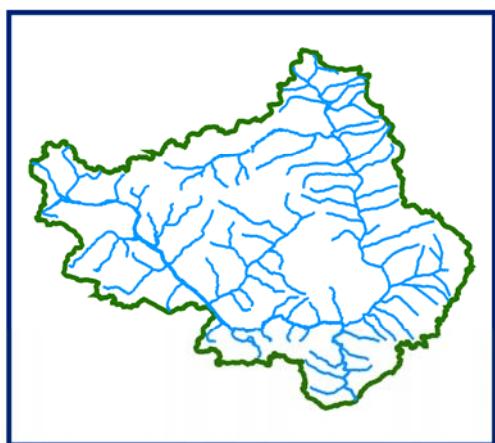
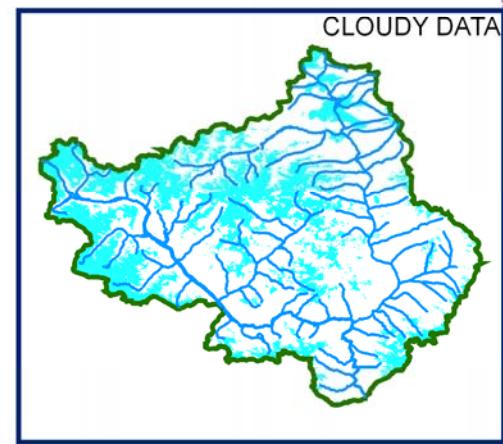
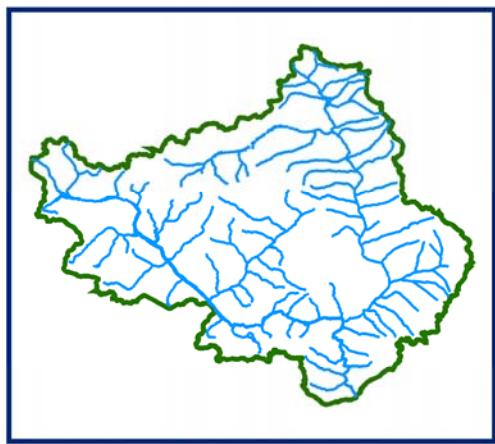


SNOW

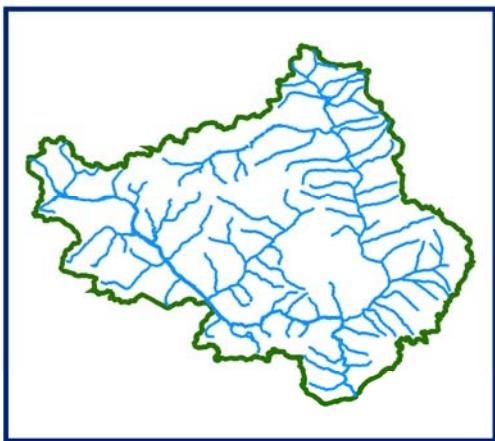


## SNOW COVER MAP

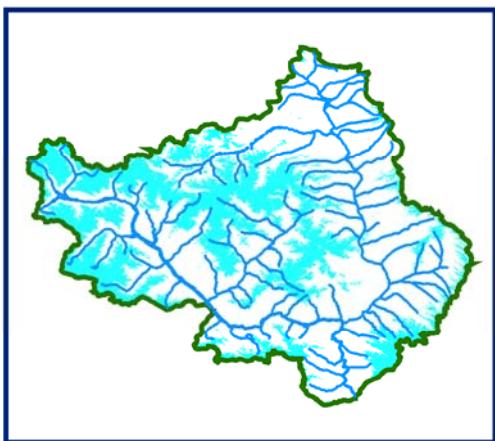
## : SPITI BASIN



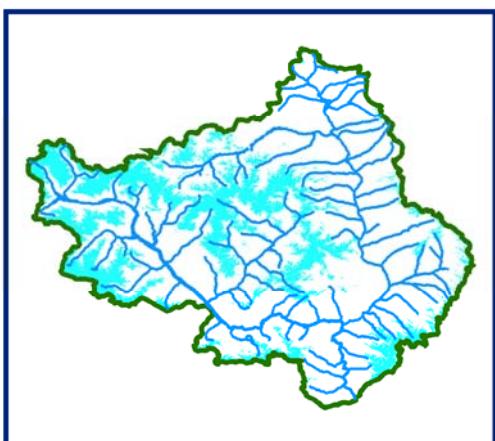
## 10 DAILY SNOW COVER MAP: SPITI BASIN



DATA USED  
DATA NOT AVAILABLE



DATA USED  
20 JUNE 2009



DATA USED  
25 JUNE 2009



SNOW



*BASPA BASIN*

### AREAL EXTENT OF SNOW (5 DAILY)

**BASIN NAME: BASPA**

**BASIN AREA: 1095 sq km**

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
<b>October 2008</b>							
1	4-Oct-08	661.3	60	4	23-Oct-08	575.8	53
2	13-Oct-08	586.5	54	5	27-Oct-08	575.8	53
3	18-Oct-08	673.8	62				
<b>November 2008</b>							
6	6-Nov-08	530.9	48	8	16-Nov-08	524.4	48
7	11-Nov-08	500.5	46	9	21-Nov-08	974.5	89
<b>December 2008</b>							
10	5-Dec-08	524.4	48	13	24-Dec-08	589.0	54
11	10-Dec-08	728.4	67	14	29-Dec-08	993.6	91
12	15-Dec-08	588.1	54				
<b>January 2009</b>							
15	8-Jan-09	991.1	91	16	27-Jan-09(pc)	914.0	83
<b>February 2009</b>							
17	1-Feb-09(pc)	911.6	83	19	25-Feb-09	974.5	89
18	15-Feb-09	1051.7	96				
<b>March 2009</b>							
20	1-Mar-09(pc)	928.1	85	22	16-Mar-09	856.9	78
21	11-Mar-09	908.4	83				
<b>April 2009</b>							
23	4-Apr-09	872.3	80	25	23-Apr-09	911.4	83
24	14-Apr-09	855.0	78	26	28-Apr-09	792.9	72
<b>May 2009</b>							
27	12-May-09	870.1	79	29	22-May-09(pc)	431.4	39
28	17-May-09	712.3	65	30	27-May-09(pc)	637.9	58
<b>June 2009</b>							
31	10-Jun-09(pc)	310.1	28	33	25-Jun-09	408.3	37
32	20-Jun-09	494.0	45				

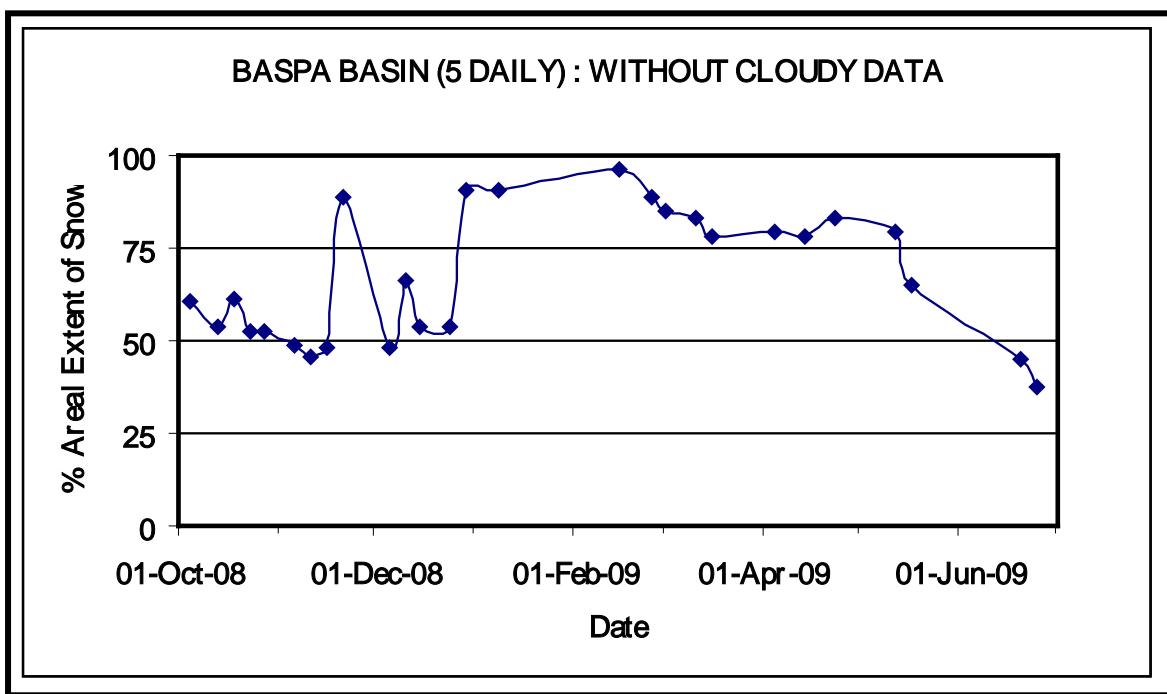
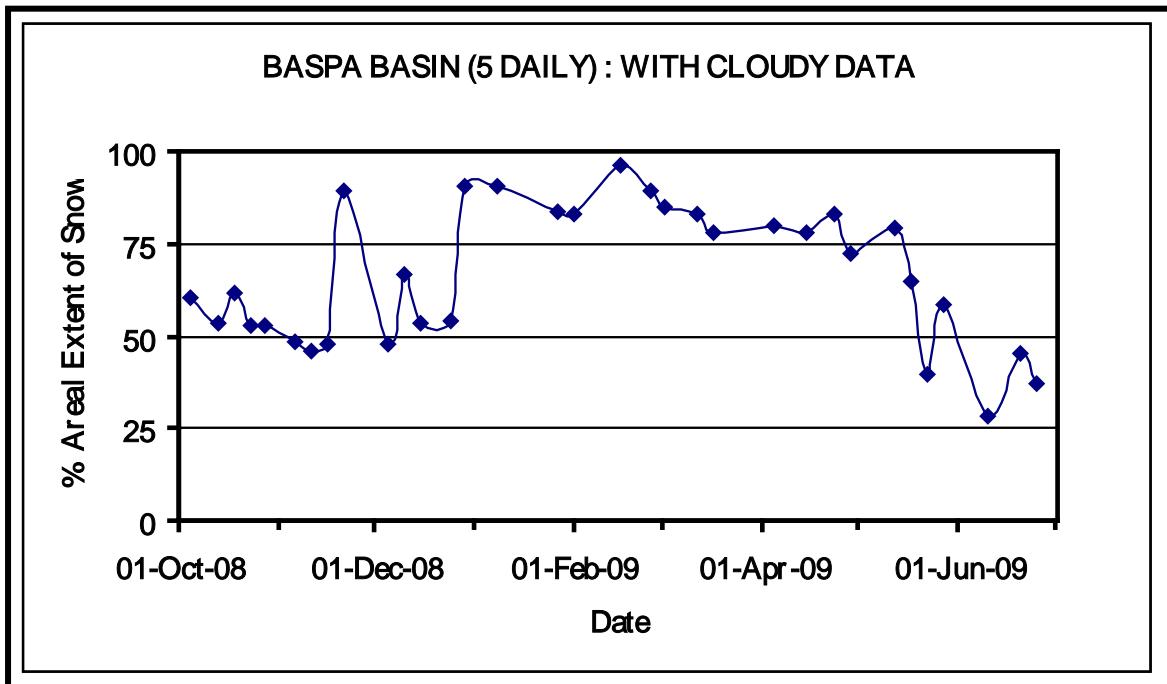
**AREAL EXTENT OF SNOW (10 DAILY)**

**BASIN NAME: BASPA**

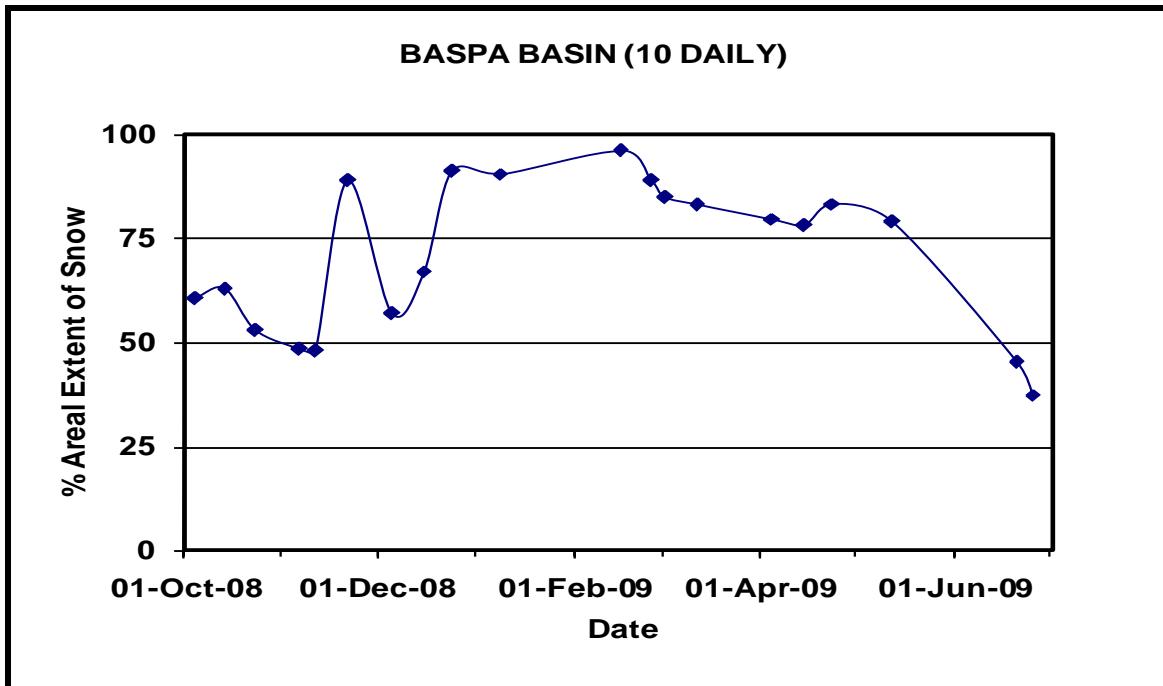
**BASIN AREA: 1095 sq km**

S. No	Date	Snow cover (sq km)	Snow cover (%)	S. No	Date	Snow cover (sq km)	Snow cover (%)
<b>October 2008</b>				<b>November 2008</b>			
1	4-Oct-08	661.3	60	4	6-Nov-08	530.9	48
2	13-Oct-08	688.9	63	5	11-Nov-08	423.5	39
3	23-Oct-08	557.2	51	6	21-Nov-08	974.5	89
<b>December 2008</b>				<b>January 2009</b>			
7	5-Dec-08	624.2	57	10	8-Jan-09	991.1	91
8	15-Dec-08	588.1	54				
9	24-Dec-08	895.0	82				
<b>February 2009</b>				<b>March 2009</b>			
11	15-Feb-09	1051.7	96	13	1-Mar-09	928.1	85
12	25-Feb-09	974.5	89	14	11-Mar-09	908.4	83
<b>April 2009</b>				<b>May 2009</b>			
15	4-Apr-09	872.3	80	18	12-May-09	795.0	73
16	14-Apr-09	855.0	78				
17	23-Apr-09	911.4	83				
<b>June 2009</b>							
19	20-Jun-09	494.0	45				
20	25-Jun-09	408.3	37				

### Snow cover depletion curve

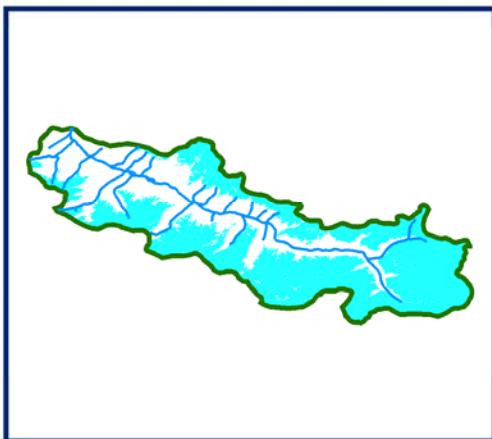


## Snow cover depletion curve

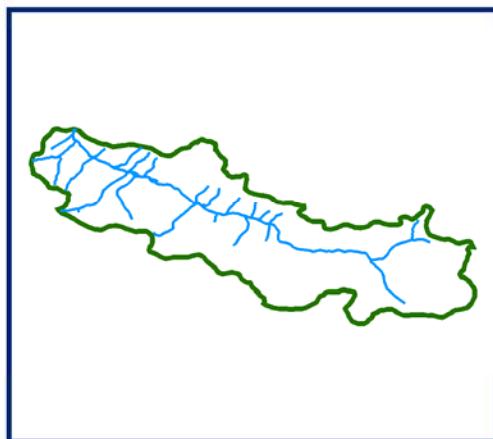


# *SNOW COVER MAP*

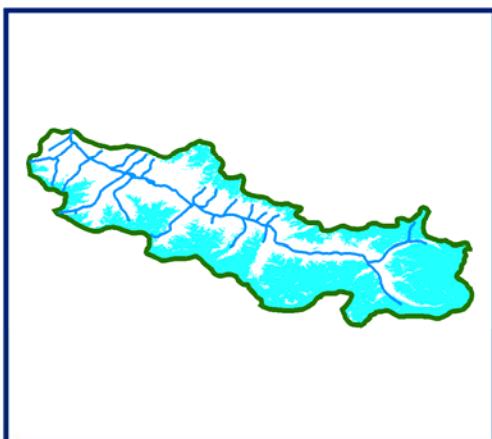
# SNOW COVER MAP : BASPA BASIN



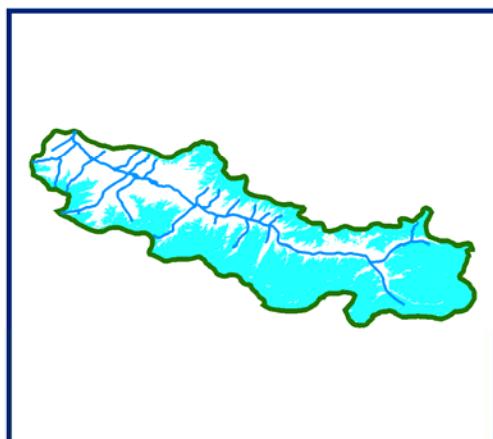
04 OCTOBER 2008



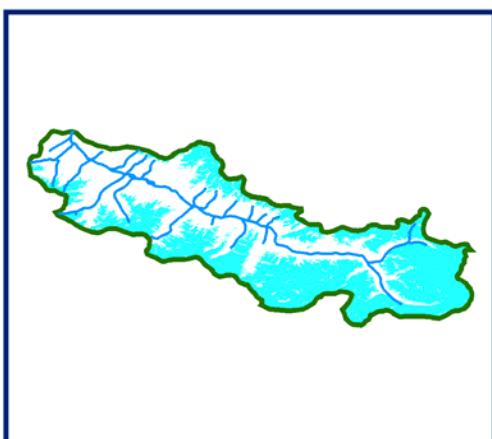
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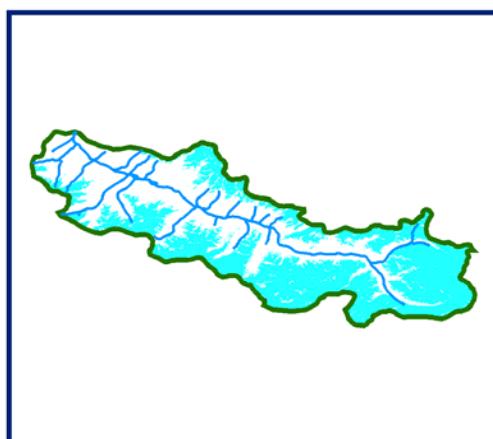
13 OCTOBER 2008



18 OCTOBER 2008



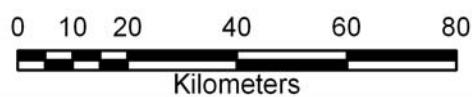
23 OCTOBER 2008



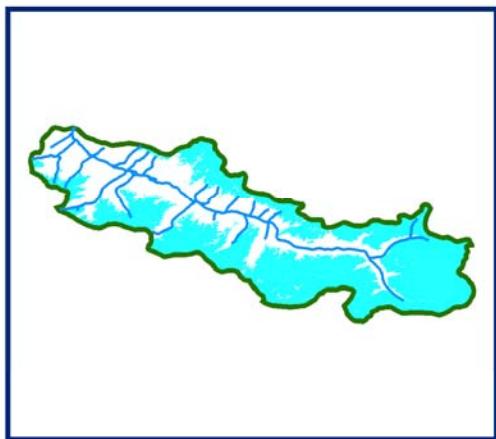
27 OCTOBER 2008



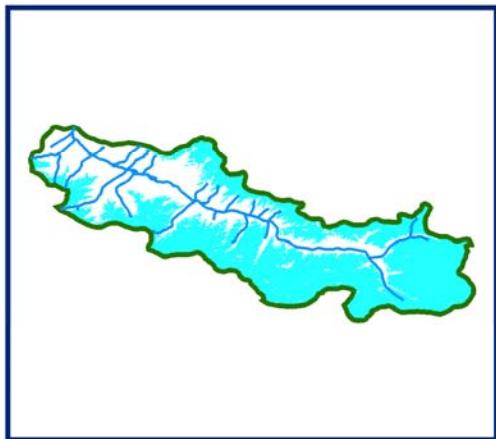
SNOW



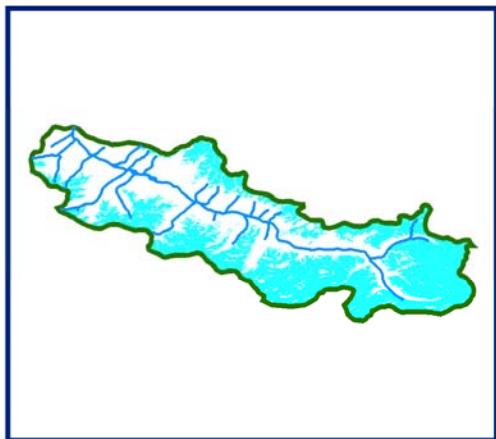
**10 DAILY SNOW COVER MAP: BASPA BASIN**



**DATA USED  
04 OCTOBER 2008**



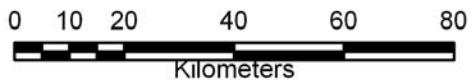
**DATA USED  
13 OCTOBER 2008  
18 OCTOBER 2008**



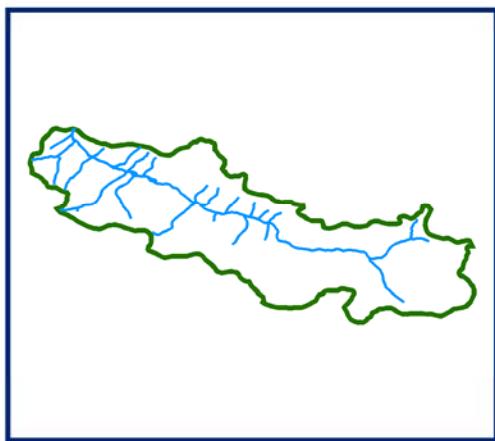
**DATA USED  
23 OCTOBER 2008  
27 OCTOBER 2008**



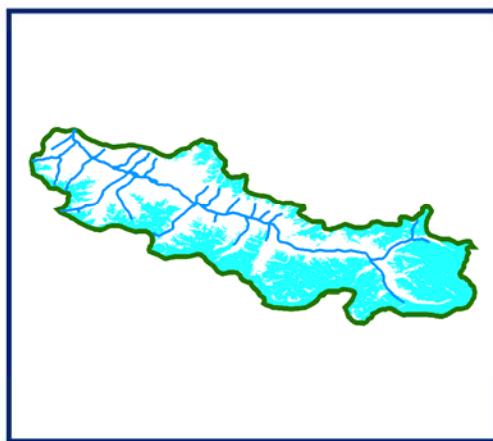
**SNOW**



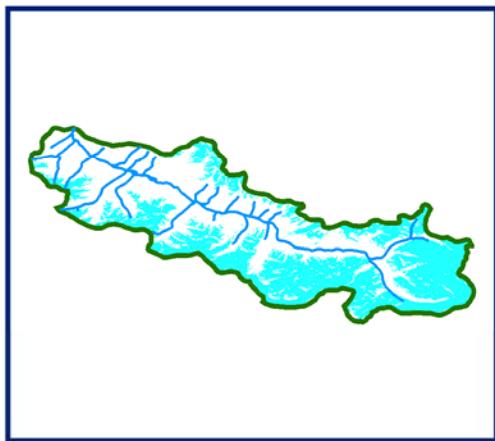
**SNOW COVER MAP : BASPA BASIN**



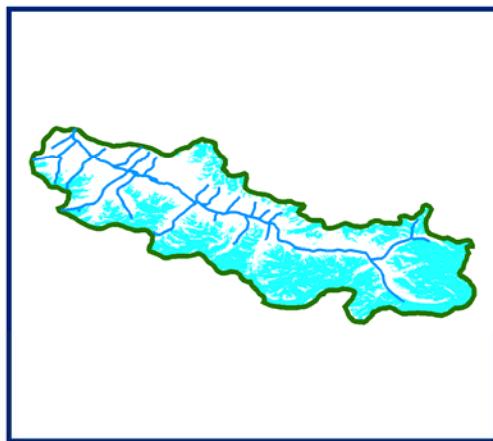
**DATA NOT AVAILABLE**



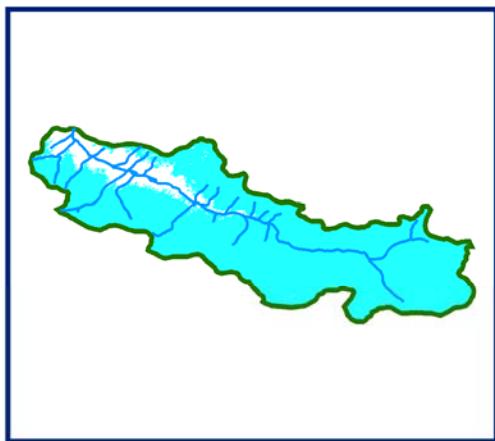
**06 NOVEMBER 2008**



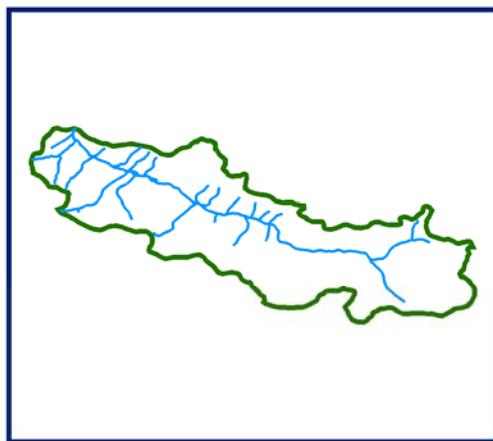
**11 NOVEMBER 2008**



**16 NOVEMBER 2008**



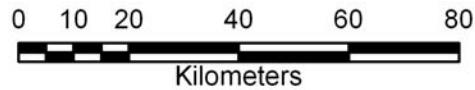
**21 NOVEMBER 2008**



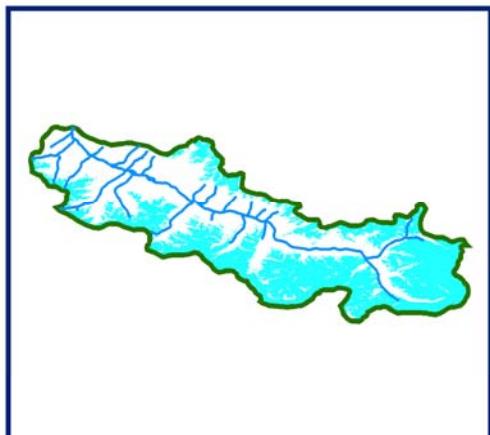
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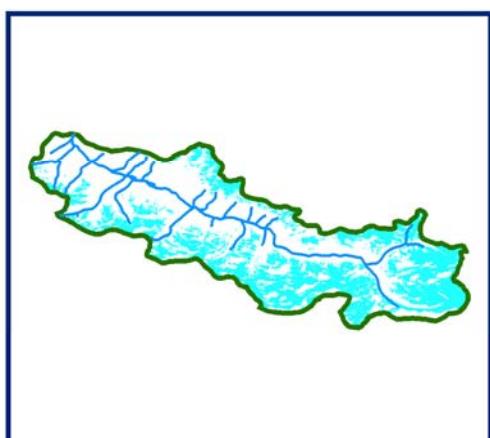
**SNOW**



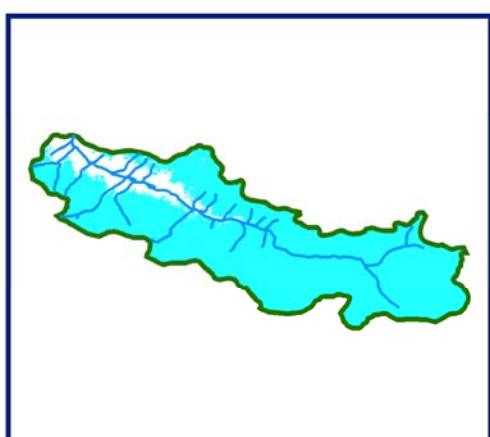
## 10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED  
**06 NOVEMBER 2008**



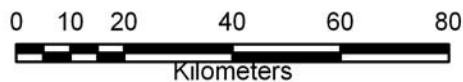
DATA USED  
**11 NOVEMBER 2008**  
**16 NOVEMBER 2008**



DATA USED  
**21 NOVEMBER 2008**

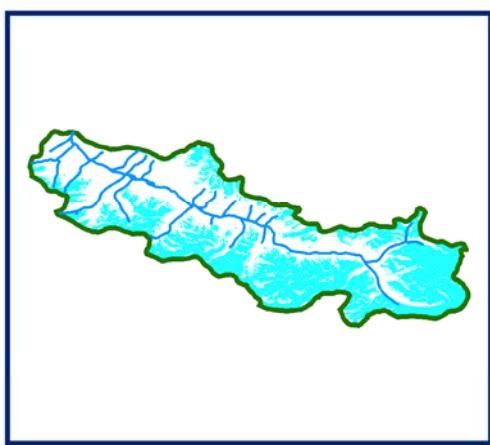


SNOW

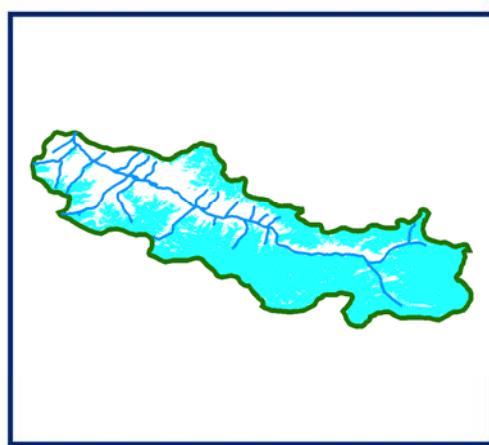


## SNOW COVER MAP

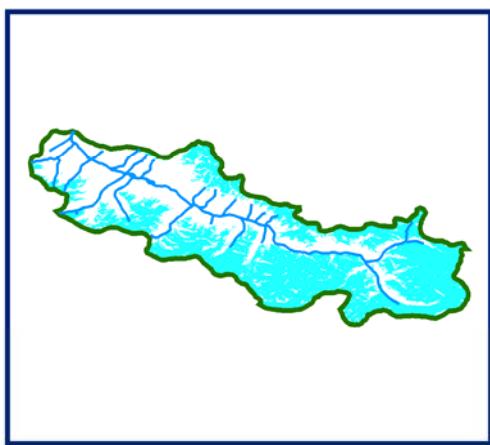
: BASPA BASIN



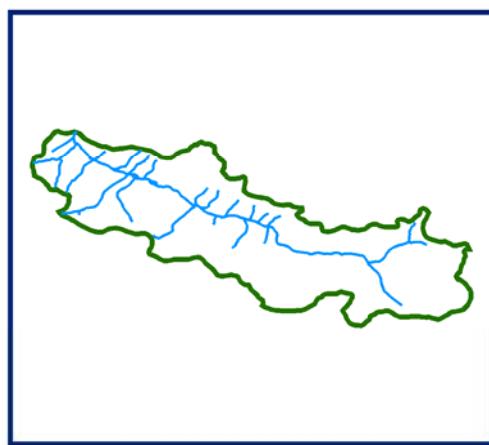
05 DECEMBER 2008



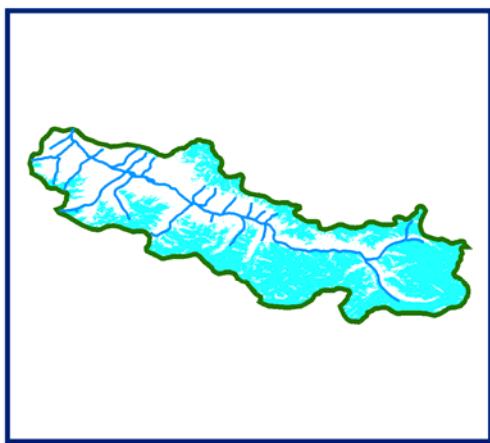
10 DECEMBER 2008



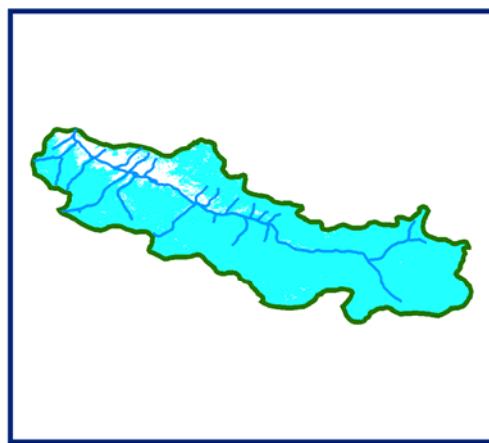
15 DECEMBER 2008



DATA NOT AVAILABLE



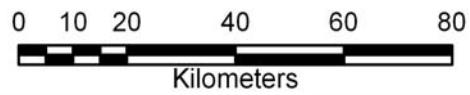
24 DECEMBER 2008



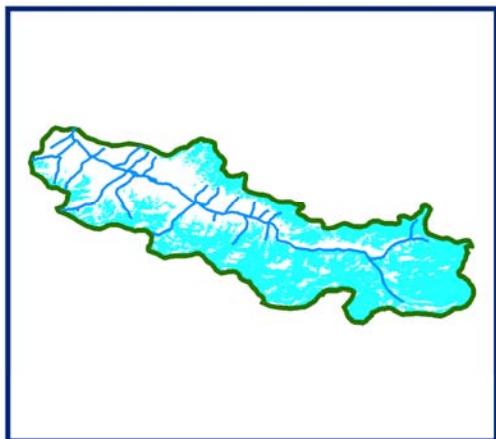
29 DECEMBER 2008



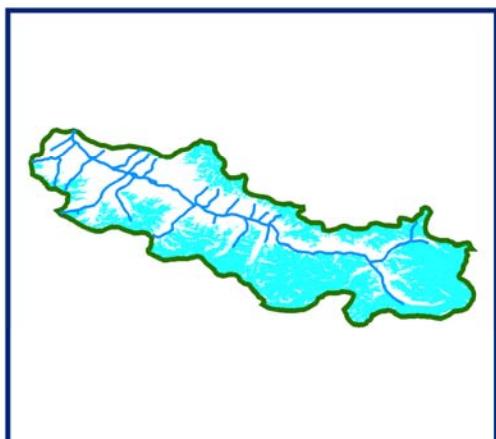
SNOW



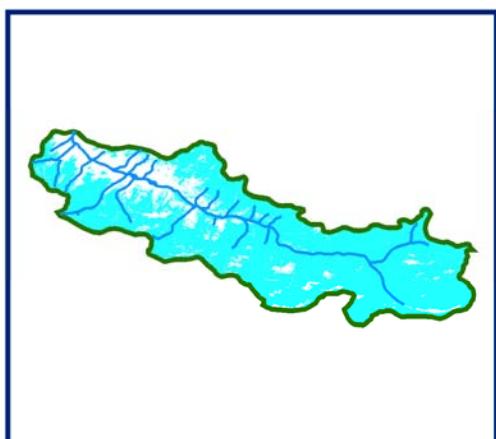
## 10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED  
**05 DECEMBER 2008**  
**10 DECEMBER 2008**



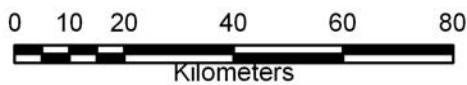
DATA USED  
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DATA USED  
**24 DECEMBER 2008**  
**29 DECEMBER 2008**

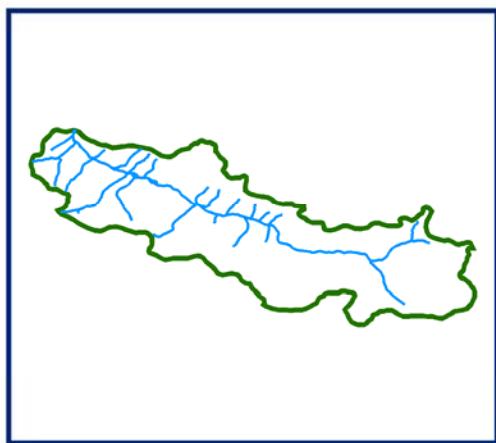


SNOW

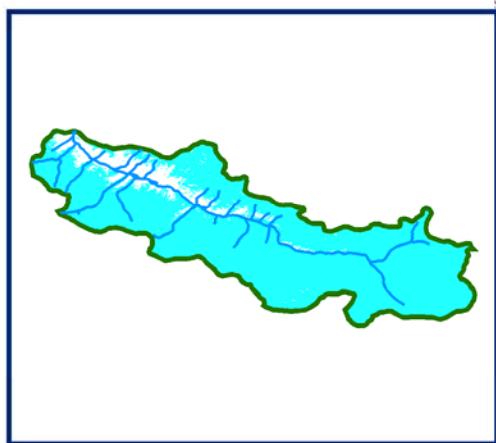


# SNOW COVER MAP

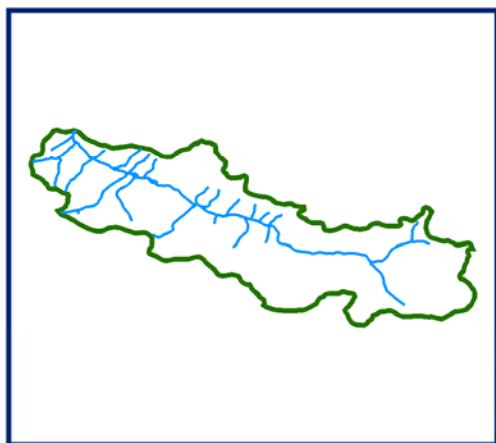
: BASPA BASIN



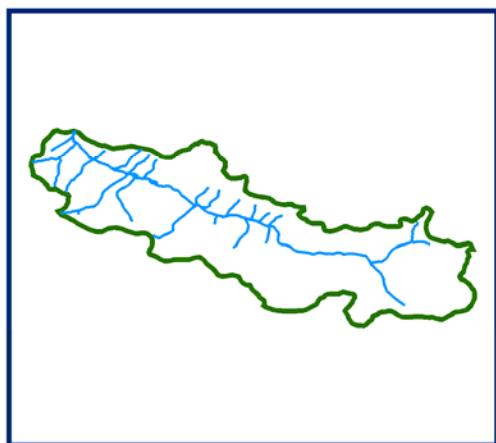
DATA NOT AVAILABLE



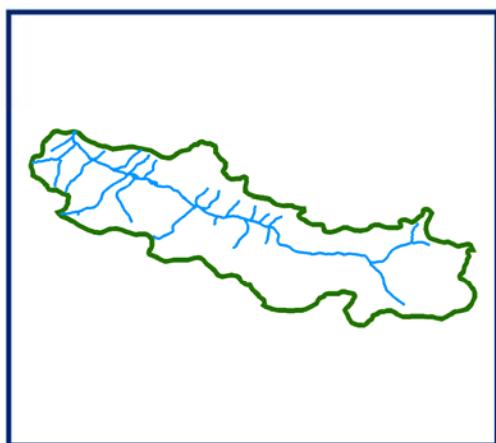
08 JANUARY 2009



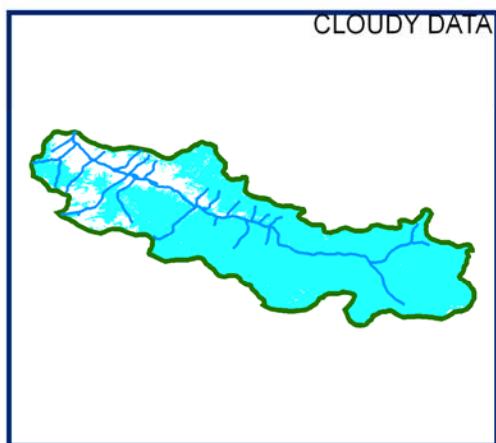
DATA NOT AVAILABLE



DATA NOT AVAILABLE



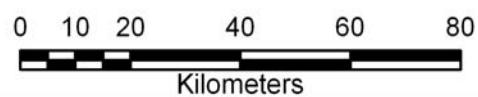
DATA NOT AVAILABLE



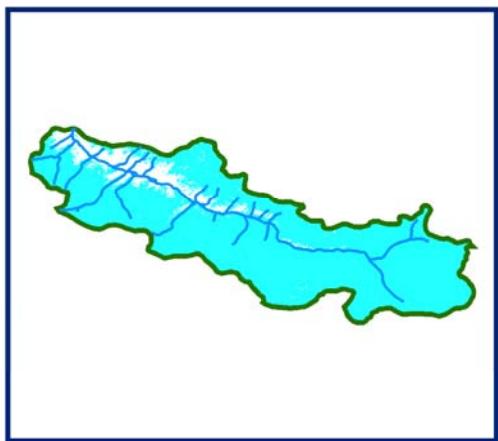
27 JANUARY 2009



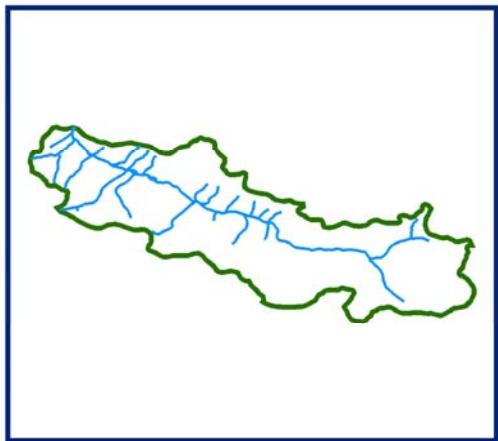
SNOW



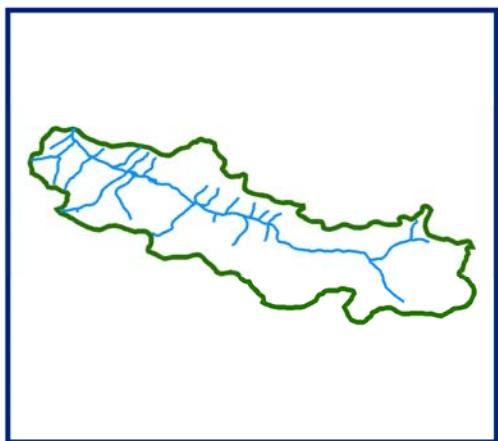
## 10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED  
**08 JANUARY 2009**



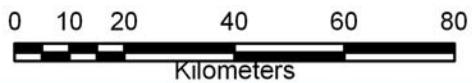
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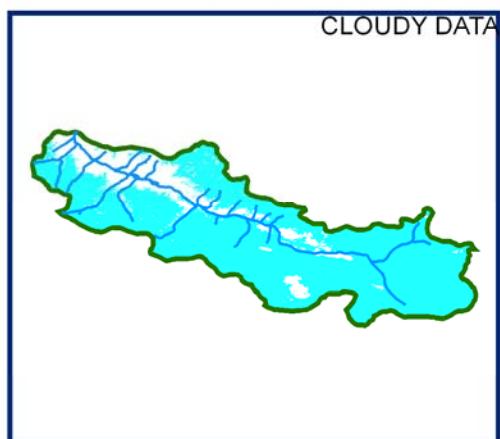
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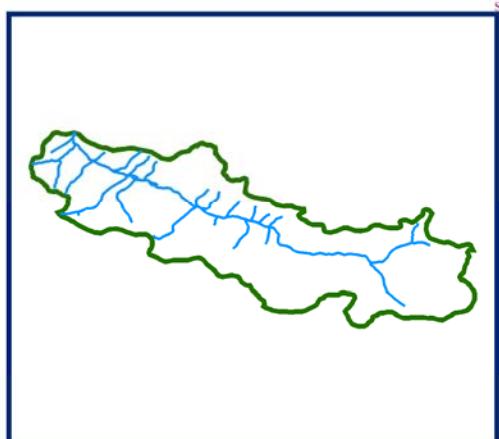
SNOW



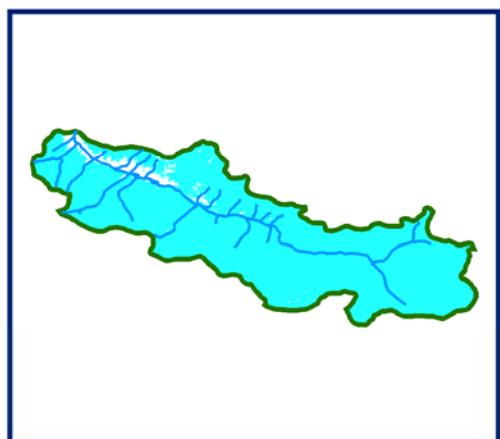
# SNOW COVER MAP : BASPA BASIN



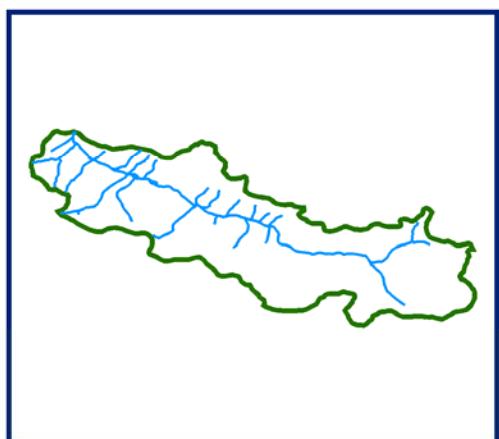
01 FEBRUARY 2009



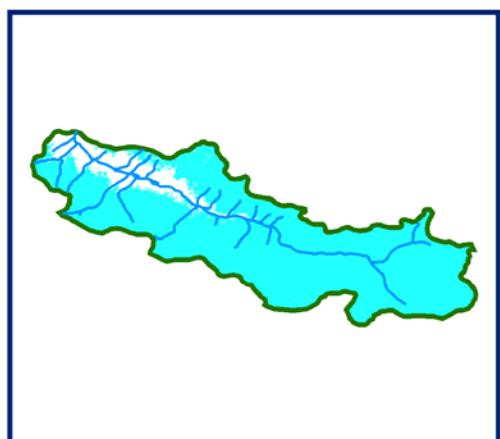
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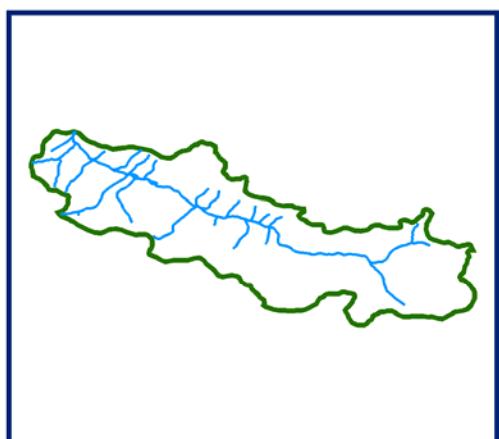
15 FEBRUARY 2009



DATA NOT AVAILABLE



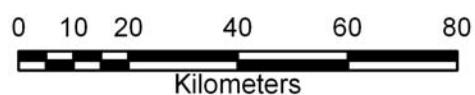
25 FEBRUARY 2009



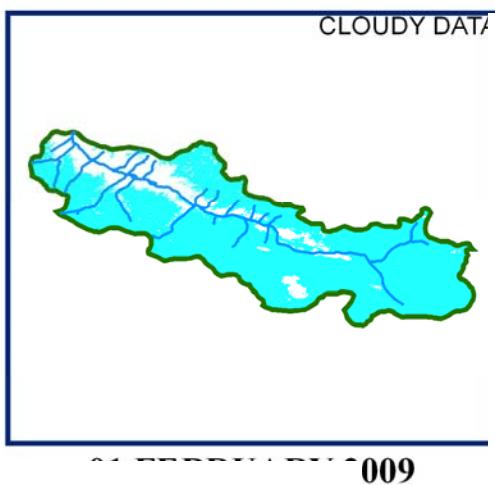
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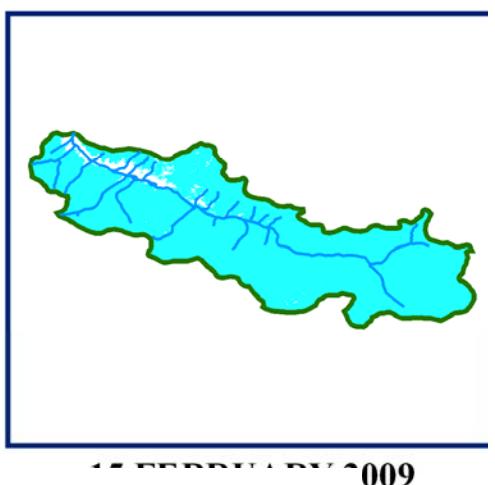
SNOW



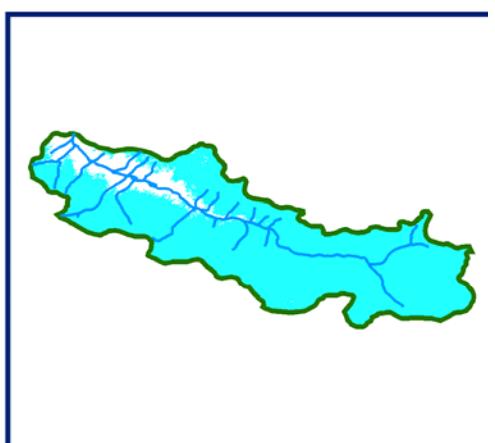
# SNOW COVER MAP : BASPA BASIN



01 FEBRUARY 2009



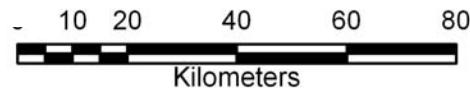
15 FEBRUARY 2009



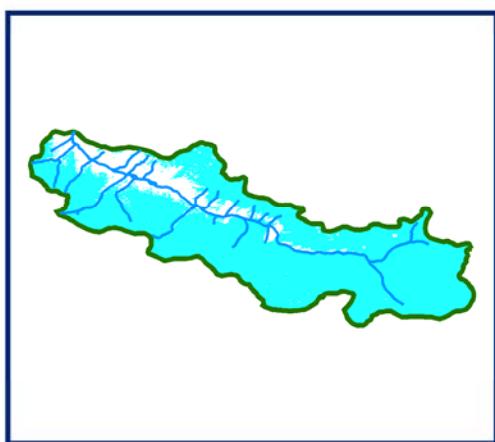
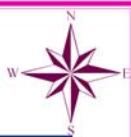
25 FEBRUARY 2009



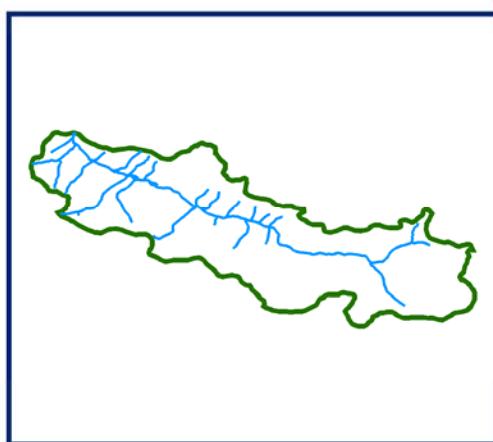
SNOW



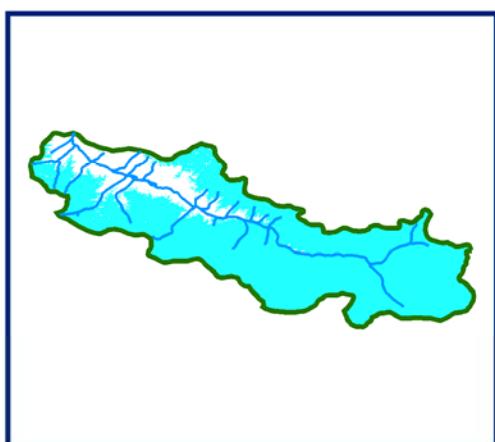
**SNOW COVER MAP : BASPA BASIN**



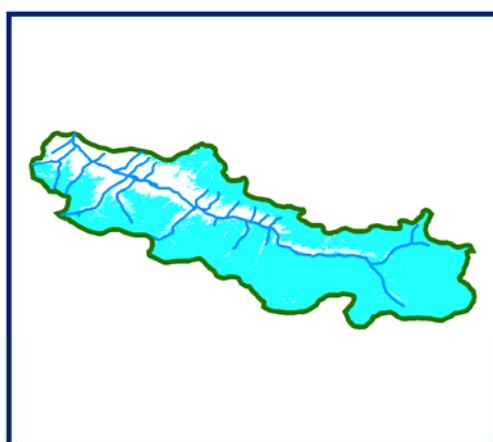
**01 MARCH 2009**



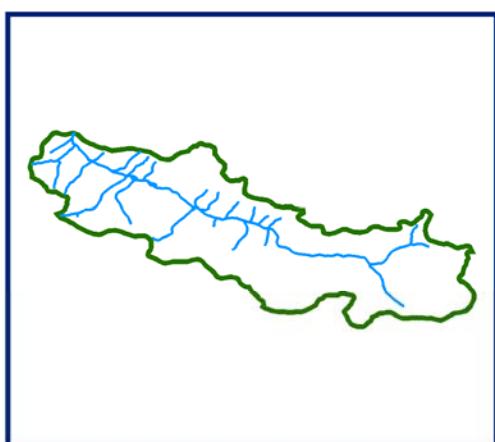
**DATA NOT AVAILABLE**



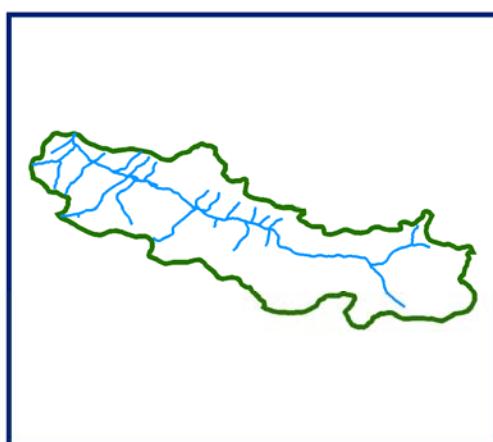
**11 MARCH 2009**



**16 MARCH 2009**



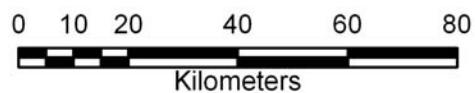
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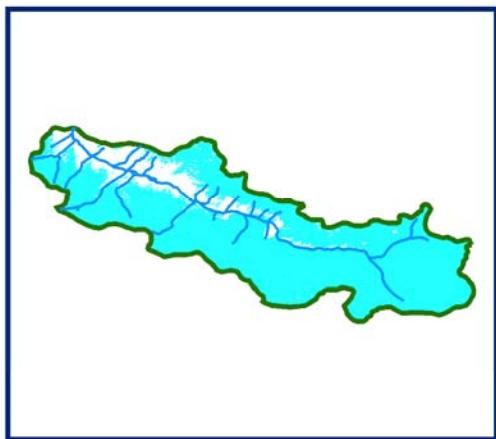
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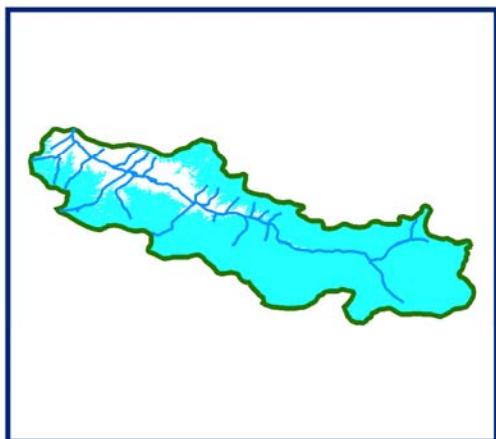
**SNOW**



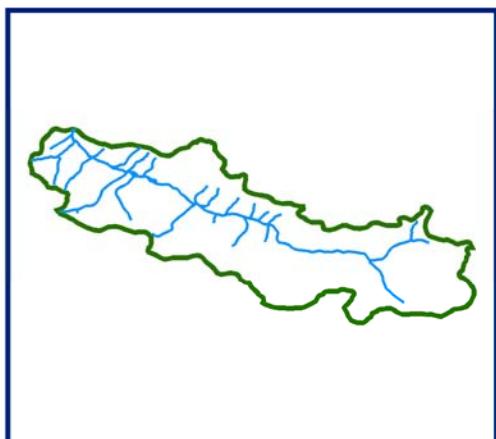
## 10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED  
**01 MARCH 2009**



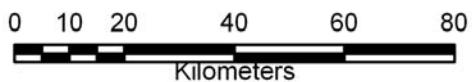
DATA USED  
**11 MARCH 2009**  
**16 MARCH 2009**



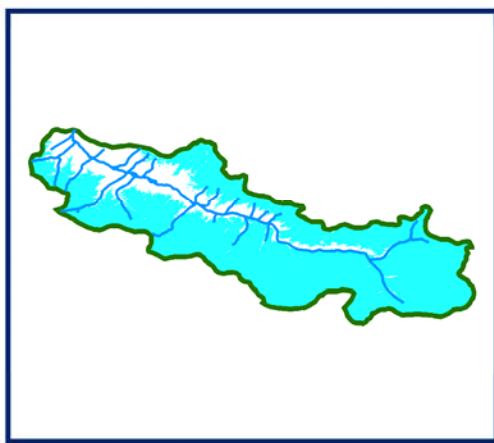
DATA USED  
**30 APRIL 2006**



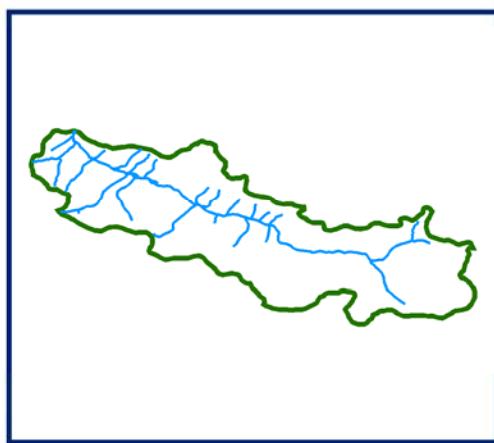
SNOW



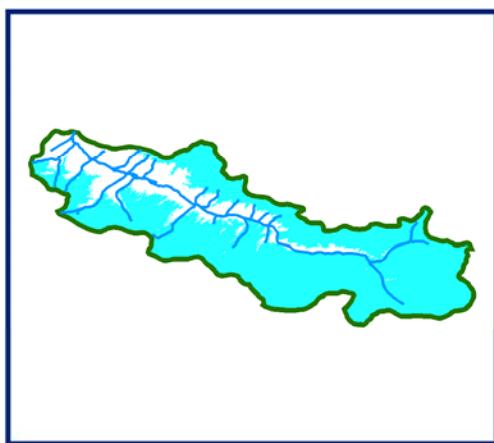
# SNOW COVER MAP : BASPA BASIN



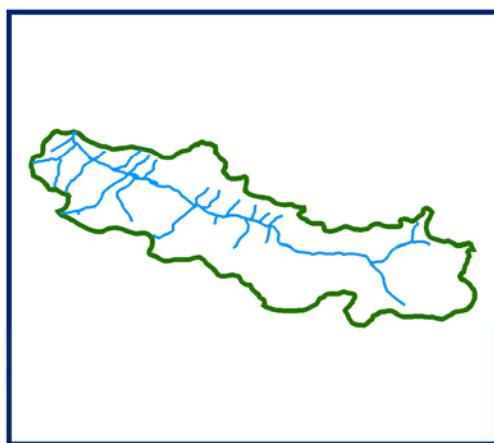
04 APRIL 2009



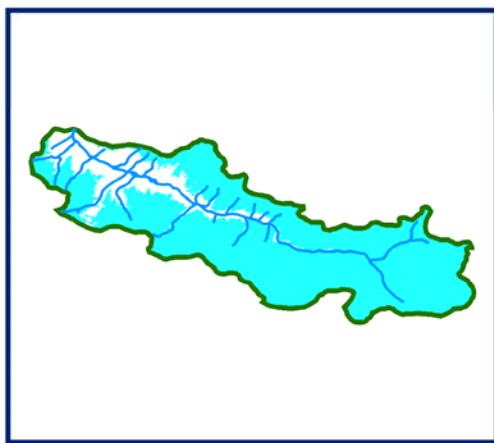
DATA NOT AVAILABLE



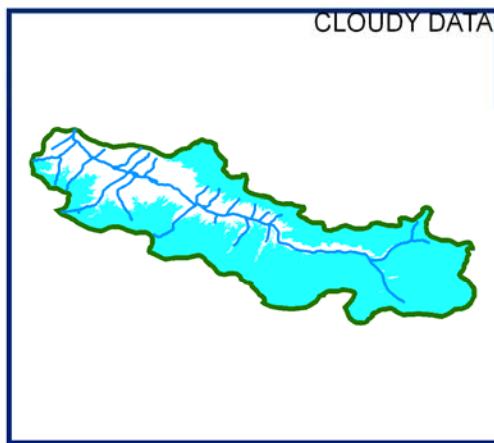
14 APRIL 2009



DATA NOT AVAILABLE



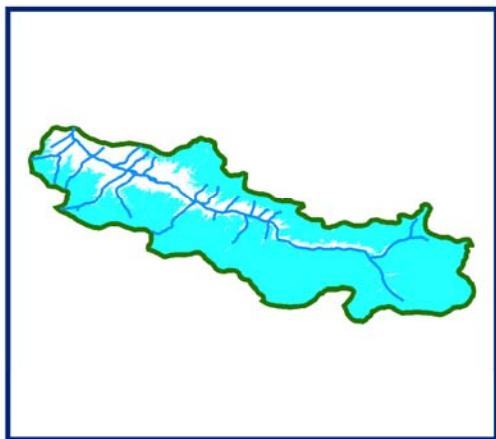
23 APRIL 2009



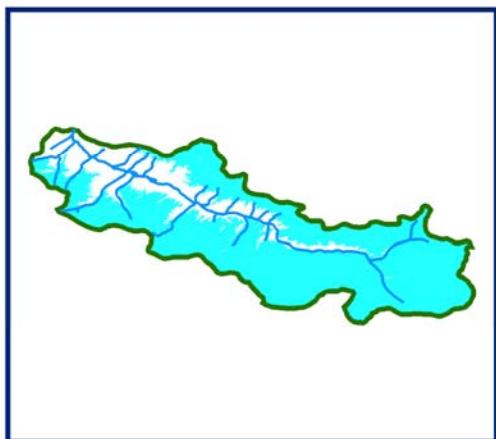
28 APRIL 2009



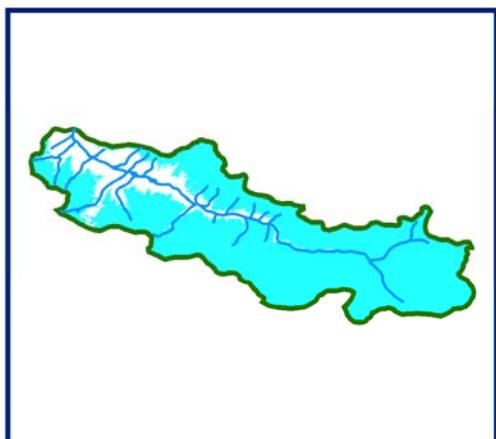
## 10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED  
**04 APRIL 2009**



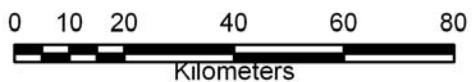
DATA USED  
**14 APRIL 2009**



DATA USED  
**23 APRIL 2009**

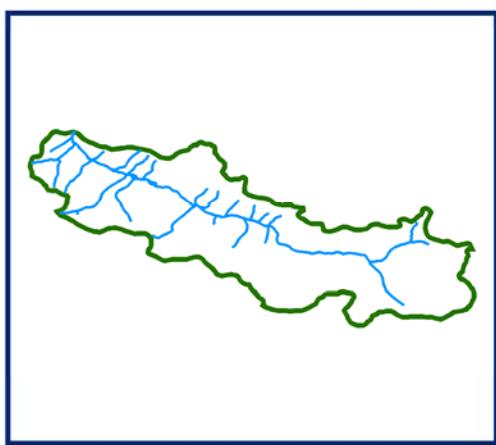


SNOW

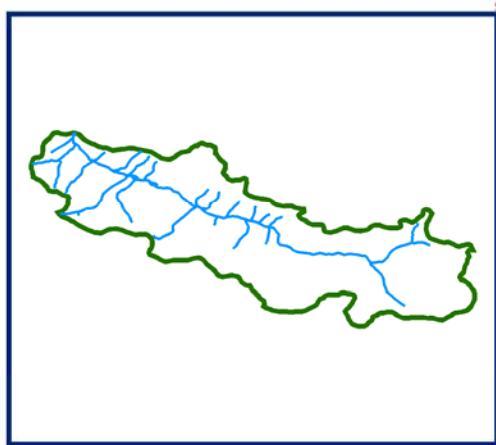


## SNOW COVER MAP

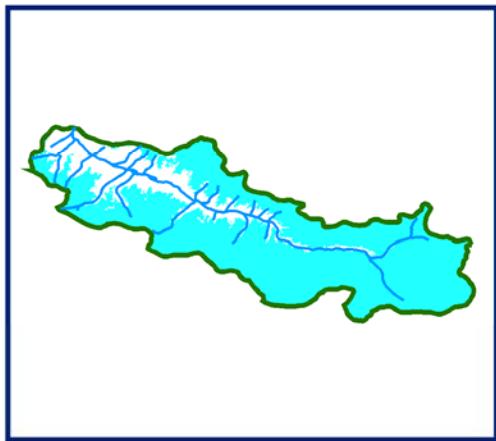
: BASPA BASIN



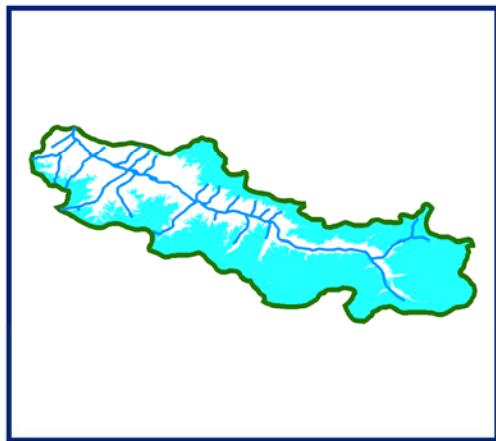
DATA NOT AVAILABLE



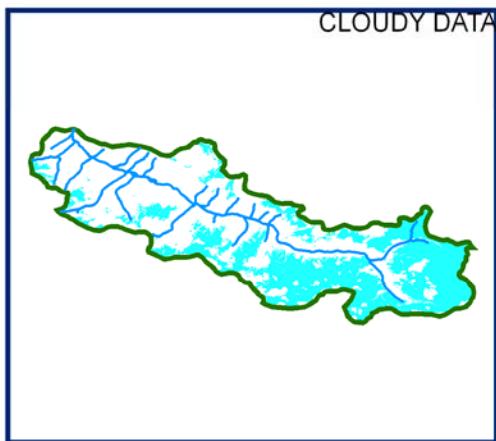
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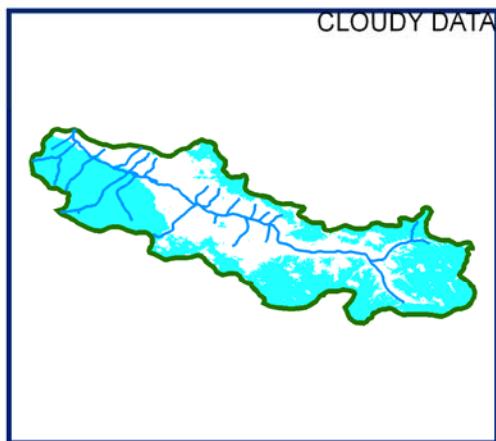
12 MAY 2009



17 MAY 2009



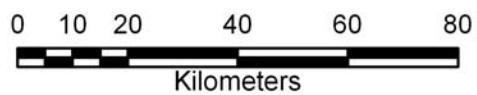
22 MAY 2009



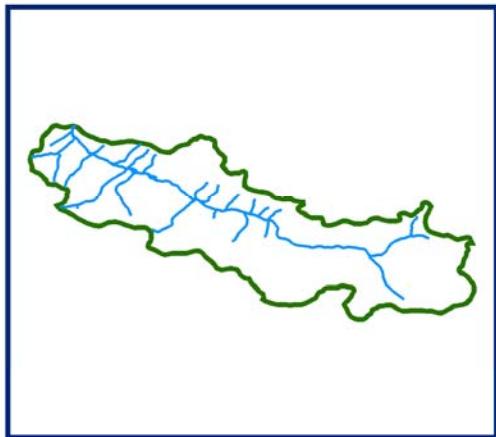
27 MAY 2009



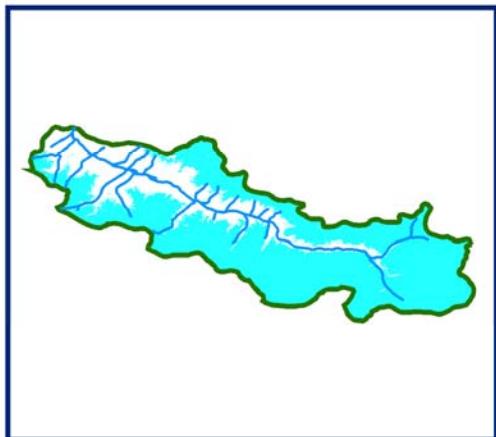
SNOW



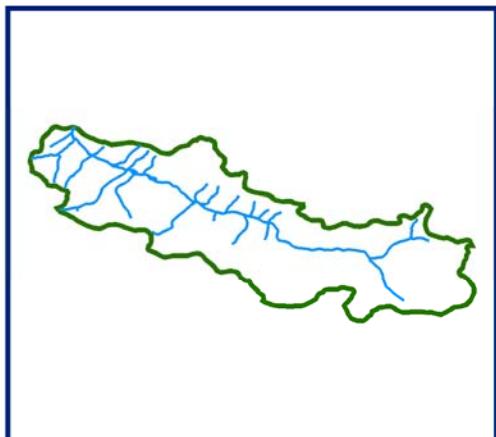
## 10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED  
DATA NOT AVAILABLE



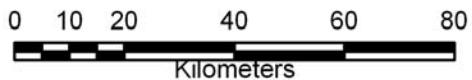
DATA USED  
12 MAY 2009  
17 MAY 2009



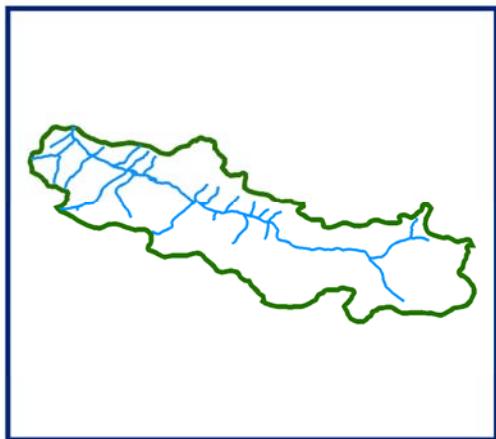
DATA USED  
DATA NOT AVAILABLE



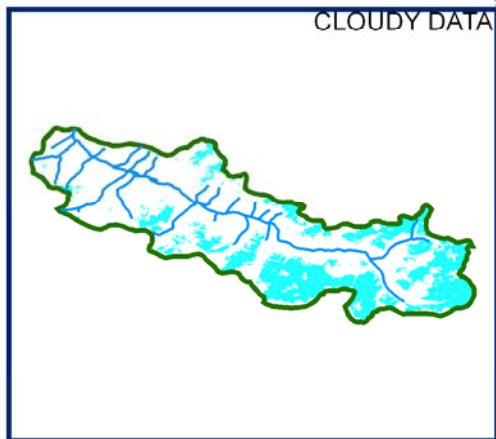
SNOW



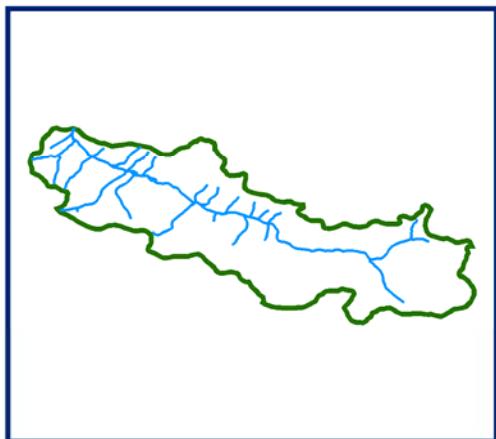
# SNOW COVER MAP : BASPA BASIN



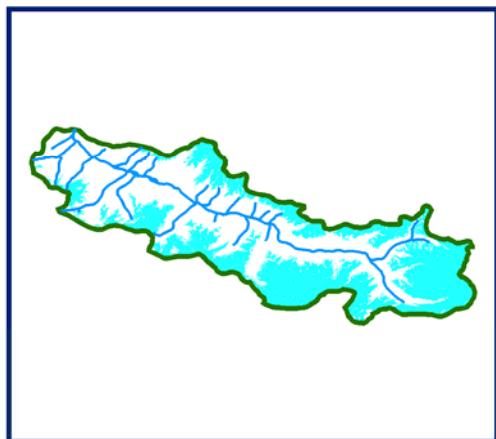
DATA NOT AVAILABLE



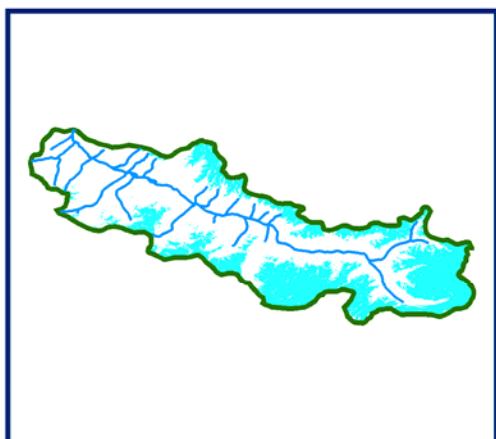
10 JUNE 2009



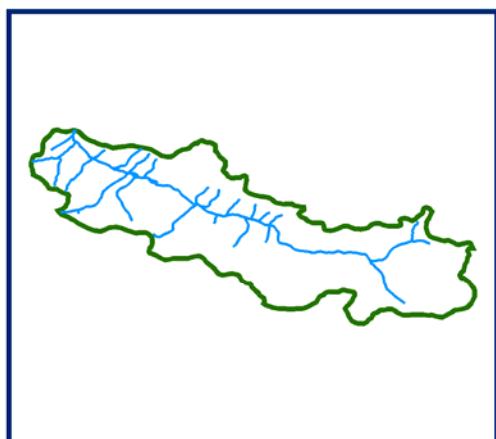
DATA NOT AVAILABLE



20 JUNE 2009



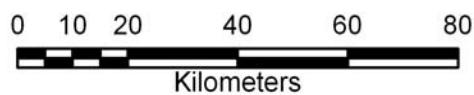
25 JUNE 2009



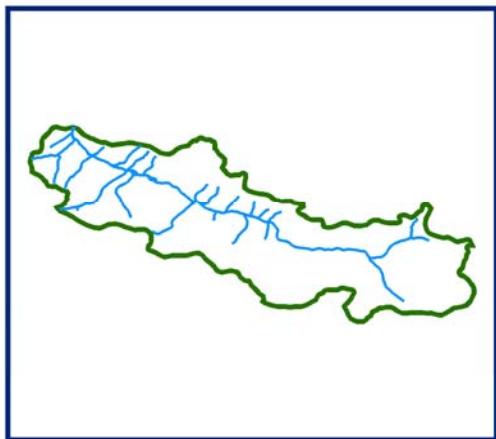
DATA NOT AVAILABLE



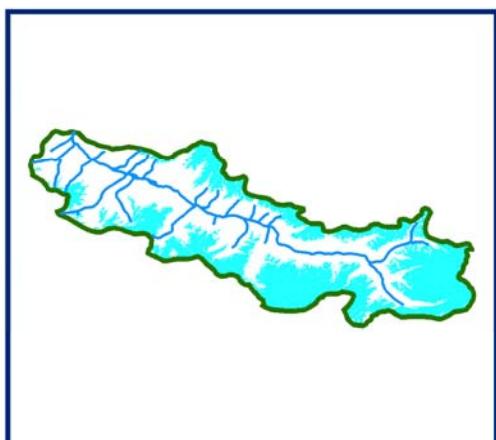
SNOW



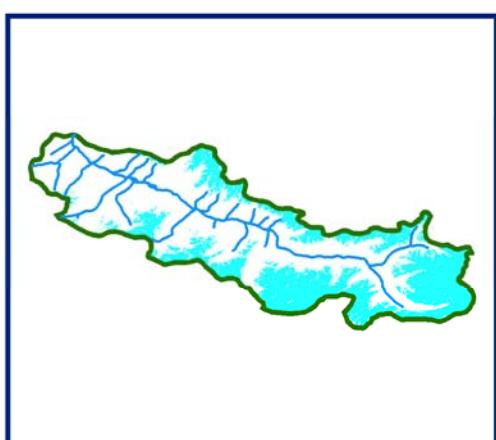
## 10 DAILY SNOW COVER MAP: BASPA BASIN



DATA USED  
DATA NOT AVAILABLE



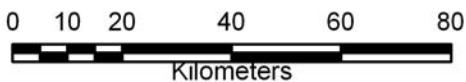
DATA USED  
20 JUNE 2009



DATA USED  
25 JUNE 2009



SNOW



*JIWA BASIN*

### AREAL EXTENT OF SNOW (5 DAILY)

**BASIN NAME: JIWA**

**BASIN AREA: 1444 sq km**

S. No	Date	Snow cover (sq km)	Snow cover (%)	S. No	Date	Snow cover (sq km)	Snow cover (%)
<b>October 2008</b>							
1	4-Oct-08	279.5	19	4	18-Oct-08	395.7	27
2	8-Oct-08	51.3	4	5	23-Oct-08	295.3	20
3	13-Oct-08	229.7	16	6	27-Oct-08	295.3	20
<b>November 2008</b>							
7	1-Nov-08	233.2	16	10	16-Nov-08	268.6	19
8	6-Nov-08	224.2	16	11	21-Nov-08	571.3	40
9	11-Nov-08	218.7	15				
<b>December 2008</b>							
12	5-Dec-08	268.6	19	15	15-Dec-08	237.4	16
13	10-Dec-08	273.1	19	16	24-Dec-08	234.1	16
14	14-Dec-08	223.6	15	17	29-Dec-08	552.6	38
<b>January 2009</b>							
18	8-Jan-09	662.6	46	20	27-Jan-09	401.7	28
19	12-Jan-09	614.8	43				
<b>February 2009</b>							
21	1-Feb-09	496.3	34	23	15-Feb-09	627.3	43
22	5-Feb-09	478.3	33	24	25-Feb-09	571.3	40
<b>March 2009</b>							
25	1-Mar-09	515.7	36	27	16-Mar-09	436.6	30
26	11-Mar-09	514.1	36				
<b>April 2009</b>							
28	4-Apr-09	478.5	33	31	23-Apr-09	412.5	29
29	14-Apr-09	449.4	31	32	28-Apr-09	375.3	26
30	18-Apr-09	429.1	30				
<b>May 2009</b>							
33	12-May-09	408.3	28	35	22-May-09	70.3	5
34	17-May-09	288.9	20	36	27-May-09	222.1	15
<b>June 2009</b>							
37	10-Jun-09	126.4	9	39	25-Jun-09	212.5	15
38	20-Jun-09	202.2	14	40	29-Jun-09	104.3	7

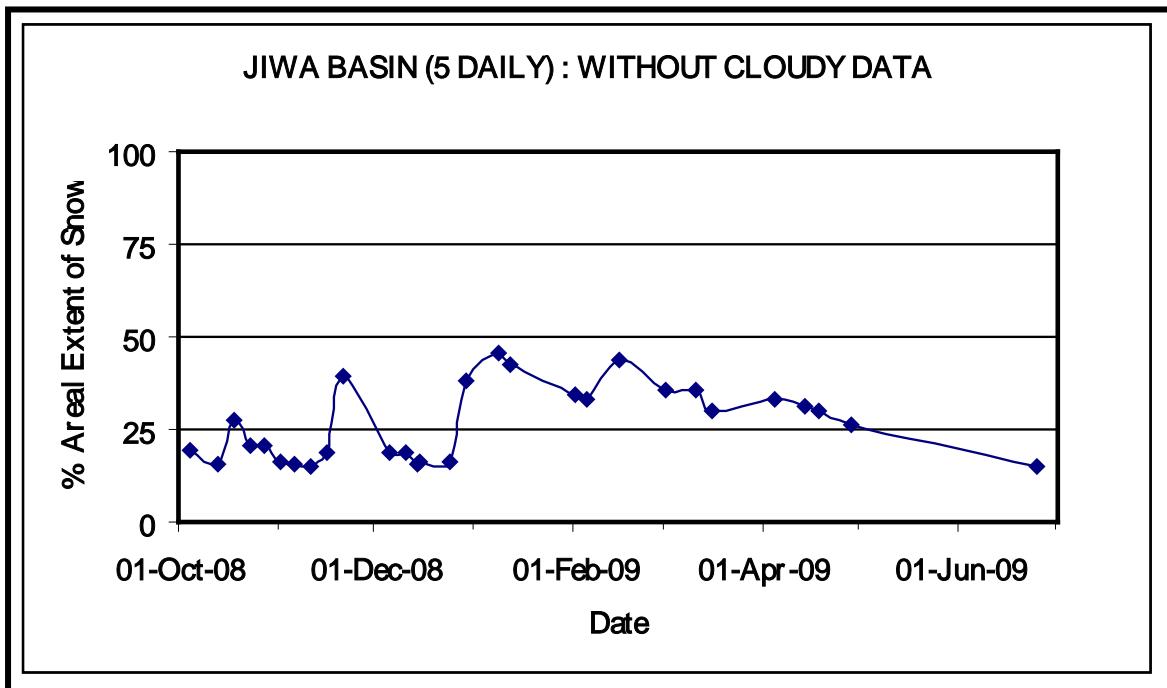
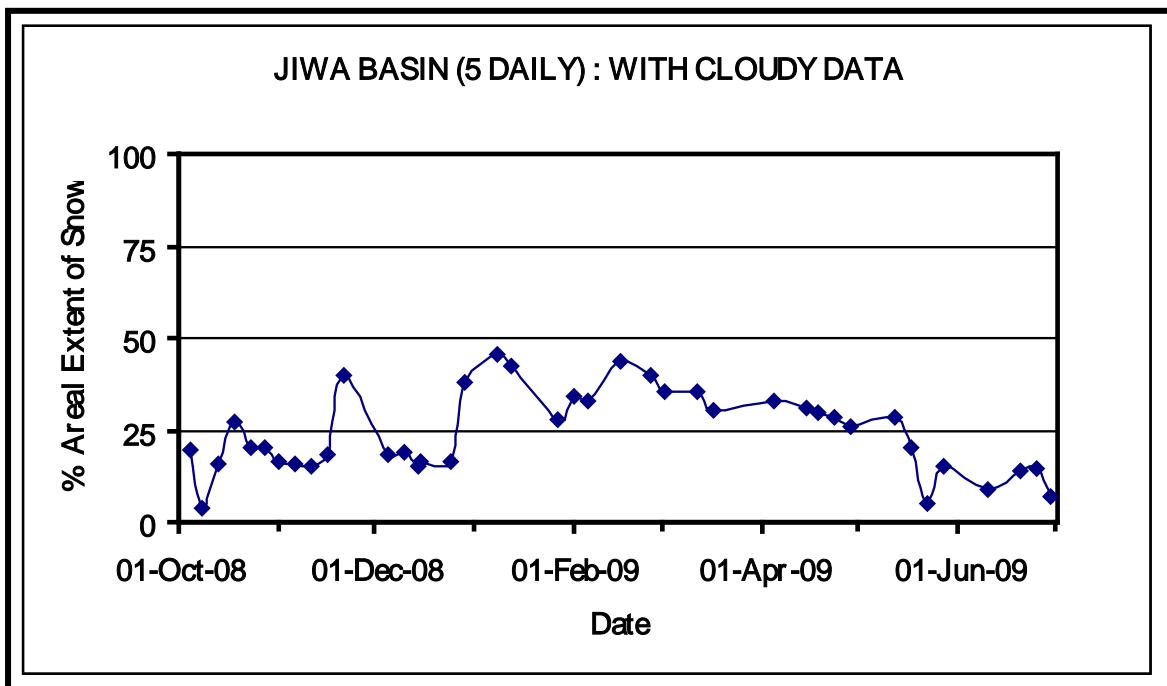
**AREAL EXTENT OF SNOW (10 DAILY)**

**BASIN NAME: JIWA**

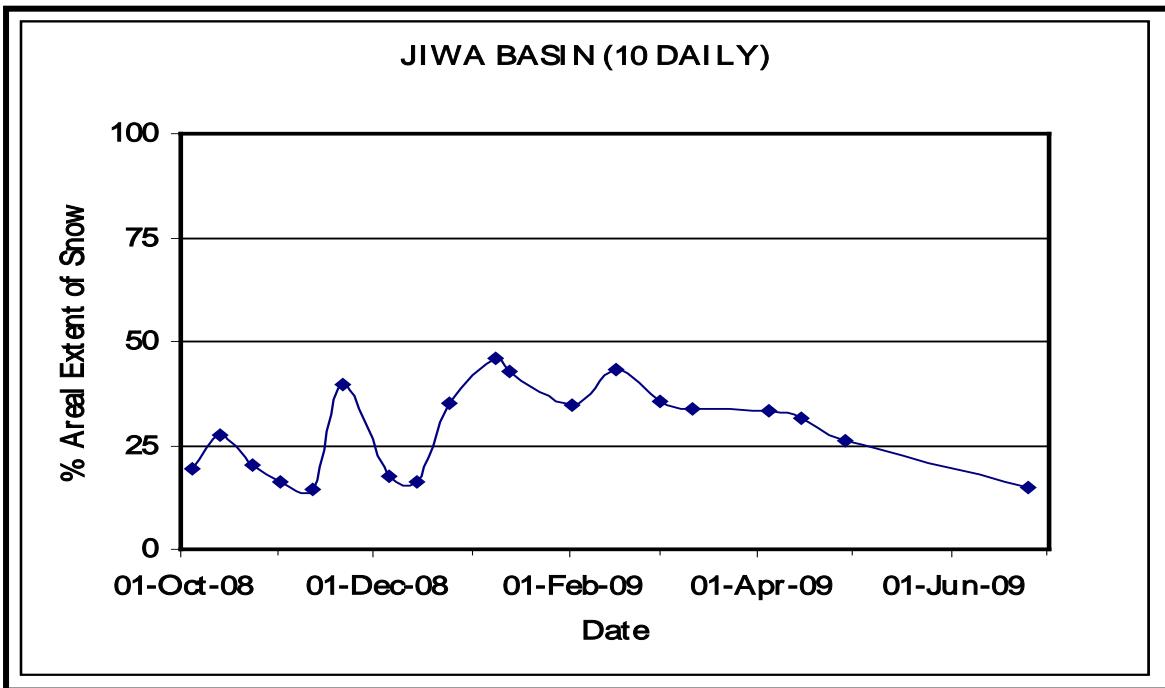
**BASIN AREA: 1444 sq km**

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
<b>October 2008</b>				<b>November 2008</b>			
1	4-Oct-08	279.5	19	4	1-Nov-08	231.6	16
2	13-Oct-08	394.3	27	5	11-Nov-08	205.1	14
3	23-Oct-08	292.9	20	6	21-Nov-08	571.3	40
<b>December 2008</b>				<b>January 2009</b>			
7	5-Dec-08	254.7	18	10	8-Jan-09	662.6	46
8	14-Dec-08	231.4	16	11	12-Jan-09	614.8	43
9	24-Dec-08	507.5	35				
<b>February 2009</b>				<b>March 2009</b>			
12	1-Feb-09	502.1	35	14	1-Mar-09	515.7	36
13	15-Feb-09	627.3	43	15	11-Mar-09	486.3	34
<b>April 2009</b>				<b>May 2009</b>			
16	4-Apr-09	478.5	33				
17	14-Apr-09	456.5	32				
18	28-Apr-09	375.3	26				
<b>June 2009</b>							
19	25-Jun-09	212.5	15				

### Snow cover depletion curve

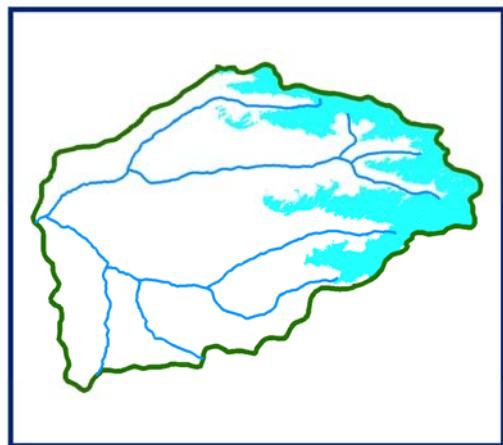


### Snow cover depletion curve

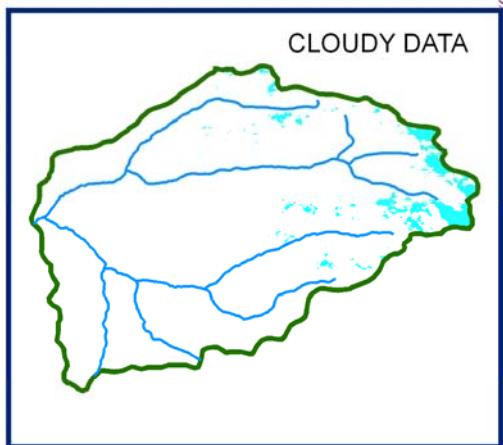


# *SNOW COVER MAP*

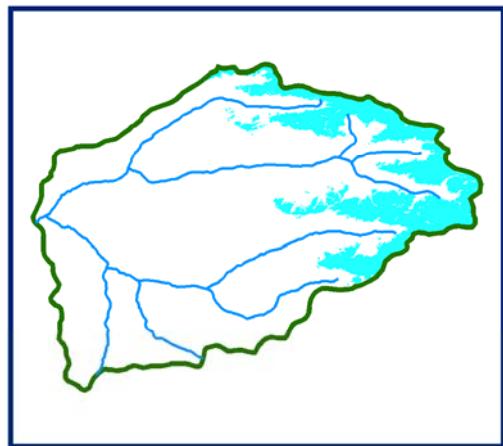
**SNOW COVER MAP : JIWA BASIN**



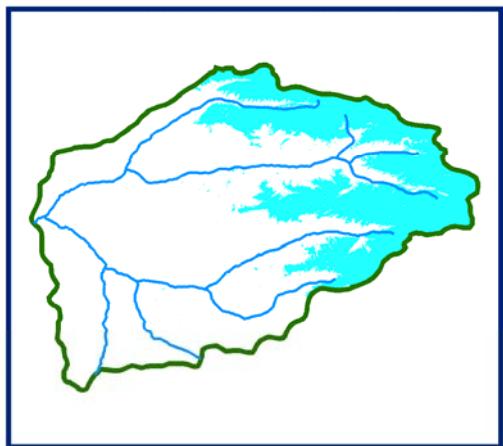
**04 OCTOBER 2008**



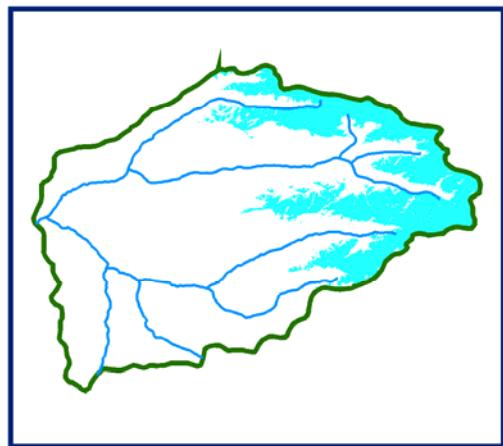
**08 OCTOBER 2008**



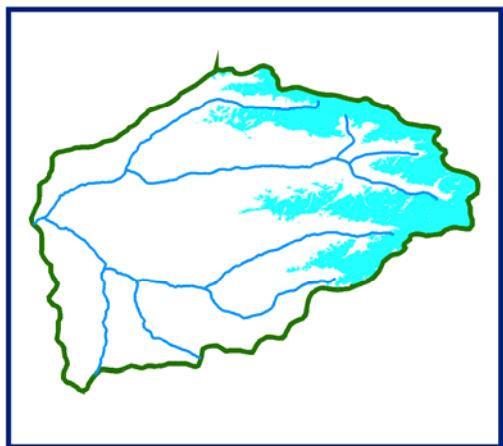
**13 OCTOBER 2008**



**18 OCTOBER 2008**



**23 OCTOBER 2008**



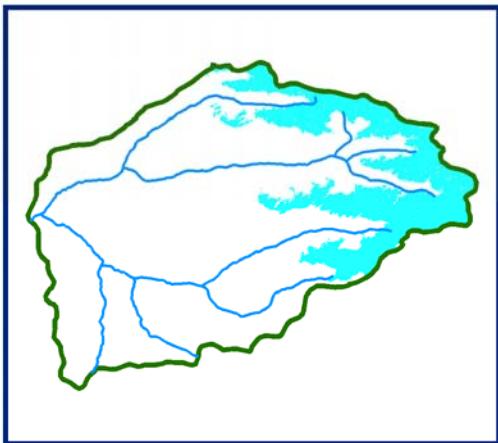
**27 OCTOBER 2008**



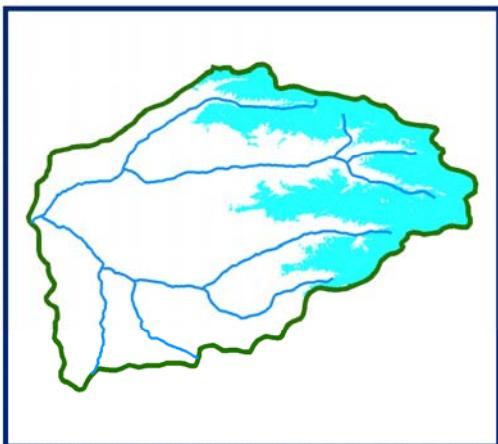
**SNOW**



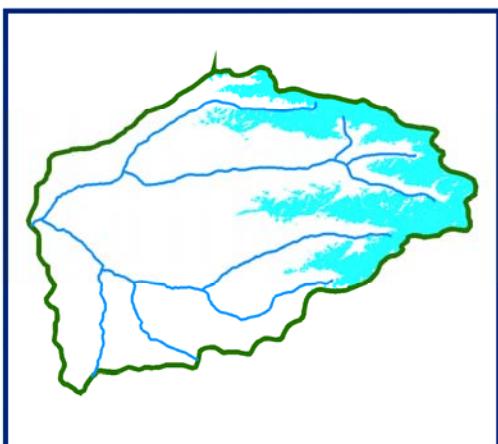
## 10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED  
**04 OCTOBER 2008**



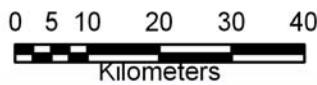
DATA USED  
**13 OCTOBER 2008**  
**18 OCTOBER 2008**



DATA USED  
**23 OCTOBER 2008**  
**27 OCTOBER 2008**

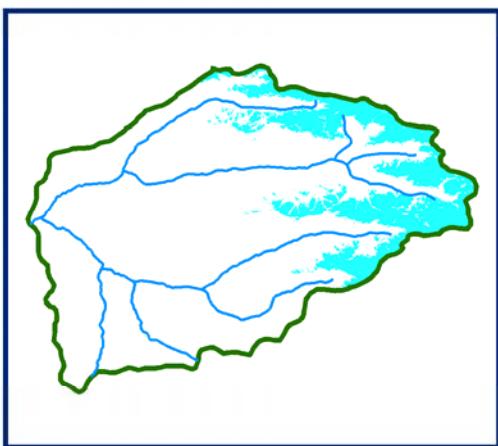
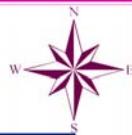


SNOW

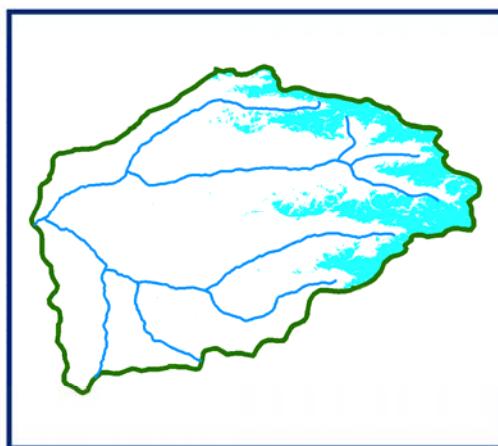


# SNOW COVER MAP

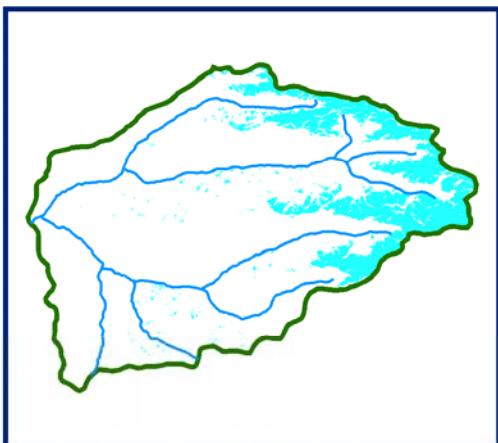
# : JIWA BASIN



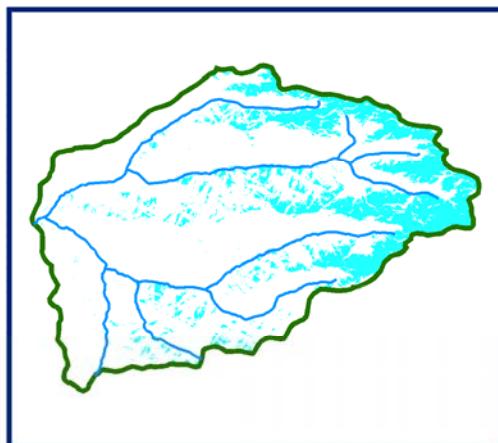
01 NOVEMBER 2008



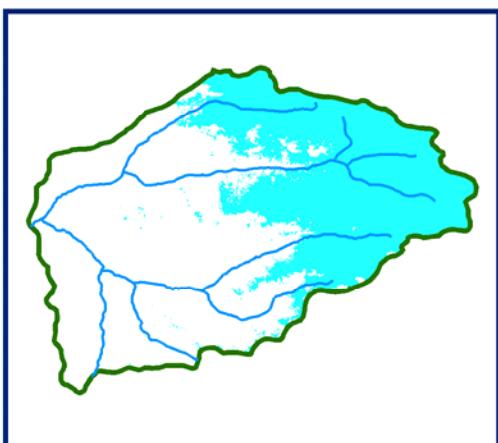
06 NOVEMBER 2008



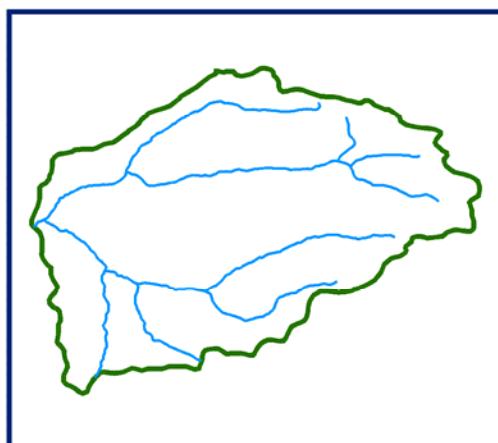
11 NOVEMBER 2008



16 NOVEMBER 2008



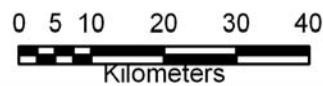
21 NOVEMBER 2008



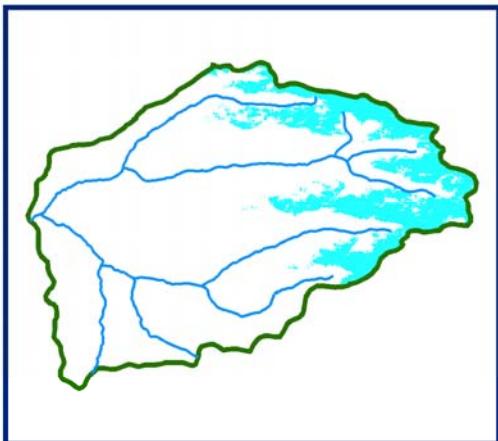
DATA NOT AVAILABLE



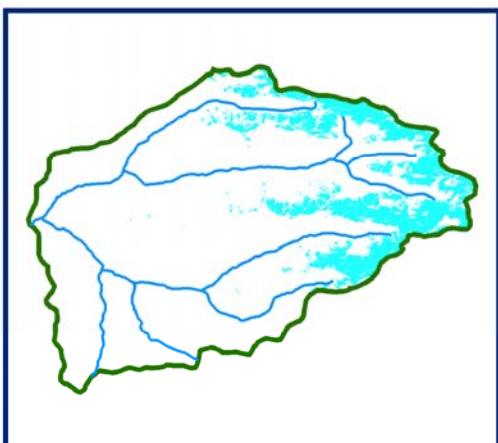
SNOW



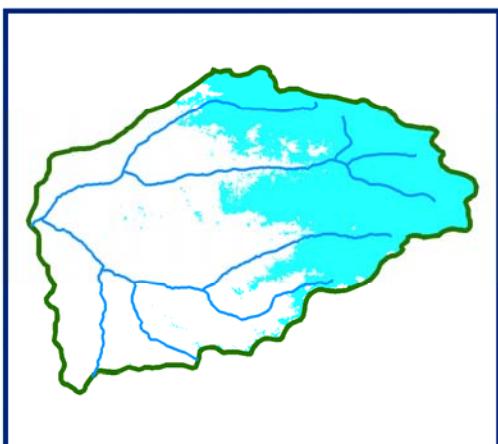
## 10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED  
**01 NOVEMBER 2008**  
**06 NOVEMBER 2008**



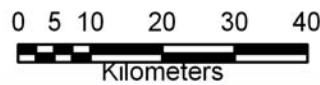
DATA USED  
**11 NOVEMBER 2008**  
**16 NOVEMBER 2008**



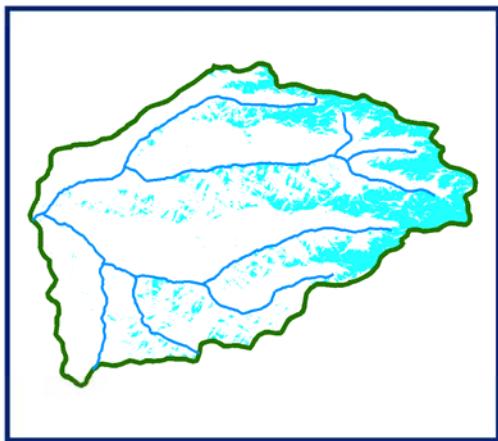
DATA USED  
**21 NOVEMBER 2008**



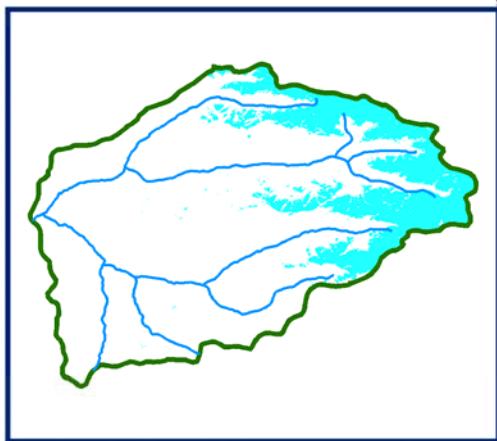
SNOW



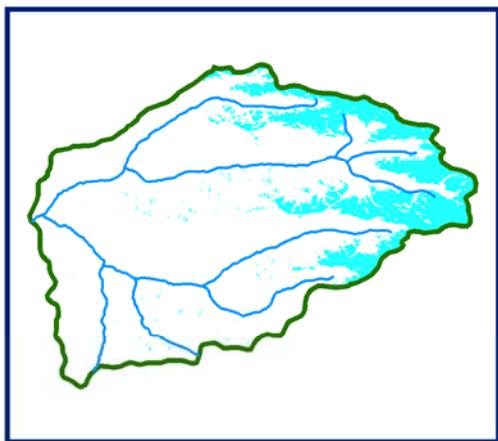
# SNOW COVER MAP : JIWA BASIN



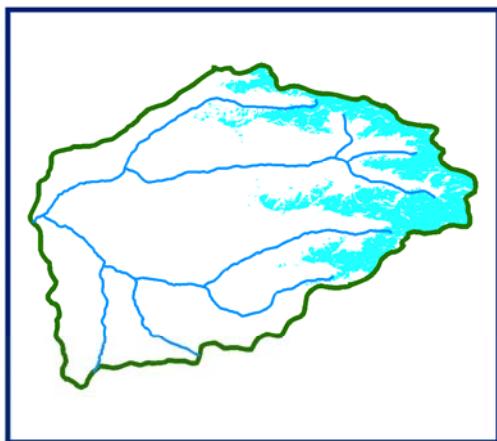
05 DECEMBER 2008



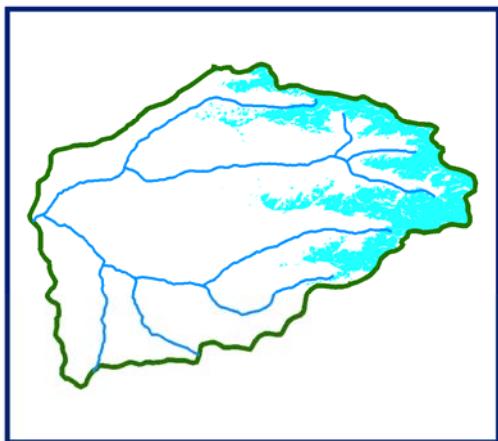
10 DECEMBER 2008



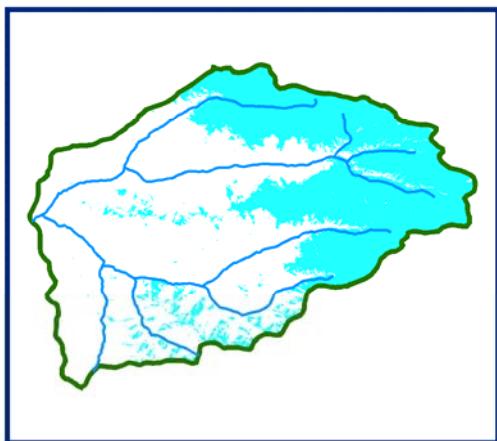
14 DECEMBER 2008



15 DECEMBER 2008



24 DECEMBER 2008



29 DECEMBER 2008

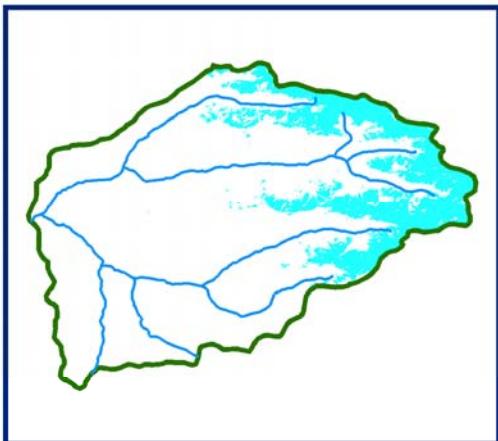


SNOW

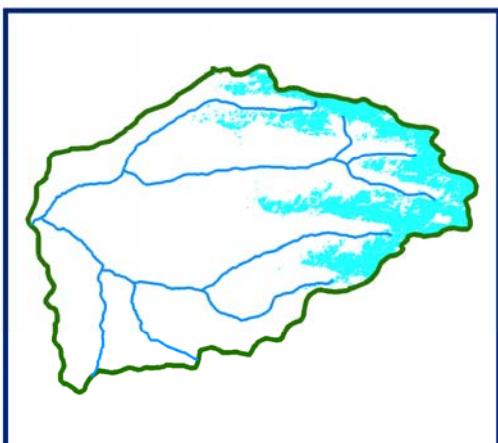


Kilometers

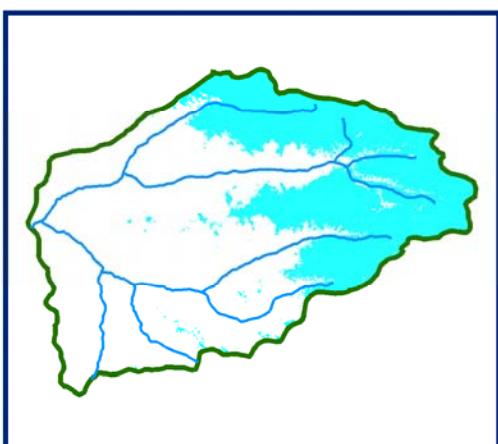
## 10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED  
**05 DECEMBER 2008**  
**10 DECEMBER 2008**



DATA USED  
**14 DECEMBER 2008**  
**15 DECEMBER 2008**



DATA USED  
**24 DECEMBER 2008**  
**29 DECEMBER 2008**

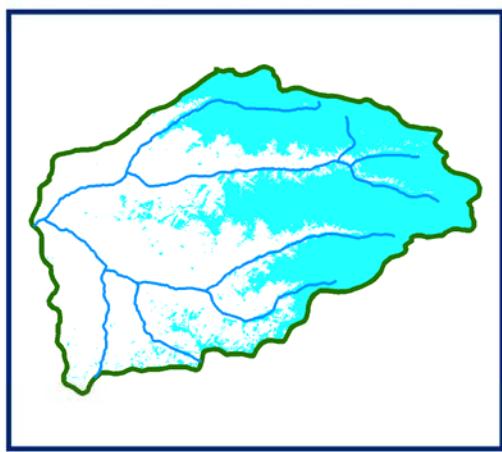


0 5 10 20 30 40  
Kilometers

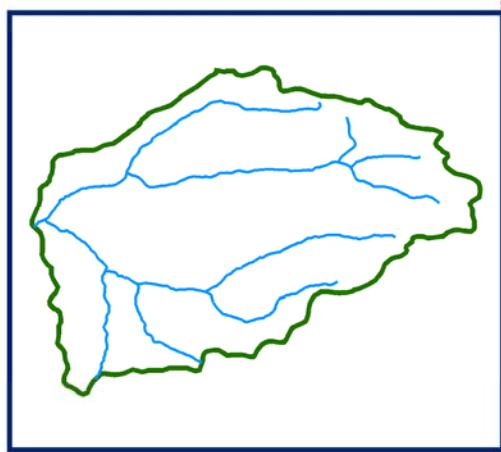
A scale bar at the bottom of the map frame, indicating distances from 0 to 40 Kilometers. The scale bar is marked with numerical values at 0, 5, 10, 20, 30, and 40, and includes a horizontal line with tick marks for each value.

# SNOW COVER MAP

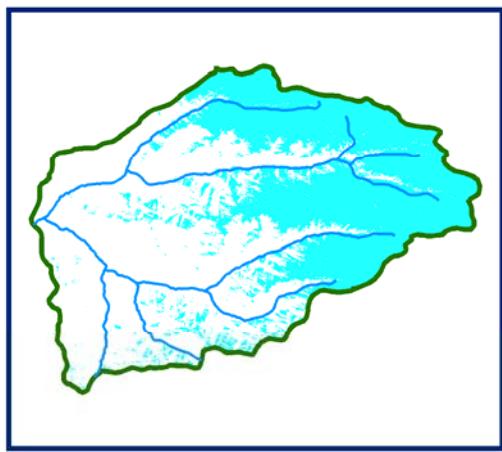
# : JIWA BASIN



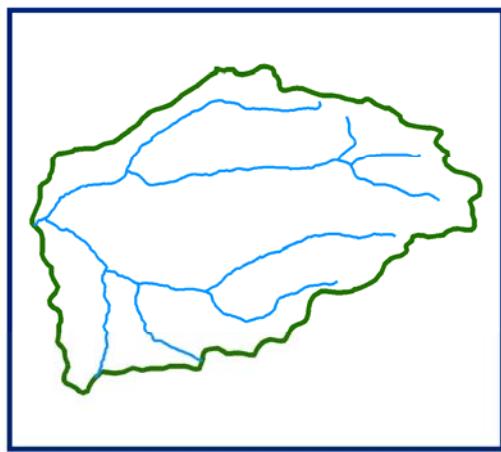
08 JANUARY 2009



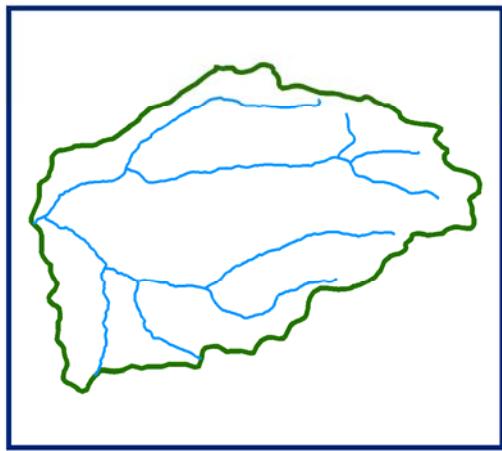
DATA NOT AVAILABLE



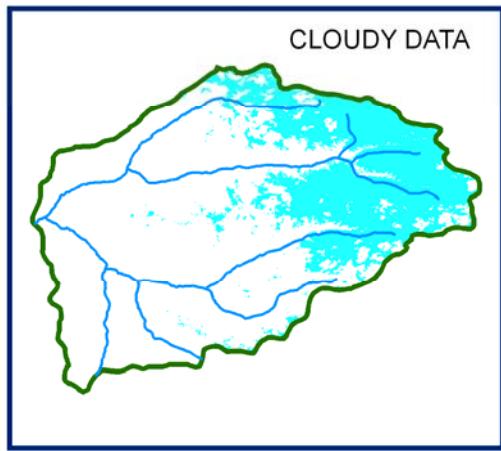
12 JANUARY 2009



DATA NOT AVAILABLE



DATA NOT AVAILABLE



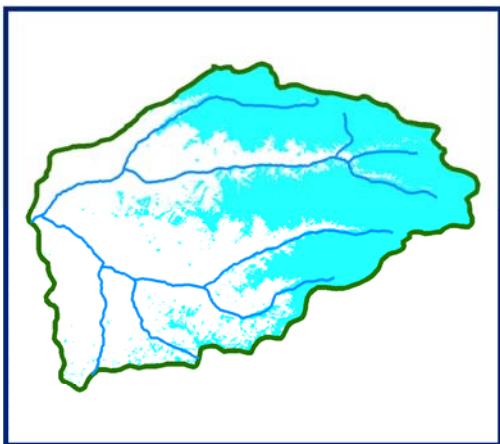
27 JANUARY 2009



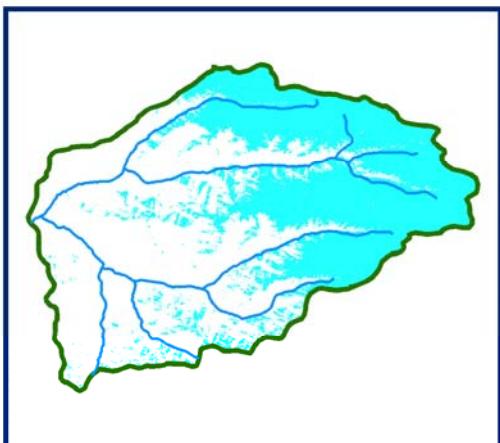
SNOW



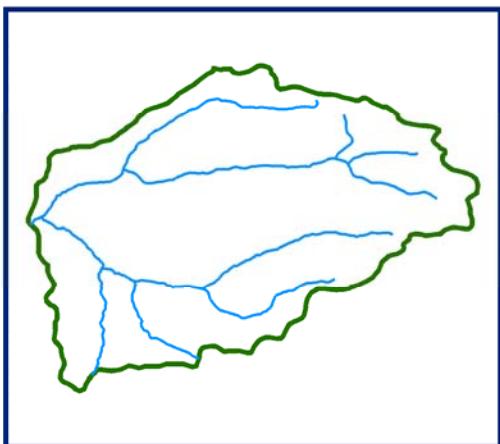
## 10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED  
08 JANUARY 2009



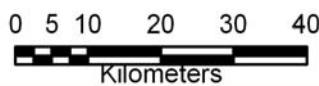
DATA USED  
12 JANUARY 2009



DATA USED  
DATA NOT AVAILABLE

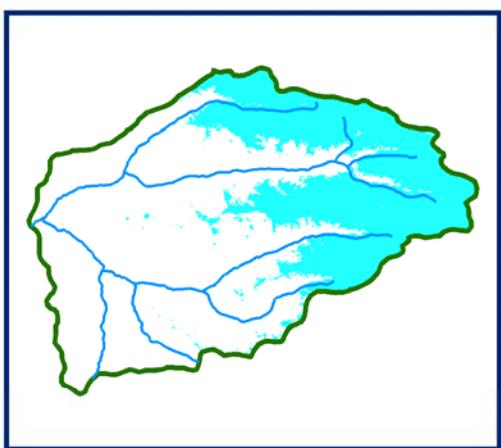


SNOW

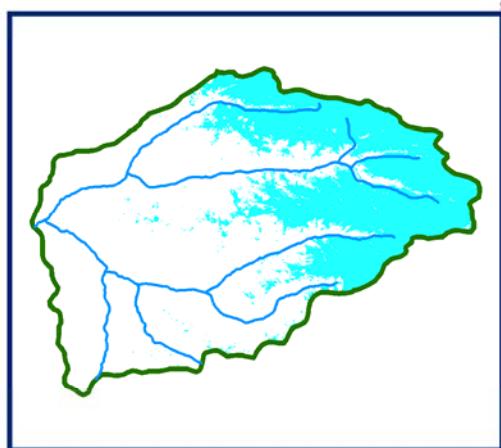


# SNOW COVER MAP

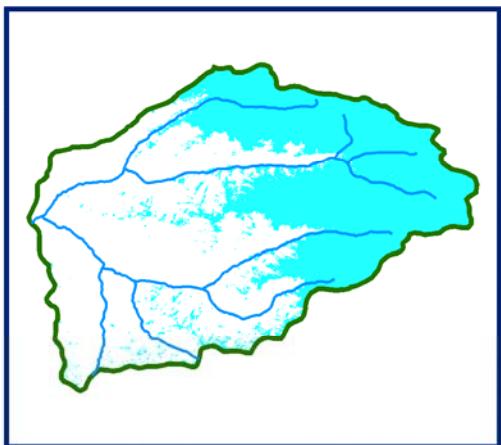
# : JIWA BASIN



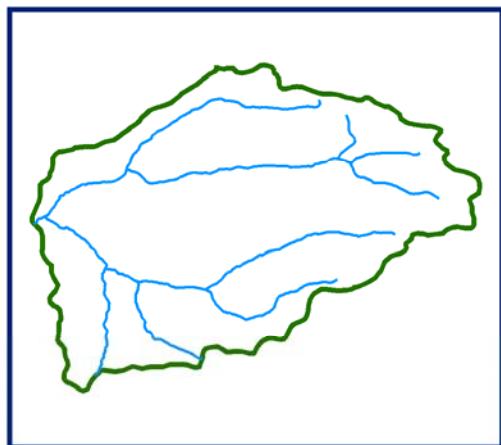
01 FEBRUARY 2009



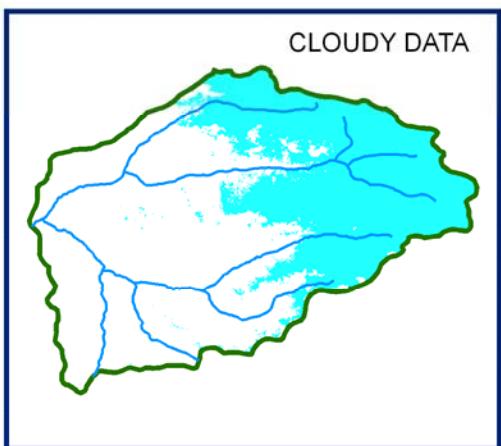
05 FEBRUARY 2009



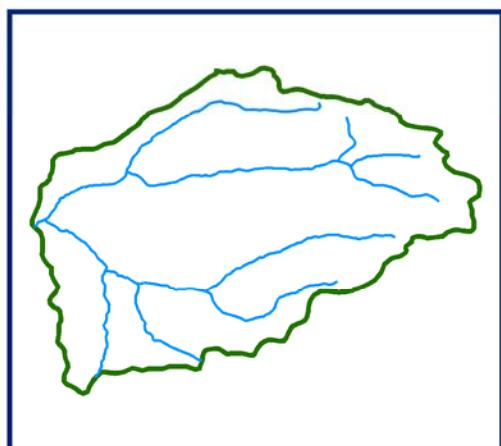
15 FEBRUARY 2009



DATA NOT AVAILABLE



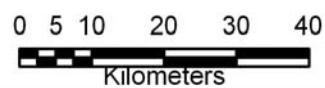
25 FEBRUARY 2009



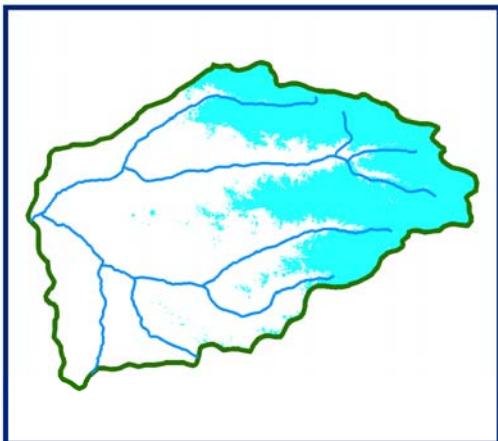
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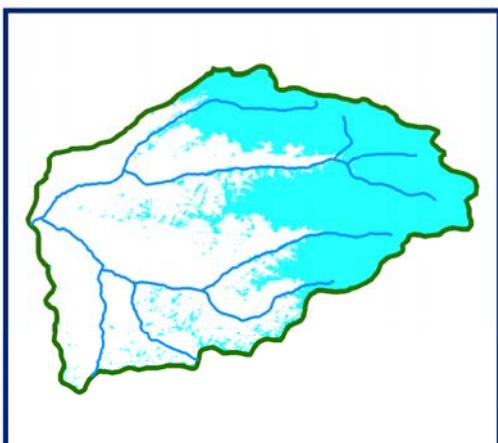
SNOW



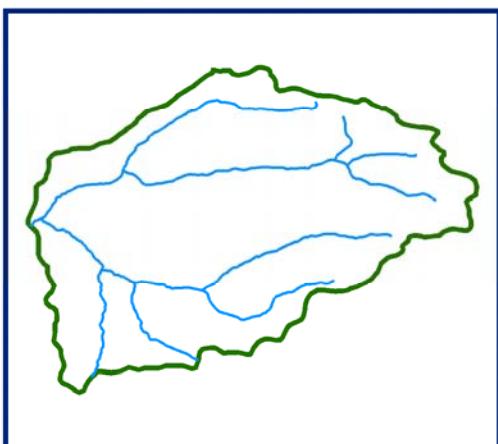
## 10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED  
**01 FEBRUARY 2009**  
**05 FEBRUARY 2009**



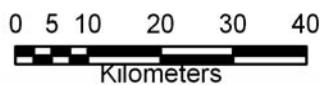
DATA USED  
**15 FEBRUARY 2009**



DATA USED  
**DATA NOT AVAILABLE**

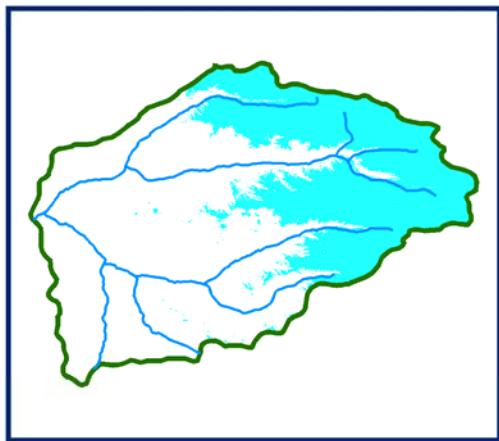


SNOW

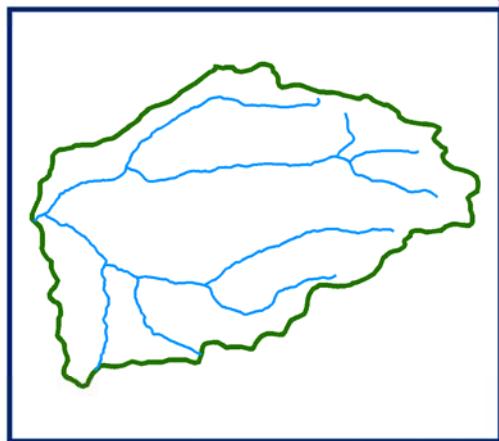


# SNOW COVER MAP

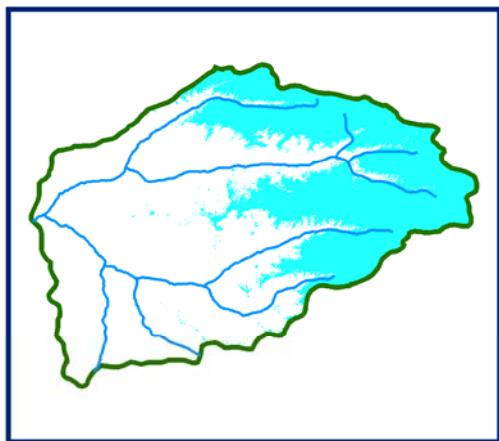
: JIWA BASIN



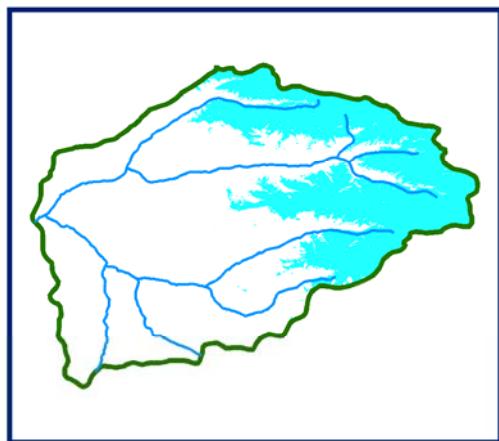
01 MARCH 2009



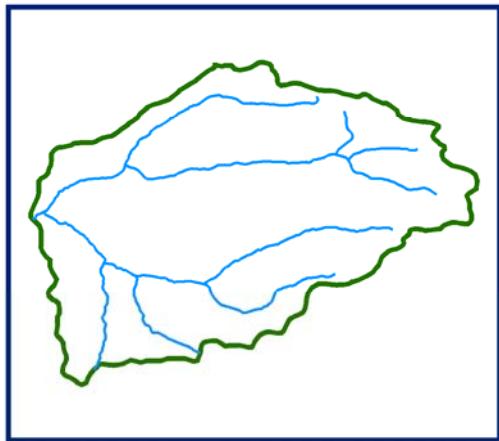
DATA NOT AVAILABLE



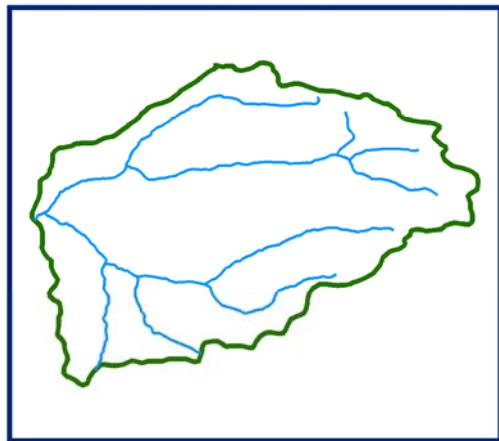
11 MARCH 2009



16 MARCH 2009



DATA NOT AVAILABLE



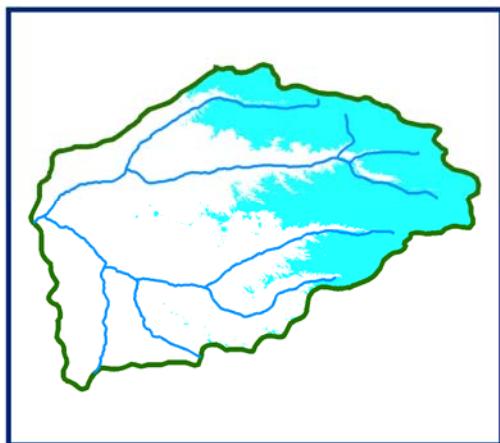
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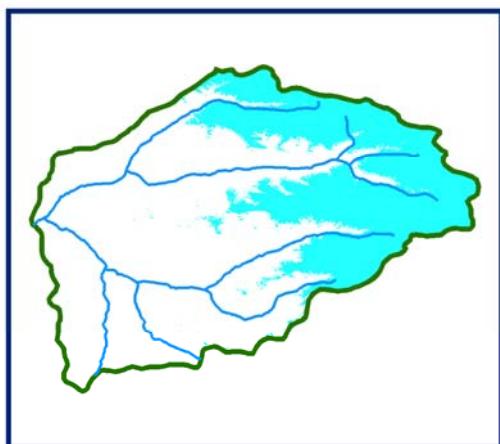
SNOW



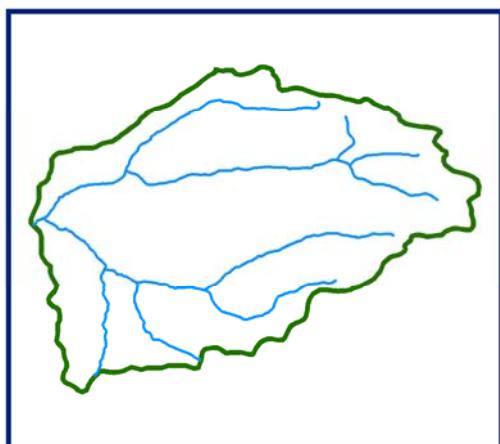
## 10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED  
**01 MARCH 2009**



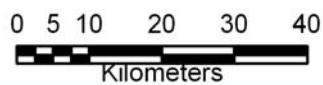
DATA USED  
**11 MARCH 2009**  
**16 MARCH 2009**



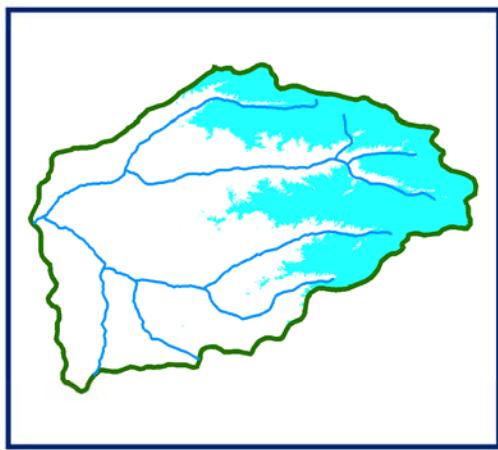
DATA USED  
**DATA NOT AVAILABLE**



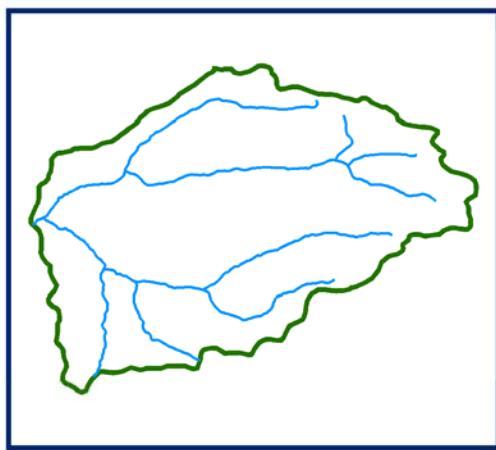
SNOW



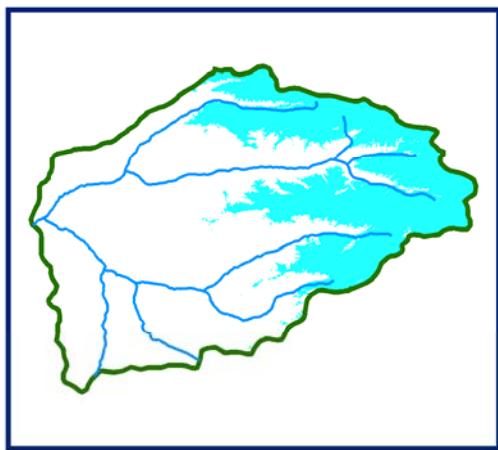
# SNOW COVER MAP : JIWA BASIN



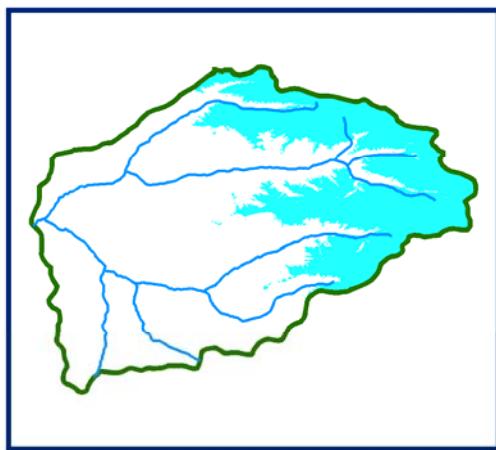
04 APRIL 2009



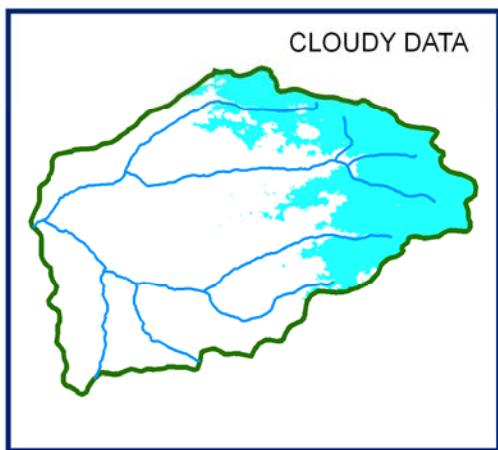
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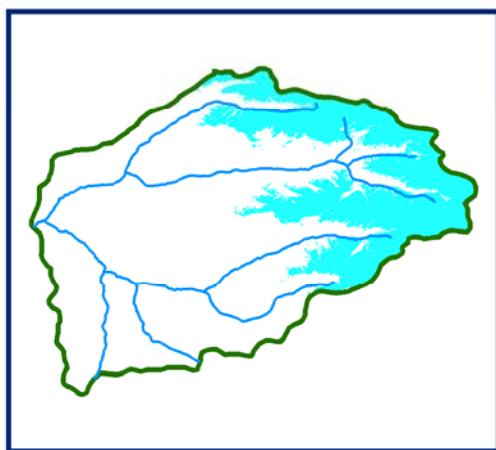
14 APRIL 2009



18 APRIL 2009



23 APRIL 2009



28 APRIL 2009

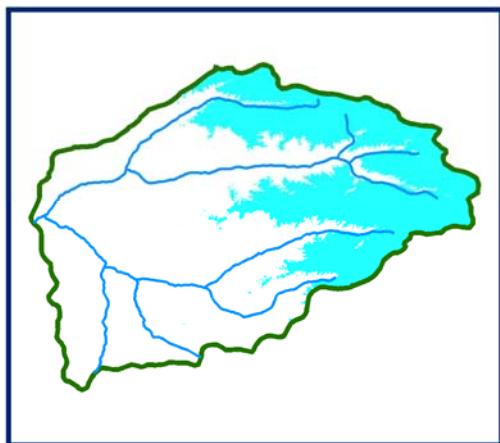


SNOW

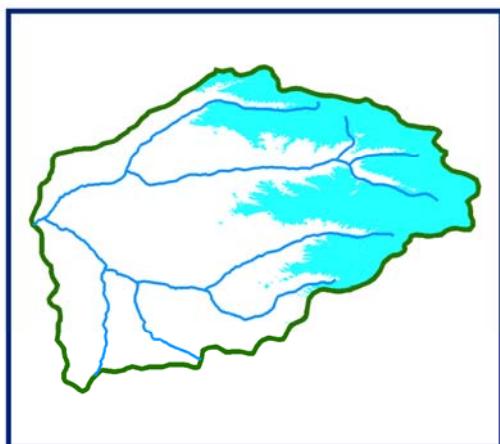


Kilometers

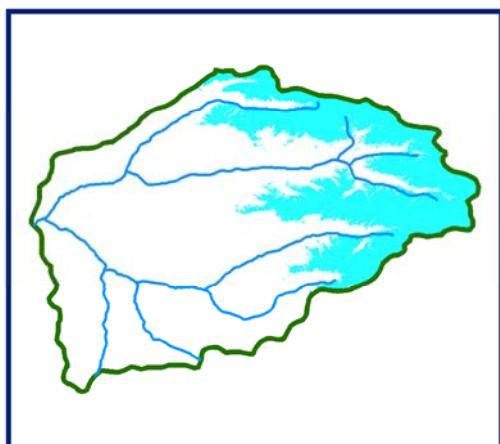
## 10 DAILY SNOW COVER MAP: JIWA BASIN



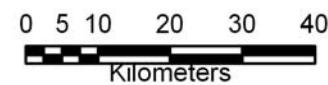
DATA USED  
**04 APRIL 2009**



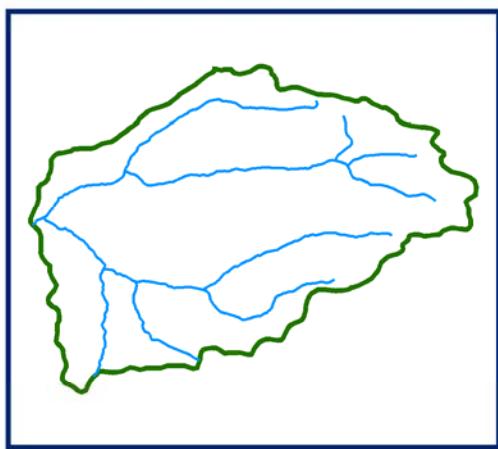
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**14 APRIL 2009**  
**28 APRIL 2009**



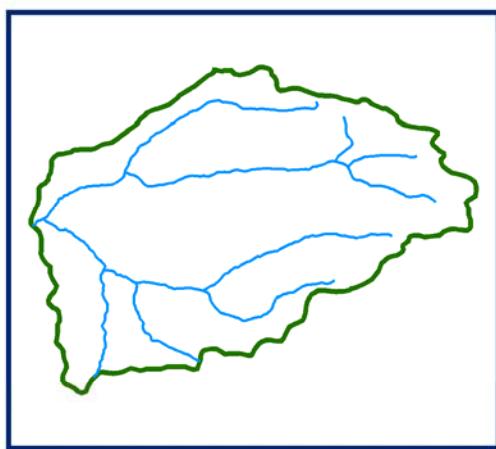
DATA USED  
**28 APRIL 2009**



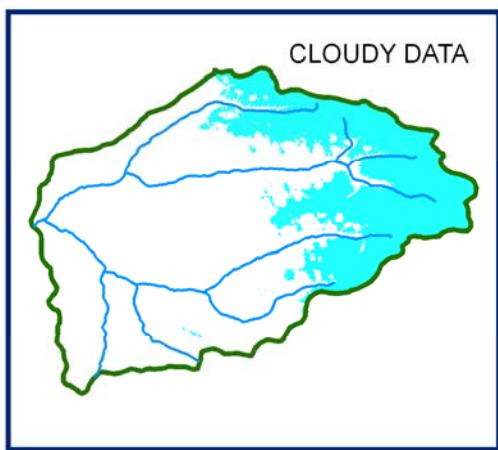
# SNOW COVER MAP : JIWA BASIN



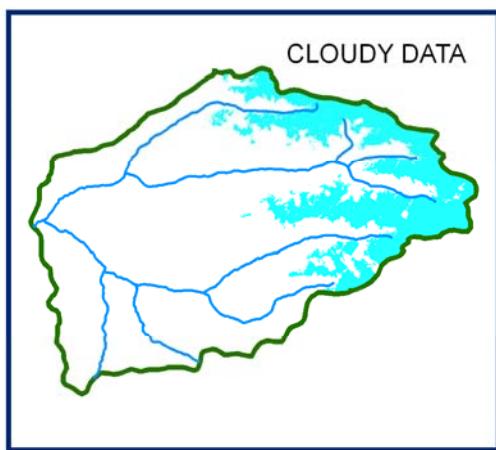
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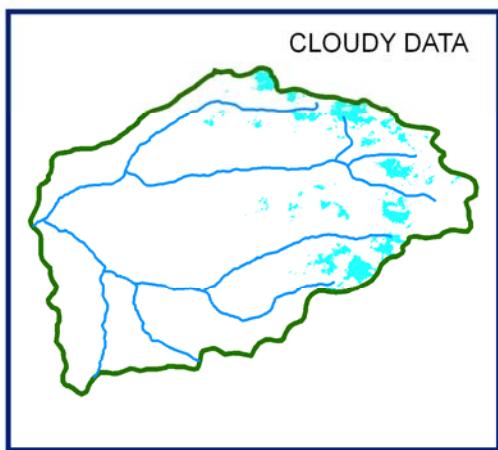
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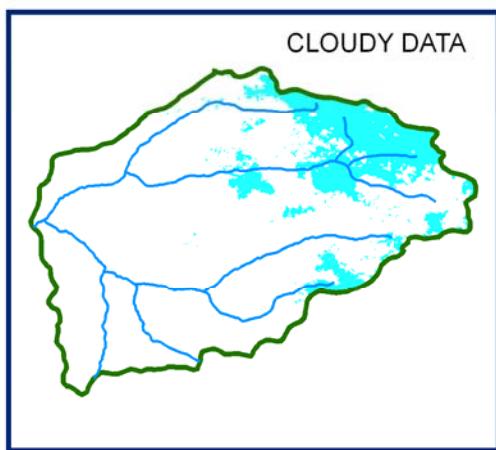
12 MAY 2009



17 MAY 2009



22 MAY 2009



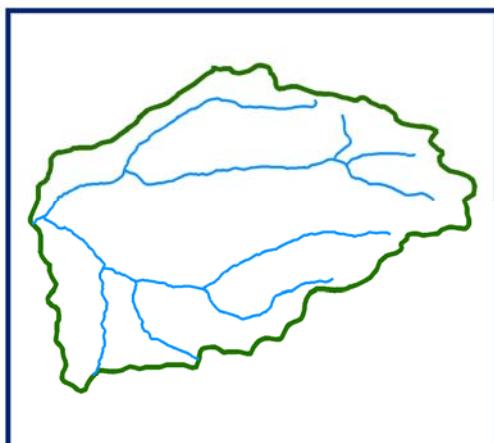
27 MAY 2009



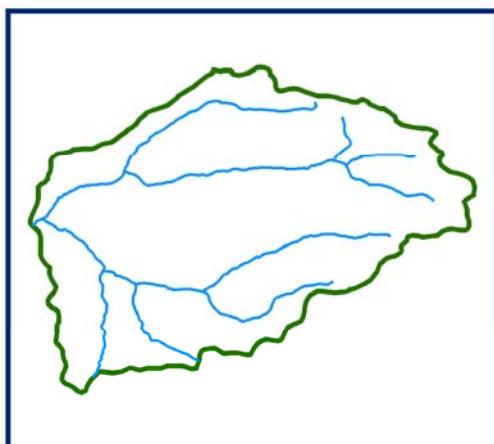
SNOW



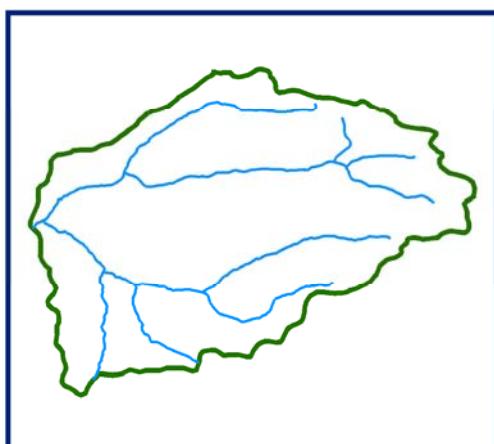
## 10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED  
**DATA NOT AVAILABLE**



DATA USED  
**DATA NOT AVAILABLE**



DATA USED  
**DATA NOT AVAILABLE**

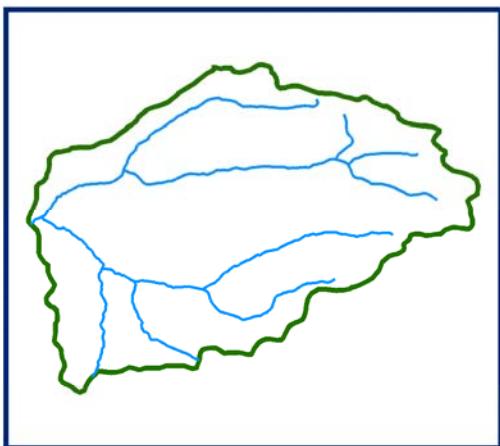
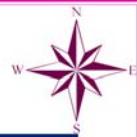


SNOW

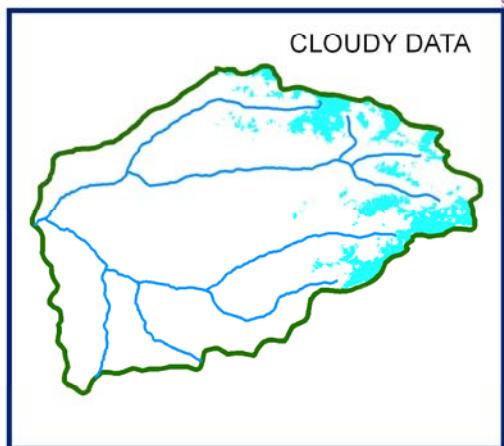


# SNOW COVER MAP

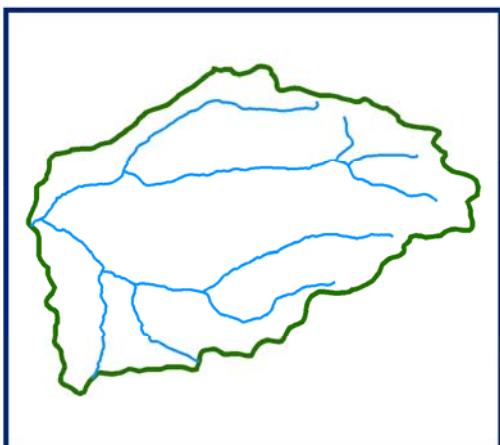
: JIWA BASIN



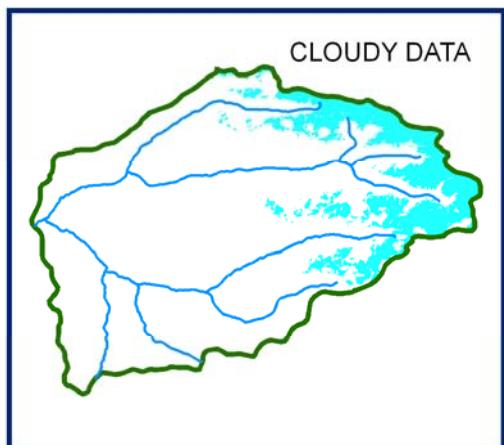
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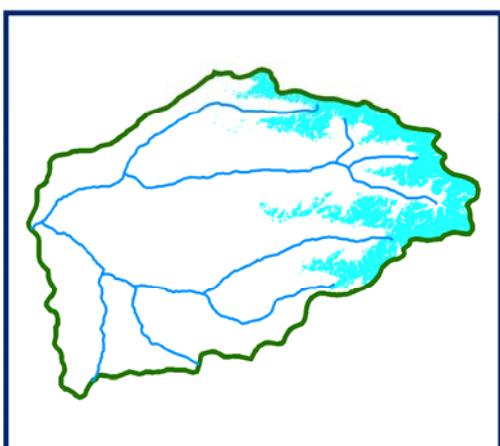
10 JUNE 2009



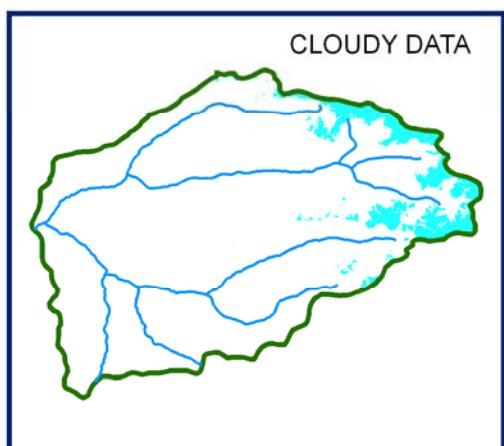
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20 JUNE 2009



25 JUNE 2009



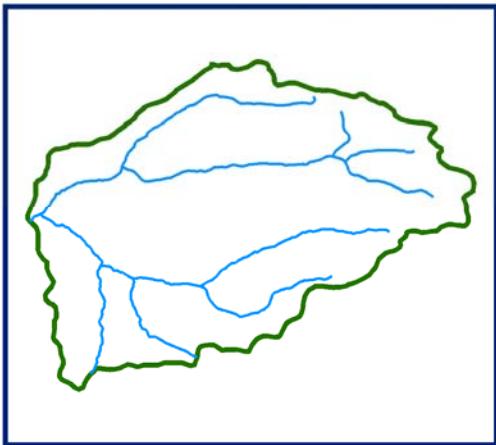
29 JUNE 2009



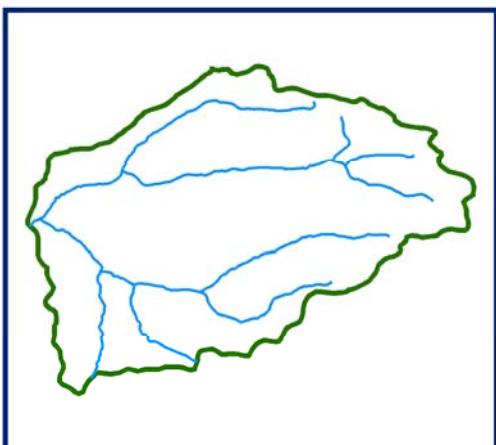
SNOW



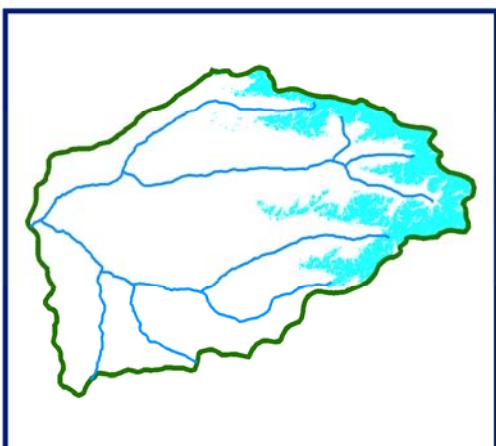
## 10 DAILY SNOW COVER MAP: JIWA BASIN



DATA USED  
DATA NOT AVAILABLE



DATA USED  
DATA NOT AVAILABLE



DATA USED  
25 JUNE 2009



SNOW



*PARBATI BASIN*

**AREAL EXTENT OF SNOW (5 DAILY)**

**BASIN NAME: PARBATI**

**BASIN AREA: 1772 sq km**

S. No	Date	Snow cover (sq km)	Snow cover (%)	S. No	Date	Snow cover (sq km)	Snow cover (%)
<b>October 2008</b>							
1	4-Oct-08	1052.6	59	4	18-Oct-08	1181.8	67
2	8-Oct-08	370.1	21	5	23-Oct-08	1050.5	59
3	13-Oct-08	954.7	54	6	27-Oct-08	1050.5	59
<b>November 2008</b>							
7	1-Nov-08	953.7	54	10	16-Nov-08	883.0	50
8	6-Nov-08	923.3	52	11	21-Nov-08	1457.5	82
9	11-Nov-08	876.1	49				
<b>December 2008</b>							
12	5-Dec-08	883.0	50	15	24-Dec-08	963.5	54
13	10-Dec-08	1094.8	62	16	29-Dec-08	1339.9	76
14	15-Dec-08	965.6	54				
<b>January 2009</b>							
17	8-Jan-09	1460.2	82	19	27-Jan-09	1252.9	71
18	12-Jan-09	1440.0	81				
<b>February 2009</b>							
20	1-Feb-09	1298.6	73	22	15-Feb-09	1463.9	83
21	5-Feb-09	1131.2	64	23	25-Feb-09	1457.5	82
<b>March 2009</b>							
24	1-Mar-09	1383.9	78	26	16-Mar-09	1260.1	71
25	11-Mar-09	1311.0	74				
<b>April 2009</b>							
27	4-Apr-09	1319.7	74	30	23-Apr-09	1274.3	72
28	14-Apr-09	1247.5	70	31	28-Apr-09	1183.5	67
29	18-Apr-09	1243.1	70				
<b>May 2009</b>							
32	12-May-09	1247.5	70	34	22-May-09	692.1	39
33	17-May-09	1088.8	61	35	27-May-09	926.9	52
<b>June 2009</b>							
36	10-Jun-09	757.3	43	38	25-Jun-09	849.6	48
37	20-Jun-09	921.4	52	39	29-Jun-09	774.1	44

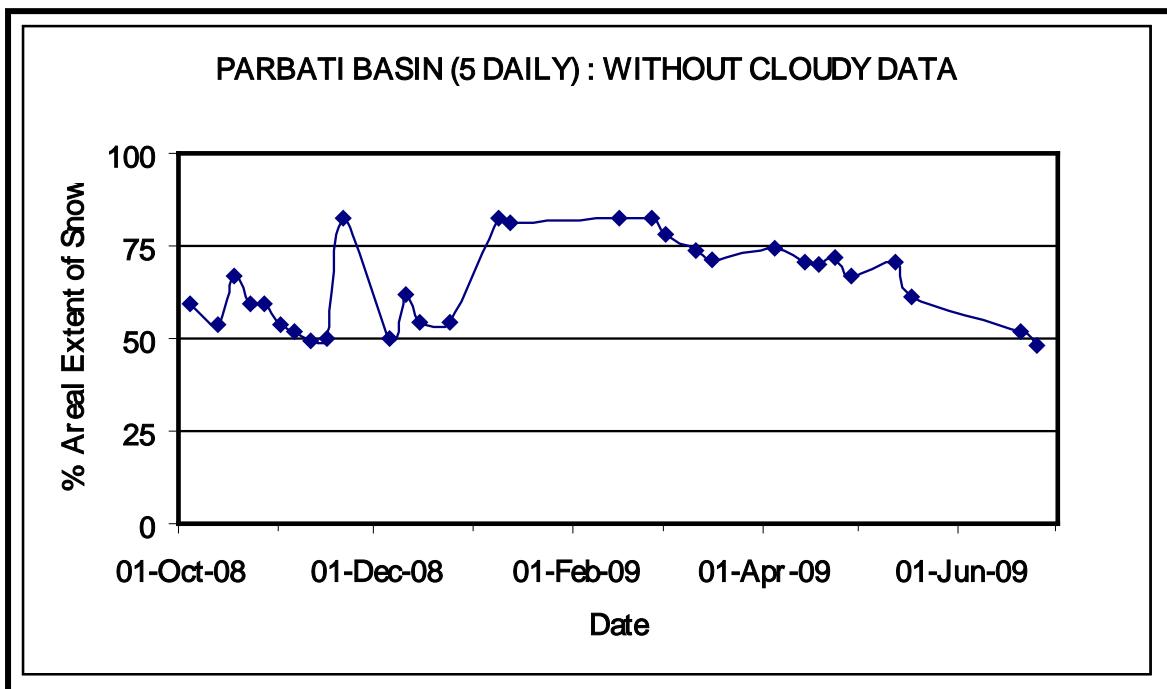
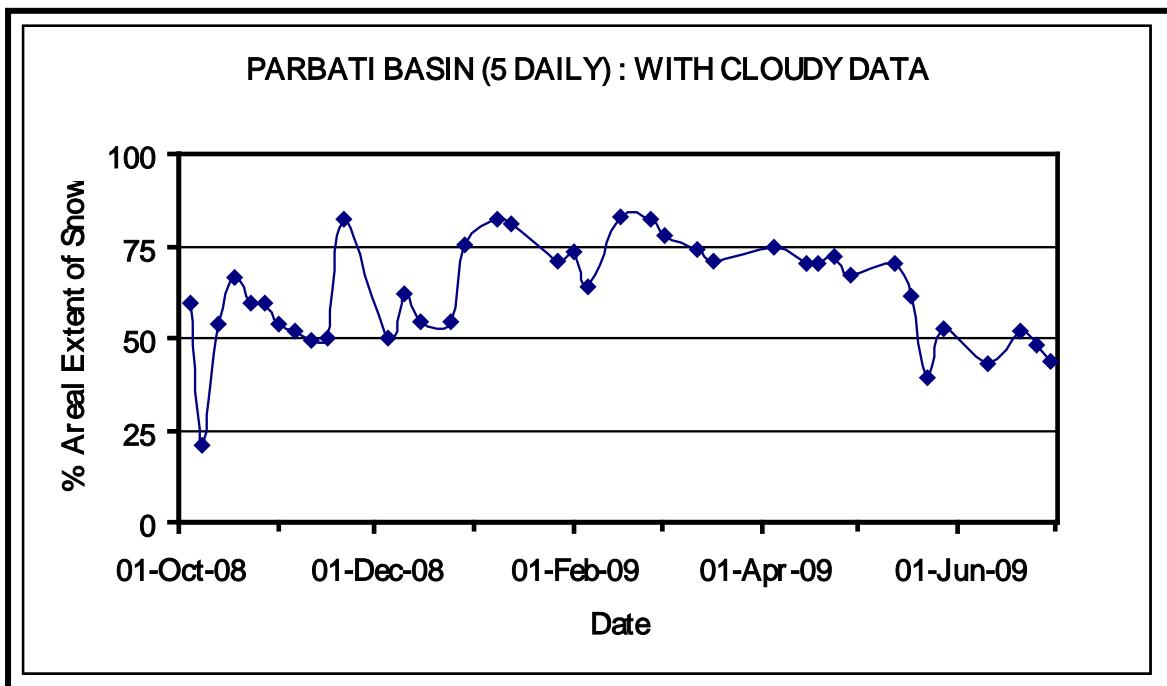
**AREAL EXTENT OF SNOW (10 DAILY)**

**BASIN NAME: PARBATI**

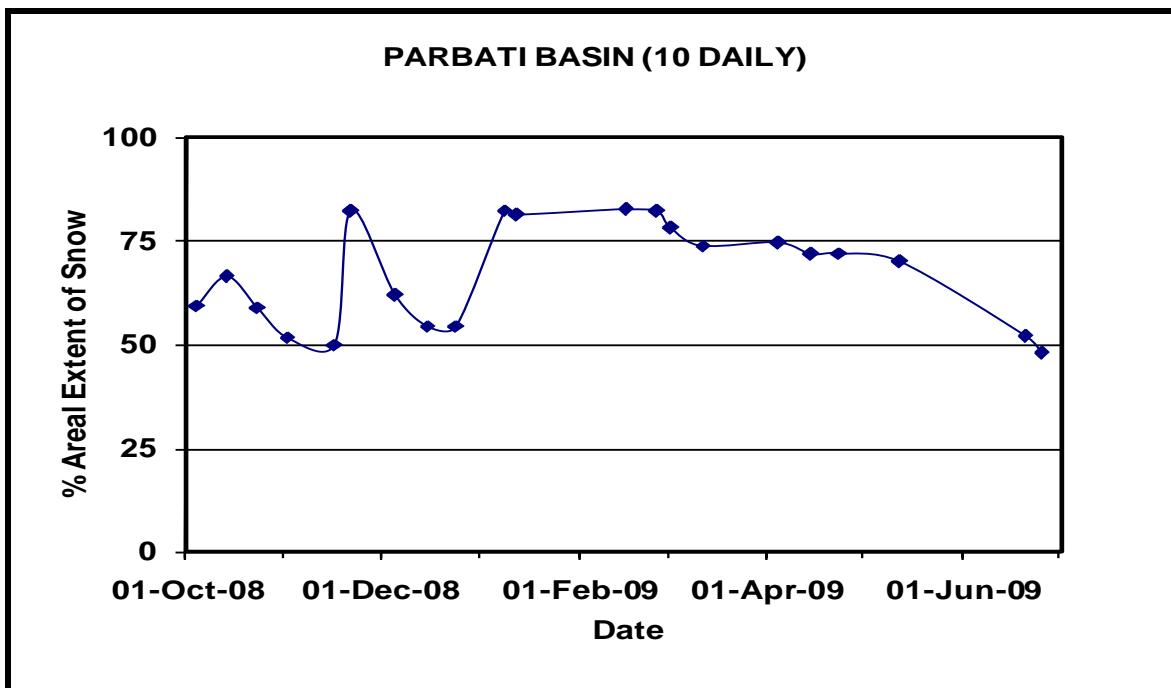
**BASIN AREA: 1772 sq km**

S. No	Date	Snow cover (sq km)	Snow cover (%)	S. No	Date	Snow cover (sq km)	Snow cover (%)
<b>October 2008</b>				<b>November 2008</b>			
1	4-Oct-08	1052.6	59	4	1-Nov-08	916.4	52
2	13-Oct-08	1175.7	66	5	16-Nov-08	1457.0	82
3	23-Oct-08	1043.5	59				
<b>December 2008</b>				<b>January 2009</b>			
6	5-Dec-08	1041.0	59	9	8-Jan-09	1460.2	82
7	15-Dec-08	965.6	54	10	12-Jan-09	1439.9	81
8	24-Dec-08	963.4	54				
<b>February 2009</b>				<b>March 2009</b>			
11	15-Feb-09	1463.8	83	13	1-Mar-09	1383.9	78
12	25-Feb-09	1457.4	82	14	11-Mar-09	1306.8	74
<b>April 2009</b>				<b>May 2009</b>			
15	4-Apr-09	1319.6	74	18	12-May-09	1195.7	67
16	14-Apr-09	1271.2	72				
17	23-Apr-09	1238.6	70				
<b>June 2009</b>							
19	20-Jun-09	921.3	52				
20	25-Jun-09	849.6	48				

### Snow cover depletion curve



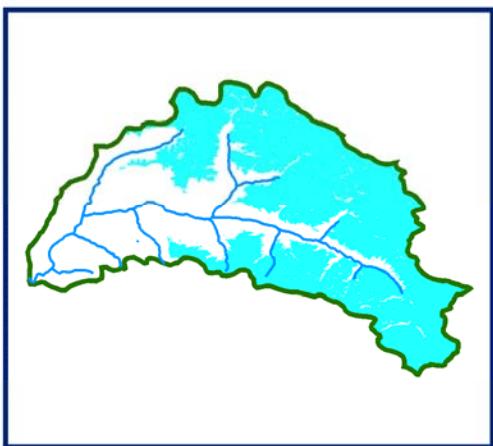
### Snow cover depletion curve



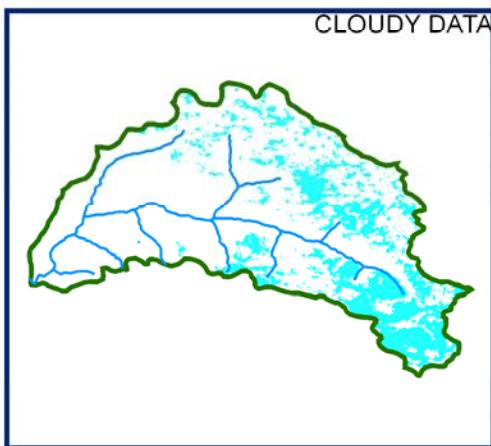
# *SNOW COVER MAP*

# SNOW COVER MAP

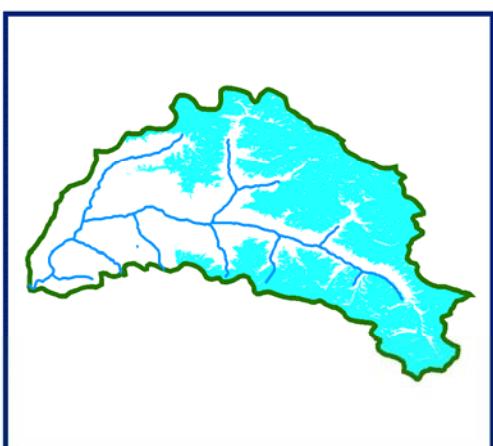
: PARBATI BASIN



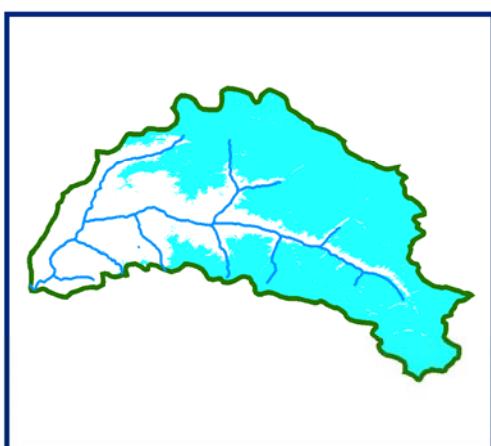
04 OCTOBER 2008



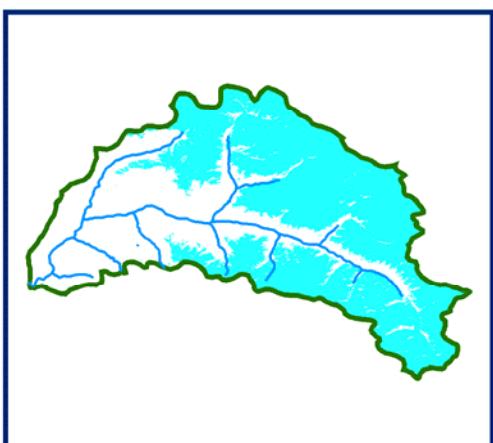
08 OCTOBER 2008



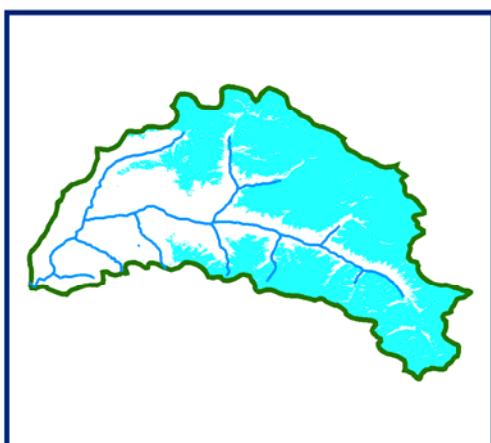
13 OCTOBER 2008



18 OCTOBER 2008



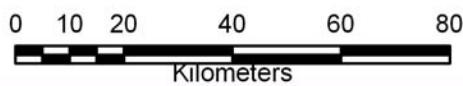
27 OCTOBER 2008



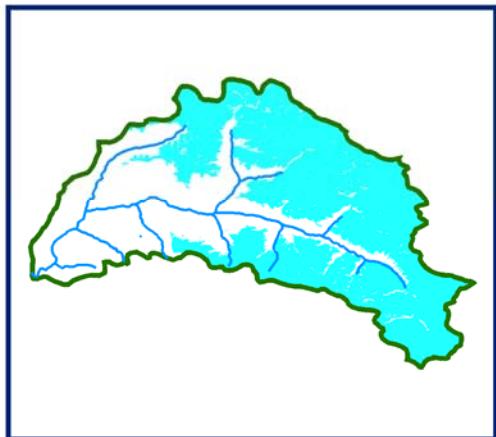
27 OCTOBER 2008



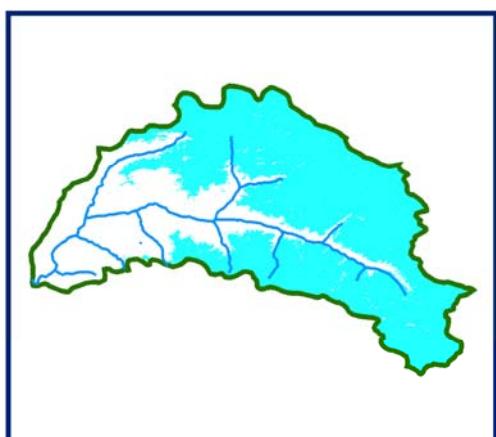
SNOW



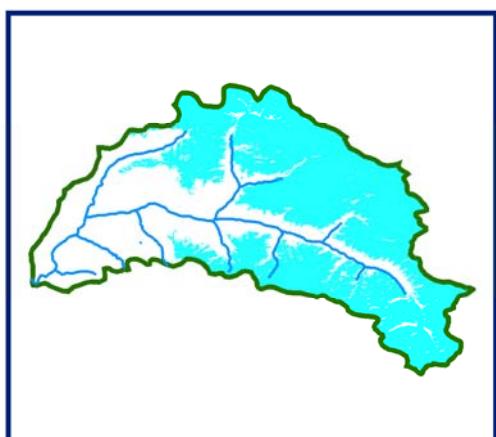
**10 DAILY SNOW COVER MAP: PARBATI BASIN**



**DATA USED  
04 OCTOBER 2008**



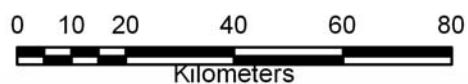
**DATA USED  
13 OCTOBER 2008  
18 OCTOBER 2008**



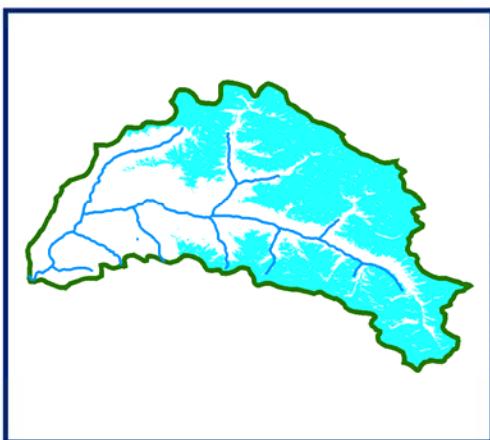
**DATA USED  
23 OCTOBER 2008  
27 OCTOBER 2008**



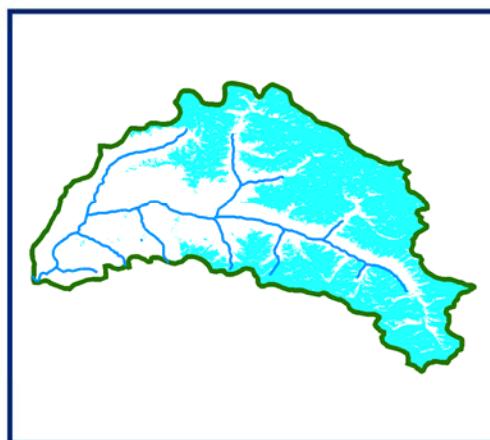
**SNOW**



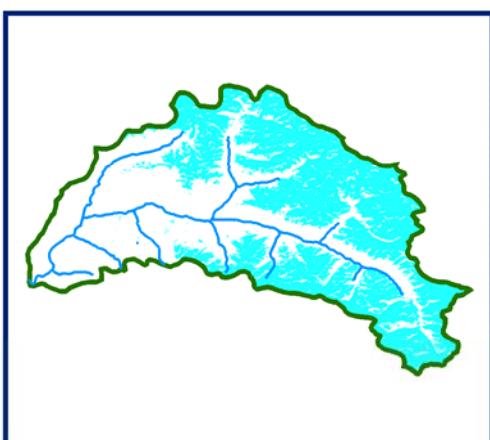
**SNOW COVER MAP : PARBATI BASIN**



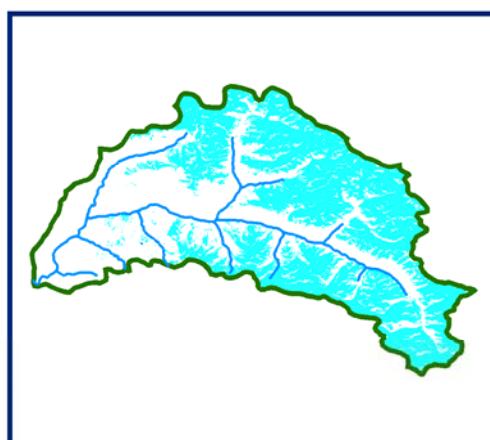
**01 NOVEMBER 2008**



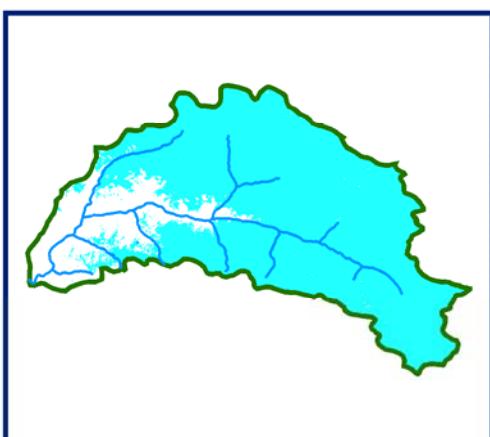
**06 NOVEMBER 2008**



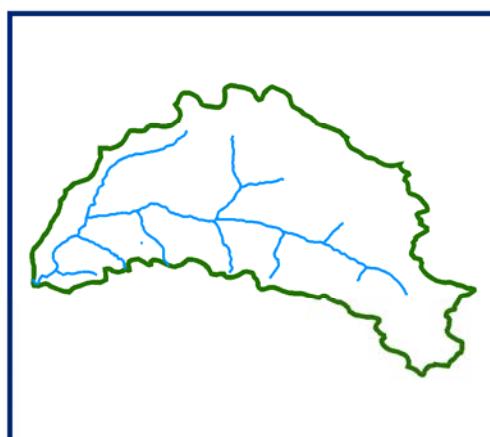
**11 NOVEMBER 2008**



**16 NOVEMBER 2008**



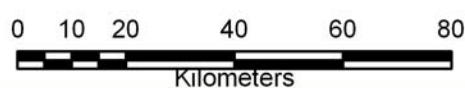
**21 NOVEMBER 2008**



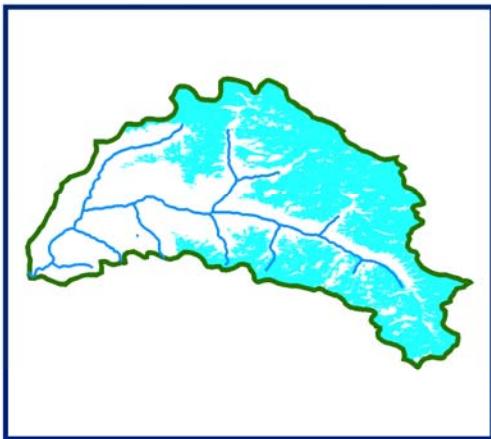
**DATA NOT AVAILABLE**



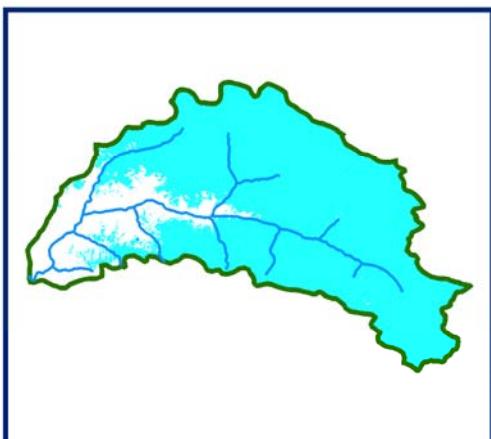
**SNOW**



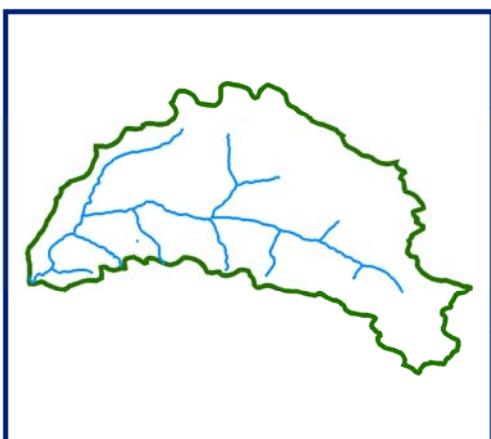
## 10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED  
**01 NOVEMBER 2008**  
**06 NOVEMBER 2008**



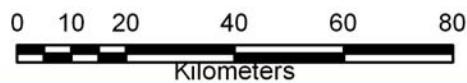
DATA USED  
**11 NOVEMBER 2008**  
**16 NOVEMBER 2008**  
**21 NOVEMBER 2008**



DATA USED  
**DATA NOT AVAILABLE**

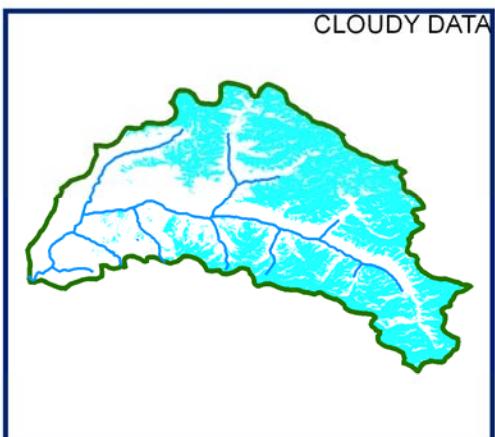


SNOW

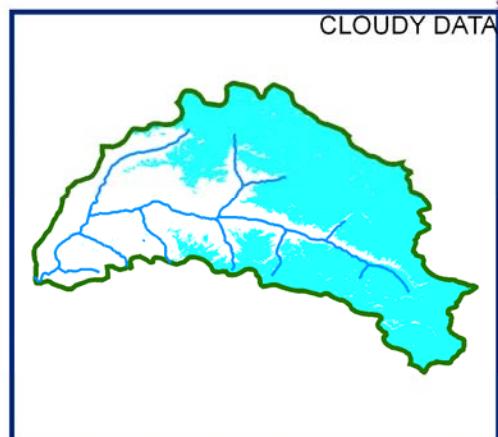


## SNOW COVER MAP

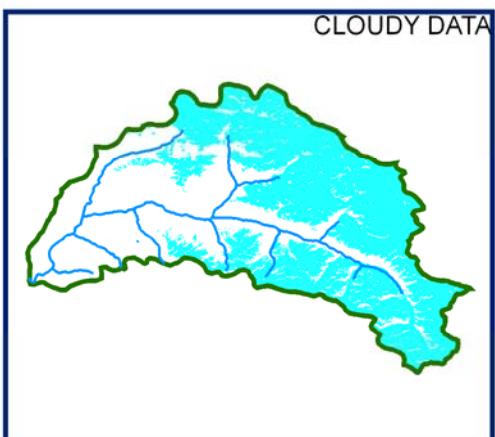
## PARBATI BASIN



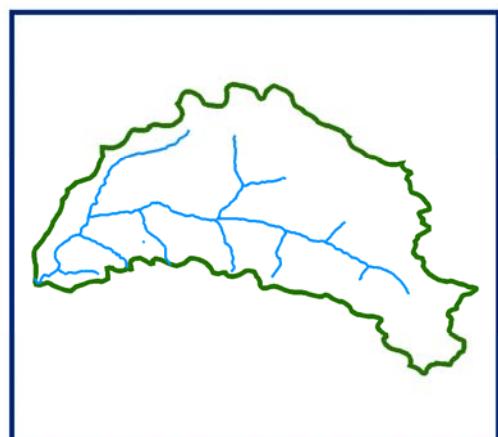
05 DECEMBER 2008



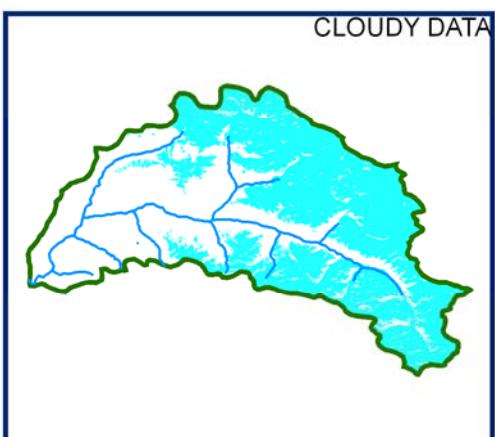
10 DECEMBER 2008



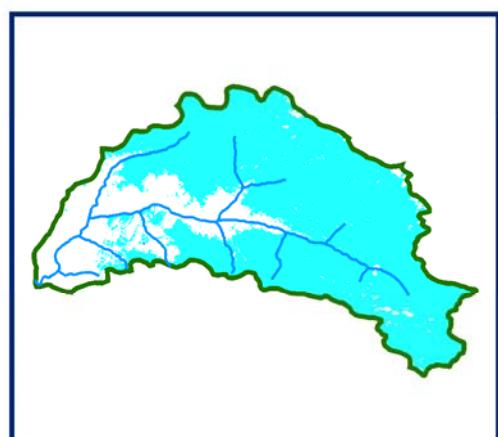
15 DECEMBER 2008



DATA NOT AVAILABLE



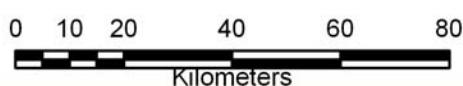
24 DECEMBER 2008



29 DECEMBER 2008

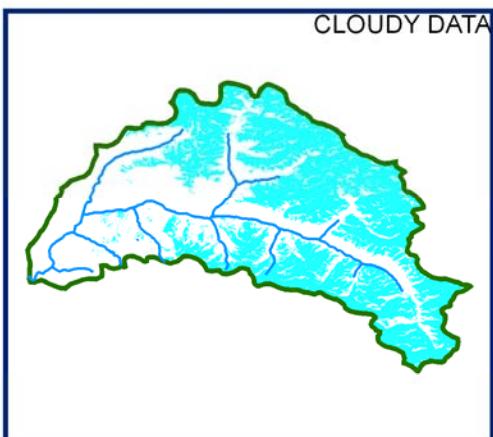


SNOW

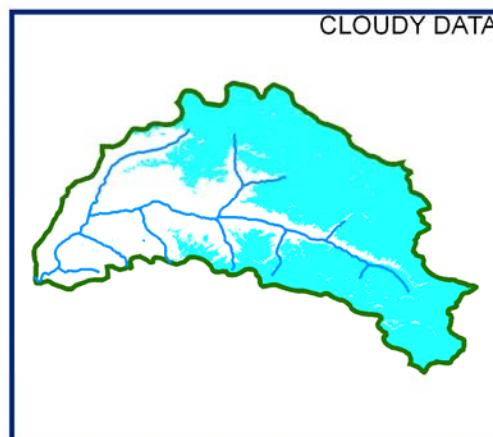


## SNOW COVER MAP

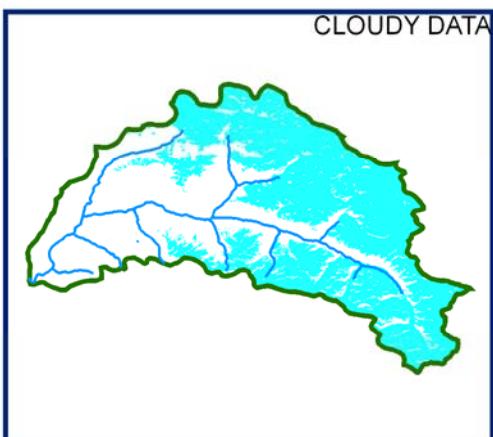
## : PARBATI BASIN



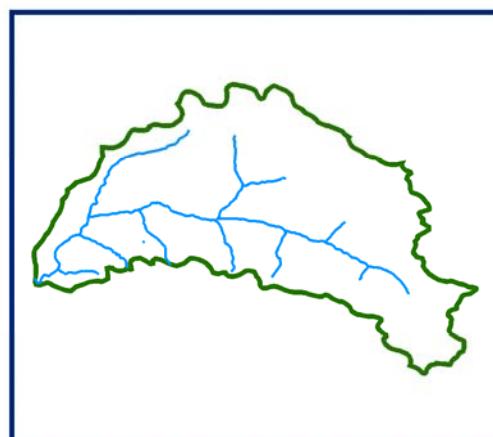
05 DECEMBER 2008



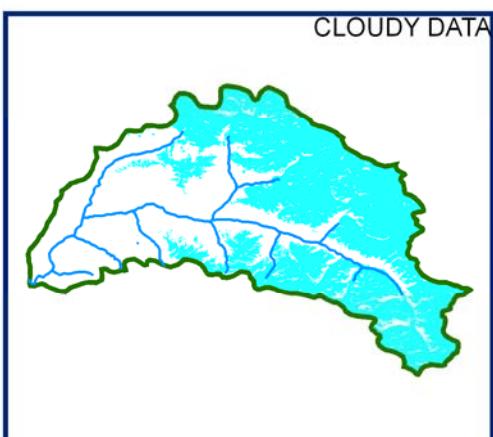
10 DECEMBER 2008



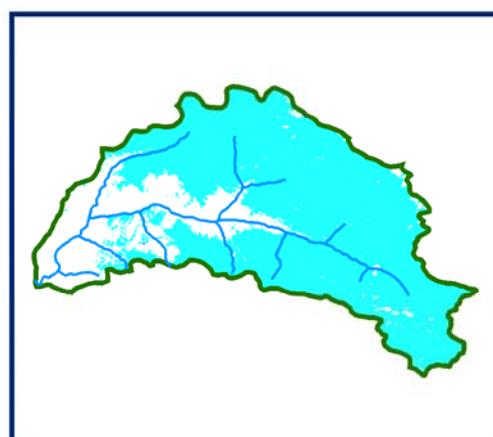
15 DECEMBER 2008



DATA NOT AVAILABLE



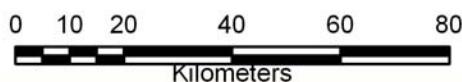
24 DECEMBER 2008



29 DECEMBER 2008



SNOW

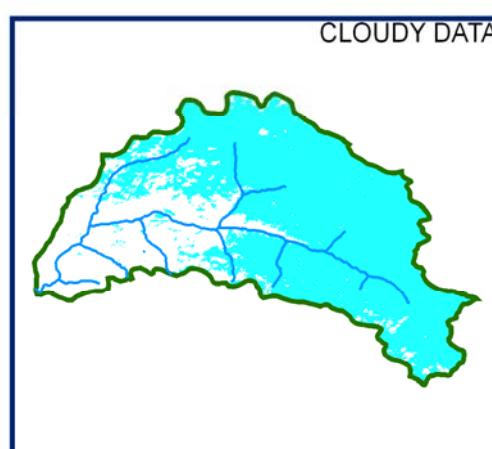
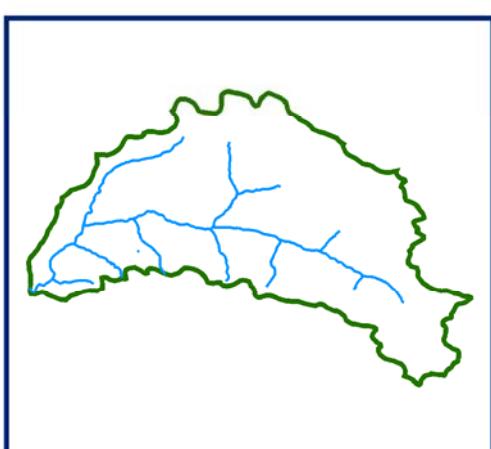
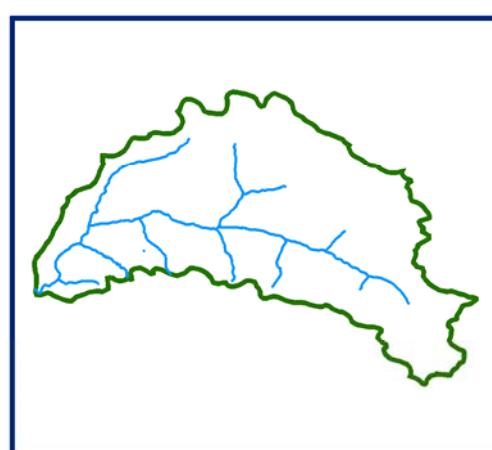
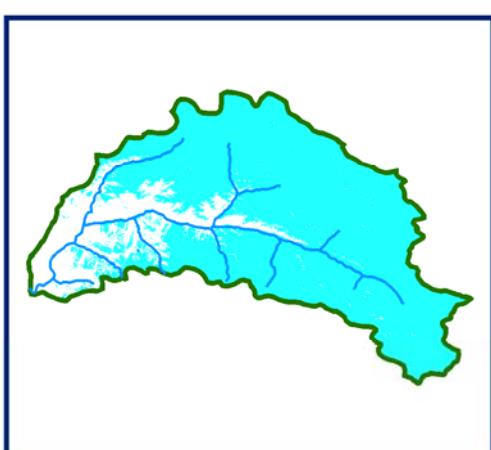
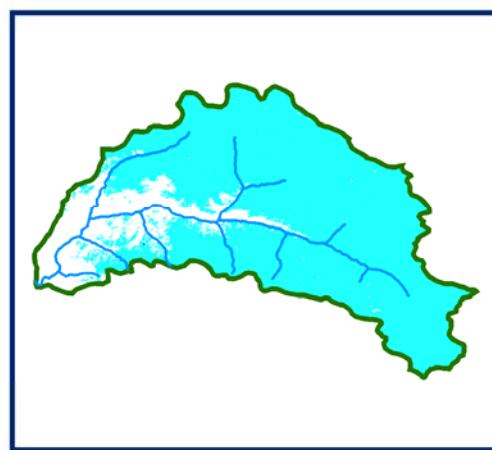
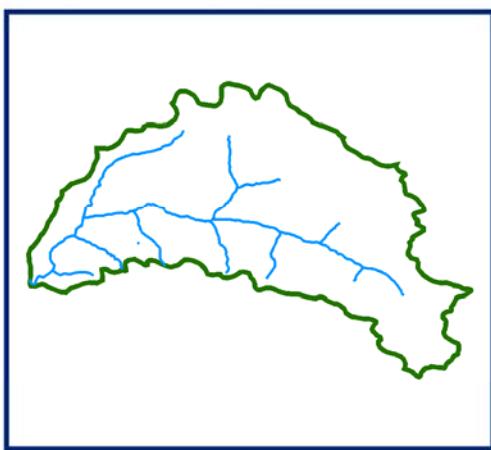


Kilometers

# SNOW COVER MAP

:

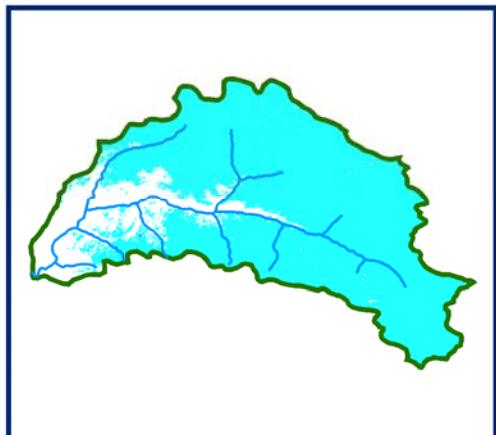
# PARBATI BASIN



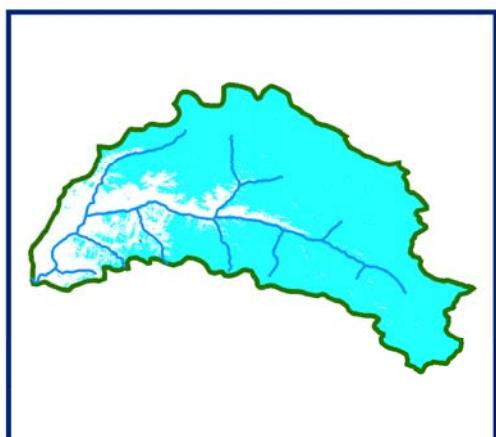
SNOW

0 10 20 40 60 80  
Kilometers

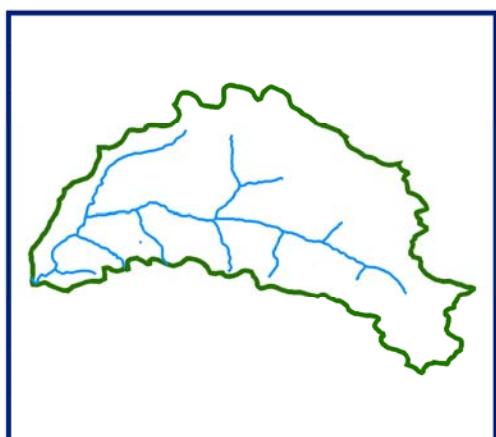
## 10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED  
08 JANUARY 2009



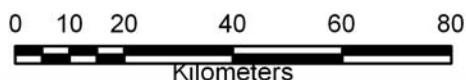
DATA USED  
12 JANUARY 2009



DATA USED  
DATA NOT AVAILABLE

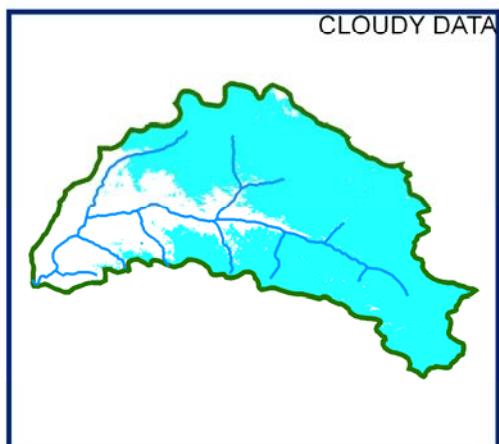


SNOW

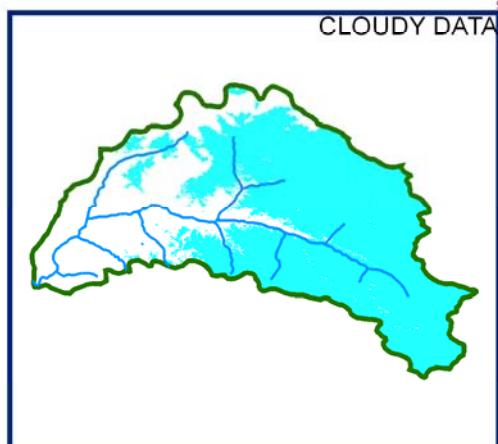


## SNOW COVER MAP

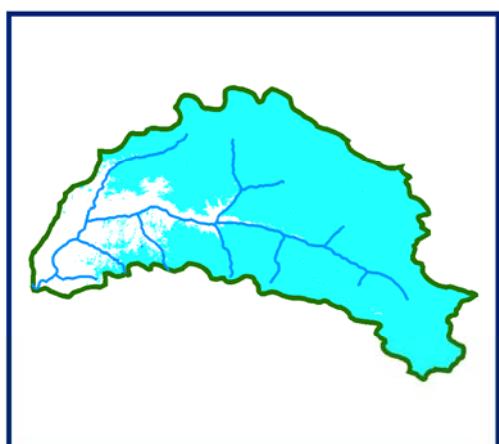
## PARBATI BASIN



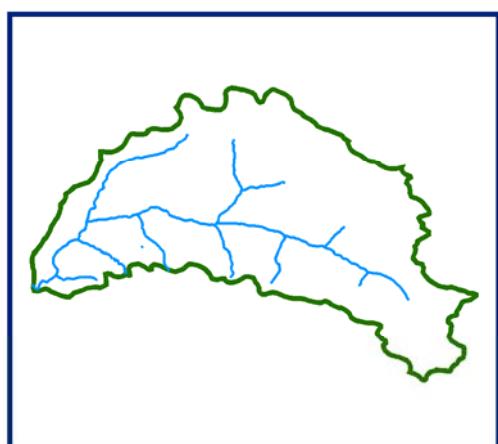
01 FEBRUARY 2009



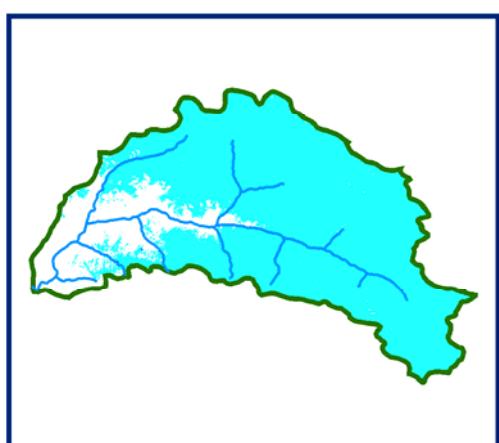
05 FEBRUARY 2009



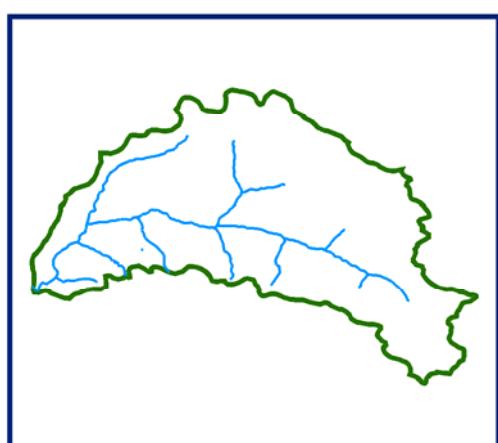
15 FEBRUARY 2009



DATA NOT AVAILABLE



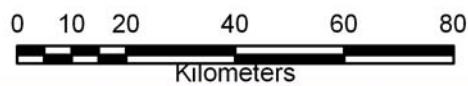
25 FEBRUARY 2009



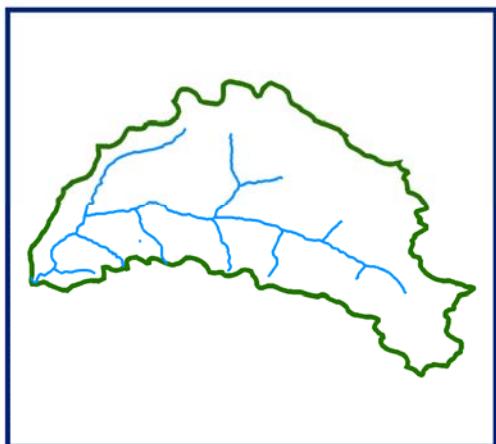
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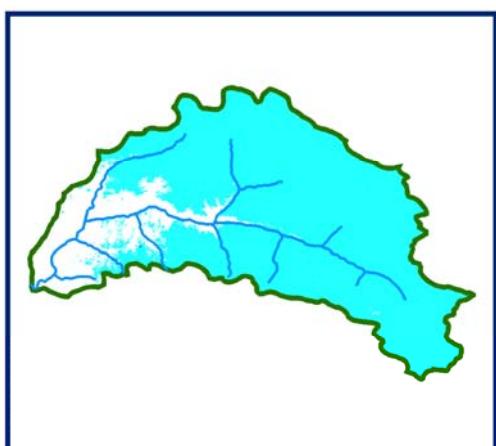
SNOW



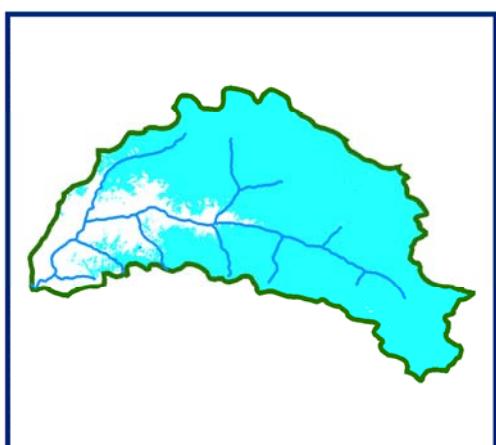
**10 DAILY SNOW COVER MAP: PARBATI BASIN**



**DATA USED  
DATA NOT AVAILABLE**



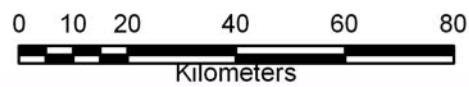
**DATA USED  
15 FEBRUARY 2009**



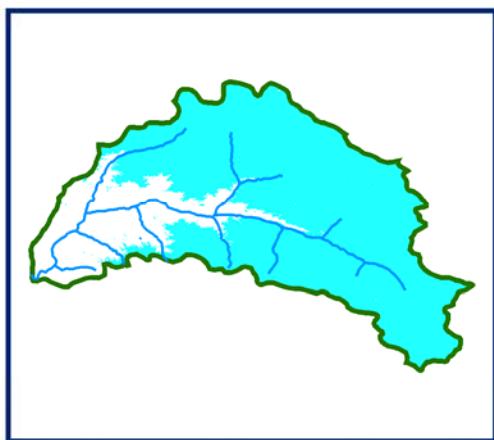
**DATA USED  
25 FEBRUARY 2009**



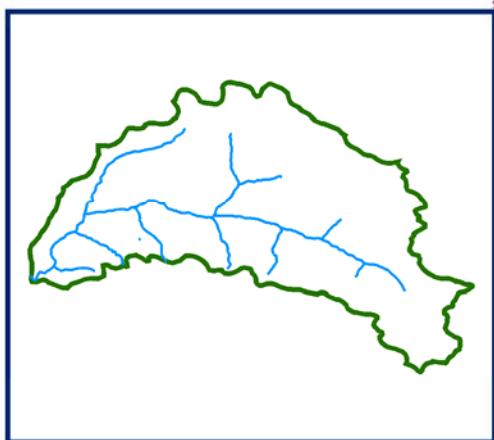
**SNOW**



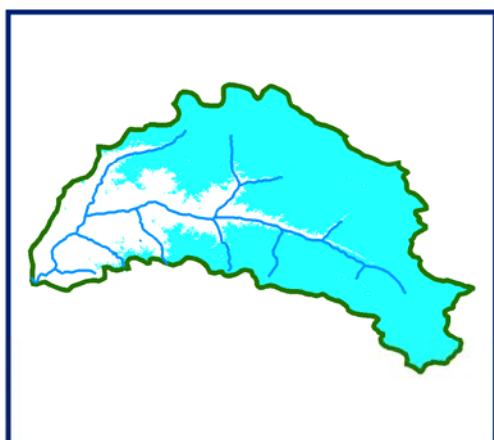
# SNOW COVER MAP : PARBATI BASIN



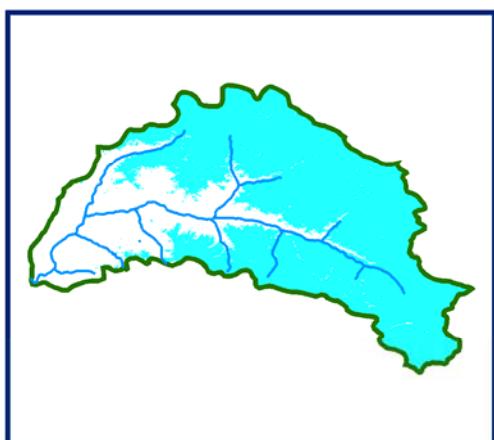
01 MARCH 2009



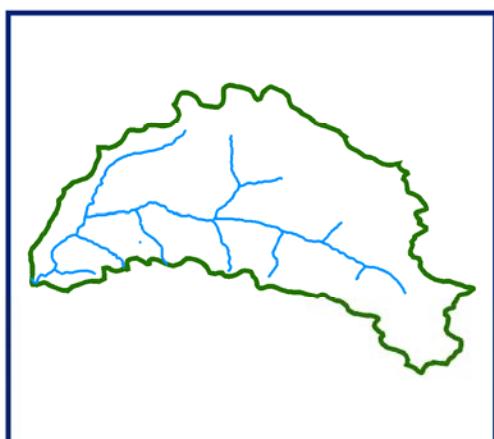
DATA NOT AVAILABLE



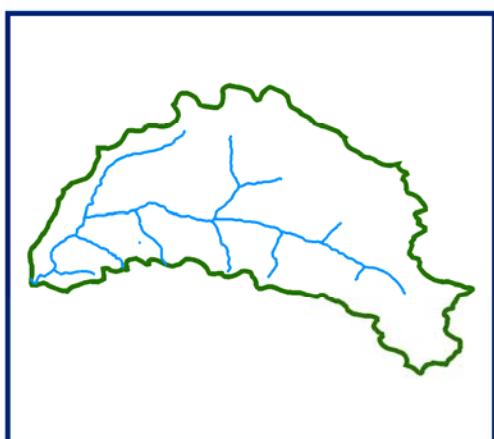
11 MARCH 2009



16 MARCH 2009



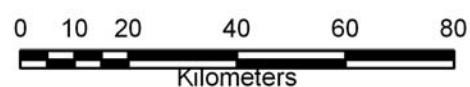
DATA NOT AVAILABLE



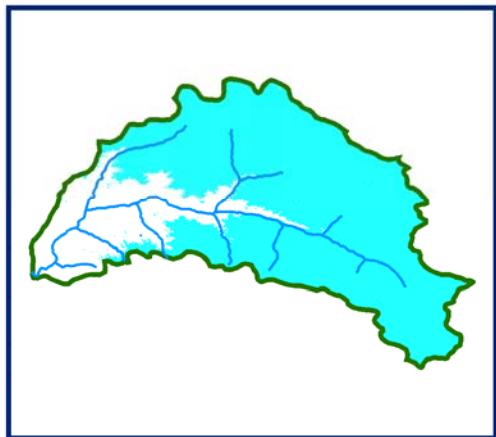
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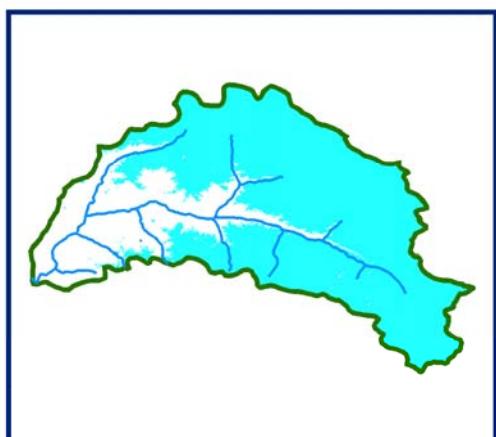
SNOW



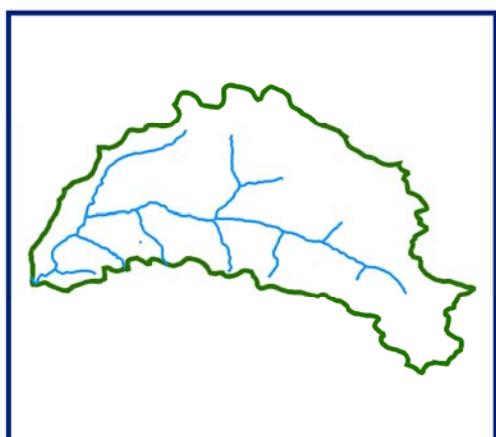
## 10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED  
01 MARCH 2009



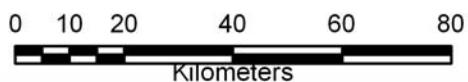
DATA USED  
11 MARCH 2009  
16 MARCH 2009



DATA USED  
DATA NOT AVAILABLE

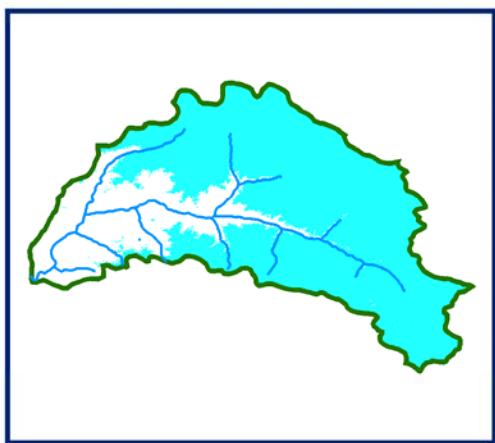


SNOW

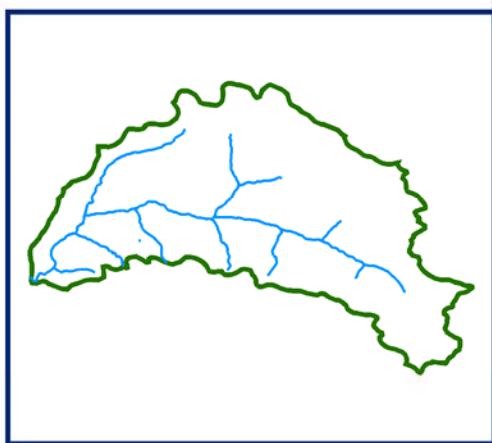


## SNOW COVER MAP

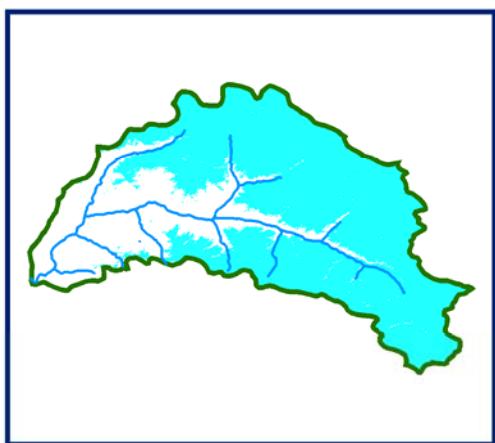
## PARBATI BASIN



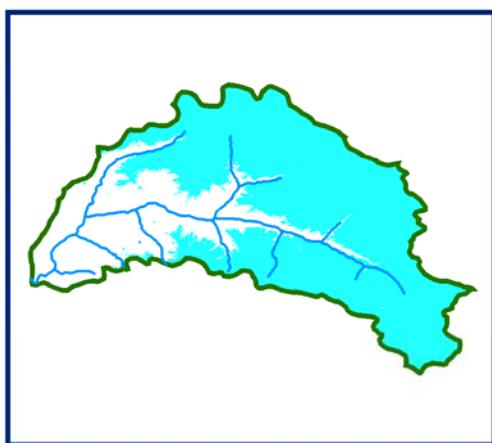
04 APRIL 2009



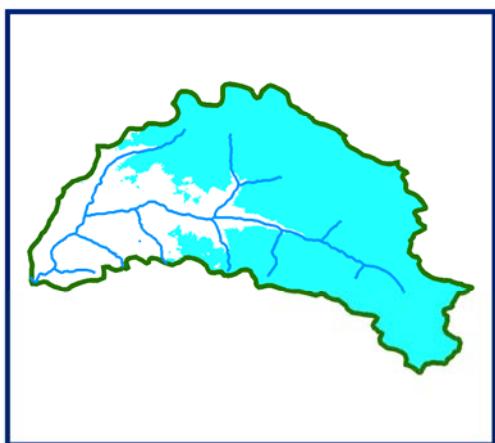
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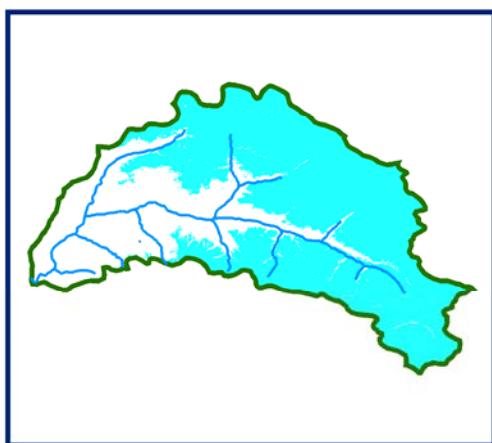
14 APRIL 2009



18 APRIL 2009



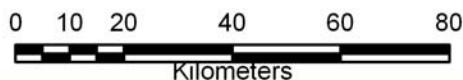
23 APRIL 2009



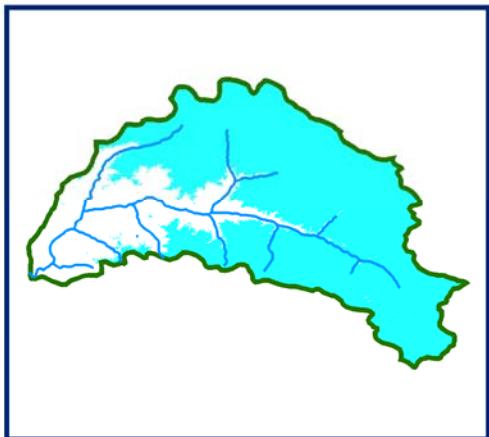
28 APRIL 2009



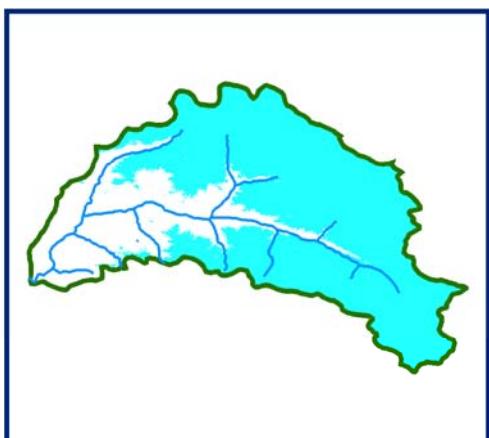
SNOW



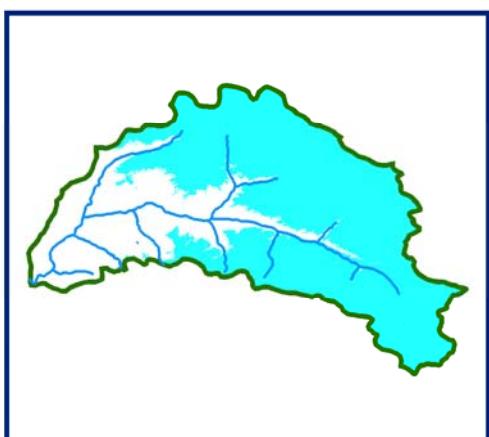
## 10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED  
**04 APRIL 2009**



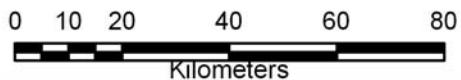
DATA USED  
**14 APRIL 2009**  
**18 APRIL 2009**



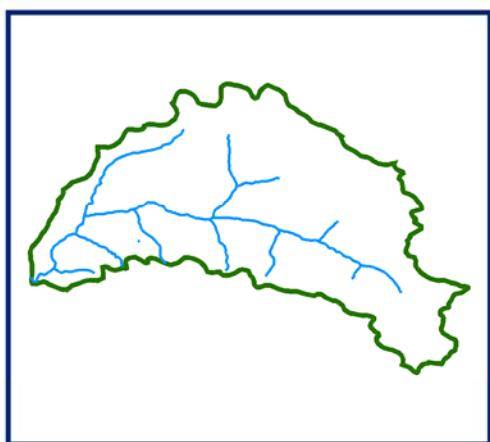
DATA USED  
**23 APRIL 2009**  
**28 APRIL 2009**



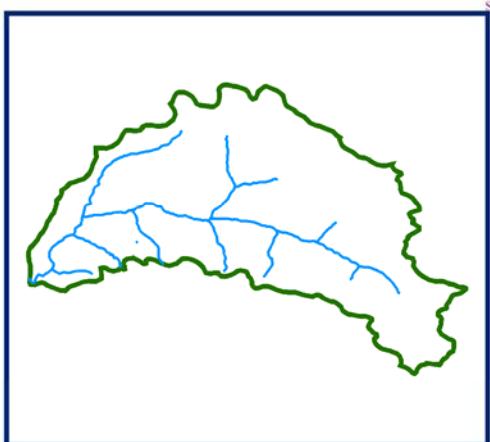
SNOW



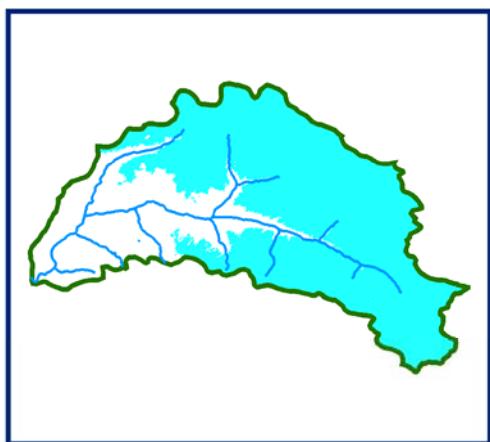
# SNOW COVER MAP : PARBATI BASIN



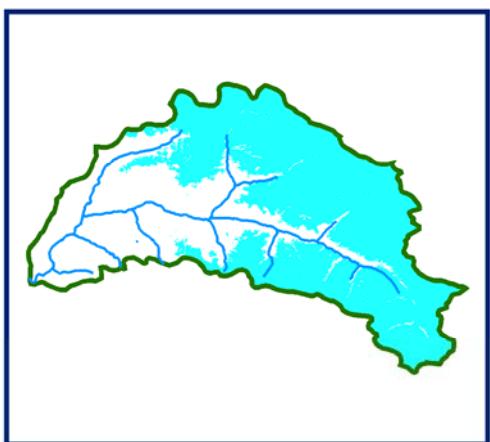
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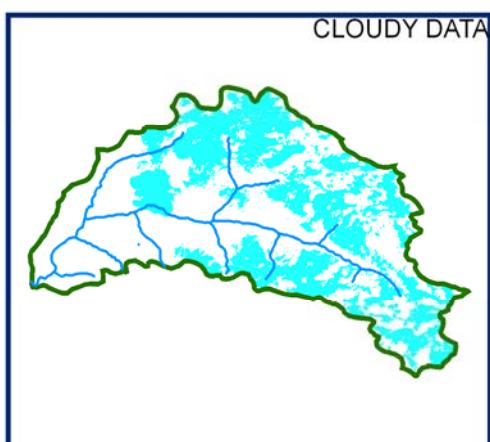
DATA NOT AVAILABLE



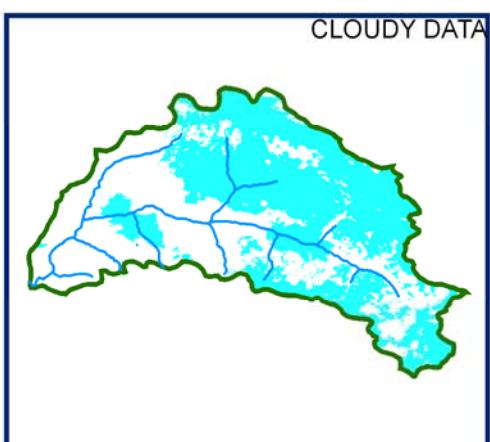
12 MAY 2009



17 MAY 2009



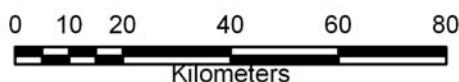
22 MAY 2009



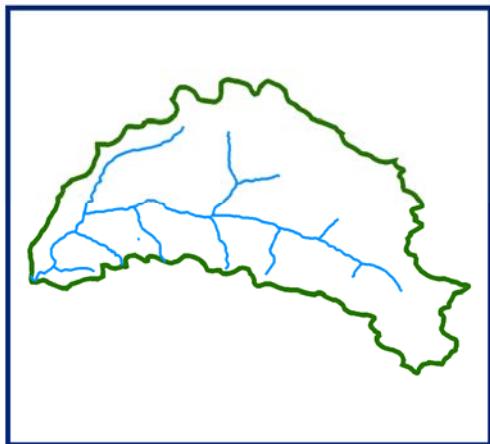
27 MAY 2009



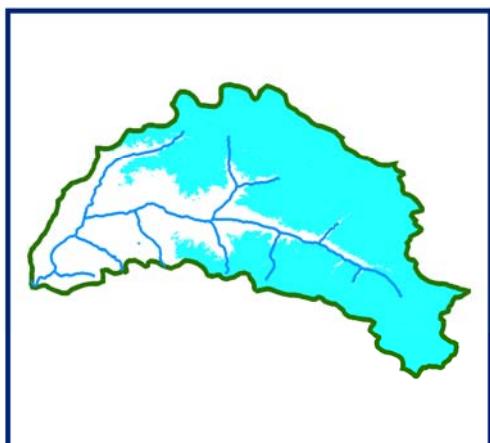
SNOW



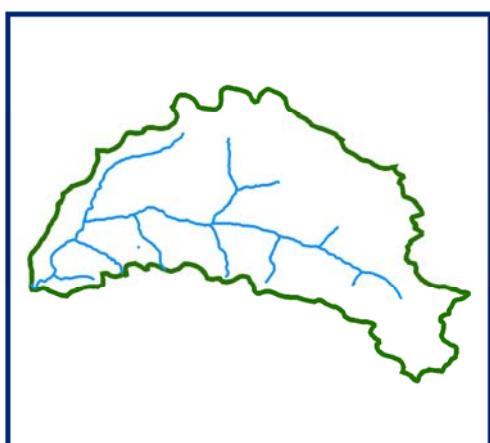
## 10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED  
DATA NOT AVAILABLE



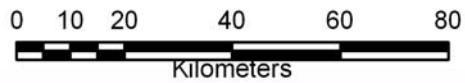
DATA USED  
12 MAY 2009  
17 MAY 2009



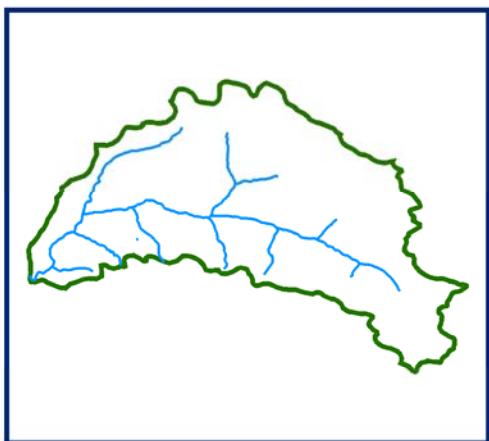
DATA USED  
DATA NOT AVAILABLE



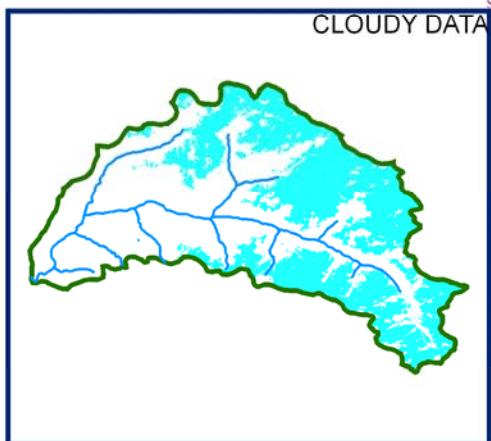
SNOW



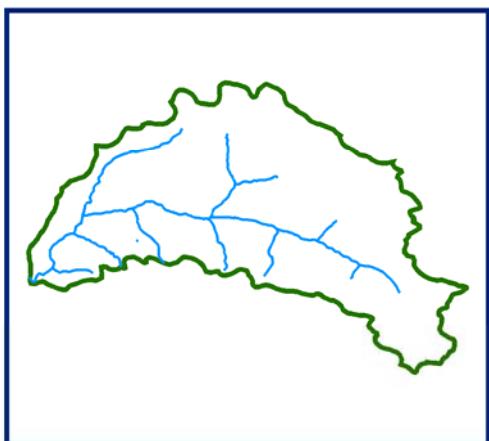
# SNOW COVER MAP : PARBATI BASIN



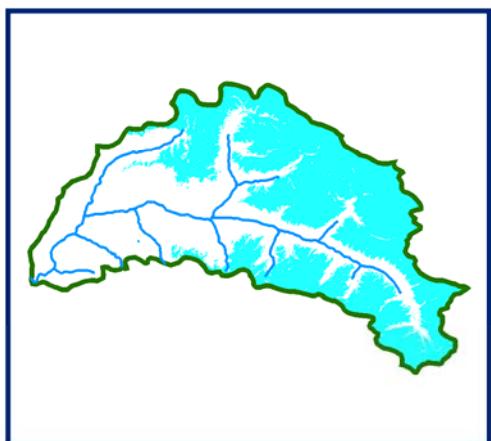
DATA NOT AVAILABLE



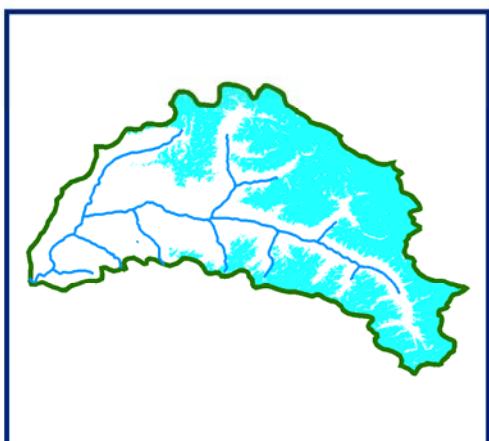
10 JUNE 2009



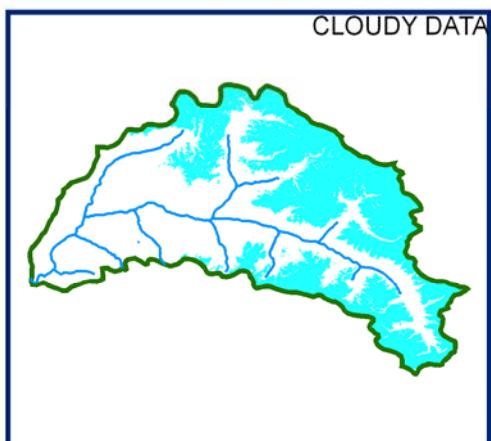
DATA NOT AVAILABLE



20 JUNE 2009



25 JUNE 2009



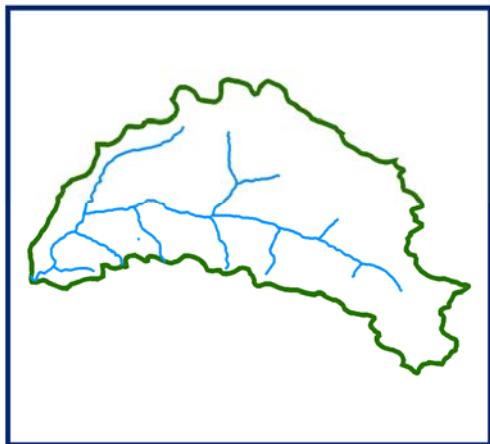
29 JUNE 2009



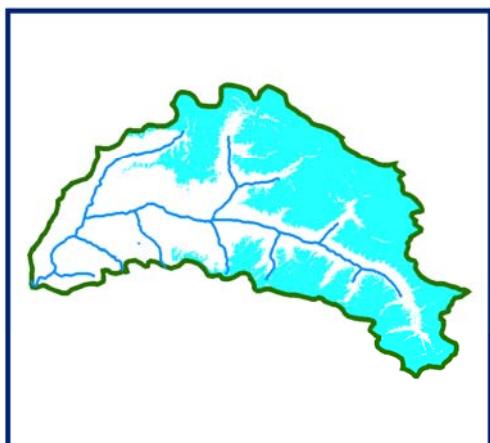
SNOW



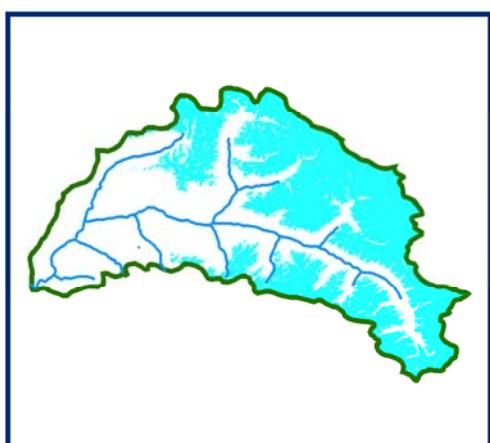
## 10 DAILY SNOW COVER MAP: PARBATI BASIN



DATA USED  
DATA NOT AVAILABLE



DATA USED  
20 JUNE 2009



DATA USED  
25 JUNE 2009



SNOW



*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 (%)
<b>October 2008</b>							
1	3-Oct-08	236.1	21	5	18-Oct-08	494.3	44
2	4-Oct-08	207.7	18	6	23-Oct-08	289.6	26
3	8-Oct-08	78.0	7	7	27-Oct-08	277.3	24
4	13-Oct-08	169.6	15				
<b>November 2008</b>							
8	1-Nov-08	233.8	21	11	16-Nov-08	162.2	14
9	6-Nov-08	204.0	18	12	21-Nov-08	638.5	56
10	11-Nov-08	176.1	16				
<b>December 2008</b>							
13	5-Dec-08	162.2	14	16	15-Dec-08	190.2	17
14	10-Dec-08	173.7	15	17	24-Dec-08	184.3	16
15	14-Dec-08	218.8	19	18	29-Dec-08	654.0	58
<b>January 2009</b>							
19	8-Jan-09	804.4	71	21	27-Jan-09	530.8	47
20	12-Jan-09	798.1	71				
<b>February 2009</b>							
22	1-Feb-09	518.4	46	24	15-Feb-09	728.7	64
23	5-Feb-09	409.2	36	25	25-Feb-09	637.5	56
<b>March 2009</b>							
26	1-Mar-09	788.2	70	28	16-Mar-09	565.5	50
27	11-Mar-09	622.8	55				
<b>April 2009</b>							
29	4-Apr-09	664.7	59	32	23-Apr-09	552.4	49
30	14-Apr-09	559.9	49	33	28-Apr-09	440.1	39
31	18-Apr-09	567.3	50				
<b>May 2009</b>							
34	12-May-09	481.3	43	36	22-May-09	146.3	13
35	17-May-09	349.8	31	37	27-May-09	285.3	25
<b>June 2009</b>							
38	10-Jun-09	103.8	9	40	25-Jun-09	156.4	14
39	20-Jun-09	243.8	21	41	29-Jun-09	152.8	13

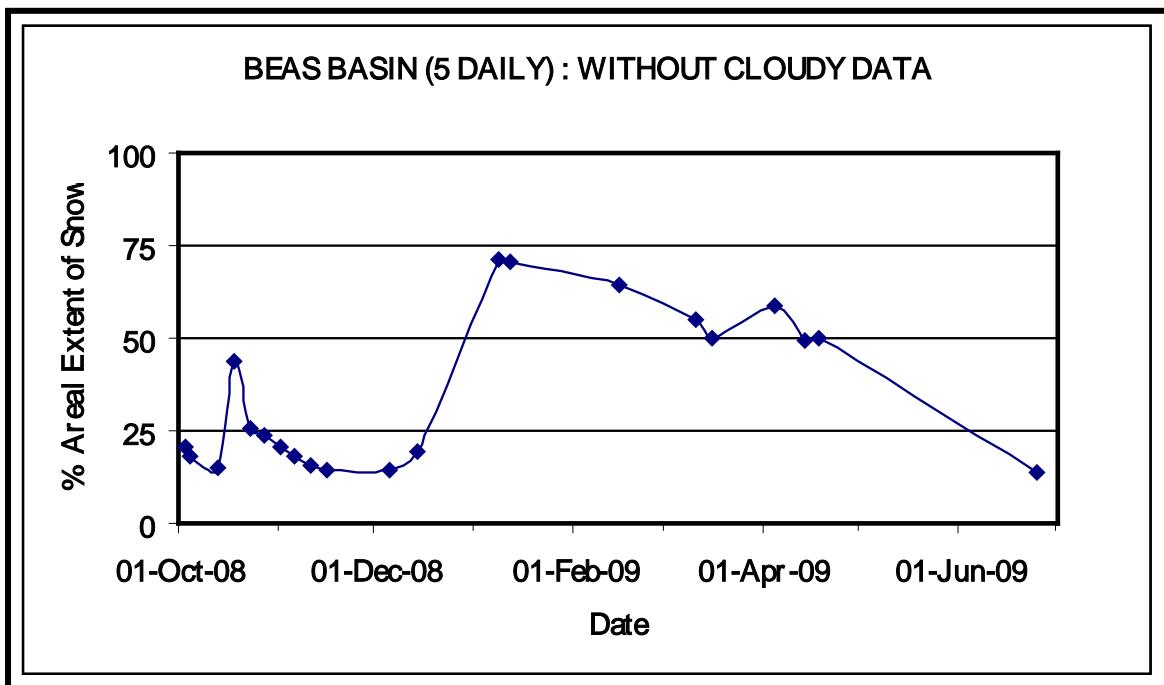
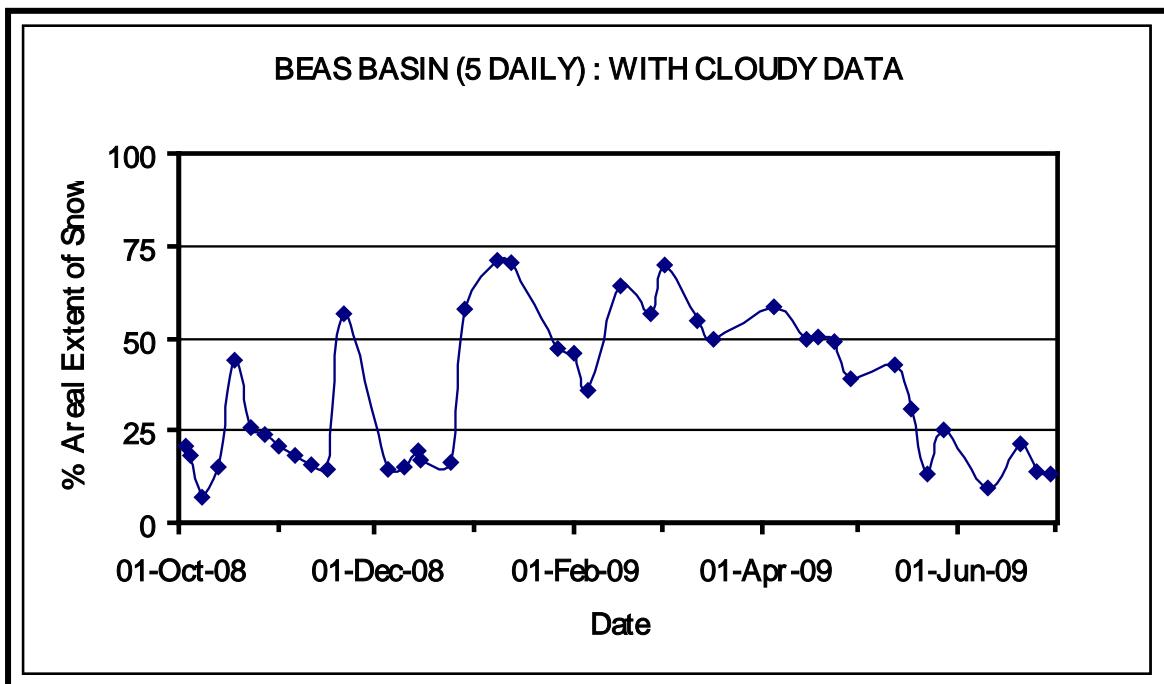
**AREAL EXTENT OF SNOW (10 DAILY)**

**BASIN NAME: BEAS**

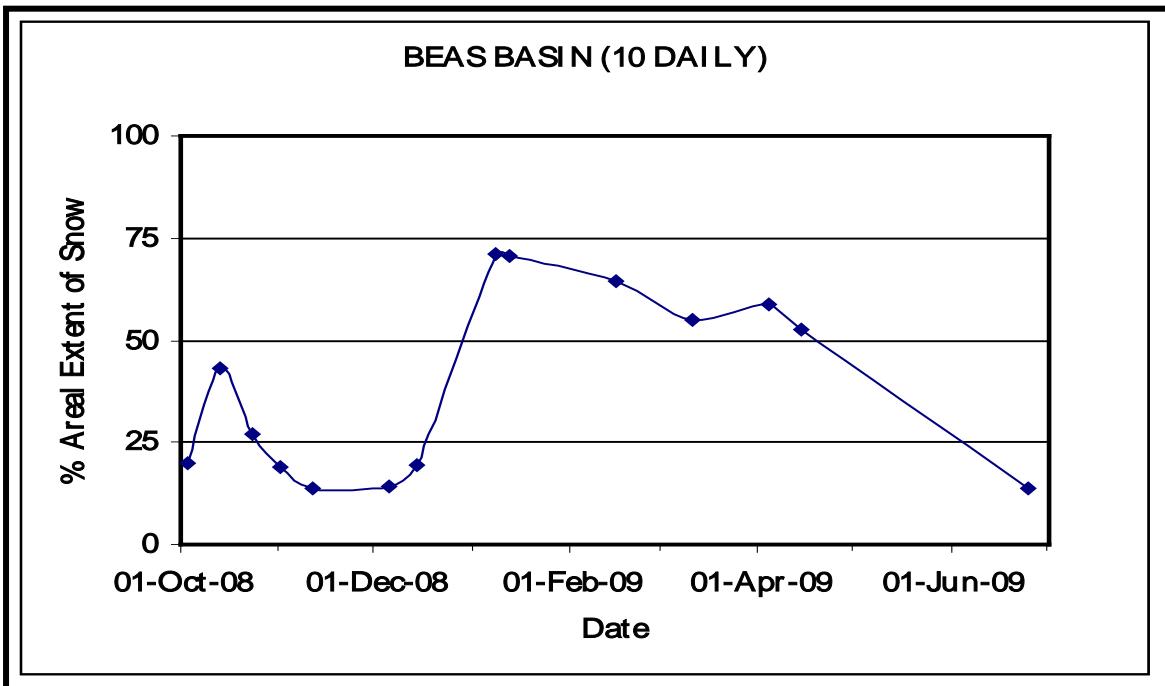
**BASIN AREA: 1132 sq km**

S. No	Date	Snow cover (sq km)	Snow cover (%)	S. No	Date	Snow cover (sq km)	Snow cover (%)
<b>October 2008</b>				<b>November 2008</b>			
1	3-Oct-08	227.0	20	4	1-Nov-08	216.1	19
2	13-Oct-08	492.2	43	5	11-Nov-08	155.5	14
3	23-Oct-08	303.3	27				
<b>December 2008</b>				<b>January 2009</b>			
6	5-Dec-08	162.2	14	8	8-Jan-09	804.4	71
7	14-Dec-08	218.8	19	9	12-Jan-09	798.1	71
<b>February 2009</b>				<b>March 2009</b>			
10	15-Feb-09	728.7	64	11	11-Mar-09	622.8	55
<b>April 2009</b>				<b>May 2009</b>			
12	4-Apr-09	664.7	59				
13	14-Apr-09	593.6	52				
<b>June 2009</b>							
14	25-Jun-09	156.4	14				

### Snow cover depletion curve

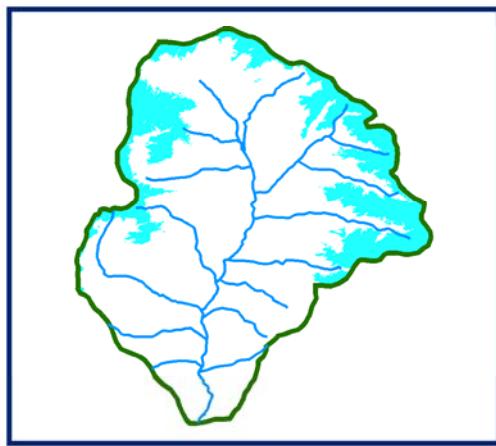


### Snow cover depletion curve

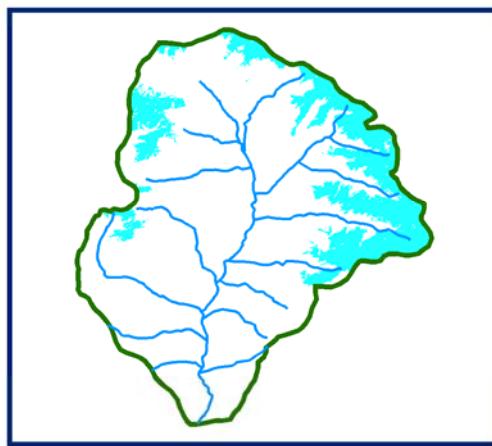


# *SNOW COVER MAP*

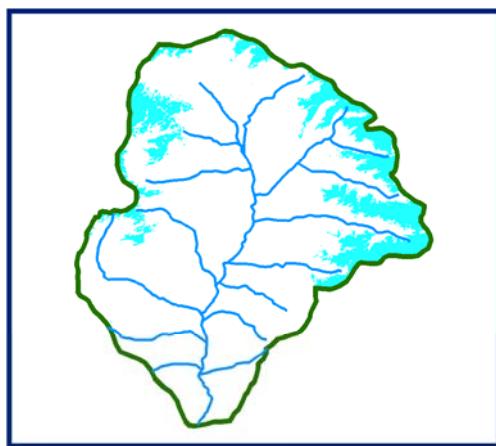
**SNOW COVER MAP : BEAS BASIN**



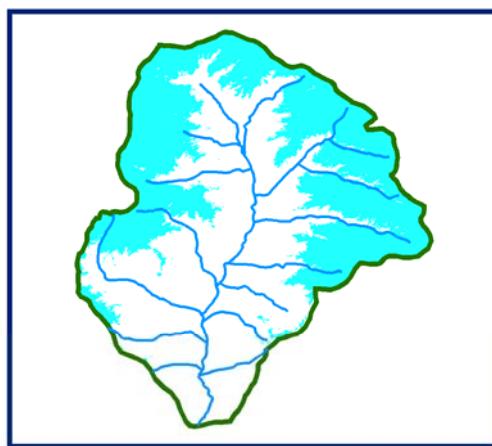
**03 OCTOBER 2008**



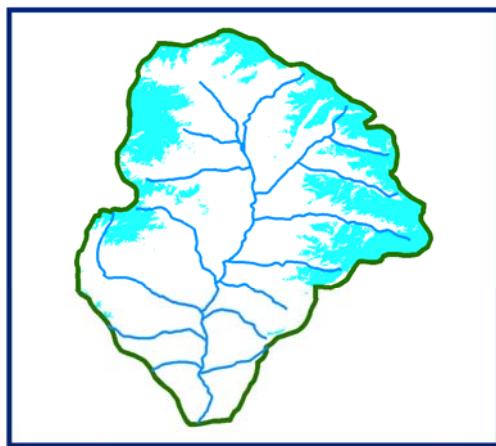
**04 OCTOBER 2008**



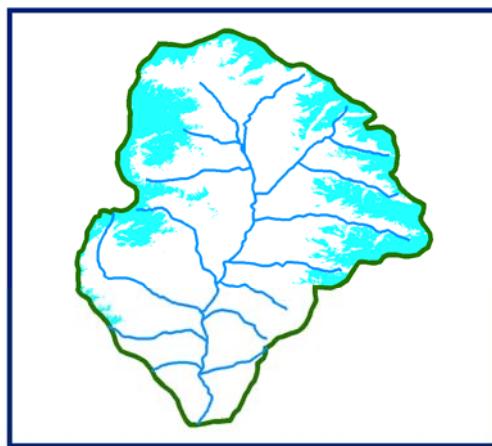
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**18 OCTOBER 2008**



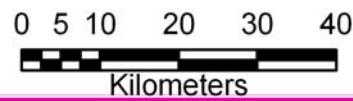
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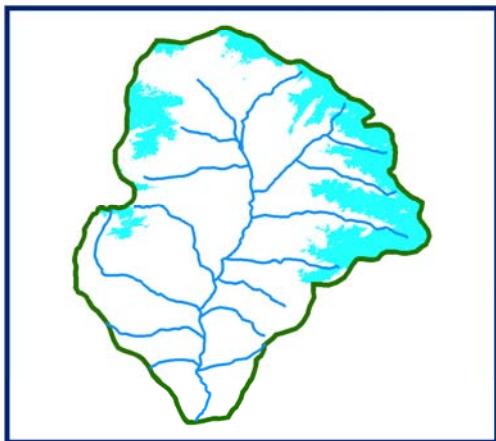
**27 OCTOBER 2008**



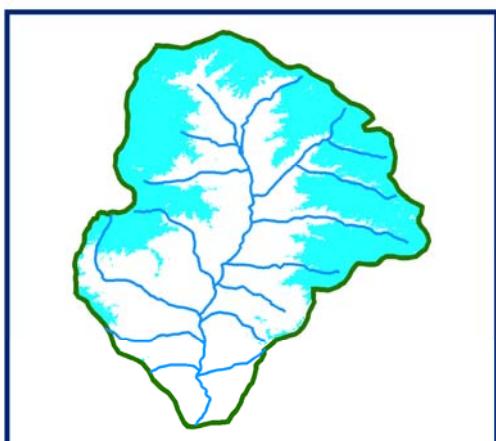
**SNOW**



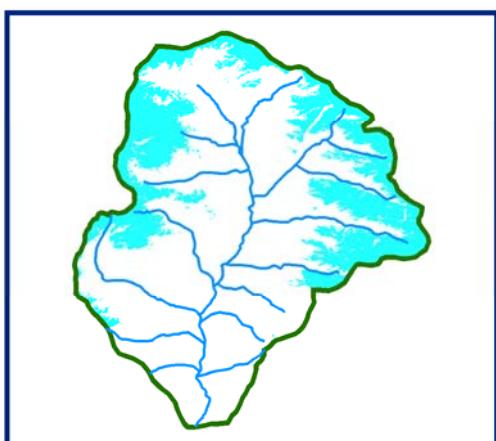
## 10 DAILY SNOW COVER MAP: BEAS BASIN



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**03 OCTOBER 2008**  
**04 OCTOBER 2008**



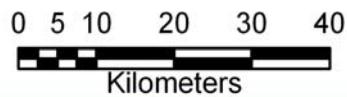
DATA USED  
**13 OCTOBER 2008**  
**18 OCTOBER 2008**



DATA USED  
**23 OCTOBER 2008**  
**27 OCTOBER 2008**

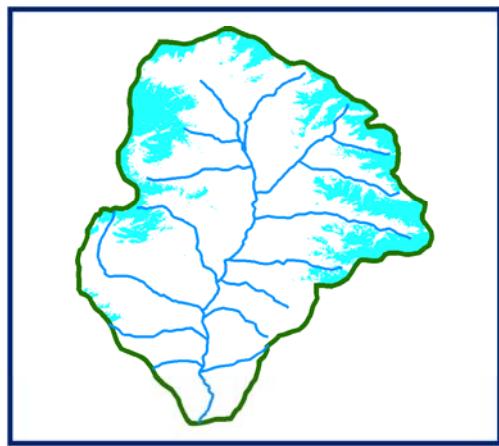


SNOW

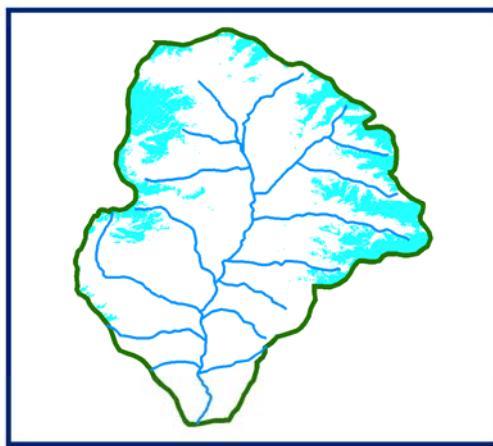


# SNOW COVER MAP

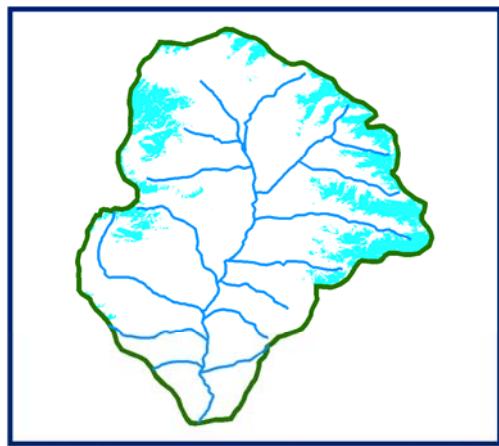
: BEAS BASIN



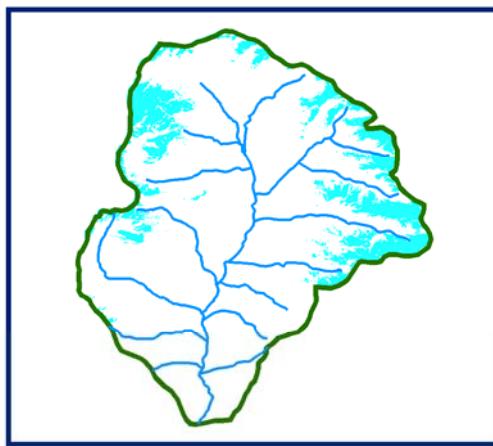
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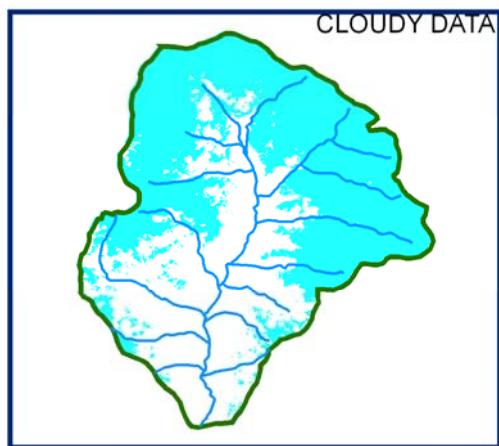
06 NOVEMBER 2008



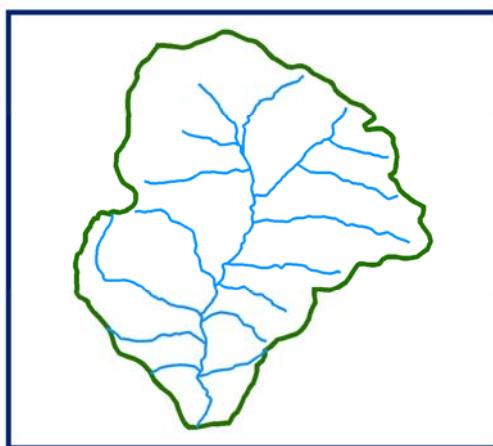
11 NOVEMBER 2008



16 NOVEMBER 2008



21 NOVEMBER 2008



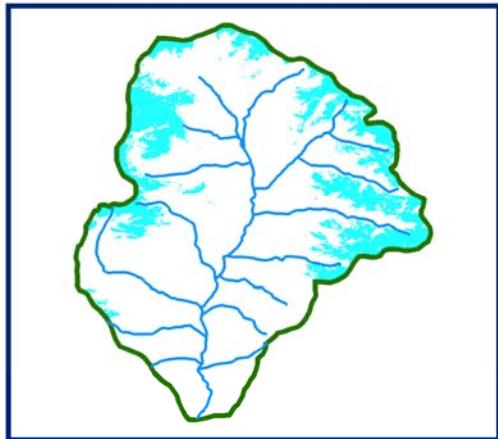
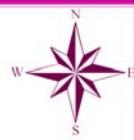
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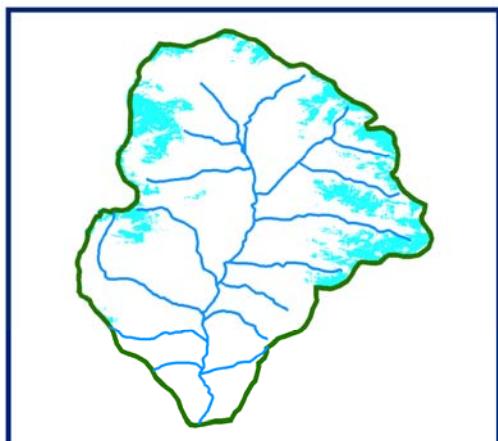
SNOW



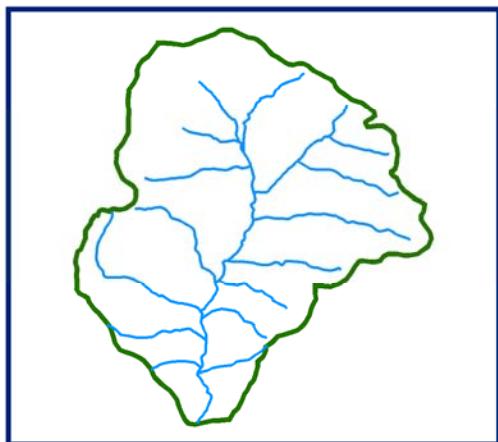
## 10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED  
**01 NOVEMBER 2008**  
**06 NOVEMBER 2008**



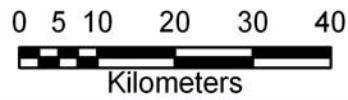
DATA USED  
**11 NOVEMBER 2008**  
**16 NOVEMBER 2008**



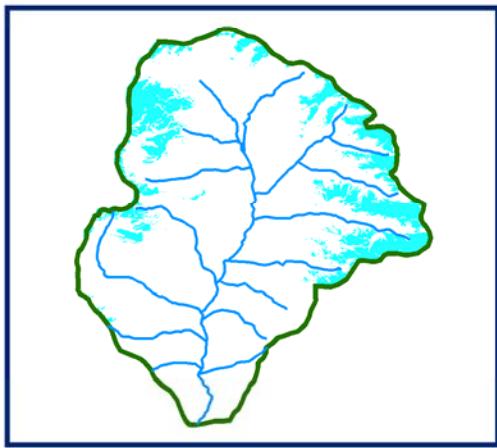
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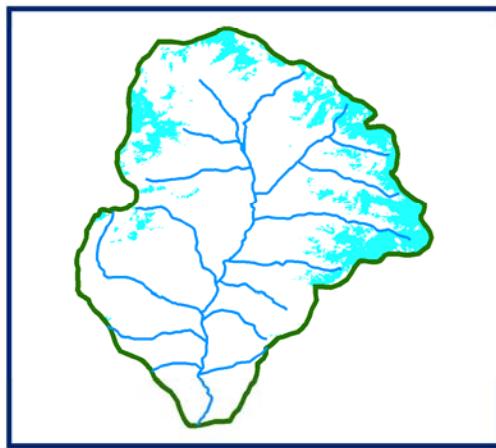
SNOW



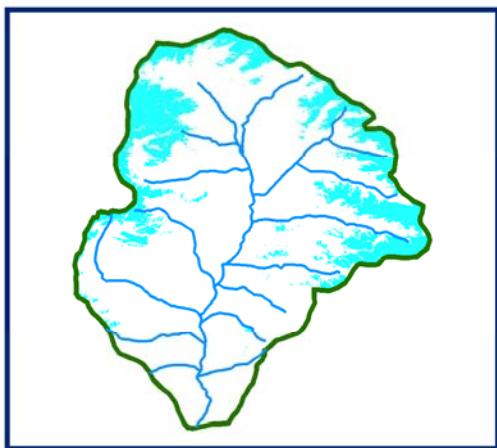
**SNOW COVER MAP : BEAS BASIN**



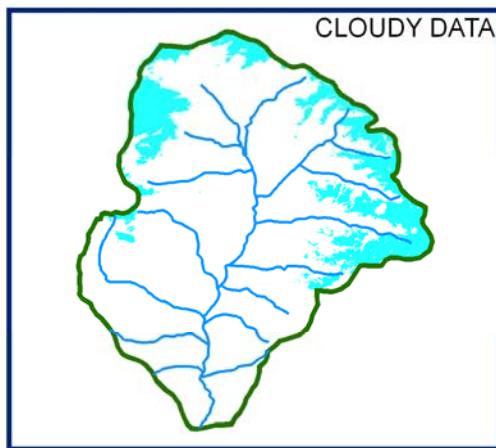
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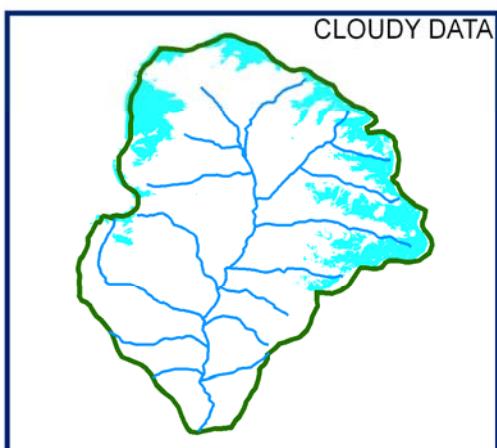
**10 DECEMBER 2008**



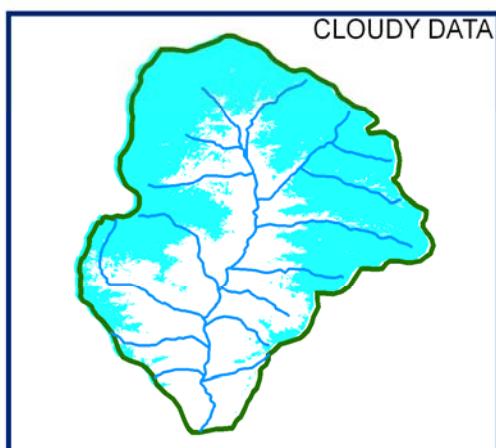
**14 DECEMBER 2008**



**CLOUDY DATA  
15 DECEMBER 2008**



**CLOUDY DATA  
24 DECEMBER 2008**



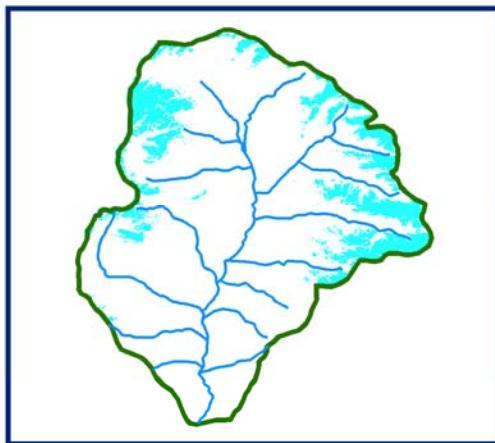
**CLOUDY DATA  
29 DECEMBER 2008**



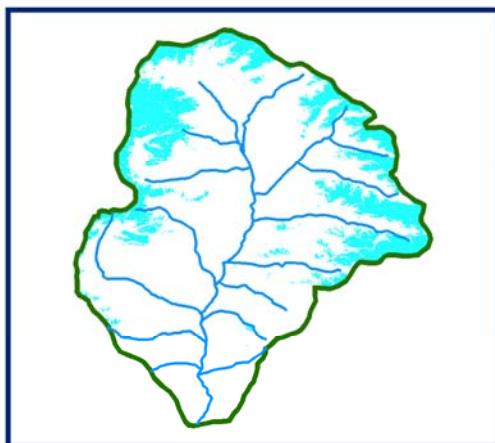
**SNOW**



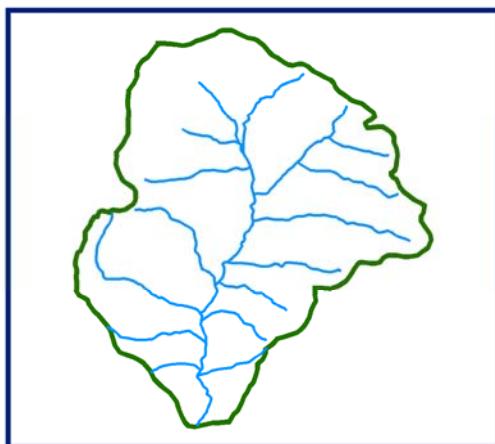
## 10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED  
**05 DECEMBER 2008**



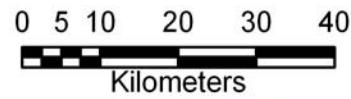
DATA USED  
**14 DECEMBER 2008**



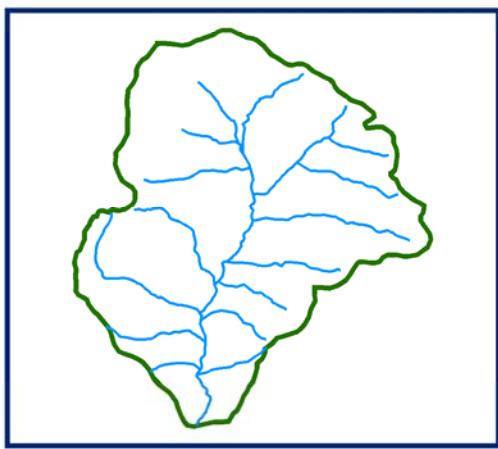
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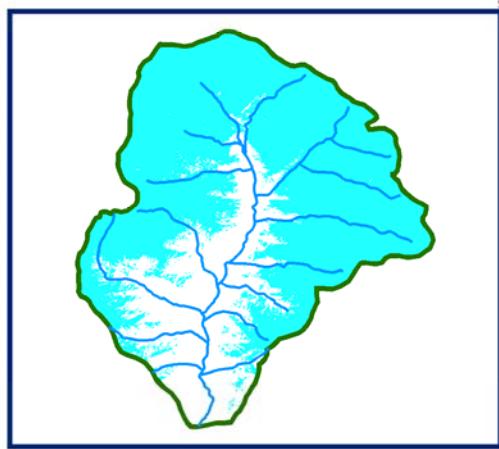
SNOW



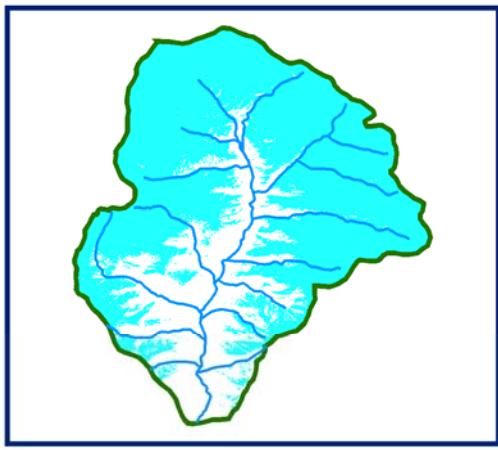
**SNOW COVER MAP : BEAS BASIN**



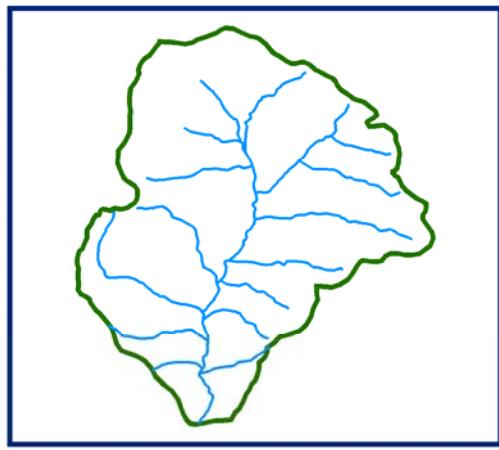
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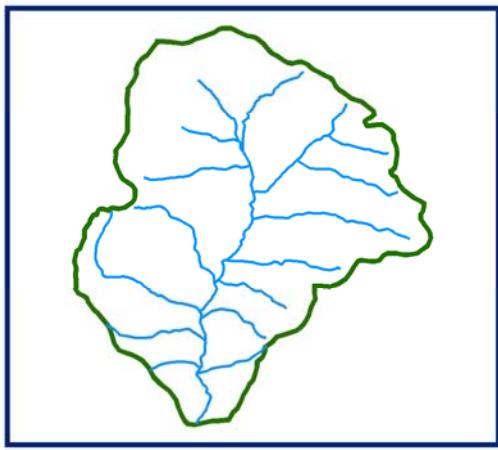
**08 JANUARY 2009**



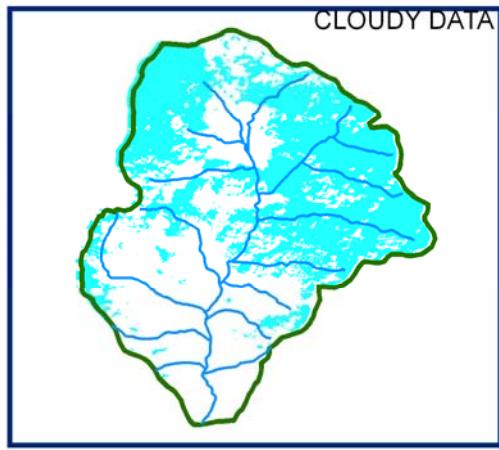
**12 JANUARY 2009**



**DATA NOT AVAILABLE**



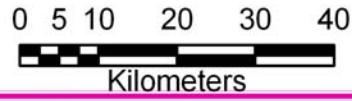
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**27 JANUARY 2009**

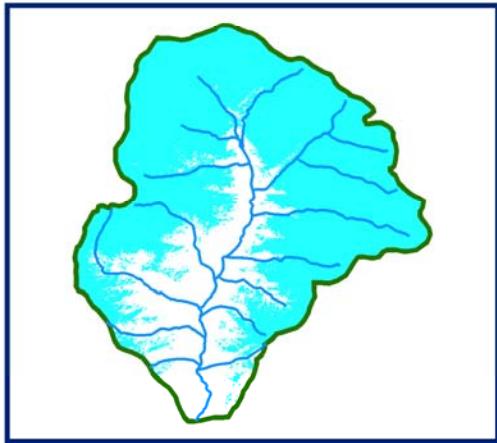


**SNOW**

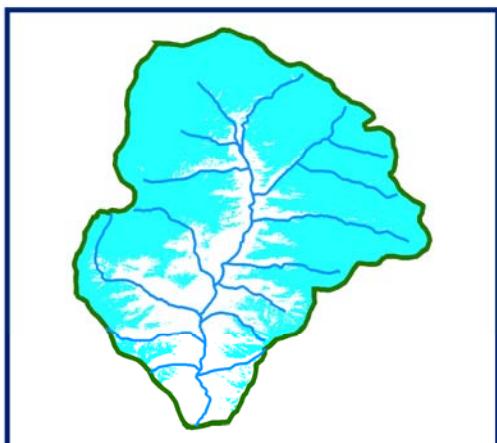


**Kilometers**

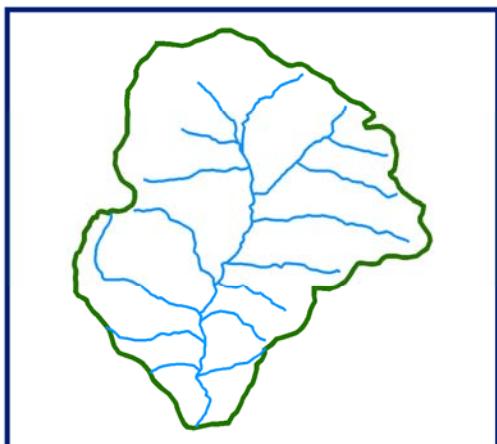
## 10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED  
**08 JANUARY 2009**



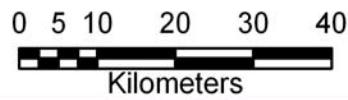
DATA USED  
**12 JANUARY 2009**



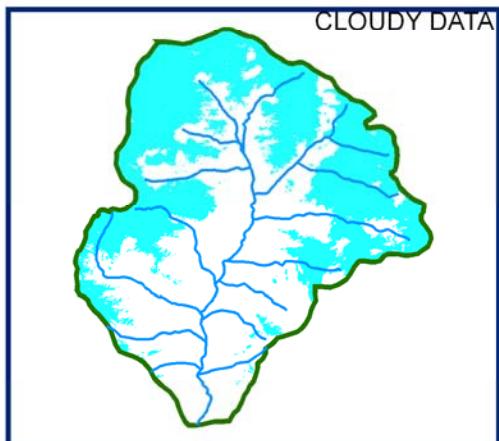
DATA USED  
**DATA NOT AVAILABLE**



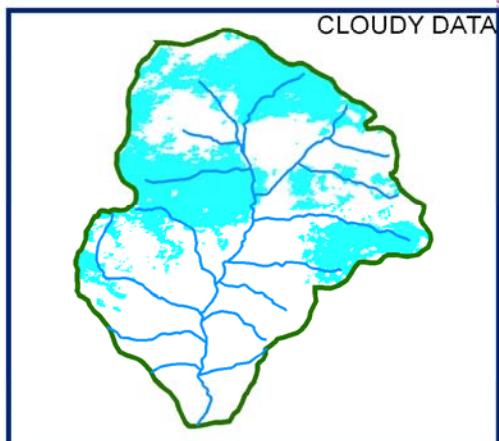
SNOW



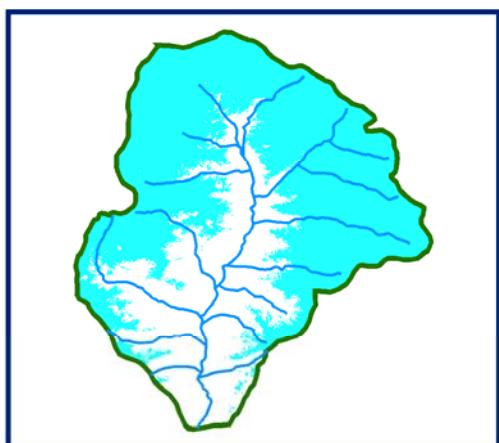
# SNOW COVER MAP : BEAS BASIN



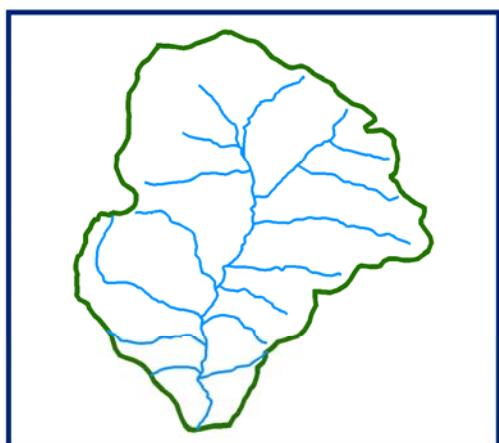
01 FEBRUARY 2009



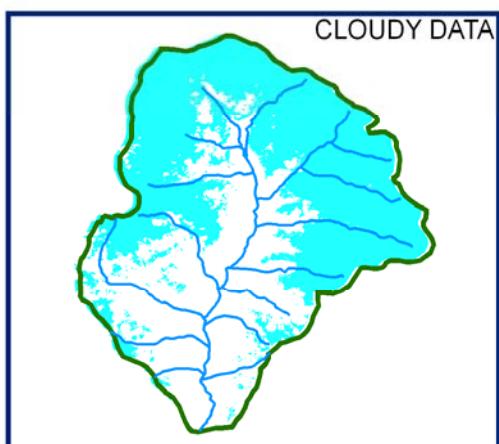
05 FEBRUARY 2009



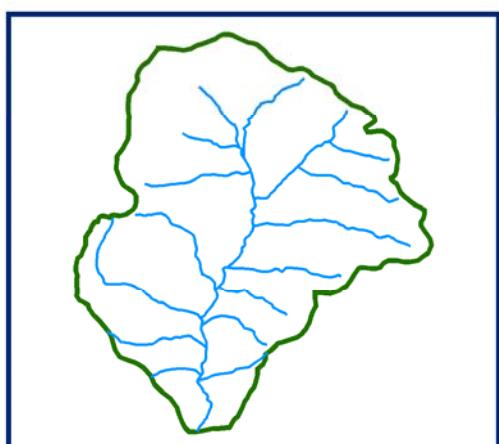
15 FEBRUARY 2009



DATA NOT AVAILABLE



25 FEBRUARY 2009



DATA NOT AVAILABLE

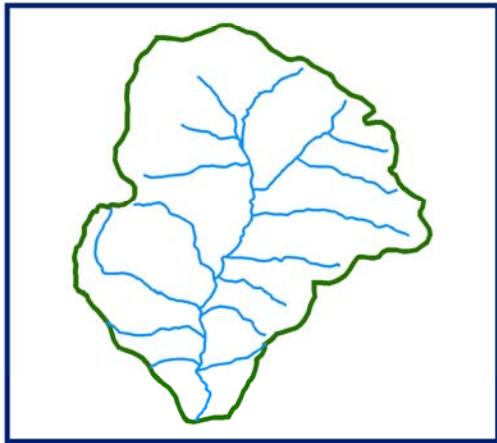


SNOW

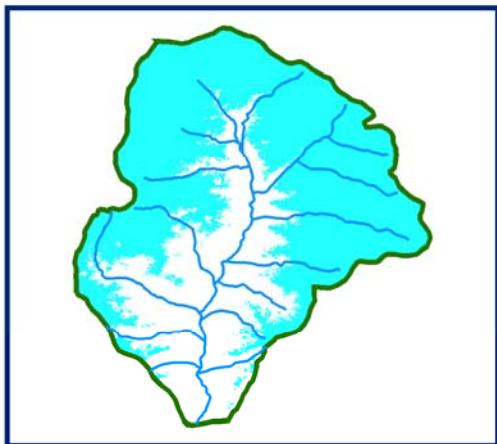


Kilometers

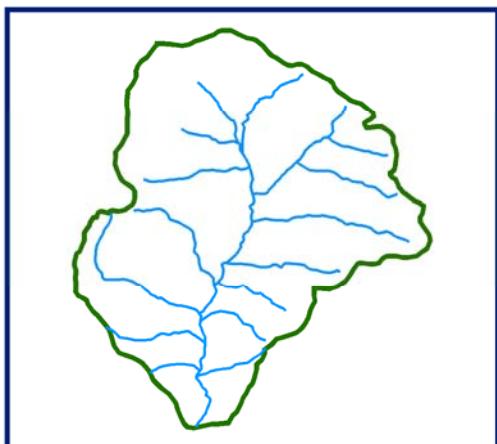
## 10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED  
DATA NOT AVAILABLE



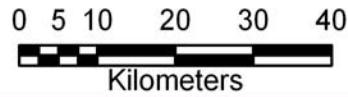
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15 FEBRUARY 2009



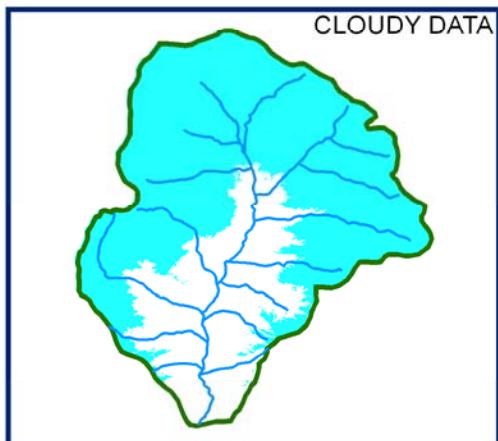
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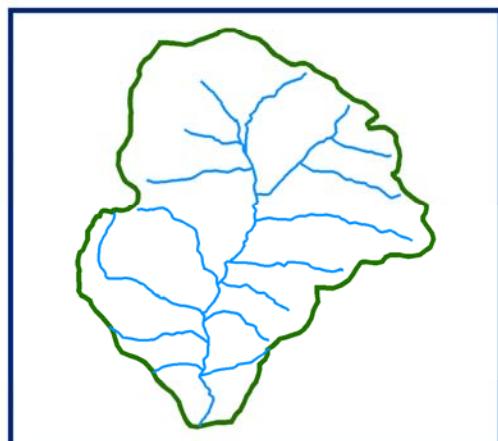
SNOW



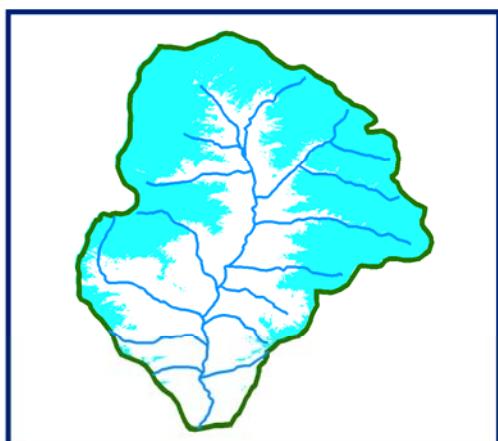
# SNOW COVER MAP : BEAS BASIN



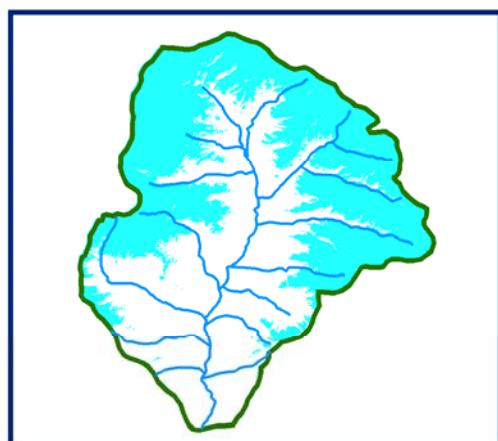
01 MARCH 2009



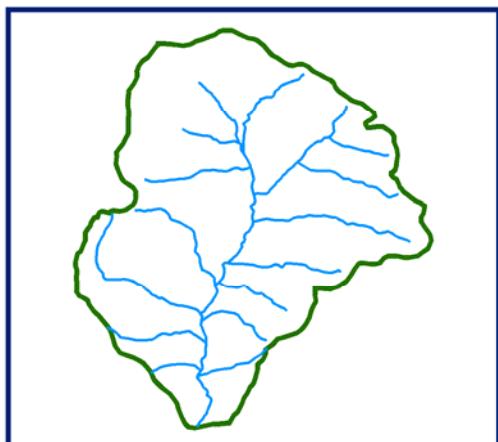
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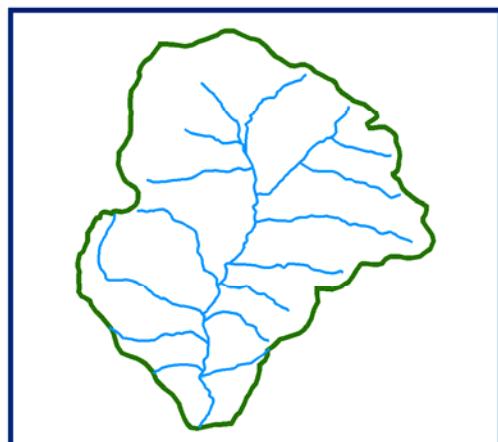
11 MARCH 2009



16 MARCH 2009



DATA NOT AVAILABLE



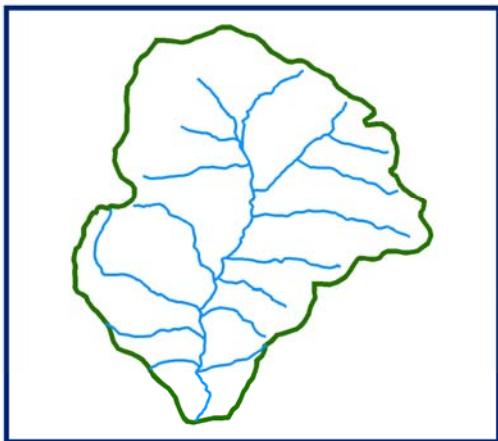
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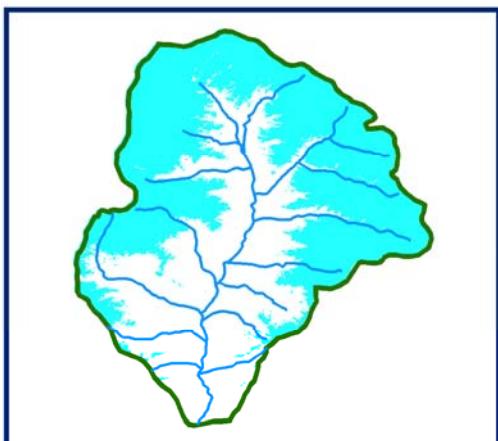
SNOW



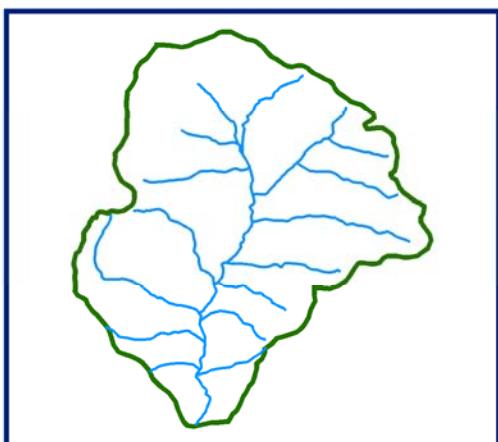
## 10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED  
**DATA NOT AVAILABLE**



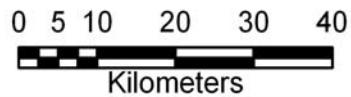
DATA USED  
**11 MARCH 2009**  
**16 MARCH 2009**



DATA USED  
**DATA NOT AVAILABLE**

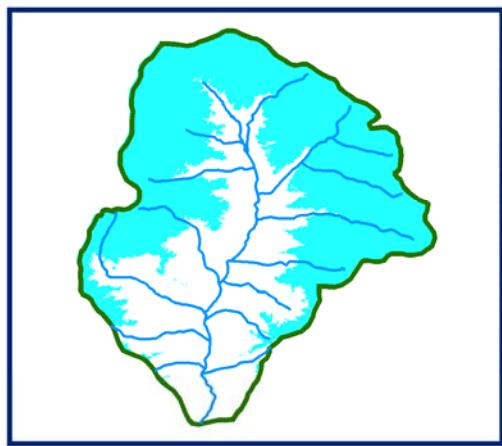


SNOW

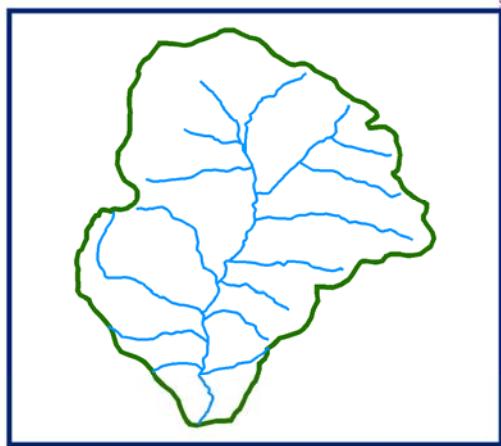


# SNOW COVER MAP

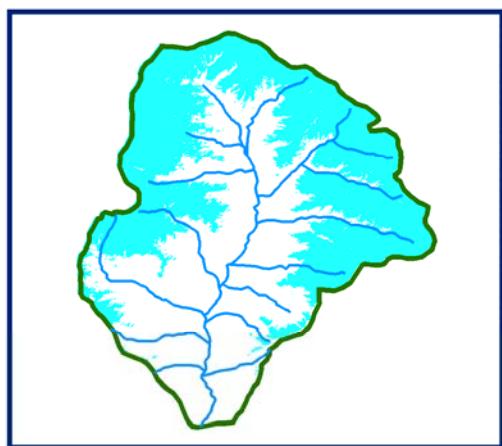
: BEAS BASIN



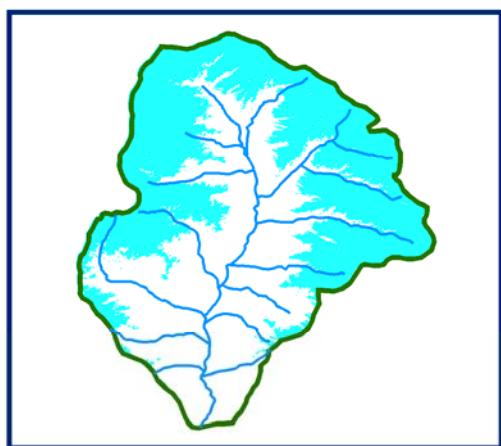
04 APRIL 2009



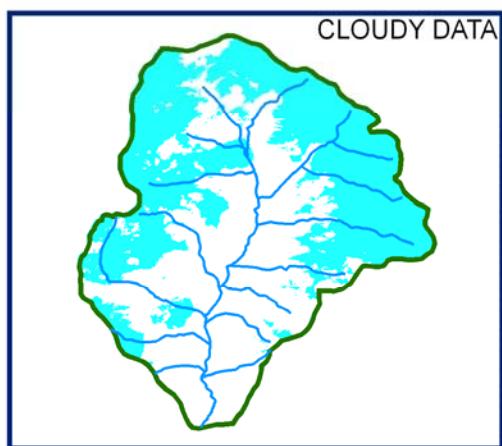
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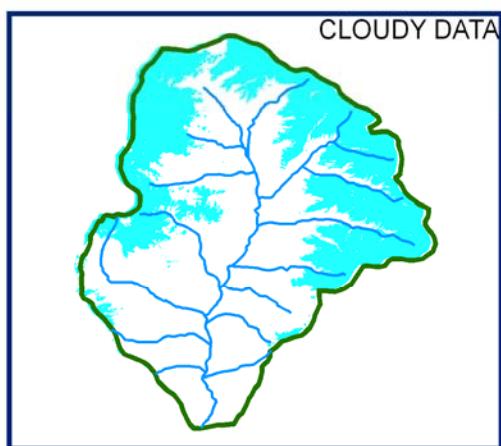
14 APRIL 2009



18 APRIL 2009



23 APRIL 2009



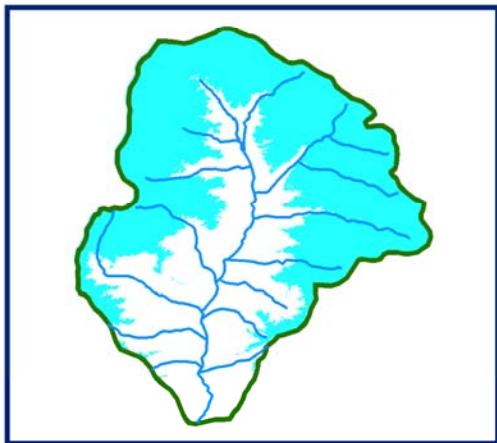
28 APRIL 2009



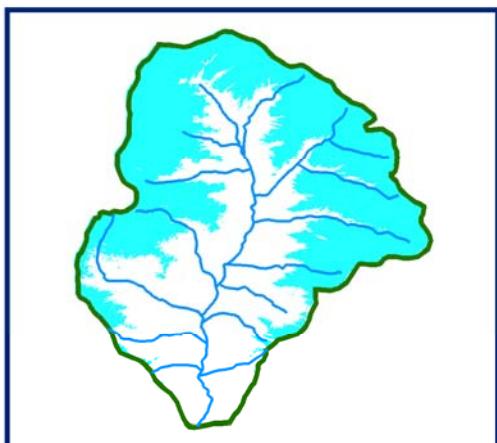
SNOW



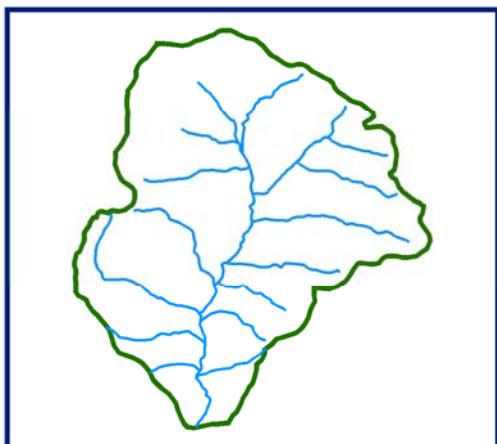
## 10 DAILY SNOW COVER MAP: BEAS BASIN



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**04 APRIL 2009**



DATA USED  
**14 APRIL 2009**  
**18 APRIL 2009**



DATA USED  
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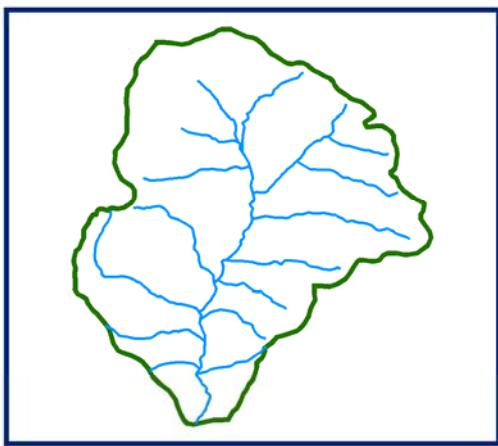


SNOW

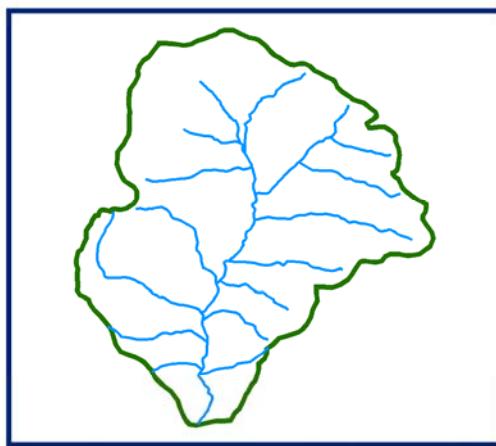


# SNOW COVER MAP

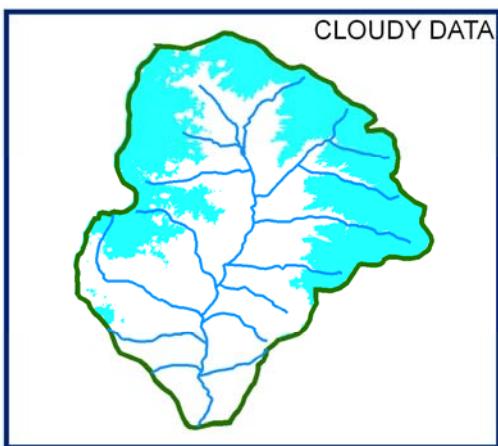
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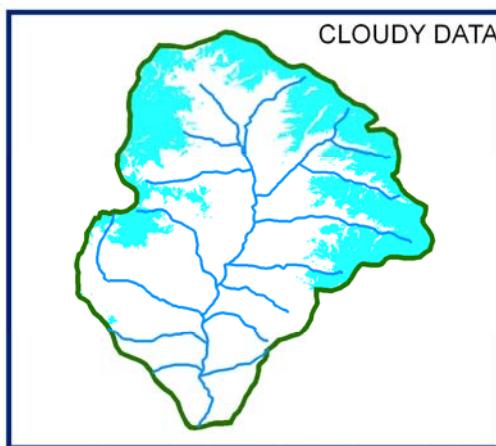
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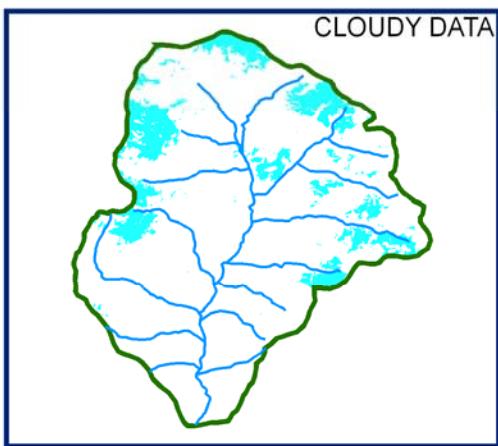
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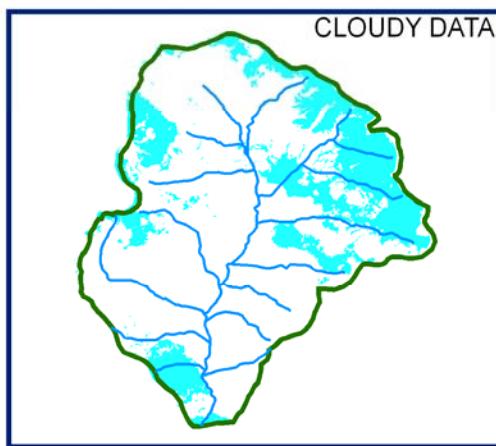
12 MAY 2009



17 MAY 2009



22 MAY 2009



27 MAY 2009



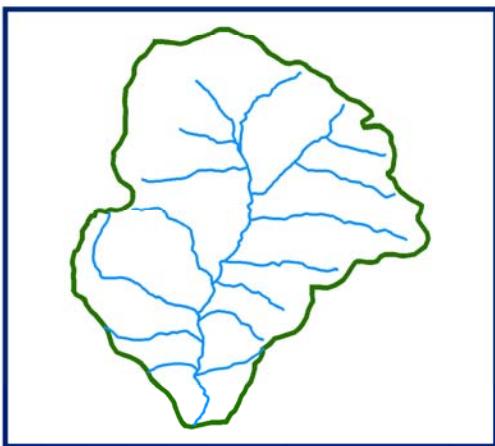
SNOW

0 5 10 20 30 40

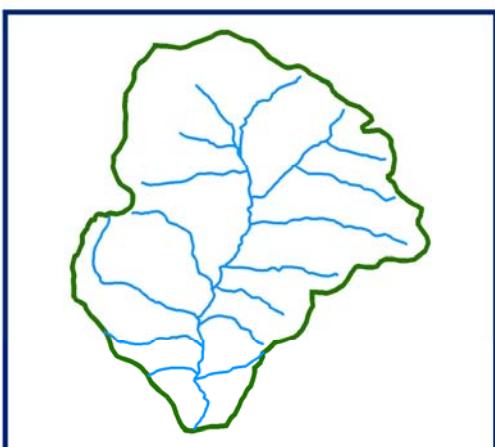


Kilometers

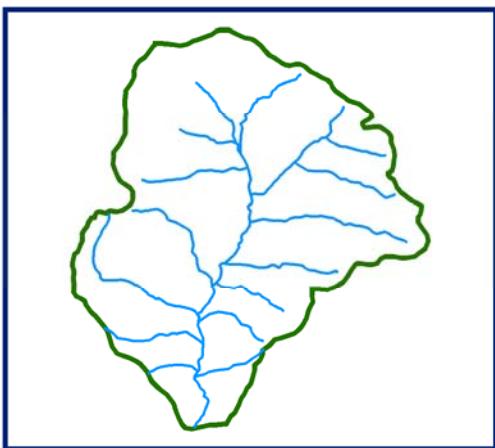
## 10 DAILY SNOW COVER MAP: BEAS BASIN



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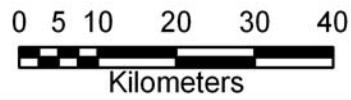
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DATA USED  
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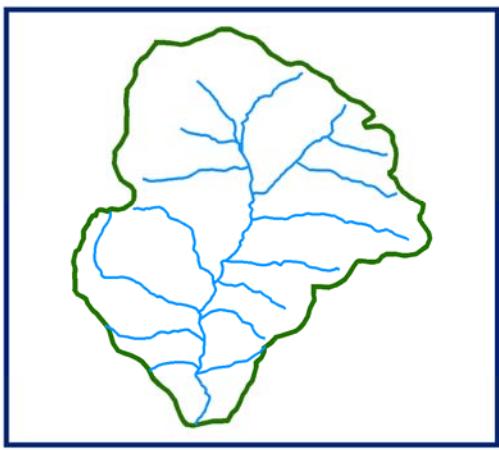


SNOW

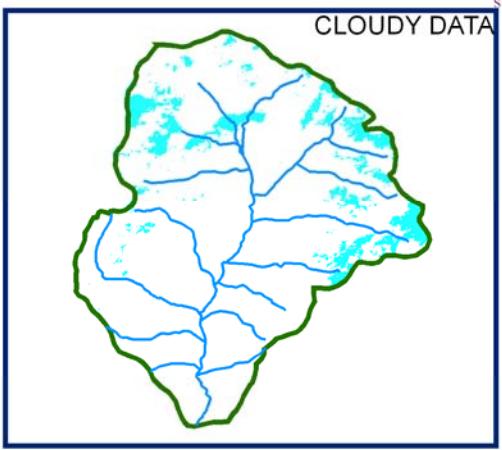


# SNOW COVER MAP

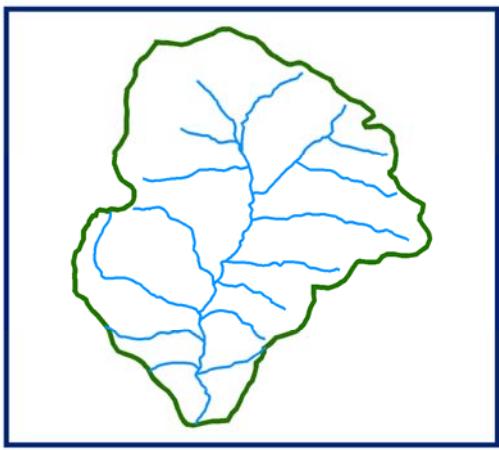
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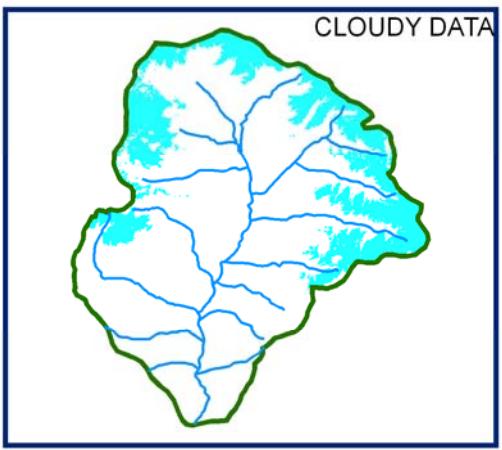
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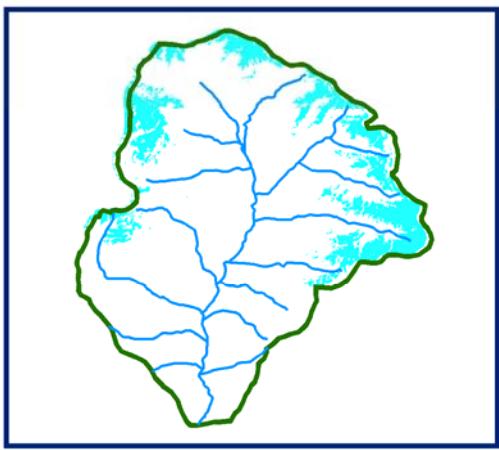
10 JUNE 2009



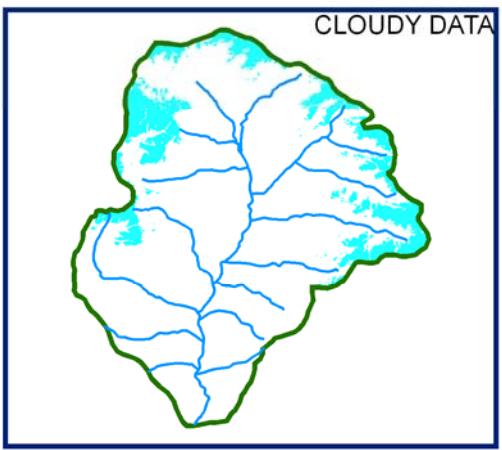
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20 JUNE 2009



25 JUNE 2009



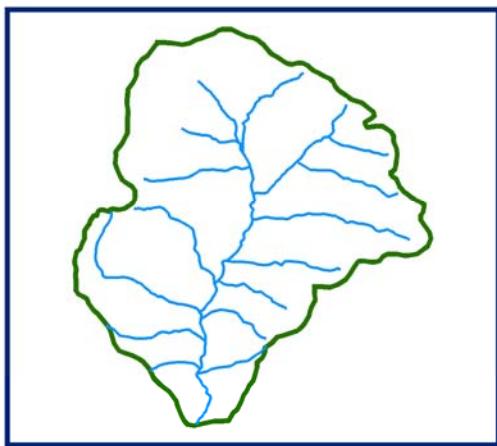
29 JUNE 2009



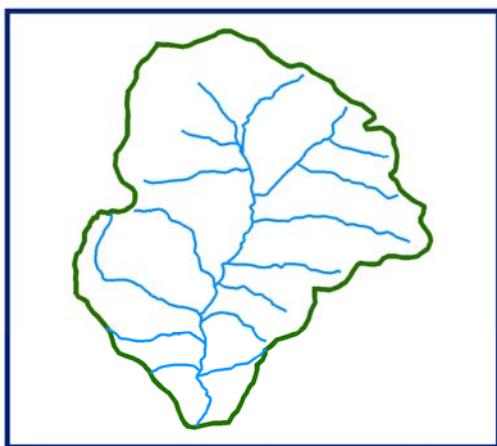
SNOW



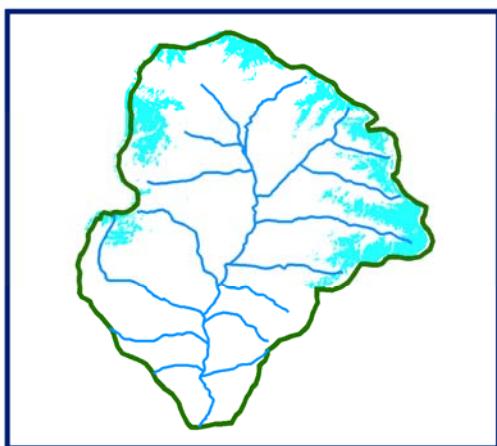
## 10 DAILY SNOW COVER MAP: BEAS BASIN



DATA USED  
DATA NOT AVAILABLE



DATA USED  
DATA NOT AVAILABLE



DATA USED  
25 JUNE 2009



SNOW

