

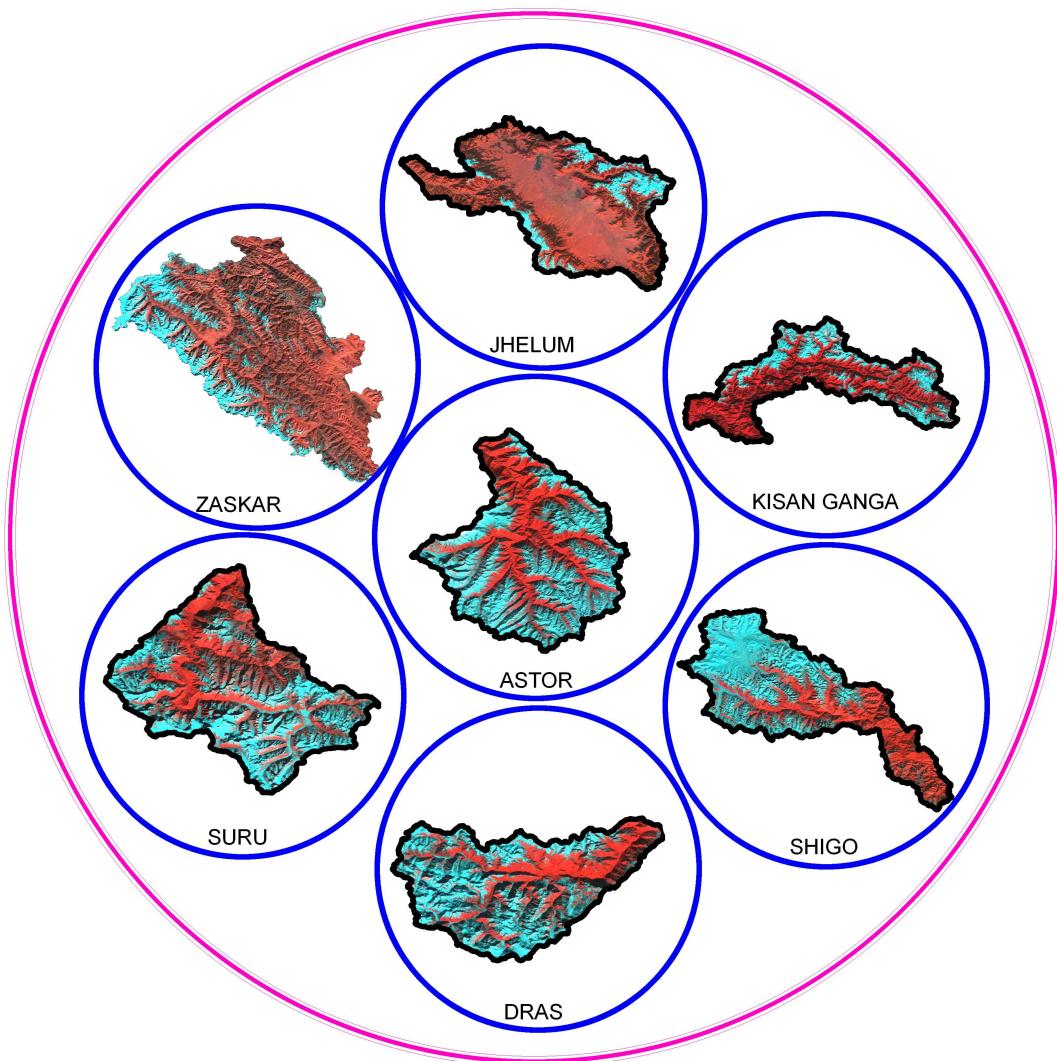
SNOW COVER ATLAS OF THE INDUS BASIN

Sub basins

Jhelum, Kisan Ganga, Astor, Shigo, Dras, Suru and Zaskar.

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

Year 2011 -12



Space Applications Centre (ISRO)
Ahmedabad - 380015

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Abstract	This atlas gives subbasin-wise distribution of snow cover in the Indus basin from October 2011 to June 2012. The subbasins included in this report are Jhelum, Kisan ganga, Astor, Shigo, Dras, Suru and Zaskar. 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, Jhelum, Kisan ganga, Astor, Shigo, Dras, Suru and Zaskar basins.
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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 seven subbasins of the Indus basin. These are Jhelum, Kisan ganga , Astor, Shigo, Dras, Suru and Zaskar sub basins. Locations of these basins are shown in Figure 1.

3. Data used:

AWiFS data from October 2011 to June 2012 were used in this study.

4. Normalised Difference Snow Index (NDSI):

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

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

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

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 curves have been provided from October 2011 to June 2012. Snow ablation pattern varies from basin to basin, depending on area altitude distribution in the basins. Accumulation and ablation pattern in Astor and Dras is same. Accumulation and ablation pattern in Kisanganga, Shigo and Suru is also same. In all the five basins accumulation starts from mid of October and ablation starts from end of March. In Zaskar basin accumulation starts from January & ablation starts from end of March. Accumulation starts from December in Jhelum basin. Maximum snow was observed in end of January and ablation starts from January itself. It may be due lower altitude and latitude.

Acknowledgements

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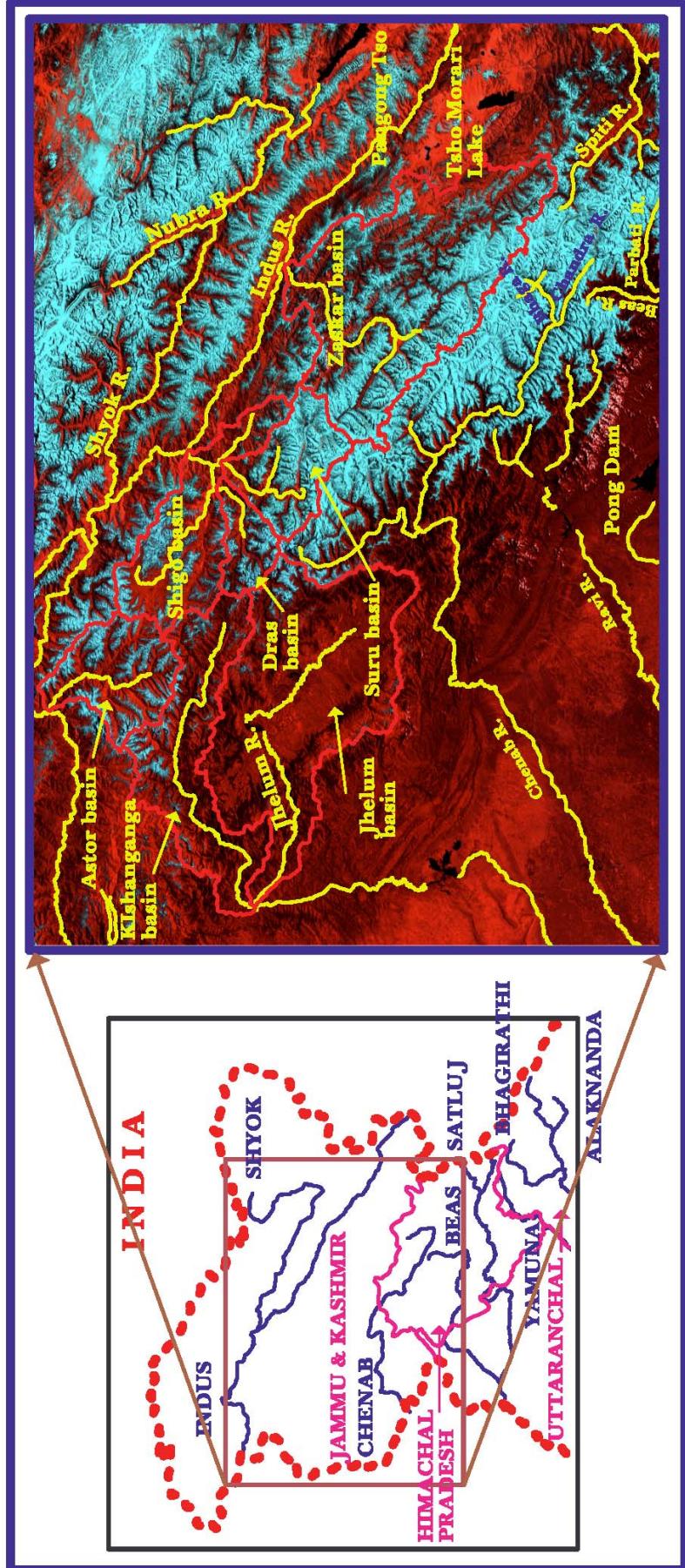


Figure 1: Location map of Jhelum, Kisan ganga, Astor, Shigok, Dras, Suru and Zaskar sub-basins (Part of Indus basin)

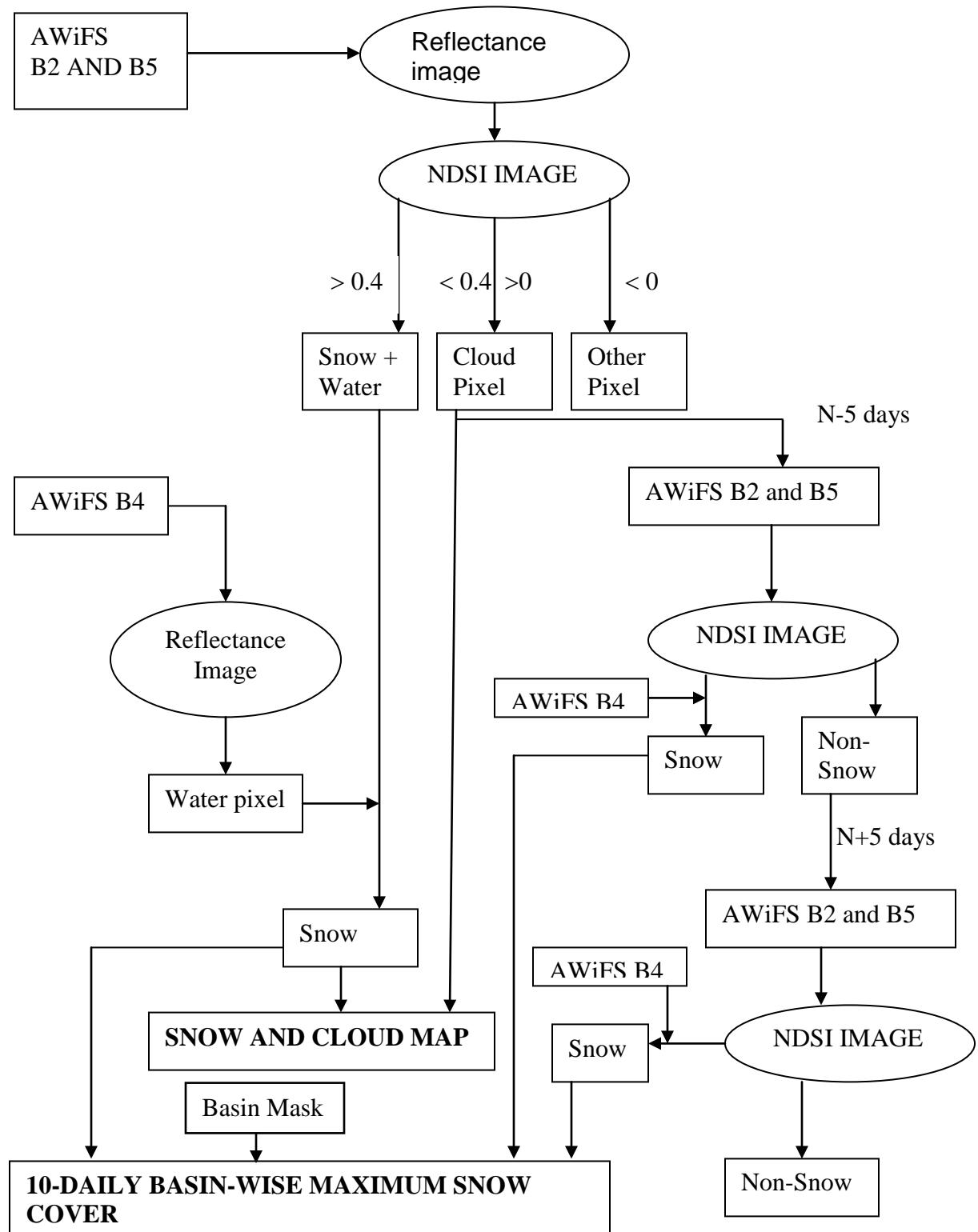


Figure 2: Algorithm for snow cover mapping using AWiFS data

JHELUM BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: JHELUM

BASIN AREA: 14472 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	02-Oct-11	101	1	2	10-Oct-11	1215	8
November 2011							
3	5-Nov-11	3470	24	4	22-Nov-11	4241	29
5	27-Nov-11	2272	16	6	29-Nov-11	2145	15
December 2011							
7	4-Dec-11	1851	13	8	16-Dec-11	5054	35
9	25-Dec-11	6421	44	10	28-Dec-11	4662	32
11	30-Dec-11	5350	37				
January 2012							
12	28-Jan-12	12654	87	13	30-Jan-12	10990	76
February 2012							
14	2-Feb-12	10661	74	15	9-Feb-12	8916	62
March 2012							
16	2-Mar-12	7767	54	17	21-Mar-12	5707	39
18	30-Mar-12	5184	36				
April 2012							
19	2-Apr-12	3512	24	20	4-Apr-12	4258	29
21	18-Apr-12	4518	31	22	19-Apr-12	4166	29
May 2012							
23	3-May-12	3550	25	24	8-May-12	3044	21
25	29-May-12	2007	14				
June 2012							
26	1-Jun-12	5388	37	27	3-Jun-12	1178	8
28	22-Jun-12	858	6	29	25-Jun-12	1321	9

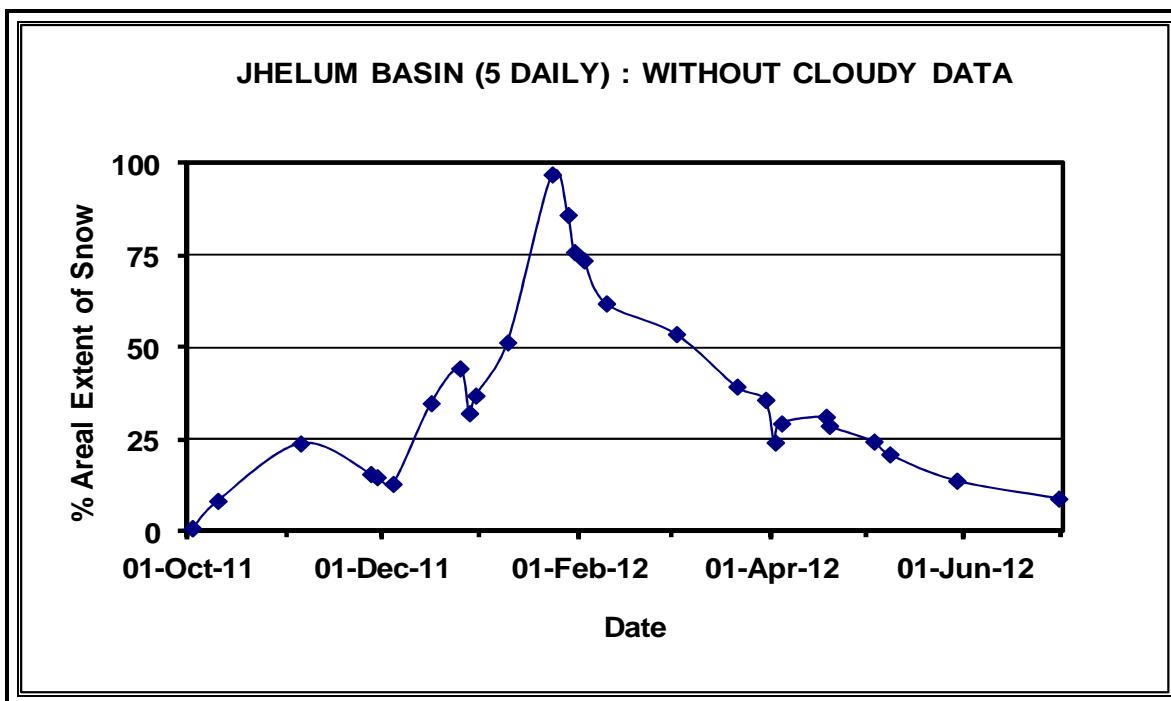
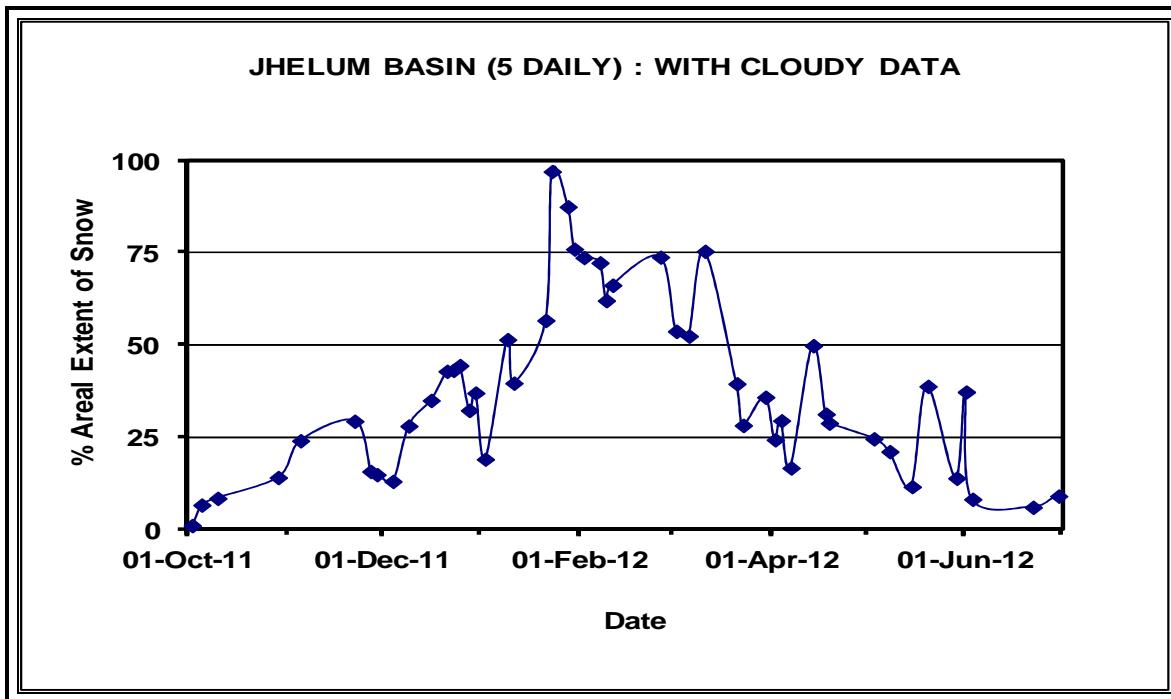
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: JHELUM

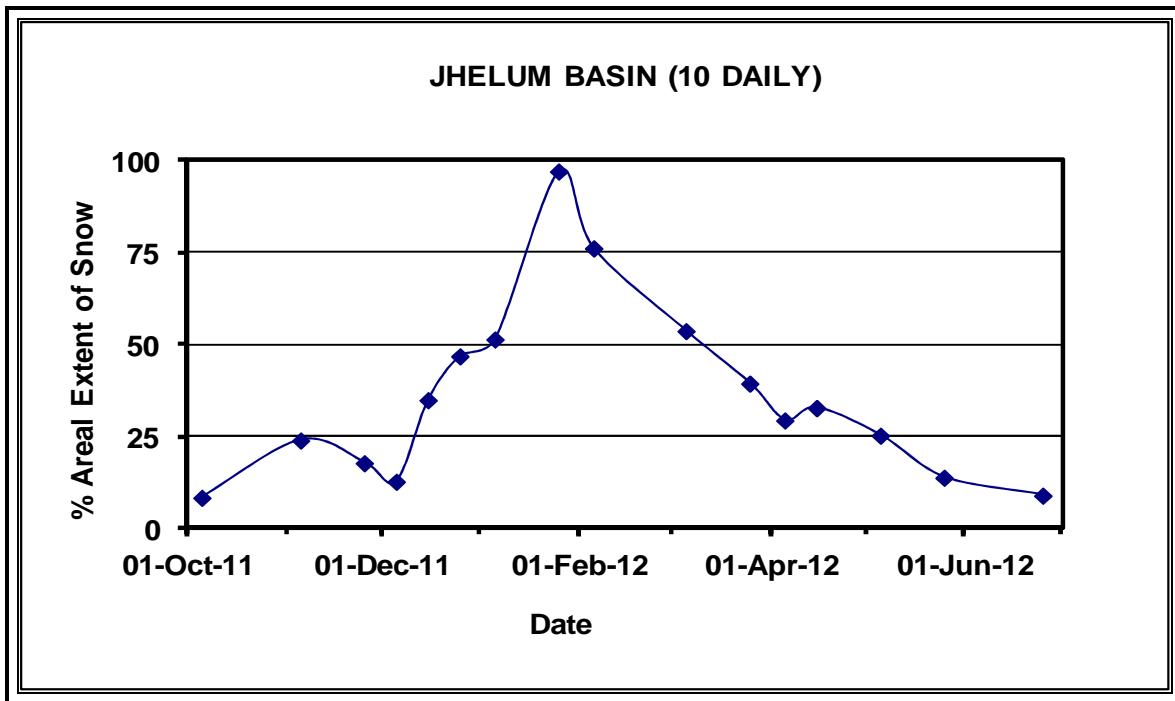
BASIN AREA: 14472 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	10-Oct-11	1220	8				
November 2011							
2	5-Nov-11		24	2	27-Nov-11	2581	18
December 2011							
3	4-Dec-11	1851	13	4	16-Dec-11	5054	35
5	25-Dec-11		47				
January 2012							
5	5-Jan-12		51	6	30-Jan-12		97
February 2012							
7	2-Feb-12	11017	76				
March 2012							
8	2-Mar-12	7767	54	9	21-Mar-12	5707	39
April 2012							
10	4-Apr-12	4258	29	11	19-Apr-12	4744	33
May 2012							
12	3-May-12	3661	25	13	29-May-12	2007	14
June 2012							
14	25-Jun-12	1321	9				

Snow cover depletion curve

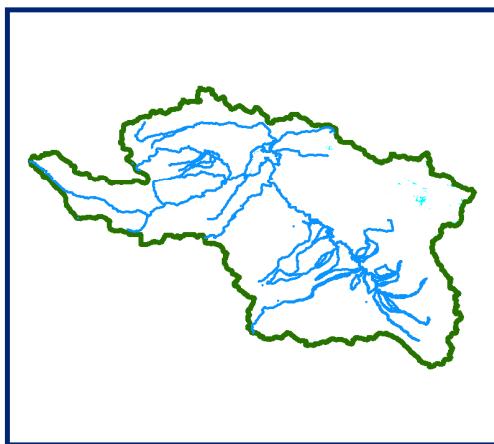


Snow cover depletion curve

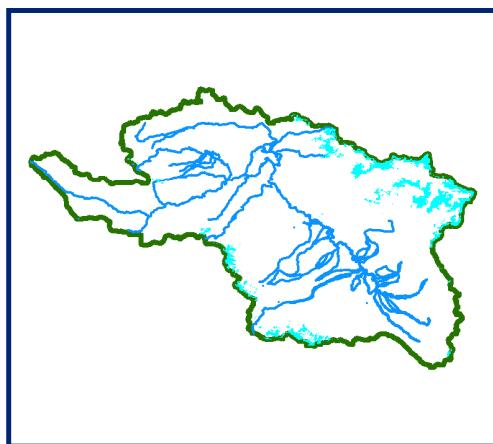


SNOW COVER MAP

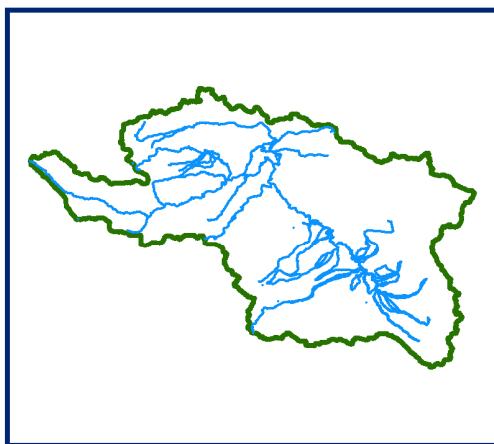
SNOW COVER MAP : JHELUM BASIN



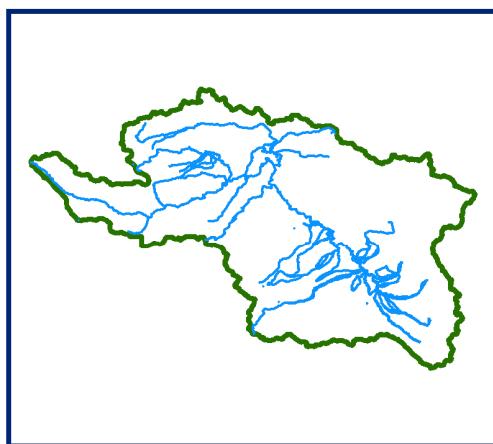
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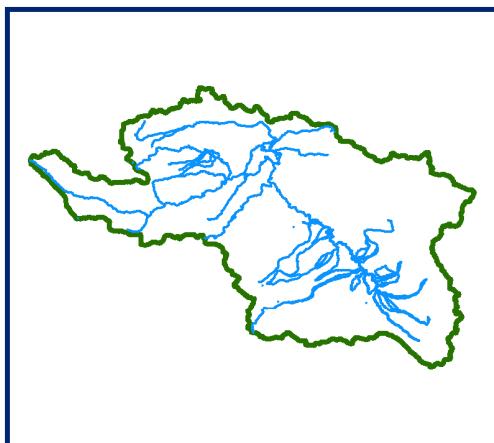
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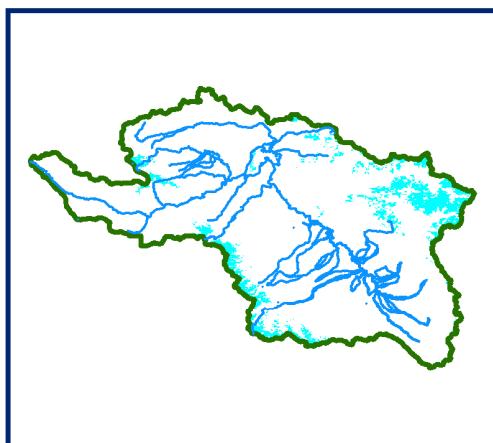
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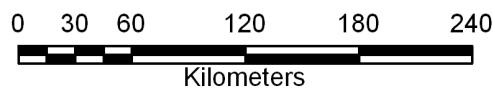
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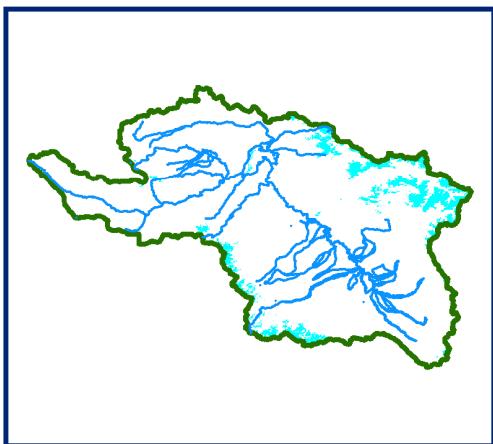
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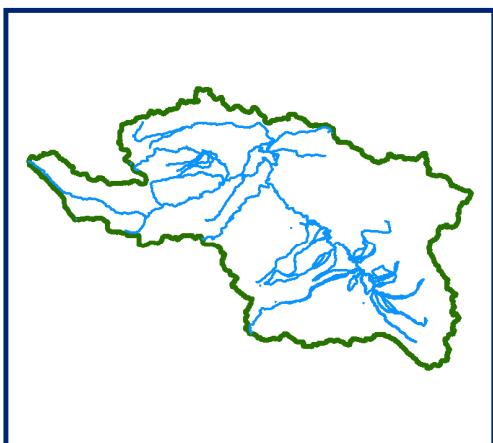
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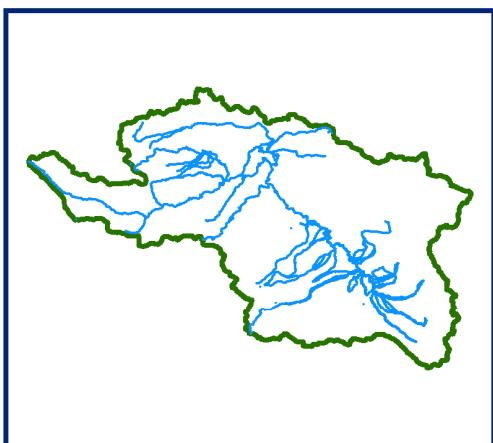
10 DAILY SNOW COVER MAP: JHELUM BASIN



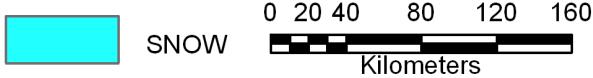
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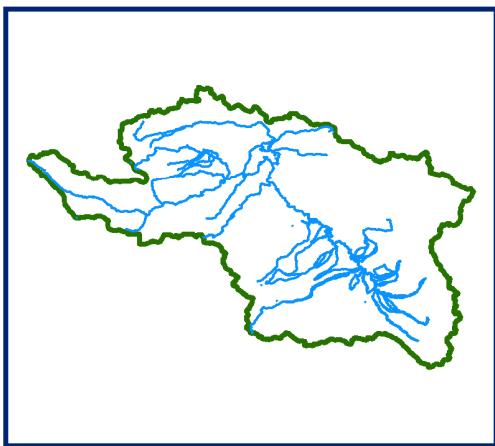


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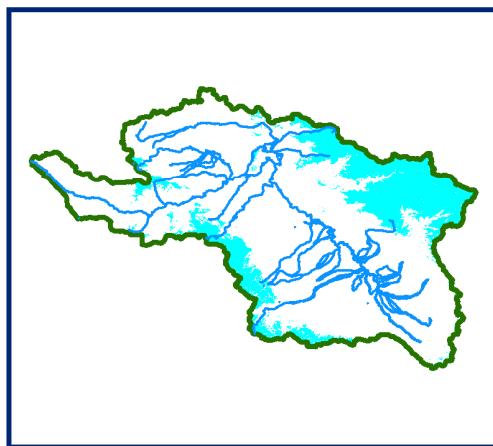


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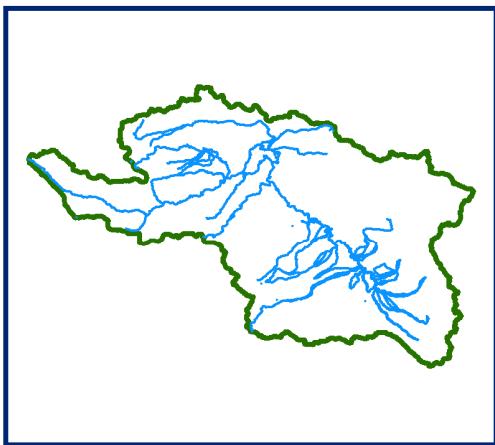
JHELUM BASIN



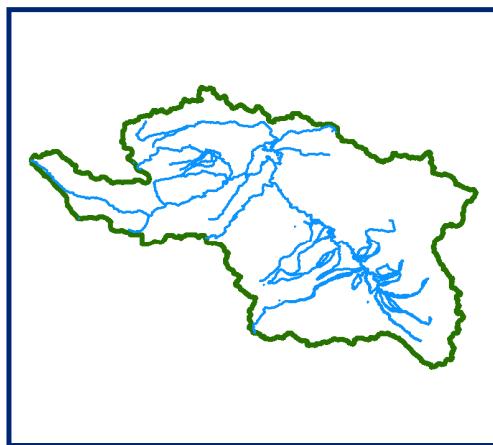
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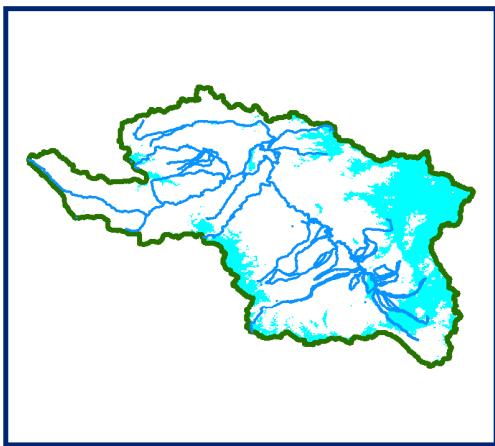
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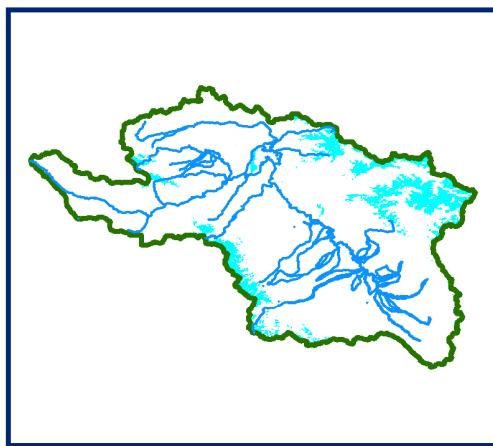
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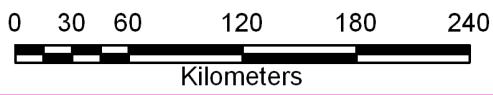
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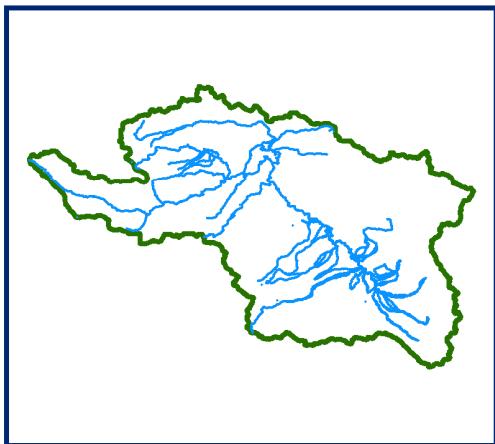
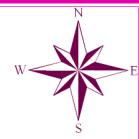
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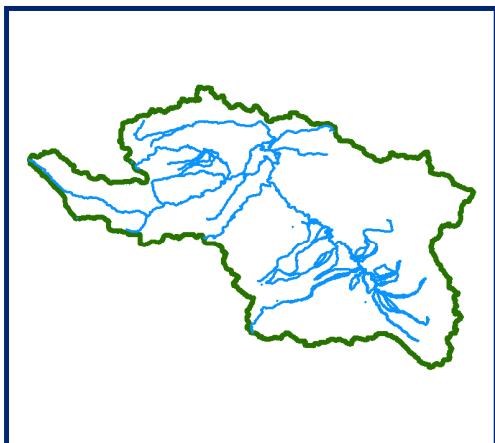
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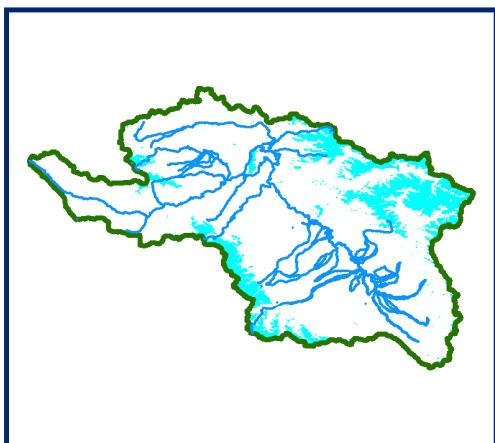
10 DAILY SNOW COVER MAP: JHELUM BASIN



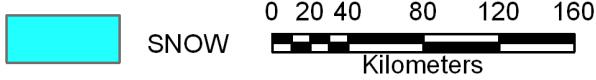
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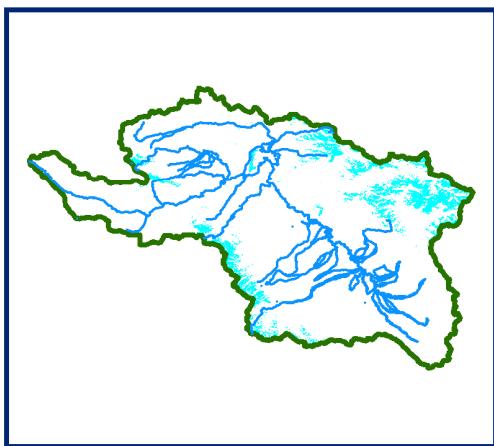
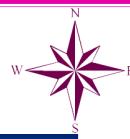


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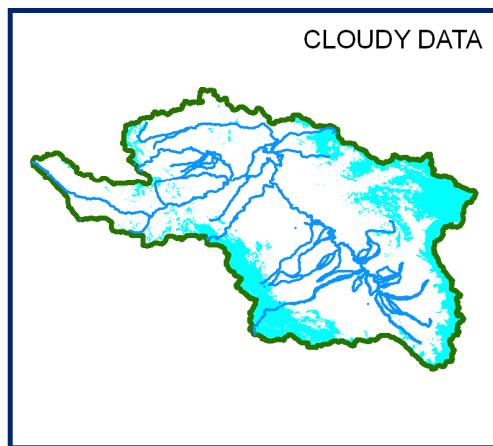


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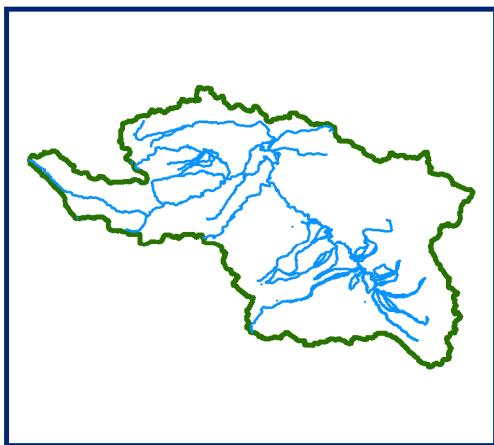
JHELUM BASIN



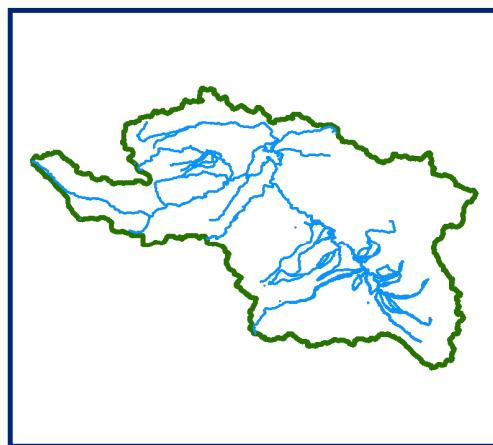
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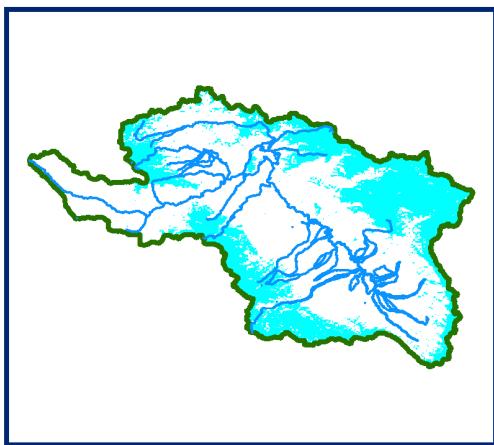
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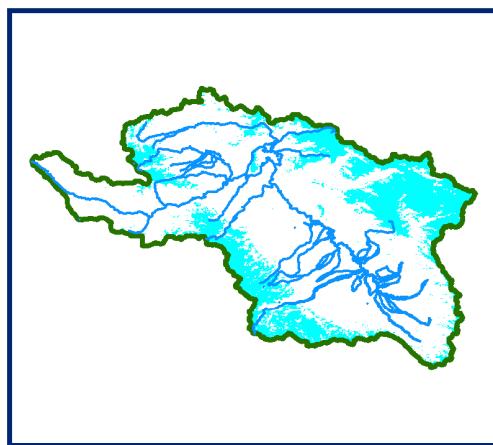
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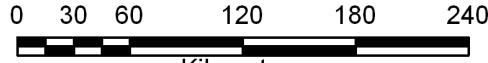
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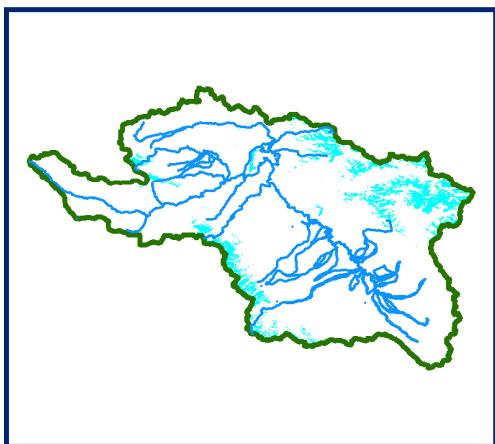


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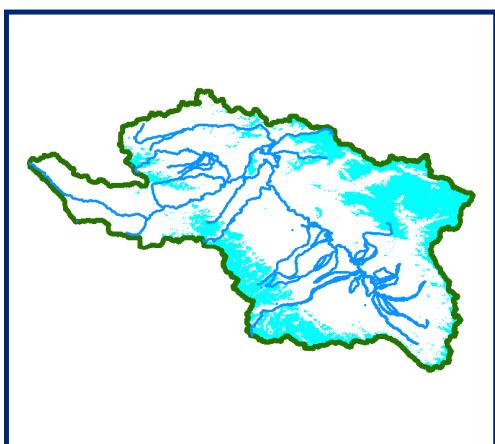


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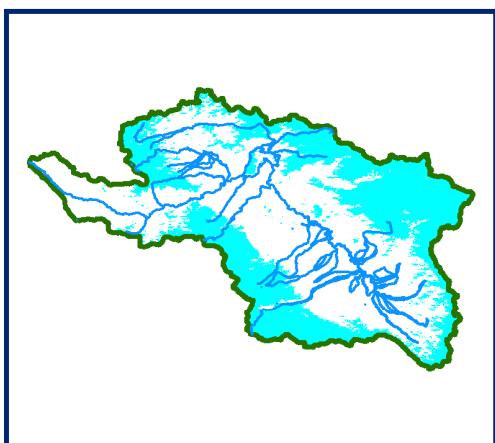
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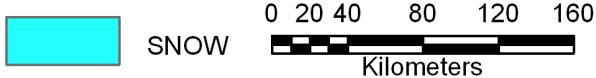
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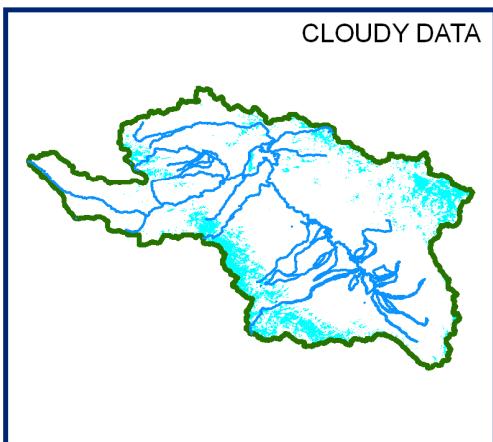


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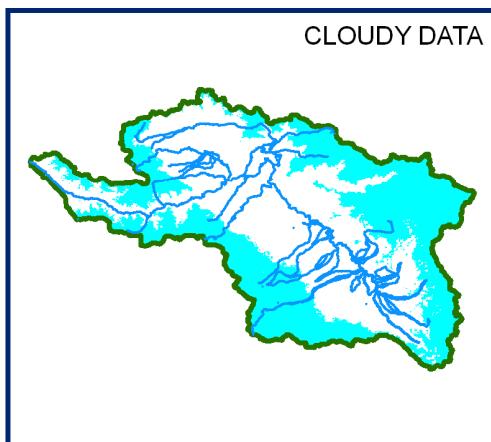


SNOW COVER MAP

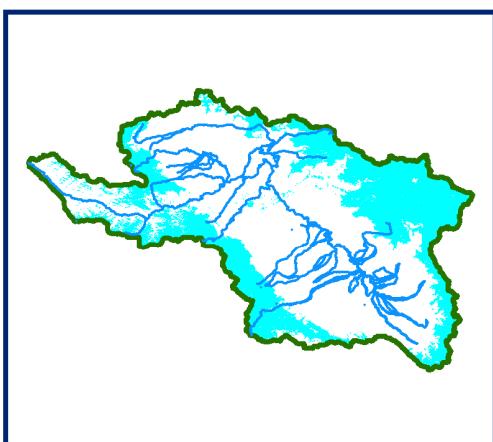
JHELUM BASIN



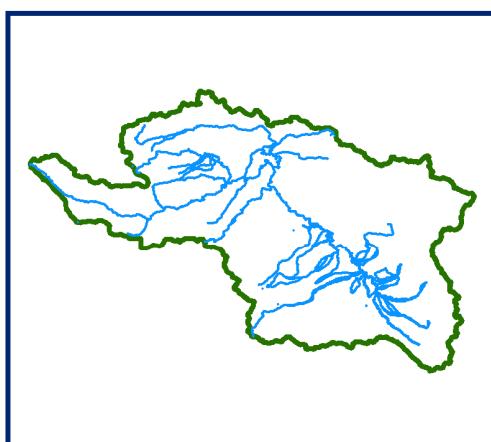
02 JANUARY 2012



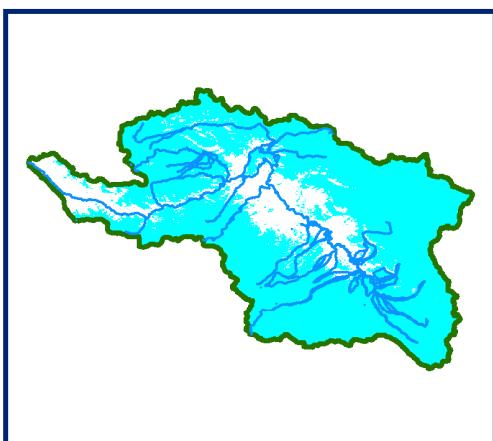
09 JANUARY 2012



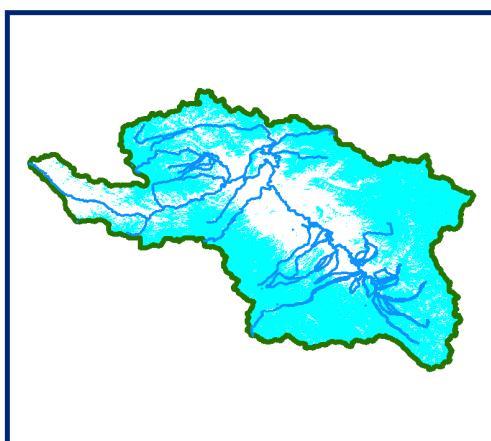
11 JANUARY 2012



DATA NOT AVAILABLE



28 JANUARY 2012



30 JANUARY 2012

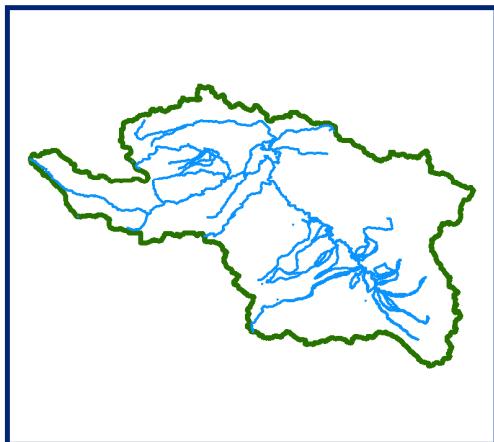


SNOW

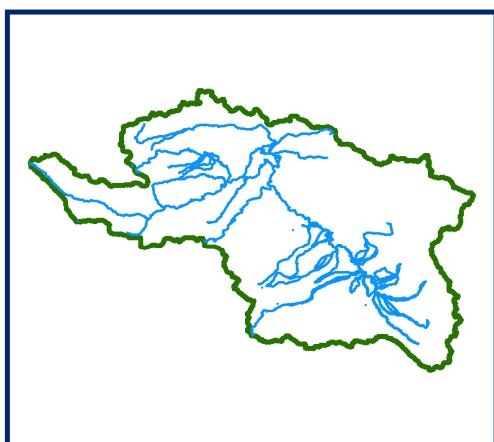


Kilometers

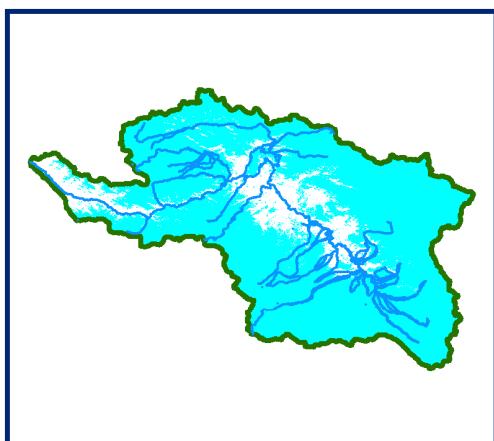
10 DAILY SNOW COVER MAP: JHELUM BASIN



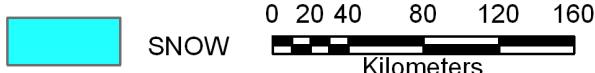
DATA USED
DATA NOT AVAILABLE



DATA USED
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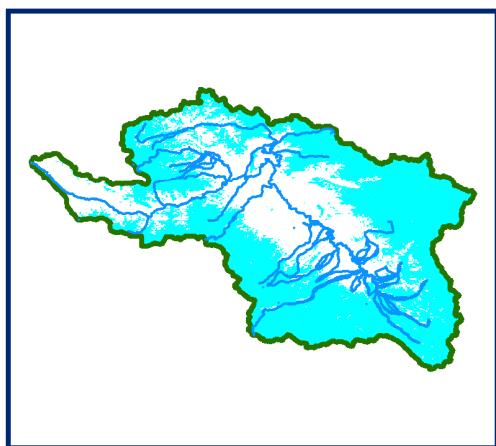


DATA USED
28 JANUARY 2012
30 JANUARY 2012

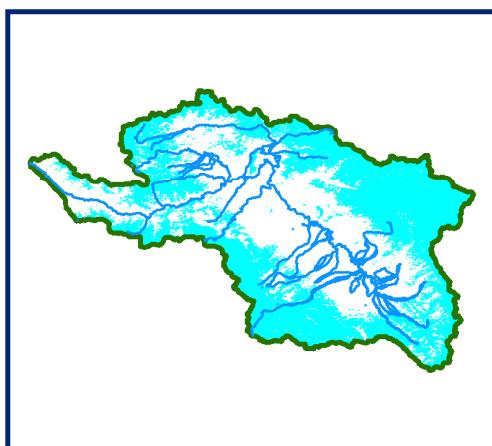


SNOW COVER MAP

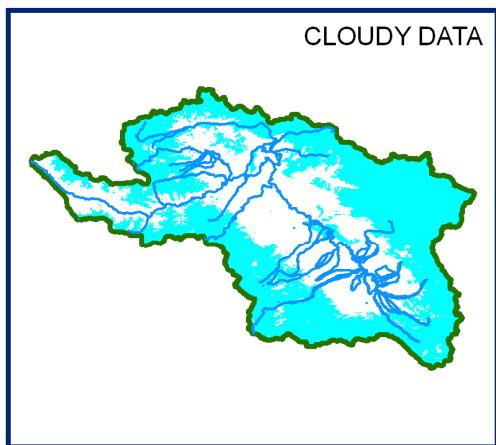
JHELUM BASIN



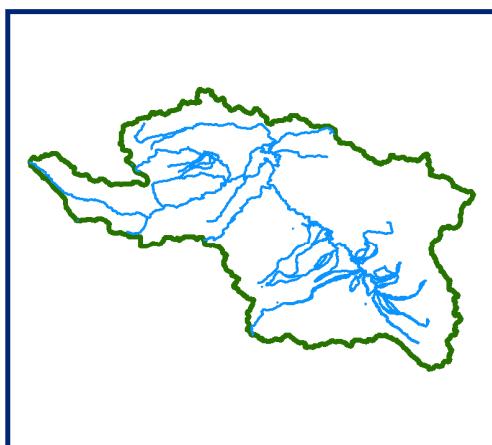
02 FEBRUARY 2012



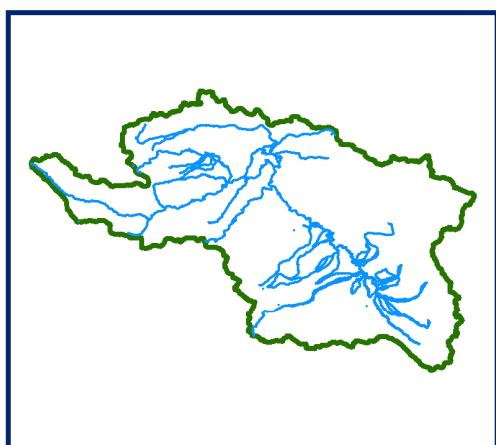
09 FEBRUARY 2012



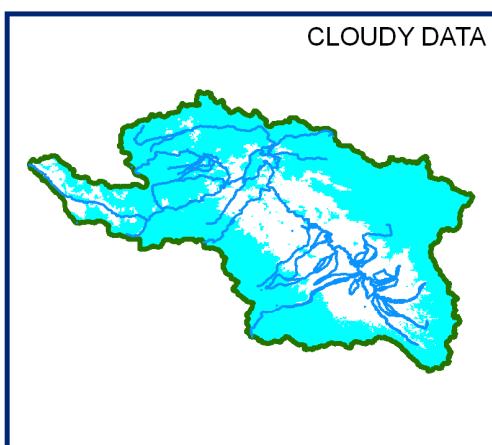
11 FEBRUARY 2012



DATA NOT AVAILABLE



DATA NOT AVAILABLE



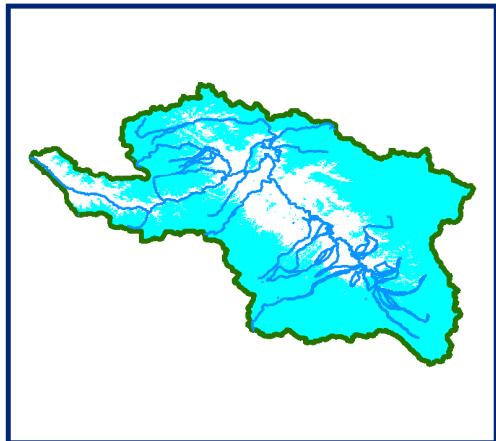
26 FEBRUARY 2012



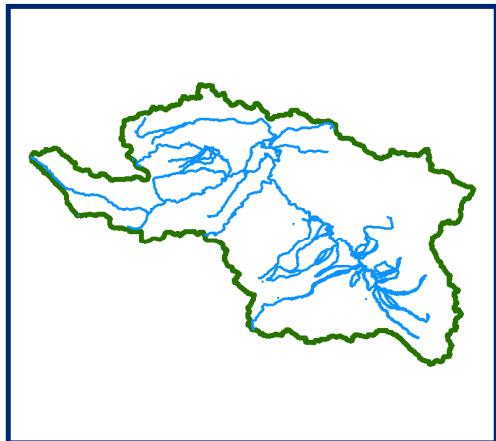
SNOW



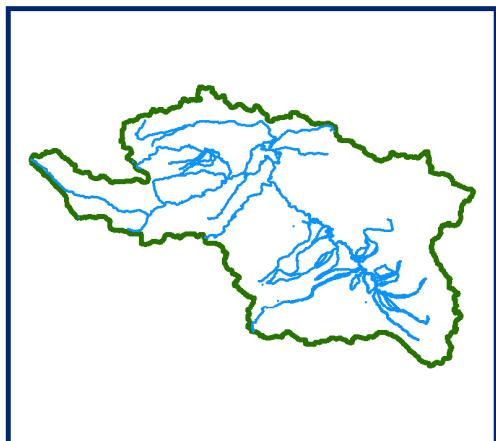
10 DAILY SNOW COVER MAP: JHELUM BASIN



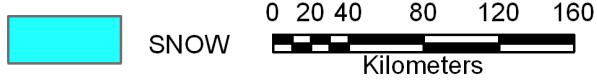
DATA USED
02 FEBRUARY 2012
09 FEBRUARY 2012



DATA USED
DATA NOT AVAILABLE

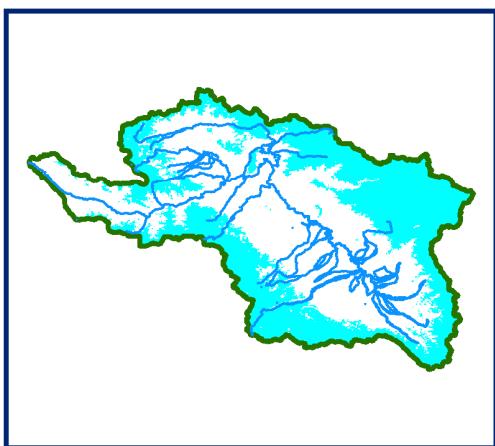


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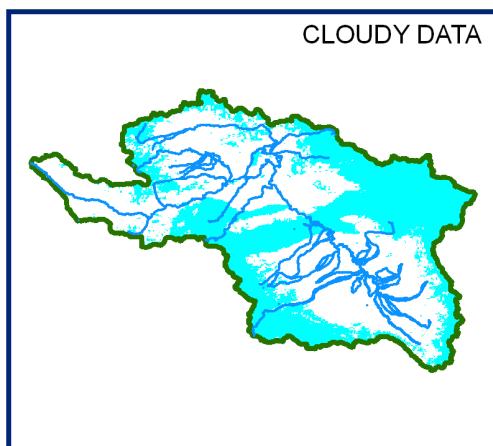


SNOW COVER MAP

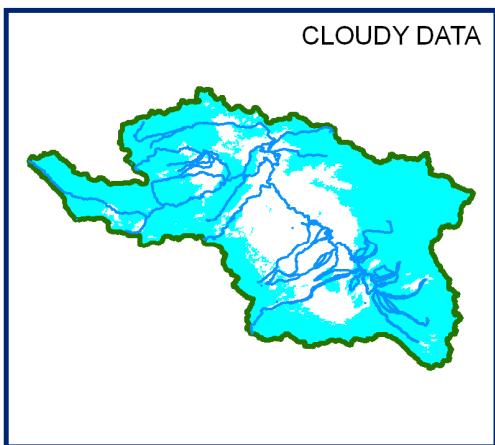
JHELUM BASIN



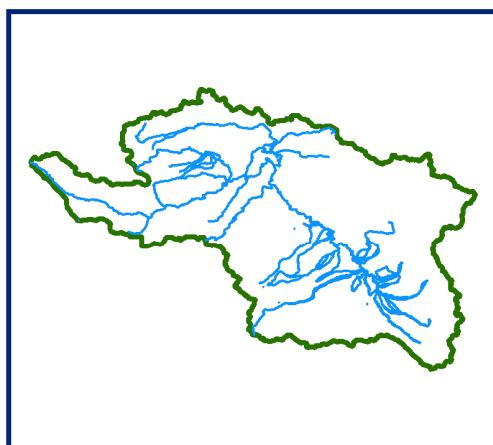
02 MARCH 2012



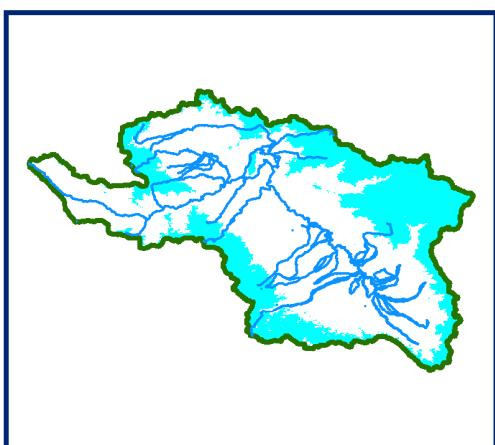
06 MARCH 2012



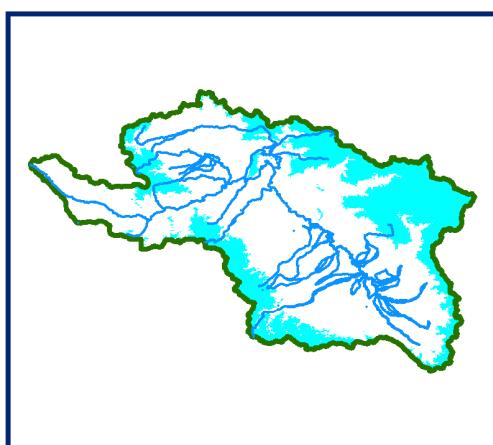
11 MARCH 2012



DATA NOT AVAILABLE



21 MARCH 2012



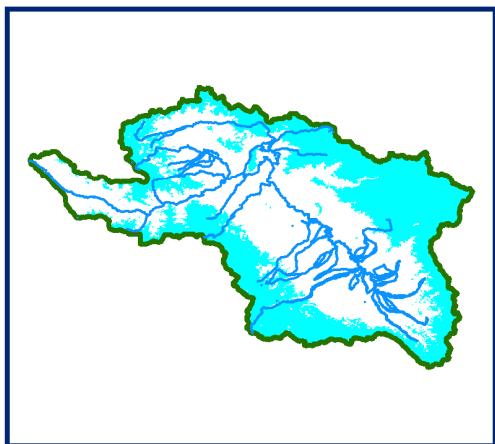
30 MARCH 2012



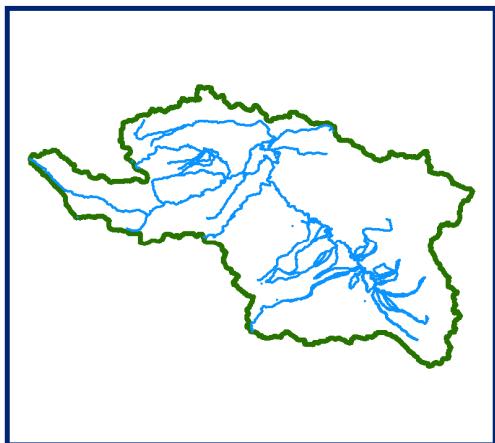
SNOW



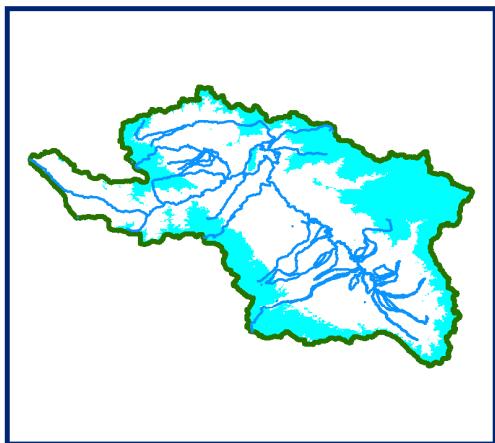
10 DAILY SNOW COVER MAP: JHELUM BASIN



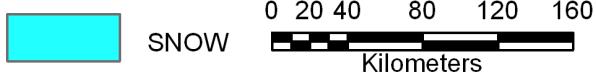
DATA USED
02 MARCH 2012



DATA USED
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DATA USED
21 MARCH 2012
30 MARCH 2012

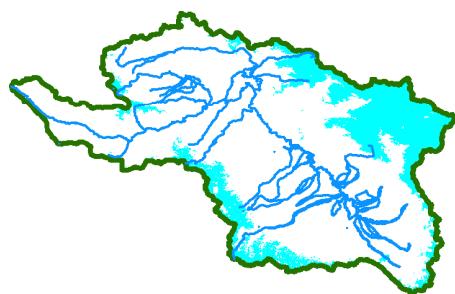


SNOW COVER MAP

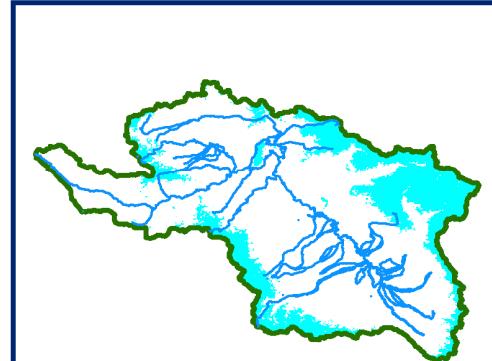
JHELUM BASIN



CLOUDY DATA

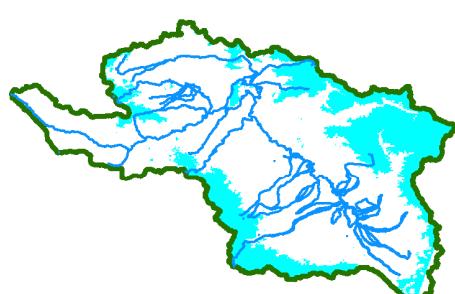


02 APRIL 2012

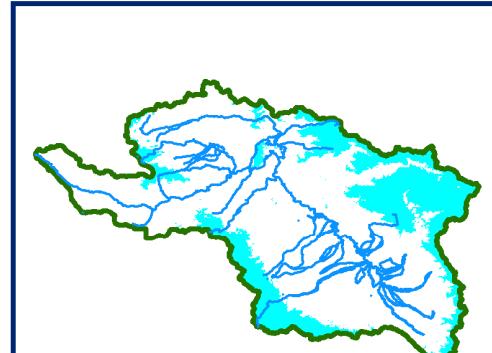


04 APRIL 2012

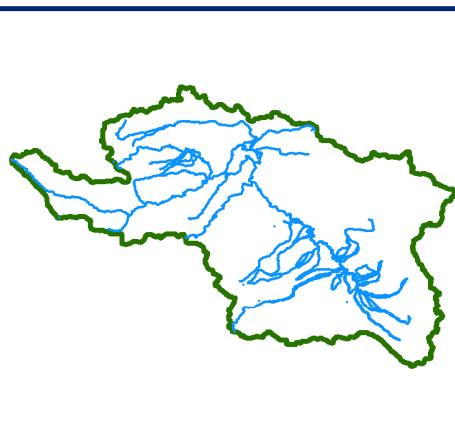
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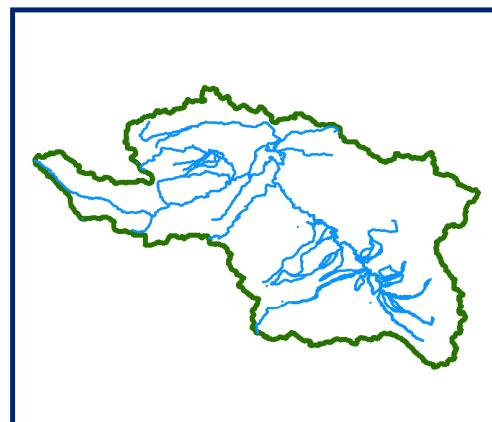
18 APRIL 2012



19 APRIL 2012



DATA NOT AVAILABLE



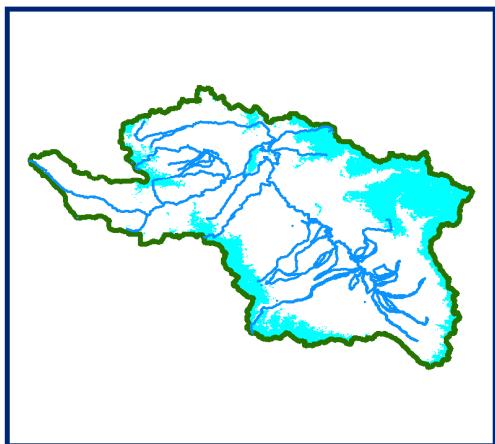
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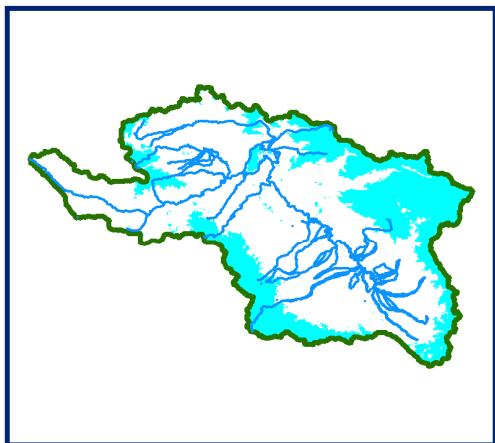
SNOW



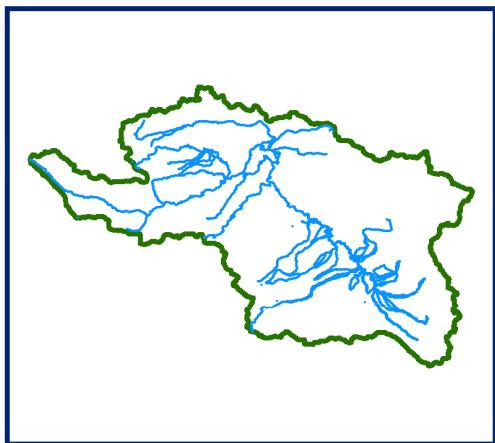
10 DAILY SNOW COVER MAP: JHELUM BASIN



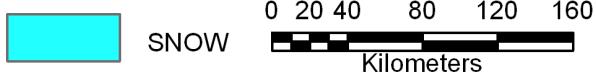
DATA USED
04 APRIL 2012



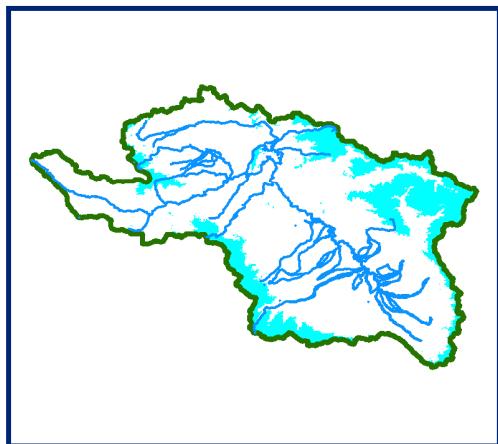
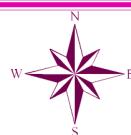
DATA USED
18 APRIL 2012
19 APRIL 2012



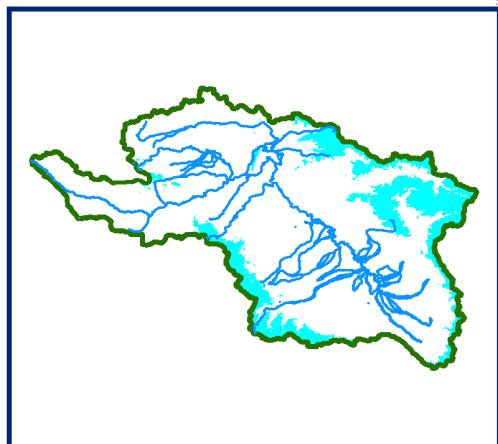
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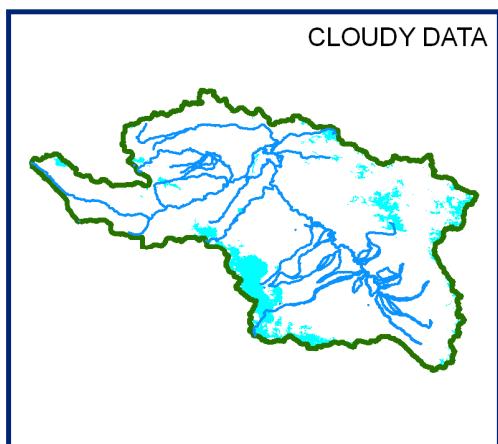
SNOW COVER MAP : JHELUM BASIN



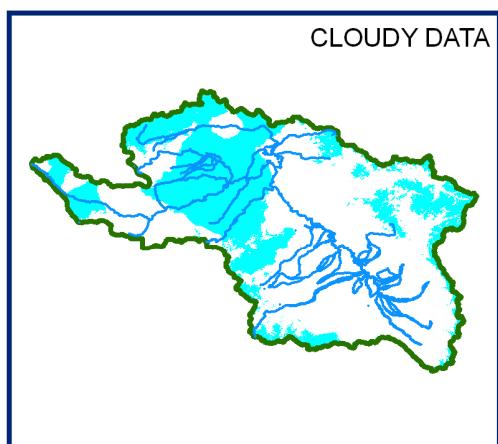
03 MAY 2012



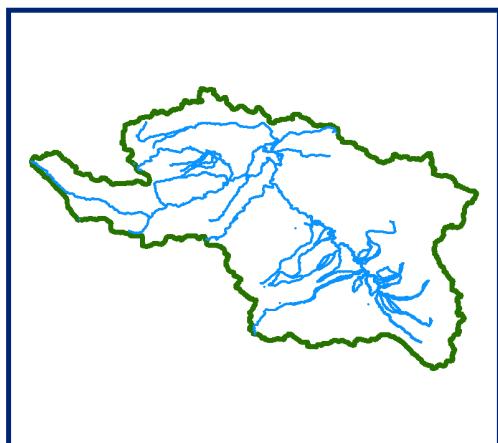
08 MAY 2012



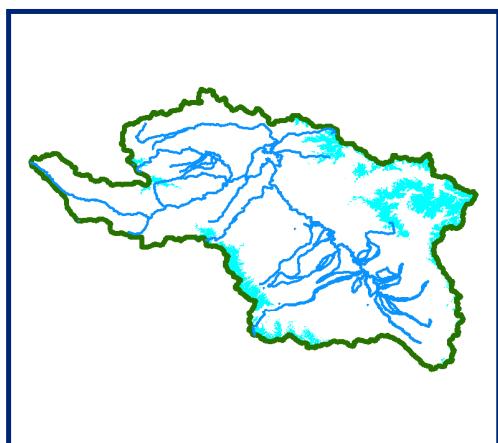
15 MAY 2012



20 MAY 2012



DATA NOT AVAILABLE



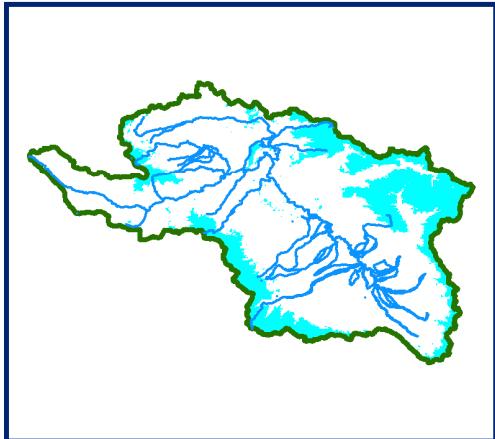
29 MAY 2012



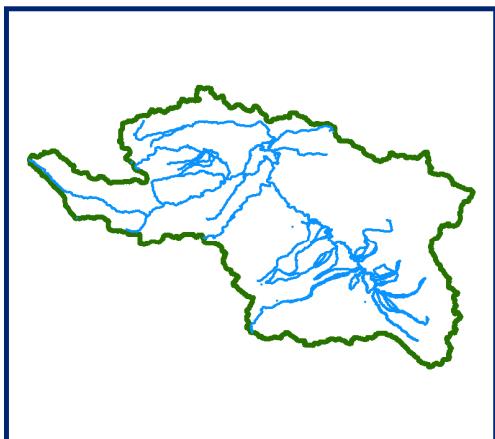
SNOW



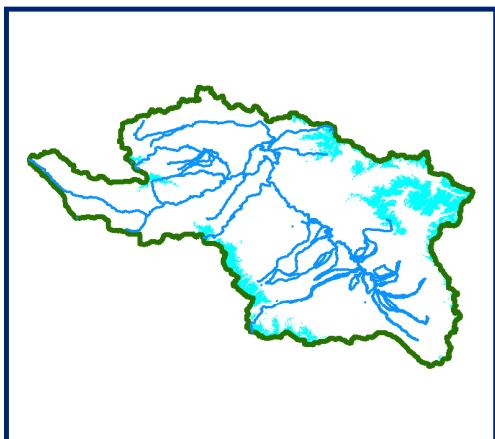
10 DAILY SNOW COVER MAP: JHELUM BASIN



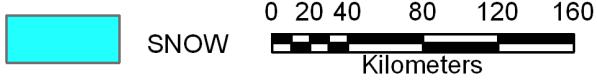
DATA USED
03 MAY 2012
08 MAY 2012



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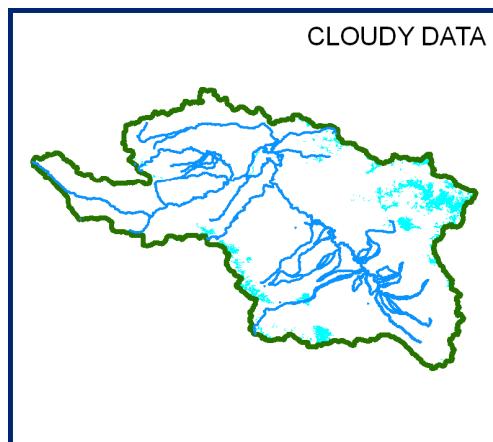
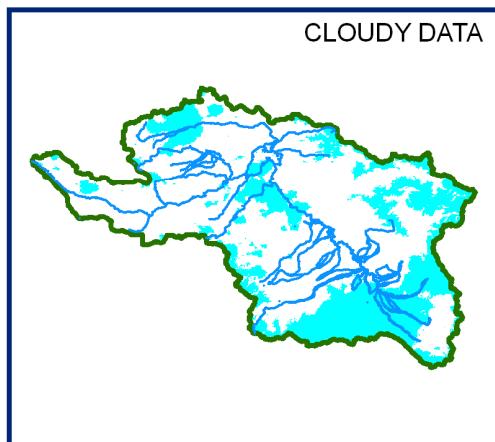


DATA USED
29 MAY 2012



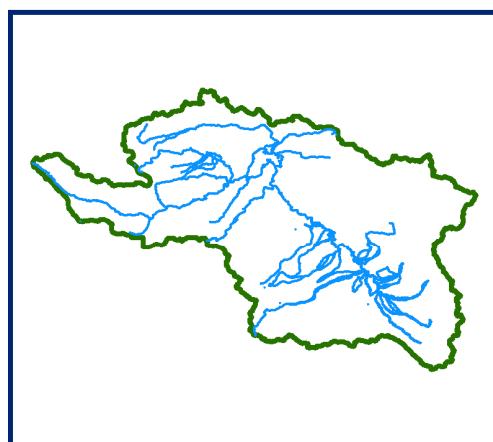
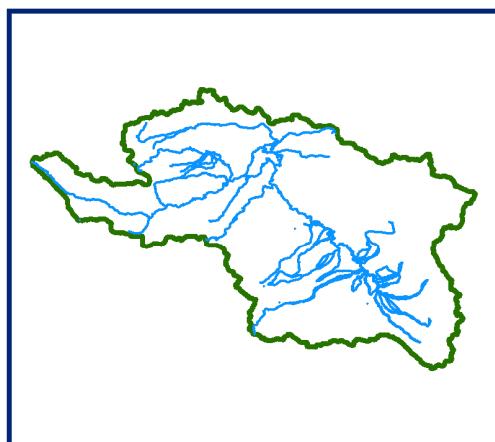
SNOW COVER MAP

: JHELUM BASIN



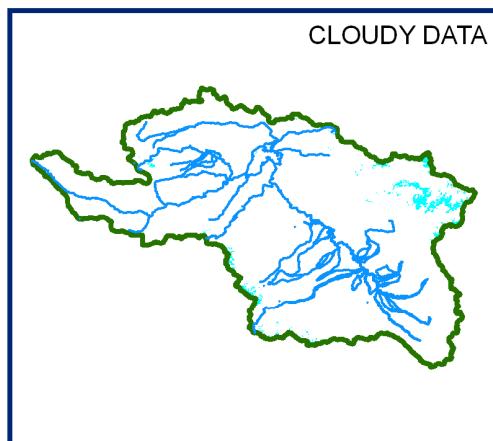
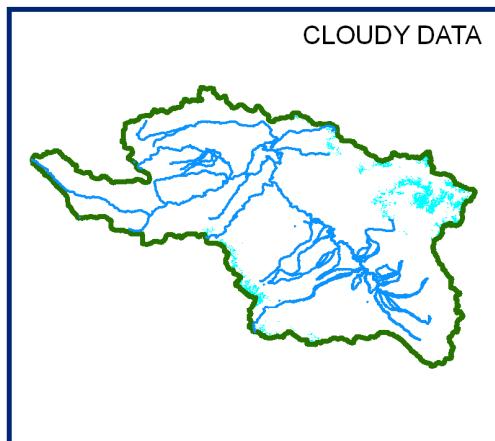
01 JUNE 2012

03 JUNE 2012



DATA NOT AVAILABLE

DATA NOT AVAILABLE



22 JUNE 2012

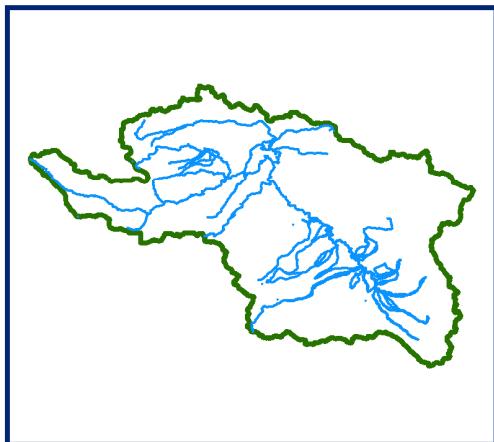
30 JUNE 2012



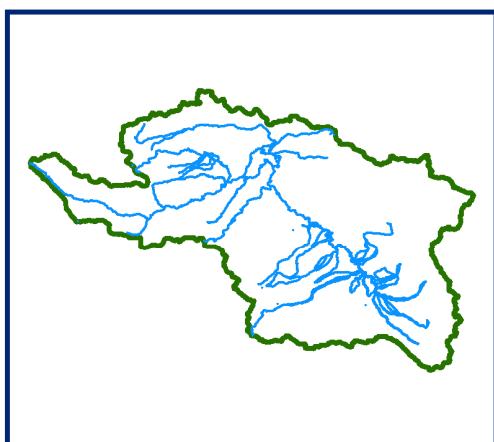
SNOW

0 30 60 120 180 240 Kilometers

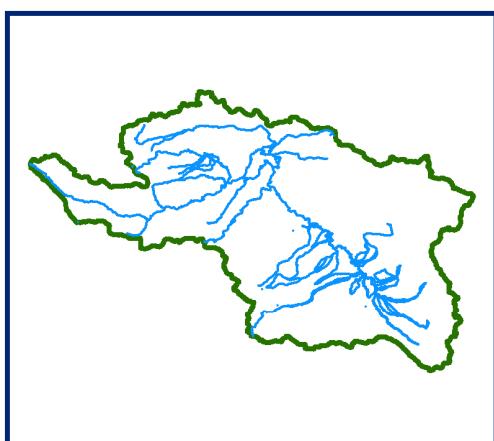
10 DAILY SNOW COVER MAP: JHELUM BASIN



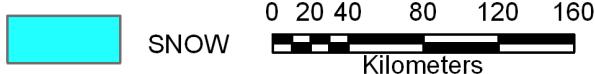
DATA USED
DATA NOT AVAILABLE



DATA USED
DATA NOT AVAILABLE



DATA USED
DATA NOT AVAILABLE



KISAN GANGA BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: KISANGANGA

BASIN AREA: 7451 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	02-Oct-11	213	3	2	10-Oct-11	1942	26
November 2011							
3	5-Nov-11	5491	74	4	22-Nov-11	3892	52
5	26-Nov-11	3517	47	6	27-Nov-11	3233	43
7	29-Nov-11	3030	41				
December 2011							
8	4-Dec-11	2850	38	9	9-Dec-11	6620	89
10	16-Dec-11	5037	68	11	23-Dec-11	6376	86
January 2012							
12	1-Jan-12	5220	70	13	9-Jan-12	7016	94
14	11-Jan-12	6734	90	15	21-Jan-12	6982	94
February 2012							
16	2-Feb-12	6680	90	17	9-Feb-12	6855	92
March 2012							
18	2-Mar-12	6723	90	19	21-Mar-12	6408	86
20	30-Mar-12	6107	82				
April 2012							
21	4-Apr-12	5557	75	22	18-Apr-12	5150	69
23	19-Apr-12	4817	65				
May 2012							
24	29-May-12	2654	36				
June 2012							
25	3-June-12	2721	37	26	30-June-12	2431	33

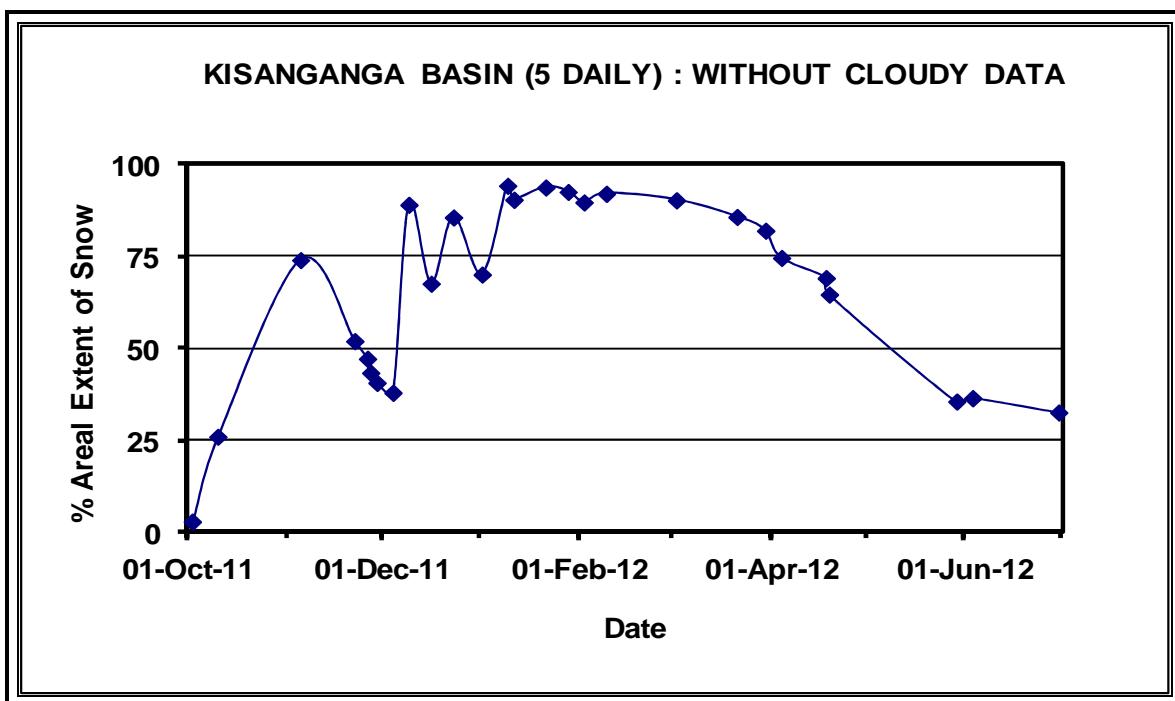
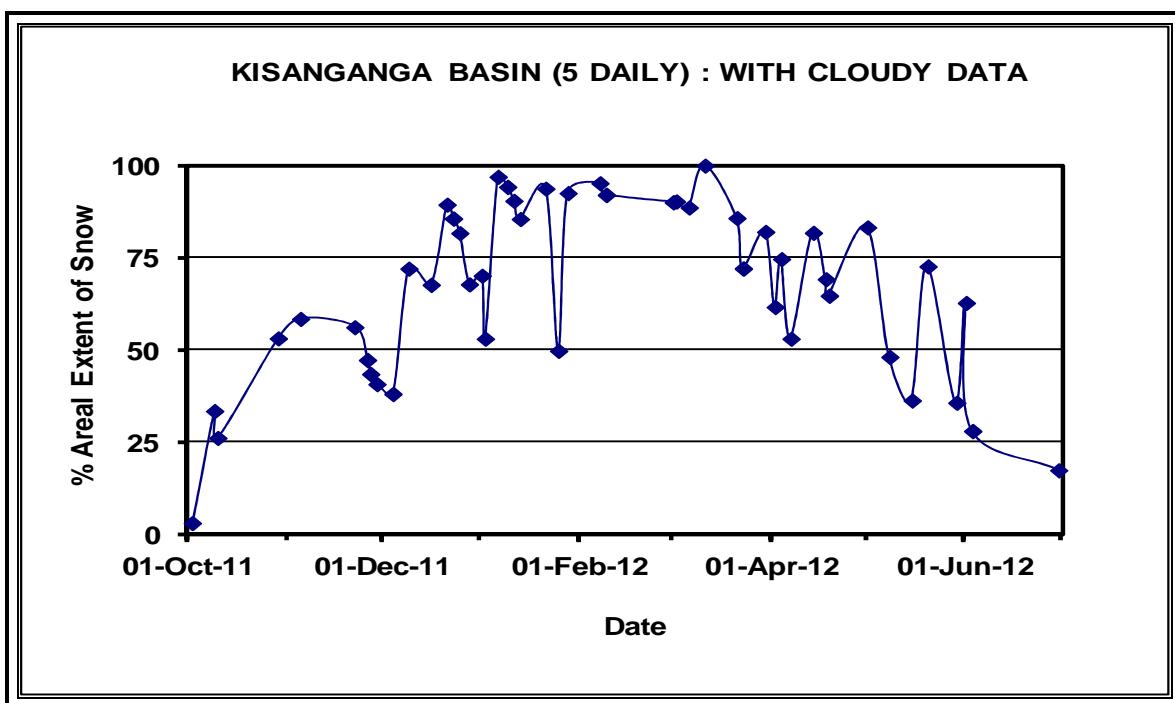
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: KISANGANGA

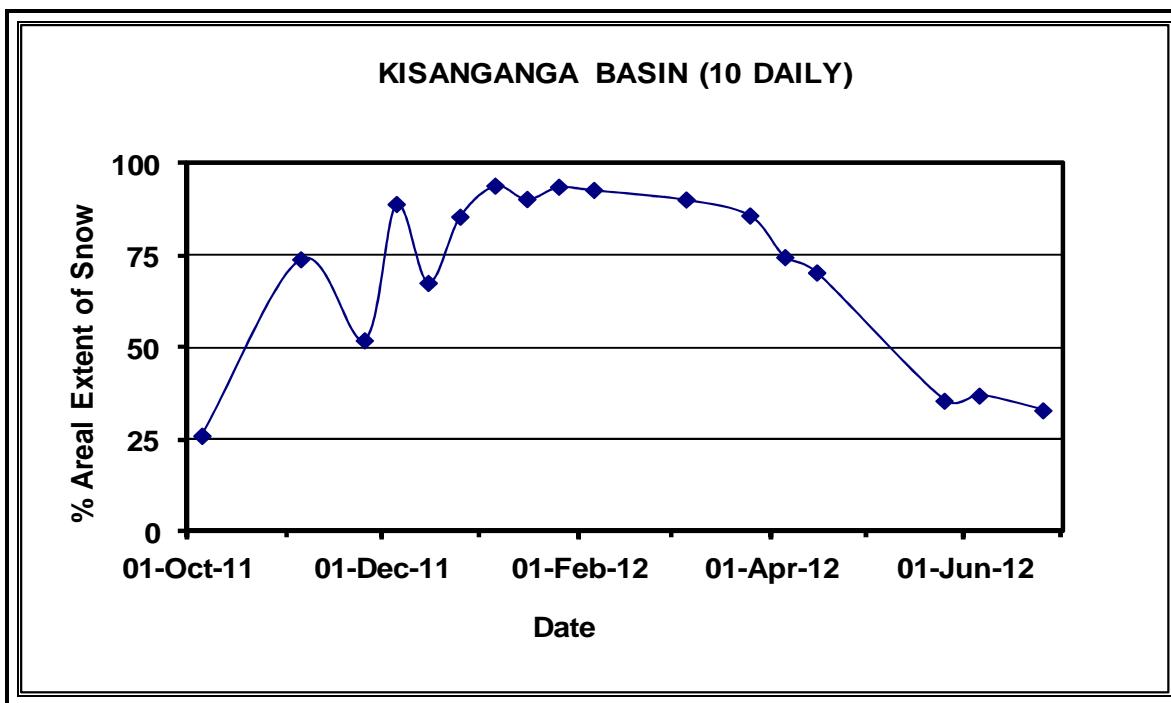
BASIN AREA: 7451 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	10-Oct-11	1944	26				
November 2011							
2	5-Nov-11	5491	74	3	29-Nov-11	3892	52
December 2011							
4	5-Dec-11	6620	89	5	15-Dec-11		68
6	25-Dec-11		86				
January 2012							
7	1-Jan-12	6323	94	8	11-Jan-12	6734	90
9	21-Jan-12	6982	94				
February 2012							
10	9-Feb-12	6918	93				
March 2012							
11	2-Mar-12	6723	90	12	30-Mar-12	6400	86
April 2012							
13	5-Apr-12	5556	75	14	18-Apr-12	5246	70
May 2012							
15	29-May-12	2654	36				
June 2012							
16	5-June-12	2721	37	17	25-June-12	2431	33

Snow cover depletion curve



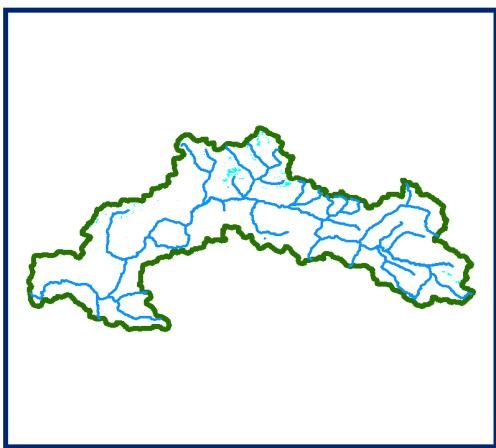
Snow cover depletion curve



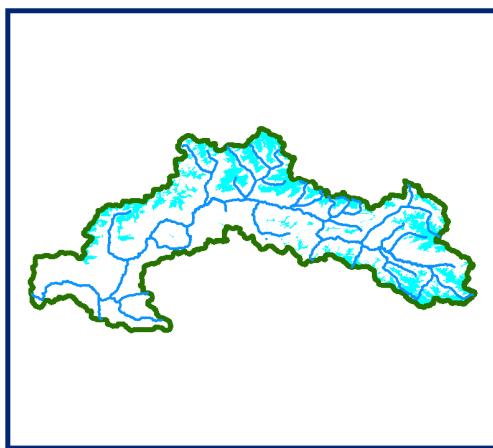
SNOW COVER MAP

SNOW COVER MAP

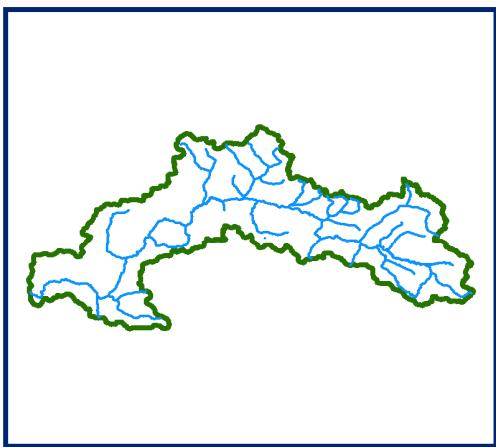
KISANGANGA BASIN



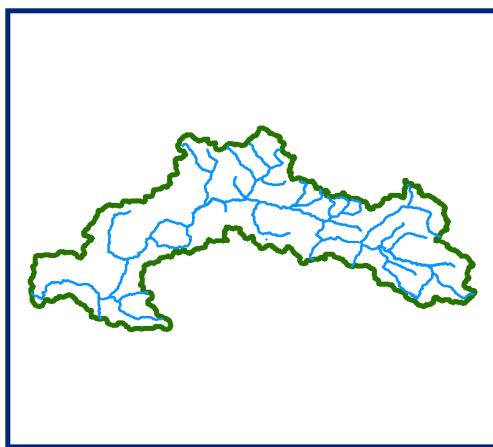
02 OCTOBER 2011



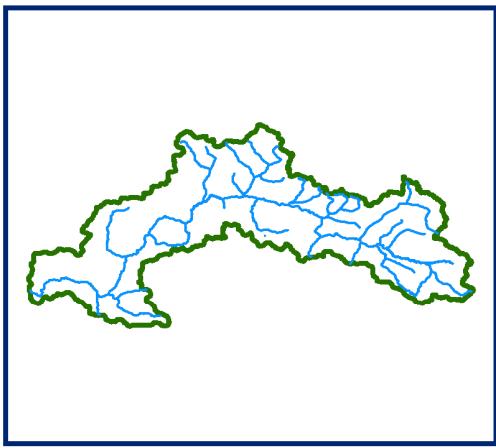
10 OCTOBER 2011



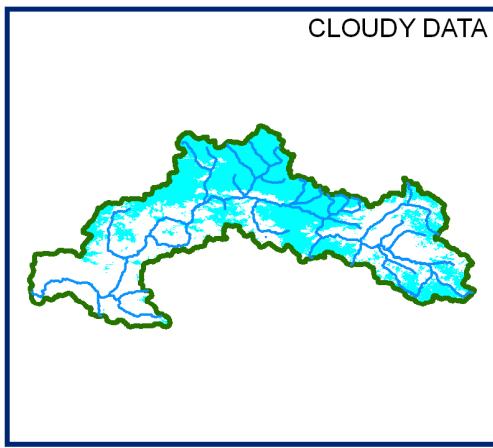
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DATA NOT AVAILABLE



DATA NOT AVAILABLE



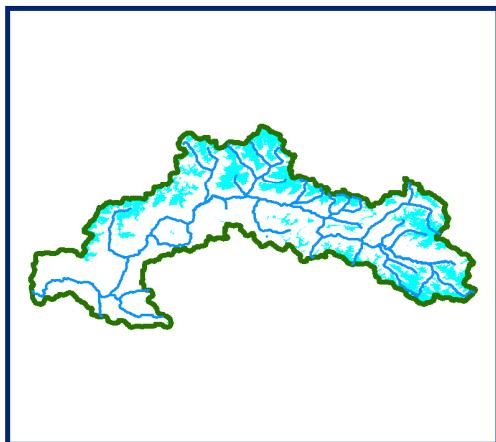
29 OCTOBER 2011



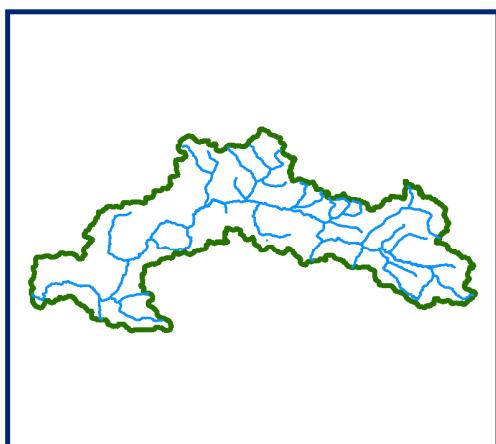
SNOW

0 30 60 120 180 240
Kilometers

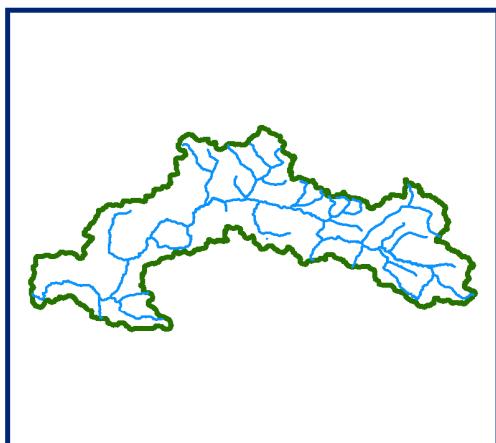
10 DAILY SNOW COVER MAP: KISANGANGA BASIN



DATA USED
02 OCTOBER 2012
10 OCTOBER 2012



DATA USED
DATA NOT AVAILABLE

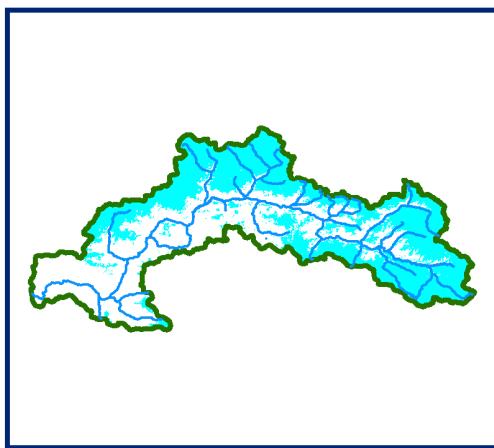
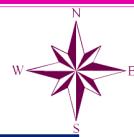


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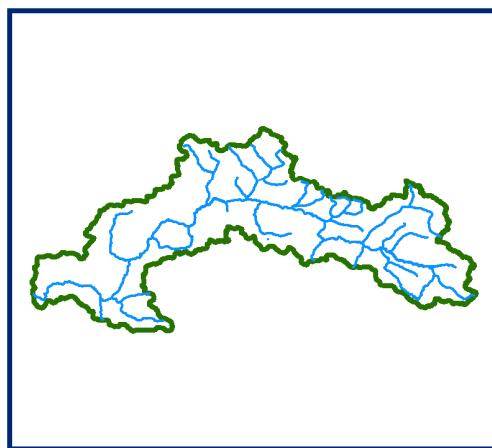


SNOW COVER MAP

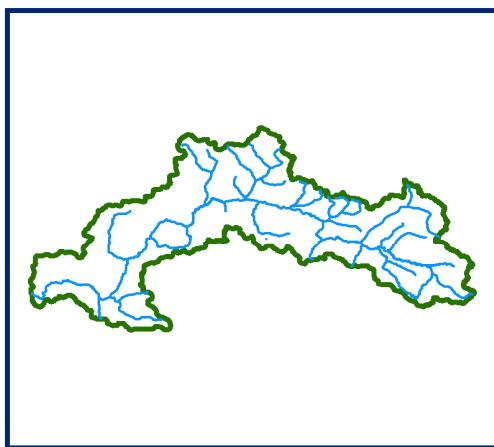
KISANGANGA BASIN



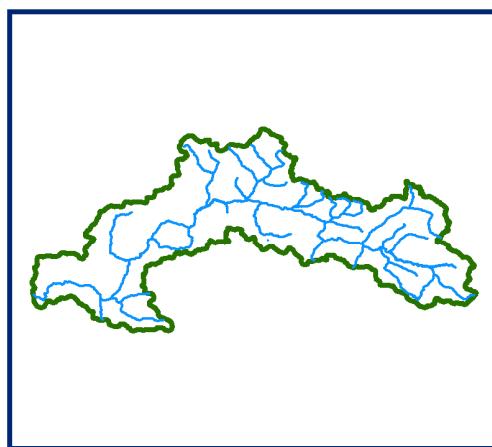
05 NOVEMBER 2011



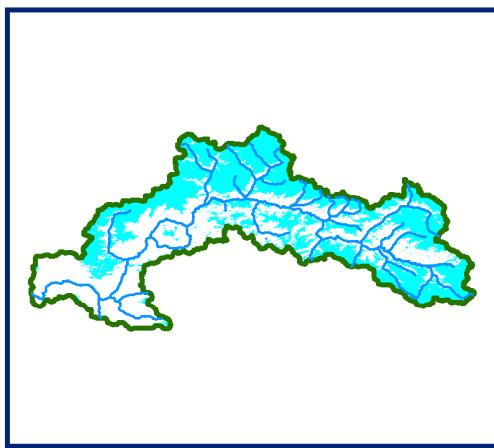
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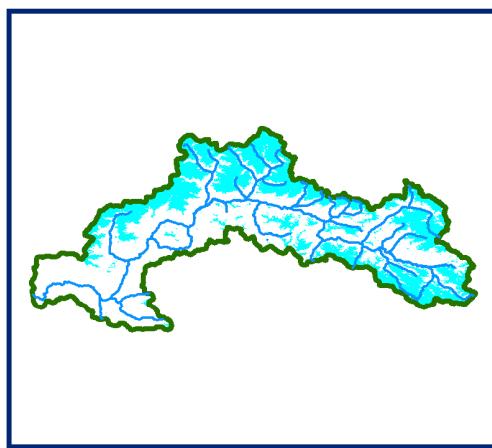
DATA NOT AVAILABLE



DATA NOT AVAILABLE



22 NOVEMBER 2011



27 NOVEMBER 2011

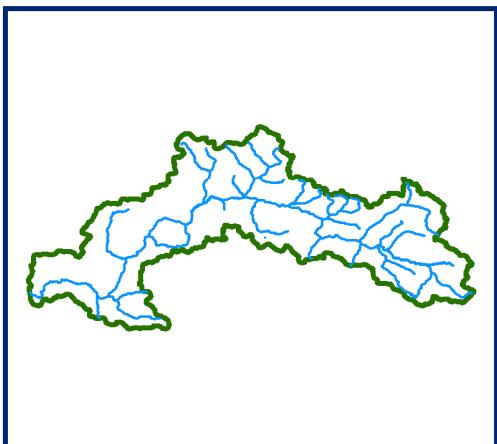


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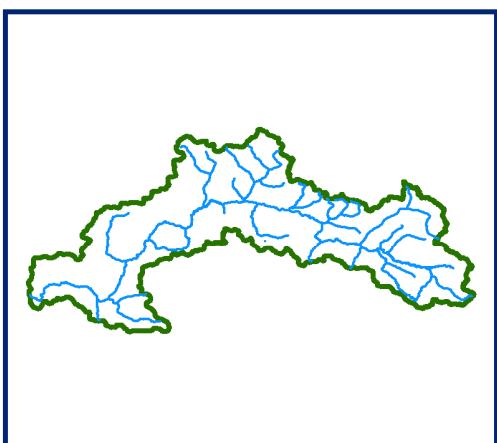


Kilometers

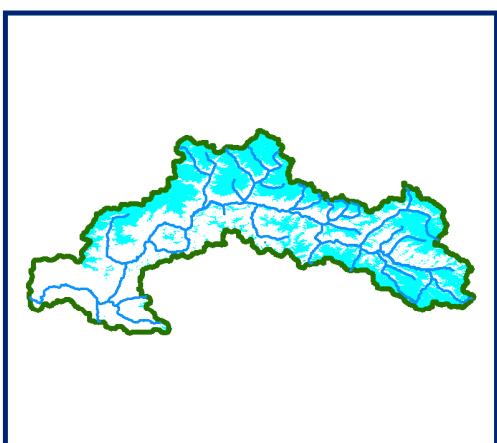
10 DAILY SNOW COVER MAP: KISANGANGA BASIN



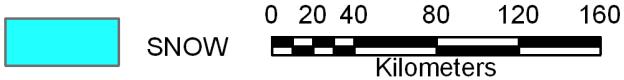
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DATA NOT AVAILABLE



DATA USED
DATA NOT AVAILABLE

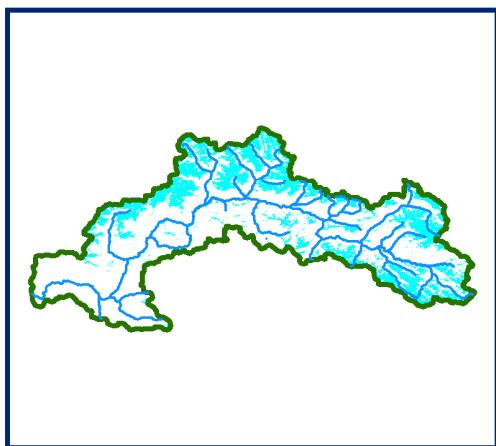
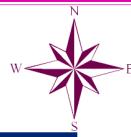


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29 NOVEMBER 2011

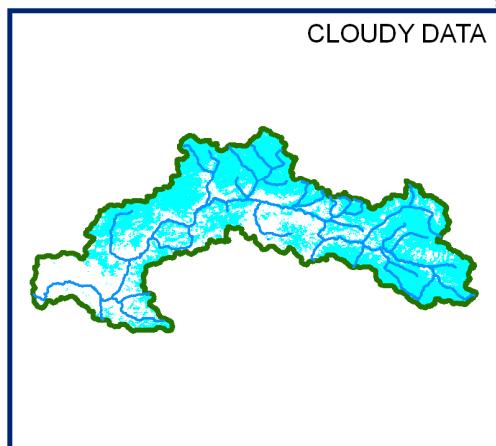


SNOW COVER MAP

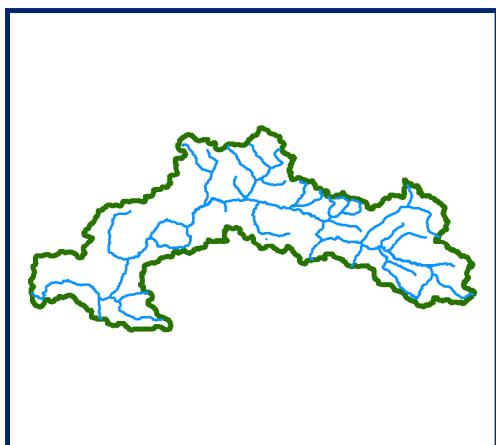
KISANGANGA BASIN



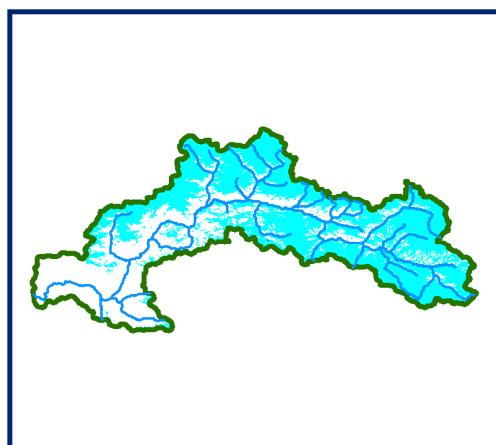
04 DECEMBER 2011



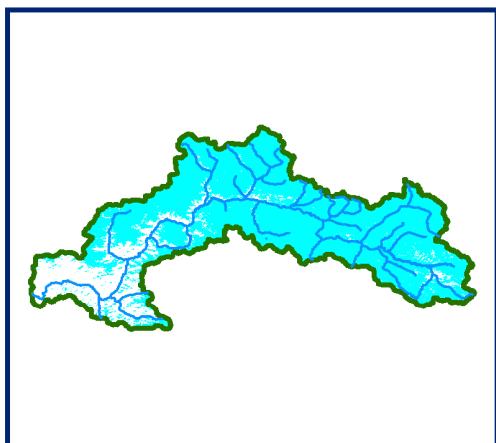
09 DECEMBER 2011



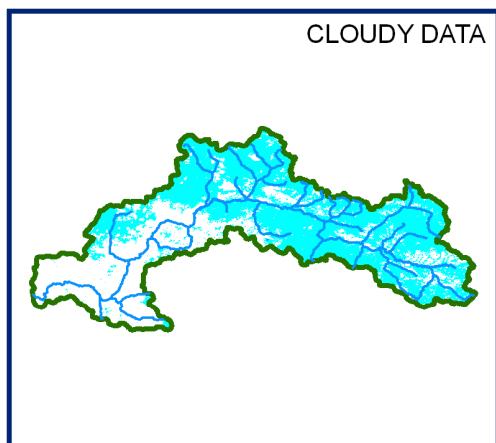
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16 DECEMBER 2011



23 DECEMBER 2011



28 DECEMBER 2011

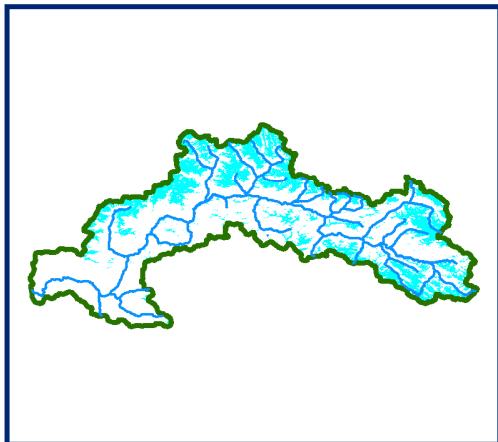


SNOW

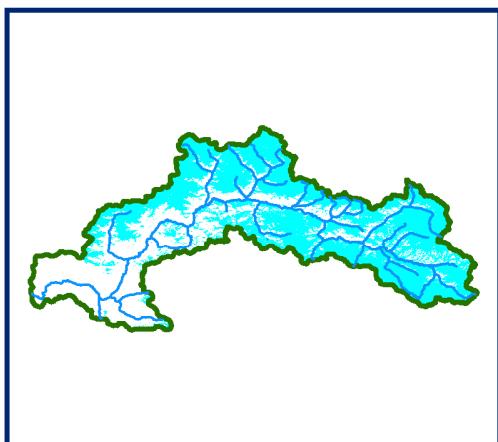
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Kilometers

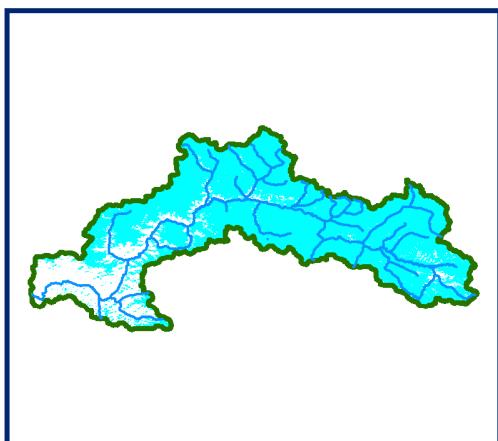
10 DAILY SNOW COVER MAP: KISANGANGA BASIN



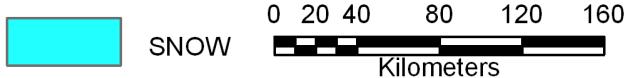
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04 DECEMBER 2011



DATA USED
16 DECEMBER 2011

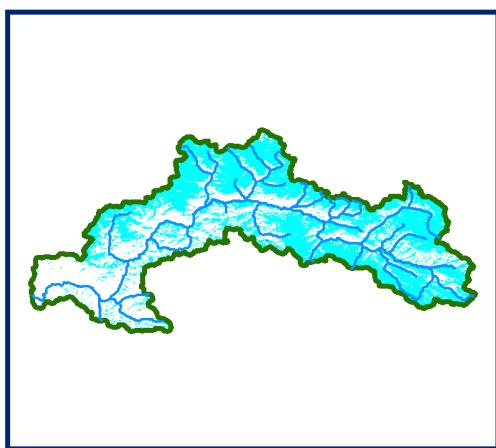


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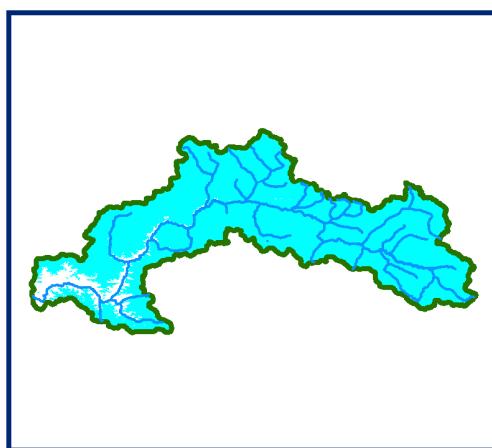


SNOW COVER MAP

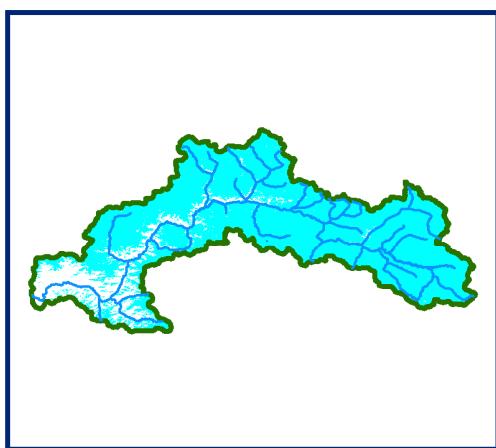
KISANGANGA BASIN



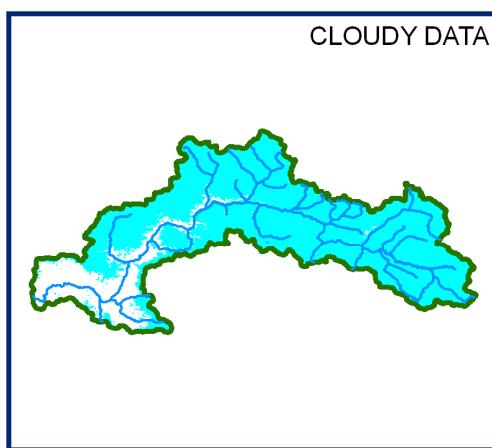
01 JANUARY 2012



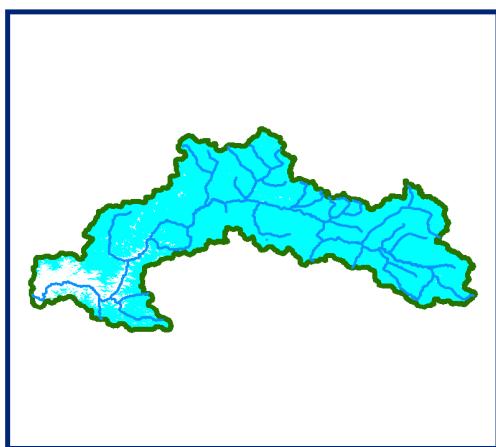
09 JANUARY 2012



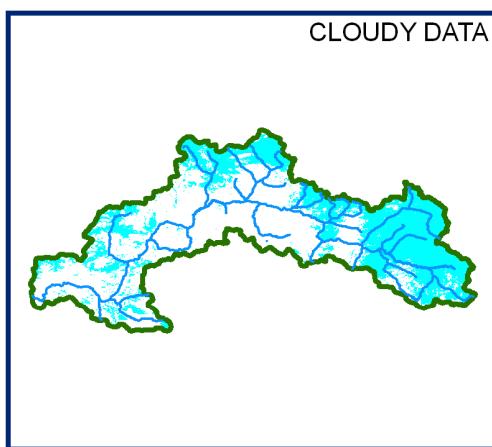
11 JANUARY 2012



CLOUDY DATA
13 JANUARY 2012



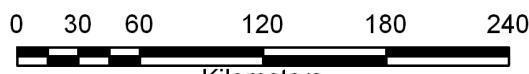
21 JANUARY 2012



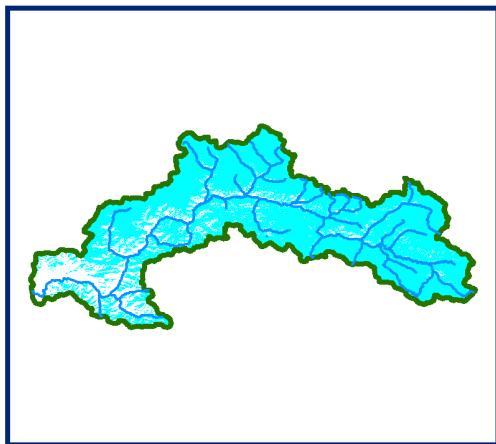
CLOUDY DATA
25 JANUARY 2012



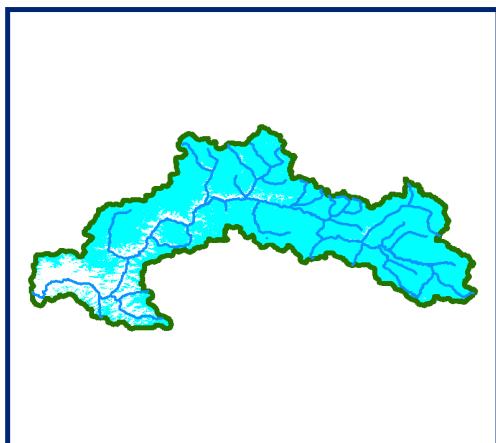
SNOW



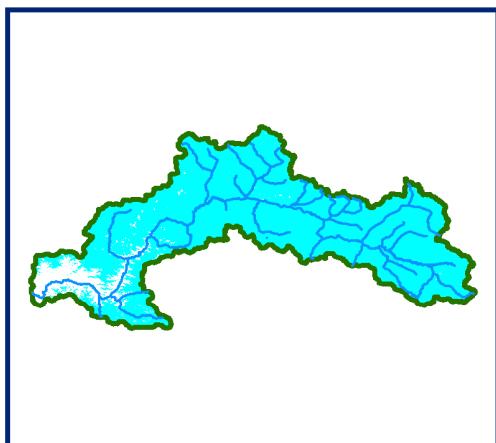
10 DAILY SNOW COVER MAP: KISANGANGA BASIN



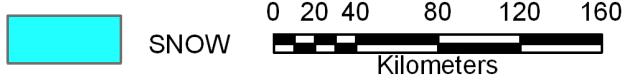
DATA USED
01 JANUARY 2012
01 JANUARY 2012



DATA USED
11 JANUARY 2012

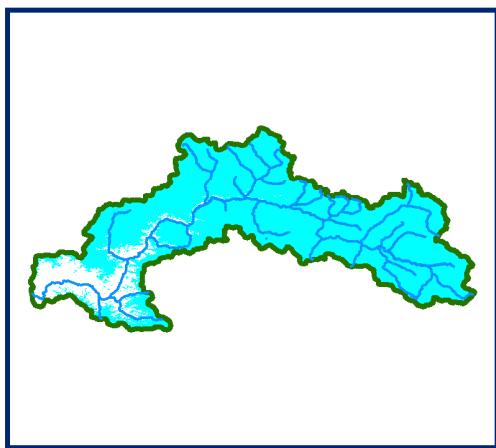
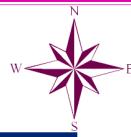


DATA USED
21 JANUARY 2012

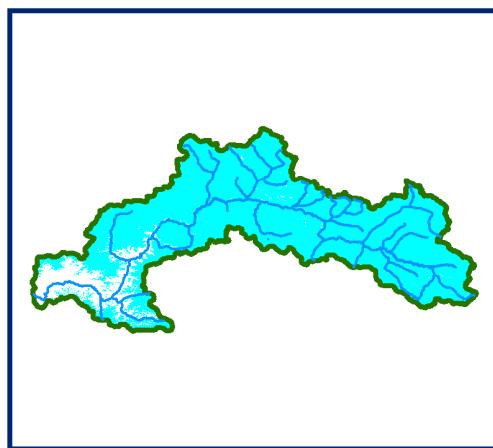


SNOW COVER MAP

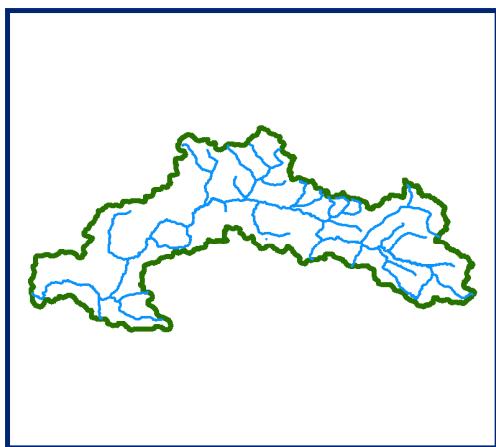
: KISANGANGA BASIN



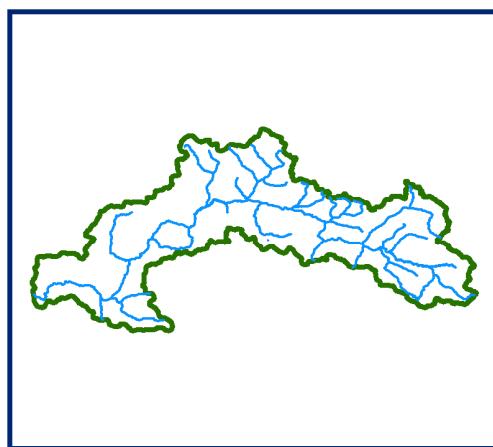
02 FEBRUARY 2012



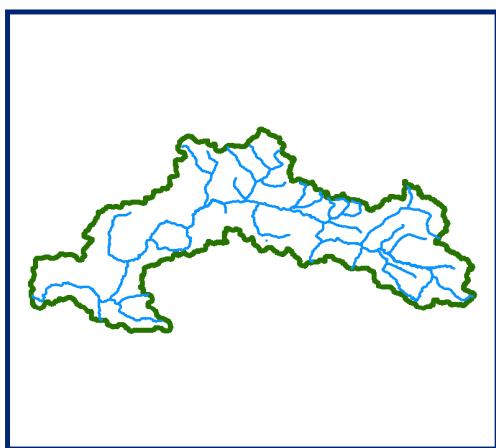
09 FEBRUARY 2012



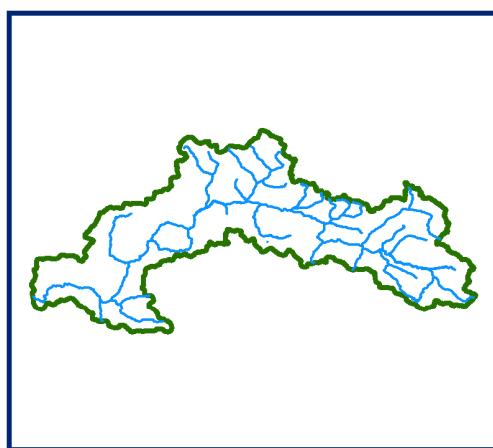
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DATA NOT AVAILABLE



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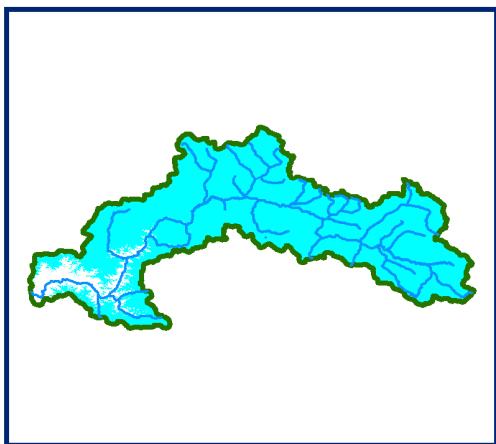
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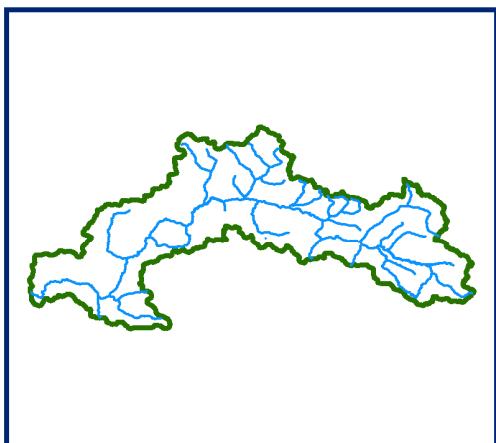
SNOW

0 30 60 120 180 240
Kilometers

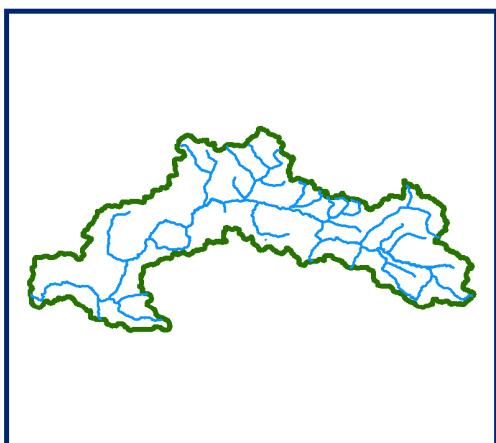
10 DAILY SNOW COVER MAP: KISANGANGA BASIN



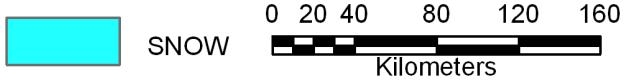
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02 FEBRUARY 2012
09 FEBRUARY 2012



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DATA USED
DATA NOT AVAILABLE



SNOW COVER MAP

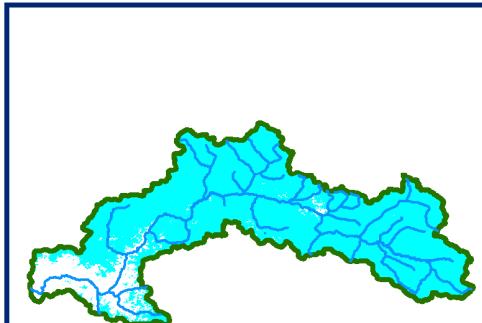
: KISANGANGA BASIN



CLOUDY DATA



01 MARCH 2012

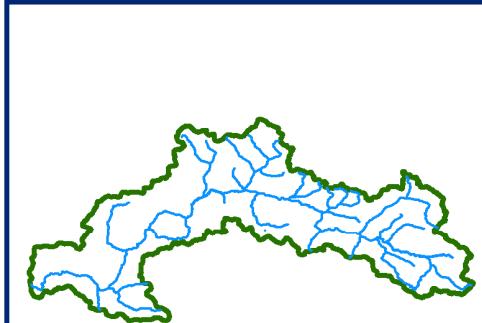


06 MARCH 2012

CLOUDY DATA



11 MARCH 2012

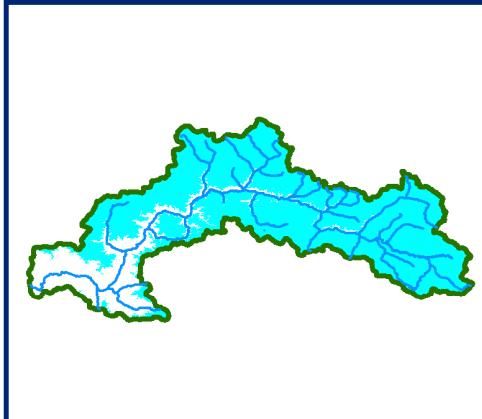


DATA NOT AVAILABLE

CLOUDY DATA



21 MARCH 2012



30 MARCH 2012

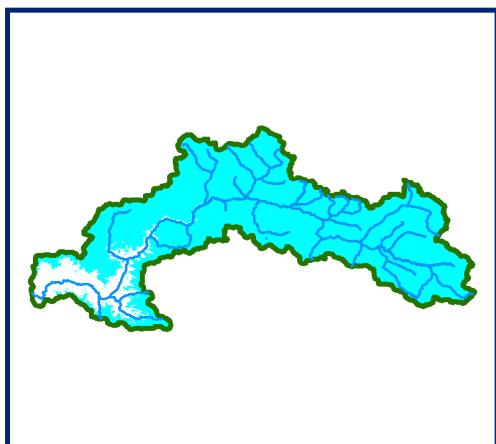


SNOW

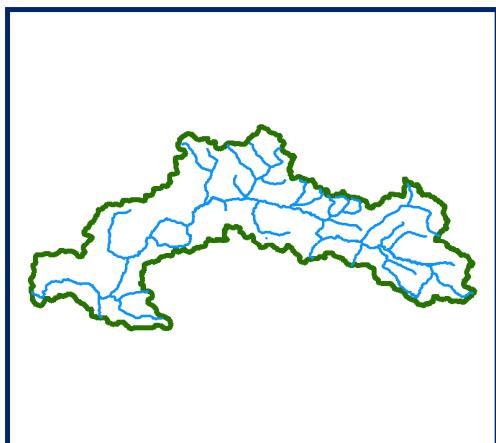
0 30 60 120 180 240

Kilometers

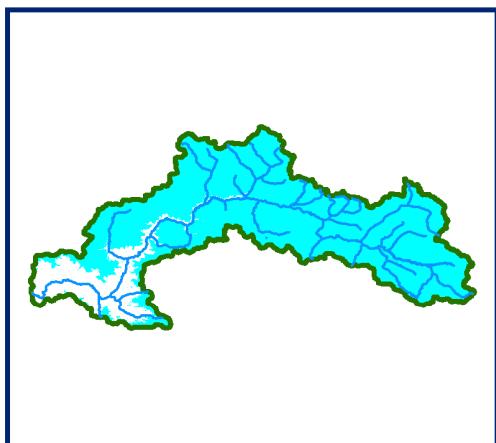
10 DAILY SNOW COVER MAP: KISANGANGA BASIN



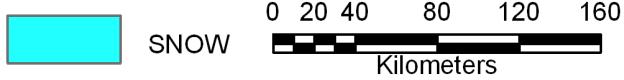
DATA USED
02 MARCH 2012



DATA USED
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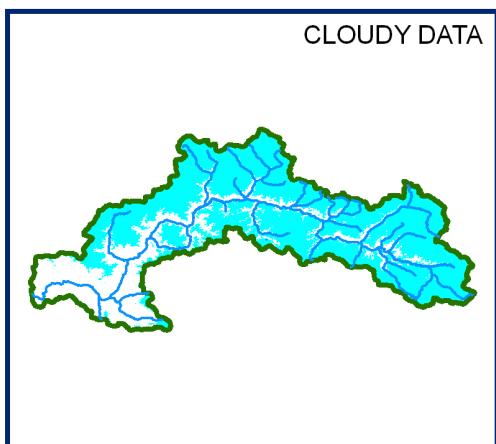


DATA USED
21 MARCH 2012
30 MARCH 2012

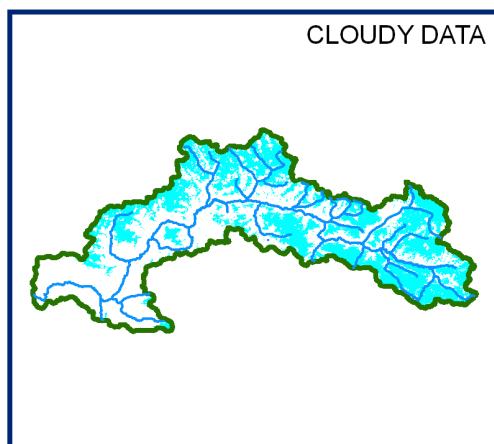


SNOW COVER MAP

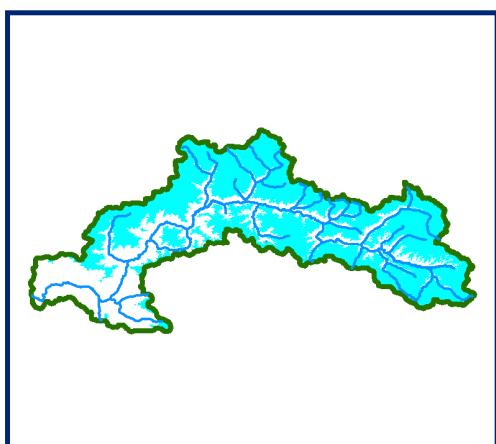
: KISANGANGA BASIN



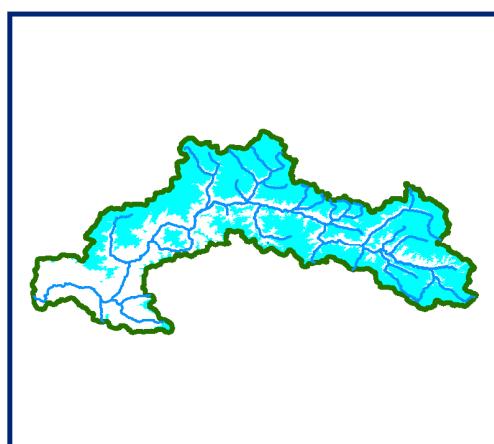
04 APRIL 2012



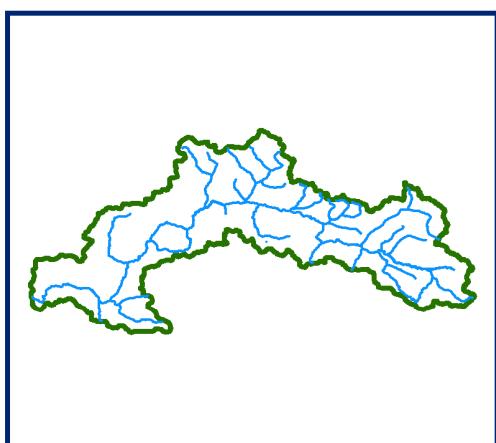
07 APRIL 2012



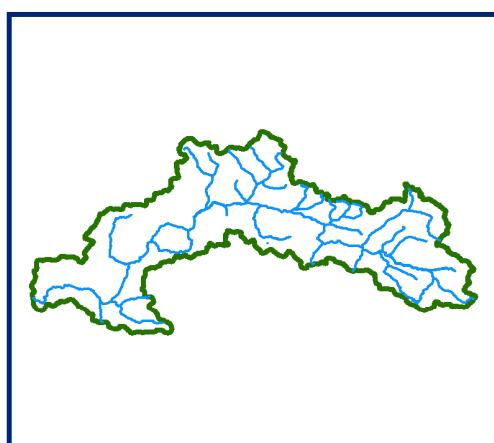
18 APRIL 2012



19 APRIL 2012



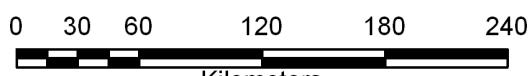
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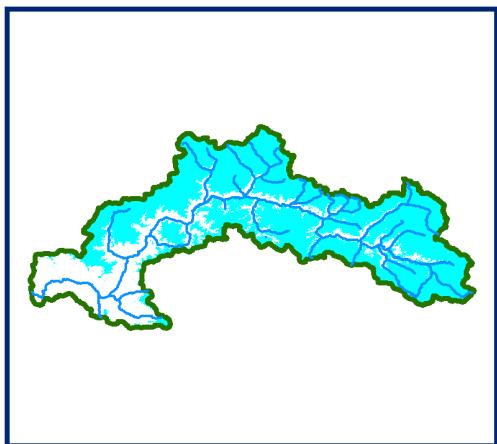
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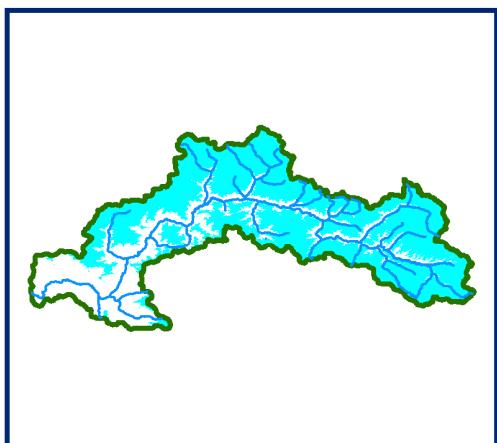
SNOW



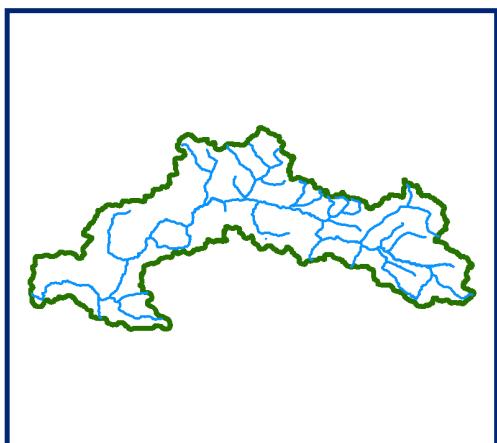
10 DAILY SNOW COVER MAP: KISANGANGA BASIN



DATA USED
04 APRIL 2012



DATA USED
18 APRIL 2012
19 APRIL 2012



DATA USED
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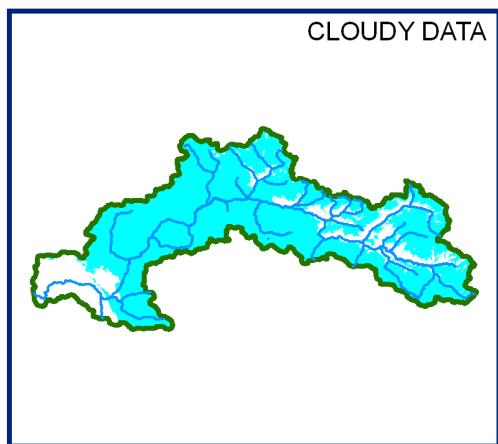


SNOW

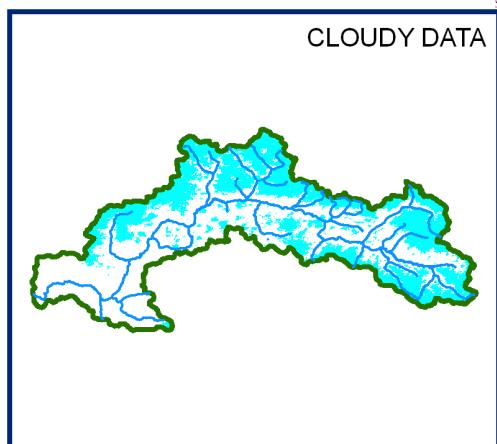


SNOW COVER MAP

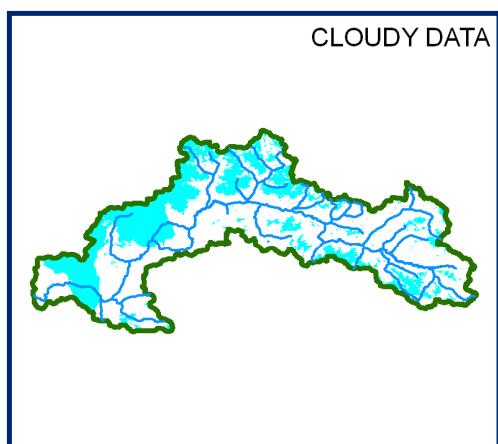
KISANGANGA BASIN



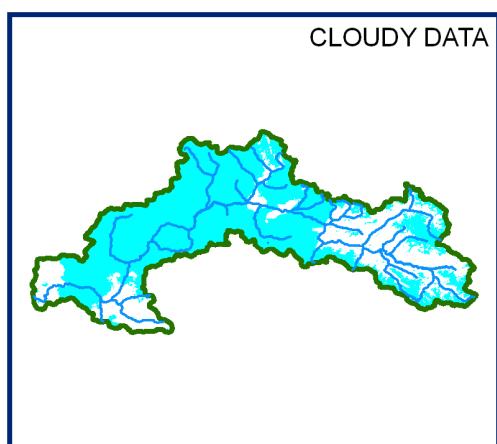
01 MAY 2012



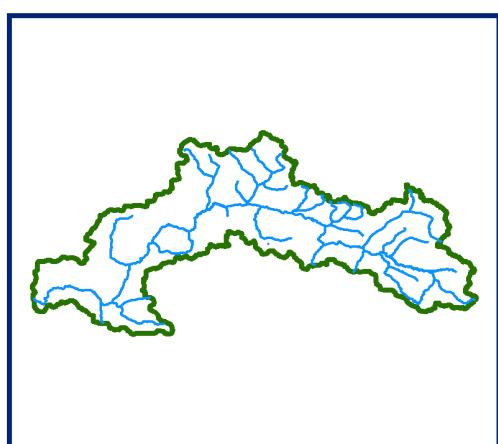
08 MAY 2012



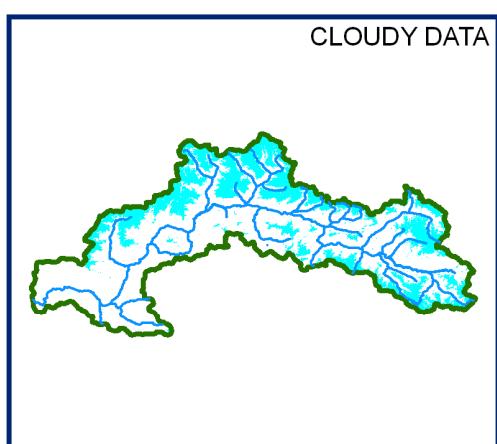
15 MAY 2012



20 MAY 2012



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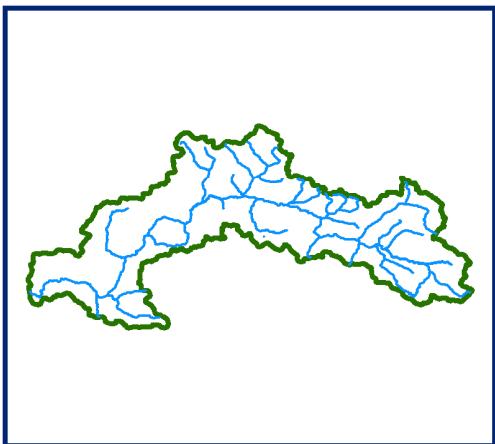
29 MAY 2012



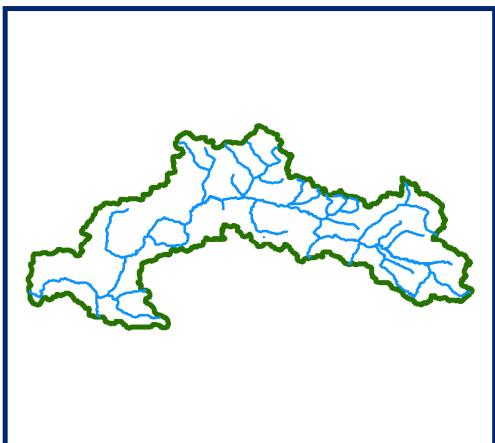
SNOW



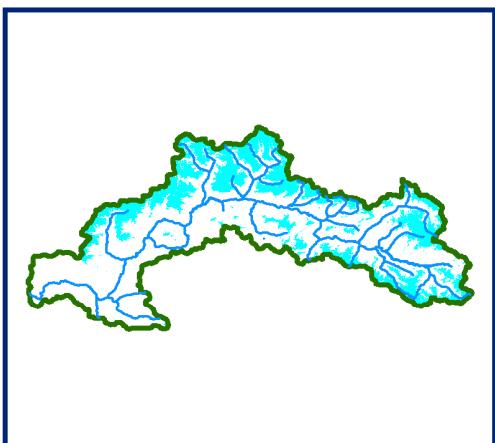
10 DAILY SNOW COVER MAP: KISANGANGA BASIN



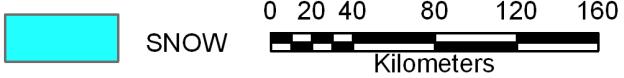
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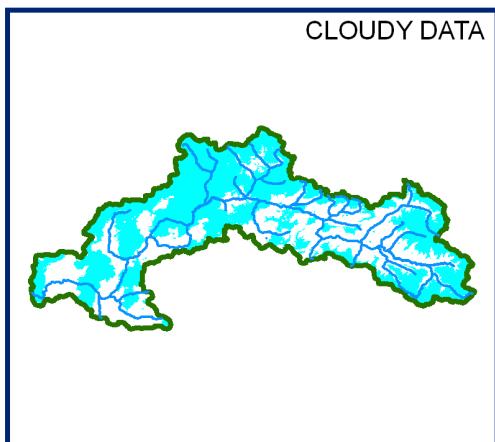


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29 MAY 2012

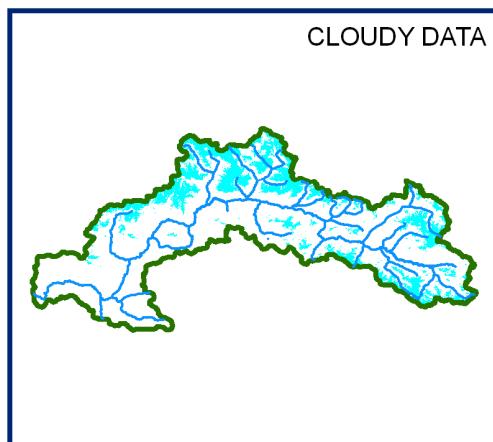


SNOW COVER MAP

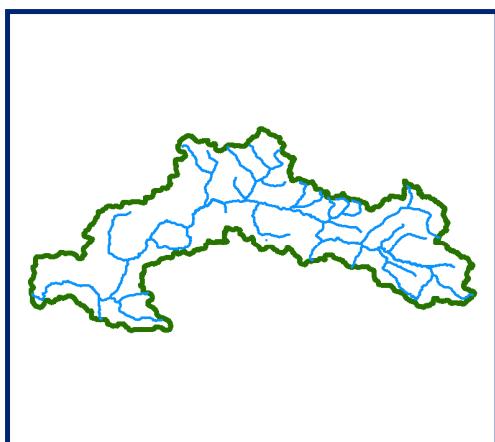
: KISANGANGA BASIN



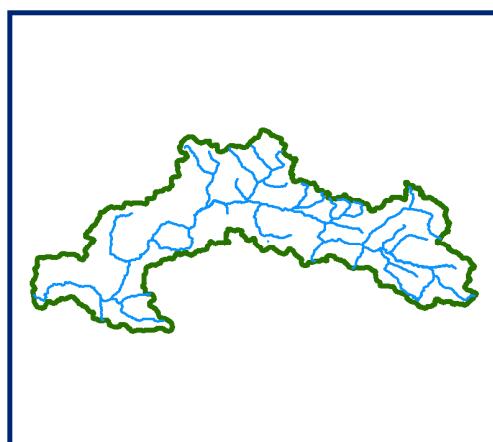
01 JUNE 2012



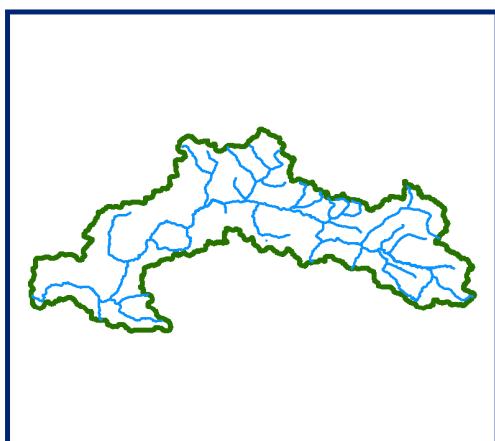
03 JUNE 2012



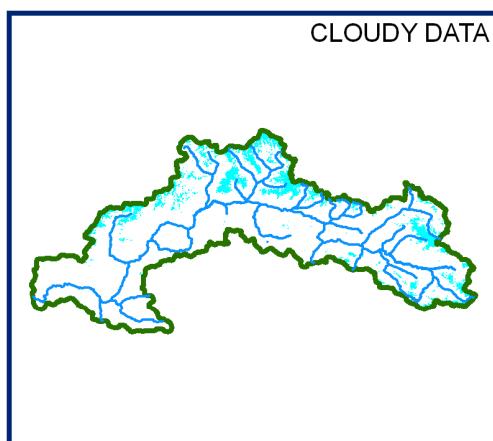
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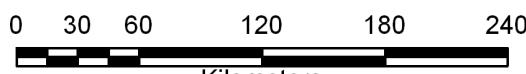
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30 JUNE 2012

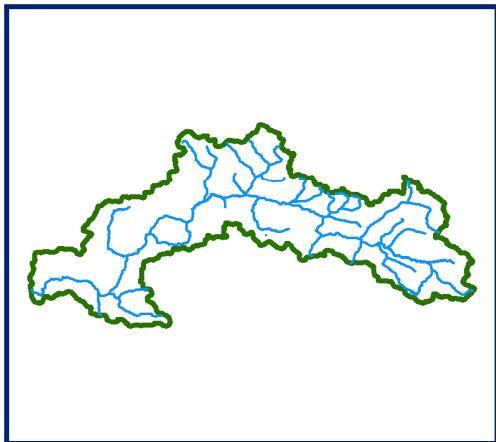


SNOW

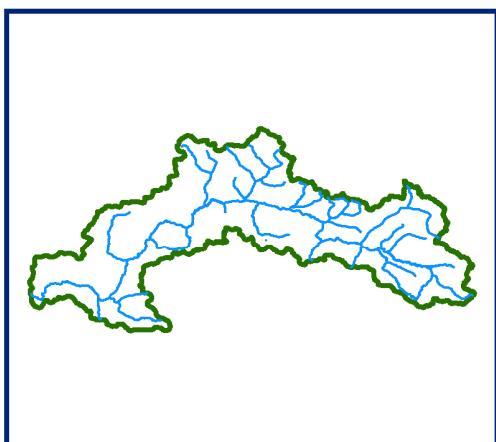


Kilometers

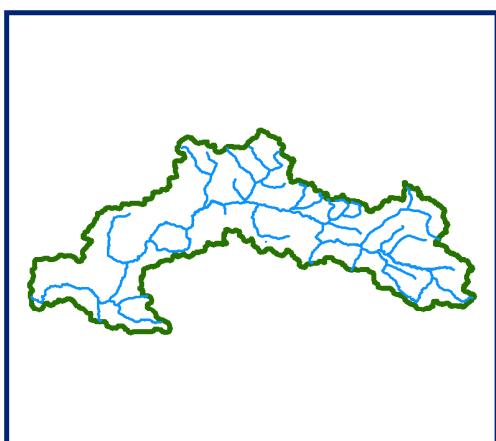
10 DAILY SNOW COVER MAP: KISANGANGA BASIN



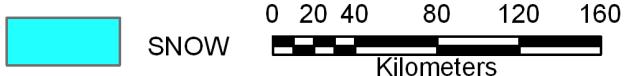
DATA USED
DATA NOT AVAILABLE



DATA USED
DATA NOT AVAILABLE



DATA USED
DATA NOT AVAILABLE



ASTOR BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: ASTOR

BASIN AREA: 4008 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	2-Oct-11	453	11	2	3-Oct-11	367	9
3	10-Oct-11	1935	48	4	15-Oct-11	1062	26
November 2011							
5	22-Nov-11	3237	81	6	26-Nov-11	2940	73
7	27-Nov-11	2816	70	8	29-Nov-11	2633	66
December 2011							
9	2-Dec-11	2696	67	10	4-Dec-11	2500	62
11	14-Dec-11	3413	85	12	16-Dec-11	3581	89
13	26-Dec-11	3467	86				
January 2012							
14	1-Jan-12	3249	81	15	9-Jan-12	3717	93
16	21-Jan-12	3780	94	17	12-Jan-12	3854	96
February 2012							
18	9-Feb-12	3705	92				
March 2012							
19	2-Mar-12	3805	95	20	21-Mar-12	3836	96
21	30-Mar-12	3607	90	22	31-Mar-12	3681	92
April 2012							
23	18-Apr-12	3324	83	24	19-Apr-12	3261	81
May 2012							
25	30-May-12	2175	54				

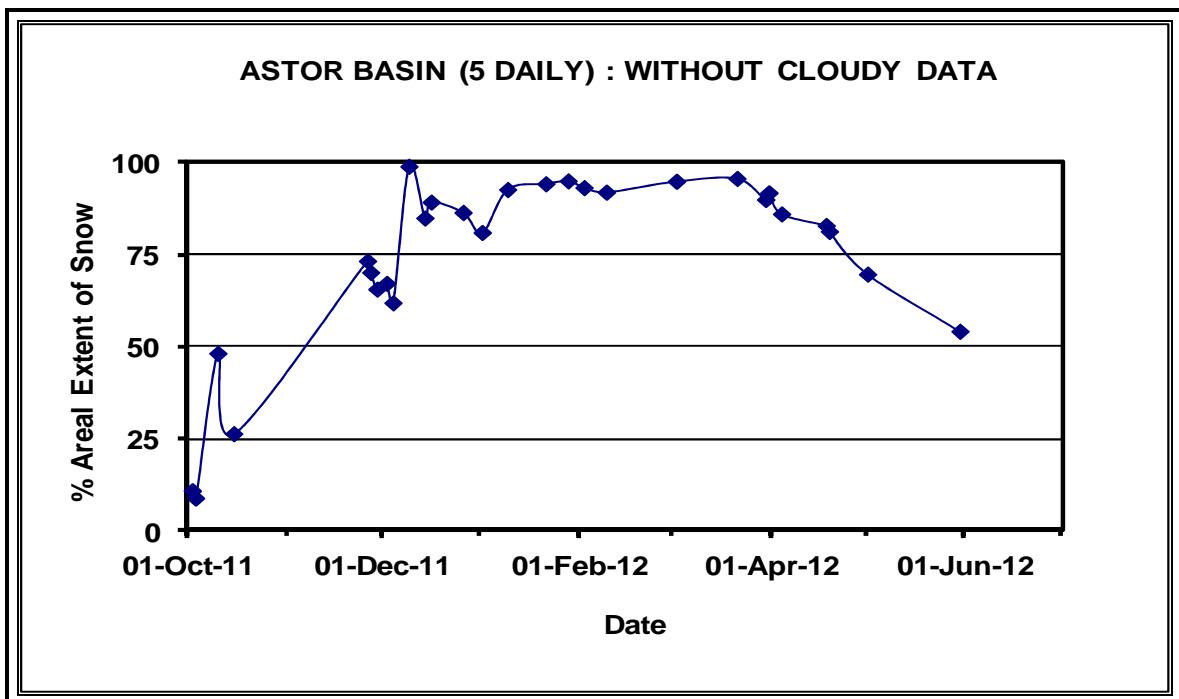
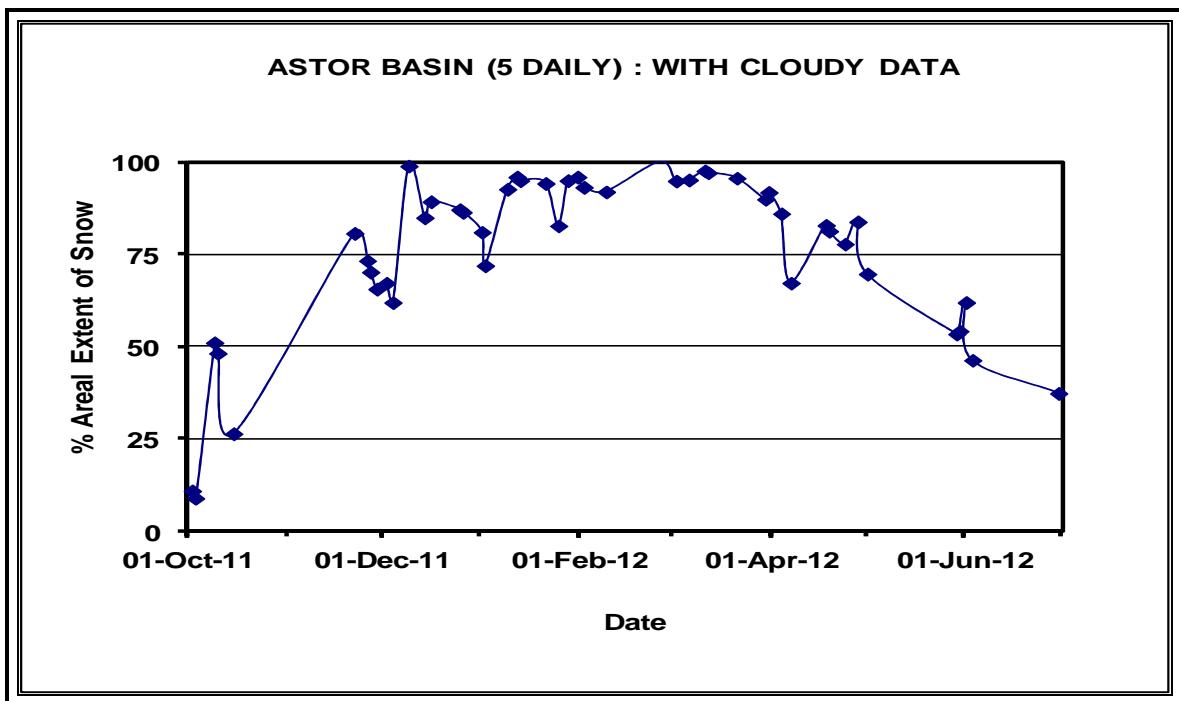
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: ASTOR

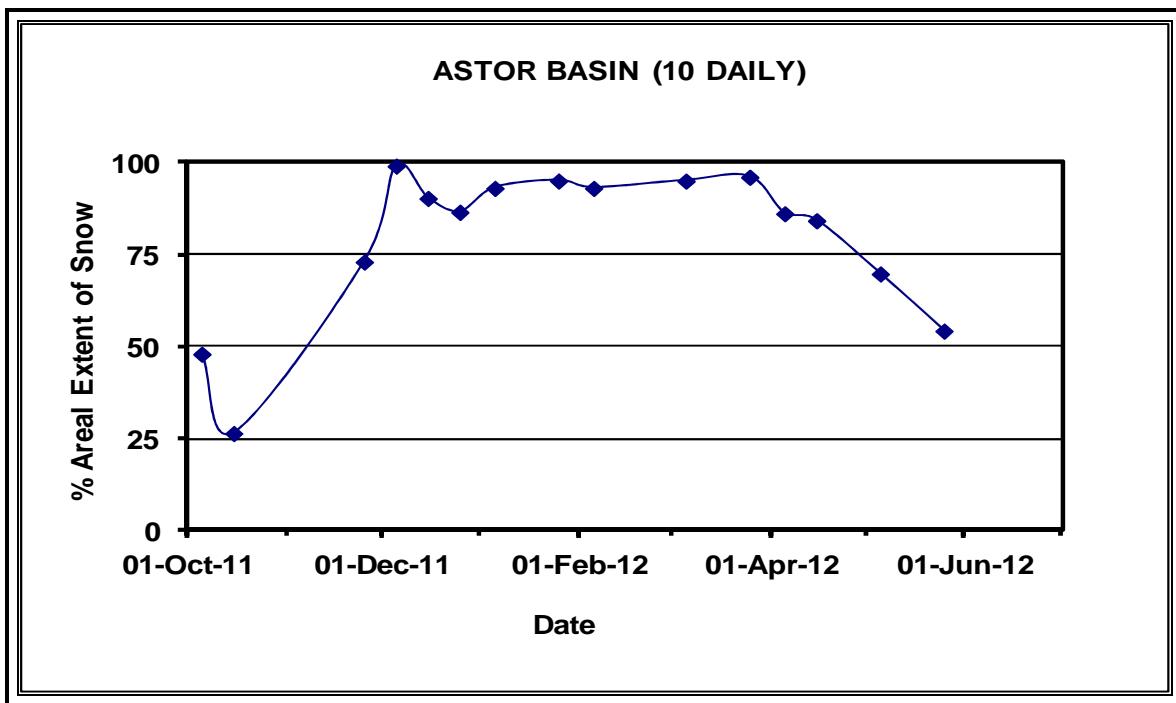
BASIN AREA: 4008 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	2-Oct-11	1924	48	2	15-Oct-11	1062	26
November 2011							
3	29-Nov-11	2926	73				
December 2011							
4	4-Dec-11	3968	99	5	14-Dec-11	3617	90
6	26-Dec-11	3467	86				
January 2012							
7	1-Jan-12	3727	93	8	21-Jan-12	3808	95
February 2012							
9	9-Feb-12	3727	93				
March 2012							
10	2-Mar-12	3805	95	11	30-Mar-12	3848	96
April 2012							
12	5-Apr-12	3450	86	13	18-Apr-12	3374	84
May 2012							
14	5-May-12	2796	70	15	30-May-12	2175	54
June 2012							

Snow cover depletion curve

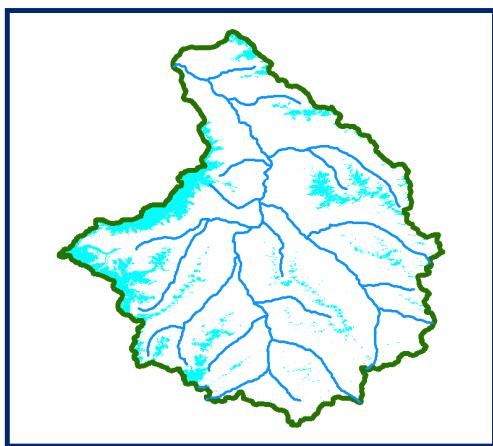
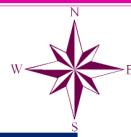


Snow cover depletion curve

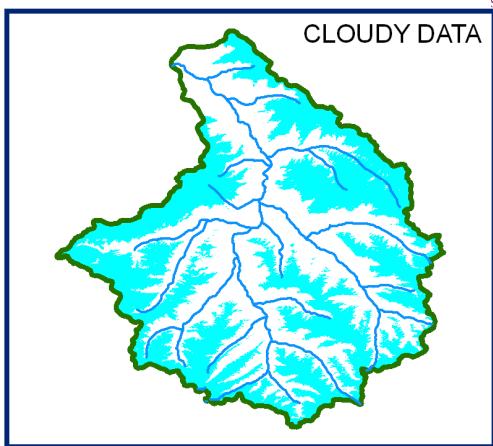


SNOW COVER MAP

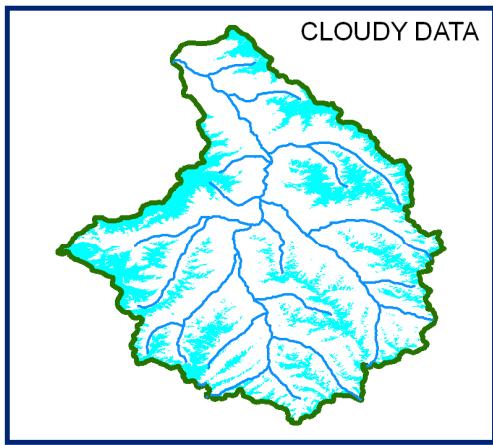
SNOW COVER MAP : ASTOR BASIN



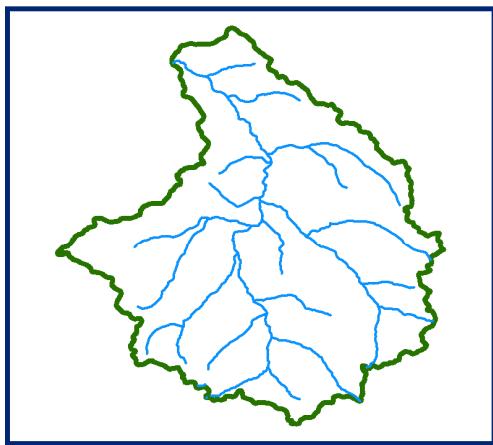
02 OCTOBER 2011



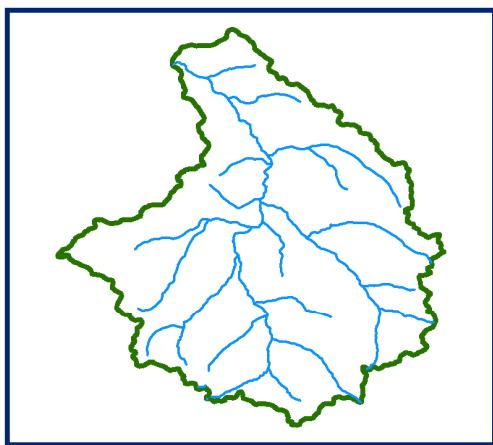
10 OCTOBER 2011



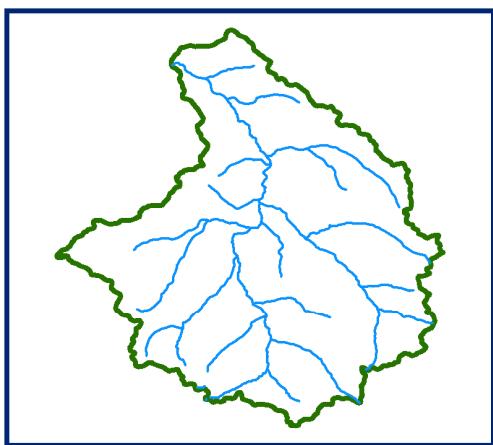
15 OCTOBER 2011



DATA NOT AVAILABLE



DATA NOT AVAILABLE



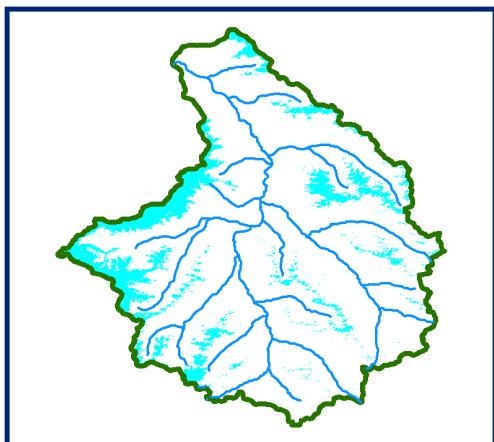
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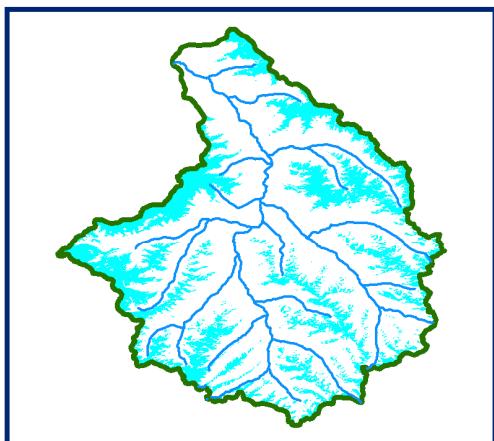
SNOW



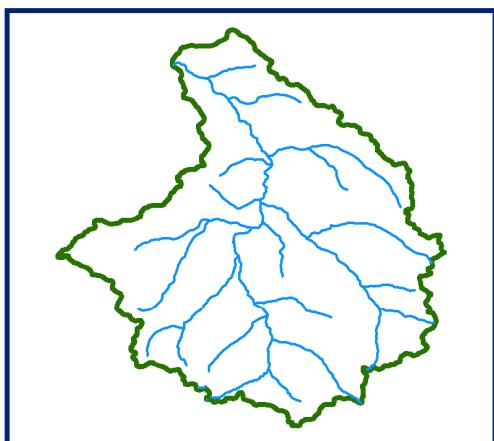
10 DAILY SNOW COVER MAP: ASTOR BASIN



DATA USED
02 OCTOBER 2011
03 OCTOBER 2011



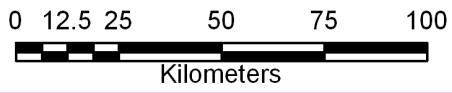
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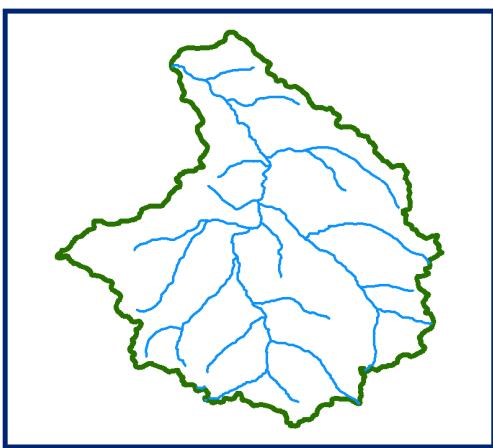
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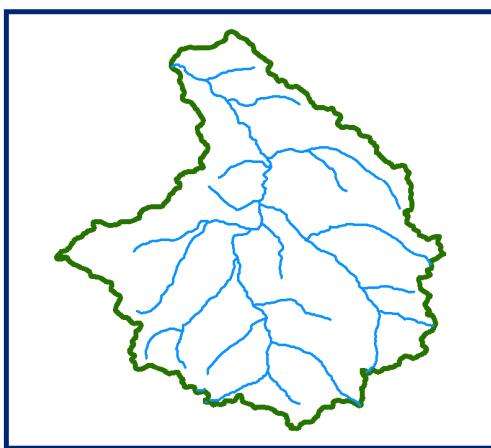
SNOW



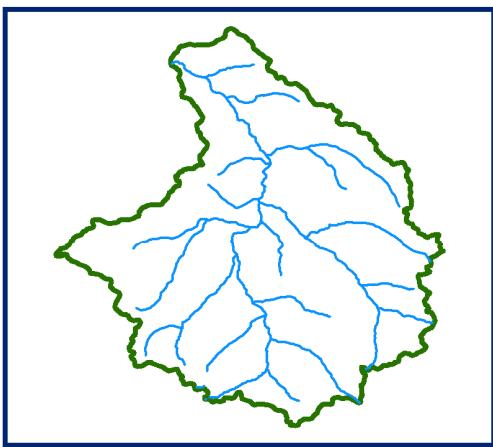
SNOW COVER MAP : ASTOR BASIN



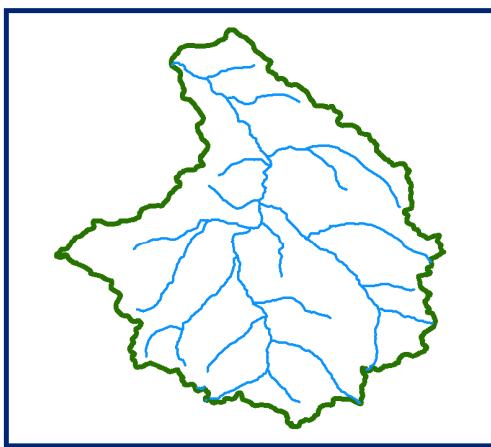
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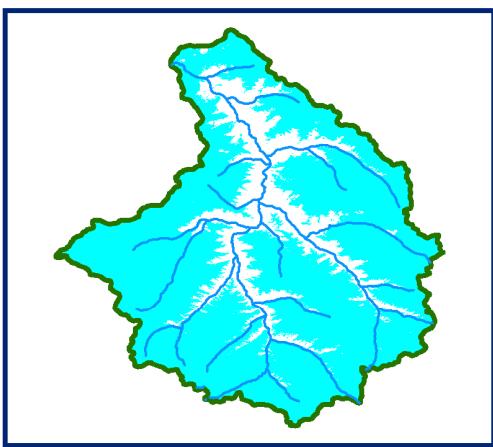
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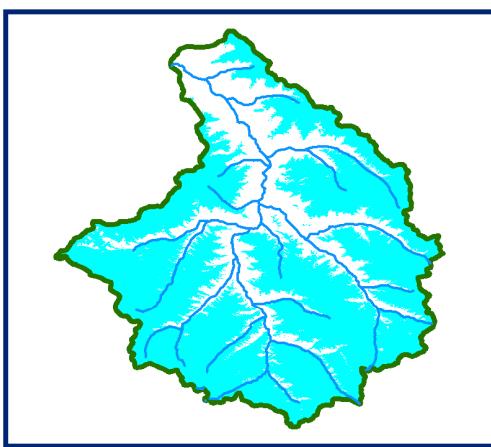
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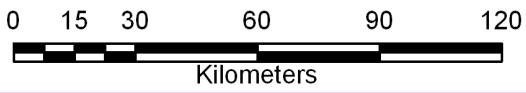
22 NOVEMBER 2011



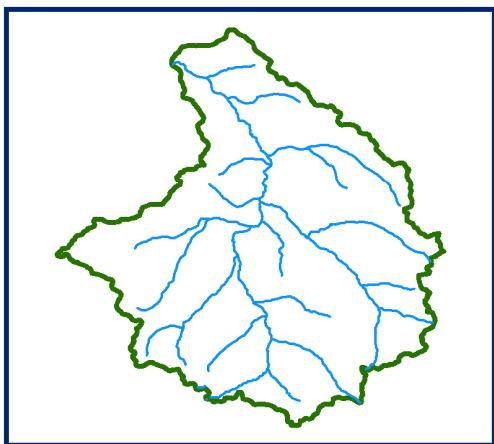
27 NOVEMBER 2011



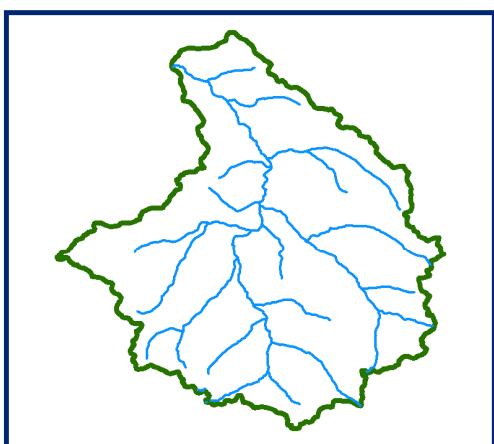
SNOW



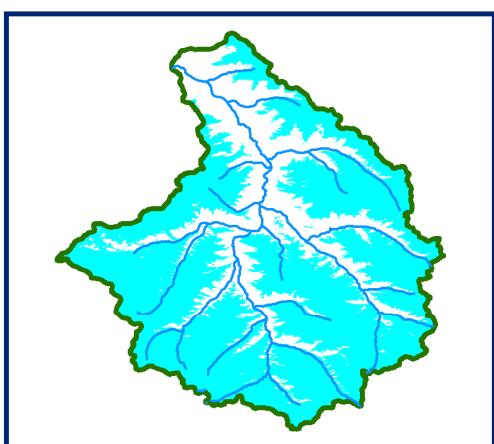
10 DAILY SNOW COVER MAP: ASTOR BASIN



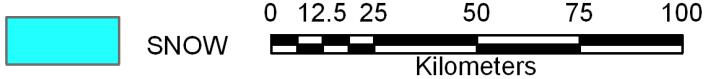
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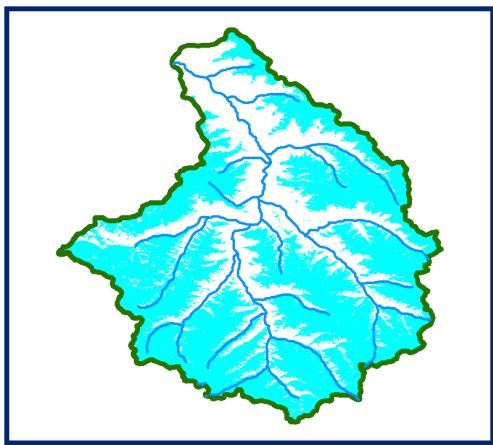
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DATA NOT AVAILABLE



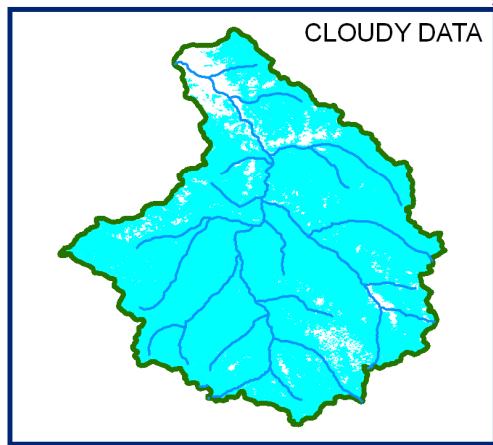
DATA USED
27 NOVEMBER 2011
29 NOVEMBER 2011



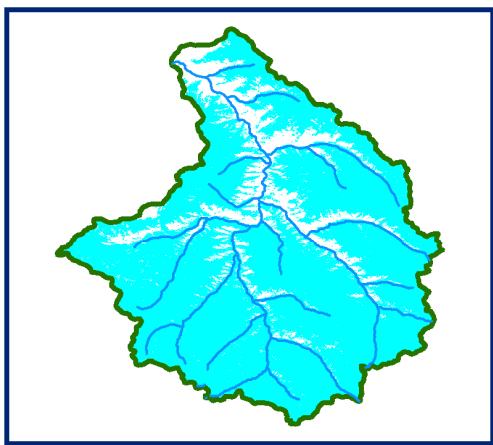
SNOW COVER MAP : ASTOR BASIN



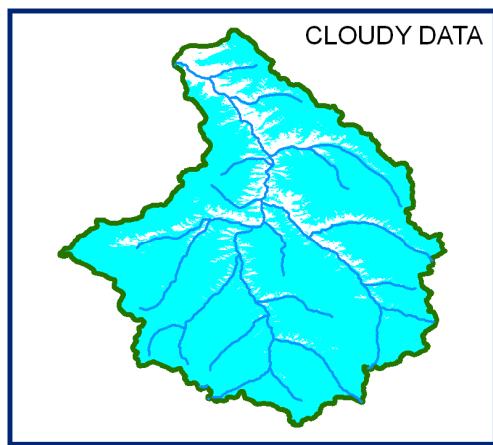
04 DECEMBER 2011



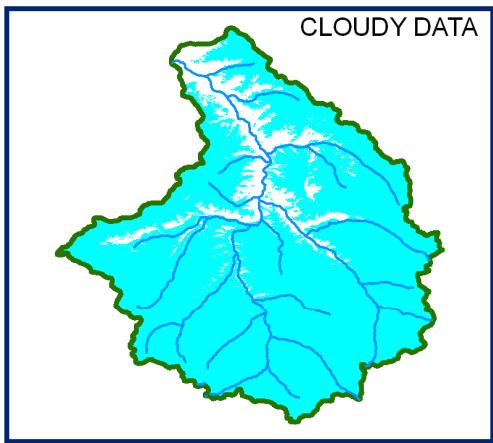
09 DECEMBER 2011



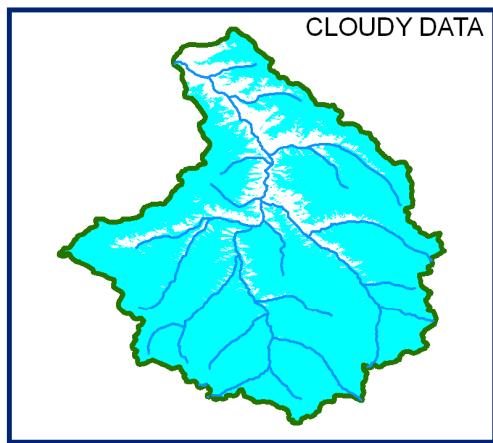
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16 DECEMBER 2011



25 DECEMBER 2011



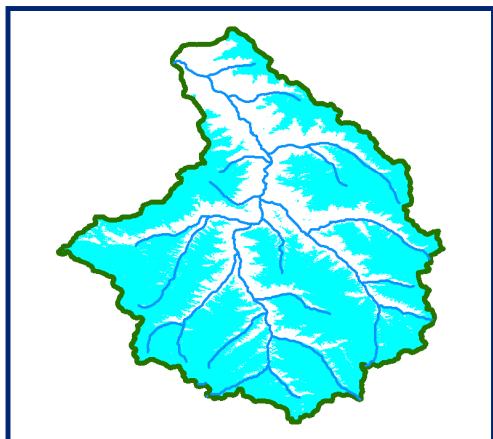
26 DECEMBER 2011



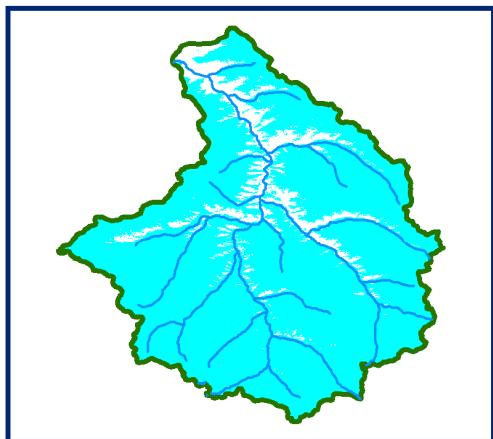
SNOW



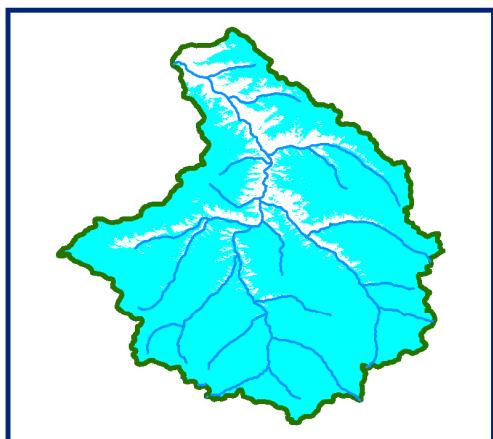
10 DAILY SNOW COVER MAP: ASTOR BASIN



DATA USED
02 DECEMBER 2011
04 DECEMBER 2011



DATA USED
14 DECEMBER 2011
16 DECEMBER 2011



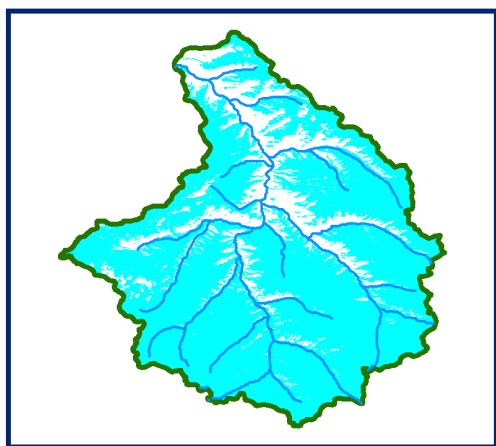
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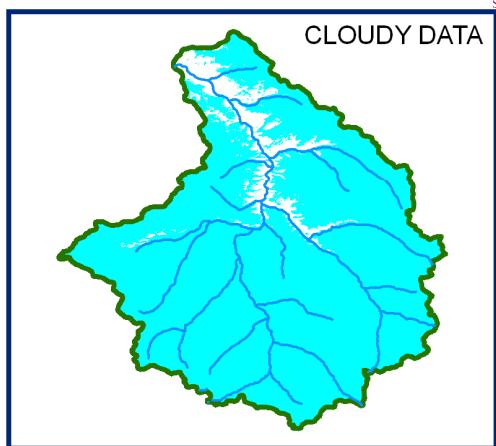
SNOW



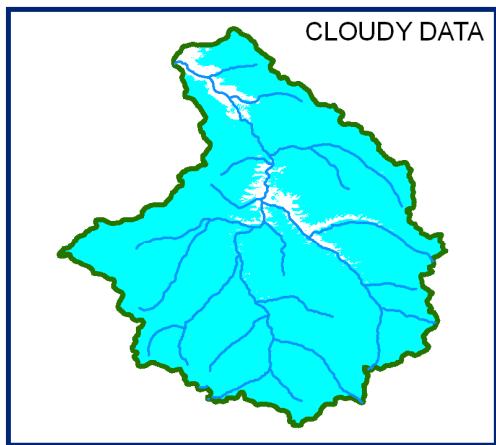
SNOW COVER MAP : ASTOR BASIN



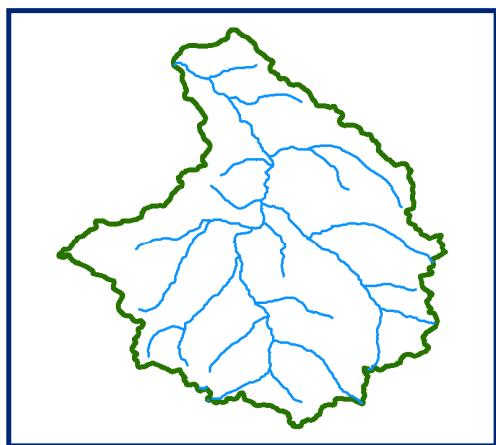
01 JANUARY 2012



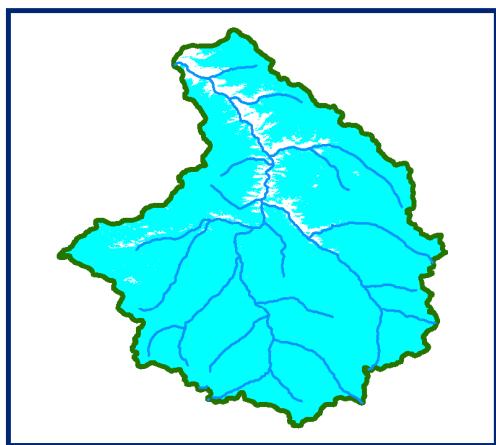
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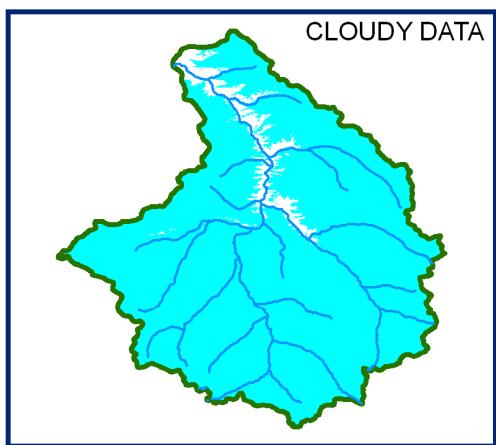
13 JANUARY 2012



DATA NOT AVAILABLE



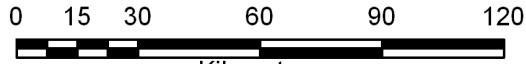
21 JANUARY 2012



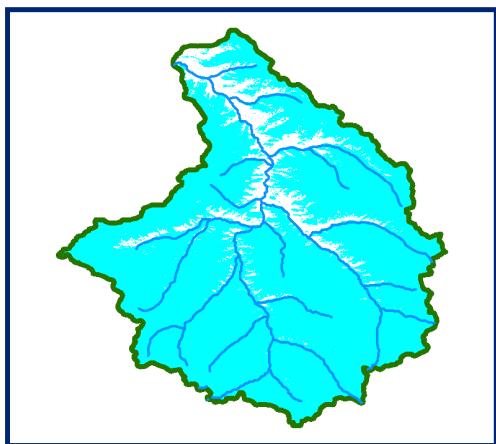
28 JANUARY 2012



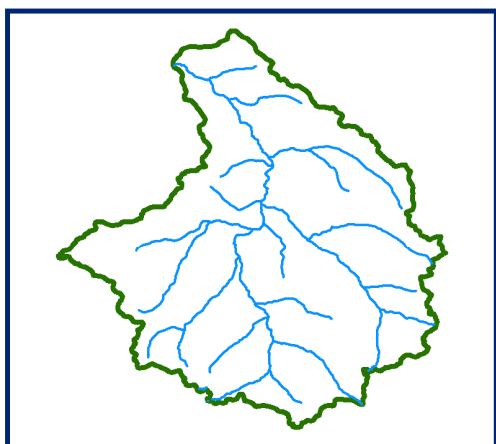
SNOW



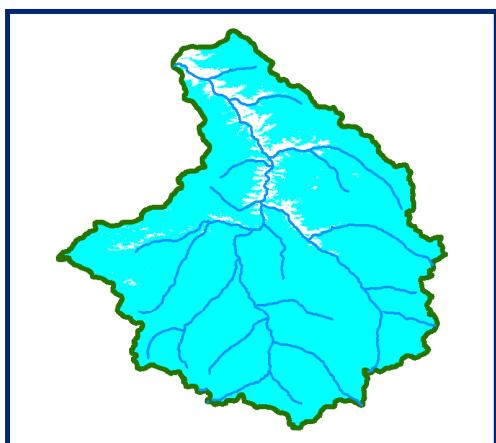
10 DAILY SNOW COVER MAP: ASTOR BASIN



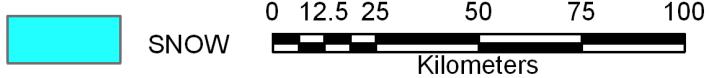
DATA USED
01 JANUARY 2012
09 JANUARY 2012



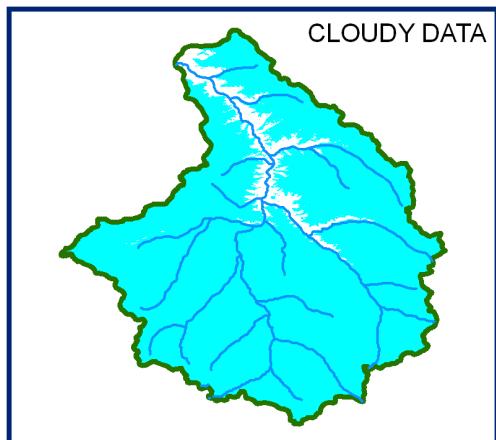
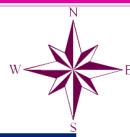
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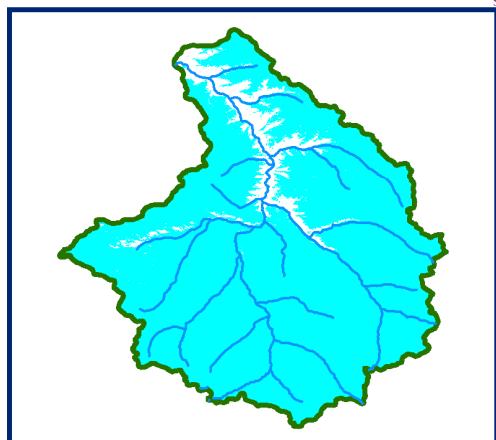
DATA USED
21 JANUARY 2012



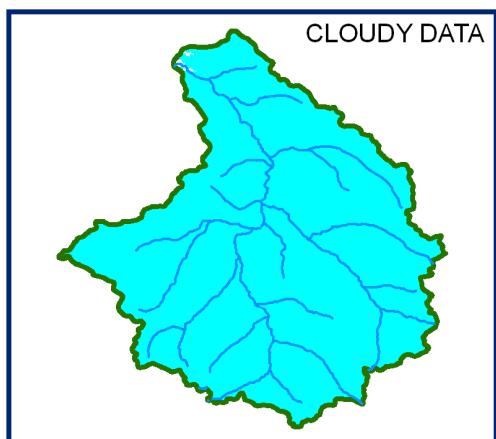
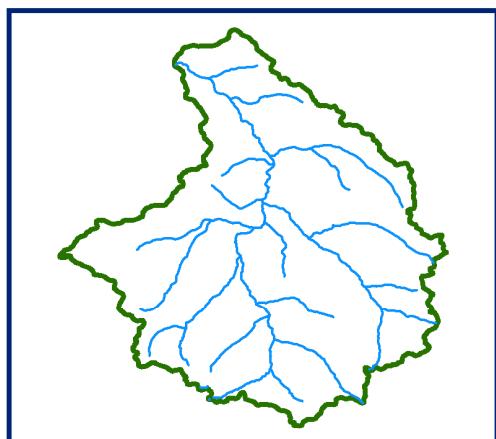
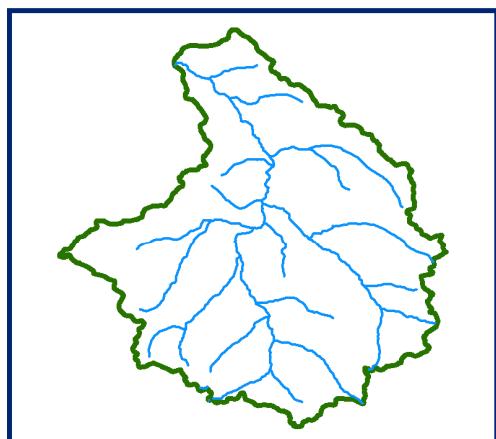
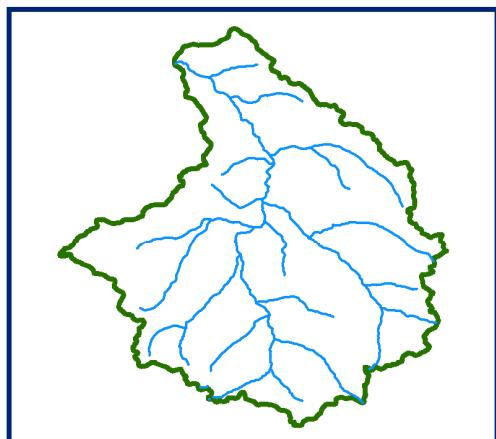
SNOW COVER MAP : ASTOR BASIN



02 FEBRUARY 2012



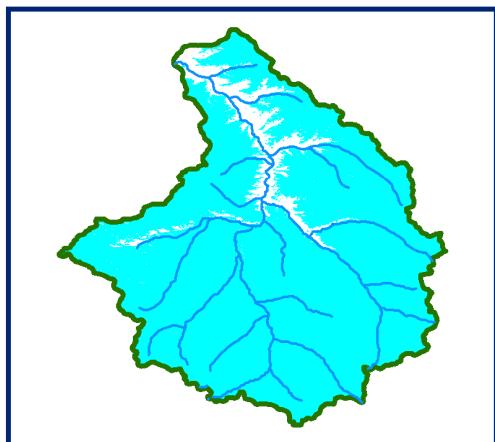
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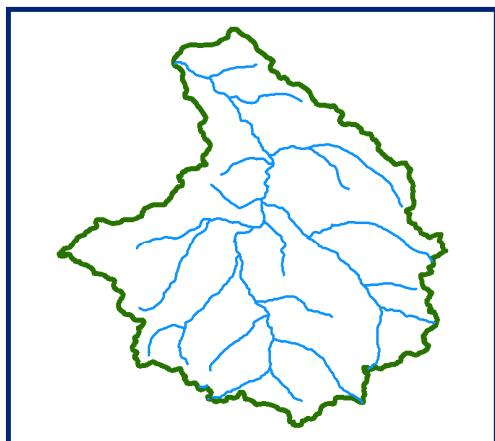
26 FEBRUARY 2012



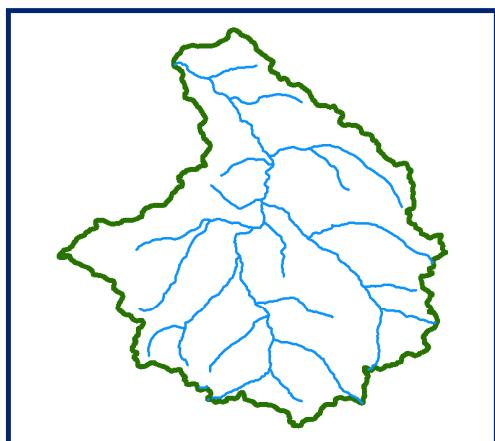
10 DAILY SNOW COVER MAP: ASTOR BASIN



DATA USED
09 FEBRUARY 2012



DATA USED
DATA NOT AVAILABLE



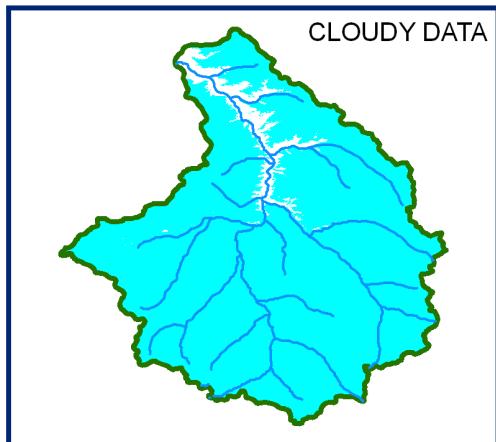
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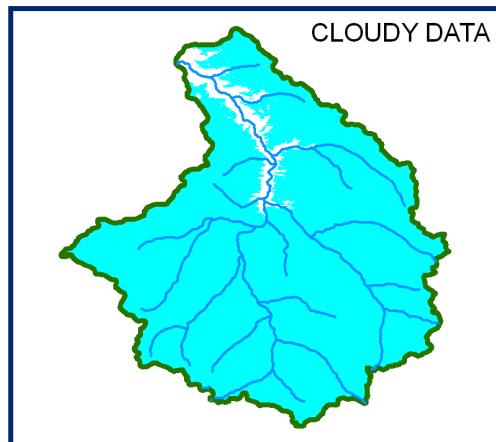
SNOW



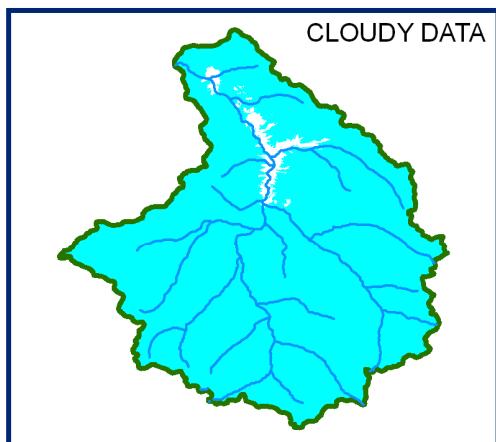
SNOW COVER MAP : ASTOR BASIN



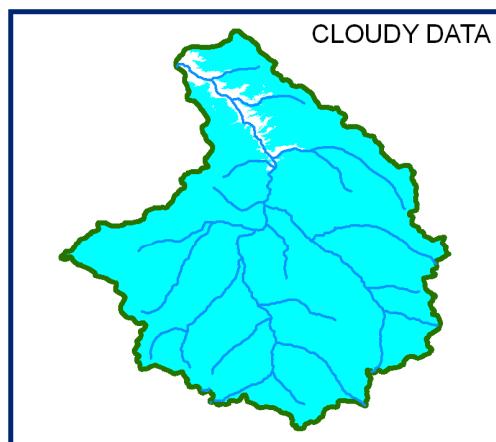
02 MARCH 2012



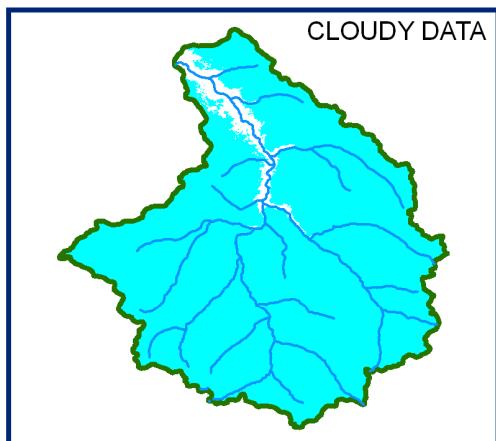
06 MARCH 2012



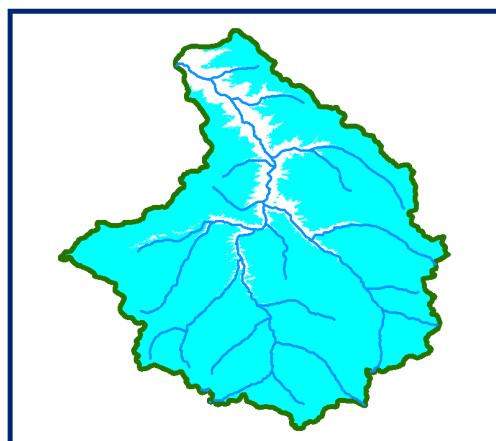
11 MARCH 2012



12 MARCH 2012



21 MARCH 2012



30 MARCH 2012



SNOW



0

15

30

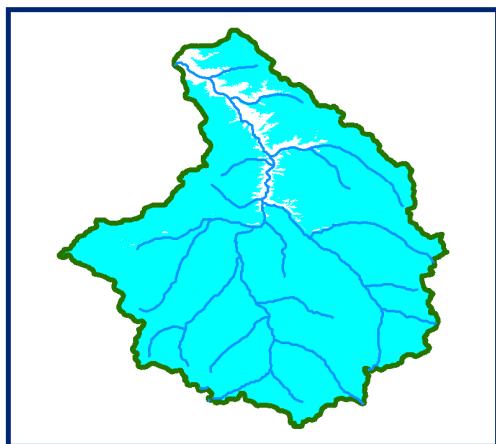
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90

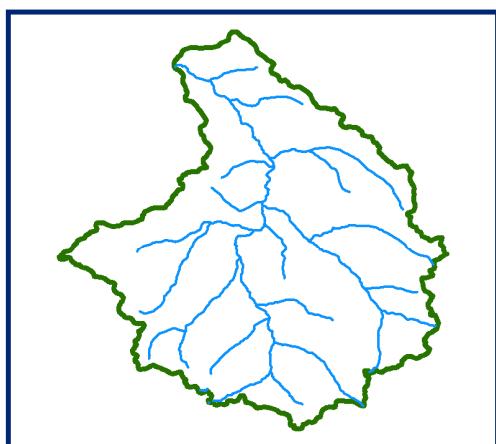
120

Kilometers

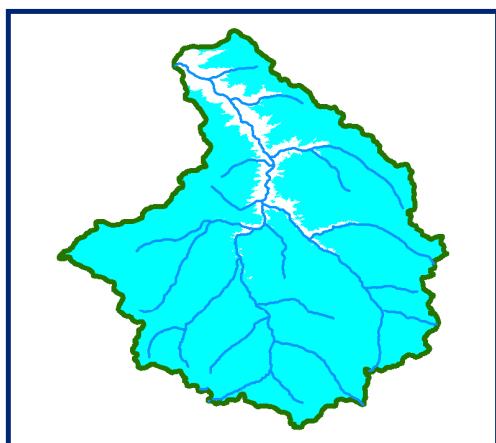
10 DAILY SNOW COVER MAP: ASTOR BASIN



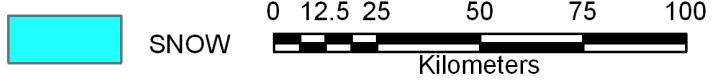
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02 MARCH 2012



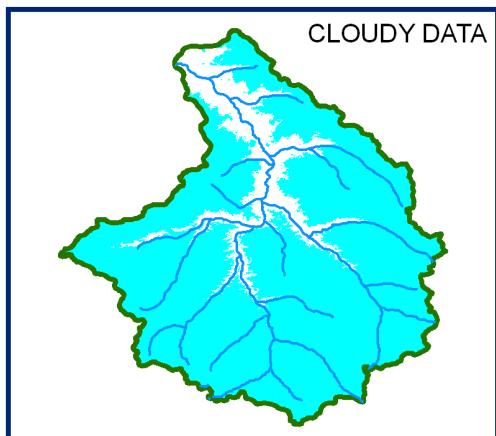
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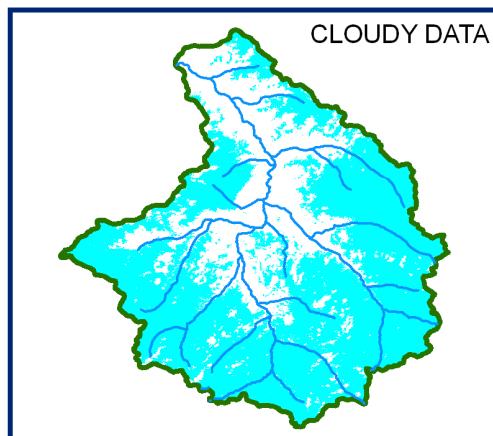
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30 MARCH 2012
31 MARCH 2012



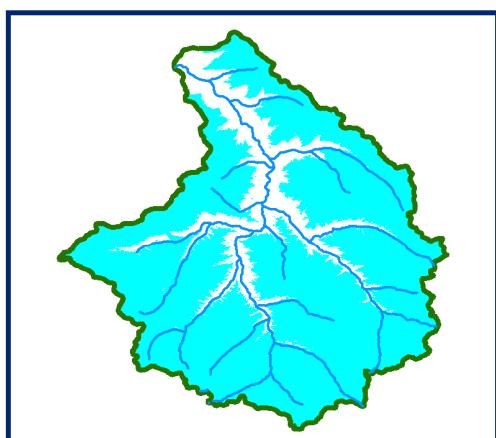
SNOW COVER MAP : ASTOR BASIN



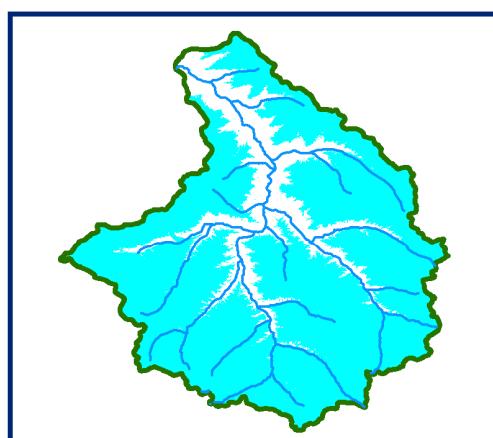
04 APRIL 2012



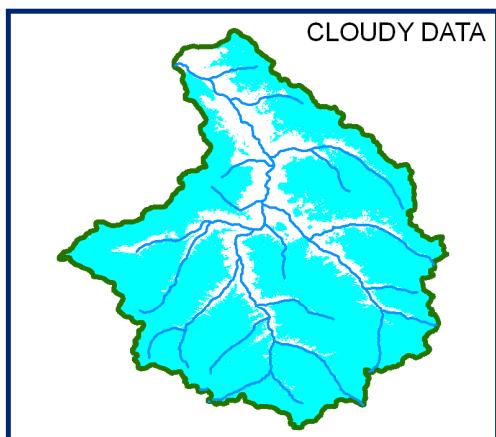
07 APRIL 2012



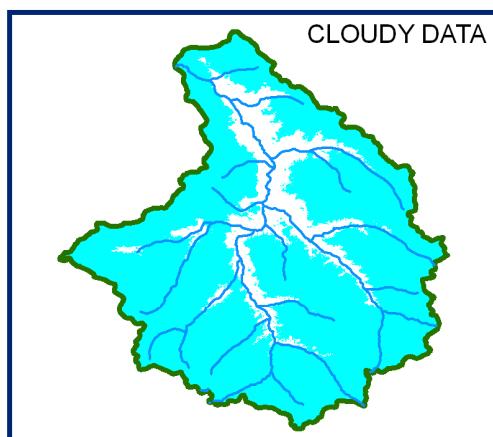
18 APRIL 2012



19 APRIL 2012



24 APRIL 2012



28 APRIL 2012



SNOW



0 15 30

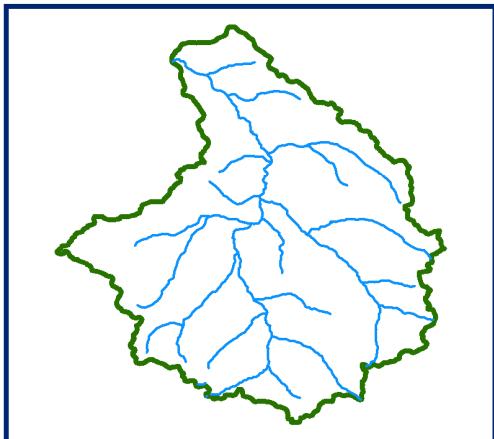
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90

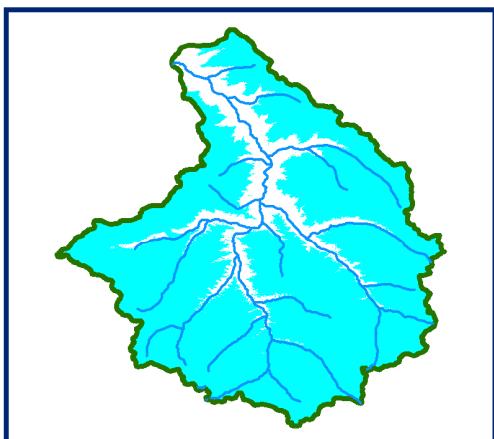
120

Kilometers

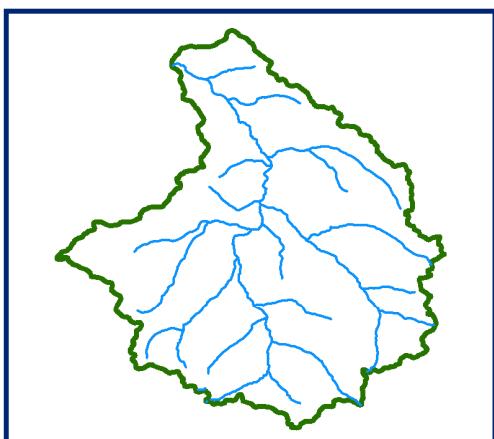
10 DAILY SNOW COVER MAP: ASTOR BASIN



DATA USED
DATA NOT AVAILABLE



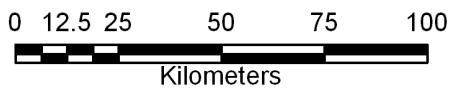
DATA USED
18 APRIL 2012
19 APRIL 2012



DATA USED
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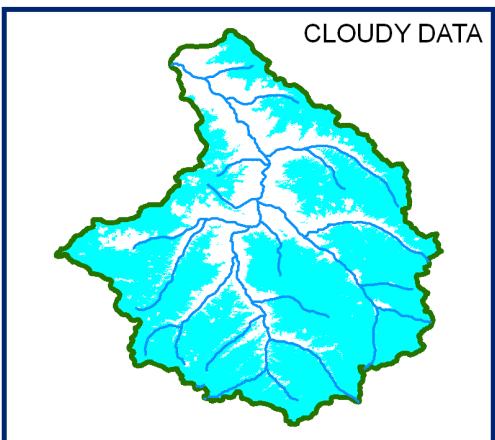


SNOW

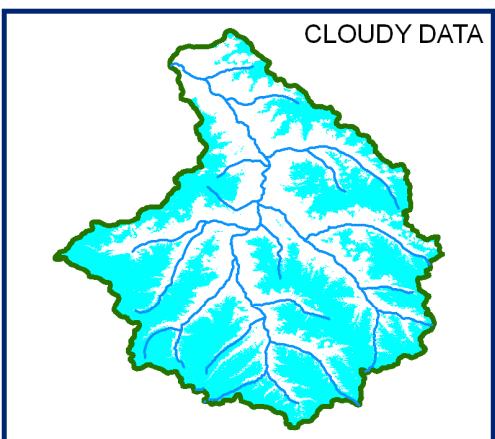
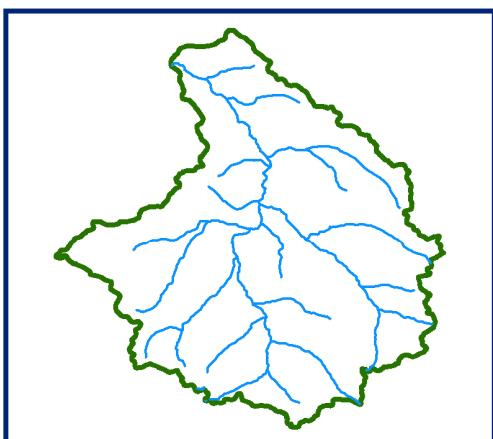
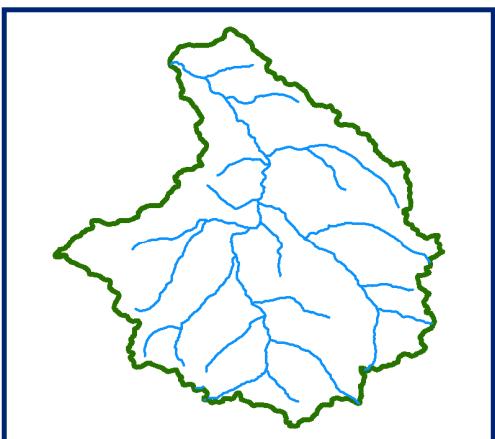
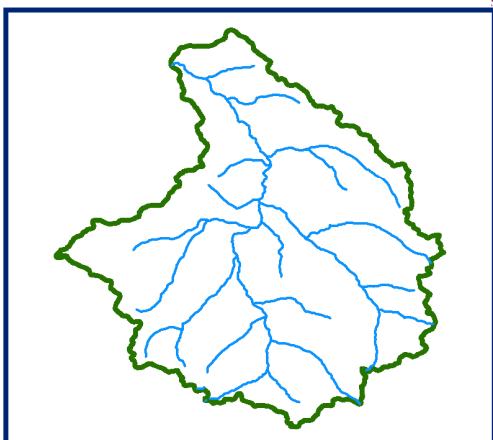


SNOW COVER MAP

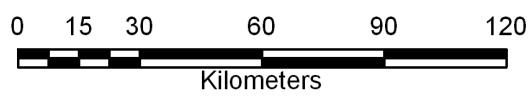
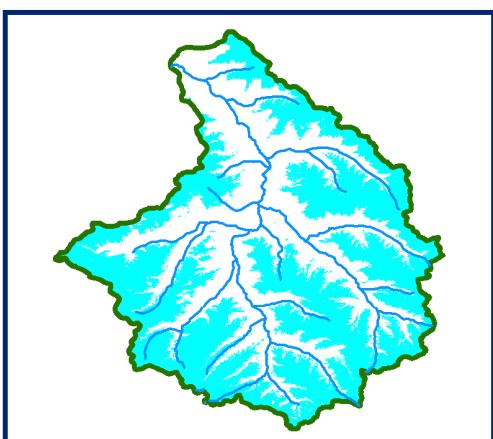
: ASTOR BASIN



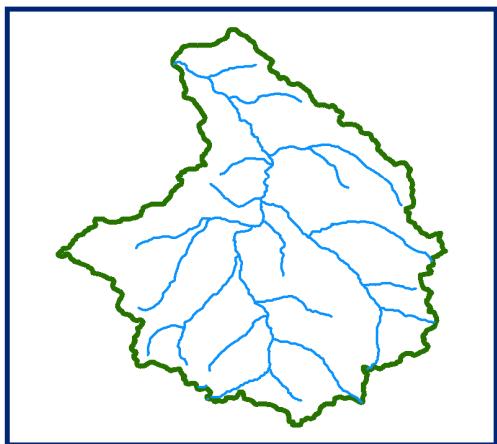
01 MAY 2012



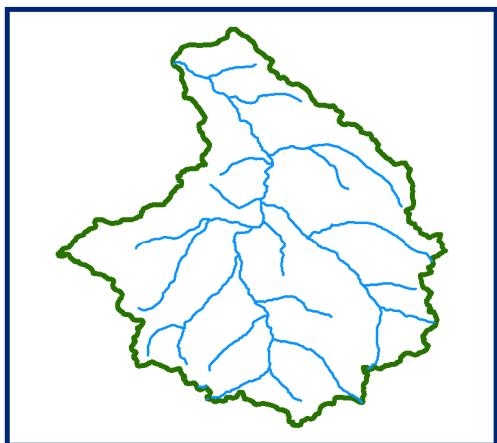
29 MAY 2012



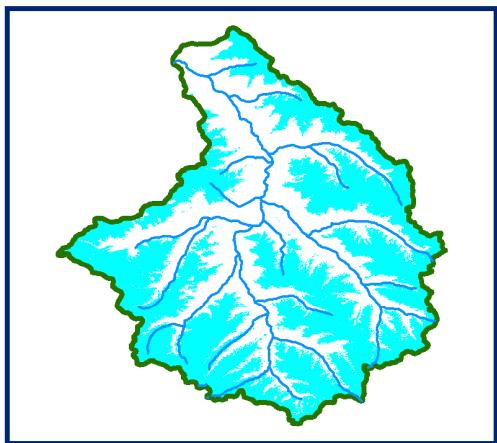
10 DAILY SNOW COVER MAP: ASTOR BASIN



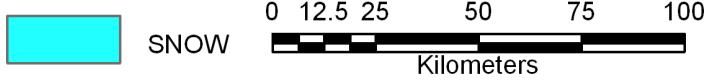
DATA USED
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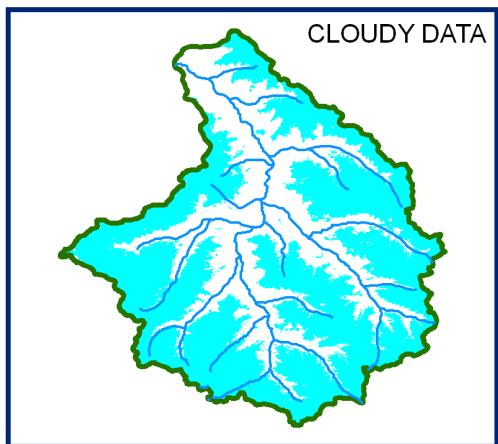
DATA USED
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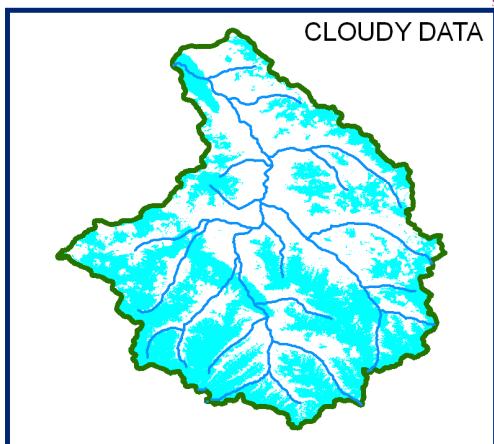
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30 MAY 2012



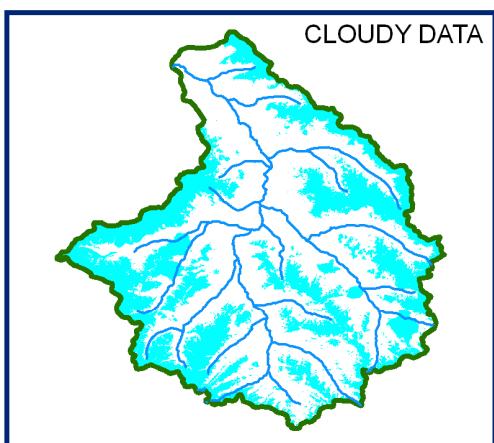
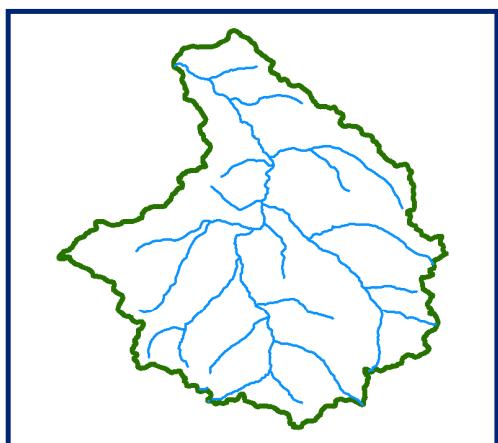
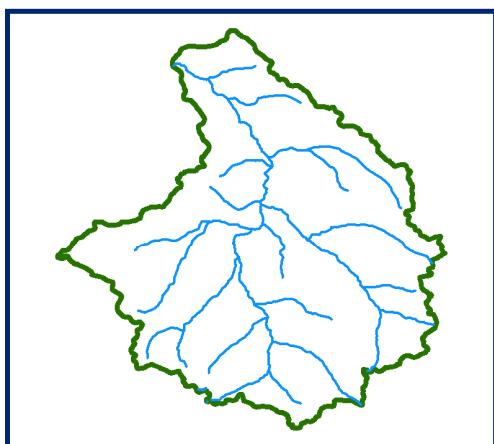
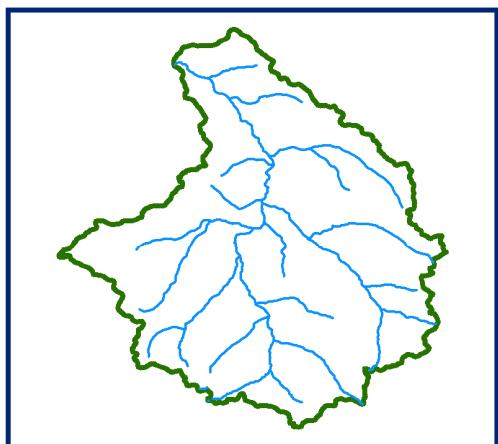
SNOW COVER MAP : ASTOR BASIN



01 JUNE 2012



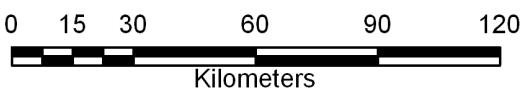
03 JUNE 2012



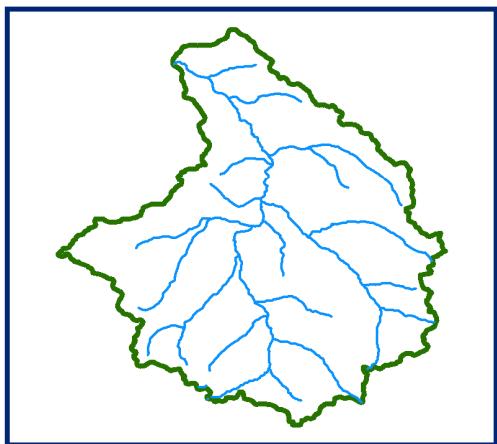
30 JUNE 2012



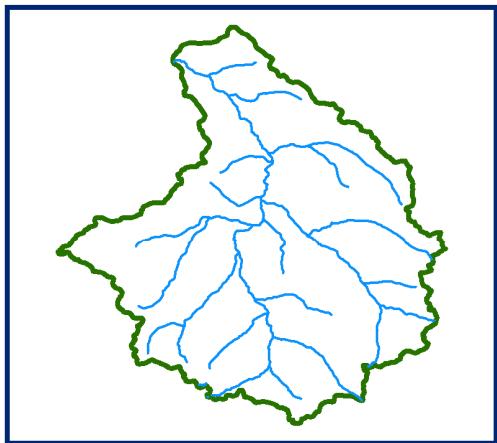
SNOW



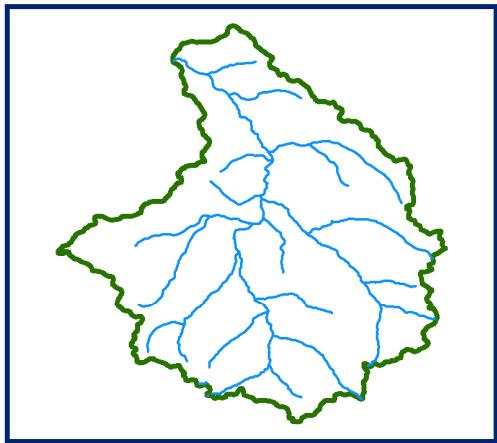
10 DAILY SNOW COVER MAP: ASTOR BASIN



DATA USED
DATA NOT AVAILABLE



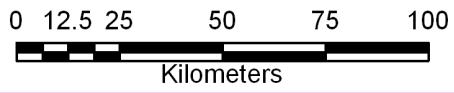
DATA USED
DATA NOT AVAILABLE



DATA USED
DATA NOT AVAILABLE



SNOW



SHIGO BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: SHIGO

BASIN AREA: 5539 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	2-Oct-11	201	4	2	10-Oct-11	1630	29
3	3-Oct-11	147	3	4	15-Oct-11	531	10
November 2011							
5	5-Nov-11	3807	69	6	22-Nov-11	4225	76
7	27-Nov-11	3726	67	8	29-Nov-11	3437	62
December 2011							
9	2-Dec-11	3518	64	10	4-Dec-11	3320	60
11	14-Dec-11	4016	73	12	16-Dec-11	4227	76
13	21-Dec-11	4969	90	14	23-Dec-11	4263	77
15	25-Dec-11	4273	77	16	26-Dec-11	4252	77
17	28-Dec-11	4104	74				
January 2012							
18	2-Jan-12	3907	71	19	12-Jan-12	5222	94
20	21-Jan-12	5523	100				
February 2012							
21	2-Feb-12	5504	99	22	9-Feb-12	5471	99
23	29-Feb-12	5394	97				
March 2012							
24	2-Mar-12	5494	99	25	6-Mar-12	5529	100
26	21-Mar-12	5526	100	27	30-Mar-12	5244	95
28	31-Mar-12	5186	94				
April 2012							
29	4-Apr-12	4916	89	30	5-Apr-12	4886	88
31	14-Apr-12	4744	86	32	19-Apr-12	4473	81
33	24-Apr-12	4222	76				

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
May 2012							
34	1-May-12	3711	67	35	30-May-12	2868	52
34	20-May-12	3029	55				
June 2012							
	3-June-12	2880	52				

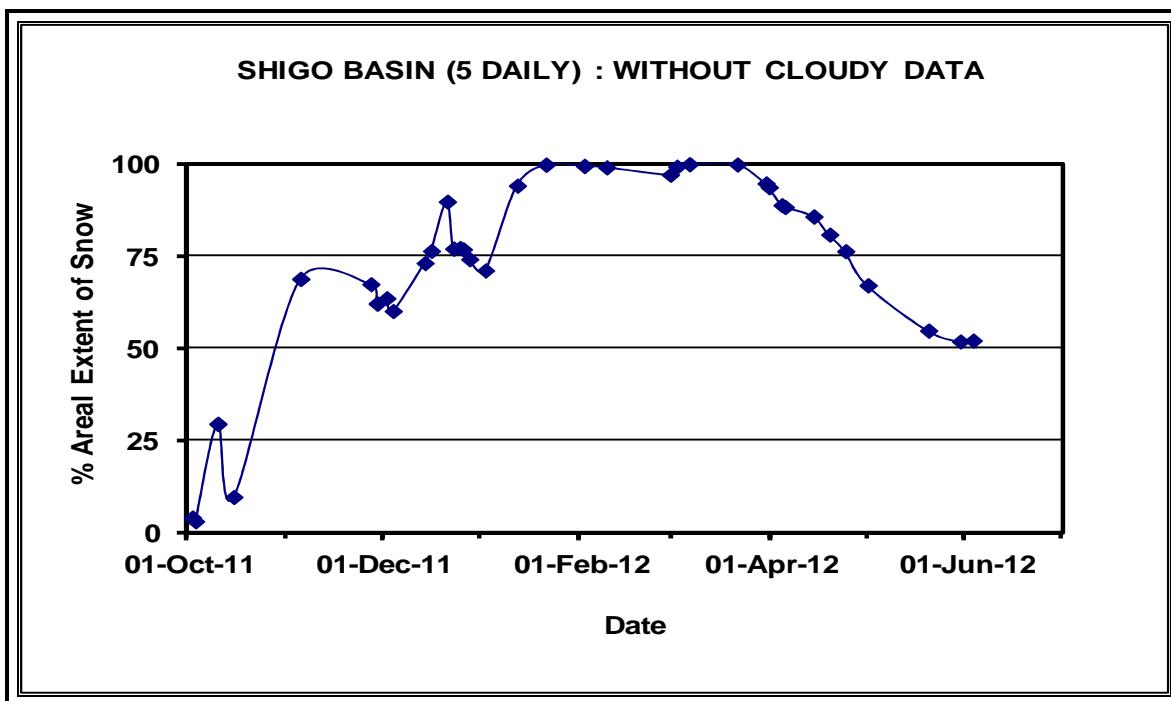
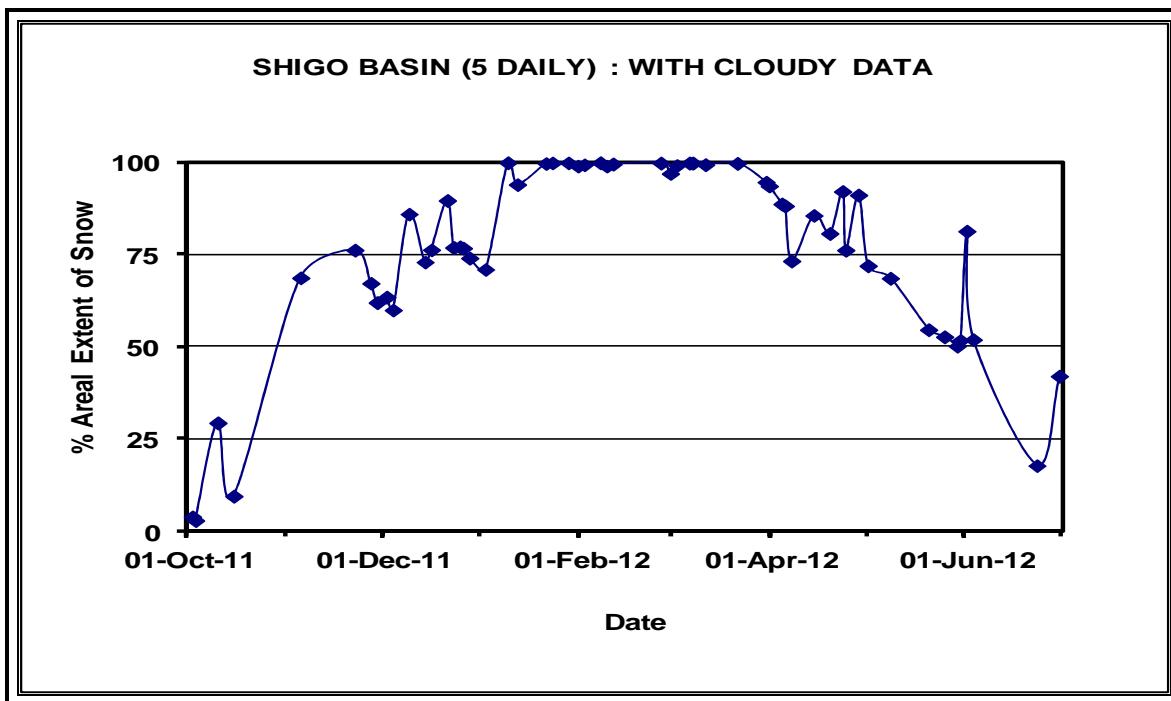
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: SHIGO

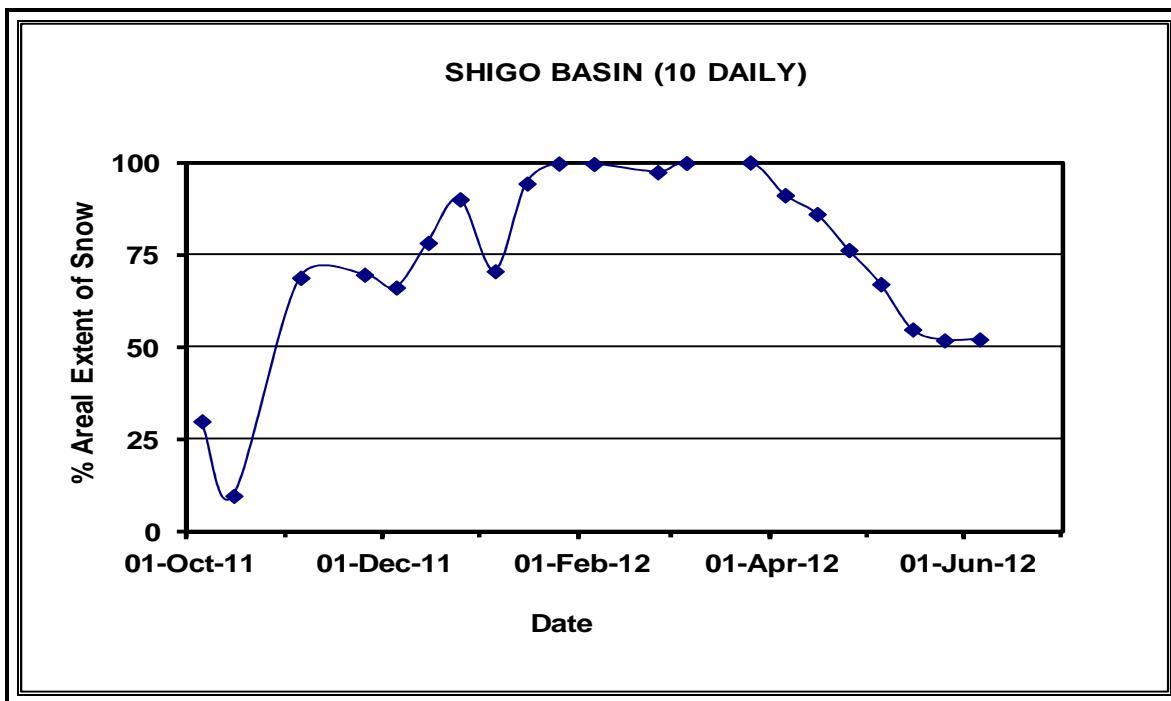
BASIN AREA: 5539 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	10-Oct-11	1651	30	2	15-Oct-11	531	10
November 2011							
3	5-Nov-11	3807	69	4	27-Nov-11	3854	70
December 2011							
5	2-Dec-11	3659	66	6	16-Dec-11	4331	78
7	25-Dec-11		90				
January 2012							
8	2-Jan-12	3907	71	9	12-Jan-12	5222	94
10	21-Jan-12	5523	100				
February 2012							
11	9-Feb-12	5517	100	12	29-Feb-12	5394	97
March 2012							
13	2-Mar-12	5531	100	14	30-Mar-12	5277	95
April 2012							
15	4-Apr-12	5047	91	16	19-Apr-12	4763	86
May 2012							
17	5-May-12	3711	67	18	15-May-12	3046	55
18	25-May-12	2880	52				
June 2012							
19	5-June-12	2880	52				

Snow cover depletion curve



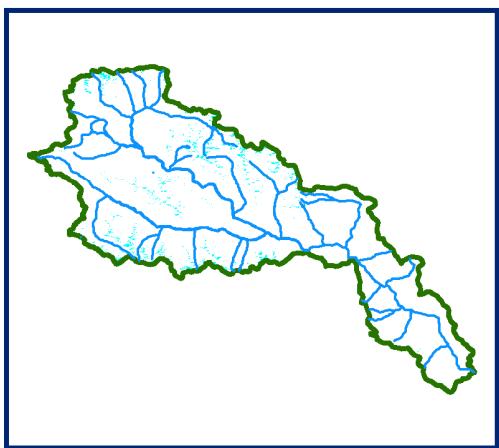
Snow cover depletion curve



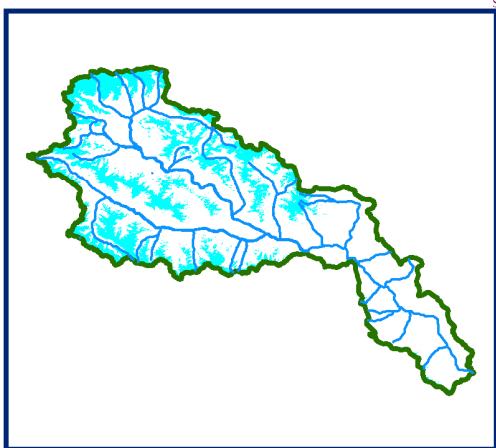
SNOW COVER MAP

SNOW COVER MAP

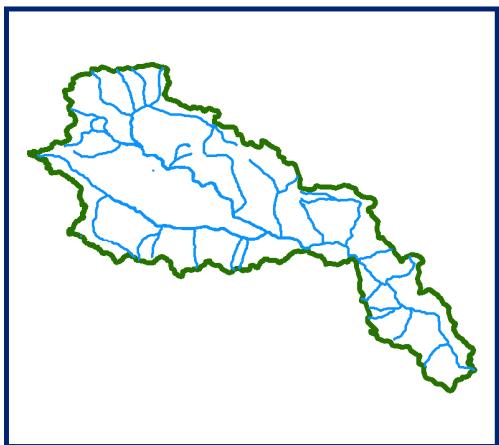
: SHIGO BASIN



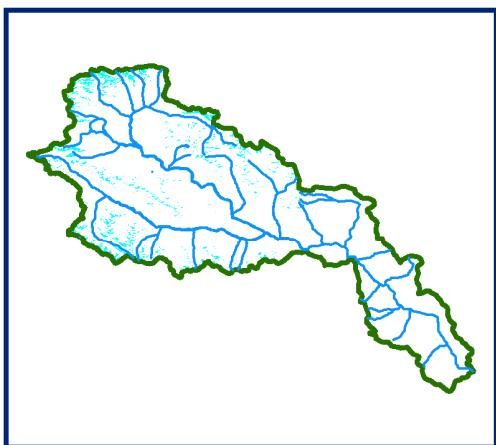
03 OCTOBER 2011



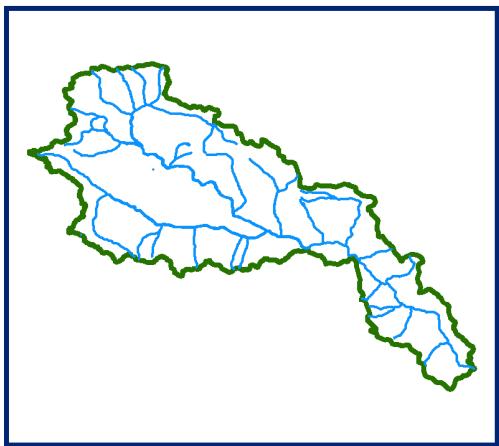
10 OCTOBER 2011



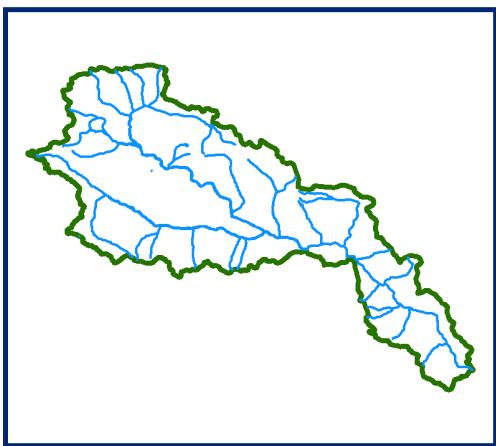
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15 OCTOBER 2011



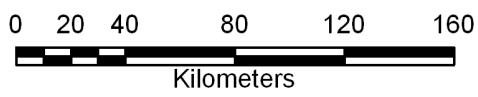
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DATA NOT AVAILABLE

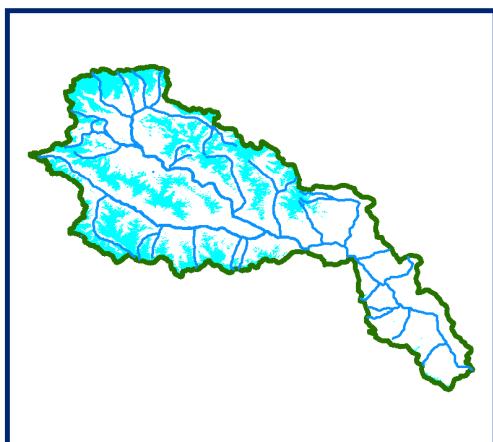


SNOW

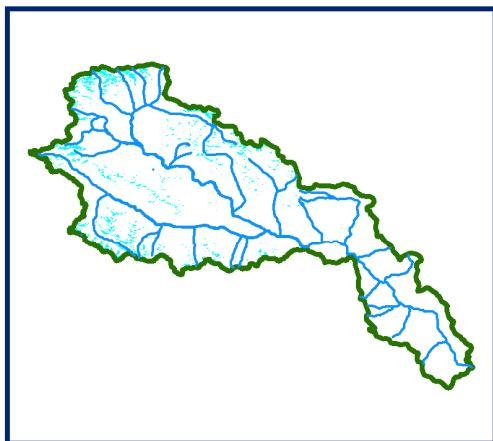


Kilometers

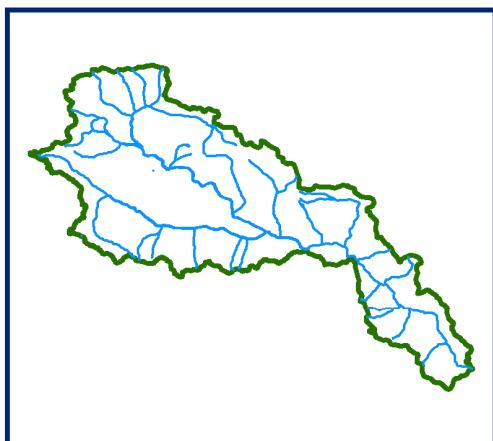
10 DAILY SNOW COVER MAP: SHIGO BASIN



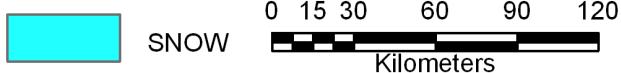
DATA USED
02 OCTOBER 2011
03 OCTOBER 2011
10 OCTOBER 2011



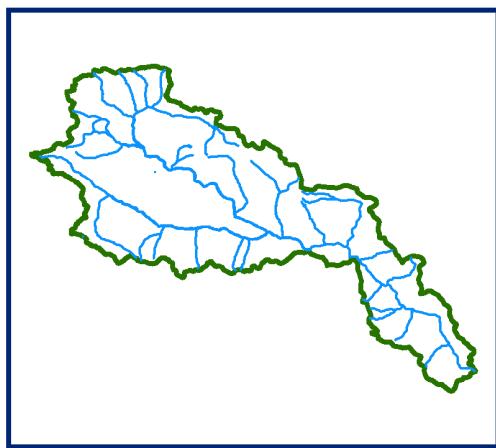
DATA USED
15 OCTOBER 2011



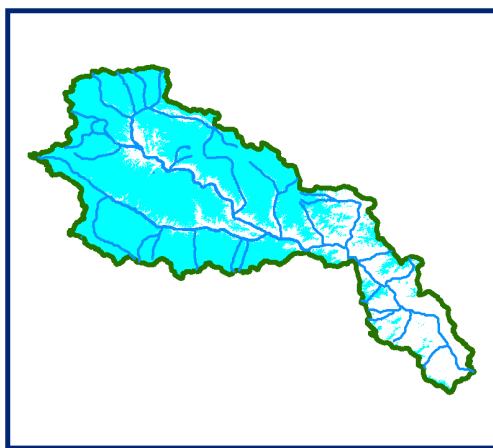
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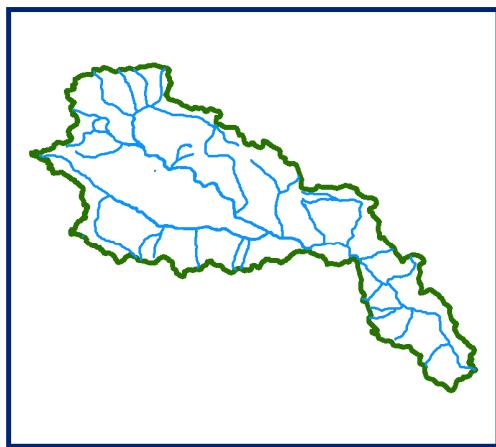
SNOW COVER MAP : SHIGO BASIN



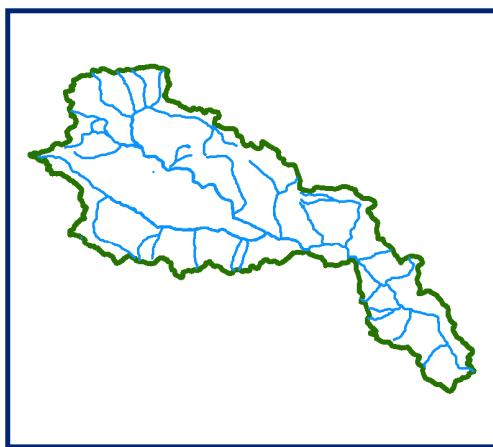
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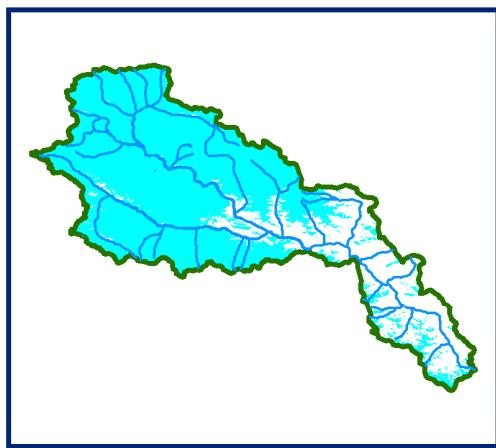
05 NOVEMBER 2011



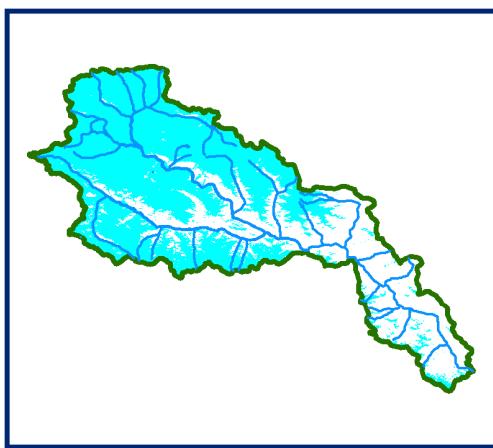
DATA NOT AVAILABLE



DATA NOT AVAILABLE



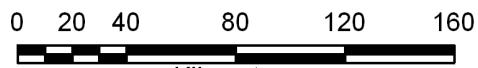
22 NOVEMBER 2011



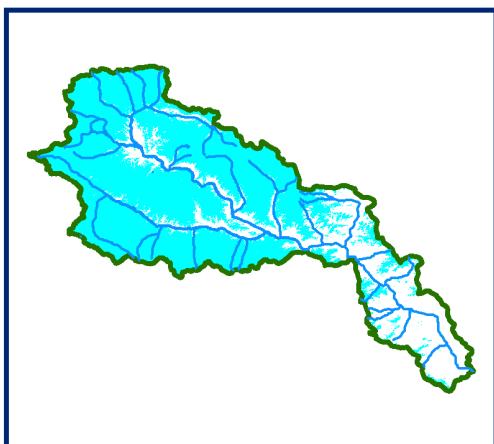
27 NOVEMBER 2011



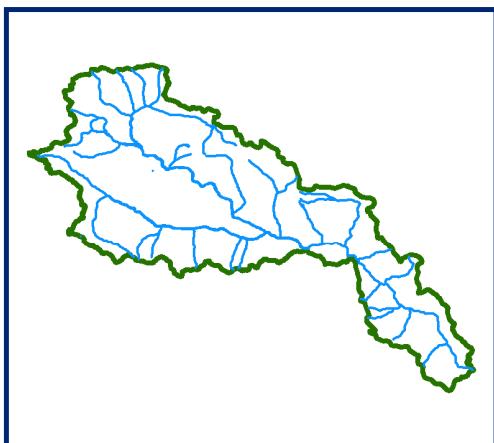
SNOW



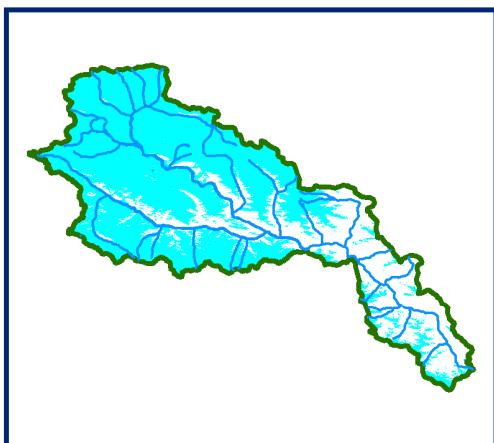
10 DAILY SNOW COVER MAP: SHIGO BASIN



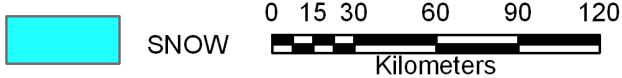
DATA USED
05 NOVEMBER 2011



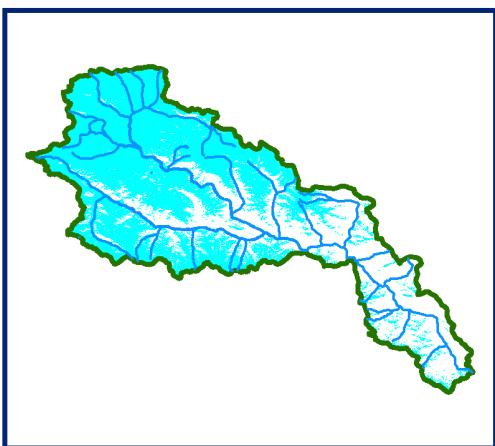
DATA USED
DATA NOT AVAILABLE



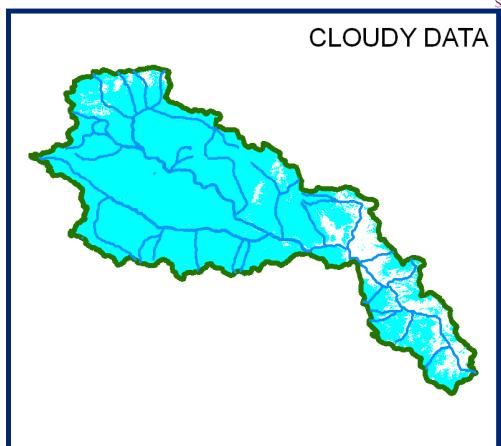
DATA USED
27 NOVEMBER 2011
29 NOVEMBER 2011



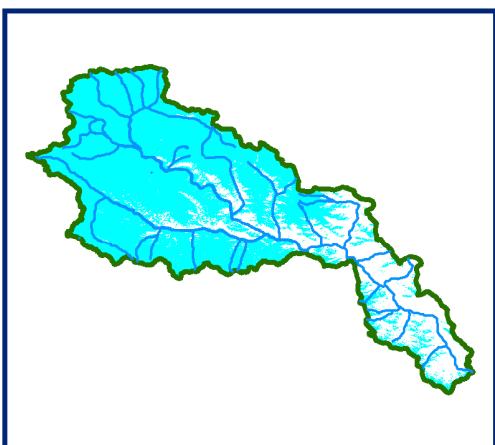
SNOW COVER MAP : SHIGO BASIN



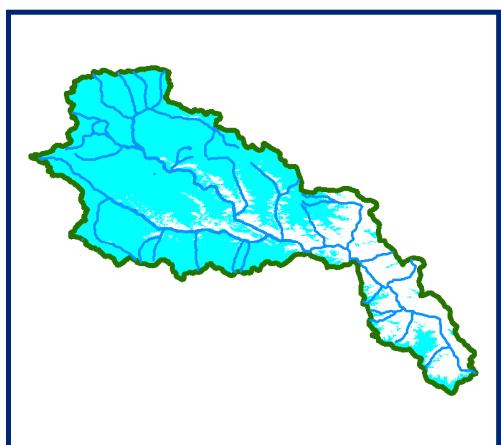
04 DECEMBER 2011



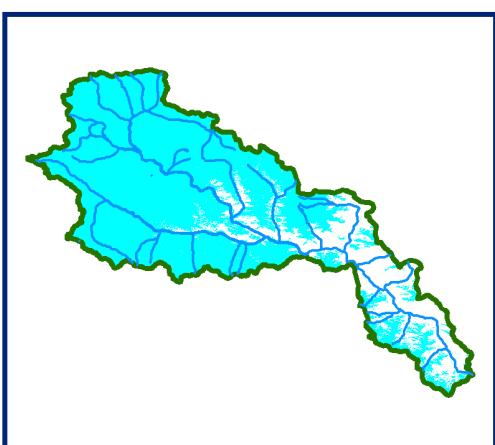
09 DECEMBER 2011



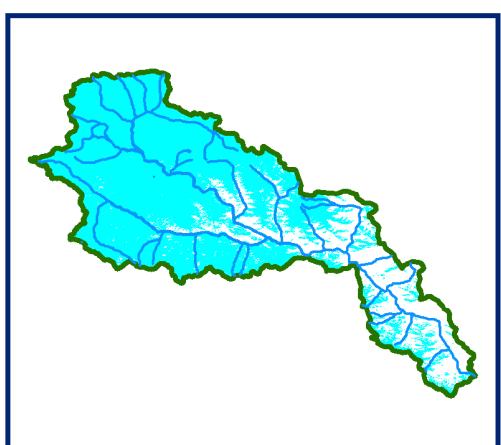
14 DECEMBER 2011



16 DECEMBER 2011



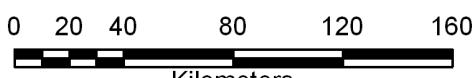
23 DECEMBER 2011



28 DECEMBER 2011

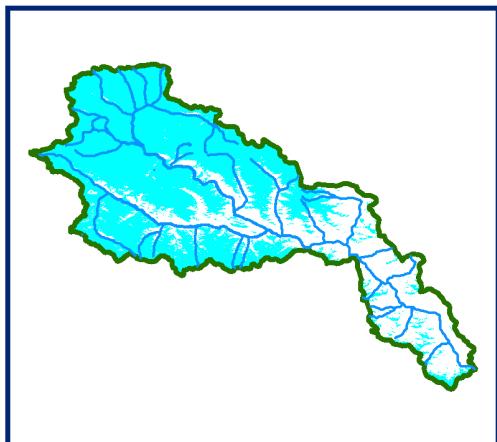
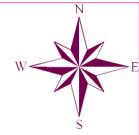


SNOW

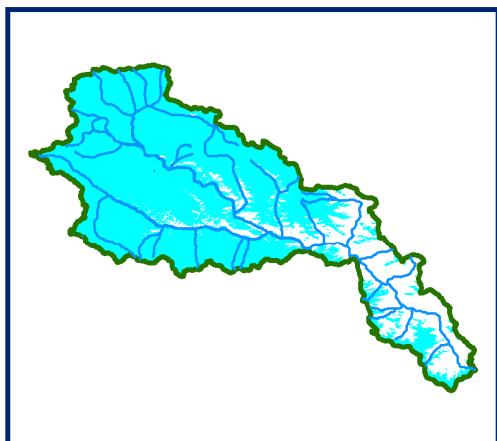


Kilometers

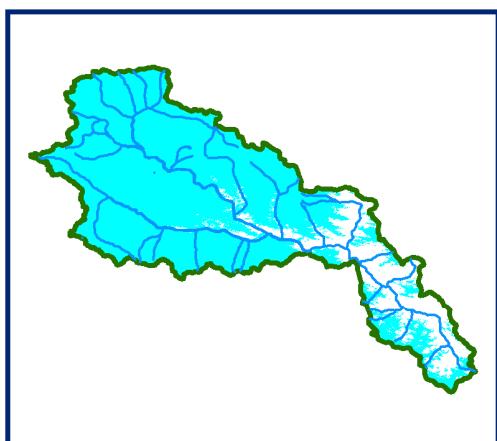
10 DAILY SNOW COVER MAP: SHIGO BASIN



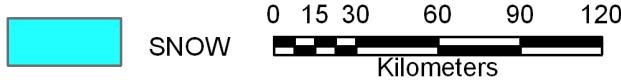
DATA USED
02 DECEMBER 2011
04 DECEMBER 2011



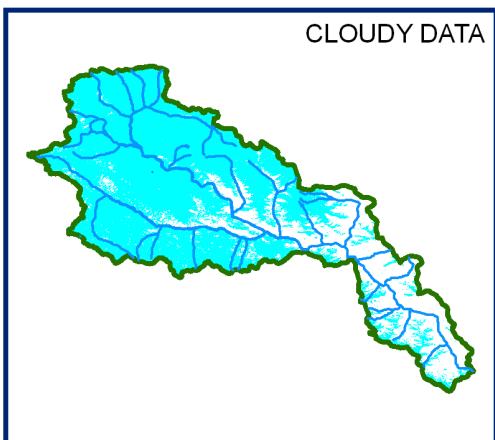
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14 DECEMBER 2011
16 DECEMBER 2011



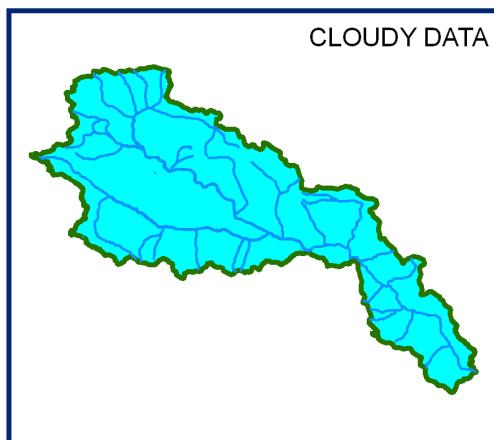
DATA USED
25 DECEMBER 2011
26 DECEMBER 2011



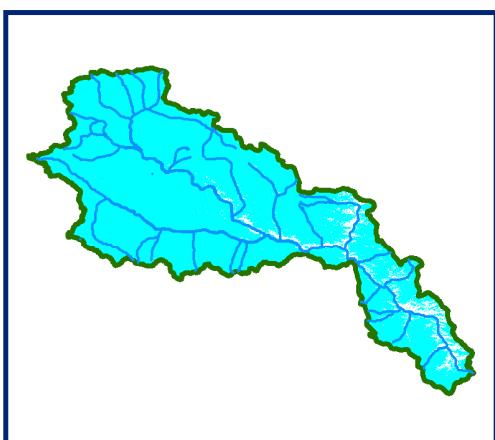
SNOW COVER MAP : SHIGO BASIN



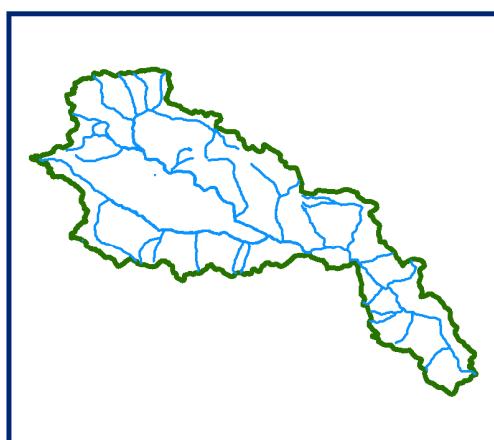
02 JANUARY 2012



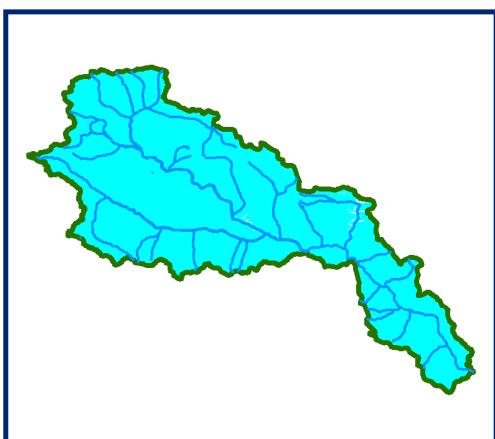
09 JANUARY 2012



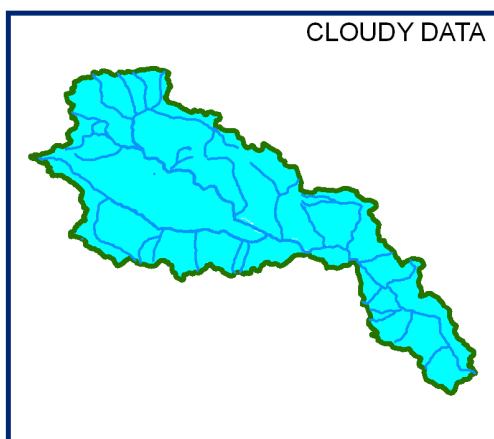
12 JANUARY 2012



DATA NOT AVAILABLE



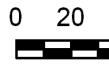
21 JANUARY 2012



28 JANUARY 2012



SNOW



0

20

40

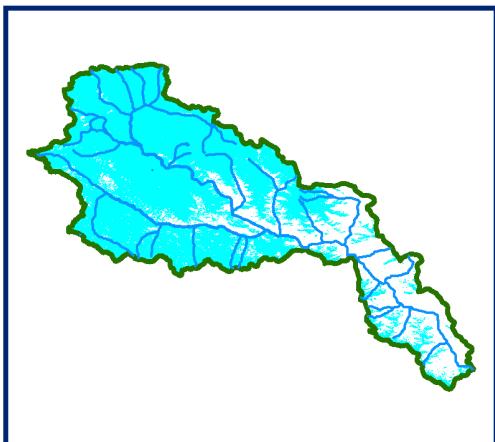
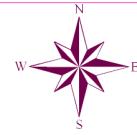
80

120

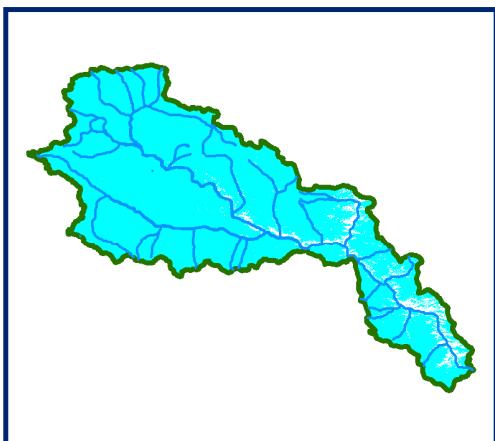
160

Kilometers

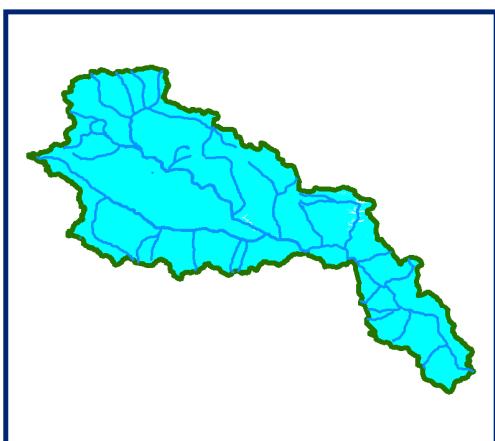
10 DAILY SNOW COVER MAP: SHIGO BASIN



DATA USED
02 JANUARY 2012



DATA USED
12 JANUARY 2012

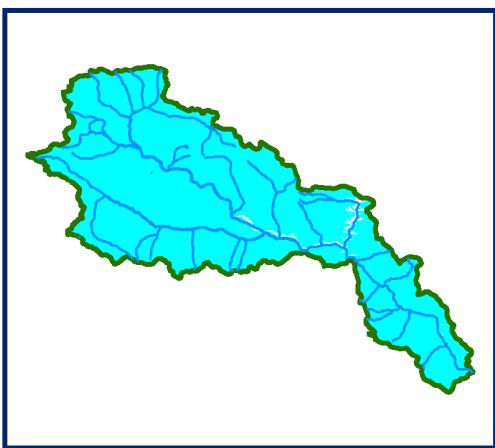
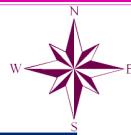


DATA USED
21 JANUARY 2012

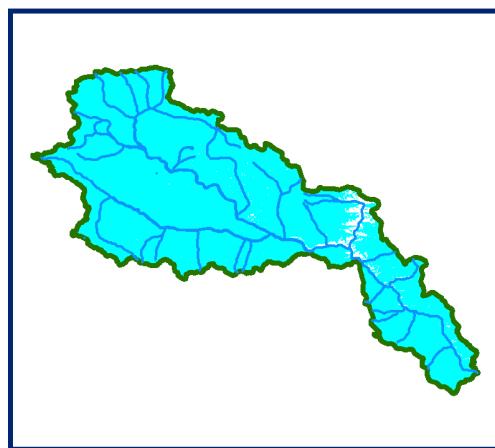


SNOW COVER MAP

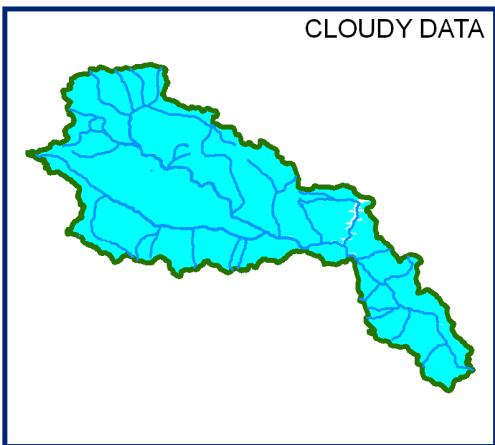
: SHIGO BASIN



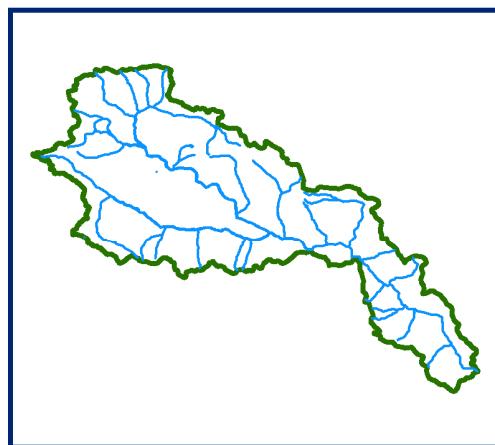
02 FEBRUARY 2012



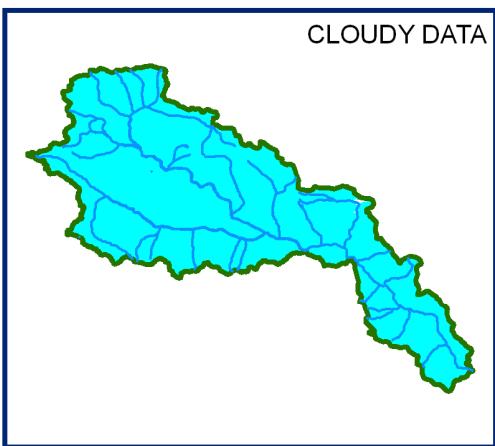
09 FEBRUARY 2012



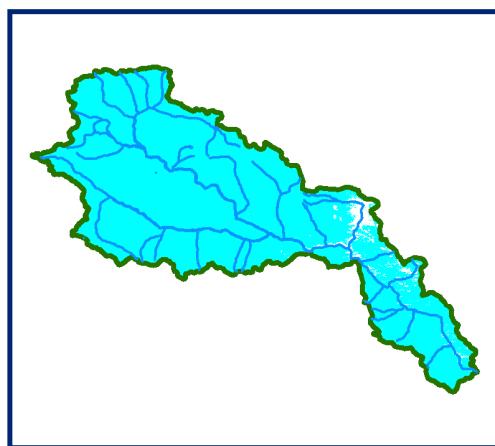
11 FEBRUARY 2012



DATA NOT AVAILABLE



26 FEBRUARY 2012



29 FEBRUARY 2012

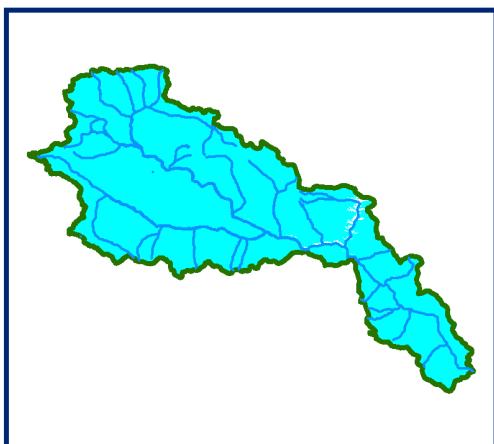


SNOW

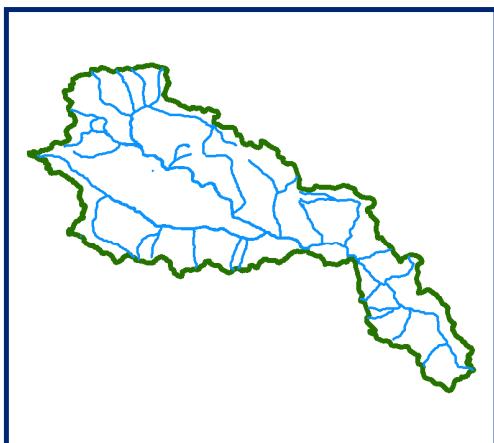
0 20 40 80 120 160

Kilometers

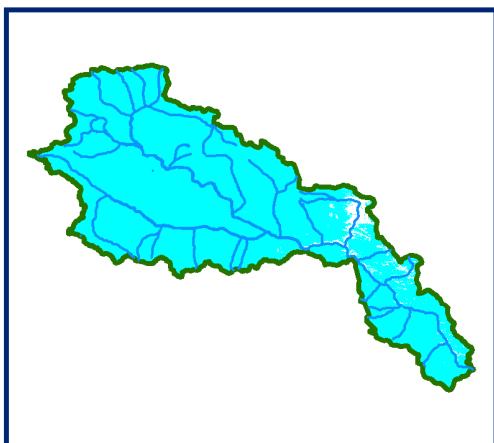
10 DAILY SNOW COVER MAP: SHIGO BASIN



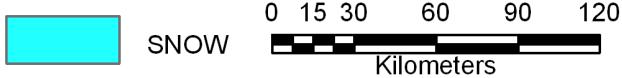
DATA USED
02 FEBRUARY 2012
09 FEBRUARY 2012



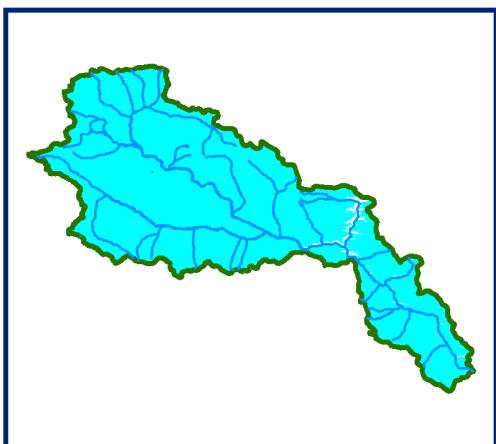
DATA USED
DATA NOT AVAILABLE



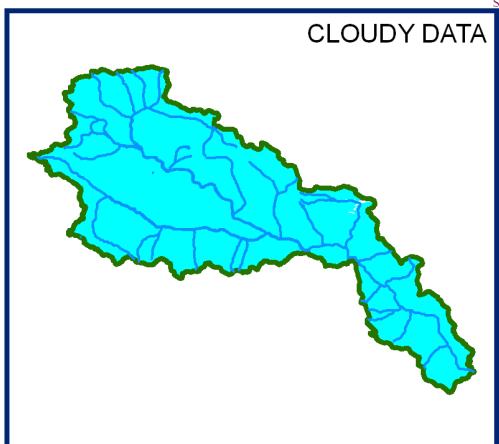
DATA USED
29 FEBRUARY 2012



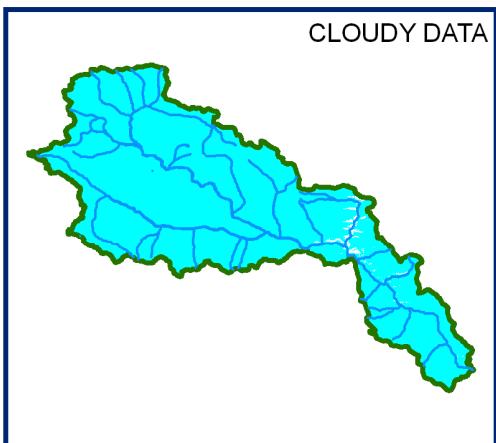
SNOW COVER MAP : SHIGO BASIN



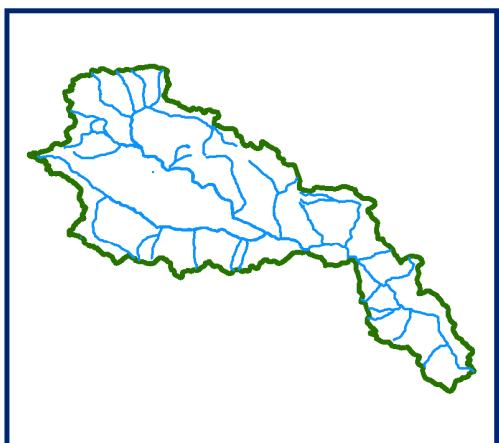
01 MARCH 2012



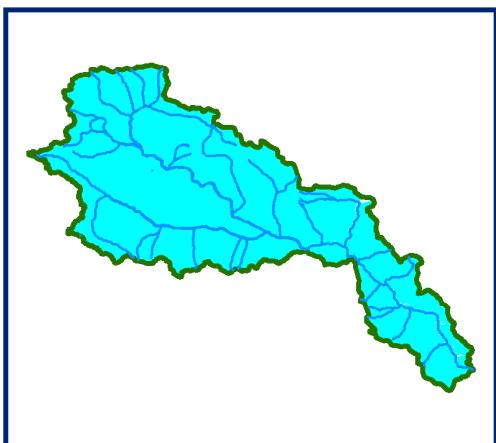
06 MARCH 2012



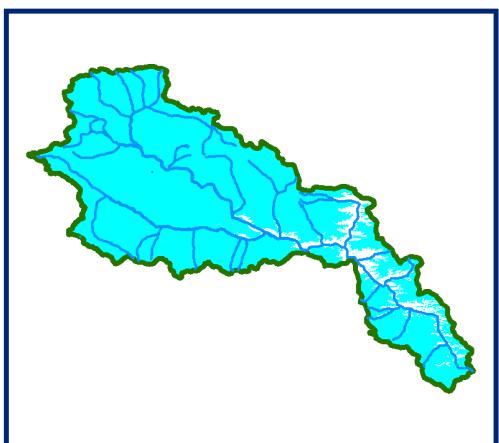
CLOUDY DATA
11 MARCH 2012



DATA NOT AVAILABLE



21 MARCH 2012



30 MARCH 2012

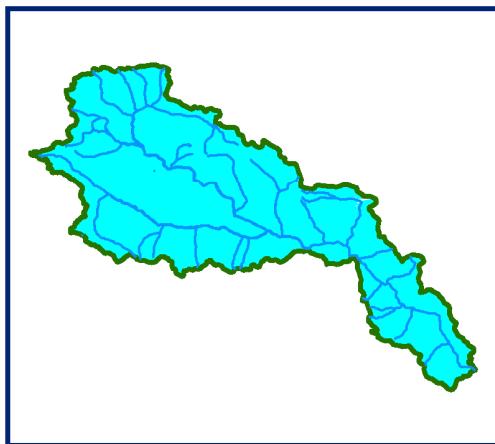


SNOW

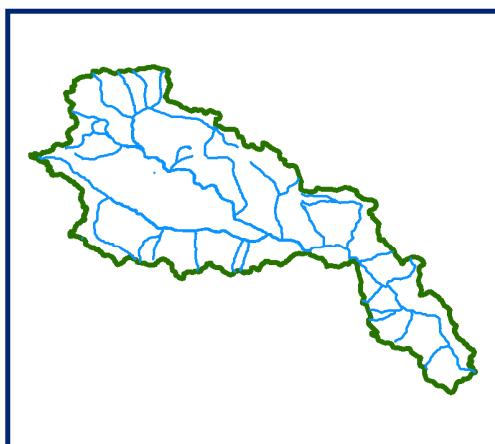
0 20 40 80 120 160

Kilometers

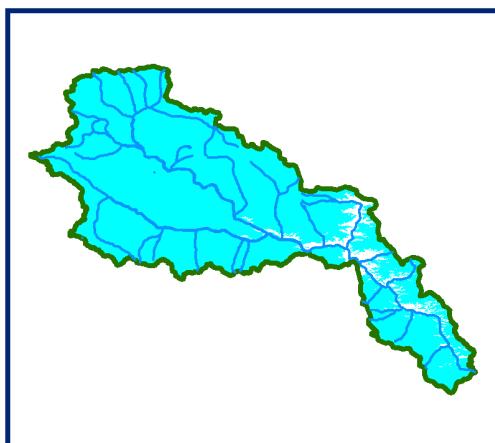
10 DAILY SNOW COVER MAP: SHIGO BASIN



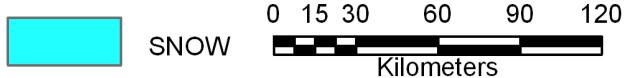
DATA USED
02 MARCH 2012
06 MARCH 2012



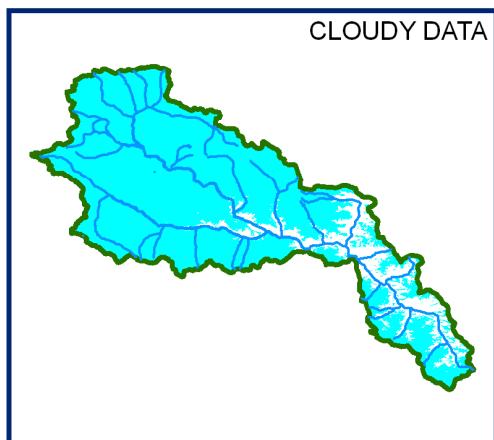
DATA USED
DATA NOT AVAILABLE



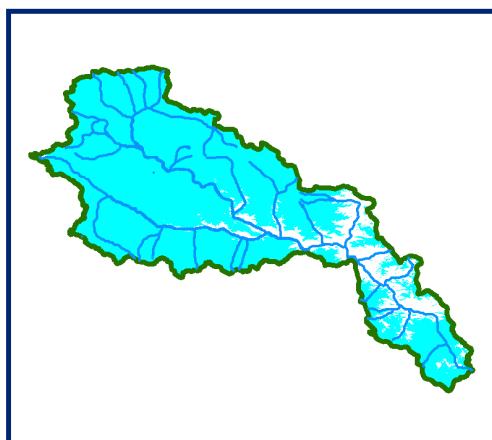
DATA USED
30 MARCH 2012
31 MARCH 2012



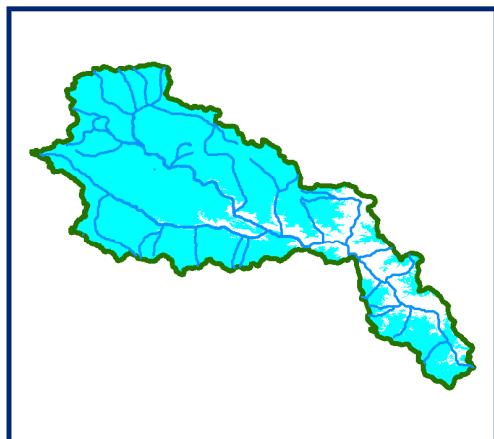
SNOW COVER MAP : SHIGO BASIN



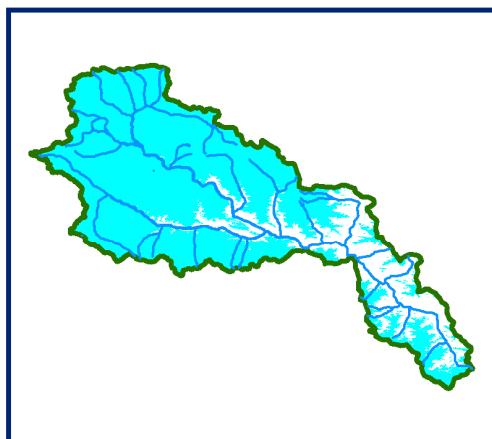
04 APRIL 2012



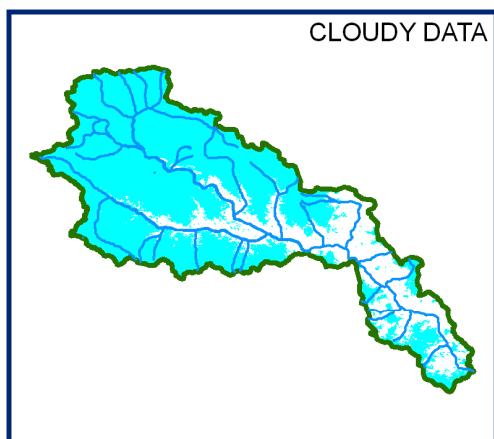
05 APRIL 2012



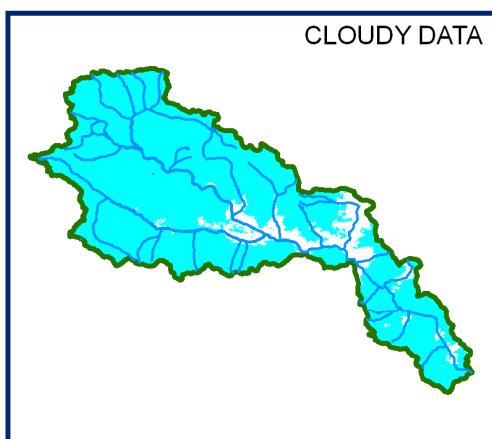
14 APRIL 2012



19 APRIL 2012



24 APRIL 2012



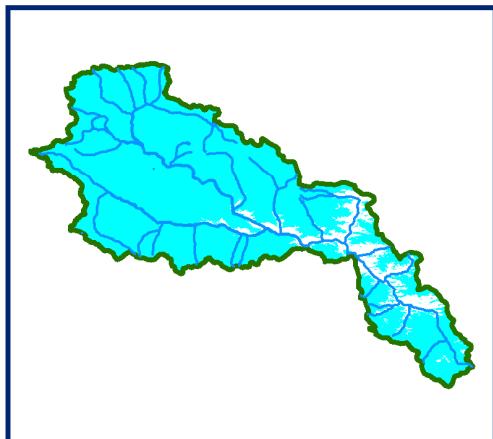
28 APRIL 2012



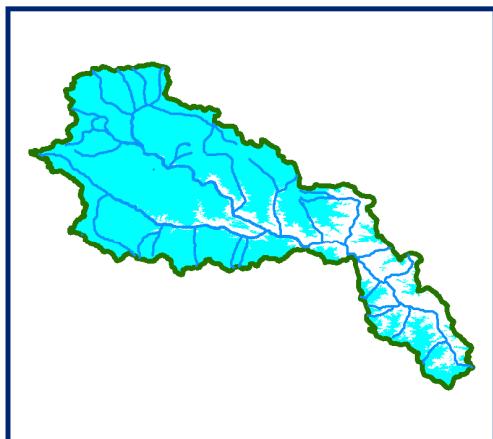
SNOW



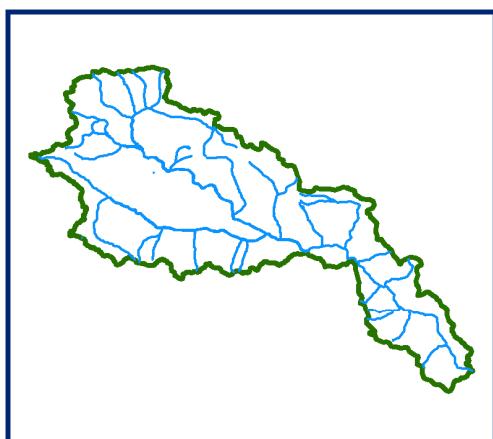
10 DAILY SNOW COVER MAP: SHIGO BASIN



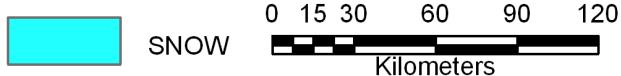
DATA USED
04 APRIL 2012
05 APRIL 2012



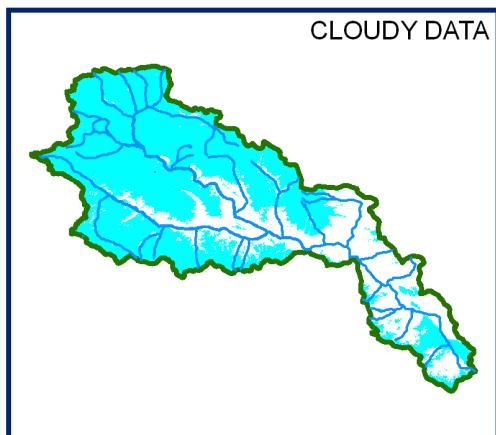
DATA USED
19 APRIL 2012



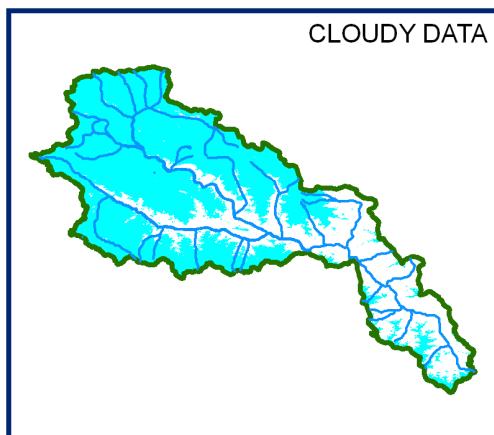
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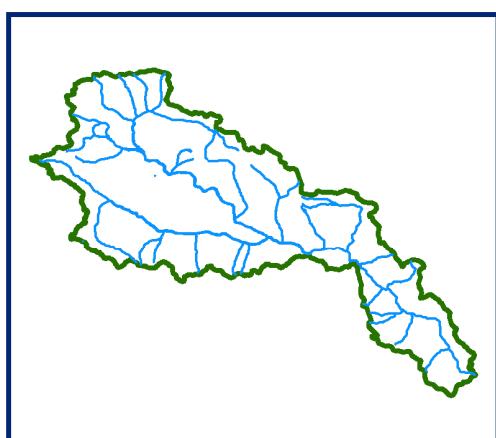
SNOW COVER MAP : SHIGO BASIN



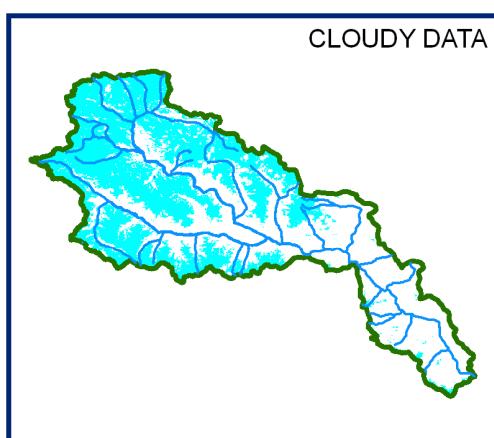
01 MAY 2012



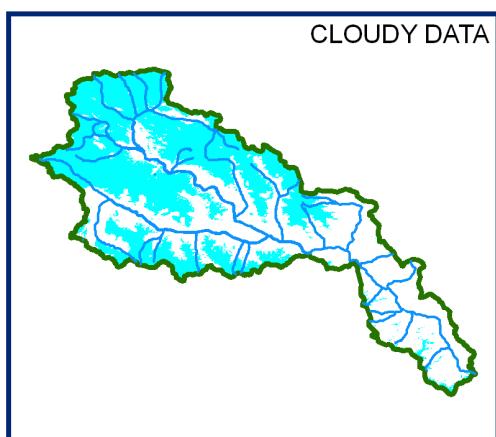
08 MAY 2012



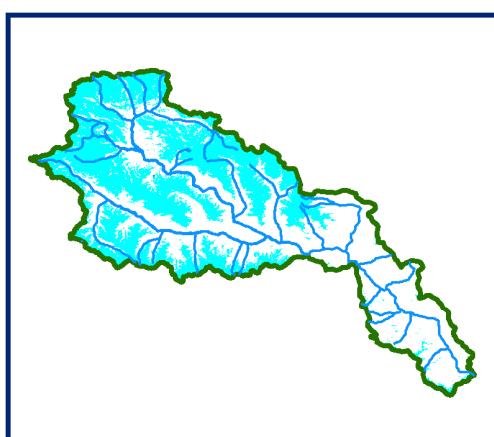
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20 MAY 2012



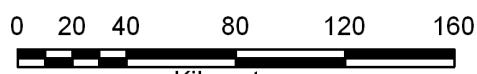
25 MAY 2012



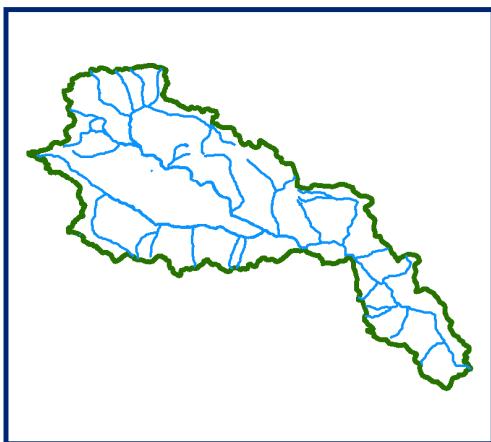
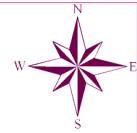
30 MAY 2012



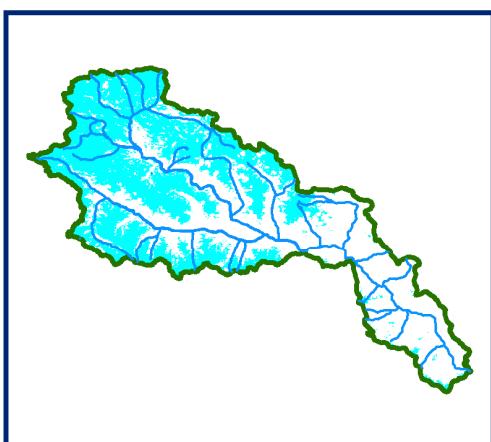
SNOW



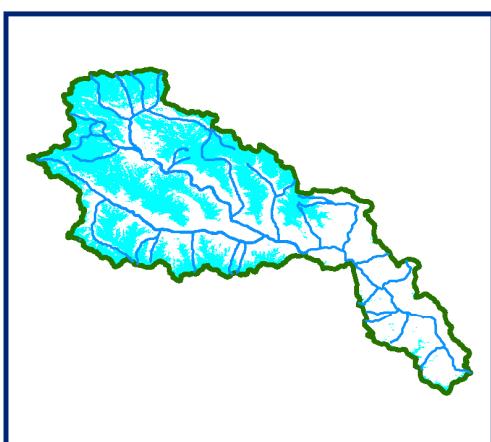
10 DAILY SNOW COVER MAP: SHIGO BASIN



DATA USED
DATA NOT AVAILABLE



DATA USED
20 MAY 2012



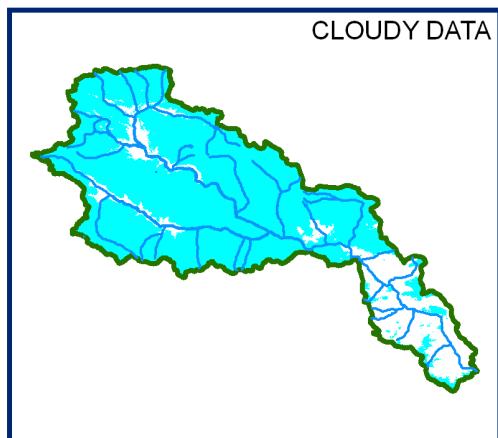
DATA USED
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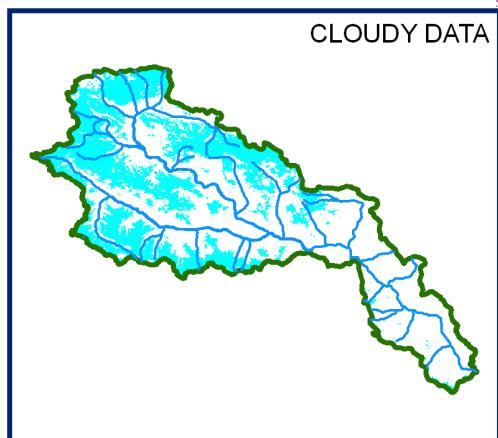
SNOW



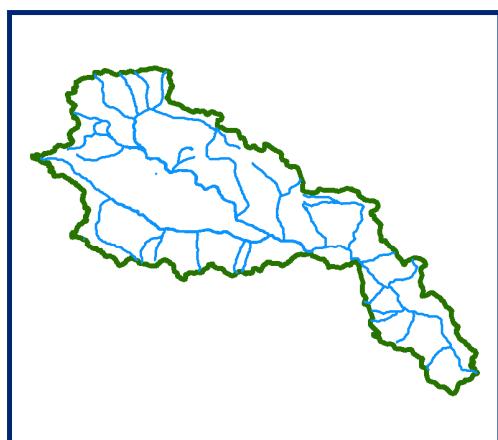
SNOW COVER MAP : SHIGO BASIN



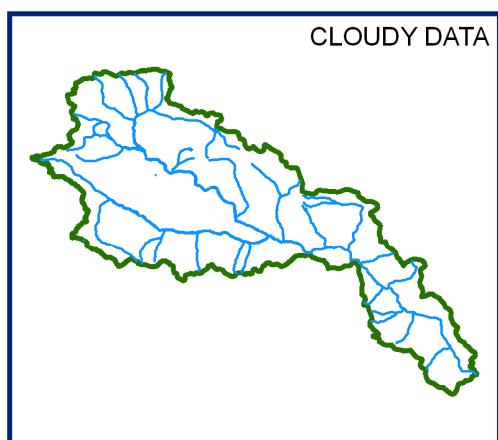
01 JUNE 2012



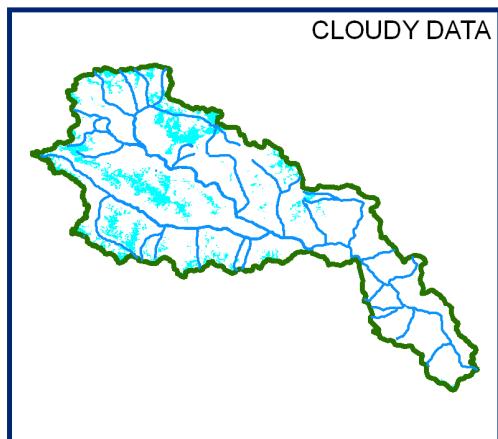
03 JUNE 2012



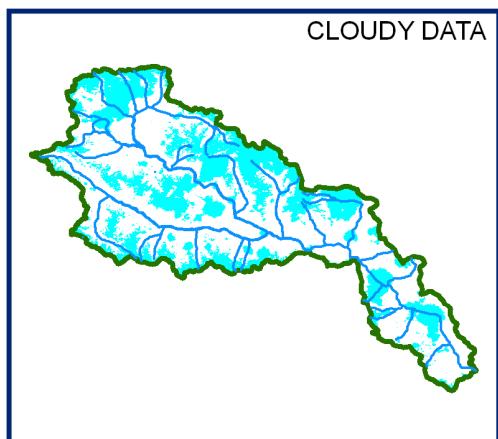
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DATA NOT AVAILABLE



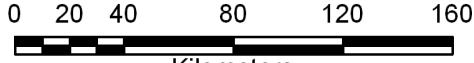
23 JUNE 2012



30 JUNE 2012

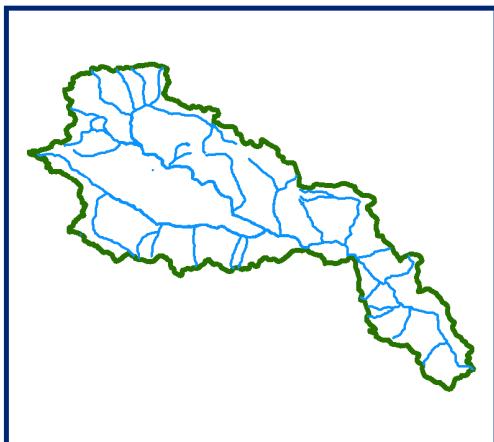


SNOW

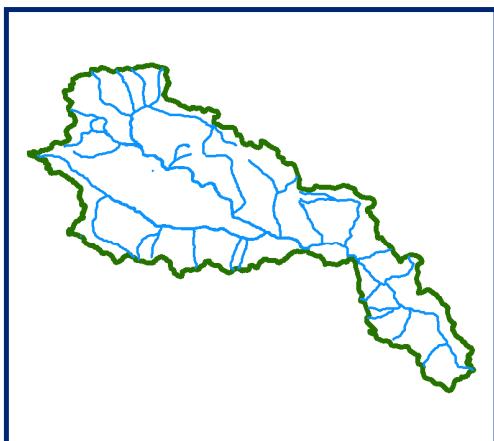


Kilometers

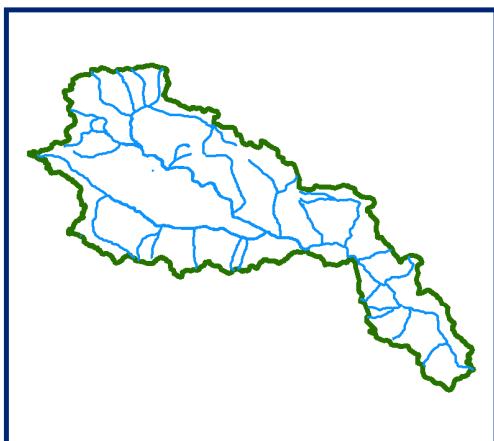
10 DAILY SNOW COVER MAP: SHIGO BASIN



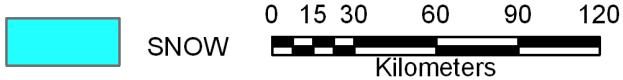
DATA USED
DATA NOT AVAILABLE



DATA USED
DATA NOT AVAILABLE



DATA USED
DATA NOT AVAILABLE



DRAS BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: DRASS

BASIN AREA: 1683 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	2-Oct-11	219	13	2	10-Oct-11	742	44
3	3-Oct-11	269	16	4	15-Oct-11	409	24
November 2011							
5	5-Nov-11	1517	90	6	13-Nov-11	1448	86
7	27-Nov-11	1271	76	8	29-Nov-11	1141	68
December 2011							
9	2-Dec-11	1213	72	10	4-Dec-11	1097	65
11	9-Dec-11	1643	98	12	14-Dec-11	1683	91
13	16-Dec-11	1579	94	14	21-Dec-11	1652	98
15	23-Dec-11	1585	94	16	25-Dec-11	1606	95
17	26-Dec-11	1587	94	18	28-Dec-11	1511	90
19	30-Dec-11	1575	94	20	31-Dec-11	1560	93
January 2012							
21	11-Jan-12	1683	100	22	12-Jan-12	1657	98
23	21-Jan-12	1683	100	24	24-Jan-12	1683	100
25	30-Jan-12	1683	100				
February 2012							
26	2-Feb-12	1683	100	27	9-Feb-12	1683	100
28	29-Feb-12	1683	100				
March 2012							
29	2-Mar-12	1683	100	30	21-Mar-12	1683	100
31	30-Mar-12	1650	98	32	31-Mar-12	1647	98
April 2012							
33	4-Apr-12	1603	95	34	19-Apr-12	1517	90
35	24-Apr-12	1395	83				

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
May 2012							
36	1-May-12	1305	78	37	3-May-12	1335	79
38	23-May-12	1278	76	39	30-May-12	978	58
June 2012							
40	4-Jun-12	857	51	41	16-Jun-12	857	51
42	22-Jun-12	726	43				

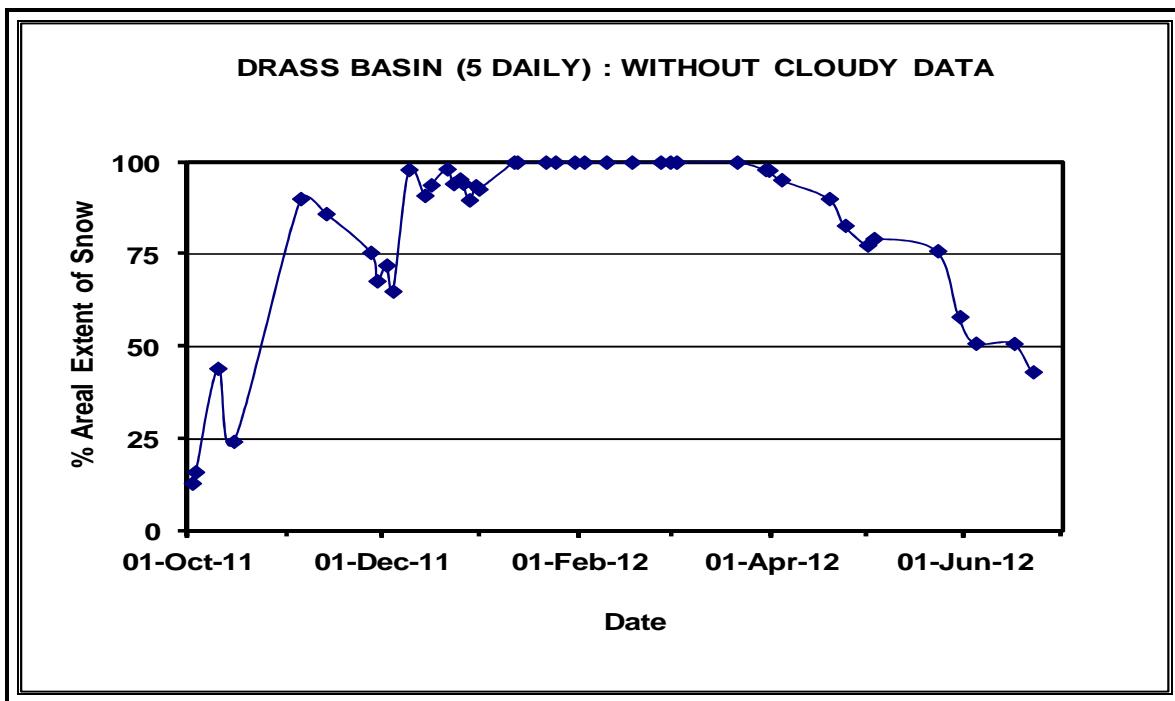
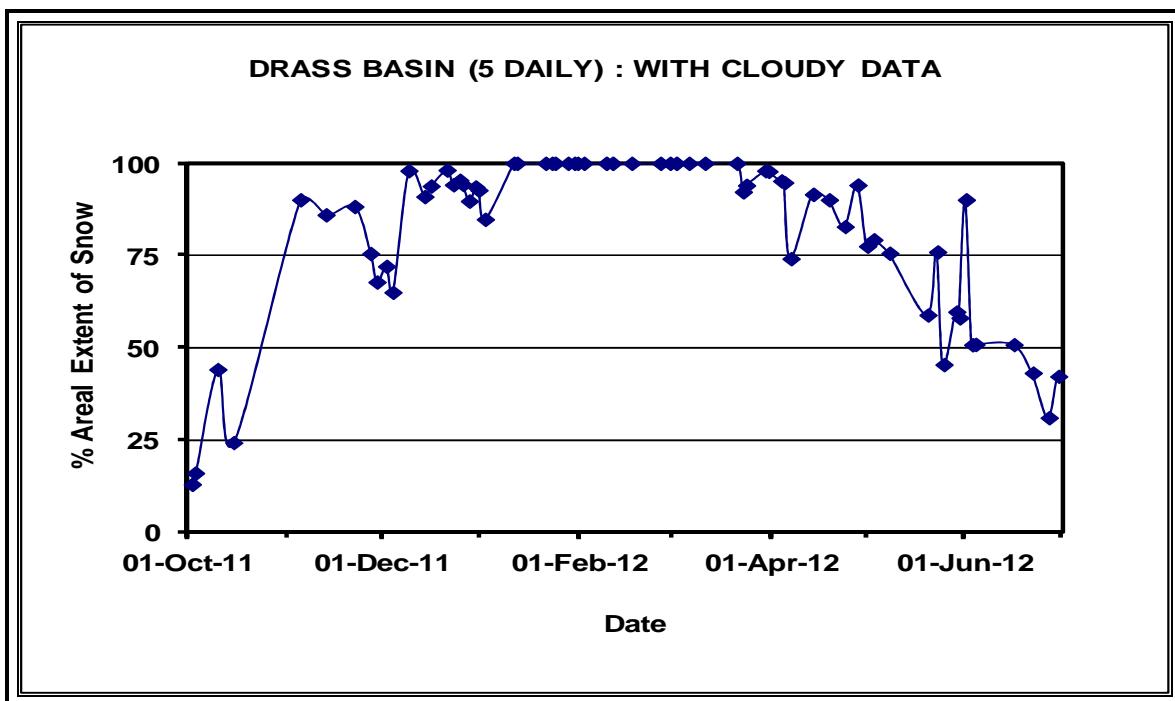
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: DRASS

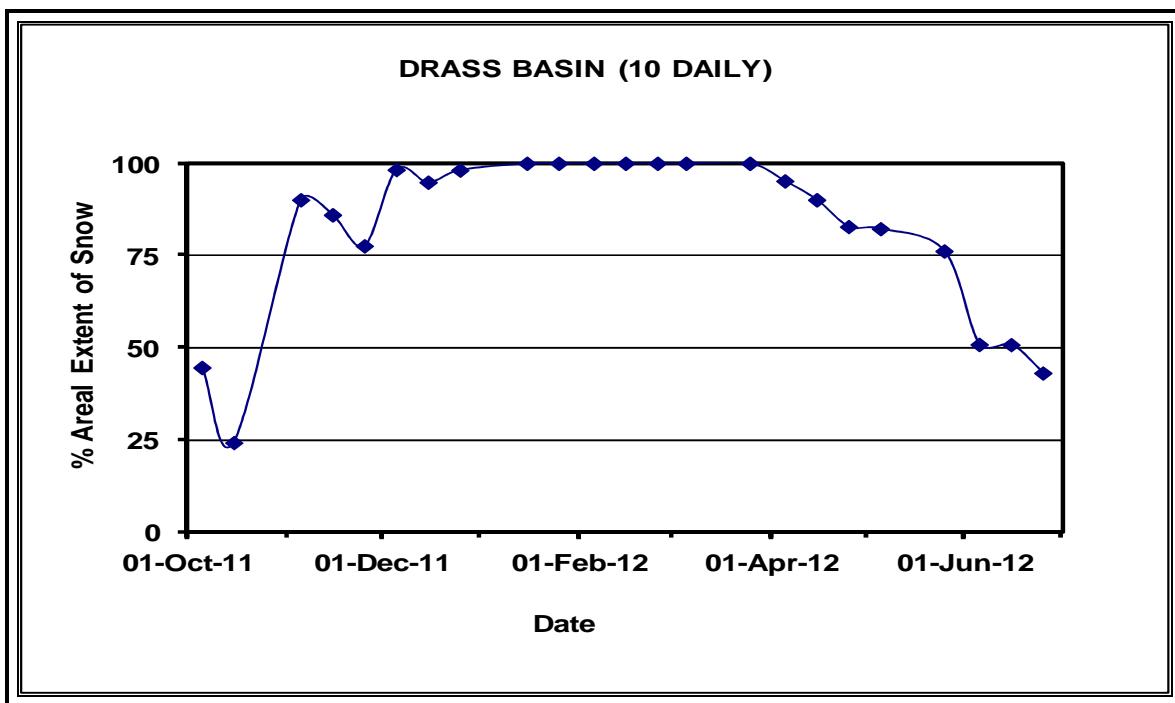
BASIN AREA: 1683 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	10-Oct-11	751	45	2	15-Oct-11	409	24
November 2011							
3	5-Nov-11	1517	90	4	13-Nov-11	1448	86
5	27-Nov-11	1306	78				
December 2011							
6	9-Dec-11	1654	98	7	16-Dec-11	1597	95
8	21-Dec-11	1653	98				
January 2012							
9	12-Jan-12	1683	100	10	21-Jan-12	1683	100
February 2012							
11	9-Feb-12	1683	100	12	15-Feb-12	1683	100
13	29-Feb-12	1683	100				
March 2012							
13	2-Mar-12	1683	100	14	31-Mar-12	1683	100
April 2012							
15	4-Apr-12	1603	95	16	19-Apr-12	1517	90
17	25-Apr-12	1389	83				
May 2012							
17	3-May-12	1385	82	18	23-May-12	1283	76
June 2012							
19	4-Jun-12	857	51	20	15-Jun-12	857	51
19	25-Jun-12	726	43				

Snow cover depletion curve

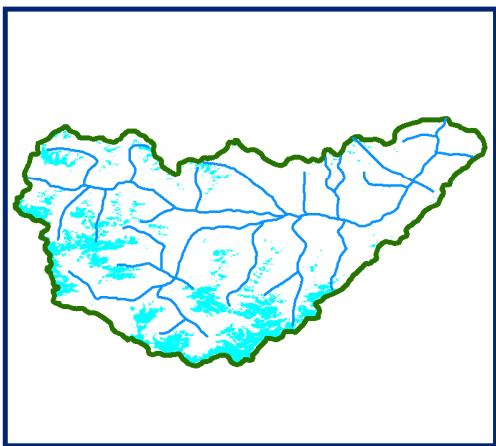


Snow cover depletion curve

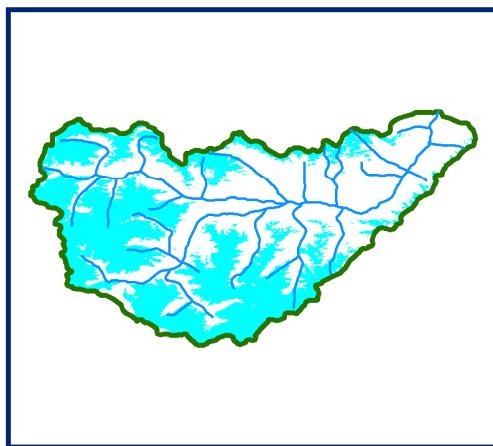


SNOW COVER MAP

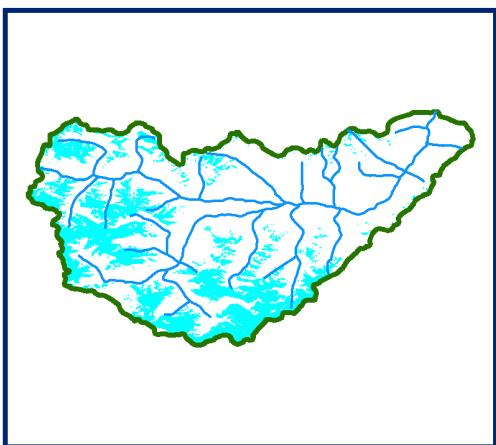
SNOW COVER MAP : DRASS BASIN



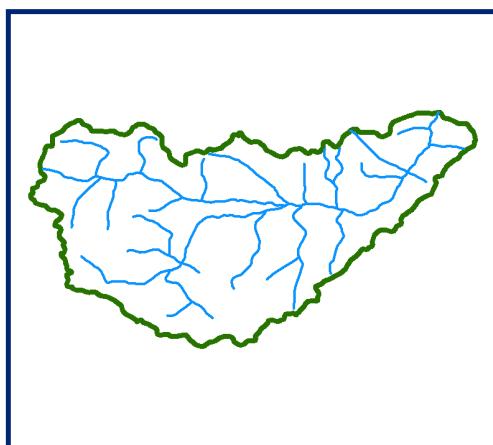
03 OCTOBER 2011



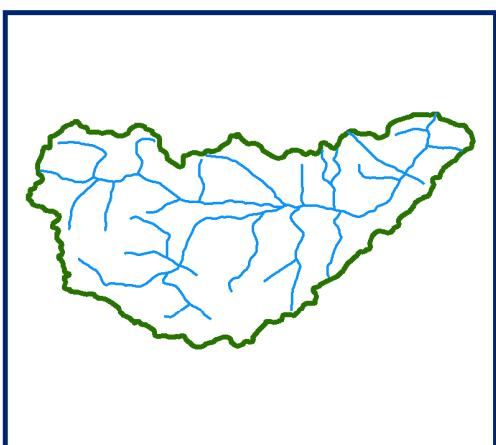
10 OCTOBER 2011



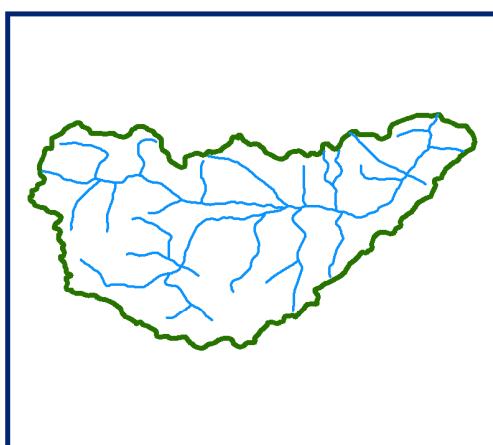
15 OCTOBER 2011



DATA NOT AVAILABLE



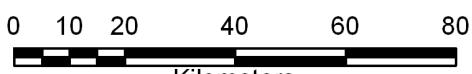
DATA NOT AVAILABLE



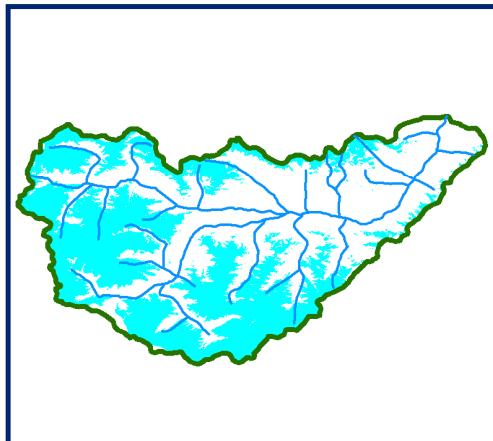
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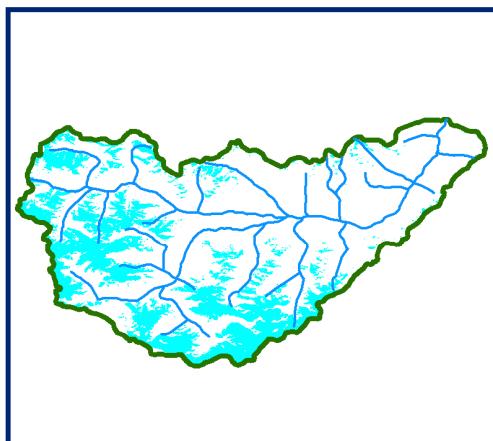
SNOW



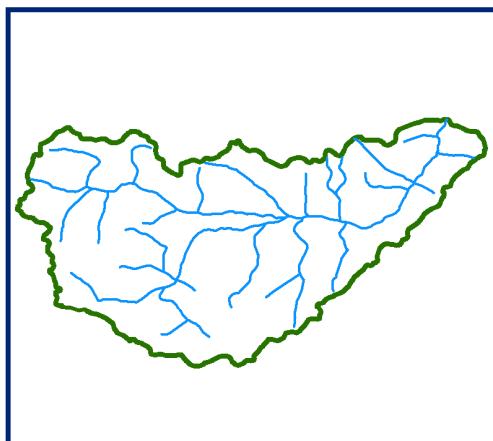
10 DAILY SNOW COVER MAP: DRASS BASIN



DATA USED
02 OCTOBER 2011
03 OCTOBER 2011
10 OCTOBER 2011



DATA USED
15 OCTOBER 2011



DATA USED
DATA NOT AVAILABLE

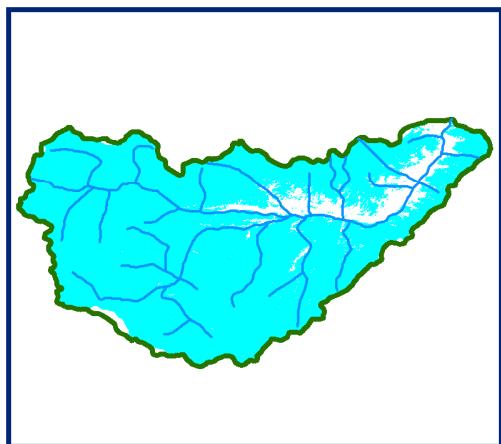


SNOW

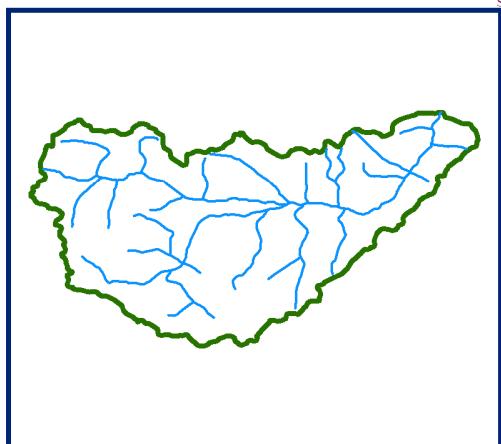


SNOW COVER MAP

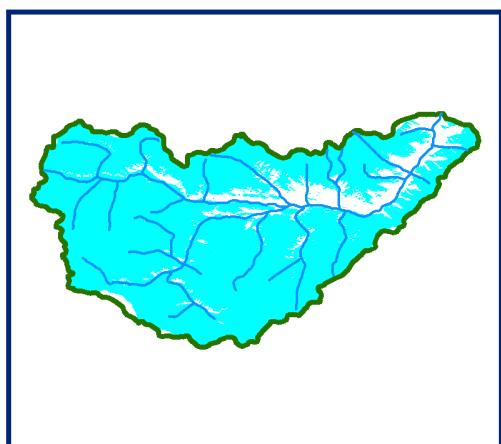
: DRASS BASIN



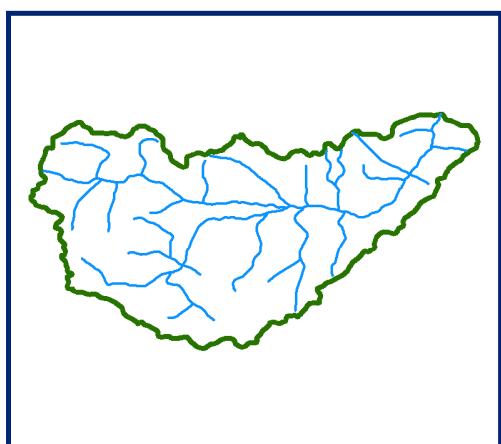
05 NOVEMBER 2011



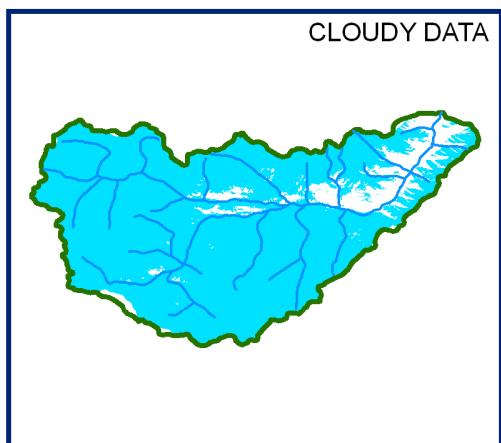
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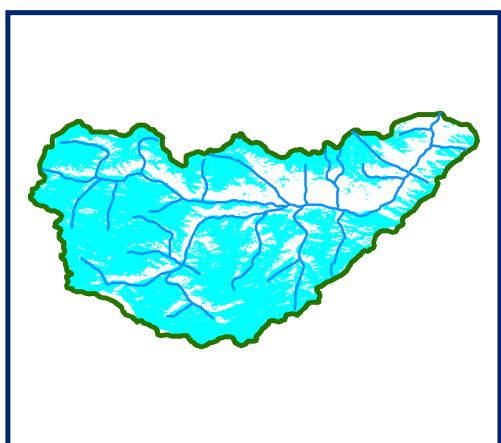
13 NOVEMBER 2011



DATA NOT AVAILABLE



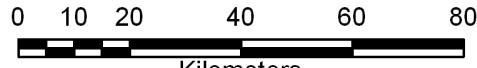
22 NOVEMBER 2011



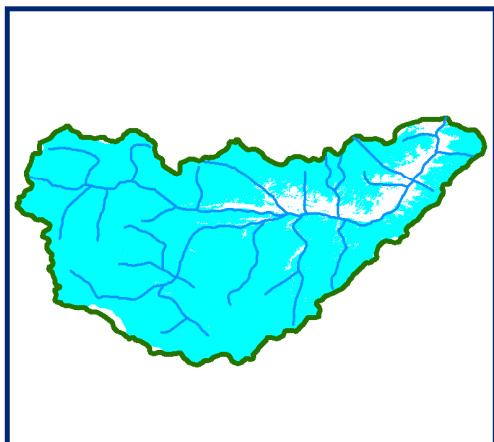
22 NOVEMBER 2011



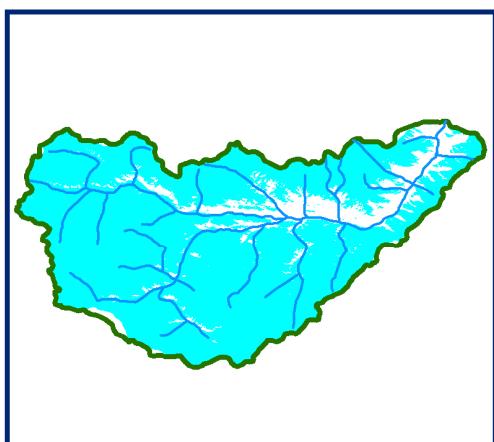
SNOW



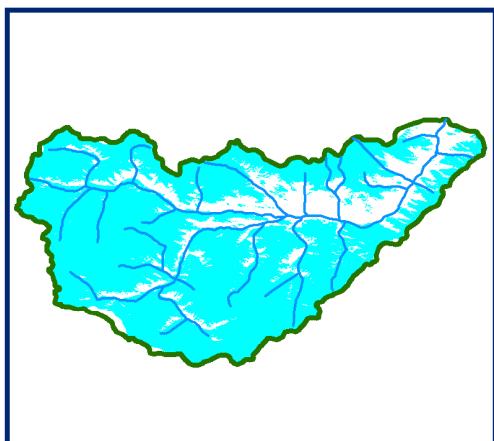
10 DAILY SNOW COVER MAP: DRASS BASIN



DATA USED
05 NOVEMBER 2011



DATA USED
13 NOVEMBER 2011



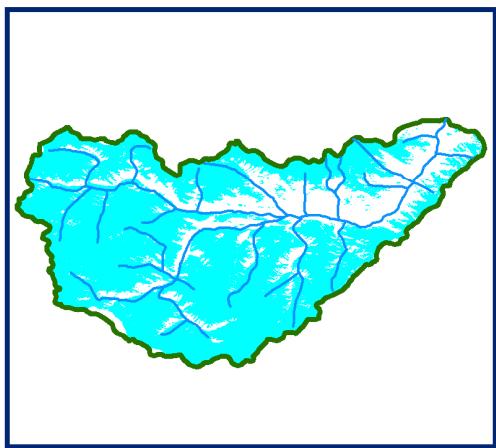
DATA USED
27 NOVEMBER 2011
29 NOVEMBER 2011



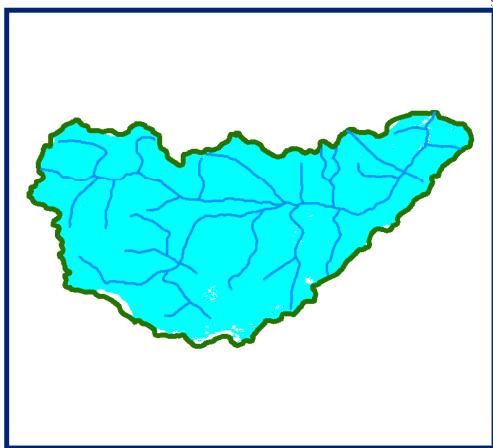
SNOW



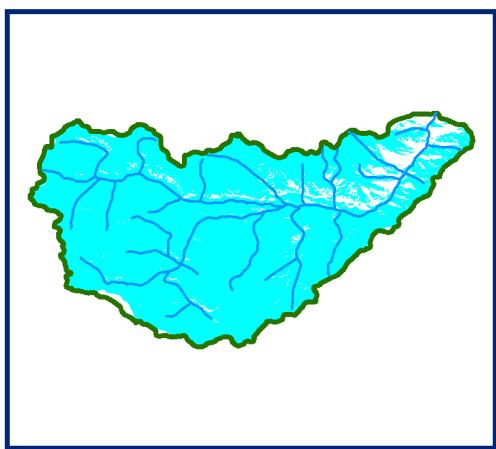
SNOW COVER MAP : DRASS BASIN



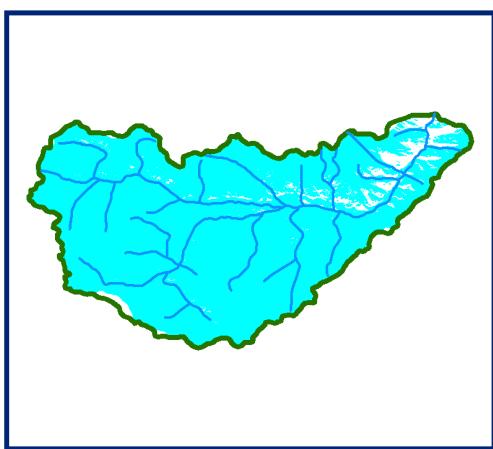
02 DECEMBER 2011



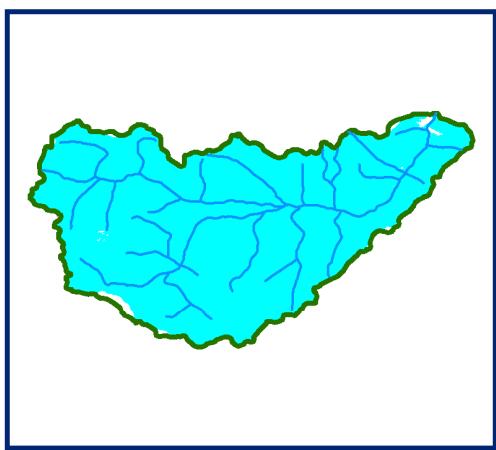
09 DECEMBER 2011



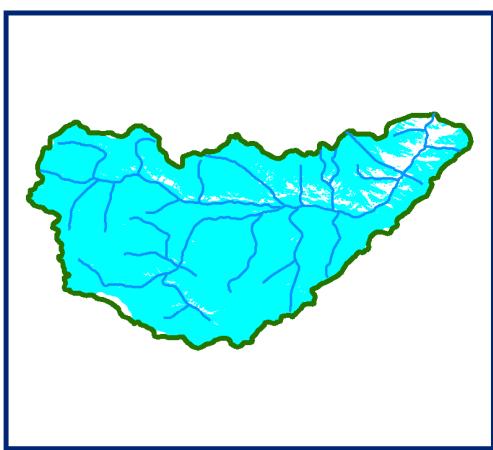
14 DECEMBER 2011



16 DECEMBER 2011



21 DECEMBER 2011



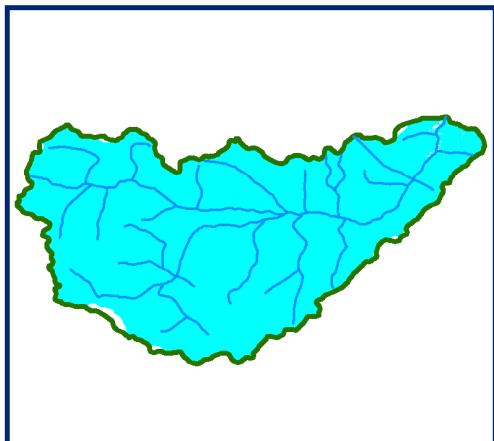
31 DECEMBER 2011



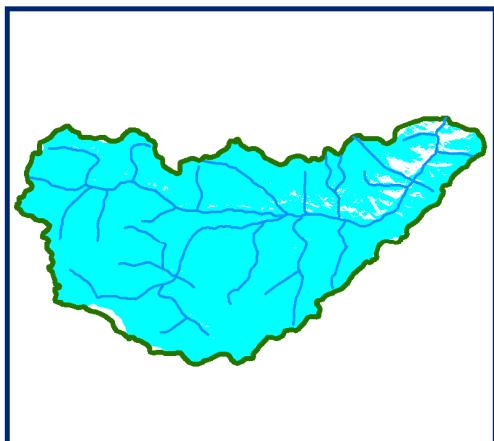
SNOW



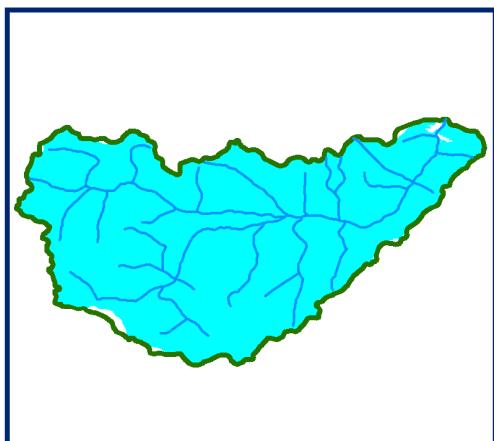
10 DAILY SNOW COVER MAP: DRASS BASIN



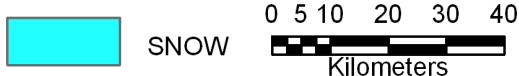
DATA USED
02 DECEMBER 2011
04 DECEMBER 2011
09 DECEMBER 2011



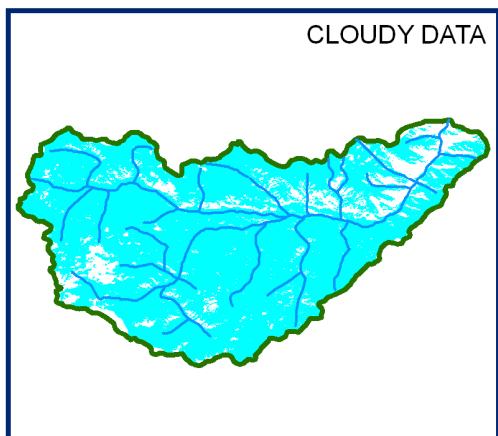
DATA USED
14 DECEMBER 2011
16 DECEMBER 2011



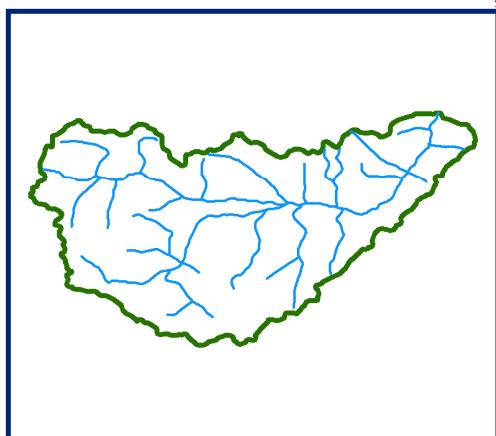
DATA USED
21 DECEMBER 2011
30 DECEMBER 2011
31 DECEMBER 2011



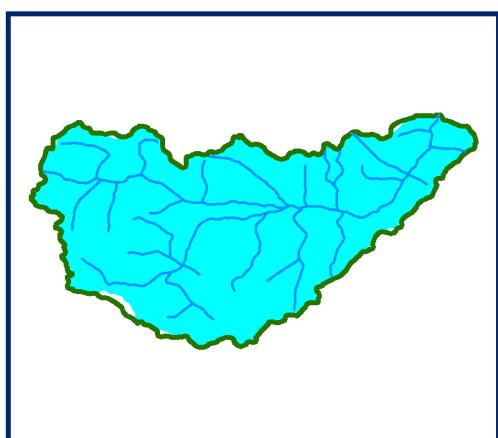
SNOW COVER MAP : DRASS BASIN



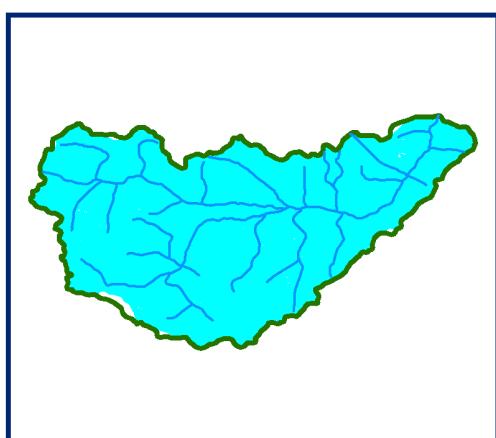
02 JANUARY 2012



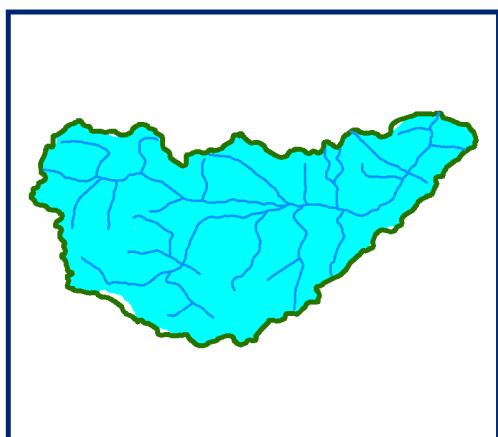
DATA NOT AVAILABLE



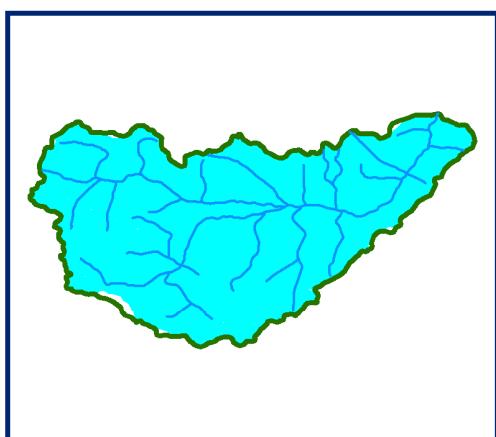
11 JANUARY 2012



12 JANUARY 2012



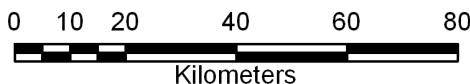
21 JANUARY 2012



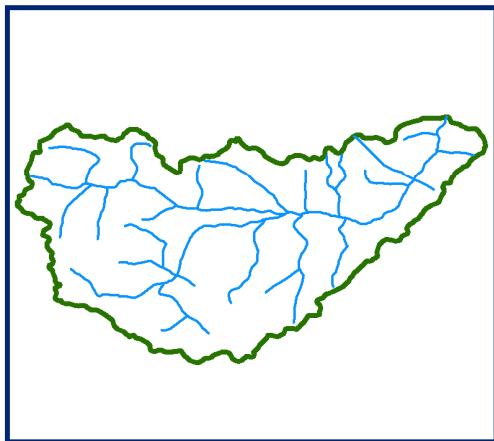
30 JANUARY 2012



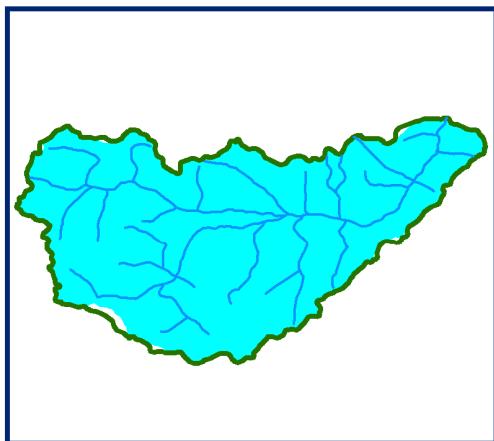
SNOW



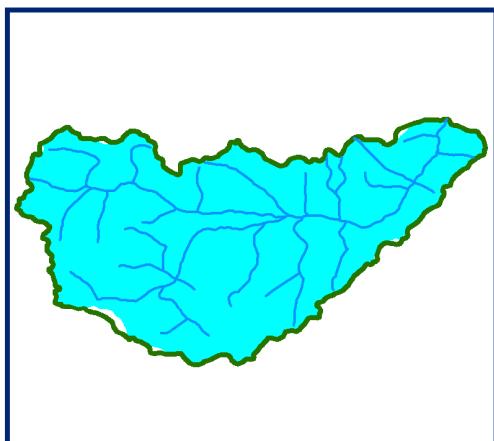
10 DAILY SNOW COVER MAP: DRASS BASIN



DATA USED
DATA NOT AVAILABLE



DATA USED
11 JANUARY 2012
12 JANUARY 2012



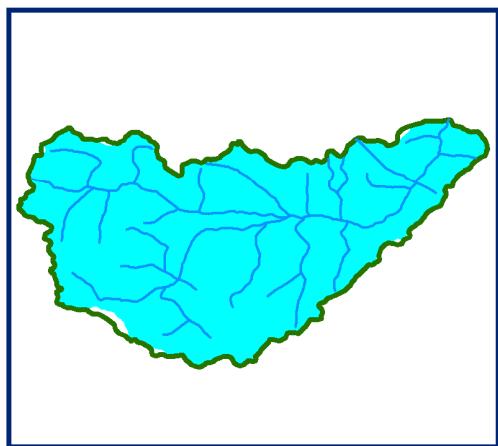
DATA USED
21 JANUARY 2012
24 JANUARY 2012
30 JANUARY 2012



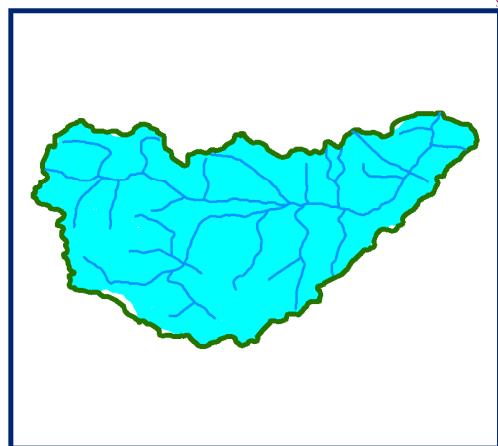
SNOW

04.59 18 27 36
A scale bar showing distances of 04.59, 18, 27, and 36 Kilometers. The bar consists of a series of black squares of decreasing size followed by the text 'Kilometers'.

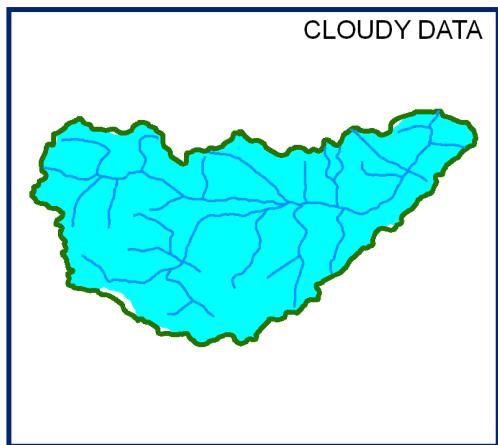
SNOW COVER MAP : DRASS BASIN



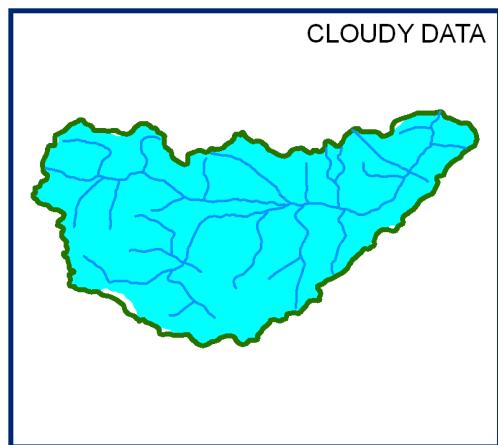
02 FEBRUARY 2012



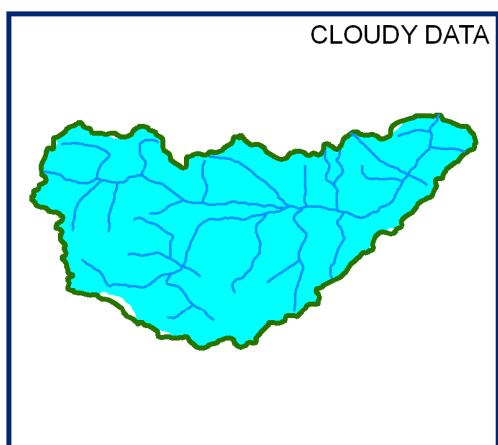
09 FEBRUARY 2012



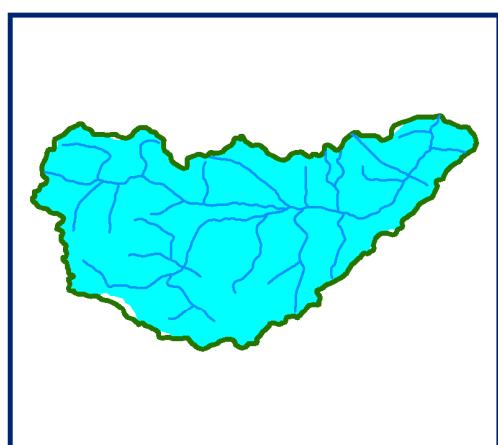
11 FEBRUARY 2012



17 FEBRUARY 2012



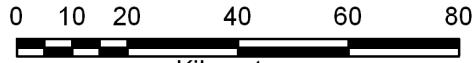
26 FEBRUARY 2012



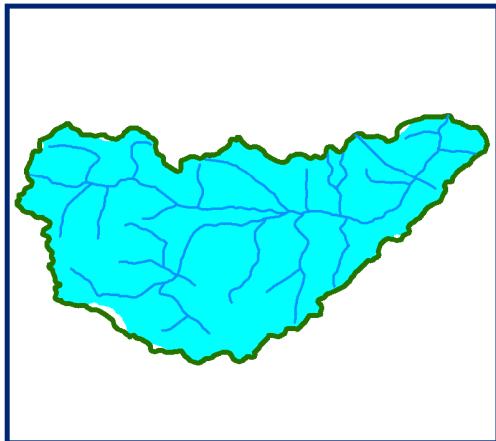
29 FEBRUARY 2012



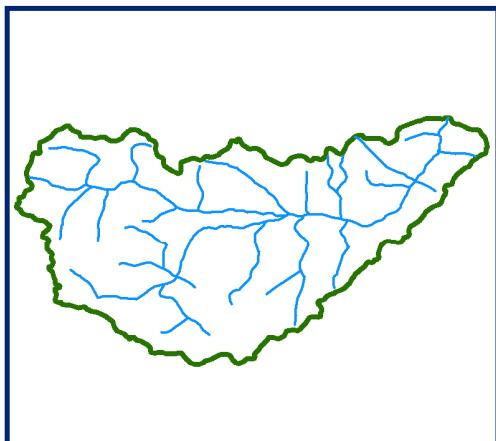
SNOW



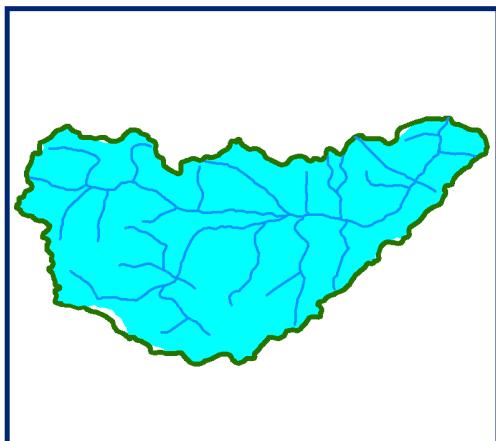
10 DAILY SNOW COVER MAP: DRASS BASIN



DATA USED
02 FEBRUARY 2012
09 FEBRUARY 2012



DATA USED
DATA NOT AVAILABLE



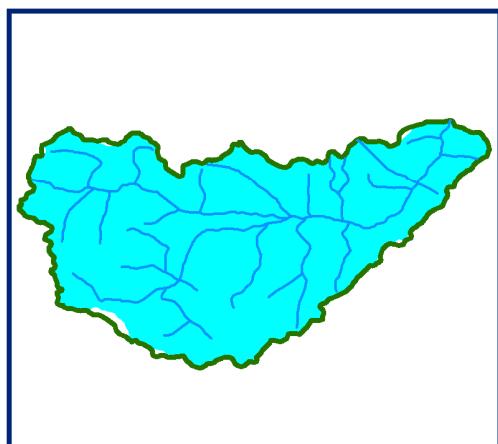
DATA USED
29 FEBRUARY 2012



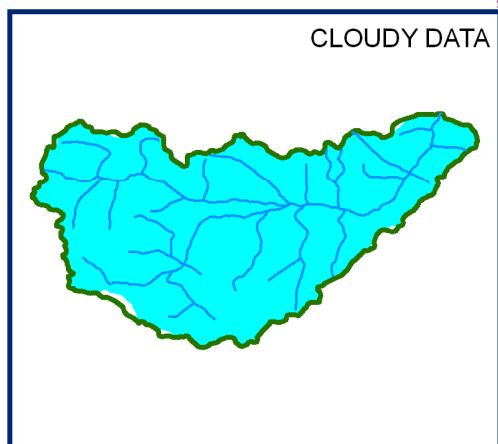
SNOW



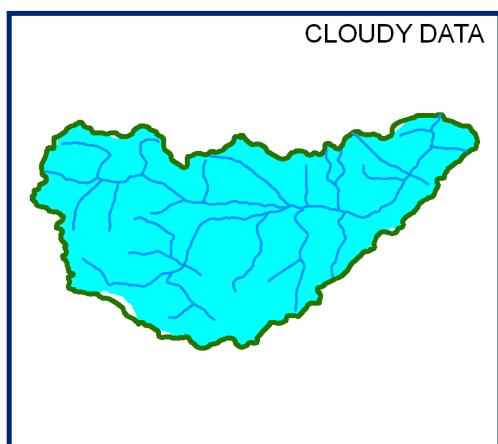
SNOW COVER MAP : DRASS BASIN



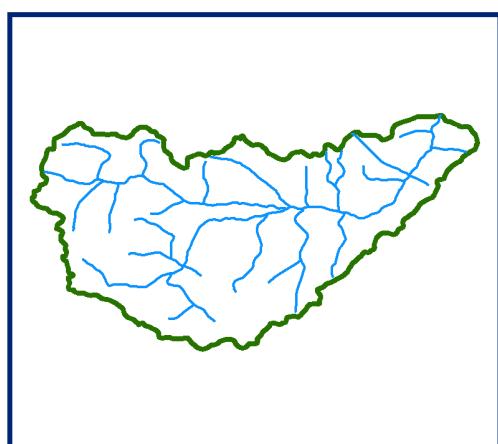
02 MARCH 2012



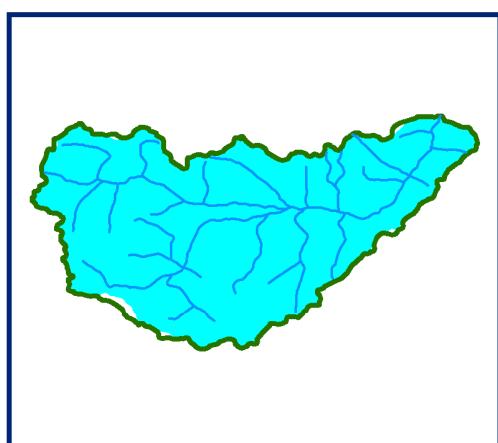
06 MARCH 2012



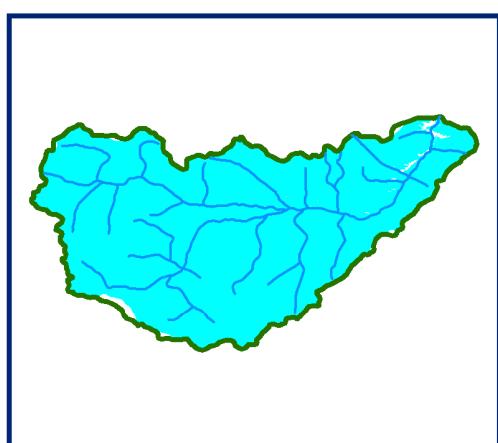
11 MARCH 2012



DATA NOT AVAILABLE



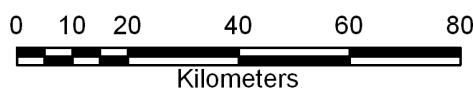
21 MARCH 2012



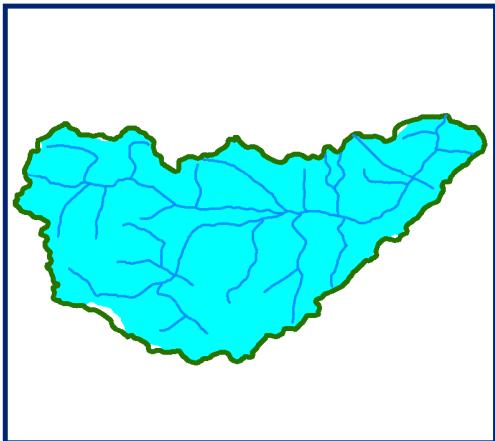
30 MARCH 2012



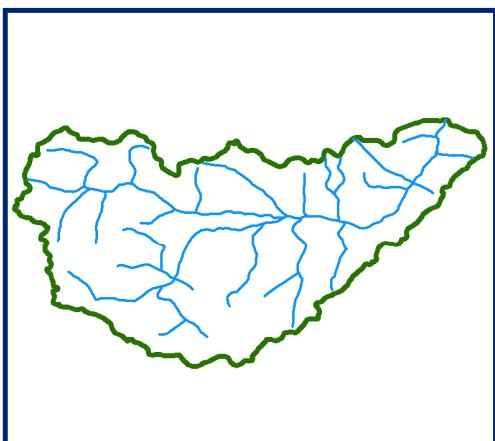
SNOW



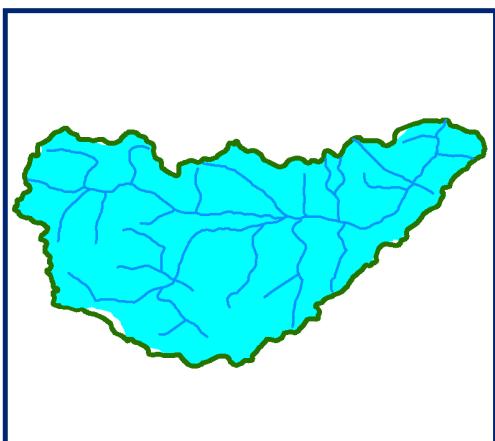
10 DAILY SNOW COVER MAP: DRASS BASIN



DATA USED
02 MARCH 2012



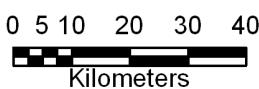
DATA USED
DATA NOT AVAILABLE



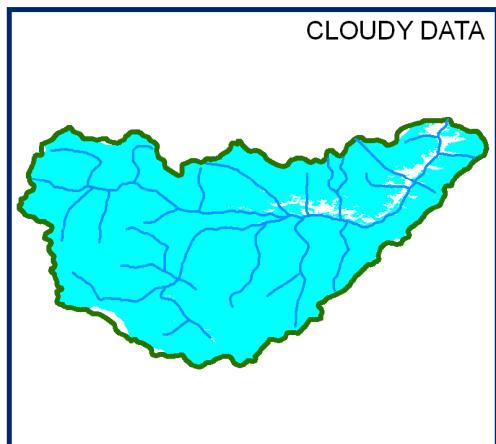
DATA USED
21 MARCH 2012
30 MARCH 2012
31 MARCH 2012



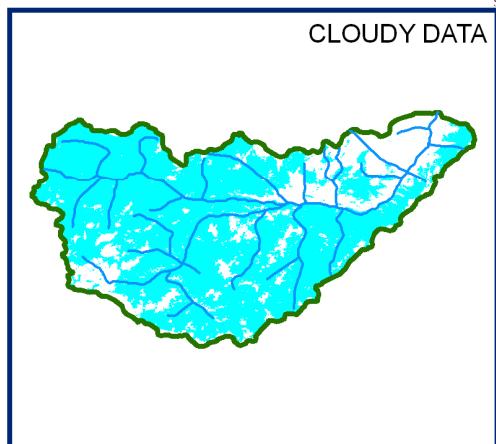
SNOW



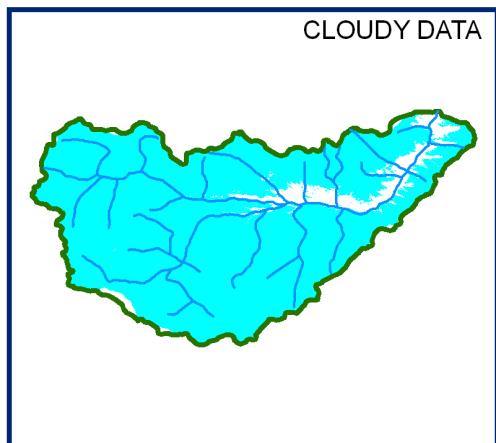
SNOW COVER MAP : DRASS BASIN



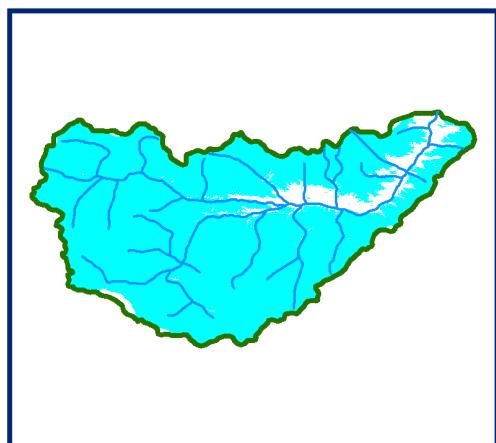
04 APRIL 2012



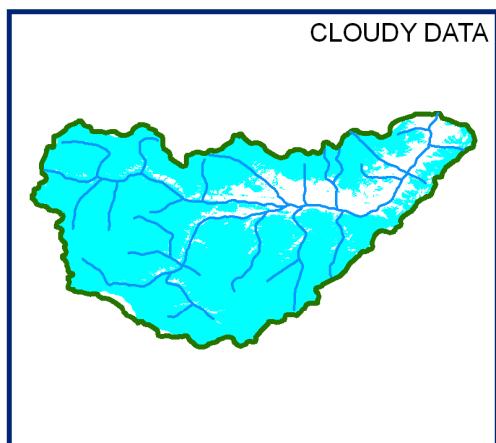
07 APRIL 2012



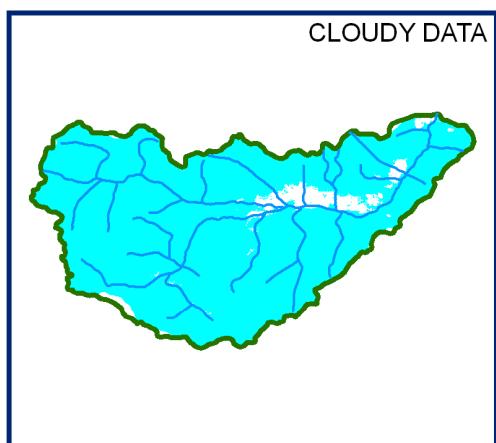
14 APRIL 2012



19 APRIL 2012



24 APRIL 2012



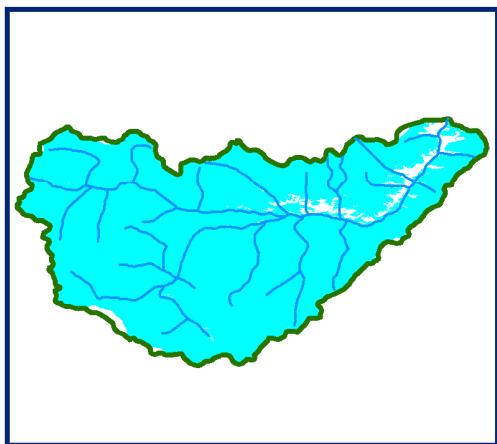
28 APRIL 2012



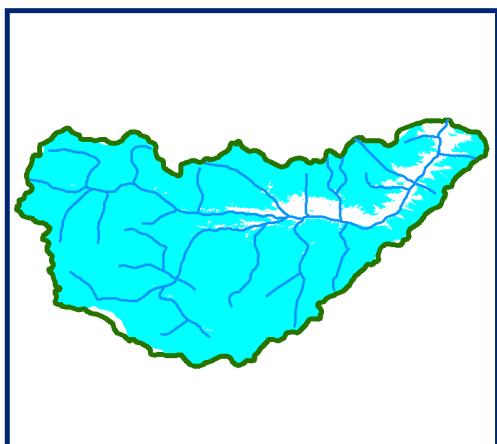
SNOW



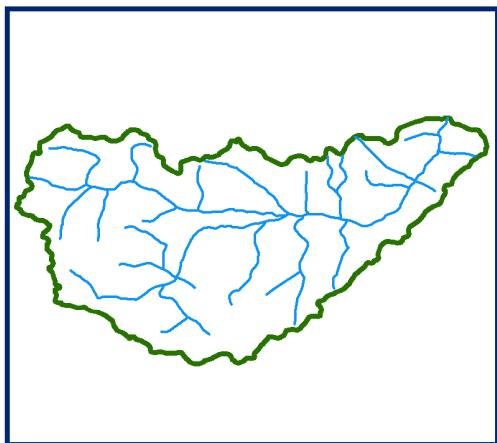
10 DAILY SNOW COVER MAP: DRASS BASIN



DATA USED
04 APRIL 2012



DATA USED
19 APRIL 2012



DATA USED
DATA NOT AVAILABLE



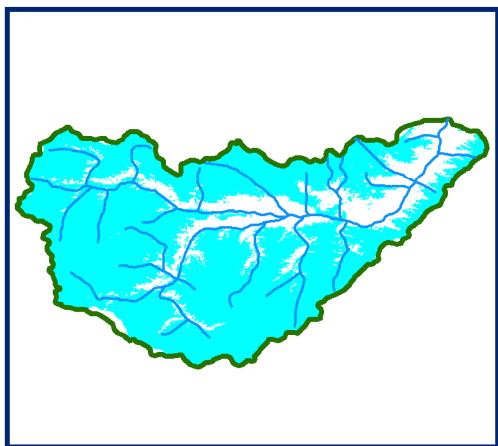
SNOW



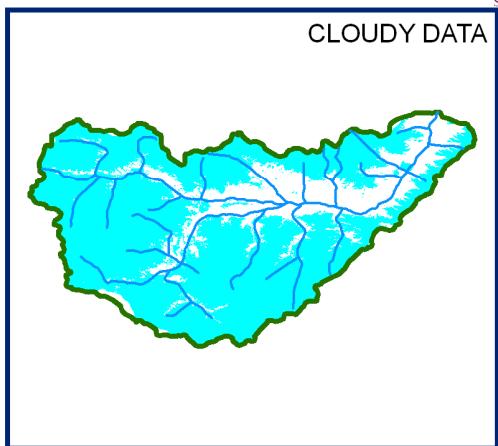
SNOW COVER MAP

:

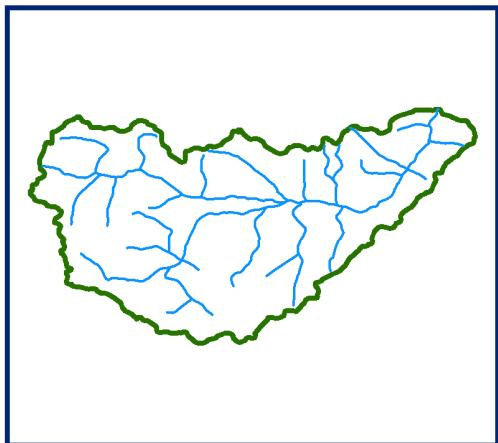
DRASS BASIN



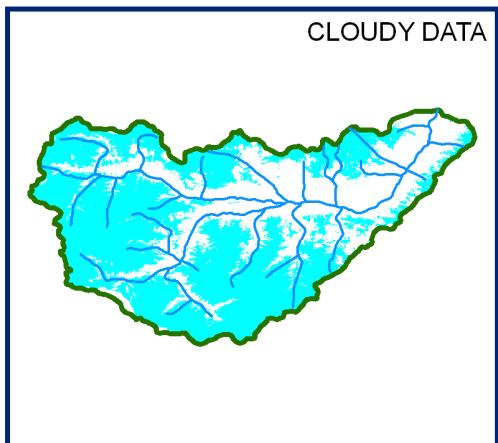
01 MAY 2012



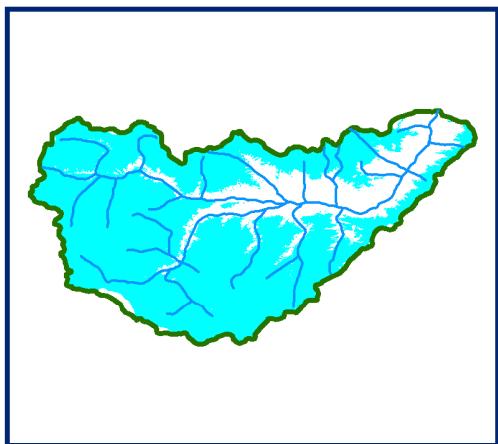
08 MAY 2012



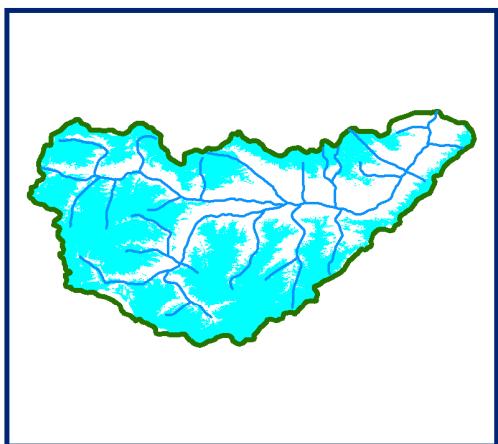
DATA NOT AVAILABLE



20 MAY 2012



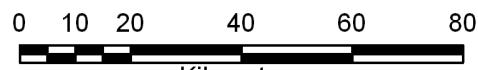
23 MAY 2012



30 MAY 2012

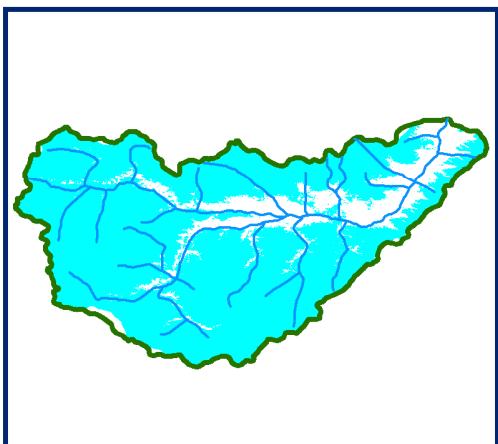


SNOW

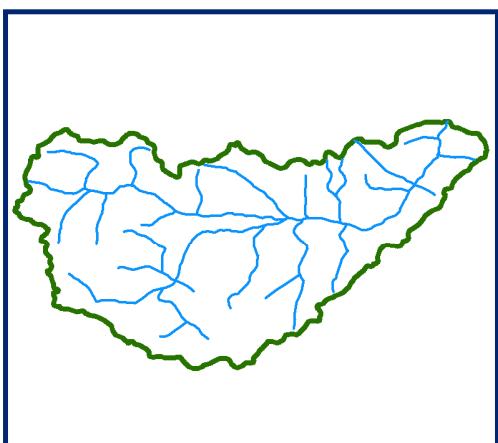


Kilometers

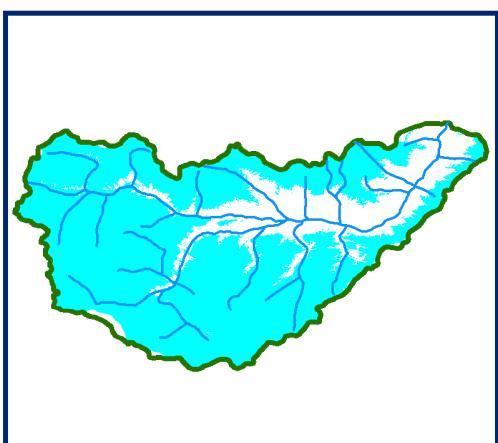
10 DAILY SNOW COVER MAP: DRASS BASIN



DATA USED
01 MAY 2012
03 MAY 2012



DATA USED
DATA NOT AVAILABLE



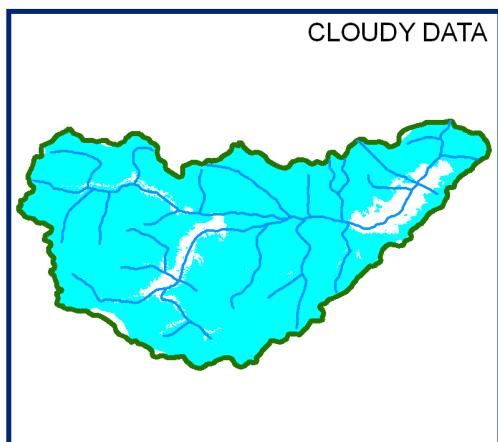
DATA USED
23 MAY 2012
30 MAY 2012



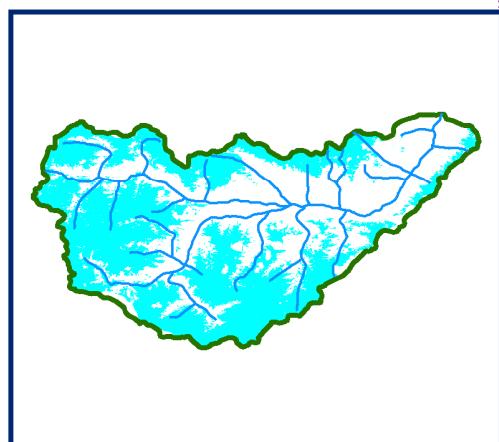
0 5 10 20 30 40
Kilometers

A scale bar at the bottom center of the page. It consists of a horizontal line with tick marks at intervals of 5 units, labeled '0 5 10 20 30 40'. Below the line, the word 'Kilometers' is written in black capital letters.

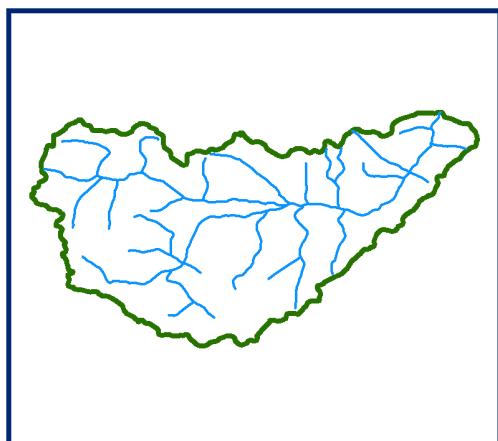
SNOW COVER MAP : DRASS BASIN



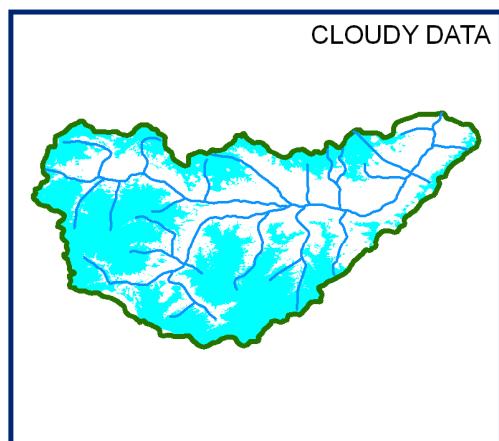
01 JUNE 2012



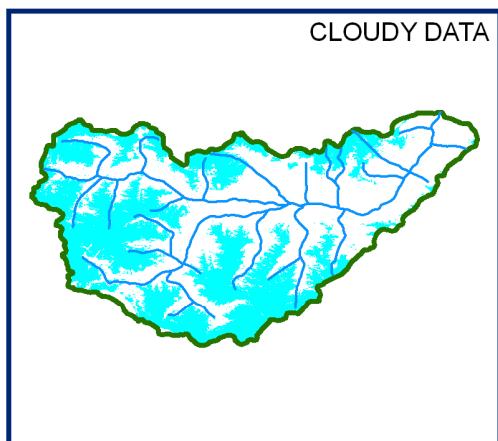
04 JUNE 2012



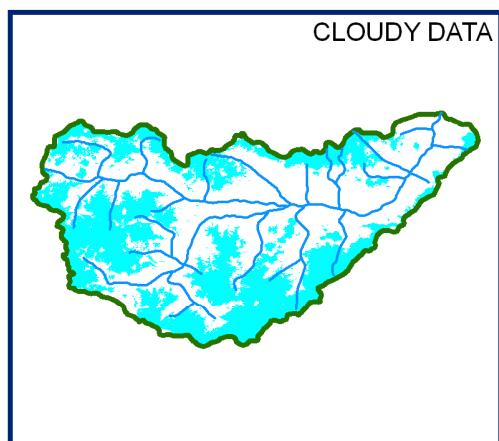
DATA NOT AVAILABLE



16 JUNE 2012



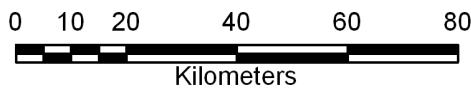
22 JUNE 2012



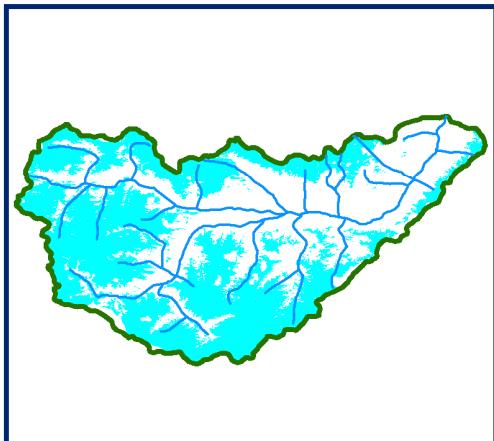
30 JUNE 2012



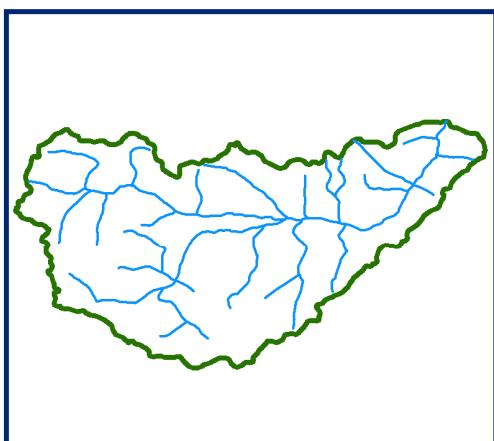
SNOW



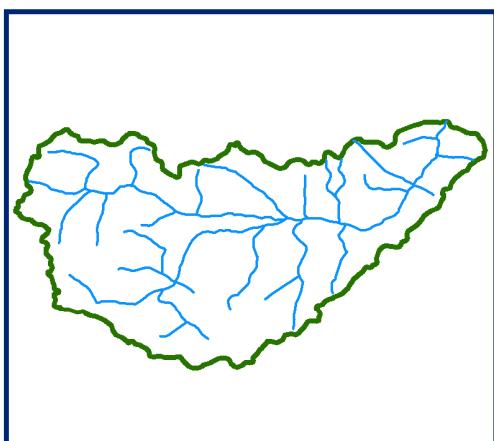
10 DAILY SNOW COVER MAP: DRASS BASIN



DATA USED
04 JUNE 2012



DATA USED
DATA NOT AVAILABLE



DATA USED
DATA NOT AVAILABLE



SNOW



SURU BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: SURU

BASIN AREA: 3575 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	2-Oct-11	724	20	2	3-Oct-11	671	19
3	5-Oct-11	758	21	4	10-Oct-11	1448	40
5	15-Oct-11	919	26		29-Oct-11	1429	40
November 2011							
6	5-Nov-11	1594	45	7	13-Nov-11	3014	84
8	22-Nov-11	2683	75	9	27-Nov-11	2403	67
10	29-Nov-11	1959	55				
December 2011							
11	2-Dec-11	2065	58	12	4-Dec-11	1710	48
13	14-Dec-11	2598	73	14	16-Dec-11	2850	80
15	21-Dec-11	3396	95	16	23-Dec-11	2654	74
17	25-Dec-11	2827	79	18	28-Dec-11	2729	76
19	30-Dec-11	2627	73	20	31-Dec-11	2547	71
January 2012							
21	2-Jan-12	2199	61	22	11-Jan-12	3551	99
23	12-Jan-12	3540	99	24	21-Jan-12	3541	99
25	23-Jan-12	3560	100	26	24-Jan-12	3560	100
27	30-Jan-12	3555	99				
February 2012							
28	2-Feb-12	3561	100	29	17-Feb-12	3561	100
30	29-Feb-12	3553	99				
March 2012							
31	2-Mar-12	3561	100	32	6-Mar-12	3561	100
33	21-Mar-12	3558	100	34	30-Mar-12	3422	96
35	31-Mar-12	3404	95				
April 2012							
36	4-Apr-12	3271	92	37	19-Apr-12	3107	87
38	24-Apr-12	2869	80				

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
May 2012							
41	1-May-12	2710	76	42	3-May-12	2741	77
43	8-May-12	2597	73	44	20-May-12	2115	59
45	23-May-12	2458	69	46	30-May-12	2066	58
June 2012							
47	16-Jun-12	2135	59	48	27-Jun-12	1796	50

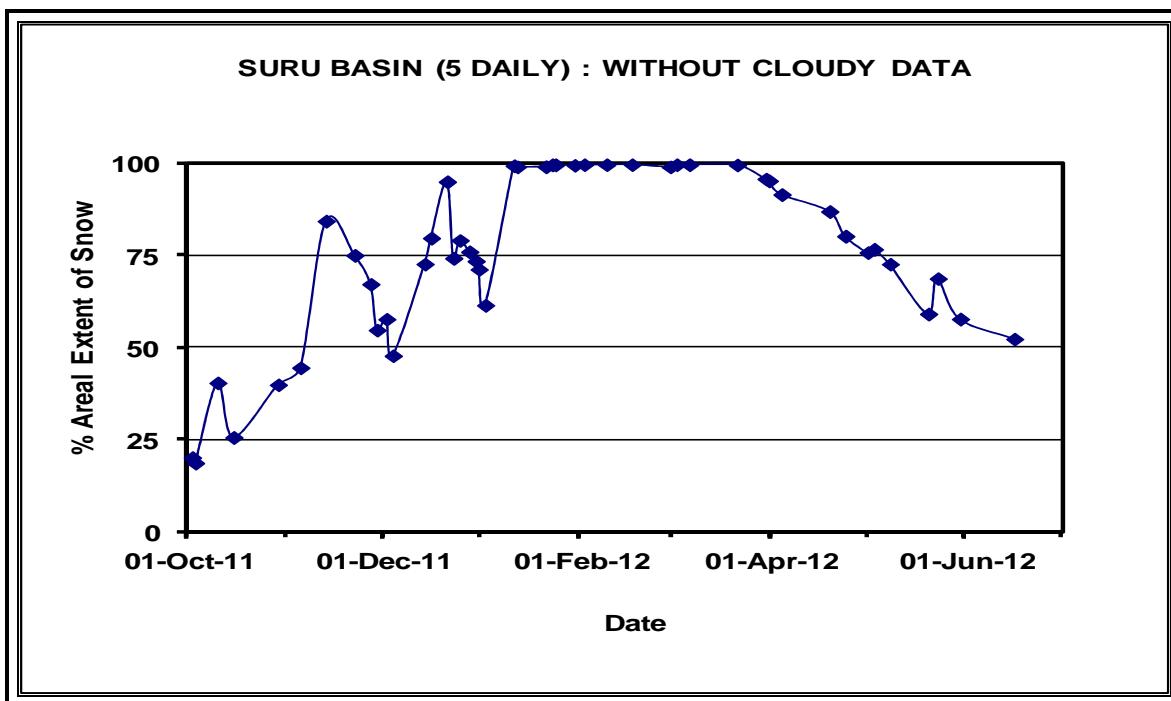
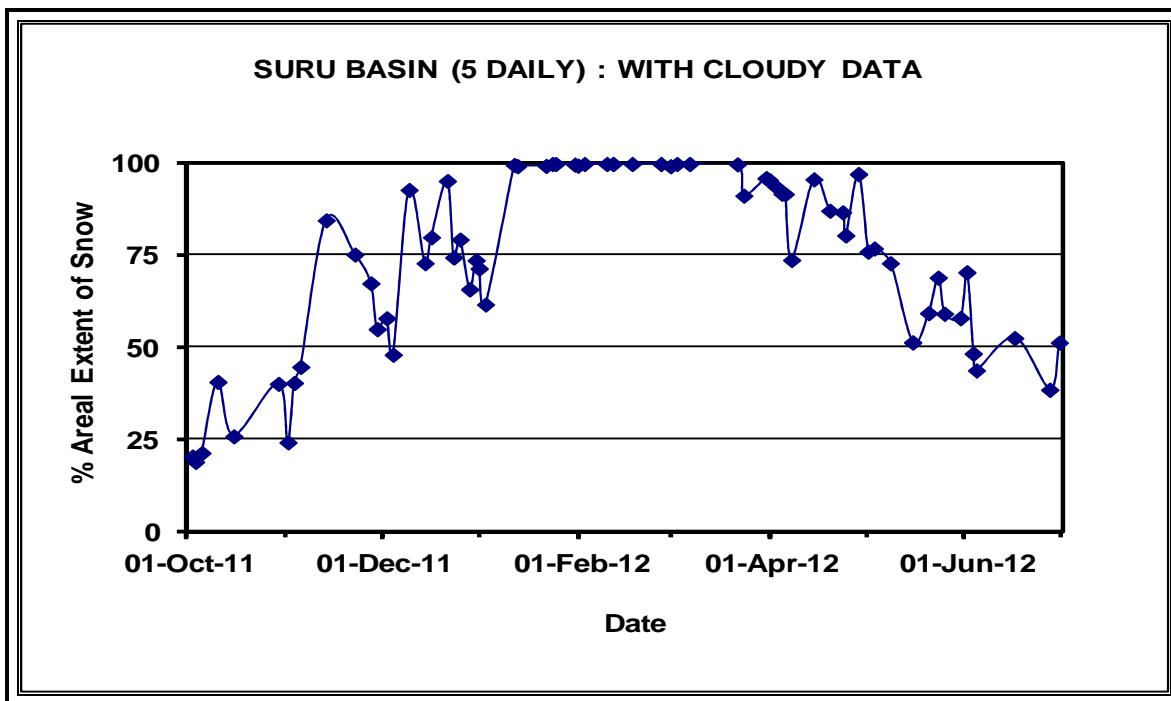
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: SURU

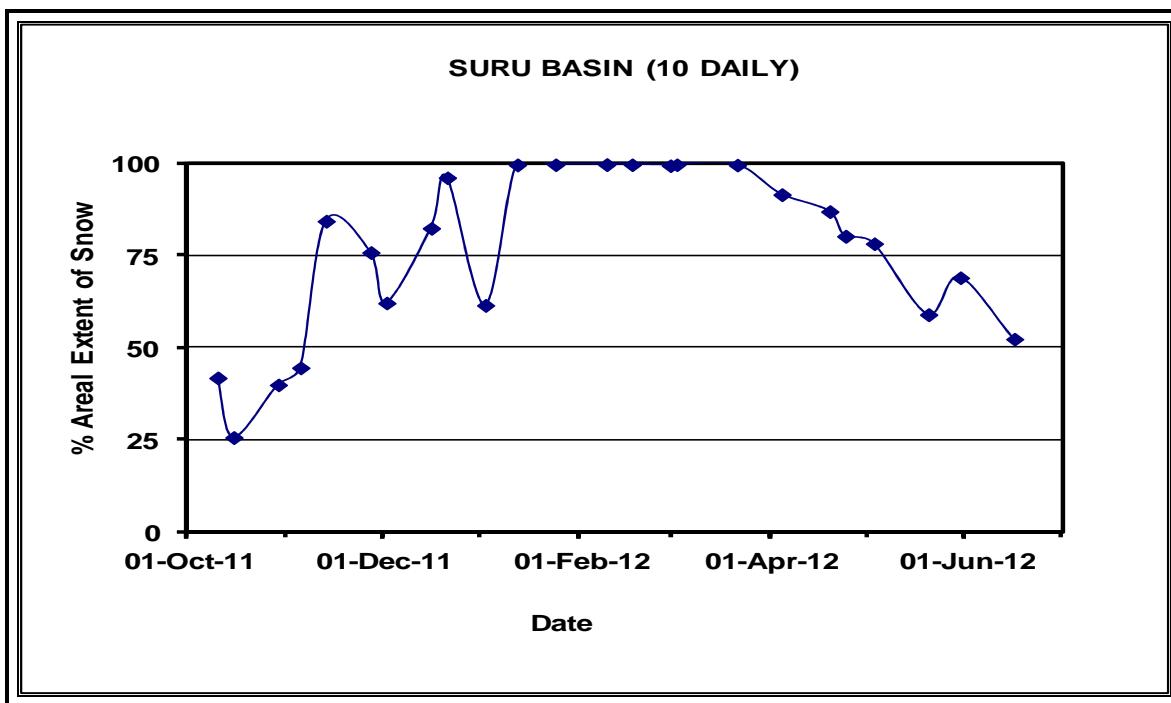
BASIN AREA: 3575 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	10-Oct-11	1496	42	2	15-Oct-11	919	26
3	29-Oct-11	1429	40				
November 2011							
4	5-Nov-11	1594	45	5	13-Nov-11	3014	84
6	27-Nov-11	2710	76				
December 2011							
7	2-Dec-11	2222	62	8	16-Dec-11	2945	82
9	21-Dec-11	3435	96				
January 2012							
10	2-Jan-12	2199	61	11	12-Jan-12	3560	100
12	24-Jan-12	3561	100				
February 2012							
13	9-Feb-12	3563	100	14	17-Feb-12	3561	100
15	29-Feb-12	3553	99				
March 2012							
16	2-Mar-12	3561	100	17	21-Mar-12	3558	100
April 2012							
18	4-Apr-12	3271	92	19	19-Apr-12	3107	87
20	24-Apr-12		80				
May 2012							
21	3-May-12	2796	78	22	20-May-12	2115	59
23	30-May-12	2467	69				
June 2012							
24	16-Jun-12	1872	52	25	27-Jun-12	1796	50

Snow cover depletion curve

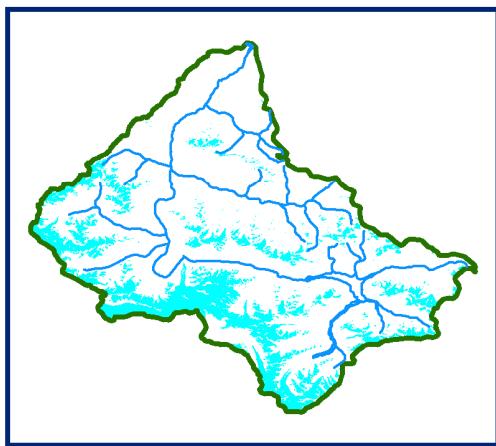


Snow cover depletion curve

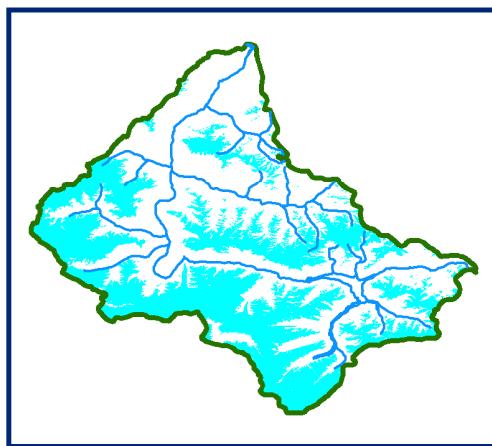


SNOW COVER MAP

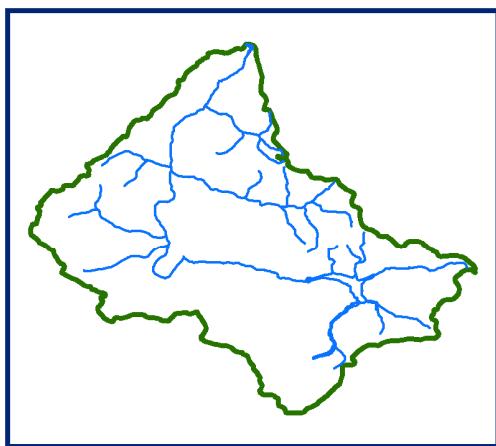
SNOW COVER MAP : SURU BASIN



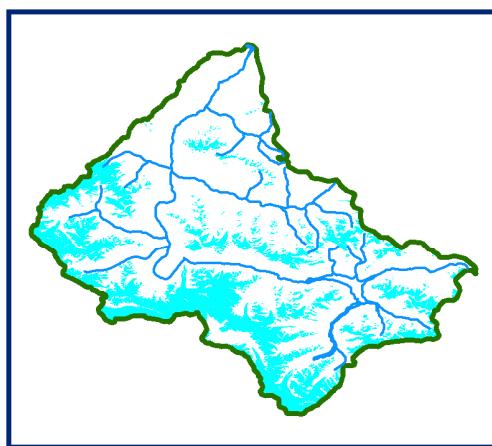
03 OCTOBER 2011



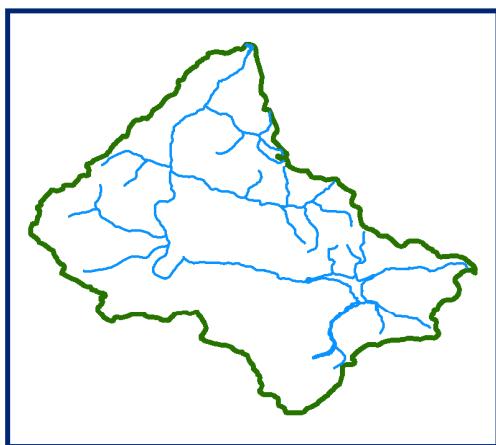
10 OCTOBER 2011



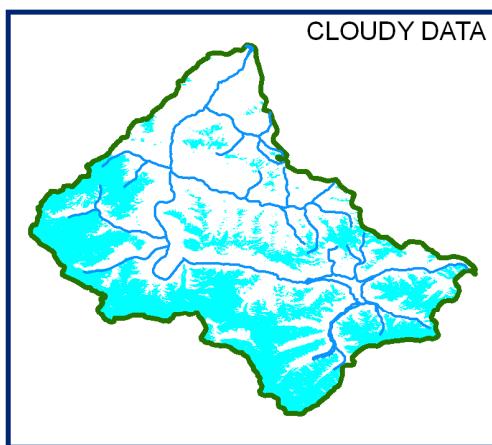
DATA NOT AVAILABLE



15 OCTOBER 2011



DATA NOT AVAILABLE



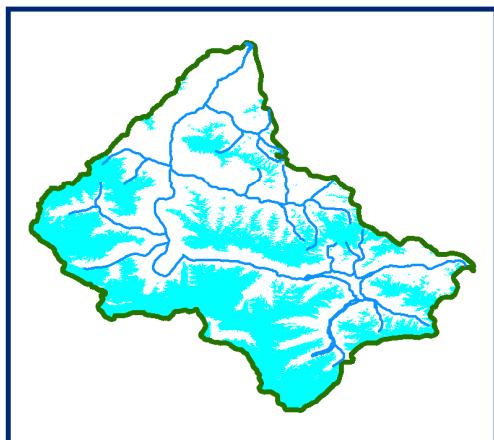
29 OCTOBER 2011



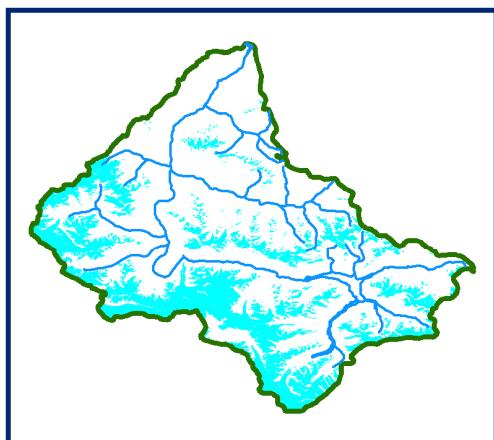
SNOW



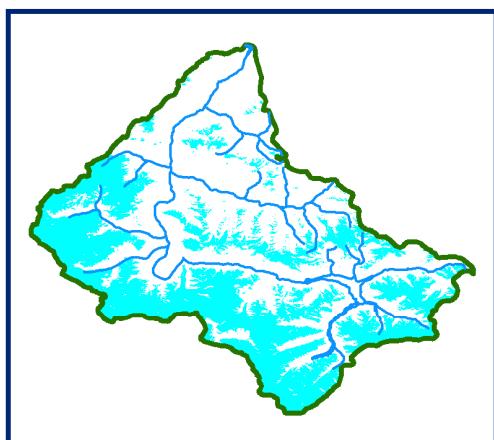
10 DAILY SNOW COVER MAP: SURU BASIN



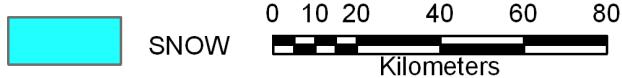
DATA USED
02 OCTOBER 2011
03 OCTOBER 2011
10 OCTOBER 2011



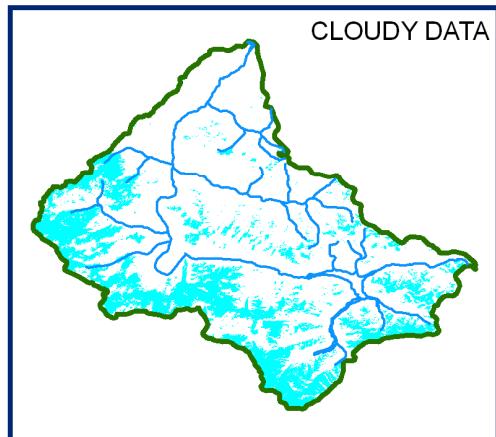
DATA USED
15 OCTOBER 2011



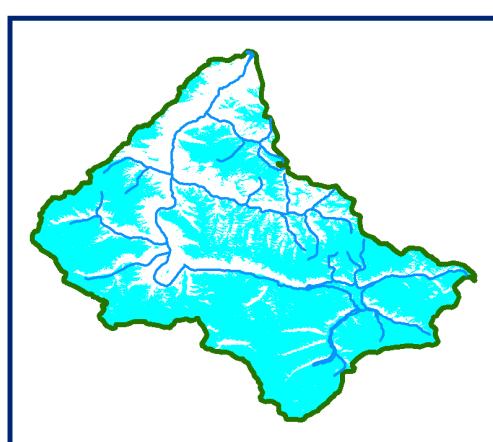
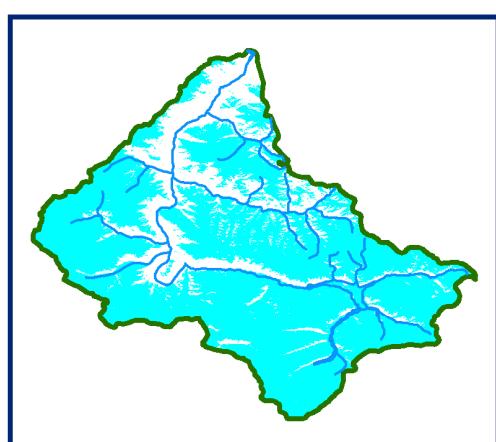
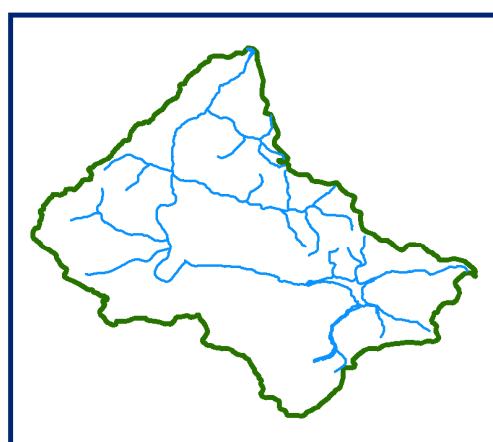
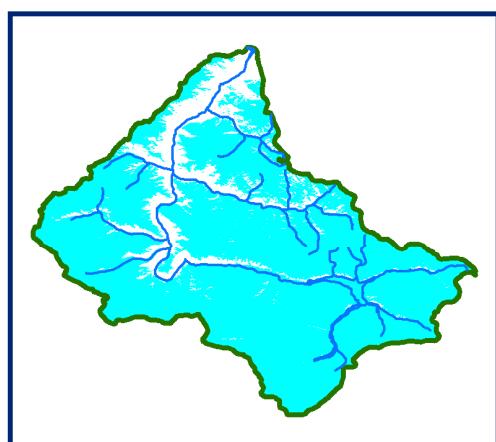
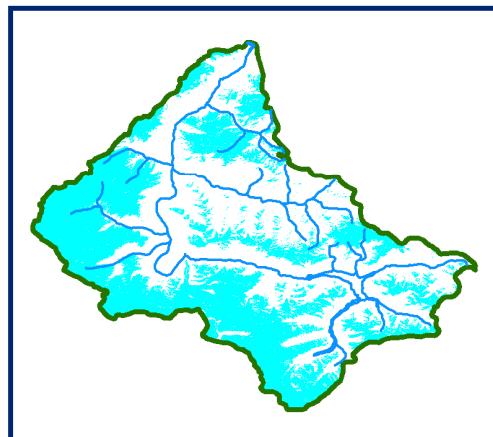
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29 OCTOBER 2011



SNOW COVER MAP : SURU BASIN



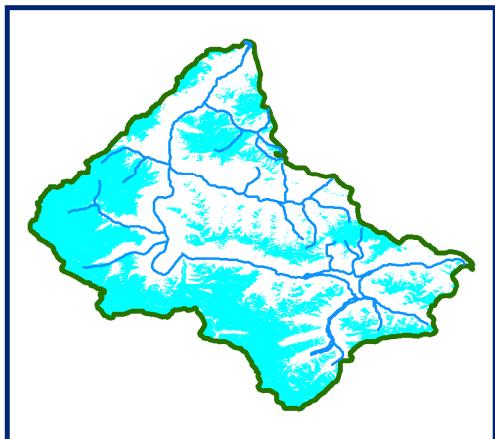
01 NOVEMBER 2011



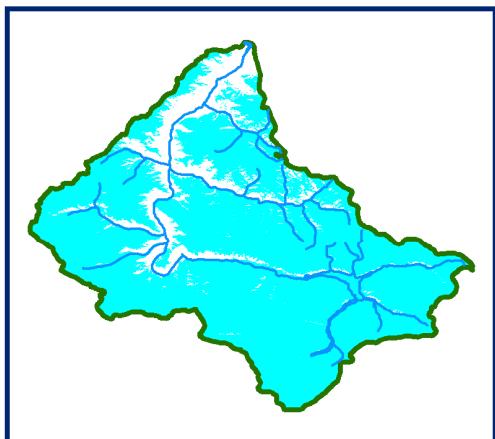
SNOW



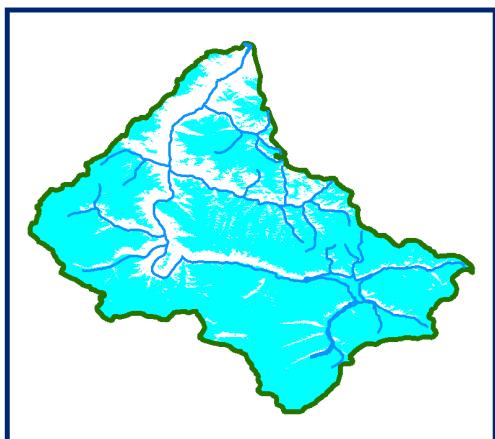
10 DAILY SNOW COVER MAP: SURU BASIN



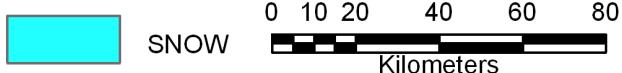
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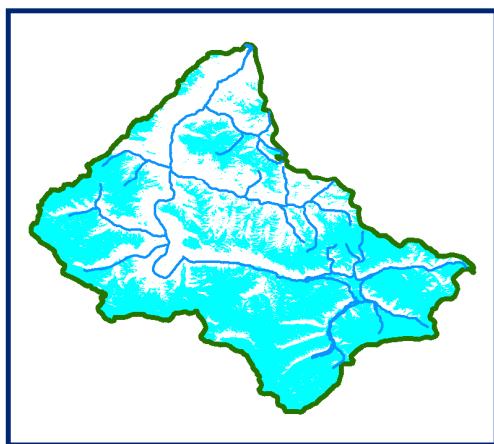
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13 NOVEMBER 2011



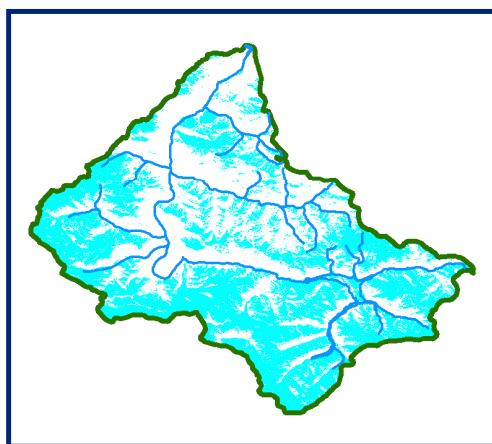
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27 NOVEMBER 2011
29 NOVEMBER 2011



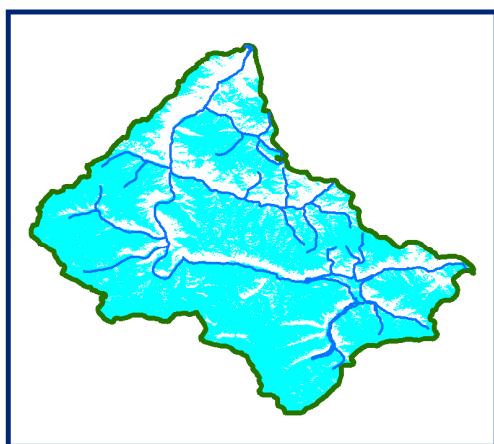
SNOW COVER MAP : SURU BASIN



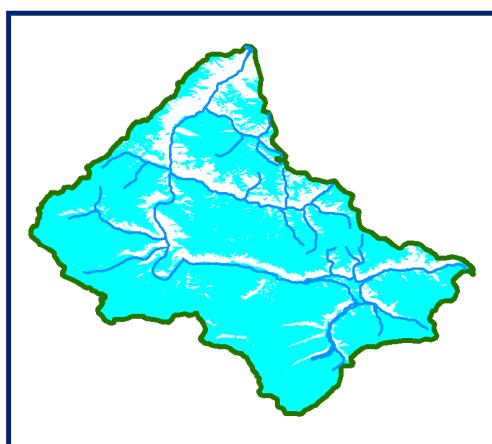
02 DECEMBER 2011



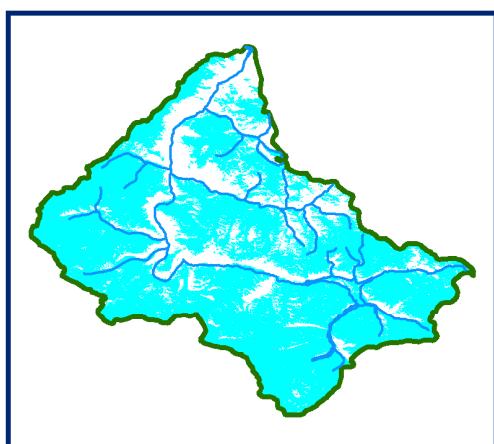
04 DECEMBER 2011



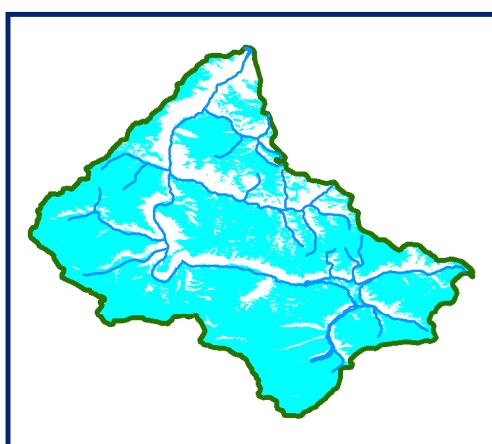
14 DECEMBER 2011



16 DECEMBER 2011



23 DECEMBER 2011



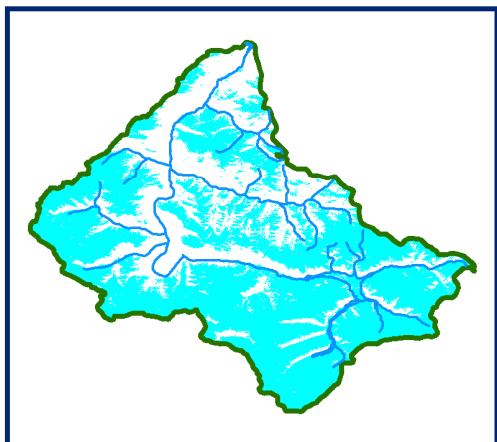
30 DECEMBER 2011



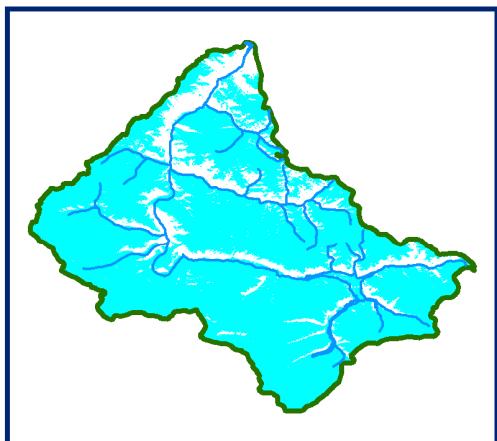
SNOW



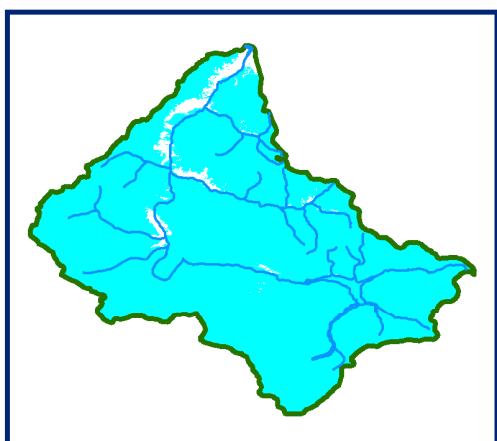
10 DAILY SNOW COVER MAP: SURU BASIN



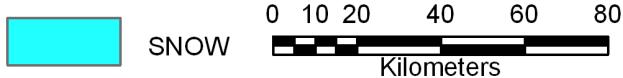
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02 DECEMBER 2011
04 DECEMBER 2011



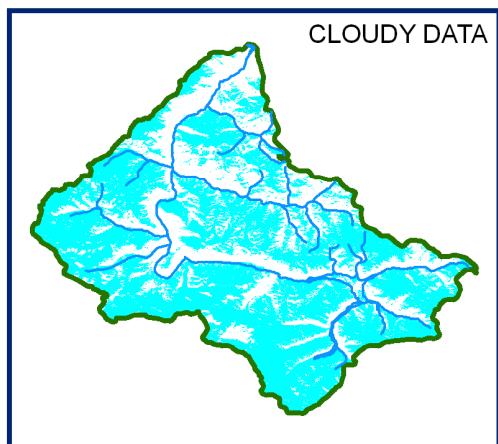
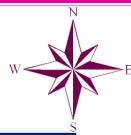
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14 DECEMBER 2011
16 DECEMBER 2011



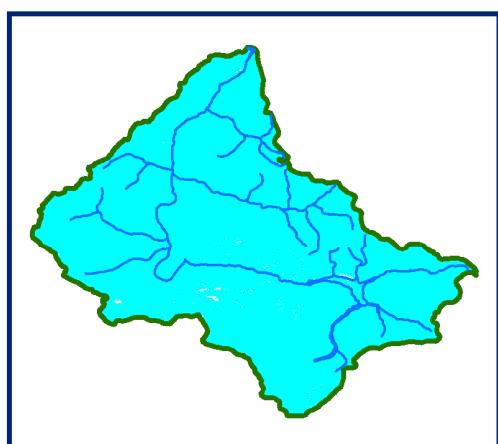
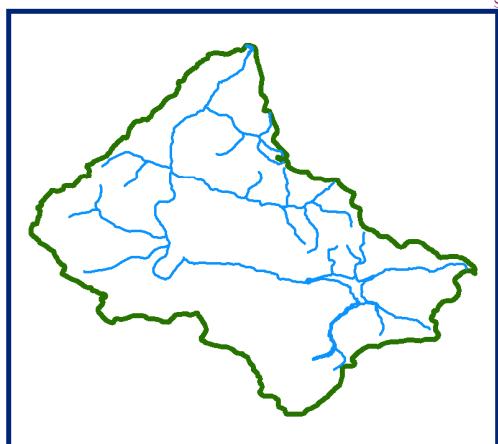
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21 DECEMBER 2011
25 DECEMBER 2011



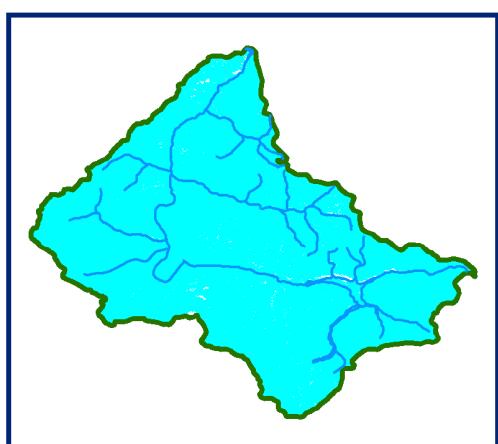
SNOW COVER MAP : SURU BASIN



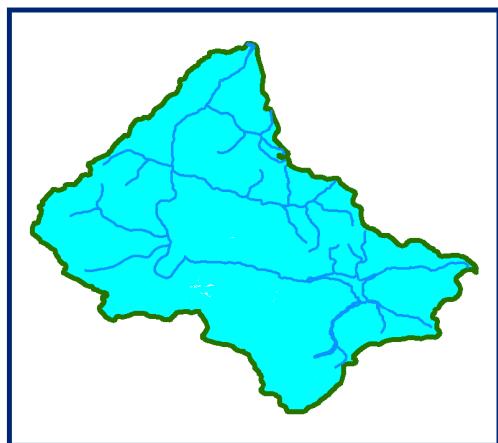
02 JANUARY 2012



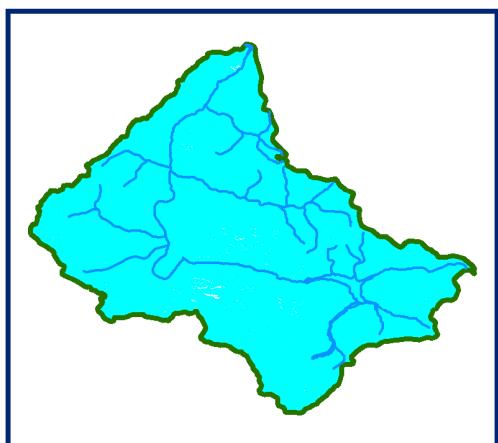
11 JANUARY 2012



12 JANUARY 2012



24 JANUARY 2012



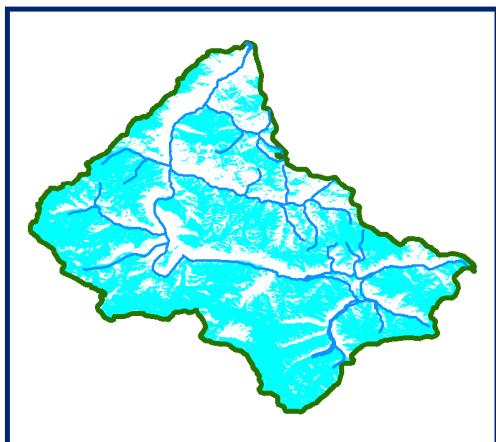
30 JANUARY 2012



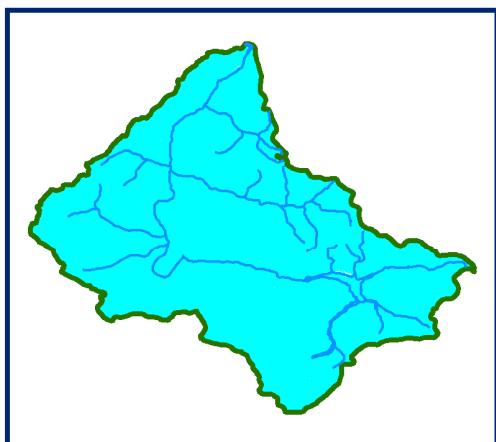
SNOW



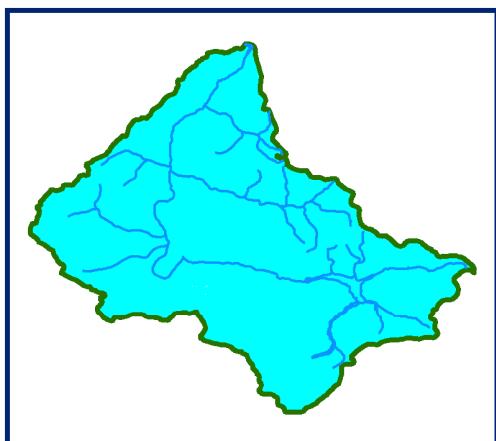
10 DAILY SNOW COVER MAP: SURU BASIN



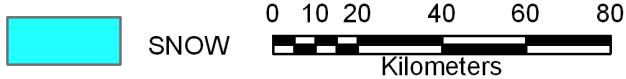
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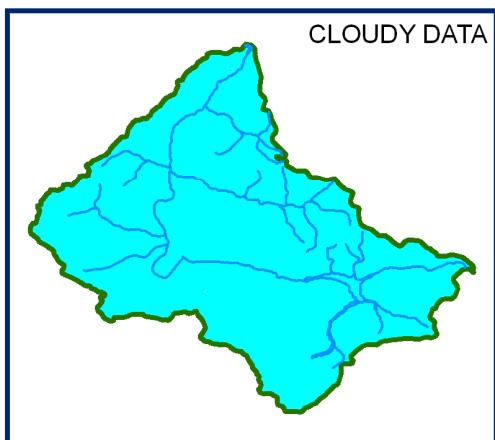
DATA USED
11 JANUARY 2012
12 JANUARY 2012



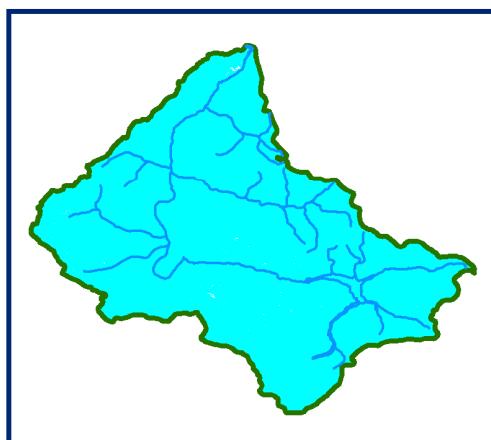
DATA USED
24 JANUARY 2012
30 JANUARY 2012



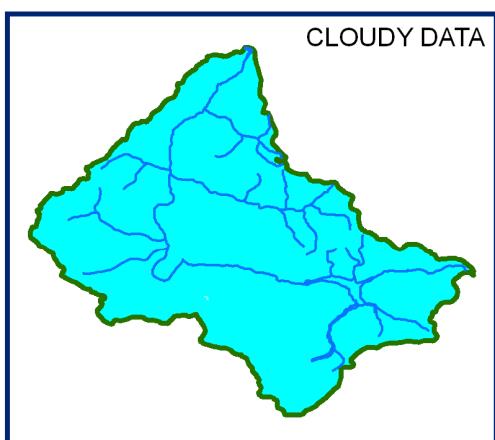
SNOW COVER MAP : SURU BASIN



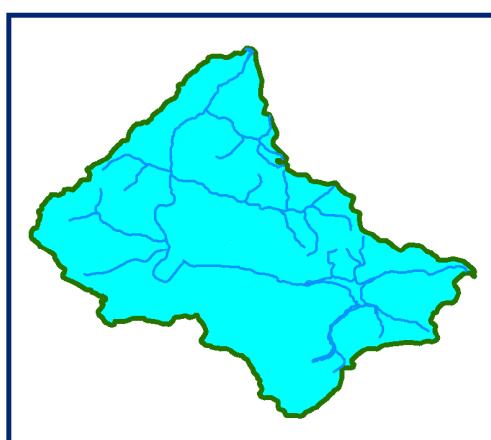
02 FEBRUARY 2012



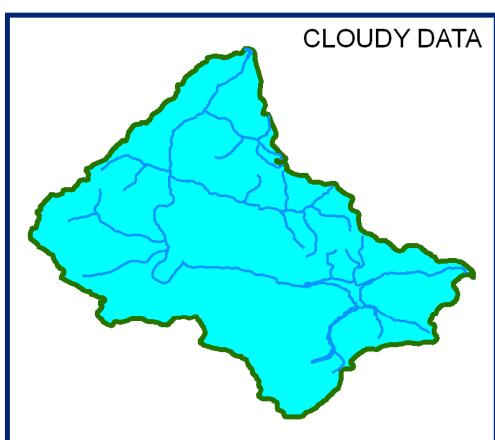
09 FEBRUARY 2012



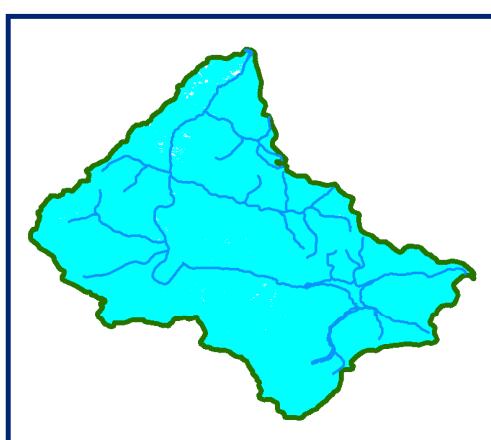
11 FEBRUARY 2012



17 FEBRUARY 2012



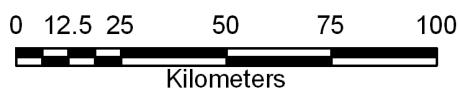
26 FEBRUARY 2012



29 FEBRUARY 2012

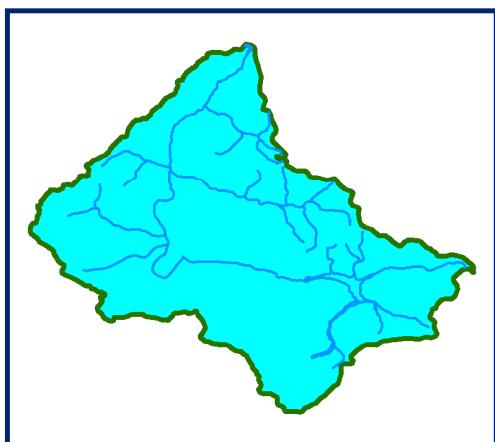


SNOW

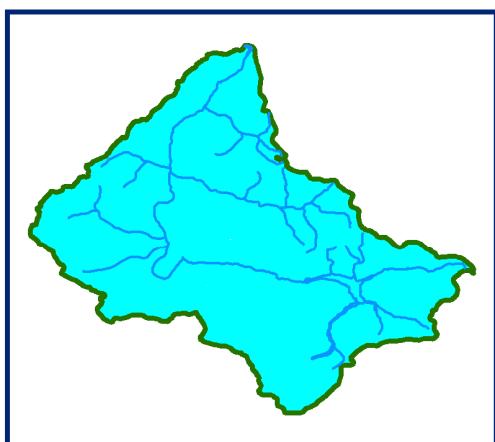


Kilometers

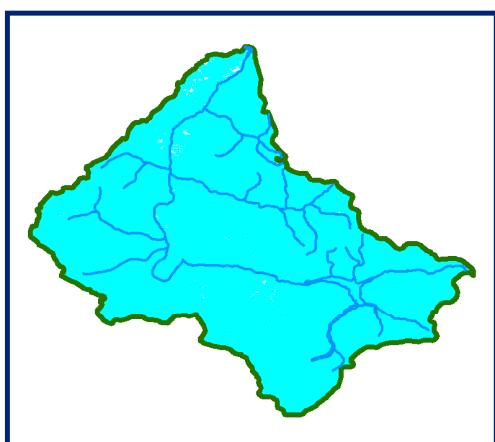
10 DAILY SNOW COVER MAP: SURU BASIN



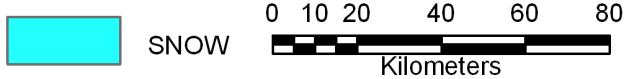
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02 FEBRUARY 2012
09 FEBRUARY 2012



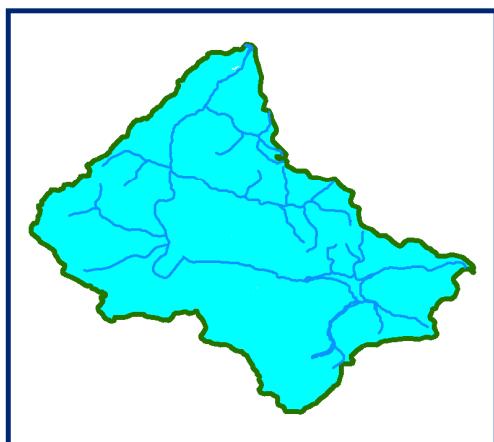
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17 FEBRUARY 2012



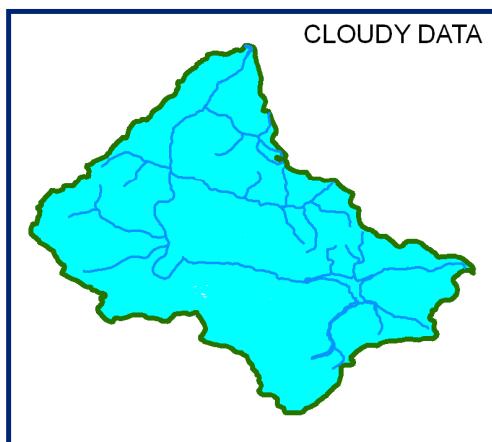
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29 FEBRUARY 2012



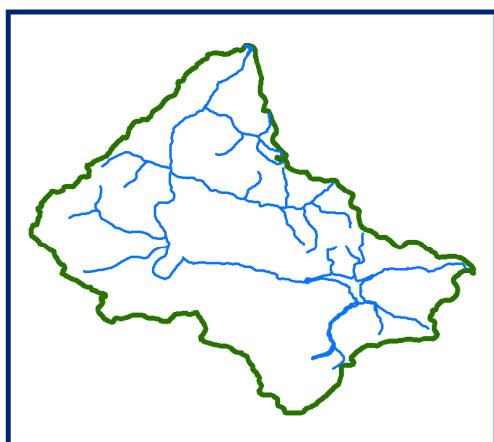
SNOW COVER MAP : SURU BASIN



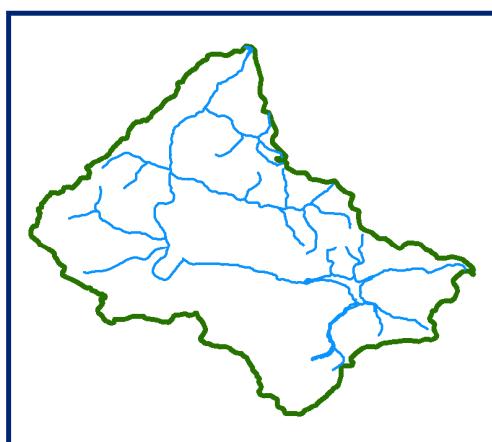
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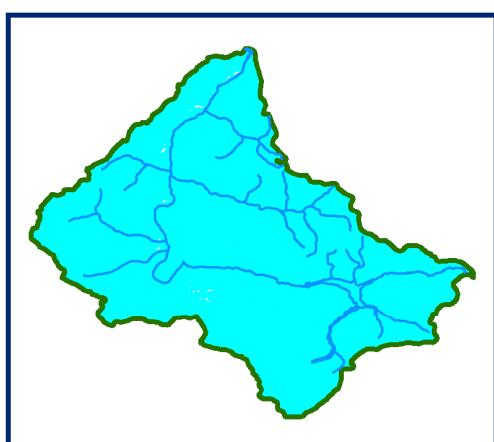
06 MARCH 2012



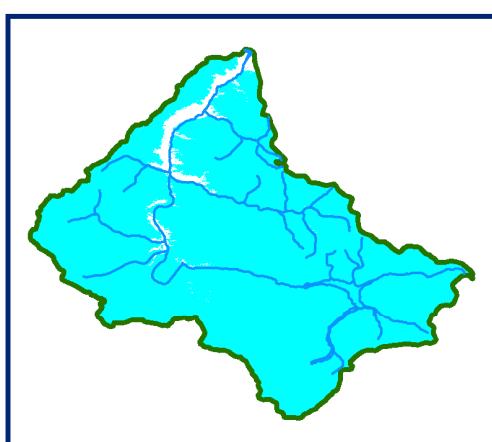
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DATA NOT AVAILABLE



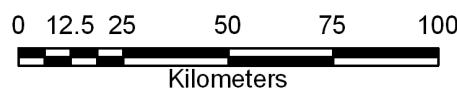
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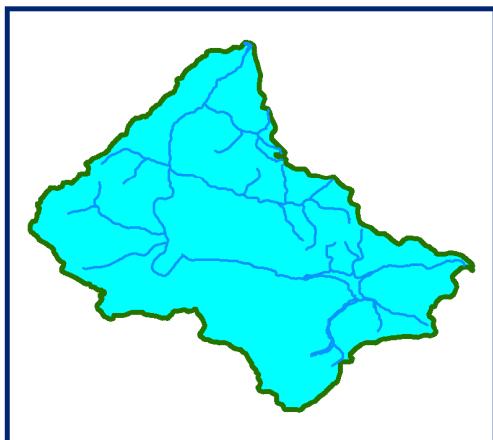
30 MARCH 2012



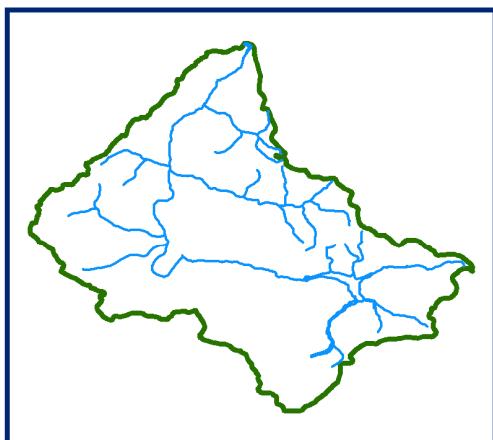
SNOW



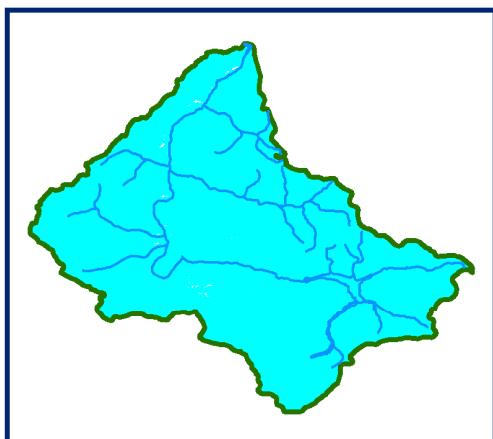
10 DAILY SNOW COVER MAP: SURU BASIN



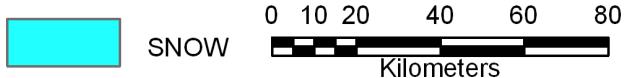
DATA USED
02 MARCH 2012
06 MARCH 2012



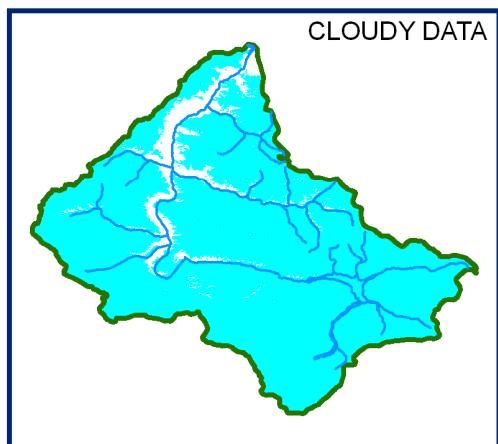
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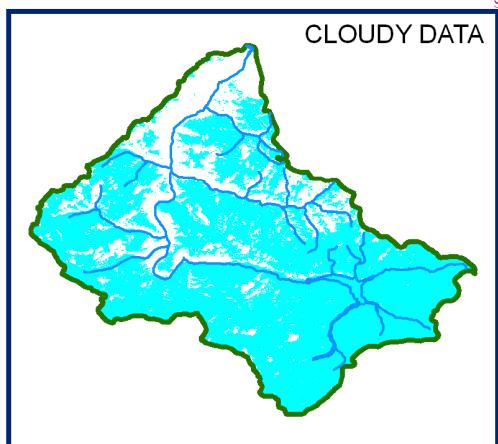
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21 MARCH 2012



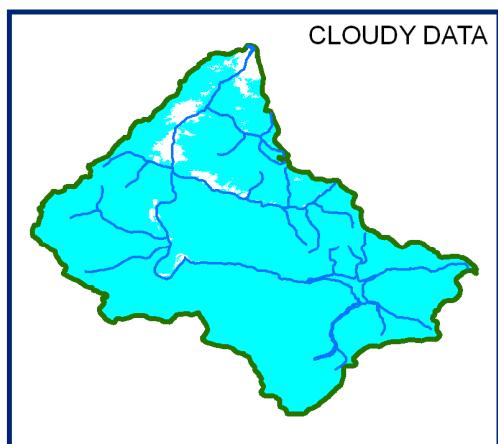
SNOW COVER MAP : SURU BASIN



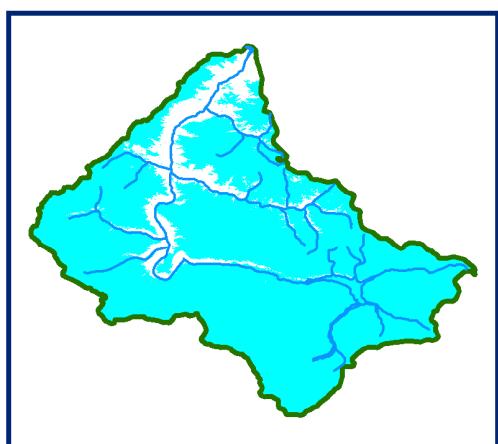
04 APRIL 2012



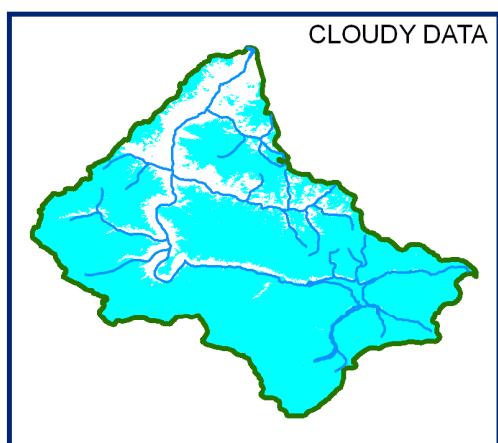
07 APRIL 2012



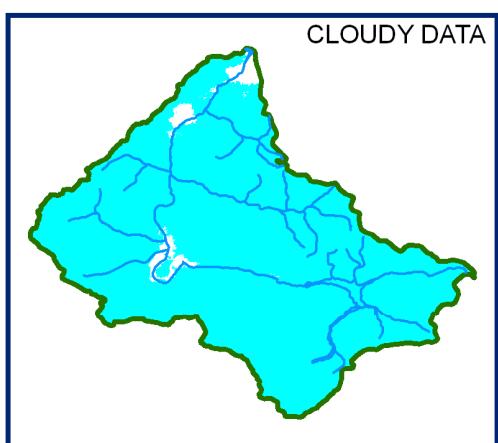
14 APRIL 2012



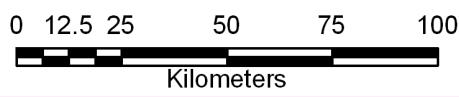
19 APRIL 2012



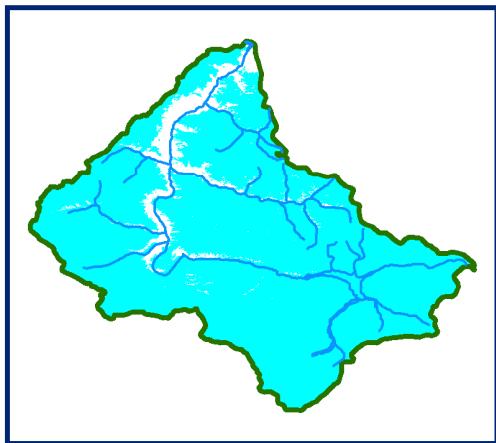
24 APRIL 2012



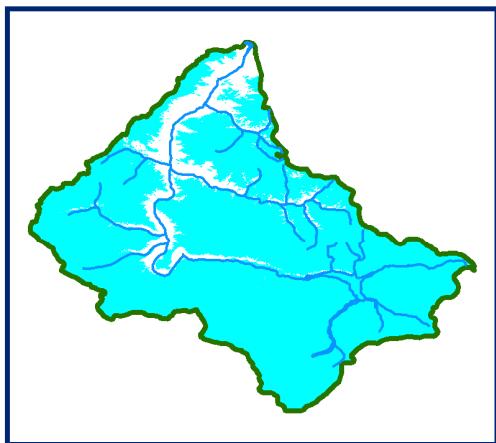
28 APRIL 2012



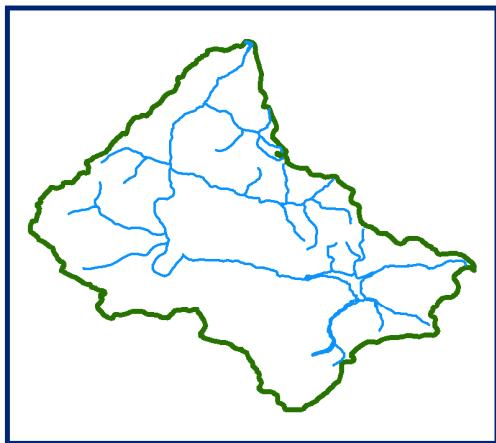
10 DAILY SNOW COVER MAP: SURU BASIN



DATA USED
04 APRIL 2012



DATA USED
19 APRIL 2012



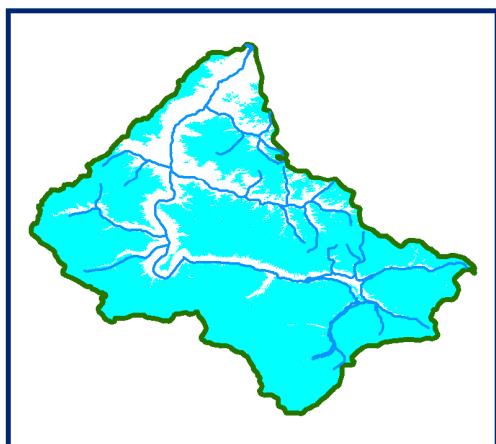
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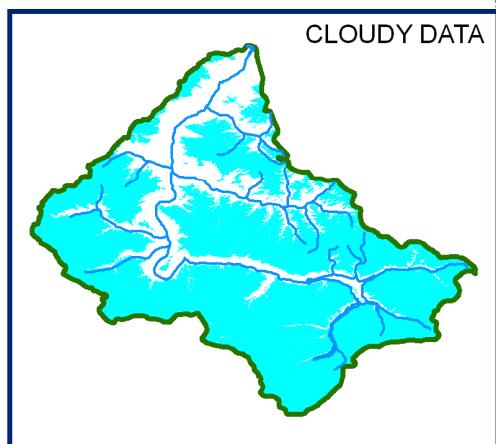
SNOW



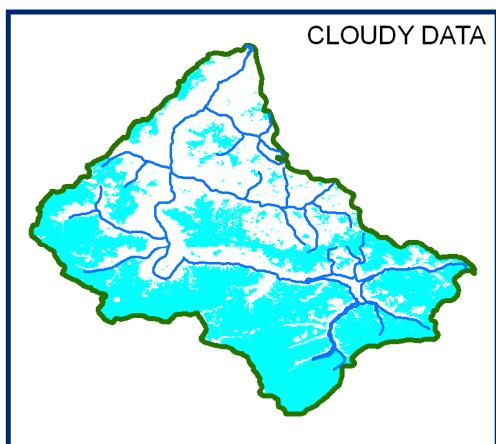
SNOW COVER MAP : SURU BASIN



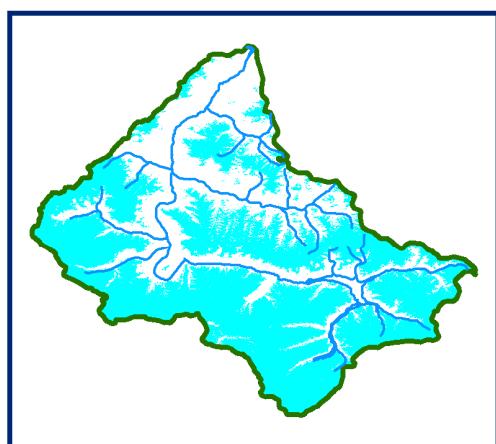
03 MAY 2012



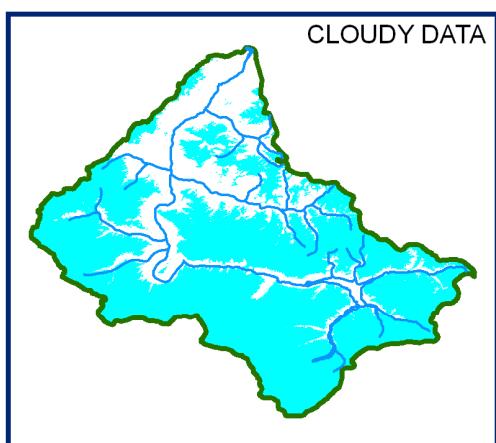
08 MAY 2012



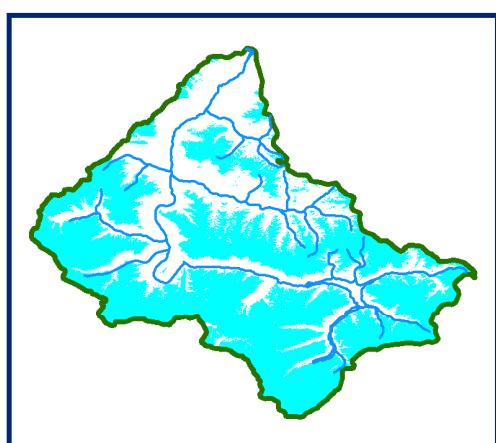
15 MAY 2012



20 MAY 2012



23 MAY 2012



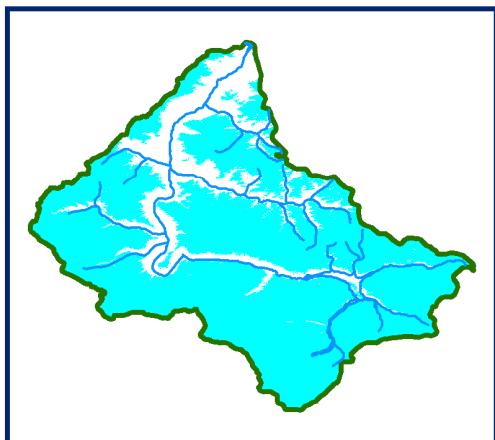
30 MAY 2012



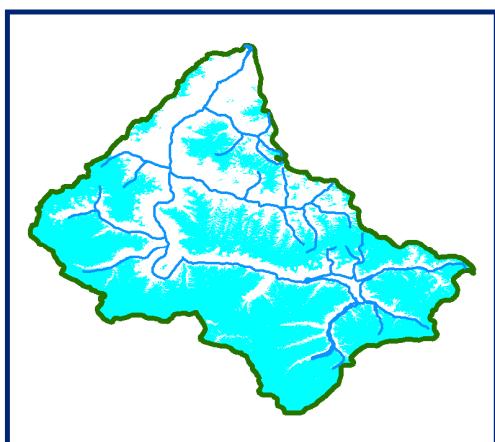
SNOW



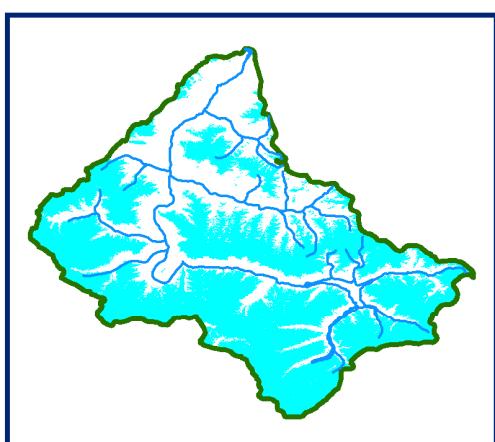
10 DAILY SNOW COVER MAP: SURU BASIN



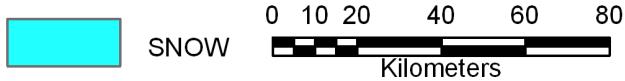
DATA USED
03 MAY 2012
03 MAY 2012



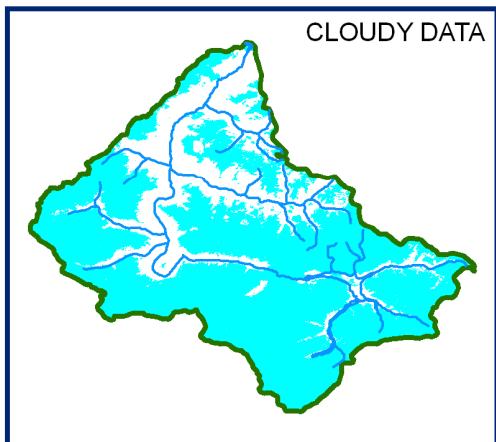
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20 MAY 2012



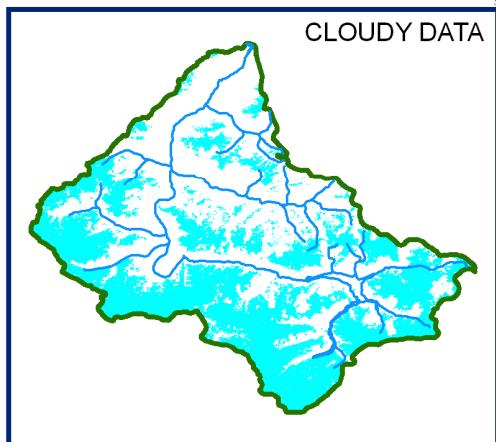
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30 MAY 2012



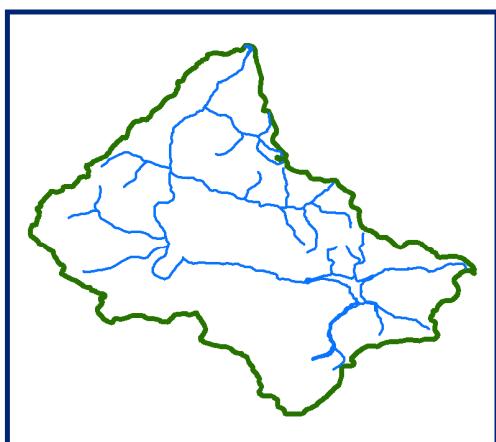
SNOW COVER MAP : SURU BASIN



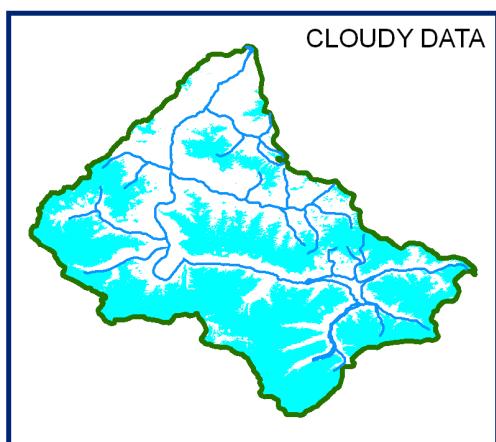
01 JUNE 2012



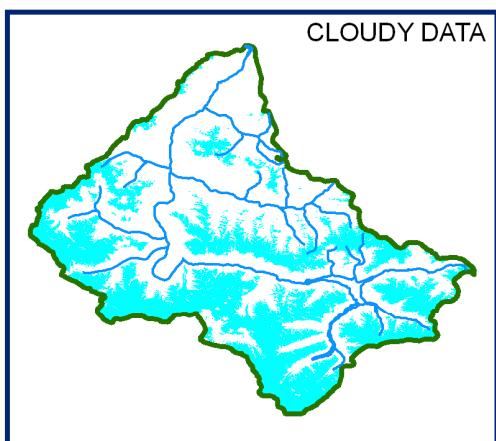
04 JUNE 2012



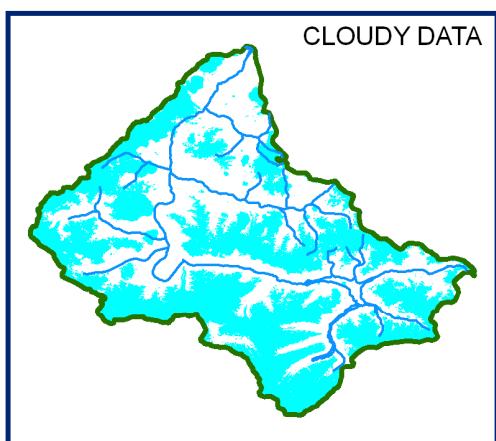
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16 JUNE 2012



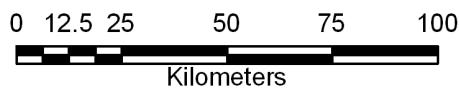
27 JUNE 2012



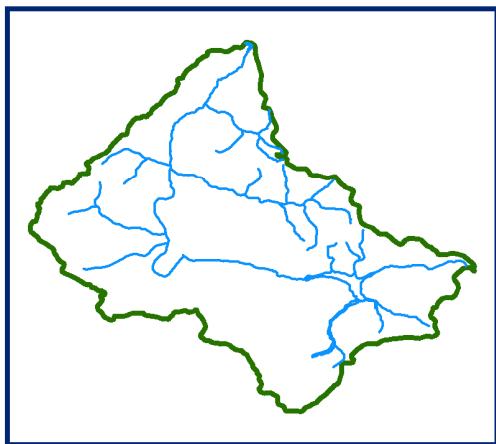
30 JUNE 2012



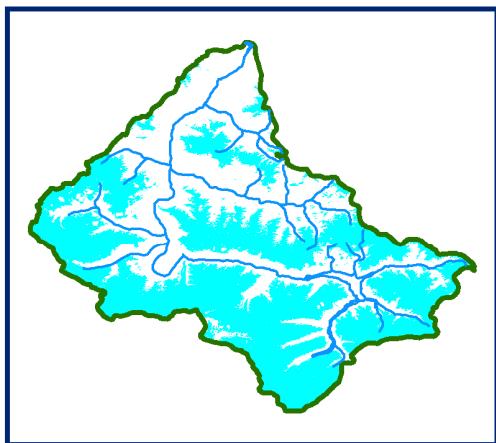
SNOW



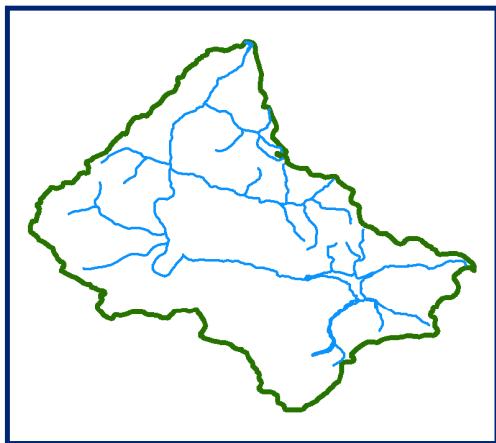
10 DAILY SNOW COVER MAP: SURU BASIN



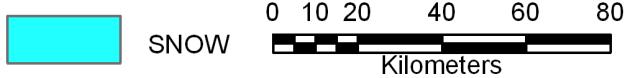
DATA USED
DATA NOT AVAILABLE



DATA USED
16 JUNE 2012



DATA USED
DATA NOT AVAILABLE



ZASKAR BASIN

AREAL EXTENT OF SNOW (5 DAILY)

BASIN NAME: ZASKER

BASIN AREA: 14914 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	3-Oct-11	1247	8	2	5-Oct-11	1424	10
3	10-Oct-11	3217	22	4	15-Oct-11	1823	12
5	25-Oct-11	6451	43	6	29-Oct-11	3737	25
November 2011							
7	1-Nov-11	2209	15	8	3-Nov-11	2898	19
9	5-Nov-11	2387	16	10	13-Nov-11	7942	53
11	18-Nov-11	5476	37	12	22-Nov-11	4257	29
13	27-Nov-11	3325	22	14	29-Nov-11	2508	17
15	30-Nov-11	2173	15				
December 2011							
16	2-Dec-11	2947	20	17	4-Dec-11	2093	14
18	12-Dec-11	5966	40	19	14-Dec-11	3762	25
20	16-Dec-11	3824	26	21	21-Dec-11	6730	45
22	23-Dec-11	2857	19	23	28-Dec-11	2686	18
24	31-Dec-11	2826	19				
January 2012							
25	2-Jan-12	2664	18	26	17-Jan-12	14941	100
27	24-Jan-12	14448	97	28	29-Jan-12	14089	94
29	31-Jan-12	12978	87				
February 2012							
30	2-Feb-12	13735	92	31	7-Feb-12	14236	95
32	9-Feb-12	14091	94	33	10-Feb-12	13570	91
34	17-Feb-12	14591	98	35	26-Feb-12	14106	95
36	29-Feb-12	12596	84				
March 2012							
37	2-Mar-12	13263	89	38	21-Mar-12	14329	96
39	24-Mar-12	12604	85	40	29-Mar-12	12373	83
41	31-Mar-12	13124	88				
April 2012							
42	2-Apr-12	11436	77	43	5-Apr-12	12178	82
44	12-Apr-12	12282	82	44	19-Apr-12	11028	74
44	22-Apr-12	11094	74				

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
May 2012							
45	3-May-12	9518	64	46	8-May-12	9472	64
47	15-May-12	6355	43	48	16-May-12	6245	42
49	18-May-12	7794	52	50	23-May-12	7302	49
51	25-May-12	5771	39	52	28-May-12	6544	44
53	30-May-12	5357	36				
June 2012							
54	16-Jun-12	4819	32	55	21-Jun-12	4294	29

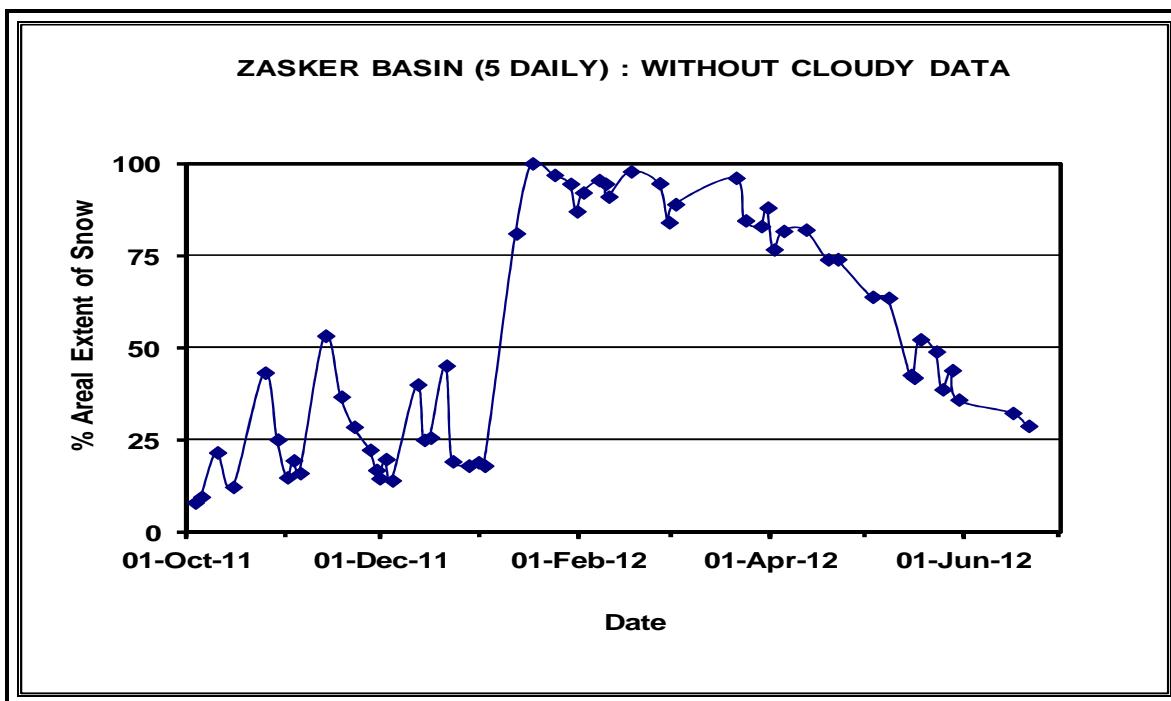
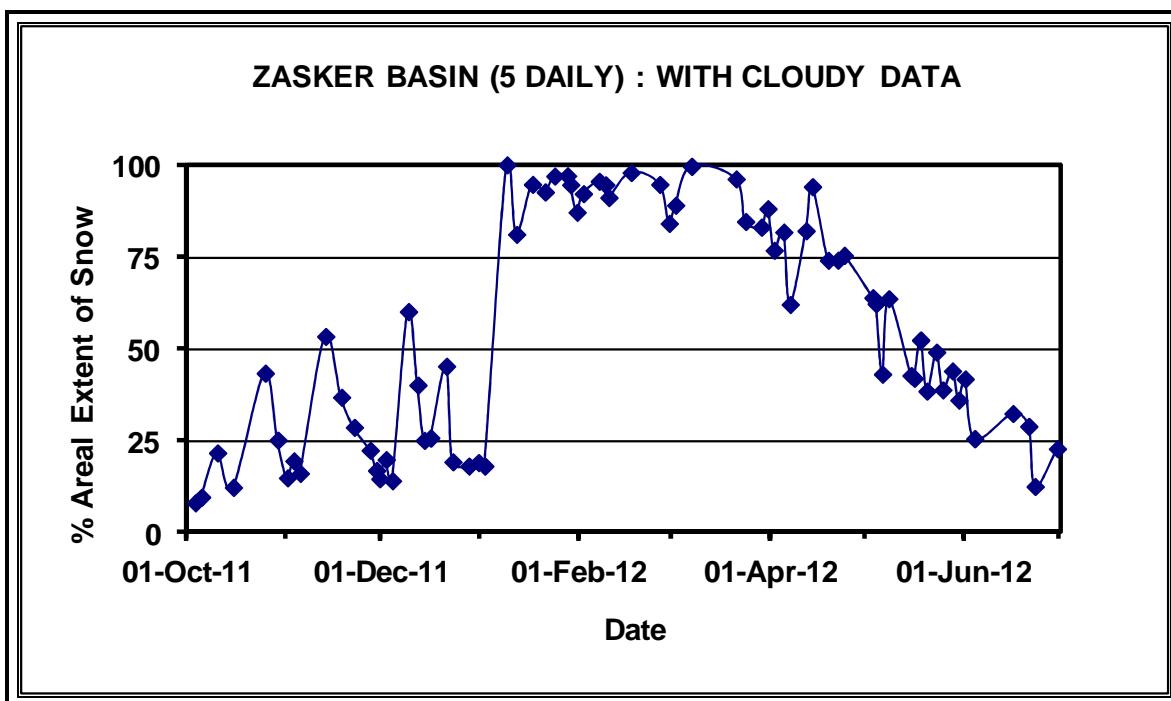
AREAL EXTENT OF SNOW (10 DAILY)

BASIN NAME: ZASKER

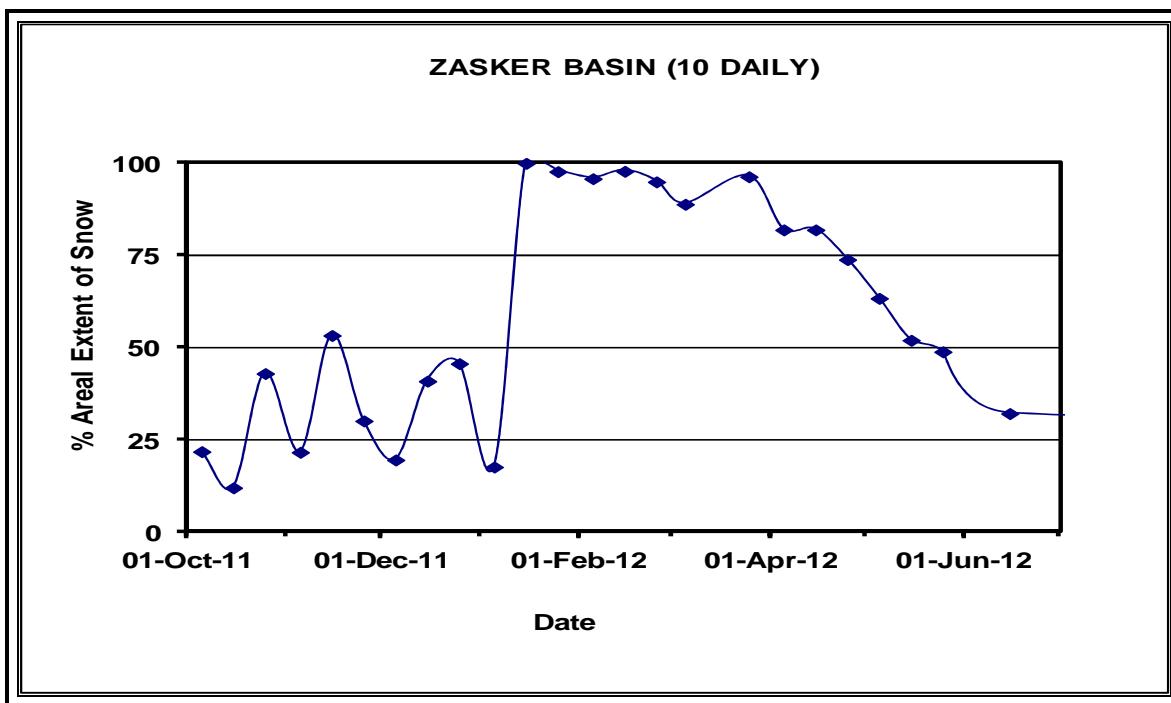
BASIN AREA: 14914 sq km

S No	Date	Snow cover (sq km)	Snow cover (%)	S No	Date	Snow cover (sq km)	Snow cover (%)
October 2011							
1	10-Oct-11	3275	22	2	15-Oct-11	1823	12
3	29-Oct-11	6429	43				
November 2011							
4	5-Nov-11	3251	22	5	18-Nov-11	7963	53
6	22-Nov-11	4516	30				
December 2011							
7	4-Dec-11	2948	20	8	12-Dec-11	6127	41
9	21-Dec-11	6827	46				
January 2012							
10	2-Jan-12	2664	18	11	15-Jan-12	14914	100
12	24-Jan-12	14586	98				
February 2012							
13	9-Feb-12	14300	96	14	17-Feb-12	14591	98
15	26-Feb-12	14175	95				
March 2012							
16	2-Mar-12	13263	89	17	21-Mar-12	14372	96
April 2012							
18	2-Apr-12	12282	82	19	19-Apr-12	12282	82
20	19-Apr-12	11028	74				
May 2012							
21	8-May-12	9472	64	22	16-May-12	7780	52
23	25-May-12	7308	49				
June 2012							
24	16-Jun-12	4819	32	25	21-Jun-12	4294	29

Snow cover depletion curve

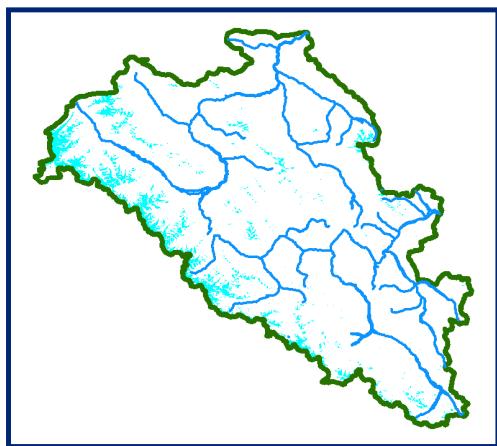
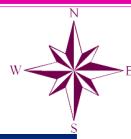


Snow cover depletion curve

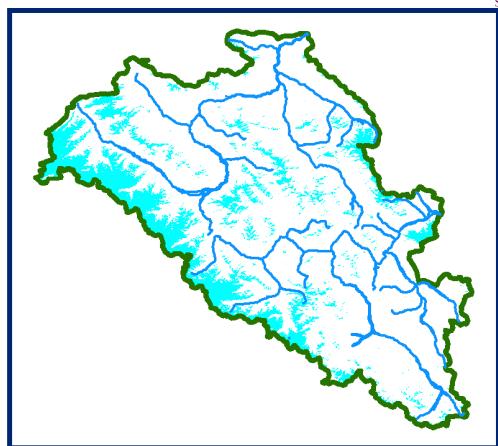


SNOW COVER MAP

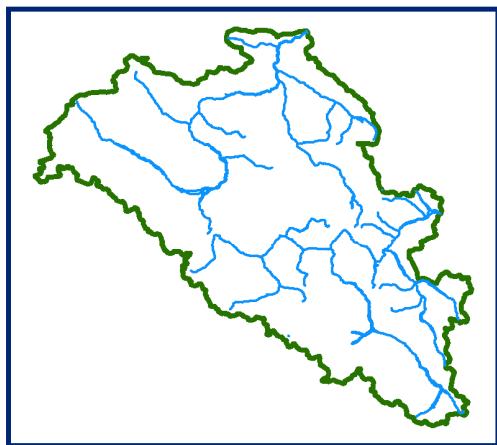
SNOW COVER MAP : ZASKER BASIN



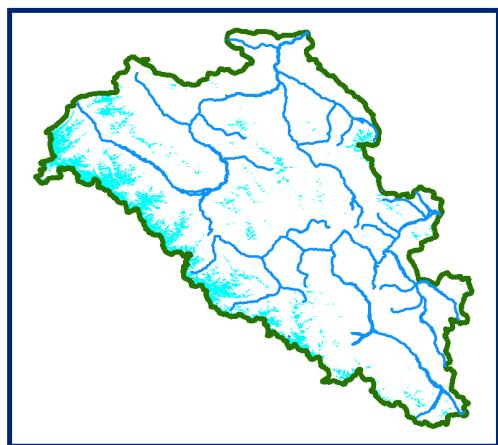
05 OCTOBER 2011



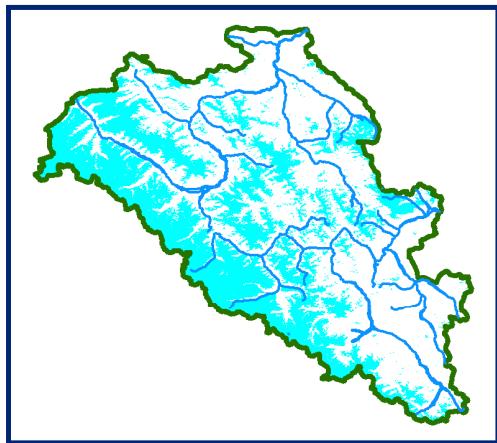
10 OCTOBER 2011



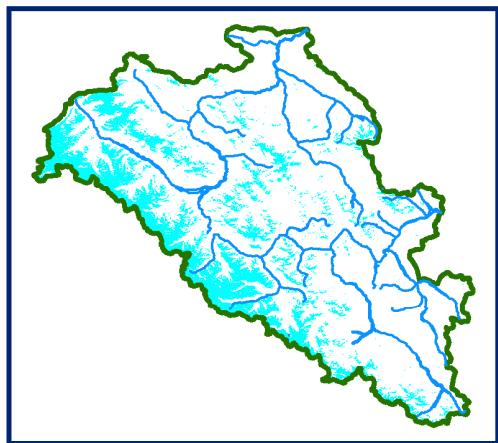
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15 OCTOBER 2011



25 OCTOBER 2011

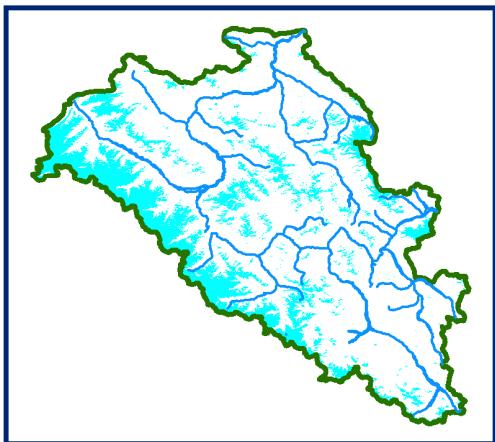


29 OCTOBER 2011

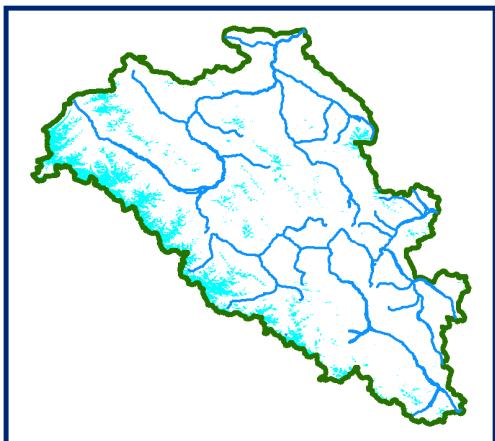


0 25 50 100 150 200
Kilometers

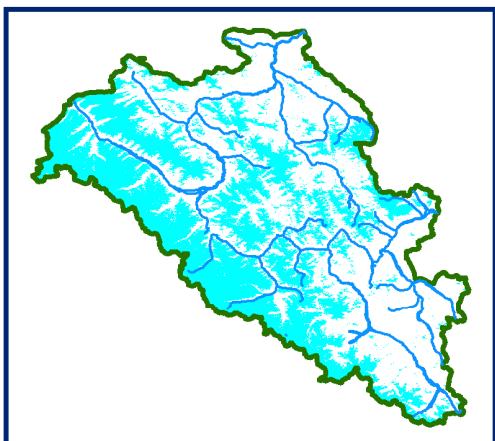
10 DAILY SNOW COVER MAP: ZASKER BASIN



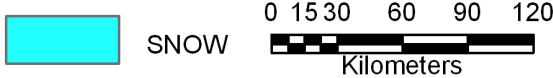
DATA USED
03 OCTOBER 2011
05 OCTOBER 2011
10 OCTOBER 2011



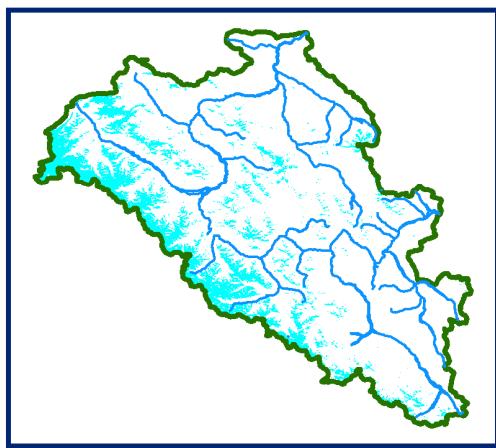
DATA USED
15 OCTOBER 2011



DATA USED
25 OCTOBER 2011
29 OCTOBER 2011



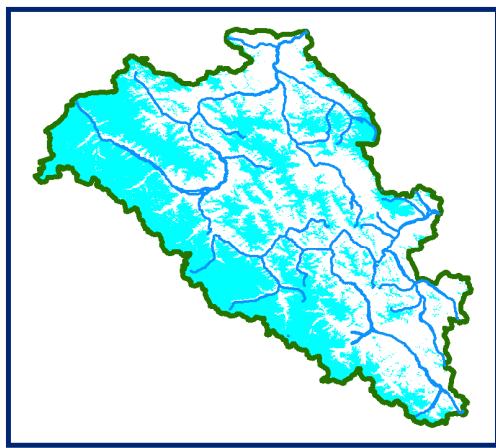
SNOW COVER MAP : ZASKER BASIN



03 NOVEMBER 2011



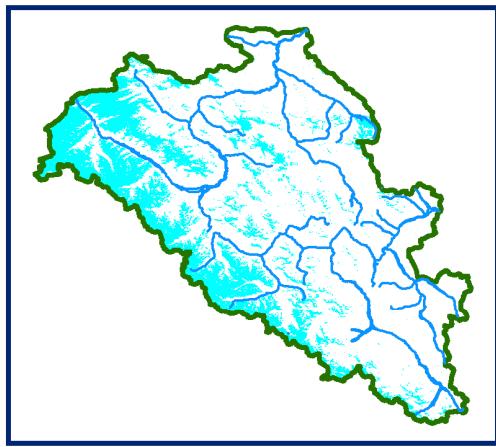
05 NOVEMBER 2011



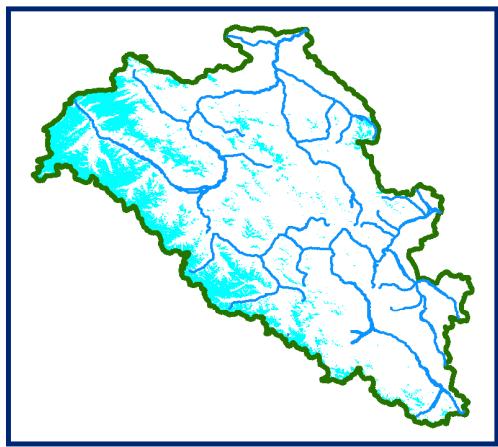
13 NOVEMBER 2011



18 NOVEMBER 2011



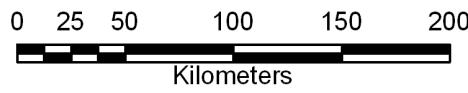
22 NOVEMBER 2011



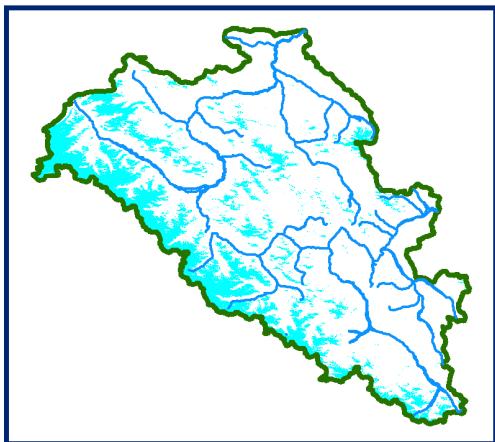
27 NOVEMBER 2011



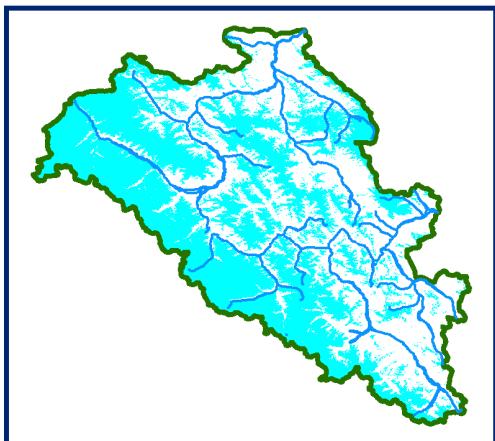
SNOW



10 DAILY SNOW COVER MAP: ZASKER BASIN



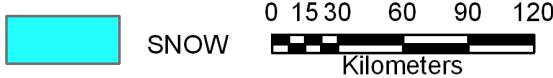
DATA USED
03 NOVEMBER 2011
05 NOVEMBER 2011



DATA USED
13 NOVEMBER 2011
18 NOVEMBER 2011



DATA USED
22 NOVEMBER 2011
27 NOVEMBER 2011
29 NOVEMBER 2011

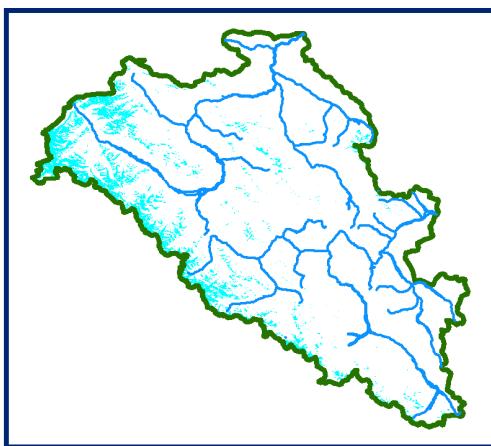


SNOW COVER MAP

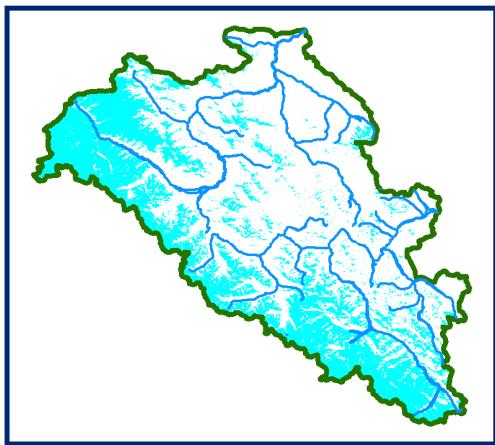
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02 DECEMBER 2011



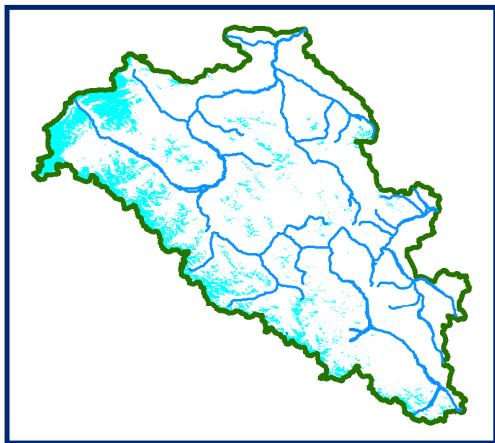
04 DECEMBER 2011



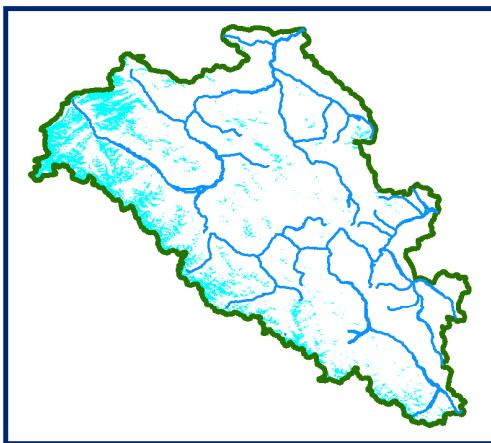
12 DECEMBER 2011



16 DECEMBER 2011



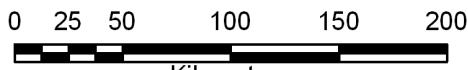
23 DECEMBER 2011



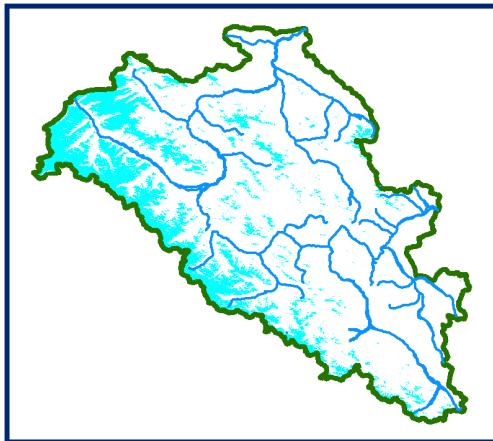
28 DECEMBER 2011



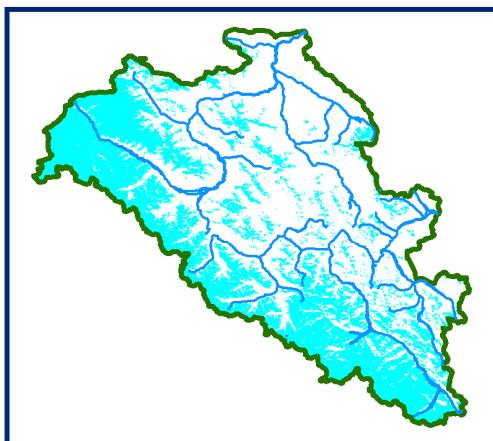
SNOW



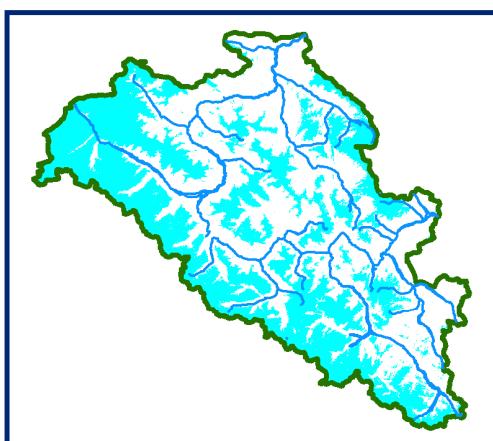
10 DAILY SNOW COVER MAP: ZASKER BASIN



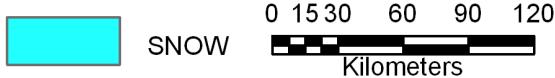
DATA USED
02 DECEMBER 2011
04 DECEMBER 2011



DATA USED
12 DECEMBER 2011
14 NOVEMBER 2011
16 DECEMBER 2011

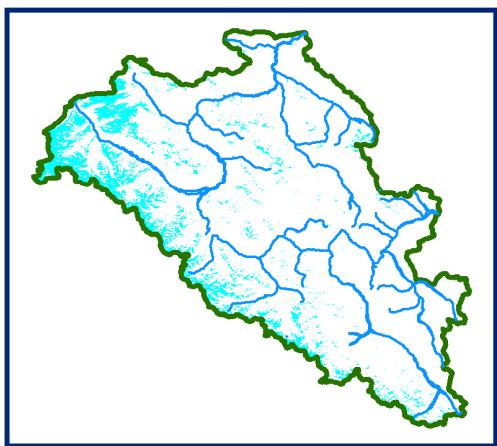


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28 DECEMBER 2011
31 DECEMBER 2011

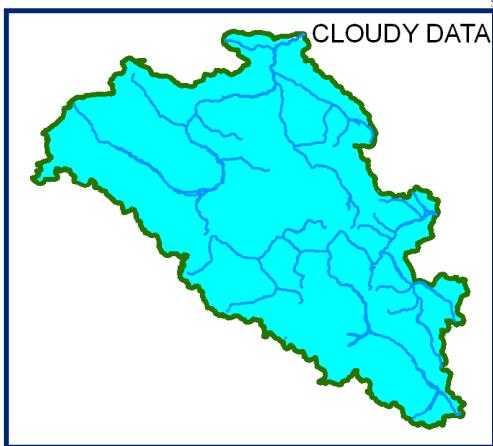


SNOW COVER MAP

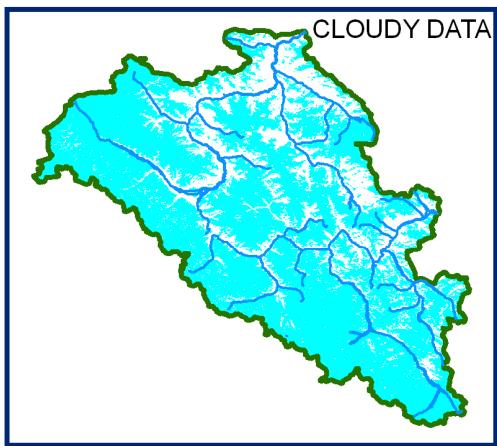
ZASKER BASIN



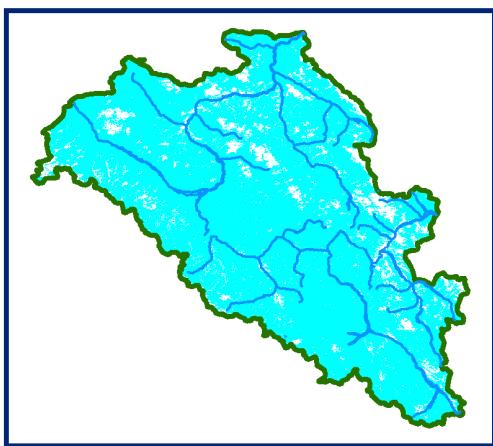
02 JANUARY 2012



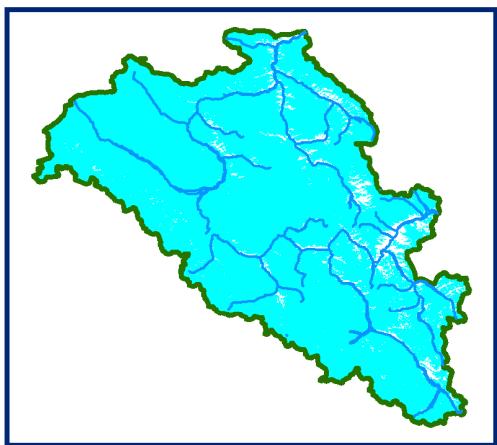
09 JANUARY 2012



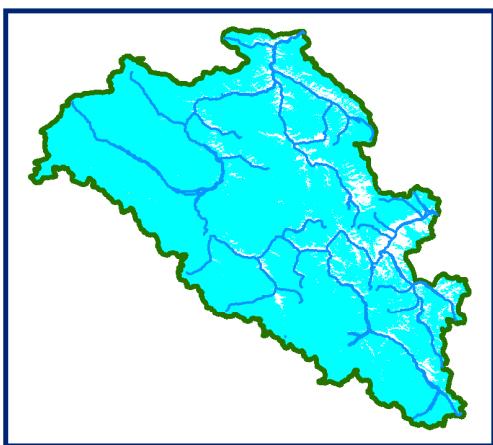
12 JANUARY 2012



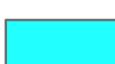
17 JANUARY 2012



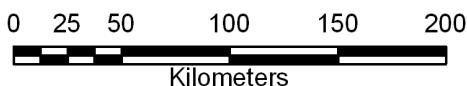
24 JANUARY 2012



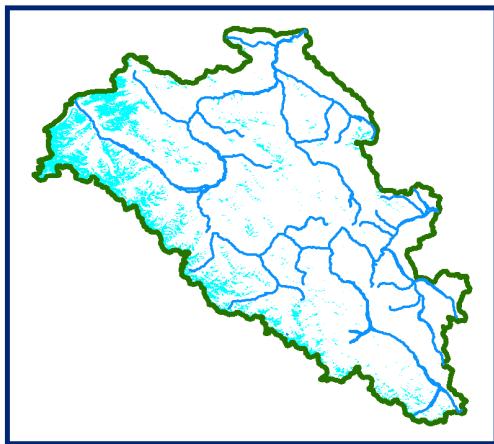
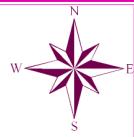
29 JANUARY 2012



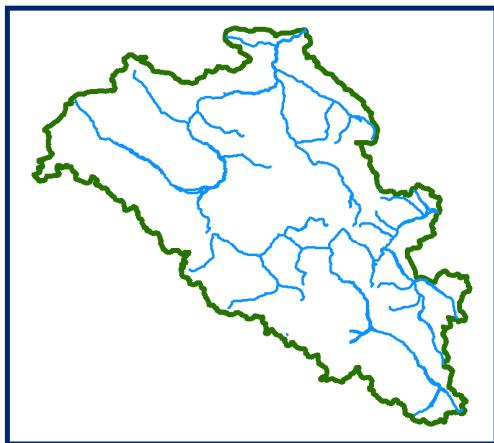
SNOW



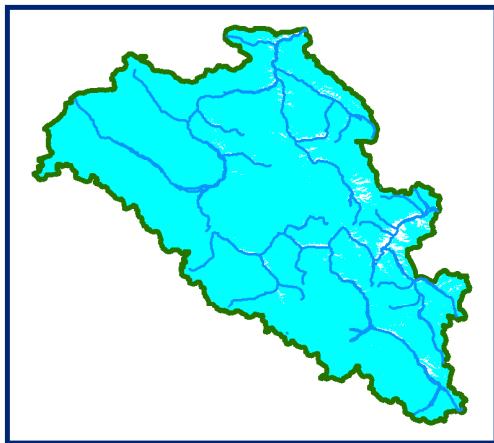
10 DAILY SNOW COVER MAP: ZASKER BASIN



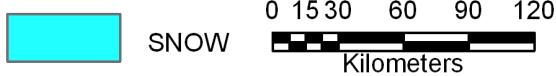
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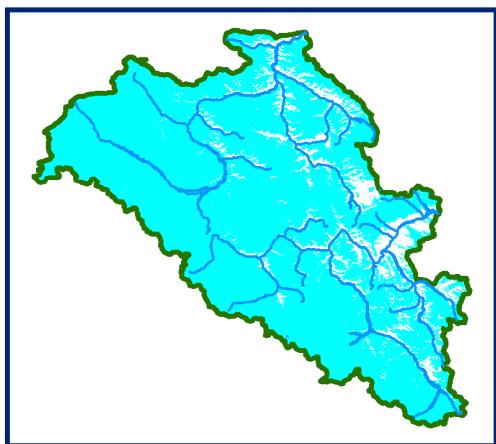
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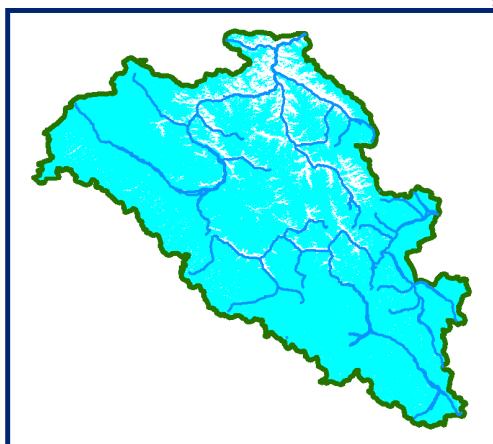
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29 JANUARY 2012



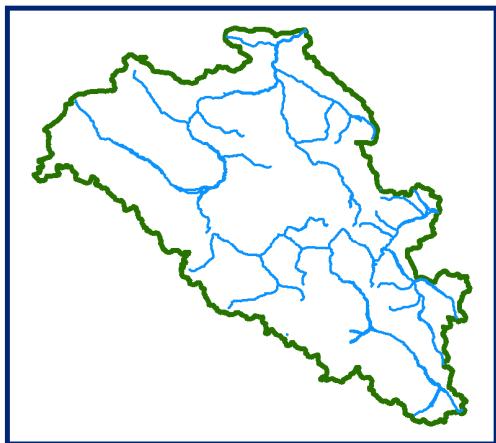
SNOW COVER MAP : ZASKER BASIN



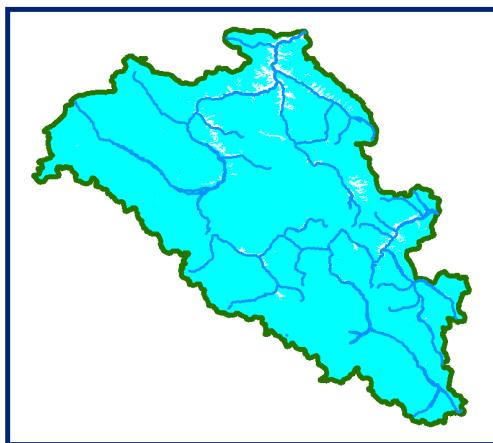
02 FEBRUARY 2012



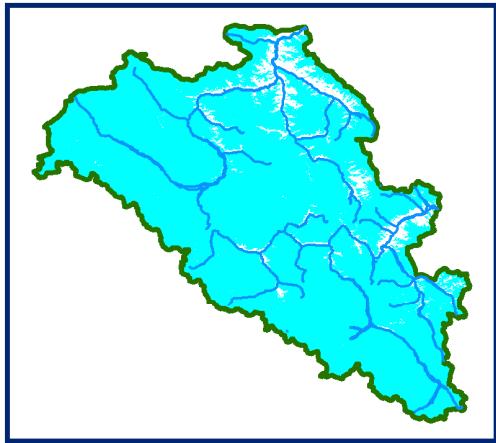
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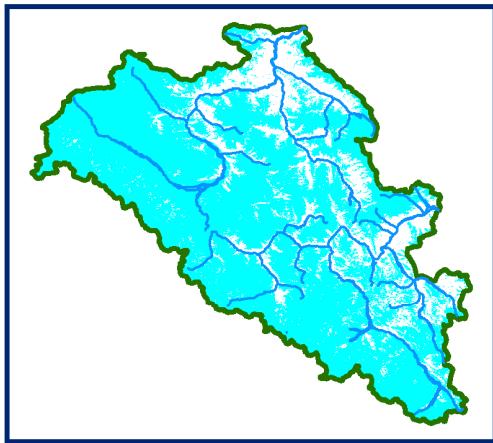
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17 FEBRUARY 2012



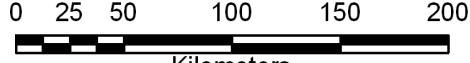
26 FEBRUARY 2012



29 FEBRUARY 2012

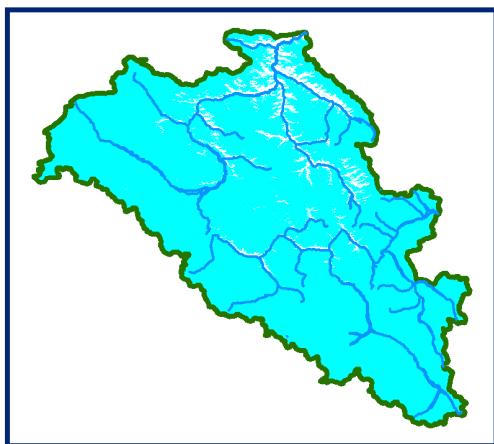


SNOW

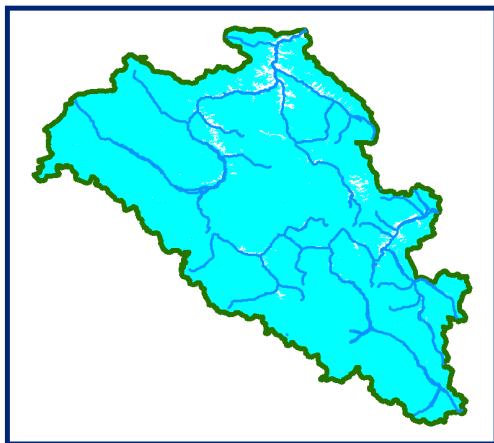


Kilometers

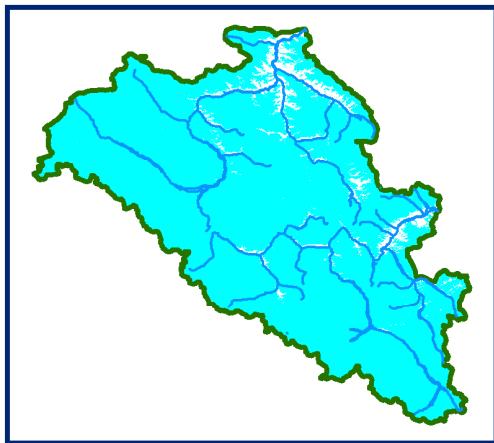
10 DAILY SNOW COVER MAP: ZASKER BASIN



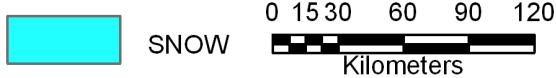
DATA USED
09 FEBRUARY 2012
10 FEBRUARY 2012



DATA USED
17 FEBRUARY 2012

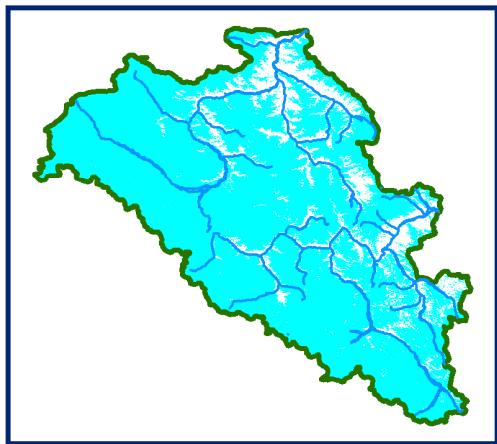


DATA USED
26 FEBRUARY 2012
29 FEBRUARY 2012

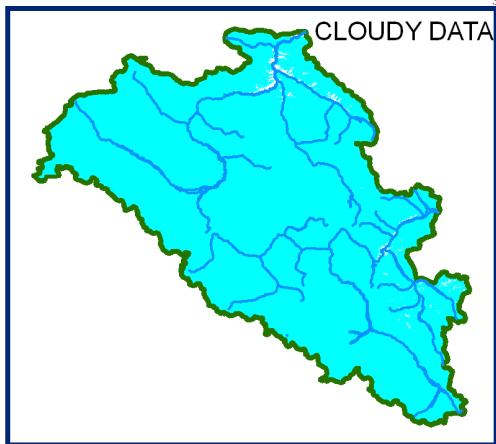


SNOW COVER MAP

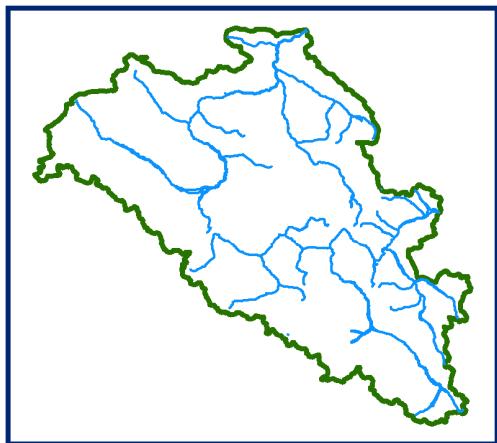
ZASKER BASIN



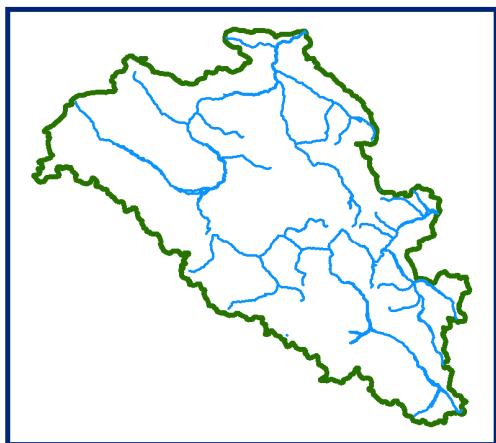
02 MARCH 2012



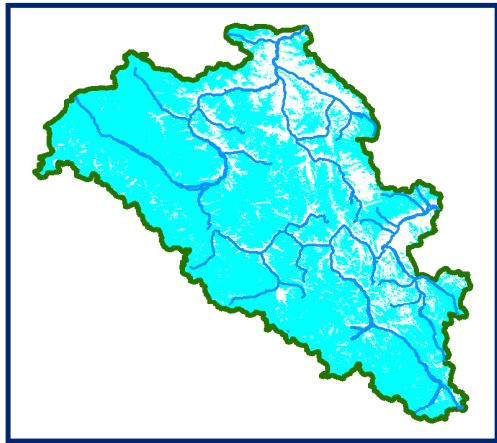
07 MARCH 2012



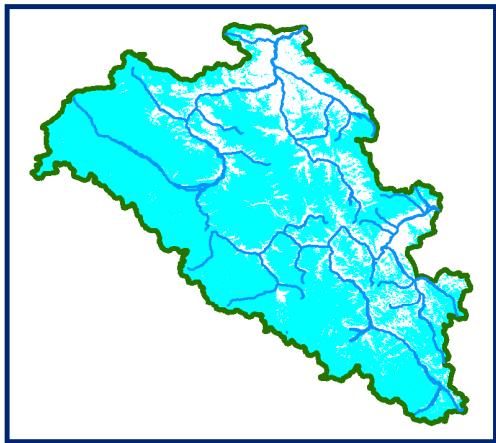
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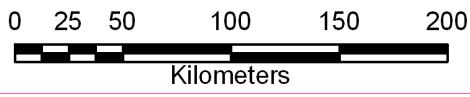
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29 MARCH 2012

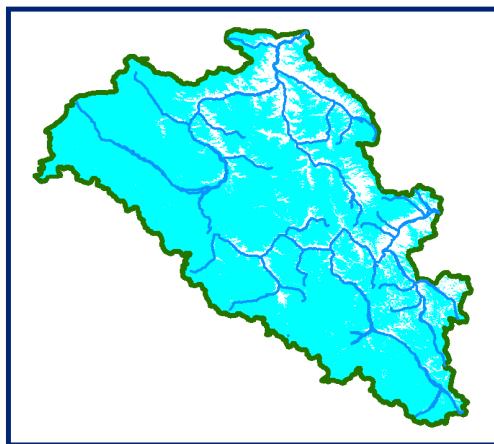


SNOW

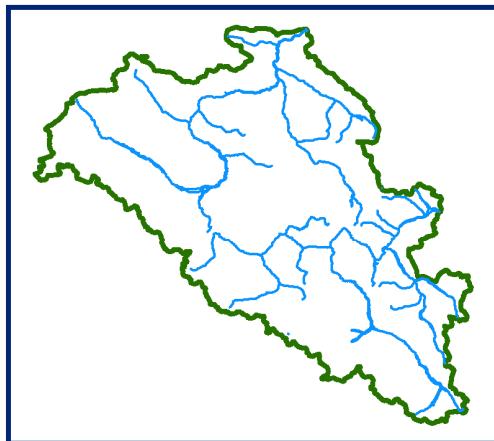


Kilometers

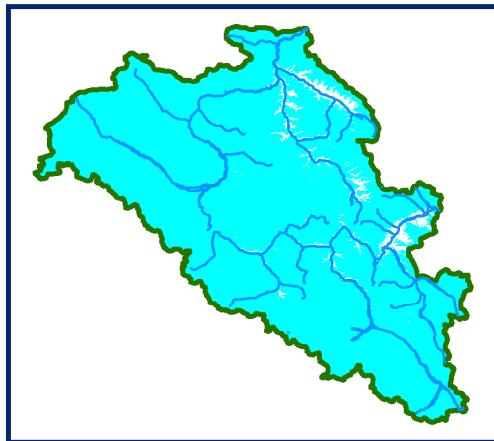
10 DAILY SNOW COVER MAP: ZASKER BASIN



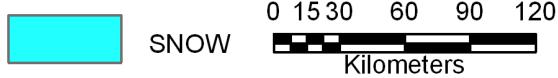
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02 MARCH 2012



DATA USED
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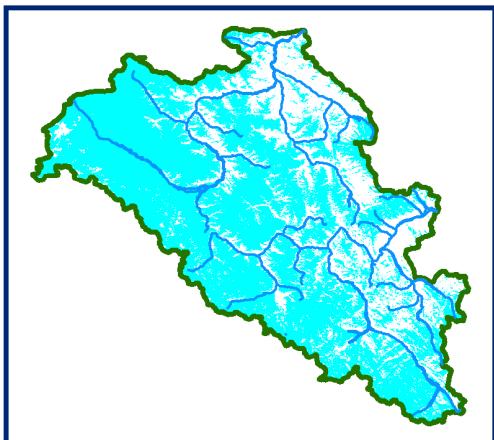


DATA USED
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31 MARCH 2012

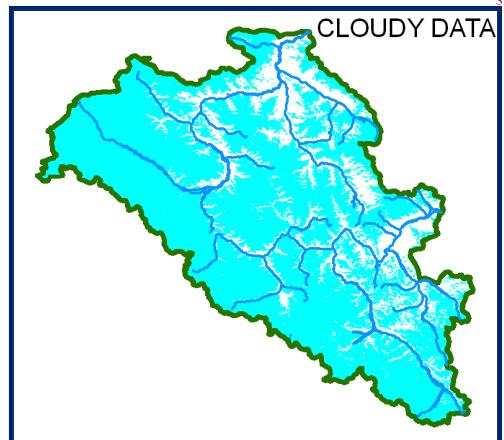


SNOW COVER MAP

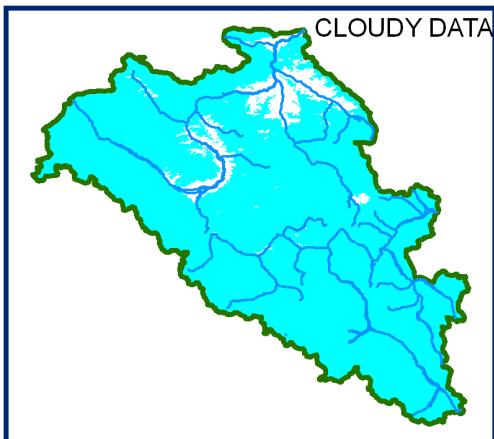
ZASKER BASIN



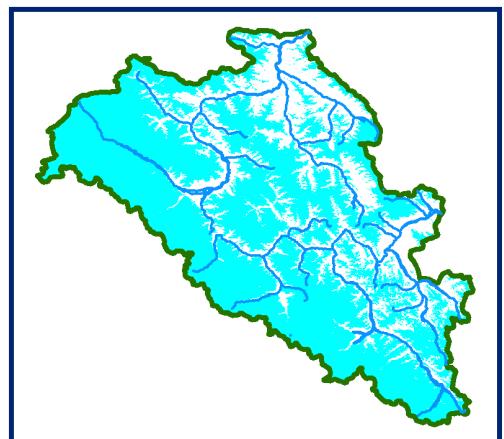
02 APRIL 2012



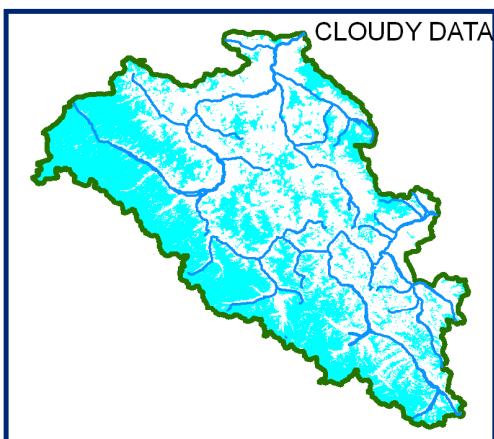
05 APRIL 2012



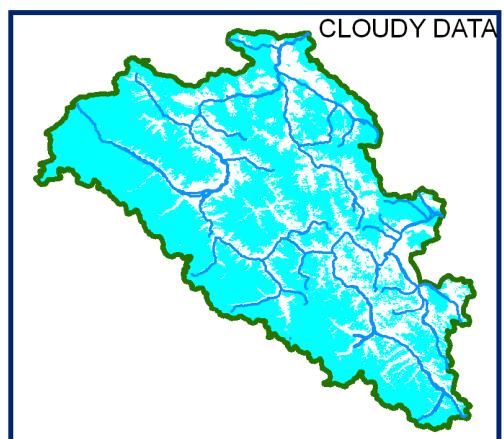
14 APRIL 2012



19 APRIL 2012



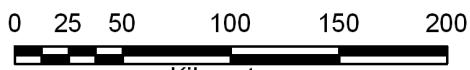
22 APRIL 2012



29 APRIL 2012

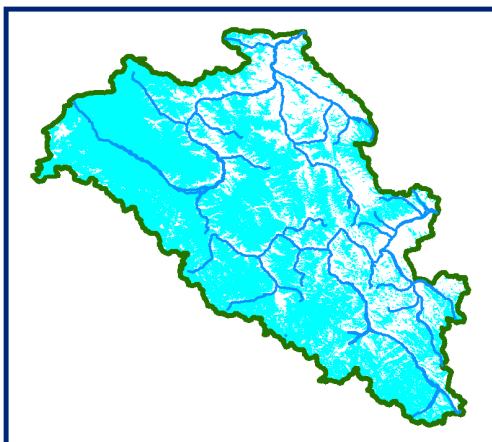


SNOW

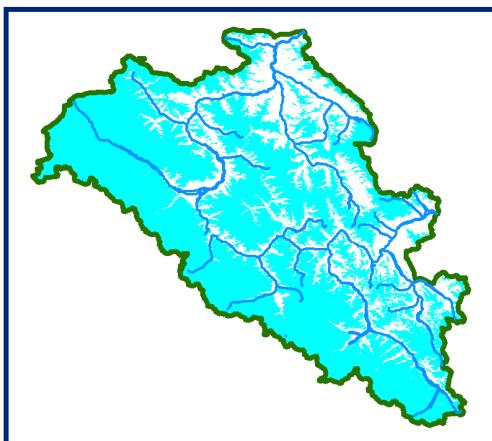


Kilometers

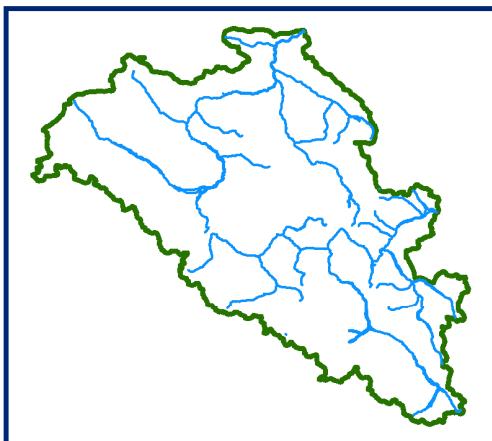
10 DAILY SNOW COVER MAP: ZASKER BASIN



DATA USED
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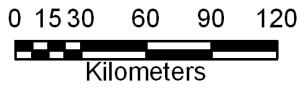
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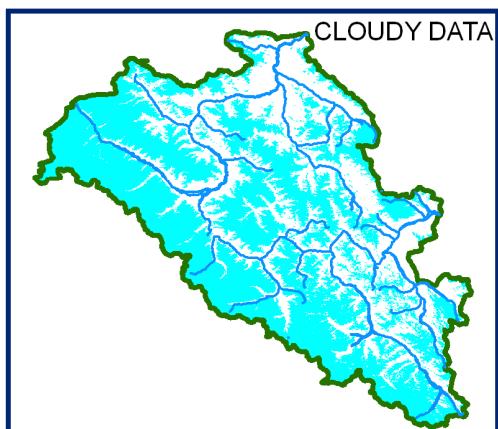


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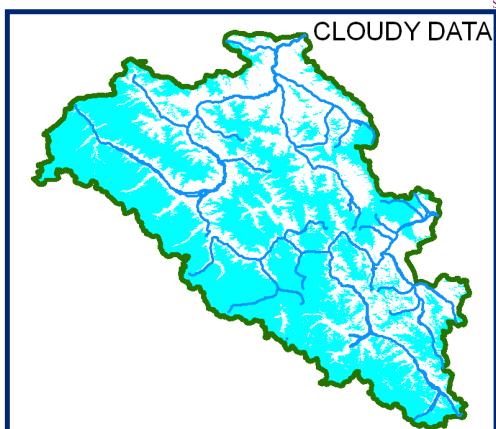


SNOW COVER MAP

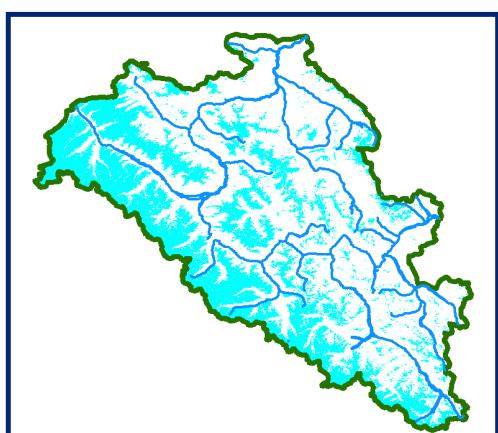
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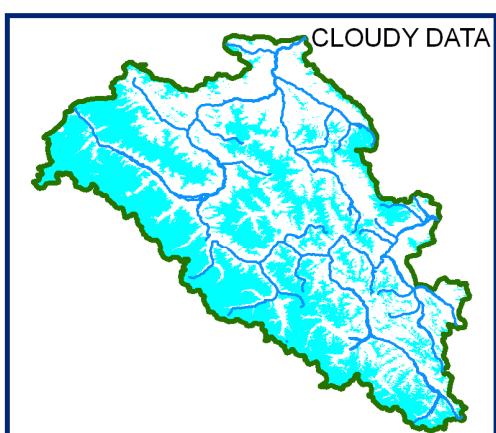
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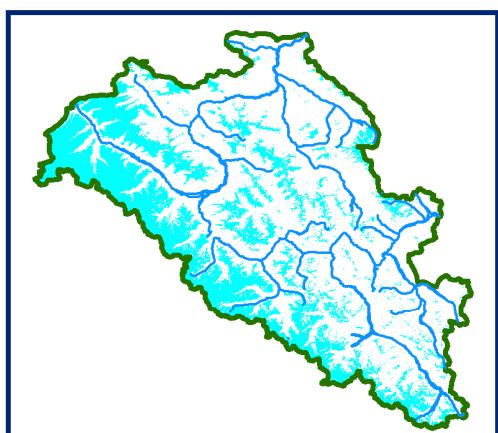
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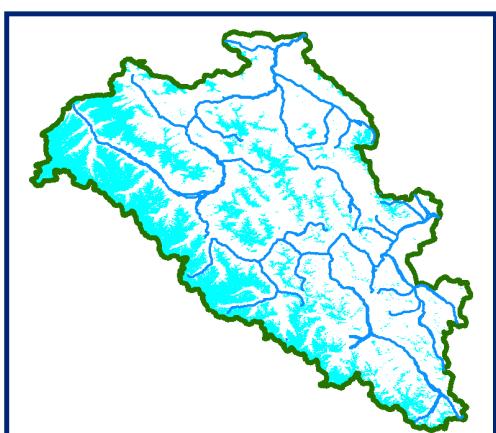
16 MAY 2012



18 MAY 2012



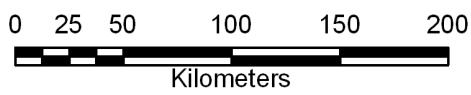
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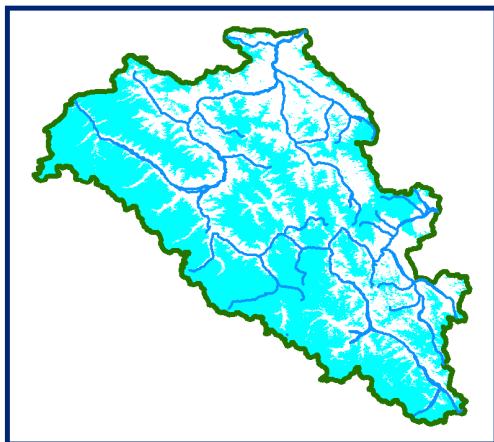
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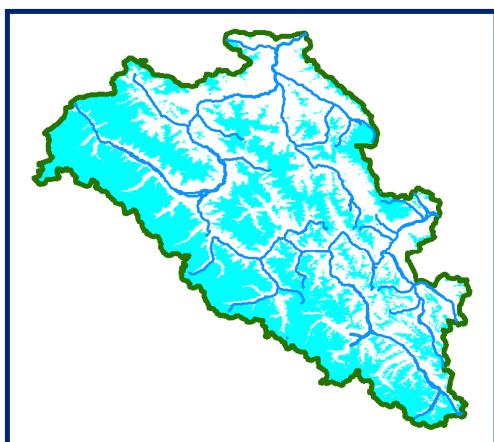
SNOW



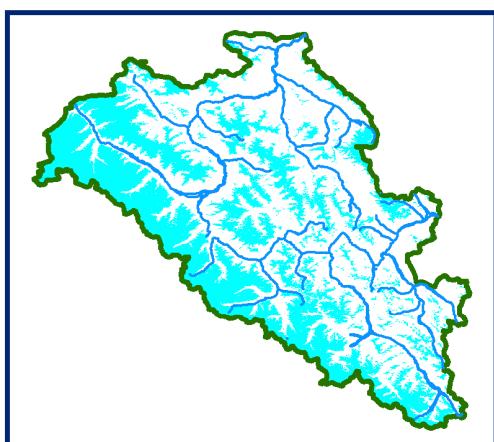
10 DAILY SNOW COVER MAP: ZASKER BASIN



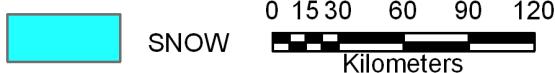
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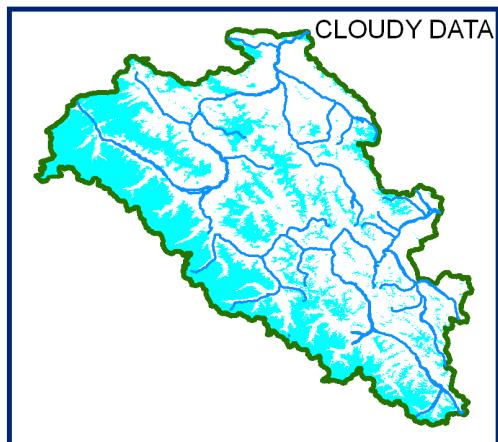


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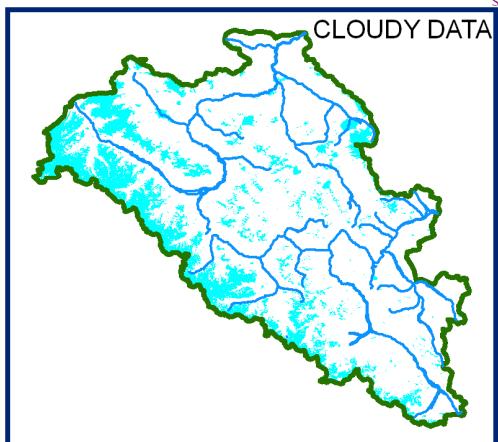


SNOW COVER MAP

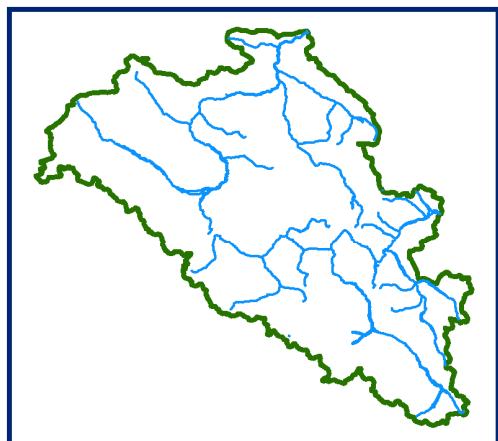
ZASKER BASIN



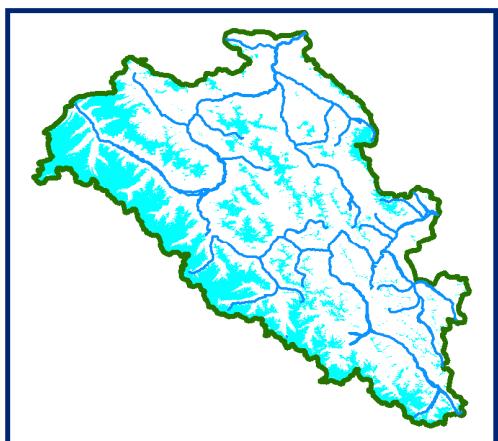
01 JUNE 2012



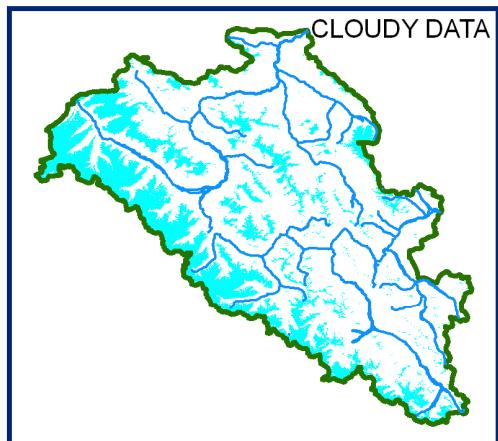
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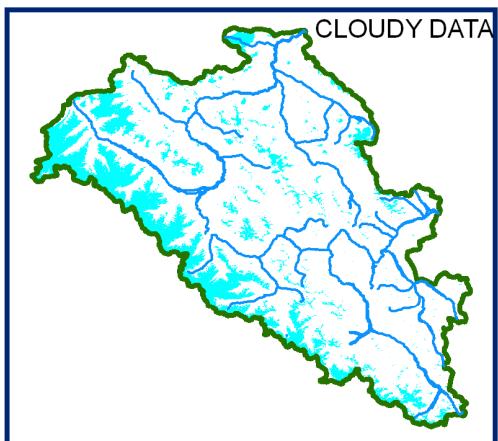
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16 JUNE 2012



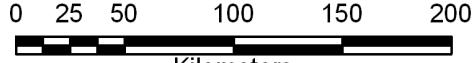
21 JUNE 2012



30 JUNE 2012

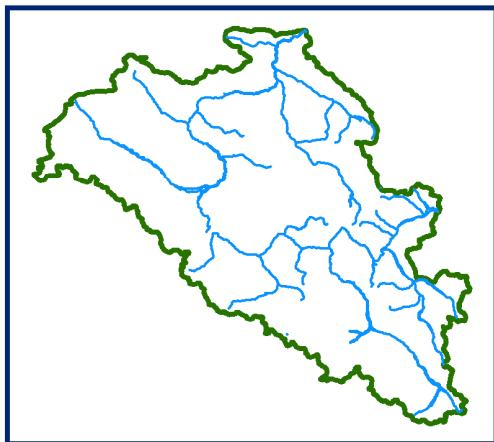


SNOW

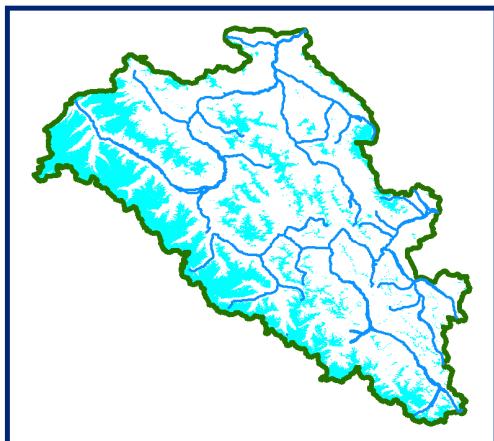


Kilometers

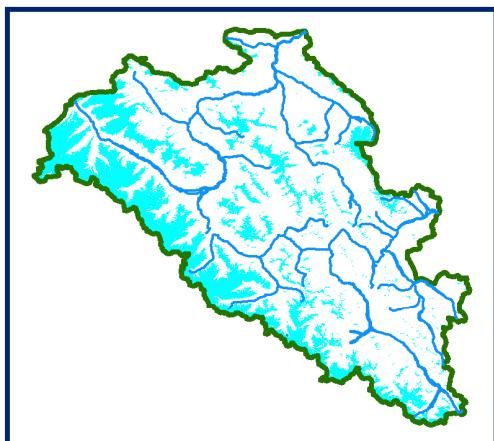
10 DAILY SNOW COVER MAP: ZASKER BASIN



DATA USED
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DATA USED
16 JUNE 2012



DATA USED
21 JUNE 2012

