

## Snow Coverage Area for the Sierra Nevada –April 1, 2008

The following analysis of Snow Covered Area (SCA) is derived from MODIS (Moderate Resolution Imaging Spectroradiometer) aboard NASA's Terra and Aqua satellites. Data from MODIS are processed to provide a resolution of 500 meters and a fractional SCA product where each pixel can range in value between 0 and 100% (e.g. 50%=50% of the 500 meter pixel is covered by snow) as opposed to the operational binary product that defines a pixel as either snow or snow free. The MODIS SCA product is available on a daily basis, but viewable areas are subject to cloud cover. In addition, tree canopies mask a portion of the SCA and should be viewed accordingly based on the vegetation characteristics of each hydrologic unit and watershed.

This analysis covers the Sierra Nevada and various river basins, with Figure 1 highlighting the SCA over the Sierra Nevada for April 1, 2008, and Figure 2 showing the daily SCA in select river basins for March 2007 and 2008. Figures 3 (a-e) focuses on the **Feather, American, Tuolumne, Merced, and Kaweah** River basins. The years 2007 and 2005 are used to represent the extreme variability that the Sierra's have experienced and provide a current benchmark for comparison. Additional basins will be added throughout the year and upon request.

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For further information or comments/suggestions please contact Robert Rice ([rrice@ucmerced.edu](mailto:rrice@ucmerced.edu) or (209)228-4397).

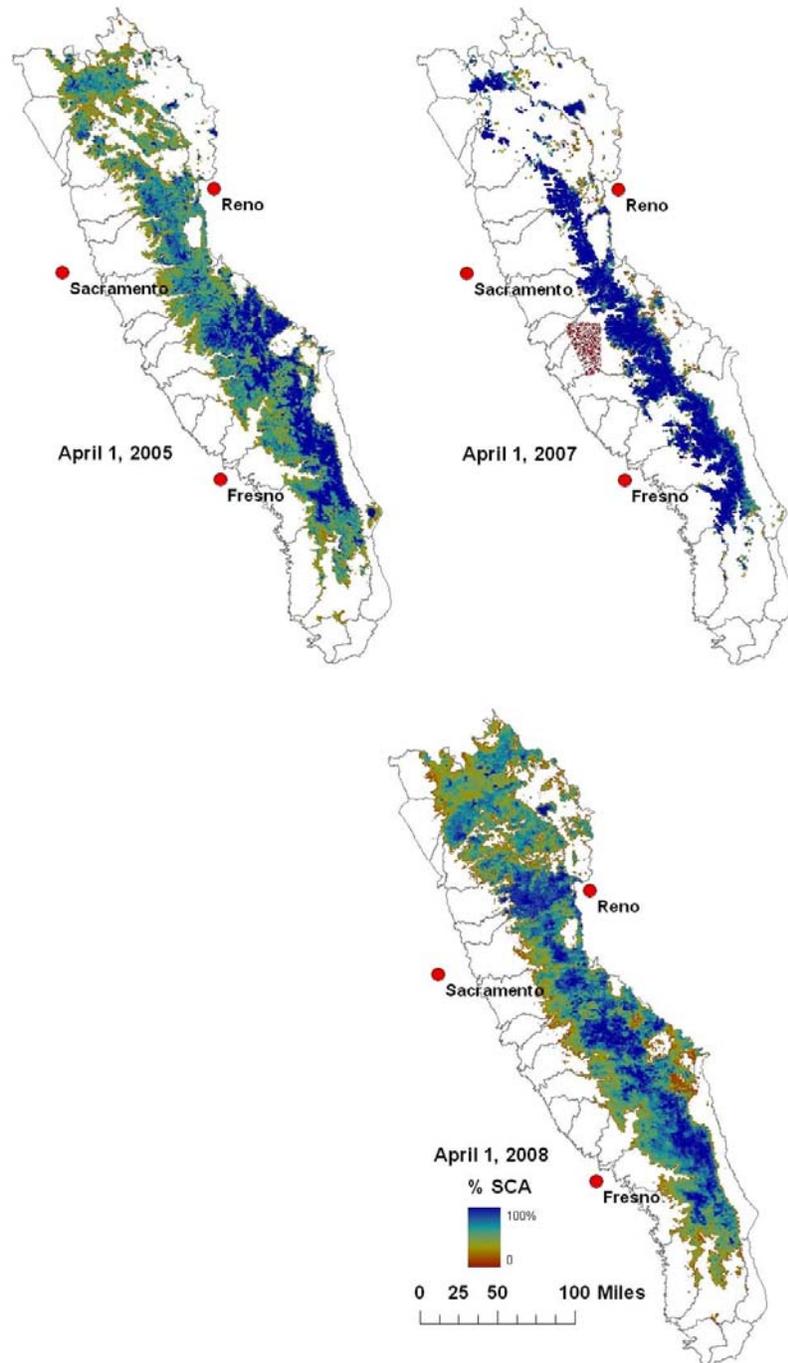


Figure 1. SCA over the **Sierra Nevada** on April 1, 2007/2005 and April 1, 2008 outlined by the individual watersheds. Evident is the extent of snowcover between April 2008 and 2007 in which the statewide snow water equivalent (SWE) on April 1, 2008 was 102% of the historical April 1 average, while the April 1, 2007 was 39% of the April 1 average. On April 1, 2005 the Sierra Nevada was 137% of the April 1 average.

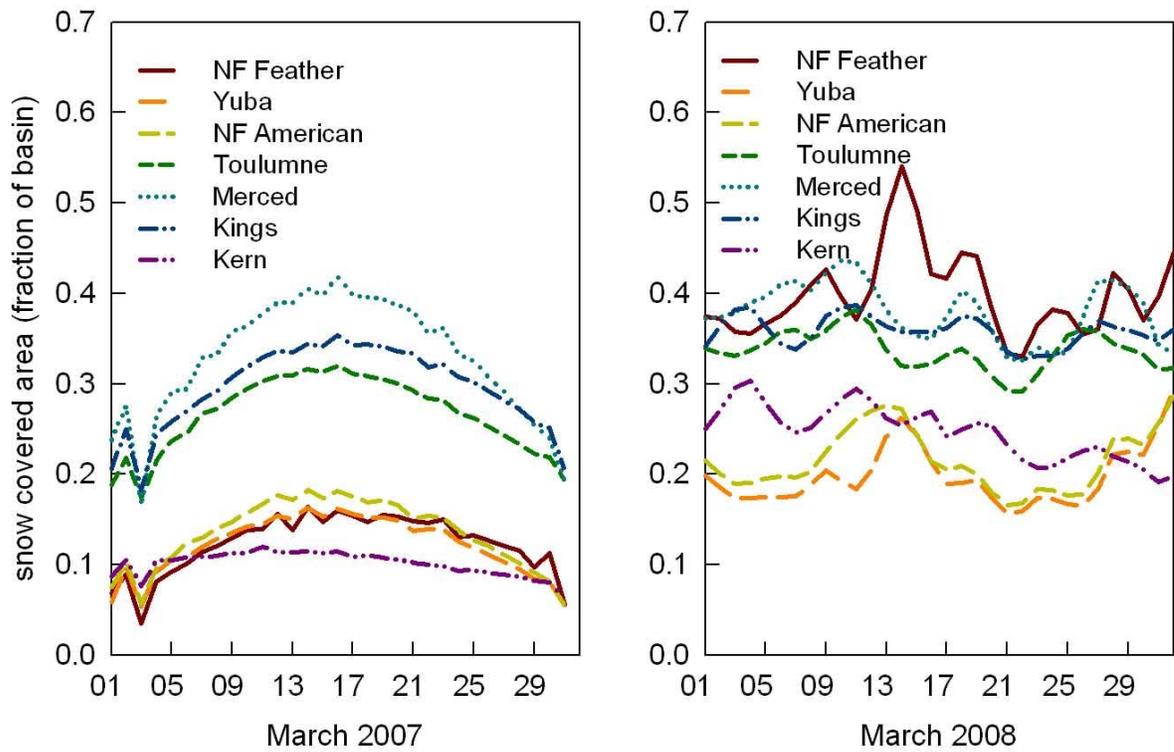
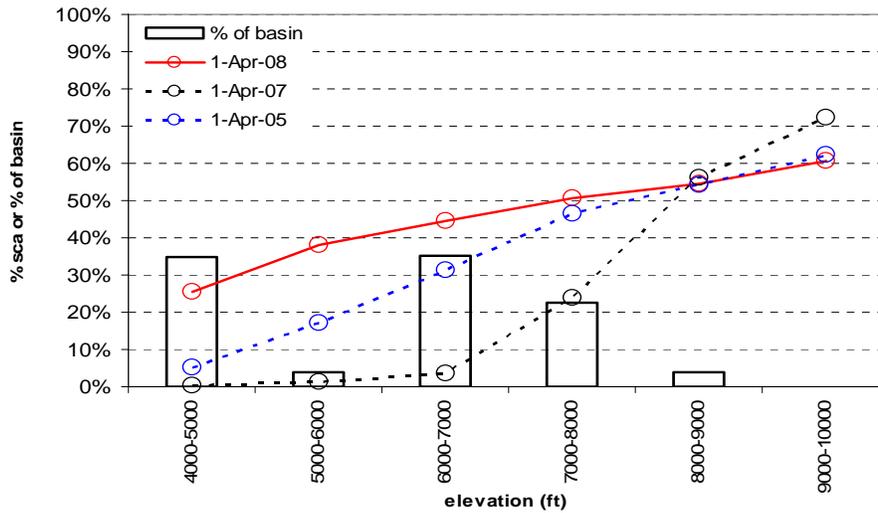
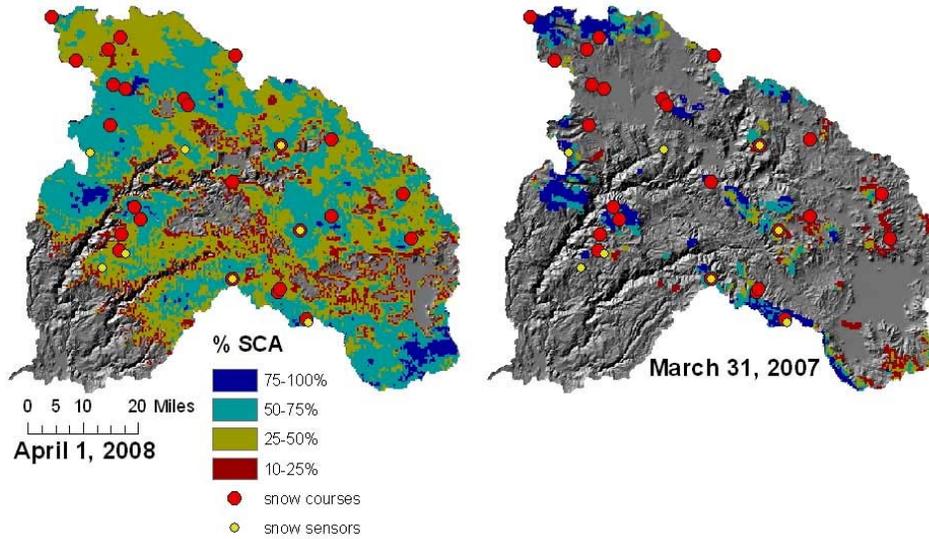
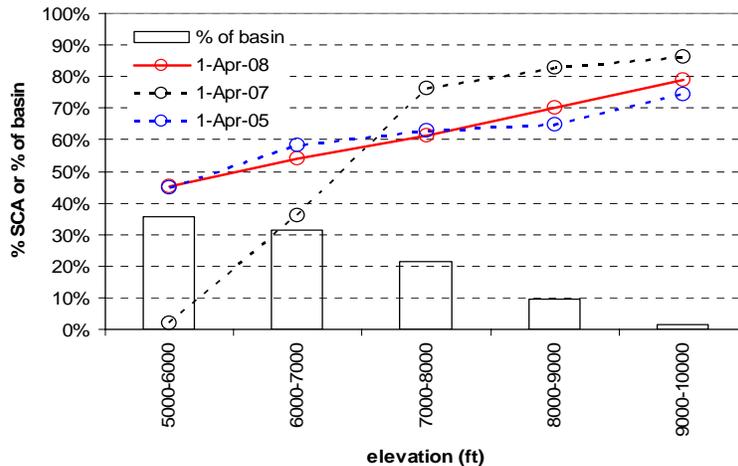
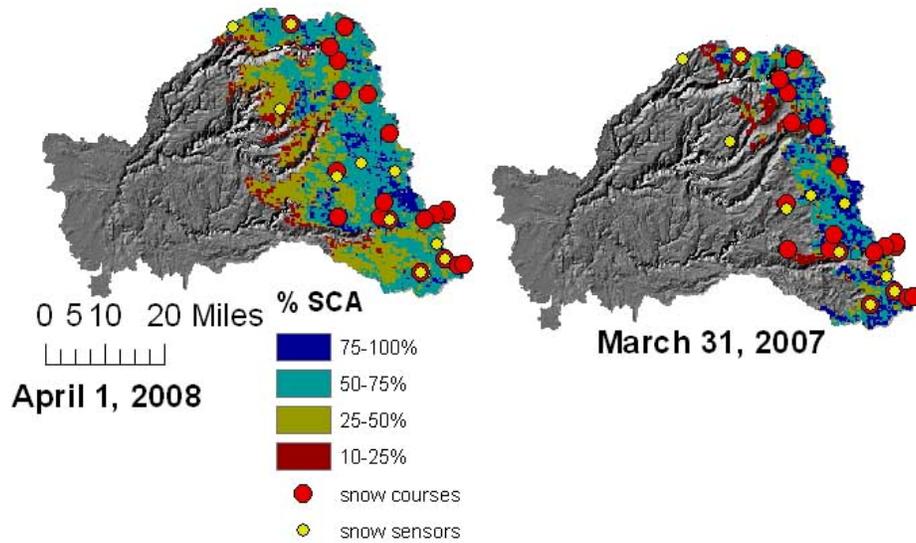


Figure 2. The graphs show the daily March 2007 and 2008 progression of SCA, expressed as a fraction of the basin area (e.g. 0.25 = 25%) in the Sierra Nevada (above the Central Valley) and shows significant differences between the March 2007 and 2008 snow covered area in 7 river basins.



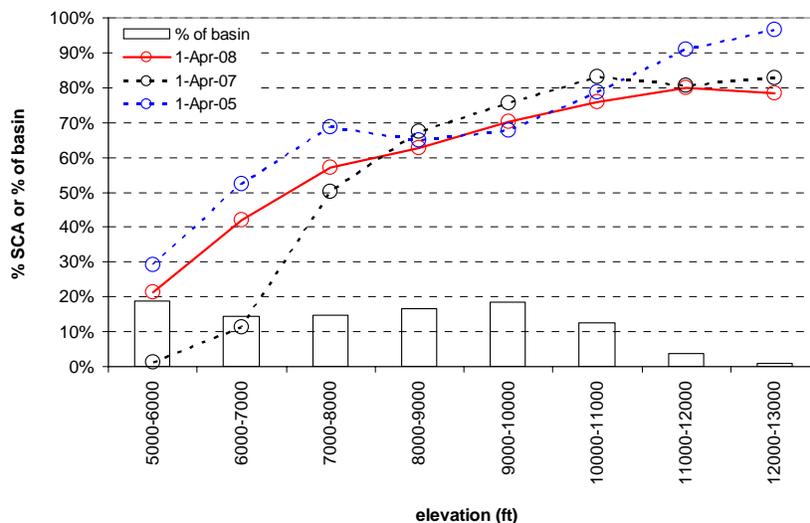
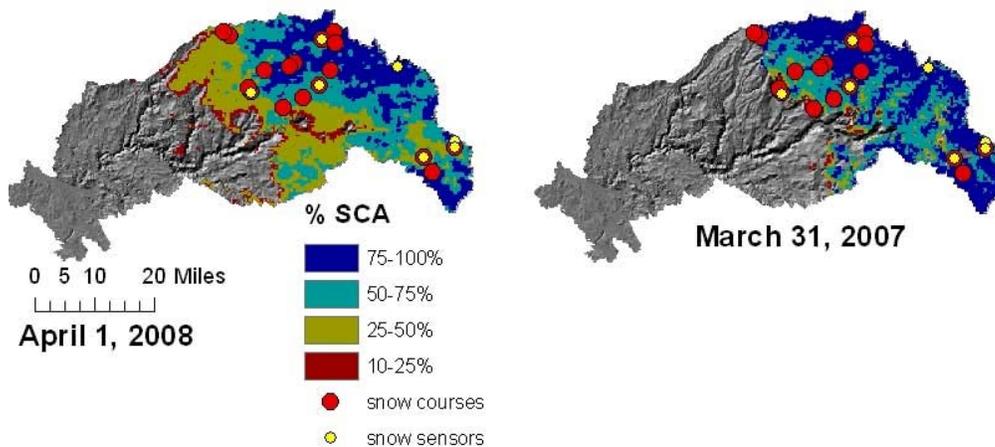
	April 1, 2008	April 1, 2007	April 1, 2005
4000-5000	25%	0	5%
5000-6000	38%	1%	17%
6000-7000	45%	3%	31%
7000-8000	51%	24%	46%
8000-9000	55%	56%	54%
9000-10000	61%	72%	62%

Figure 3(a). SCA over the **Feather River** Basin on April 1, 2008 and March 31, 2007. On April 1, 2008 basin-wide SWE was 100% of the April 1 historical average (based on basin-wide snow course data), while April 1, 2007 was 34% of the April 1 average. On April 1, 2005 basin-wide SWE was 103% of the April 1 historical average. Graphical and tabular data represent average % SCA by 1000 foot elevation bands over the **Feather River** Basin for April 1, 2008 and April 1, 2007/2005.



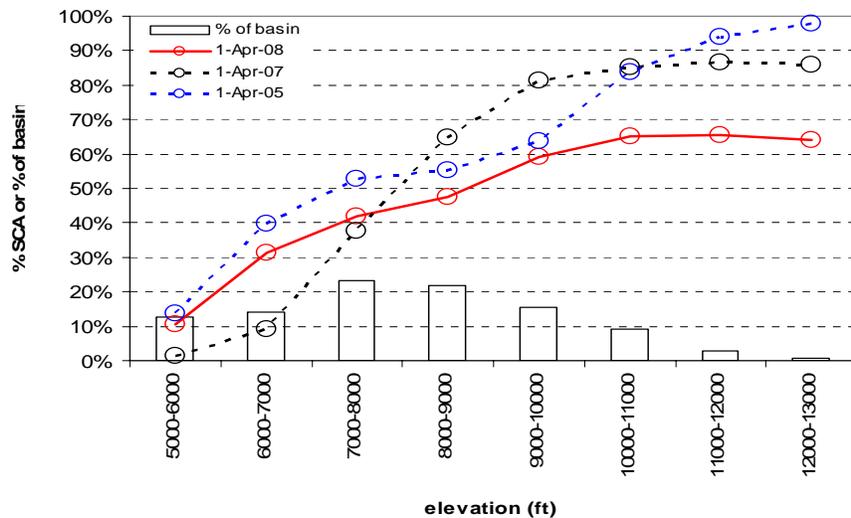
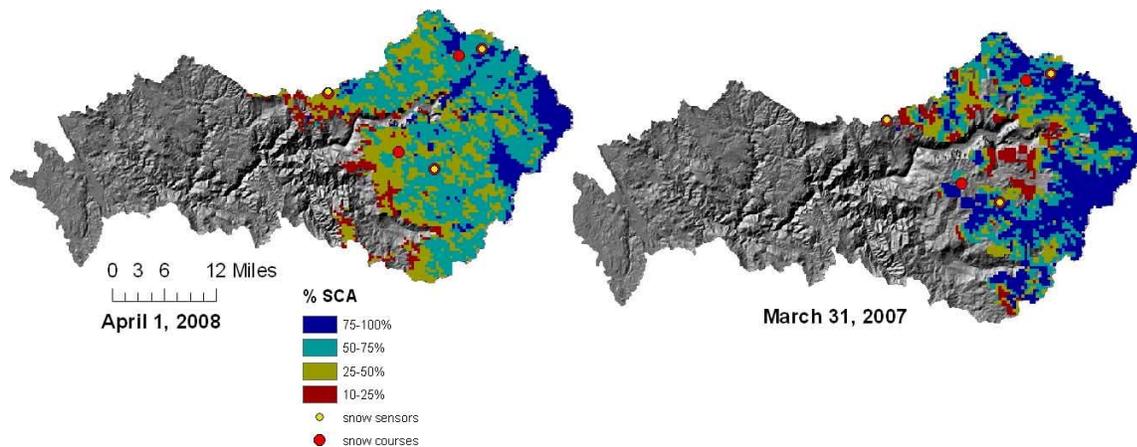
	April 1, 2008	April 1, 2007	April 1, 2005
5000-6000	45%	2%	45%
6000-7000	54%	36%	58%
7000-8000	61%	76%	63%
8000-9000	70%	83%	65%
9000-10000	79%	86%	75%

Figure 3(a). SCA over the **American River** Basin on April 1, 2008 and March 31, 2007. On April 1, 2008 basin-wide SWE was 96% of the April 1 historical average (based on basin-wide snow course data), while April 1, 2007 was 38% of the April 1 average. On April 1, 2005 basin-wide SWE was 139% of the April 1 historical average. Graphical and tabular data represent average % SCA by 1000 foot elevation bands over the **American River** Basin for April 1, 2008 and April 1, 2007/2005.



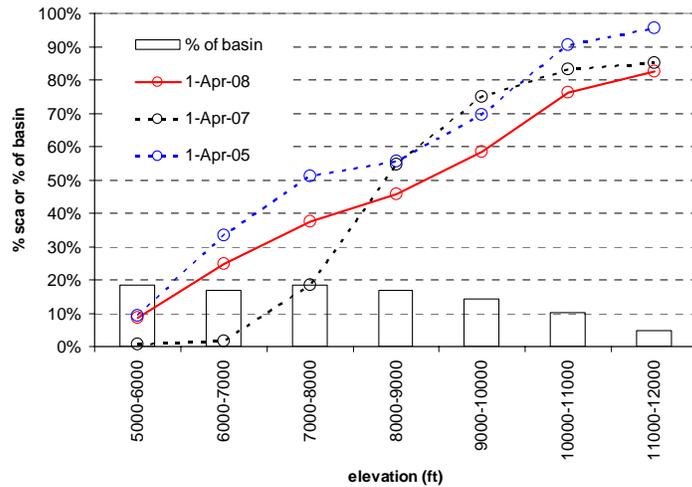
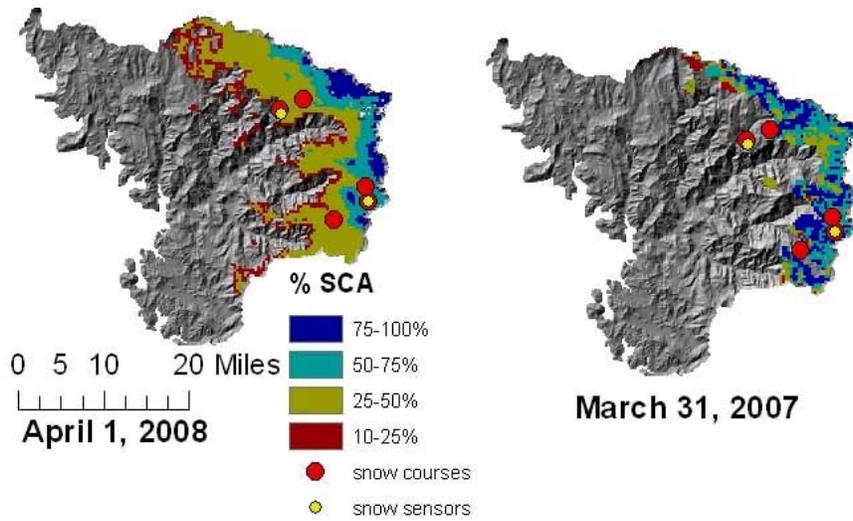
	April 1, 2008	April 1, 2007	April 1, 2005
<b>5000-6000</b>	21%	1%	29%
<b>6000-7000</b>	42%	11%	52%
<b>7000-8000</b>	57%	50%	69%
<b>8000-9000</b>	63%	67%	65%
<b>9000-10000</b>	70%	76%	68%
<b>10000-11000</b>	76%	83%	79%
<b>11000-12000</b>	80%	81%	91%
<b>12000-13000</b>	78%	83%	97%

Figure 3(a). SCA over the **Tuolumne River** Basin on April 1, 2008 and March 31, 2007. On April 1, 2008 basin-wide SWE was 99% of the April 1 historical average (based on basin-wide snow course data), while April 1, 2007 was 46% of the April 1 average. On April 1, 2005 basin-wide SWE was 163% of the April 1 historical average. Graphical and tabular data represent average % SCA by 1000 foot elevation bands over the **Tuolumne River** Basin for April 1, 2008 and April 1, 2007/2005.



	April 1, 2008	April 1, 2007	April 1, 2005
5000-6000	11%	1%	14%
6000-7000	31%	9%	40%
7000-8000	42%	38%	53%
8000-9000	47%	65%	55%
9000-10000	59%	81%	64%
10000-11000	65%	85%	84%
11000-12000	65%	87%	94%
12000-13000	65%	86%	98%

Figure 3(a). SCA over the **Merced River** Basin on April 1, 2008 and March 31, 2007. On April 1, 2008 basin-wide SWE was 94% of the April 1 historical average (based on basin-wide snow course data), while April 1, 2007 was 45% of the April 1 average. On April 1, 2005 basin-wide SWE was 167% of the April 1 historical average. Graphical and tabular data represent average % SCA by 1000 foot elevation bands over the **Merced River** Basin for April 1, 2008 and April 1, 2007/2005.



	April 1, 2008	April 1, 2007	April 1, 2005
5000-6000	9%	1%	9%
6000-7000	25%	2%	33%
7000-8000	37%	18%	51%
8000-9000	46%	54%	56%
9000-10000	58%	75%	70%
10000-11000	76%	83%	91%
11000-12000	83%	85%	96%

Figure 3(a). SCA over the **Kaweah River Basin** on April 1, 2008 and March 31, 2007. On April 1, 2008 basin-wide SWE was 128% of the April 1 historical average (based on basin-wide snow course data), while April 1, 2007 was 41% of the April 1 average. On April 1, 2005 basin-wide SWE was 159% of the April 1 historical average. Graphical and tabular data represent average % SCA by 1000 foot elevation bands over the **Kaweah River Basin** for April 1, 2008 and April 1, 2007/2005.