

Lily Lake

The Lily Lake SNOTEL site is on the on the Bear River Watershed a mile or two east of Lily Lake at an elevation of 9156 feet. This site was installed in 1982 and as such, has a fairly long period of record. When installed, the site was in a small clearing - meadow type of environment in the bottom of a small drainage. The dominant vegetation type at the site was grasses with trees surrounding the opening a distance of some 15 to 30 yards across.



Lily Lake SNOTEL, 1999.

As one can see, a nice open meadow surrounded by conifer.



Lily Lake SNOTEL in winter – early 1990's, looking southeast.



Lily Lake SNOTEL in winter – early 1990's from the air looking to the northeast.

In 2002, the Boy Scout Fire went right through this area, directly through the SNOTEL site – we were extremely fortunate that the damage to the instrumentation and site was minimal – it was hot enough that it buckled and blistered a pvc junction box on the meteorological tower as well as the paint on the shelter. However the characteristics of snow accumulation/ablation may have been substantially changed as a result of the fire.



PVC junction box on the tower.



Blistered paint on the shelter.



The new "Lily Lake SNOTEL". Blackened forest can substantially change the ablation characteristics at a site.



Lily Lake SNOTEL, 2002 immediately after the fire. Many trees although dead, still have needles which will fall onto the snow surface and accelerate melt for at least one year and potentially two or three. There is a large amount of black carbon from the singed bark and wood that will also accelerate melt.



Lily Lake SNOTEL in 2005.

Note there are still needles on some trees that can fall to the snow surface and substantial blackening on both the standing and fallen dead.



Ablation characteristics at this site are continually changing. As one can see in comparing this 2010 photo with photos from previous years, standing dead trees are falling to the ground which decreases the black above snowpack and increases it below. Some of the carbon has been scrubbed from the tree surfaces both standing and fallen so the total amount of blackening is decreasing over time. The black on the fallen trees can still have an impact as shortwave energy can penetrate the pack to substantial depths.

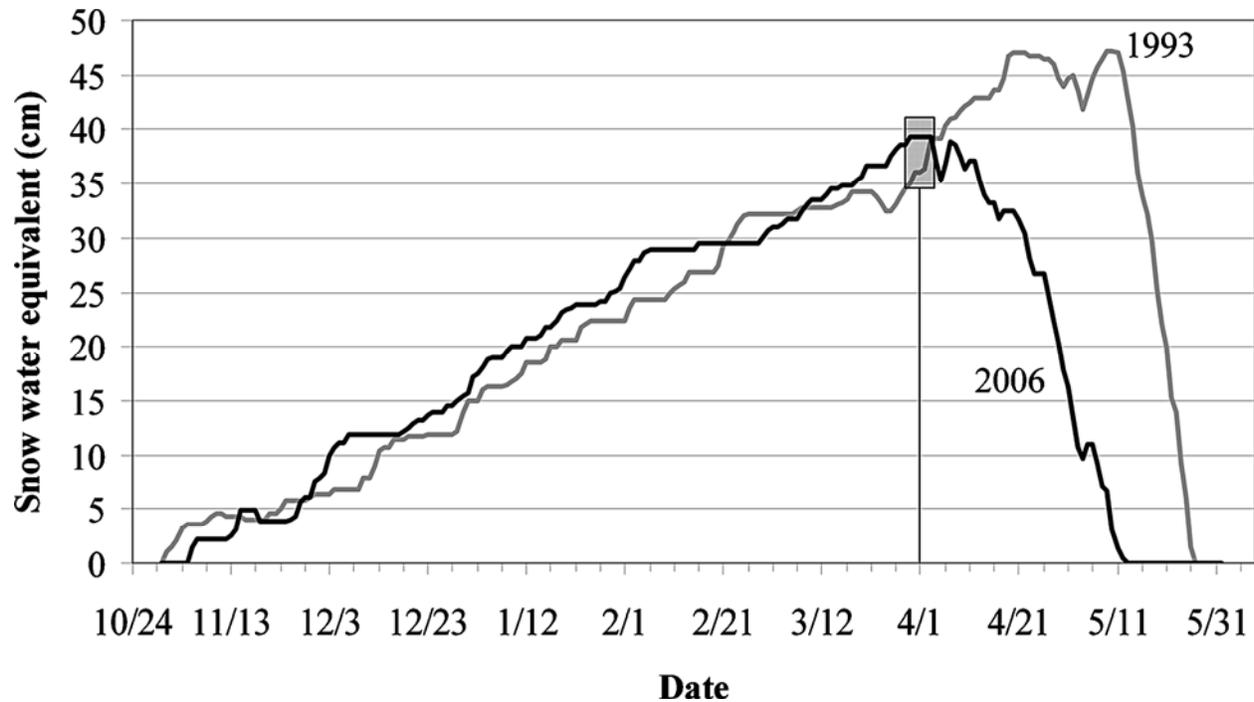


Figure 1 Snow water equivalent (SWE) records for the SNOTEL site at Lily Lake, Utah, for 1993 (gray line) and 2006 (black line). SWE values for 1 April are highlighted. Note that these values are similar for both years, with a small increase between 1993 and 2006, even though 2006 shows considerably reduced total snowpack. Relying only on 1 April SWE data would therefore produce a misleading picture of how snowpack properties differ between the two years.

As noted in a 2008 publication by Bedford and Douglass, (Changing Properties of Snowpack in the Great Salt Lake Basin, Western United States, from a 26-Year SNOTEL Record) snowpack characteristics at this site have changed. In this specific case, the cause of the changed characteristics are very likely due to the impacts of the fire on both the site as well as the surrounding area.

R. Julander, 2010.

Reference.

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Changing Properties of Snowpack in the Great Salt Lake Basin, Western United States, from a 26-Year SNOTEL Record

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