

**Vermont Soil Climate Analysis Network (SCAN) Sites  
at Lye Brook and Mount Mansfield**

**10 Year Soil Temperature and Soil Moisture  
Summary Report**

**September 13, 2000 – September 30, 2010**



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**This report is a summary of the first 10 years of operation of the Vermont sites of the Soil Climate Analysis Network (SCAN). SCAN is a nationwide project of the USDA Natural Resources Conservation Service. The Vermont sites were first installed in September 2000 by a team made up of personnel from the NRCS, USDA Forest Service, and the State of Vermont Agency of Natural Resources, with site coordination and financial assistance provided by the Vermont Monitoring Cooperative. Modifications and improvements have been made to each site since the original installation and they continue to be in operation, with the ongoing support of the original cooperators and others.**

**This report was prepared by Thomas Villars, Soil Resource Specialist, with assistance from the NRCS National Water and Climate Center staff. This project is carried out under the NRCS technical soil services program in Vermont.**

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*On the cover: SCAN installations in Vermont as seen through the seasons: winter at Lye Brook; summer and fall at Mount Mansfield.*

## SUMMARY

The Soil Climate Analysis Network (SCAN) of the Natural Resources Conservation Service (NRCS) is designed to collect soil moisture, soil temperature, and local climate information on a real-time basis. In September 2000, the Vermont Monitoring Cooperative (VMC), a partnership of the State of Vermont, University of Vermont, and USDA Forest Service, joined with NRCS to install SCAN stations at two VMC research and monitoring sites. Above-ground sensors provide the information required for climate analysis and evapotranspiration calculations. Below-ground sensors provide soil temperature and soil moisture at five depths (2 inches, 4 inches, 8 inches, 20 inches, and 40 inches). One set of below-ground sensors are installed at Mount Mansfield in a forest opening. Two sets of below-ground sensors are installed at Lye Brook, one set in a forest opening and one set under the forest canopy.

The soils at the two SCAN sites have similar temperature characteristics. The mean annual soil temperature is 7.3 deg C at Mount Mansfield and 6.9 deg C at the Lye Brook shaded site and 7.2 deg C at the open, less shaded site. SCAN data can be used to verify Soil Taxonomy soil temperature classification of the soils at each site and to help calibrate soil temperature classifications for soils within larger Major Land Resource Areas (MLRA). Based on the 2001-2010 data, the soils at the Vermont SCAN sites, at elevations between 2200 to 2440 feet, classify as having a *frigid* soil temperature class.

Surface layers have daily temperature fluctuations for the entire seasonal period in which the surface is not covered with snow. Deeper layers do not exhibit daily temperature fluctuations. Daily temperature fluctuations of up to 3 degrees C can occur at the surface. Soils are cooler in the shade than in the sun, based on the record of data at Lye Brook. Two sets of sensors, one underneath the forest canopy and one in a clearing, are only about 75 feet apart, yet have markedly different temperatures ranges.

There is very little change in soil temperature between the months of December and April, with the soils appearing to “sleep” through the winter months. Temperature gradually drops to near 0 degrees C, with deeper layers being slightly warmer than surface layers. The coldest daily soil temperatures are in late March to early April. On an average monthly basis, March is the coldest month. Very few soil temperature readings of below 0 C have been recorded.

Similar to the Lake Turnover that occurs on large northern lakes, soils in northern climates undergo a spring and fall temperature turnover. In the summer, the upper layers of soil are the warmest, and in the winter, the deeper layers are warmest. Using SCAN data, a seasonal turnover in soils can be defined as the date at which the temperature of the 2 inch surface layer sensor crosses over (or under) the temperature of the lower 40 inch sensor for the season. This concept can be useful when looking at a multi-year average of soil temperatures. Using the 10 year daily average soil temperature data, the average dates of the spring and fall turnover for 2000-2010 were determined. This information can be useful in tracking soil warming, the effects of forest management, soil geography, and other broad environmental issues.

The soils at the two SCAN sites have similar moisture characteristics. All soils have the highest moisture content reading in the spring, typically in April. This seems to be more attributable to snowmelt than increased precipitation. All soils exhibit a drying-out in the summer months, regardless of precipitation levels. The 8 inch soil depth has the highest moisture levels – this is consistent in virtually all months of the year at both sites. Although not as distinct as in summer, there is a noticeable drop in soil moisture in winter.

Data is placed on the NRCS National Water and Climate Center SCAN website: <http://www.wcc.nrcs.usda.gov/scan/>. The website contains current and historical data for each SCAN site. In addition to climatic data, each Vermont SCAN site webpage contains links to on-site soil pedon descriptions and National Soil Survey Lab characterization data provided by the National Soil Survey Center.

## INTRODUCTION

The Soil Climate Analysis Network (SCAN) of the Natural Resources Conservation Service (NRCS) is a cooperative nationwide data collection system designed to support natural resource assessments and conservation activities. It is designed to collect soil moisture, soil temperature, and local climate information on a real-time basis using existing sites and through the establishment of new sites through partnerships with other entities.

In 1999, the Vermont Monitoring Cooperative (VMC), a partnership of the State of Vermont, the University of Vermont, the USDA Forest Service, and others, partnered with NRCS to develop a long-term forest soil monitoring program in Vermont. As part of this program, VMC and NRCS decided to install SCAN stations at the two VMC research and monitoring sites near Lye Brook Wilderness in the Green Mountain National Forest in southern Vermont and on state-owned forestland on the western flank of Mount Mansfield in the northwestern part of the state.

VMC granted a sum of \$10,000 in 2000 to NRCS to facilitate the installation of the SCAN sites. The NRCS National Water and Climate Center (NWCC) in Portland, Oregon, assisted with the installation by providing the remaining equipment without charge and with staffing support. The VMC grant helped cover a portion of NWCC costs for equipment and travel. With many hands helping out, the two sites were installed over the course of a week in September 2000.

The two VMC SCAN stations are located in an approximately ¼-acre clearing within a forested area on moderately well drained soils with gentle slopes. During the time of installation, the soils at each site were described. They are Spodosols formed in dense glacial till. Vegetation is mature northern hardwoods. Each site was georeferenced using GPS.

The objectives of the Vermont SCAN stations are to collect long-term data on weather, soil moisture and soil temperature at the two VMC sites. This will complement measurements of soil physical, chemical, and biological parameters at long-term soil monitoring sites located nearby, in addition to supporting the national objectives of the SCAN program.

NRCS provides administrative and technical oversight for the two sites, with assistance from the State of Vermont and the US Forest Service.

The ability of NRCS and its partners, such as the State of Vermont and the US Forest Service, to make sound resource assessments and watershed decisions has been severely limited by the lack of quality, historic and real-time soil-climate information. SCAN will provide this information to help develop products required to make sound resource management decisions.



Fig. 1. Locations of Vermont SCAN sites

## USES OF SCAN DATA

National resource management issues for which long term soil/climate information is needed include:

- Input to global circulation models.
- To predict, monitor and verify droughts.
- To develop new soil moisture accounting and risk assessments.
- To monitor and predict changes in crop, range, and woodland productivity in relation to soil moisture-temperature changes.
  - To predict regional shifts in irrigation water requirements which may affect reservoir construction and ground-water levels.
  - To predict shifts in wetlands.
  - To predict changes in runoff that affects flooding and flood control structures.
  - To be able to verify and ground-truth satellite and soil moisture model information.
  - To predict the long-term sustainability of cropping systems, and watershed health.
  - Ability to model and predict onset of molds, fungus, and other plant diseases to mitigate their effects.

## OPERATIONS and MAINTENANCE, 2001 - 2010

### Lye Brook

Management of the Lye Brook site is coordinated through:

Brian Keel

Monitoring and Research Coordinator for GMNF,  
VMC Field Coordinator for Lye Brook Wilderness

GMNF Manchester Ranger Station

2538 Depot Street (Vermont Routes 11/30)

Manchester Center, VT 05255

Phone: 802-362-2307

Fax: 802-362-1251

bkeel@fs.fed.us

- The Lye Brook station had start-up problems in 2000-2001. In early winter, the battery failed, resulting in a loss of data for about 10 weeks. It was replaced in February 2001.
- September 2002 - a second set of soil probes were installed under the (shady) forest canopy to complement the original set in a sunny opening.
- October 2003 - radios and dataloggers were maintained.
- January 2004 - the site was checked for visible signs of damage because of non-transmission of data. No



Figure 2. Lye Brook SCAN site

visible signs of damage were noted.

- June 2004 - maintenance was performed on the site. It was noted that trees were partially blocking the solar panels.
- February and March 2005 - the batteries and solar panel regulator were replaced.
- July 2005, all ten soil probes were replaced (5 each for site in opening and site under forest canopy) - NWCC.
- April 2006 - NWCC site visit for maintenance.
- July 2007-Vermont Long-term Soil Monitoring plot sampling - checked over Lye Brook SCAN site (it is near one of the monitoring plots).
- September 2008 - site visit found rain gage funnel plugged and full of water – cleaned out funnel, added filter fabric screen inside funnel to reduce plugging by vegetation (see [photos](#)); cleared vegetation around snow pillow
- October 2008 - NWCC staff maintenance at site – bleed air out of snow pillow, replace pressure transducer for snow pillow, marked several trees to remove to improve performance of solar panels, replaced bearings in anemometer propeller, cleaned out rain gage screen (covered with leaves) and filter, ERHC – enclosure relative humidity in large NEMA box. Other smaller box is called the Met NEMA and there is also a Soils NEMA box at Lye Brook, too. Replaced RH sensor head, replaced Judd sensor for measuring snow depth [81.78 inches from snow sensor to ground, 11.7 inches top of pillow to transducer (offset)]. Growing plants can be read as snow in the summer (some sites place a piece of plywood under sensor to avoid this problem). Moved Judd sensor cross pole out about 8 inches to sit more on top of the snow pillow, measured height from ground to various sensors for metadata.
- November 2009 - site check before winter. Cleaned out rain gage funnel (was not plugged), cleared leaves and twigs off snow pillow, cleared vegetation away from snow pillow and towers, checked voltage on all batteries.
- September 2010 - site visit from NWCC staff to perform maintenance on the site. Frequency was changed in the radio to Government assigned frequencies. The antenna was replaced and newly calibrated sensors were installed as part of scheduled maintenance activities.

### **Mount Mansfield**

Management of the Mount Mansfield site is coordinated through the Park Manager at Underhill State Park and:

Thomas Simmons  
Forestry Specialist  
Vermont Department of Forests, Parks, and Recreation  
111 West Street  
Essex Junction, VT 05452-4695  
Phone: 802-879-5685  
Fax: 802-878-5192  
thomas.simmons@state.vt.us

- February 2001 - site visit for a review of the systems. There was some inconsistency with the snow depth measurements.
- February 2002 - the battery was replaced.



- September 2002 - site inspection was conducted. Rain gauge funnel was checked for blockage.
- October 2003 - radios and dataloggers were maintained.
- May 2004 - rain gauge funnel was plugged and full of water and was cleaned out.
- June 2004 - maintenance was performed on the site. Rain gauge funnel was found to be plugged again and cleaned out.
- July 2005 - maintenance was performed on the site, NWCC. Air temperature and relative humidity sensor was fixed.
- May 2006 - batteries for transmitter were installed, with assistance from Tom Simmons and NWCC staff. Also replaced radio.
- July 2007- Vermont Long-term Soil Monitoring plot sampling - checked over MM SCAN site (it is adjacent to one of the monitoring plots).
- July 2008 - replaced RH sensor due to wire of old one being chewed by animal, found rain collection funnel on ground – replaced on top of gage, adjusted snow sensor angle.
- October 2008 - NWCC staff performed maintenance at site.
- November 2009 - two site visits to replace broken RH sensor, apparently broken by a wandering moose, and install ‘moose/deer guard’ to prevent breakage from re-occurring. Cleared vegetation around snow pillow. Rain gage funnel was also cleaned out. Checked battery voltage. Installed new radio.
- September 2010 - site visit by NWCC staff to perform maintenance. Frequency was changed in the radio to Government assigned frequencies. The antenna was replaced and newly calibrated sensors were installed as part of scheduled maintenance activities.

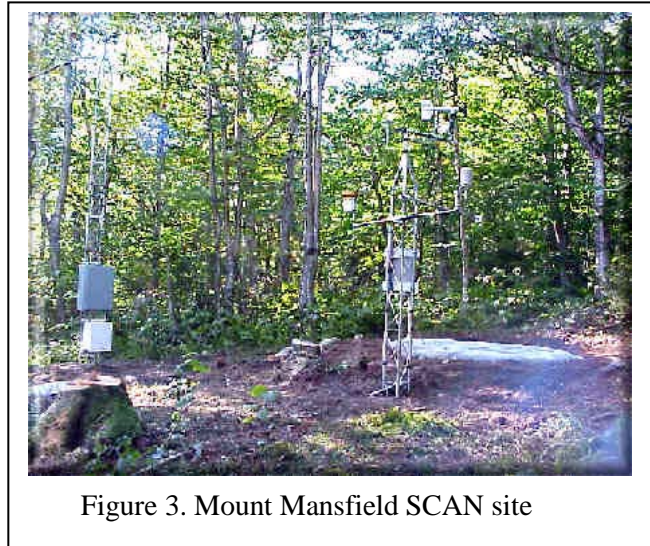


Figure 3. Mount Mansfield SCAN site

Personnel involved in the maintenance of the sites include those mentioned above and also: Garry Schaefer, Don Huffman, Bill Woolcock, Ricky Henderson, Ron Paetzold, and others with the NWCC, Debra Harms with the National Soil Survey Center, Harold Bell, Nancy Burt, and others with the USDA Forest Service-Green Mountain National Forest, State of Vermont Department of Forests, Parks, and Recreation, and Vermont employees of the NRCS.

The sites will continue to receive maintenance as part of normal operations. Questions about the functionality of the sites should be sent to the project manager, site coordinators, or the NWCC Liaison. Visitors to the sites are urged to report any disturbances or damage to the project manager.

## DATA SUMMARIES, 2000 – 2010

Denice Schilling, Statistical Assistant with the NWCC, provided the summaries included in this report.

In September 2002, a second set of soil sensors were installed at Lye Brook under the forest canopy to complement the original set located in a sunny opening. Mount Mansfield's single set of soil sensors are also placed in a small forest opening.

### SOIL TEMPERATURE

In [Appendix 6](#), graphs and tables of the average *monthly* soil temperature values can be found for both sites. In [Appendix 8](#), graphs and tables of the average *daily* soil temperature values can be found for both sites. The data were ingested into Microsoft Excel and the math functions were used to derive the calculated values.

The soils at the two SCAN sites have similar temperature characteristics. This is not entirely unexpected, as the two sites are close in elevation, and have similar soils and northern hardwood forest plant communities. The mean annual soil temperature (measured at 20 in) is 7.3 deg C at Mount Mansfield and 6.9 deg C at the Lye Brook shaded site and 7.2 deg C at the open, less shaded site (see Table 1).

### Soil Taxonomy Soil Temperature Classification

SCAN data can be used to verify Soil Taxonomy soil temperature classification of the soils at each site, and to help calibrate soil temperature classifications for soils within larger Major Land Resource Areas (MLRA). Soil temperature classes are used in Keys to Soil Taxonomy (Soil Survey Staff, 2010) as part of the family name in both mineral and organic soils. The Celsius (centigrade) scale is the standard. The soil temperature control section for the Vermont SCAN station soils is at a depth of 50 centimeters from the soil surface, which is basically the same depth as the 20 inch Hydra probe soil sensor. Temperature data for that probe can be used for taxonomic determinations.

Soil temperature classes are defined in terms of the *mean annual soil temperature* and the difference between mean summer and mean winter soil temperatures. *Mean summer temperature* includes the months of June, July and August. *Mean winter temperature* includes the months of December, January, and February. The three soil temperature classes recognized in Vermont are:

**Mesic** – Mean annual soil temperature between 8 and 15 degrees C, with difference of 6 degrees C or more between mean summer and mean winter soil temperature.

**Frigid** - Mean annual soil temperature lower than 8 degrees C, with difference of 6 degrees C or more between mean summer and mean winter soil temperature.

**Cryic** - Mean annual soil temperature lower than 8 degrees C, and the mean summer soil temperature is lower than 8 degrees C in soils that have an O horizon and that are not saturated during some part of the summer. (If the soil is saturated with water during some part of the summer, the mean summer soil temperature must be lower than 6 degrees C.)

<b>Table 1. Soil Taxonomy Soil Temperature Classification for soils at Vermont SCAN sites, 2001-2010</b>				
All temperatures Celsius - measured at 20 inch (50 cm) depth				
<b>Location</b>	<b>Mean Annual Soil Temp.</b>	<b>Mean Summer Soil Temp.</b>	<b>Mean Winter Soil Temp.</b>	<b>Difference between Mean Summer and Mean Winter Soil Temp.</b>
<b>Lye Brook, VT – in opening Elevation – 2435 ft.</b>	<b>7.2 (Frigid)</b>	<b>12.6</b>	<b>3.0</b>	<b>9.6</b>
<b>Lye Brook, VT – under shady forest canopy Elevation – 2430 ft.</b>	<b>6.9 (Frigid)</b>	<b>11.9</b>	<b>2.8</b>	<b>9.1</b>
<b>Mount Mansfield, VT – in opening Elevation – 2236 ft.</b>	<b>7.3 (Frigid)</b>	<b>12.9</b>	<b>2.9</b>	<b>10.0</b>

Based on 2001-2010 data, the soils at the Vermont SCAN sites, at elevations between 2200 to 2440 feet, classify as having a *frigid* soil temperature class. This confirms the specific taxonomic classification of the *frigid* Mundal soils at the Lye Brook site and Peru soils at the Mount Mansfield site and corroborates general assumptions about the distribution of soil temperature classes in the state. The *mesic* soil temperature class zone generally includes warmer, lower elevation areas such as the Champlain Valley and Vermont Valley biophysical regions and the narrow Connecticut River Valley. The *frigid* soil temperature class zone covers most of the rest of the state below about 3000 feet elevation. The *cryic* soil temperature class zone is limited to the upper slopes and summits of the Green Mountains, Taconic Mountains, and the Northeast Highlands at elevations generally above 3000 feet.

### **Spring and Fall Turnover**

Similar to the Lake Turnover that occurs on large northern fresh water bodies, soils in northern climates undergo a spring and fall temperature turnover. In the summer, the upper layers of soil are the warmest, and in the winter, the deeper layers are warmest. The mechanics of these turnovers are different in soils than in freshwater bodies, where it is related to the changing density of water in relation to temperature, and to the fact that water is most dense at 4 deg C, and is less dense at temperatures colder than 4 C. For this report, a **seasonal turnover** in soils is defined as the date at which the temperature of the 2 inch surface layer sensor crosses over (or under) the temperature of the lower 40 inch sensor for the season. For example, at some date in the spring, the upper layers in the soil warm to the point where the temperatures throughout the 40 inch profile are nearly equilibrated, and then from that date forward throughout the summer months, the upper layers continue to be warmer than the lower soil layers. Likewise, in early fall, the same temperature equilibration happens as the upper layers begin to cool down, and then on a certain date, drop below the temperature of the 40 inch soil sensor. From that date forward, the lower soil depths remain warmer throughout the winter months.

Using the 10 year daily average soil temperature data (Appendix 8), the average dates of the spring and fall turnover for 2000-2010 were determined (see Table 2.)

<b>Table 2. Ten year average dates for Spring and Fall Turnover at VT SCAN stations</b>		
<b>SCAN Station Location</b>	<b>10 Year Average Date of Spring Turnover</b>	<b>10 Year Average Date of Fall Turnover</b>
Mount Mansfield (in forest opening)	April 14	September 29
Lye Brook (in forest opening)	April 13	September 30
Lye Brook (under forest canopy)	April 19	September 30

The concept of pinpointing a single date for the spring and fall turnover can be useful when looking at a multi-year average of soil temperatures. This information can have value in tracking long-term soil warming in relation to changes in climate, effects of management, and may be tied to other environmental indicators. How do these dates compare to other SCAN stations around the country? How do differences between SCAN stations, in terms of soils, elevation, latitude, slope aspect, and vegetation affect these dates? What is the latitude south of Vermont where seasonal turnovers cease to occur?

Lindsey Rustad, research ecologist with the US Forest Service Northern Research Station, has studied vernal temperature patterns at the Hubbard Brook, NH SCAN site in relation to a separate long term soil temperature record (1964 to present) at the Hubbard Brook research station (*personal communication, publication pending*). This study shows a rapid rise in soil temperature of up to 8°C within a 48 hour period in early spring, usually concurrent with snow melt. The likely cause of the sudden increase in soil temperature is the abrupt drop in surface albedo in response to the loss of the highly reflective snowpack and exposure of dark surface soil to solar radiation unhindered by an aboveground canopy. The rapid spike in soil temperature may ‘trigger’ the onset of higher rates of biological activity and may serve as a useful indicator of the onset of spring conditions in northern forest soils. Rustad has found that the long term record of soil temperature and snowmelt at Hubbard Brook suggest that the timing of this spring temperature trigger, or turnover, has advanced by 16 days in the last 50 years.

For any single year, there is generally not a specific date at which the seasonal turnovers occur. Rather, it is a gradual weeks-to-months-long process. Instead of there being a single date at which the 2 inch soil temperature crosses above or below the temperature of the 40 inch soil sensor, this occurs multiple times over many weeks (see Table 3). In the spring, the first turnover date corresponds closely with the date of snowmelt. In the fall, the two apparent factors influencing the period of turnover are warm spells and date of first snowfall (see [Appendix 10](#)). The last date of the fall turnover may correspond closely with the date of first significant snowfall of early winter.

<b>Table 3. Annual “Season” of Spring and Fall Turnover at Vermont SCAN stations, 2001-2010 (dates indicate first and last turnover of season)</b>						
Year	Mt. Mansfield - Spring	Lye Brook opening - Spring	Lye Brook canopy - Spring	Mt. Mansfield - Fall	Lye Brook opening - Fall	Lye Brook canopy - Fall
2001	May 1 – June 2	May 3	NA	Sept 2 – Dec 7	Sept 15 – Dec 6	NA
2002	April 14 – May 23	April 12 – May 22	NA	Sept 12 – Nov 12	Sept 13 – Nov 12	Sept 24 – Nov 12
2003	April 16 – April 28	April 23 – April 26	April 22 – April 26	Sept 10 – Nov 1	Oct 1 – Nov 6	Sept 2 – Nov 6
2004	April 17 – May 7	NA	NA	Sept 3 – Oct 11	NA	NA
2005	April 14 – May 1	NA	NA	Sept 11 – Nov 30	Sept 11 – Oct 12	Sept 11 – Nov 30
2006	April 13 – May 27	April 12 – April 29	April 13 – May 24	Sept 11 – Oct 20	Sept 11 – Dec 2	August 12 – Dec 2
2007	May 1	May 1	May 1	Sept 6 – Oct 25	Sept 17 – Oct 28	August 19 – Oct 24
2008	April 24 – May 3	April 21 – May 1	April 20 – May 20	Sept 11 – Nov 17	Sept 11 – Nov 16	Sept 11 – Nov 16
2009	April 22 – May 11	April 17	April 18 – April 24	Sept 17 – Nov 16	Sept 2 – Nov 1	August 30 – Nov 1
2010	April 4 – May 14	April 7 – May 11	April 8 – May 13	Sept 15 – Oct 29	Sept 11 – Oct 28	Sept 6 – Oct 28

### **Winter “Hibernation”**

There is very little change in soil temperature at the Vermont SCAN sites between the months of December and April, with the soils appearing to “sleep” through the winter months. Temperature gradually drops to near 0 degrees C, with deeper layers being warmer than surface layers. The coldest daily soil temperatures are in late March to early April. On an average monthly basis, March is the coldest month. This is a good two months later than the coldest average monthly air temperature, which occurs in January. It’s interesting to note that very few soil temperature readings of below 0 C have been recorded. The stability of winter temperatures in these soils appears to be a function of sufficient snow depth insulating and buffering daily surface temperature swings tied to air temperature and solar radiation.

### **Other soil temperature characteristics of the sites**

Surface layers have daily temperature fluctuations for the entire seasonal period in which the surface is not covered with snow. Deeper layers do not exhibit daily temperature fluctuations. Daily temperature fluctuations of up to 3 degrees C occur at the surface, while at 40 inches, daily temperature changes are on the order of about 0.1 degree C or less in July and August.

Soils are cooler in the shade than in the sun, based on the limited record of data at Lye Brook. Two sets of sensors, one underneath the forest canopy and one in the SCAN clearing, are located only about 75 feet apart, yet they have markedly different temperature ranges. Mean annual soil temperature is 6.9 deg C underneath the forest canopy and 7.2 deg C in the opening. Mean summer soil temperature is 11.9 deg C in the shade and 12.6 deg C in the sunnier forest opening. This pair of sensors provides some indication as to the effect a forest patch cut or clearcut can have on soil temperature, based on increased solar radiation. See Appendix 6 for monthly differences between these two sets of sensors.

## **SOIL MOISTURE**

In [Appendix 7](#), graphs and tables of the average *monthly* soil moisture values can be found for both sites. In [Appendix 9](#), graphs and tables of the average *daily* soil moisture values can be found for both sites. The data were ingested into Microsoft Excel and the math functions were used to derive the calculated values.

The soils at the two SCAN sites have similar moisture characteristics.

1. Spring moisture peak – the soils at both sites have the highest moisture content reading in the spring, typically in April. This seems to be more attributable to snowmelt than increased precipitation. The moisture peaks are more equalized throughout the soil profile in the soils in more sunny forest openings, while the shaded site at Lye Brook has a more diffuse moisture peak, which may be due to a slower rate of snowmelt. However, this site also has the shortest period of record, which may have some influence. Because both are tied into high rates of snowmelt, the spring moisture peak roughly coincides with the spring turnover.

2. Summer moisture drawdown – due to higher evapotranspiration rates, the soils at both sites exhibit a decrease in soil moisture in the summer months.

3. The 8 inch soil depth has the highest moisture levels – this is consistent in virtually all months of the year at both sites.

4. Fall moisture peak – a smaller moisture peak occurs in the fall as trees start losing their leaves and evapotranspiration rates go down.

5. Winter moisture drawdown – although not as distinct as in summer, there is a noticeable drop in soil moisture in winter. At Lye Brook, it is most distinct at the 20 and 40 inch depths. At Mount Mansfield, it is not as pronounced, but also occurs.

### **Soil Moisture Equation Change Implemented**

The NRCS, in cooperation with the Agricultural Research Service (ARS), implemented a new Soil Moisture Equation for use on select SCAN sites. This work has been peer reviewed and published (Seyfried et.al., 2005). On February 19, 2010, selected SCAN sites, including the two Vermont sites, were remapped with the new “loam” equation, which has been shown to better represent the volumetric moisture content in these soils (Ibid.). Further evaluation is currently being completed before the new equation is implemented on the remaining SCAN sites. Site metadata will reflect this change and all historic and current data will be calibrated using the same equation. Historical soil moisture data was also recalibrated by mid-2010. Additional information concerning the original “silt” equation is available (Vitel, Inc. 1994).

## **NON-SOIL CLIMATE DATA**

This report does not include data summaries on air temperature, rainfall, snow depth, or other above-ground climate data for the two Vermont SCAN sites. This data is available as monthly historical records through the SCAN website, using the “View Historic” option.

## **DATA TRANSMISSION FROM VERMONT’S SCAN SITES**

The majority of SCAN sites use *meteor burst telemetry* to transmit remote site information. Meteor burst communication technology is extremely reliable and cost-effective. It utilizes the billions of sand-sized particles that continually enter the earth's atmosphere. As these particles enter the 60 to 80 mile high region, they begin to burn up and leave a highly charged gaseous trail of electrons with some unique properties. When a UHF radio signal hits the gaseous trail, it reflects the radio signal back to the earth. Using meteor burst communication, remote sites such as Vermont’s two sites are capable of transmitting information to a master station located within a 1000-mile radius. Each master station can support up to 3,000 remote sites. Currently NRCS owns and operates five master stations in the following locations: Boise, Idaho; Dugway Proving Ground, Utah; Mt Gilead, Ohio; Tipton, Missouri; and Stoneville, Mississippi. Once the data is received at the master station, it is sent via conventional telephone lines to the Central Computer Facility (CCF) in Portland, Oregon, where the data are stored and made available to users.

Remote sites like Vermont’s sites are designed to provide ‘near real-time’ data from a variety of sensors. The above-ground sensors provide the information required for climate analysis and evapotranspiration calculations. The below-ground sensors provide soil temperature and soil moisture at five depths (2 inches, 4 inches, 8 inches, 20 inches, and 40 inches). One set of below-ground sensors are installed in a soil profile at Mount Mansfield in a forest opening (see Appendix 3c). Two sets of below-ground sensors are installed in soil profiles at Lye Brook, one set in the forest opening and one set under the forest canopy (see Appendix 3a and 3b). More information on the Hydra probe below-ground sensors is available in the Vermont SCAN 5 Year Summary report (VT Soil Survey Staff, 2006).

### **Data Management**

Data management is performed in two stages. The first stage is when the data values are initially received at the CCF for processing. For each site and each parameter, a parameter limit and rate of change are determined. The computer automatically checks the incoming value against these limits and flags any values that fall outside these windows before placing the data into the database. A second screening stage is conducted by a statistical assistant who examines any flagged values to determine their accuracy and makes corrections. All parameters are graphed and comparisons are made between sensors to verify that the data are within an acceptable range. All edited values are flagged in the database.

### **Public Data Access**

Data is posted and updated hourly on the NRCS National Water and Climate Center SCAN website: <http://www.wcc.nrcs.usda.gov/scan/>. The website contains current and historical data for each SCAN site. In addition to climatic data, each Vermont SCAN site webpage contains links to on-site soil pedon descriptions and National Soil Survey Lab primary and supplementary characterization data (chemical, physical, and mineralogical) provided by the National Soil Survey Center. The soils sampled and described for the National Soil Survey Lab are in close

proximity to the SCAN sites. The soil temperature and moisture sensors providing hourly data are located within the SCAN site in similar soils.

## **References**

The author of this report has quoted sections from the following brochures and reports, with minor editing, with permission of Garry Schaefer.

### **1. Soil Climate Analysis Network (SCAN) brochure, revised March 2009.**

Garry L. Schaefer, Branch Leader  
National Water and Climate Center  
101 SE Main St., Suite 1600  
Portland, OR 97204

and

Deb Harms, Soil Scientist  
National Soil Survey Center  
Federal Building  
100 Centennial Mall North  
Lincoln, NE 68508-3866

### **2. Soil Moisture / Soil Temperature Pilot Project - A National Near-Real Time Monitoring Project**

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and

Ronald D. Yeck and Ron F. Paetzold  
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100 Centennial Mall North  
Lincoln, NE 68508-3866

Seyfried, M.S., L.E. Grant, E.Du, and K Humes. 2005. Dielectric loss and calibration of the hydra probe soil water sensor. *Vadose Zone J.* 4:1070-1079.

Soil Survey Staff. 2010. *Keys to Soil Taxonomy*, Eleventh Edition, 2010. United States Department of Agriculture, Natural Resources Conservation Service.

Vermont Soil Survey Staff, February 2006. Vermont Soil Climate Analysis Network (SCAN) Sites at Lye Brook and Mount Mansfield, 5 Year Summary Report, October 2000 – September 2005. United States Department of Agriculture, Natural Resources Conservation Service. Colchester, Vermont.

Vitel, Inc. 1994. Hydra soil moisture probe user's manual, version 1.2. Vitel Inc., Chantilly, VA.



## APPENDICES

### Appendix 1. Standard SCAN Site Configuration

Parameter Measured	Description/ Units/Frequency
Precipitation	Tipping Bucket gage, reported as total precipitation for the water year (October 1-September 30). The units are in inches of water. Note that this gage does not collect data on precipitation that falls as snow, hail, or sleet.
Air Temperature	Collected by a shielded thermistor in conjunction with Relative Humidity. Reported as current, hourly maximum, minimum, average and 24-hour (midnight to midnight) maximum, minimum, and average. Units are in degrees C.
Relative Humidity	Collected by a thin film capacitance-type sensor. Reported as current, and hourly maximum, and average. Units are 0-100 percent
Wind Speed and Direction	Collected by a propeller-type anemometer. Reported as an hourly average and maximum. Units are in miles per hour. Direction is reported as average hourly direction. Units are in degrees true.
Solar Radiation	Collected by a pyranometer. Units are in watts/meter <sup>2</sup> .
Barometric Pressure	Measured by a silicon capacitive pressure sensor. Units are in inches of mercury.
Snow Water Content	Measured using a snow pillow device and a pressure transducer. Units are in inches of water. Measurements are taken at sites with snowpack, including both Vermont sites.
Snow Depth	Measurement is done by using a sonic sensor. Units are in inches of depth. Measurements are not taken at all sites (measured at both Vermont sites).
Soil Moisture	Collected by a dielectric constant measuring device. Reported as current water volume fraction. Units are in percent (saturation is ~ 45 %). Typical measurements are at 2", 4", 8", 20", and 40" where possible. Metadata will specify exact depths.
Soil Temperature	Collected by an encapsulated thermistor. Reported as current temperature. Units are in degrees C. Typical measurements are at 2", 4", 8", 20", and 40" where possible. Metadata will specify exact depths.

**Appendix 2. Sensor Label Descriptions used for Vermont SCAN sites -  
Sensor and Element Descriptions for site 2041, Mount Mansfield, Vermont**

<b>Label</b>	<b>Elem Code</b>	<b>Description</b>	<b>Units</b>	<b>Depth</b>
BATCR	BATT	Battery-data logger	volt	0 unitless
PPCTB	PRCP	Incremental Pulse Count Precipitation	in	0 unitless
ATEC	TOBS	Air temperature - sampled 10 minutes	degC	0 unitless
ATEX	TMAX	Air temperature - sampled 10 minutes	degC	0 unitless
ATEN	TMIN	Air temperature - sampled 10 minutes	degC	0 unitless
ATEA	TAVG	Air temperature - sampled 10 minutes	degC	0 unitless
SOLAR	SRADV	Solar radiation average GCCP	watt/m2	0 unitless
WNDSA	WSPDV	Average wind speed - previous hour	mph	0 unitless
WNDDA	WDIRV	Average vector wind direction	degree	0 unitless
WSHX	WSPDX	Maximum wind speed	mph	0 unitless
RHC	RHUM	Relative humidity	pct	0 unitless
RHX	RHUMX	Relative humidity	pct	0 unitless
RHN	RHUMN	Relative humidity	pct	0 unitless
BPC	PRES	Barometric Pressure	inch_Hg	0 unitless
c1smv	SMS	Soil moisture - percent water by volume *	pct	2 inches
c1tmp	STO	Soil temperature	degC	2 inches
c1sal	SAL	Soil salinity	gram/l	2 inches
c1rdc	RDC	Soil real dielectric constant	unitless	2 inches
c2smv	SMS	Soil moisture - percent water by volume *	pct	4 inches
c2tmp	STO	Soil temperature	degC	4 inches
c2sal	SAL	Soil salinity	gram/l	4 inches
c2rdc	RDC	Soil real dielectric constant	unitless	4 inches
c3smv	SMS	Soil moisture - percent water by volume *	pct	8 inches

c3tmp	STO	Soil temperature	degC	8 inches
c3sal	SAL	Soil salinity	gram/l	8 inches
c3rdc	RDC	Soil real dielectric constant	unitless	8 inches
c4smv	SMS	Soil moisture - percent water by volume *	pct	20 inches
c4tmp	STO	Soil temperature	degC	20 inches
c4sal	SAL	Soil salinity	gram/l	20 inches
c4rdc	RDC	Soil real dielectric constant	unitless	20 inches
c5smv	SMS	Soil moisture - percent water by volume *	pct	40 inches
c5tmp	STO	Soil temperature	degC	40 inches
c5sal	SAL	Soil salinity	gram/l	40 inches
c5rdc	RDC	Soil real dielectric constant	unitless	40 inches
AT24X	TMAX	Air temperature - 24 hours	degC	0 unitless
AT24N	TMIN	Air temperature - 24 hours	degC	0 unitless
AT24A	TAVG	Air temperature - 24 hours	degC	0 unitless
WS24A	WSPDV	Wind speed-24 hours	mph	0 unitless
WD24A	WDIRV	Wind direction - previous 24 hours	degree	0 unitless
RHENC	RHUM	Internal Relative Humidity	pct	0 unitless
LBAT	BATT	Lithium battery for data logger backup	volt	0 unitless
PCPDY	PRCP	Incremental Precipitation total - previous day	in	0 unitless
PCPYR	PREC	Cumulative Precipitation total - Y T D	in	0 unitless

- \* - Soil is generally considered to be saturated when the Percent Water by Volume is above 45 percent.
- Lye Brook: soil pit in forest opening is displayed by sensors c1 through c5; soil pit under forest canopy is displayed by sensors c6 through c10.

### Appendix 3a. Soil Description at Lye Brook Wilderness (under forest canopy)

**Soil type:** Mundal

**File No.** VT003-02-919-1

**Area:** Lye Brook VMC site, Lye Brook Wilderness, near Lye Road Soil Monitoring Plot

**Date:** July 27, 2005

**Classification:** Coarse-loamy, isotic, frigid Oxyaquic Haplorthods

**Location:** SCAN Site 2042 – probes in soil under forest canopy

**Vegetation:** mostly sugar maple and beech, with striped maple and a few red spruce

**Parent Material:** Compact (dense) Glacial Till

**Physiography:** Glaciated Upland

**Relief :** Knoll, smooth

**Drainage:** Moderately Well

**Ground water:** Not observed above 40"

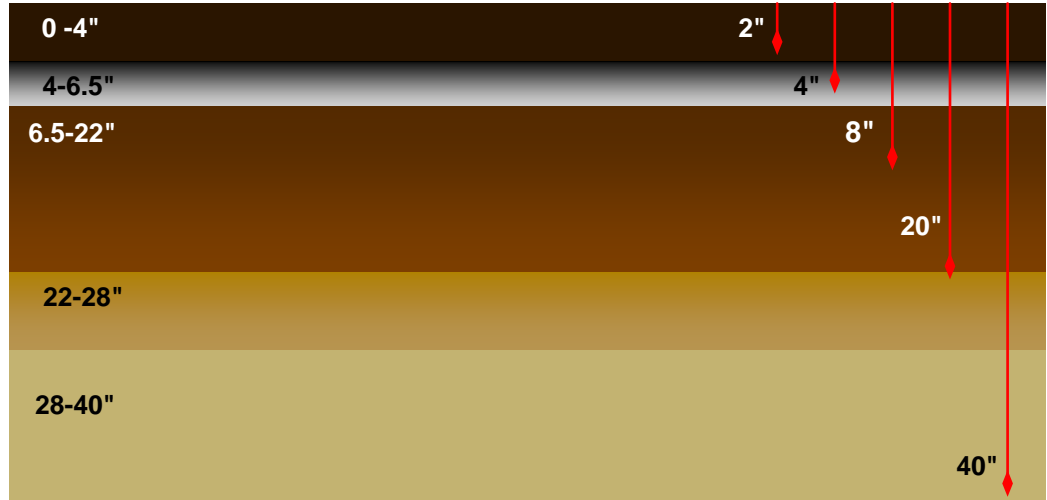
**Elevation:** 2430'

**Slope:** approx 5%

**Aspect:** SW

#### Additional Notes:

Sketch of Hydra probe placement in the soil profile:



- Hydra probes installed at 2, 4, 8, 20, and 40 inches.
- Soil pit with probes relocated in July 2005: location is 4 feet west of the “stack” (metal post with box), and just south of a large white stone. Stack is about 50 feet southwest of taller antenna tower. Shielded cable runs from tower to stack and a separate shielded 5-cable set runs from stack to sensors, buried about 3 to 5 inches underground.
- SCAN site is east (upslope) of long-term soil monitoring plot.
- Installation of probes and soil description by Thom Villars, NRCS, White River Junction, VT.
- Small sample bags taken of Oa and mineral horizons for storage in WRJ office.
- Soil profile graphic developed by Joe Homer, NRCS-NH.

Hori-zon	Depth, inches	Matrix Color, moist	Redoximorphic Features	Texture	Structure	Consistence	pH	Boun-dary	% Frags	Roots	
Oi/e	0-1.5	slightly to moderately decomposed leaves and twigs							as		many vf-co
Oa	1.5-4	black, well decomposed organic materials					vfr		as		many vf-vco
E	4-6.5	5YR 5/2		fsl	2mgr	fr	NA	aw	5	com f-co	
Bhs1	6.5-8.5	7.5YR 2.5/2		fsl	2mgr	fr		aw	5	com f-co	
Bhs2	8.5-22	7.5YR 3/2		fsl	2msbk	fr		cw	5	com f-co	
BC	22-28	10YR 5/6	c2p 7.5YR 4/6 iron concentrations	fsl	1mpl to 2msbk	Slightly firm		cw	5	few med	
Cd	28-40+	2.5Y 5/4		fsl	1mpl	firm			5		

### Appendix 3b. Soil Description at Lye Brook Wilderness (in forest opening)

**Soil type:** Mundal

**File No.** VT003-00-914-1

**Area:** Lye Brook VMC site, Lye Brook Wilderness, near Lye Road Soil Monitoring Plot

**Date:** July 27, 2005

**Classification:** Coarse-loamy, isotic, frigid Oxyaquic Haplorthods

**Location:** SCAN Site 2042 – probes in soil in forest opening

**Vegetation:** mostly sugar maple, with beech, striped maple, and a few red spruce

**Parent Material:** Compact (dense) Glacial Till

**Physiography:** Glaciated Upland

**Relief :** Knoll, smooth

**Drainage:** Moderately Well

**Ground water:** Not observed above 40"

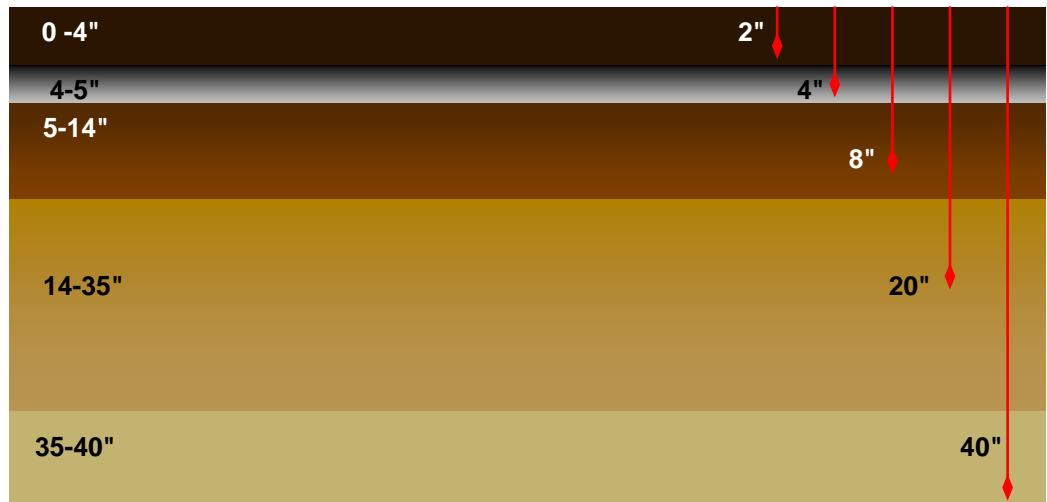
**Elevation:** 2435'

**Slope:** 6%

**Aspect:** NNW

#### Additional Notes:

Sketch of Hydra probe placement in the soil profile:



- Hydra probes installed at 2, 4, 8, 20, and 40 inches.
- Soil pit with probes relocated in July 2005: location is still about 7 feet south-southwest of taller antenna tower. Five unshielded black cables run from tower to sensors.
- SCAN site is east (upslope) of long-term soil monitoring plot.
- Soil described by Thom Villars; installation of probes by TV with Bill Woolcock and Ricky Henderson, National Water and Climate Center.
- Soil profile graphic developed by Joe Homer, NRCS-NH.

Hori-zon	Depth, inches	Matrix Color, moist	Redoximorphic Features	Texture	Structure	Consistence	pH	Boun-dary	% Frags	Roots	
Oe	0-1	Partially decomposed leaves, needles, & twigs							as		
Oa	1-4	Well decomposed organic materials					vfr		ab		
(A)	(1-4)	7.5YR 2.5/2		fsl	2mgr	vfr	5.2	ab	NA	NA	
E	4-5	7.5YR 6/2		fsl	2mgr	fr	5.2	as			
Bhs1	5-6	5YR 2.5/1		fsl, ms	2mgr	fr	4.8	as			
Bhs2	6-14	7.5YR 2.5/2		fsl, ms	1msbk	fr		cs			
Bs	14-29	10YR 4/3	c3p 7.5YR 3/2 organic stains	fsl, ws	2msbk	fr		gs			
BC	29-35	10YR 4/4		fsl	2msbk	fr		gs			
Cd	35-40	2.5Y 5/4	f2d 2.5Y 5/2 depletions	fsl	massive	fi to fr					

### Appendix 3c. Soil Description at Mount Mansfield (Underhill State Park) in forest opening

**Soil type:** Peru

**Area:** Mt. Mansfield VMC site, Underhill State Park, Polka Dot Soil Monitoring Plot

**Classification:** Coarse-loamy, isotic, frigid Aquic Haplorthods

**Location:** SCAN Site 2041 – in forest opening

**Vegetation:** mostly yellow birch, with beech, balsam fir, striped maple

**Parent Material:** Compact (dense) Glacial Till

**Physiography:** Glaciated Upland

**Relief :** Toeslope, smooth

**Drainage:** Moderately Well

**Ground water:** Not observed above 40"

**Elevation:** 2236'

**Slope:** 10-12%

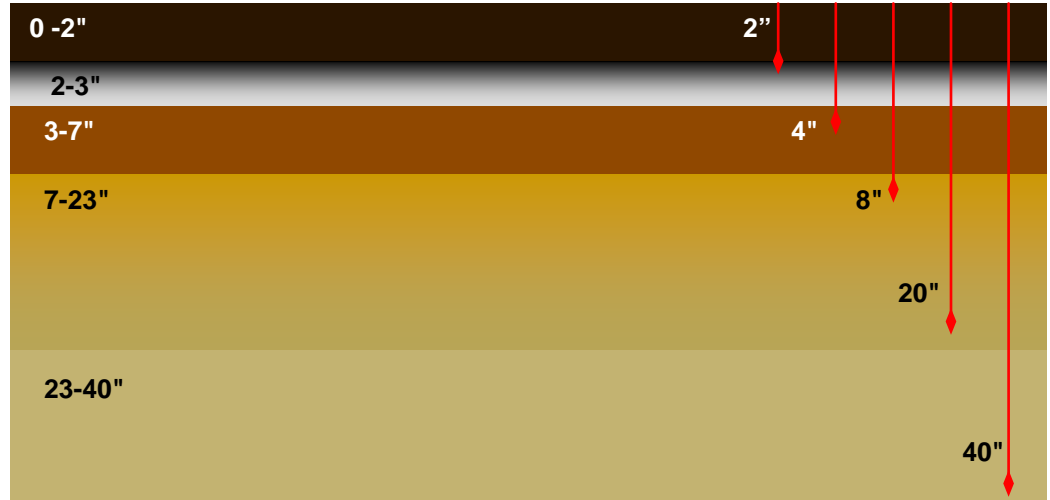
**Aspect:** South

**File No. VT007-00-912-1**

**Date:** September 12, 2000

#### Additional Notes:

Sketch of Hydra probe placement in the soil profile:



- Hydra probes installed at 2, 4, 8, 20, and 40 inches.
- Soil pit with probes is about 7 feet north and a little east of taller (western) antenna tower. Cable runs from tower to probes.
- SCAN site is south (downslope) of Polka Dot long-term soil monitoring plot.
- Soil described by Thom Villars; installation of probes by Ron Paetzold, National Water and Climate Center.
- Soil profile graphic developed by Joe Homer, NRCS-NH.

Hori-zon	Depth, inches	Matrix Color, moist	Redoximorphic Features	Texture	Structure	Consistence	pH	Boun-dary	% Frags	Roots
Oi	1 - 0	Undecomposed leaves, needles, and twigs						as		
Oa	0-1	Moderately decomposed organic materials						as		
A	1-2	5YR 2.5/2		vfsl	1vfgr	vfr	NA	as	NA	NA
E	2-3	7.5YR 4/2		vfsl	1fgr	vfr		as		
Bs1	3-7	7.5YR 4/4		vfsl	2mgr	fr		cs		
Bs2	7-17	10YR 4/4		vfsl	2mgr	fr		cs		
BC	17-23	2.5Y 4/3	c2p 5Y 6/2 depletions	fsl	1msbk	fr		cs		
Cd	23-40	similar to BC	similar to BC	fsl	2mpl	firm				

**Appendix 4. Vermont Monitoring Cooperative Long-Term Soil Monitoring Plots  
co-located with SCAN sites**

VMC Long-Term Monitoring Plot Name	Elevation (m)	Soil series	Taxonomic classification	Vegetation type	General comments
Lye Road site, Lye Brook Wilderness	739	Mundal	Coarse-loamy, mixed, frigid, Aquic Haplorthods	Beech- sugar maple- yellow birch	Near to the Lye Brook SCAN station
Polka Dot site, Underhill State Park, Mt. Mansfield	695	Peru	Coarse-loamy, mixed, frigid, Aquic Haplorthods	Yellow birch- balsam fir	Adjacent to the Mt. Mansfield SCAN station

## Appendix 5. Photographs of Vermont SCAN sites

### A. Lye Brook

Garry Schaefer (standing) and Don Huffman, National Water and Climate Center, check out equipment in the large NEMA box at the Lye Brook site, October 2008.



Garry Schaefer, NWCC, bleeding air out of the non-freezing liquid-filled snow pillow at the Lye Brook site, October 2008.





Left – Lye Brook rain gage collection funnel plugged with fine leaf litter and twigs, an all-too-common problem. September 2008.

Below left – Solution to the problem: install a small patch of synthetic filter fabric over the small diameter drain hole at bottom of funnel to prevent clogging.

Below right – Rain gage collection funnel ready to be replaced on top of the rain gage, with filter fabric and coarse metal screen in place.



Lye Brook solar panel array, used to power station, mounted on radio transmission tower, November 2009. The larger solar panel on the bottom was installed after the original panels were installed in 2000.

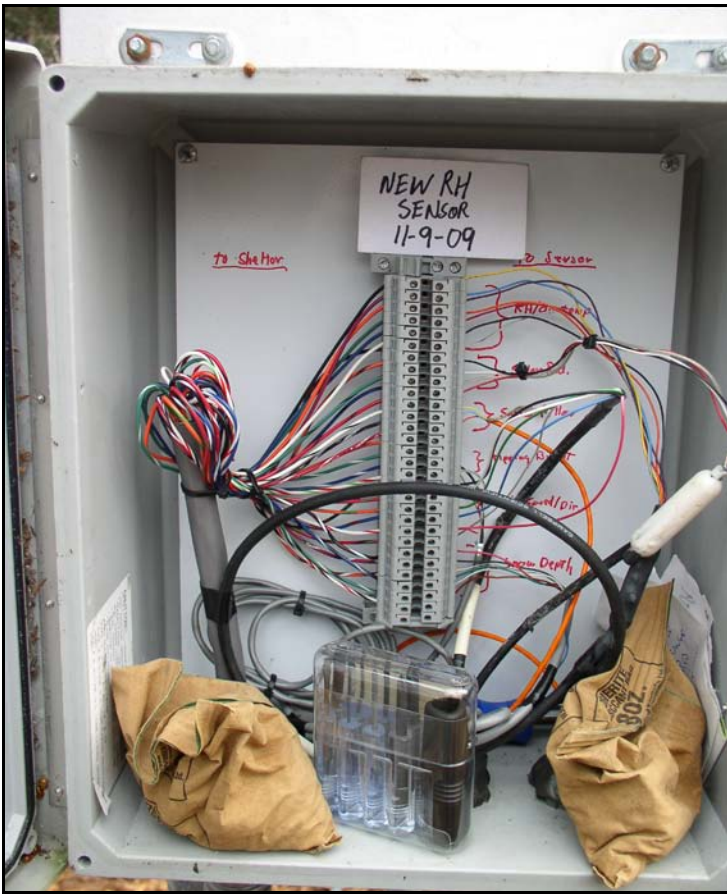
## B. Mt. Mansfield (Underhill State Park)



Top left – Broken relative humidity sensor and cable connector at Mount Mansfield, possibly broken by the antler of a wandering moose or deer snagging on the exposed cable. November 2009.

Lower left – New relative humidity sensor, connector and cable in place, with homemade pipe protector installed to reduce risk of cable being snagged on moose or deer antler.

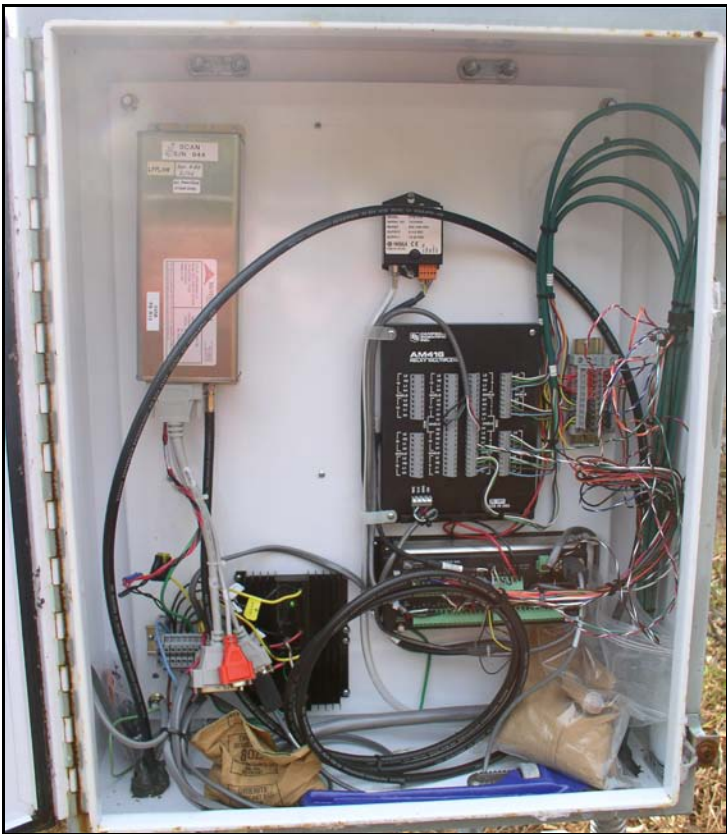




Inside view of both NEMA boxes at each site (Mount Mansfield set shown).

Top left – Small NEMA box located on Met tower. New relative humidity sensor was installed in November 2009 after being broken by wandering moose or deer.

Lower left – Large NEMA box located on radio transmission/solar panel tower. Radio is in upper left; datalogger is in lower right. Some hand tools are kept in this box for making small repairs.

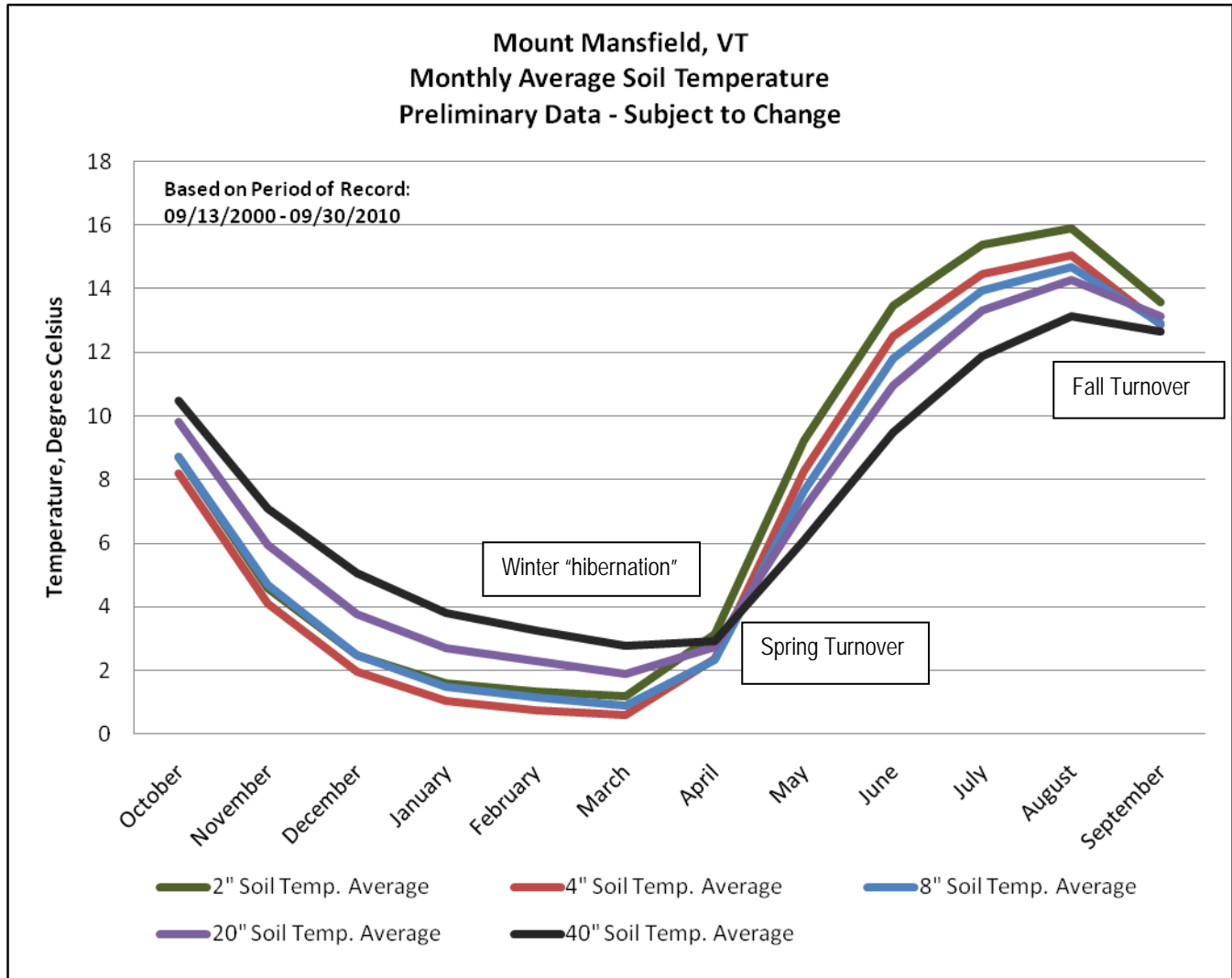




Example of hydraprobe used for collecting soil moisture and temperature data, along with other information. Five hydraprobes are installed in soil profiles at each site at 2, 4, 8, 20 and 40 inches below the surface.

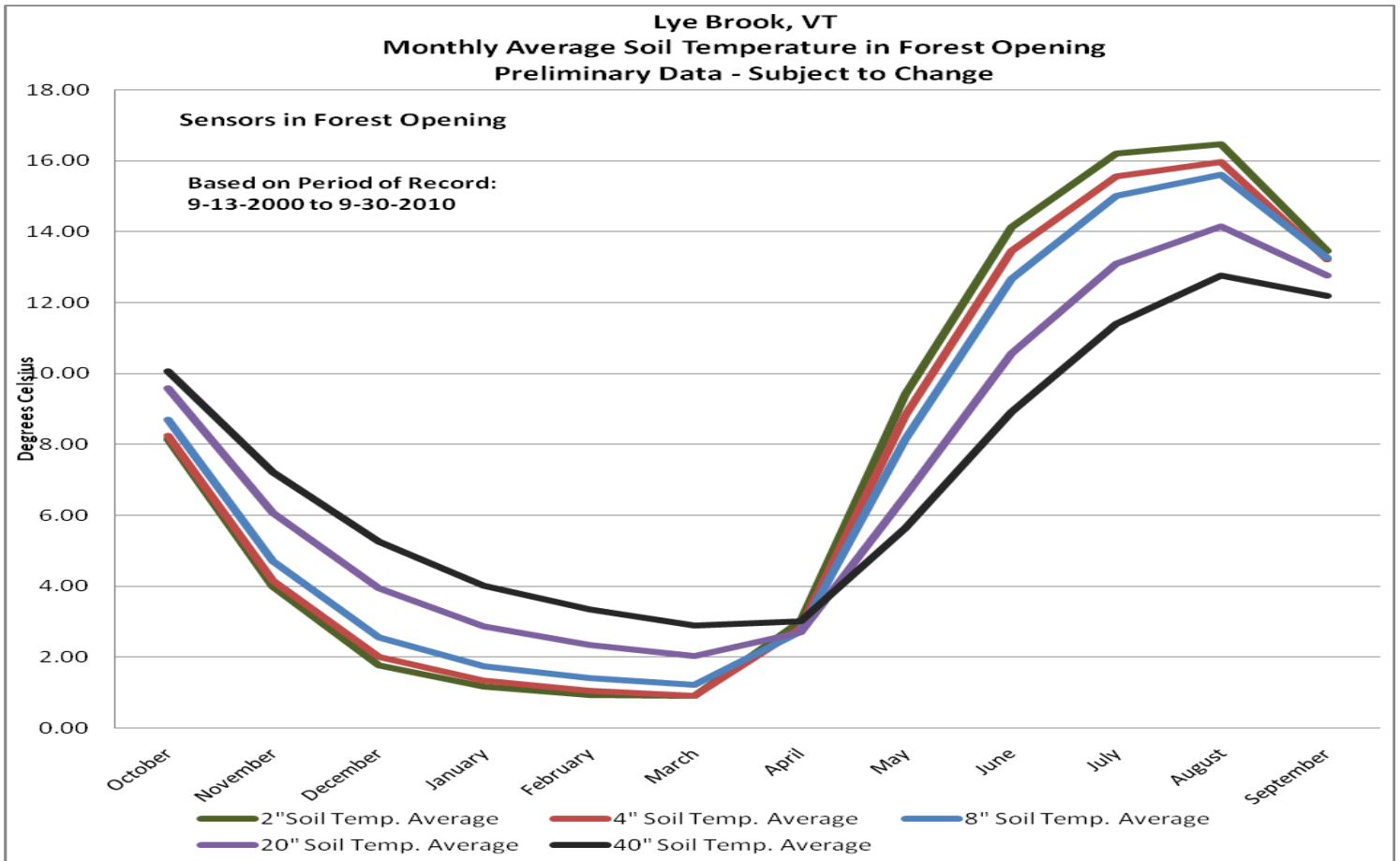
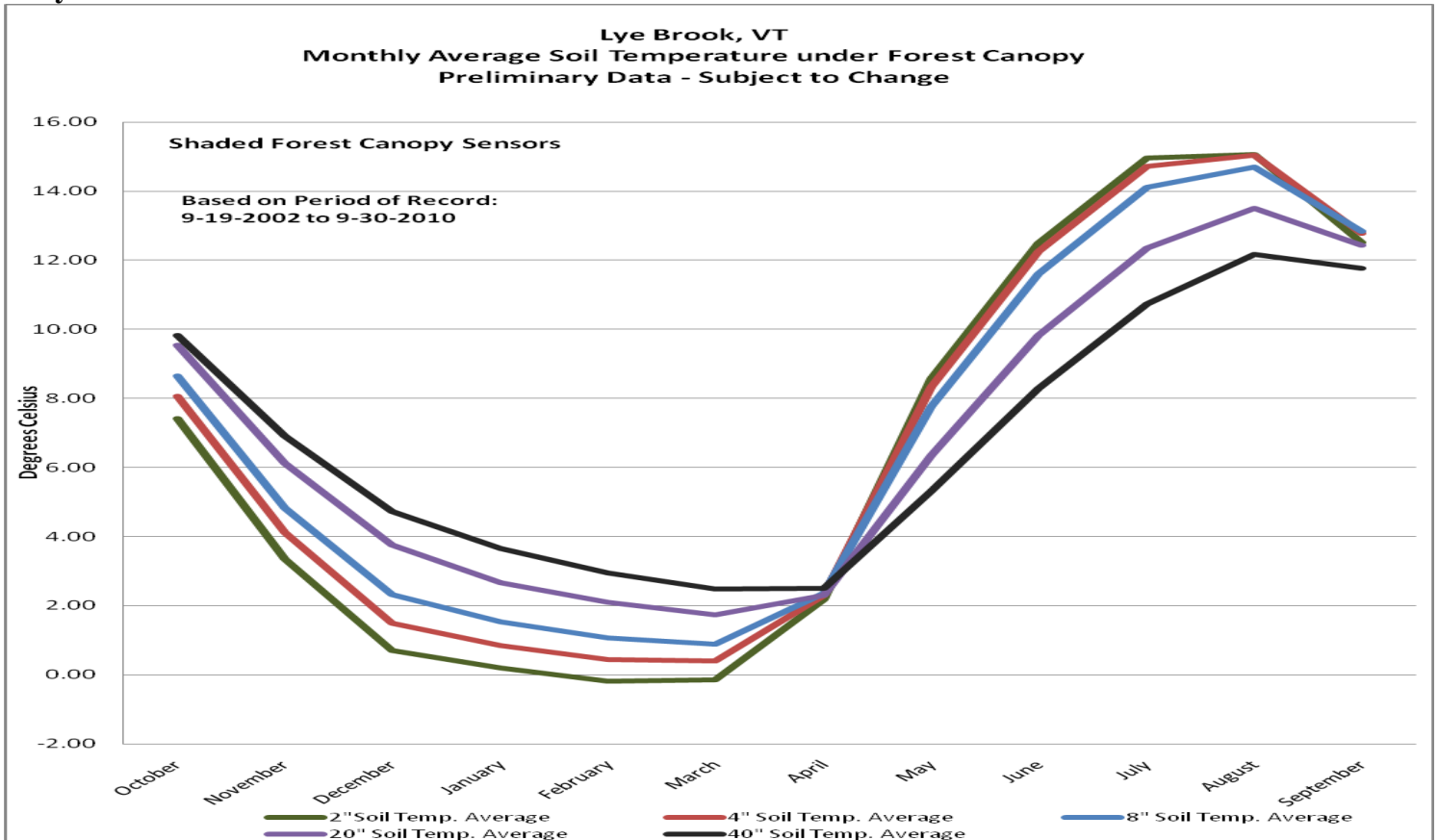
# Appendix 6. Monthly Average Soil Temperature Data

## 1. Mount Mansfield



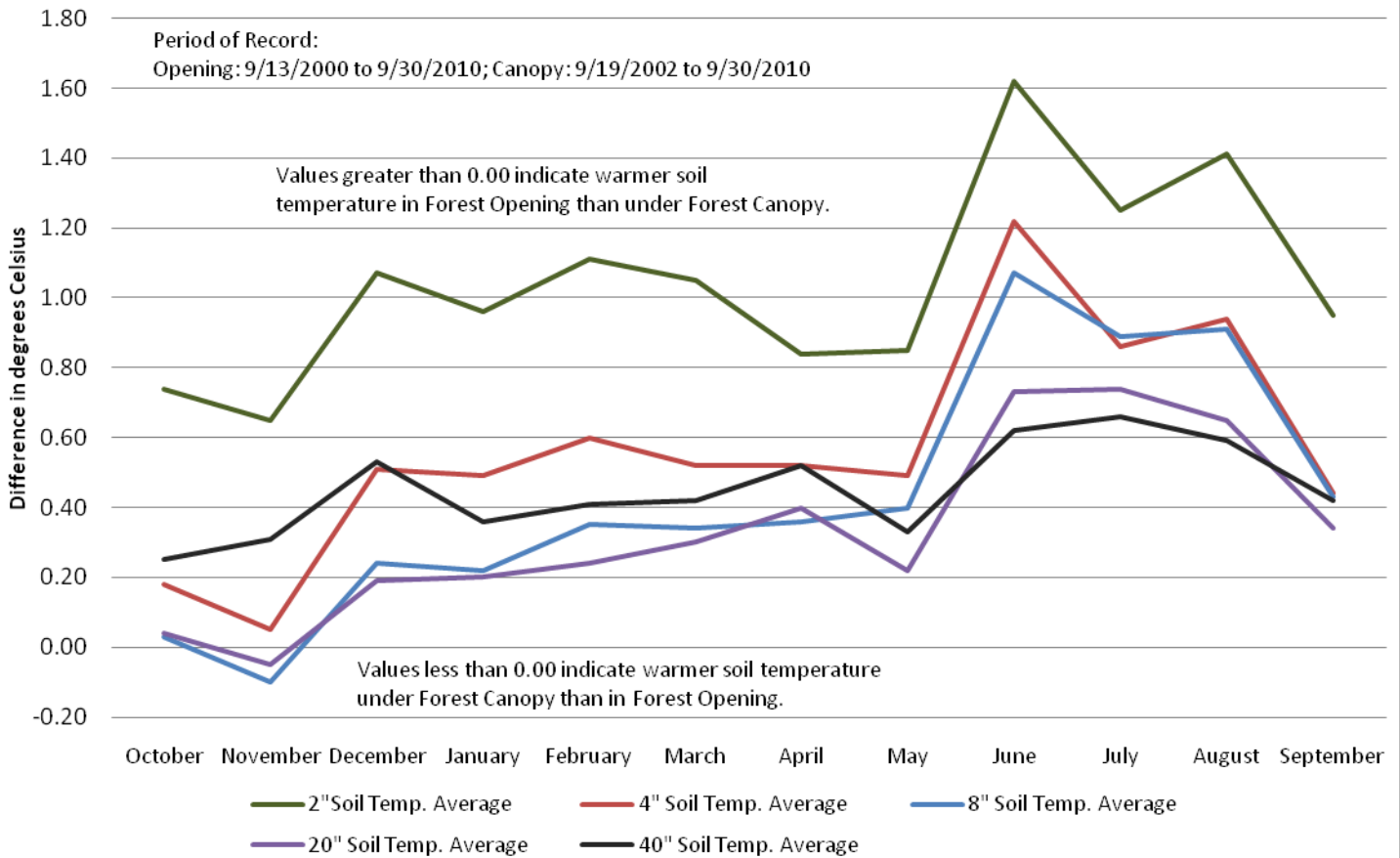
Mount Mansfield, Monthly Average Soil Temperature (degrees Celsius), 9/13/2000 – 9/30/2010					
Month	2" Soil Temp. Average	4" Soil Temp. Average	8" Soil Temp. Average	20" Soil Temp. Average	40" Soil Temp. Average
October	8.7	8.21	8.71	9.81	10.47
November	4.59	4.1	4.7	5.96	7.1
December	2.48	1.98	2.48	3.78	5.06
January	1.59	1.03	1.47	2.69	3.81
February	1.34	0.75	1.14	2.28	3.25
March	1.19	0.6	0.89	1.9	2.78
April	3.13	2.36	2.33	2.73	2.93
May	9.23	8.26	7.63	7.08	6.1
June	13.47	12.49	11.79	10.97	9.49
July	15.38	14.46	13.96	13.31	11.88
August	15.88	15.05	14.69	14.28	13.12
September	13.59	12.89	12.9	13.13	12.65
Annual					7.3

## 2. Lye Brook



Lye Brook, Monthly Average Soil Temperature (degrees Celsius)										
In Forest Opening						Under Forest Canopy				
Begin Date: 9/15/2000    End Date: 9/30/2010						Begin Date: 9/19/2002    End Date: 9/30/2010				
Month	2" Soil Temp. Average	4" Soil Temp. Average	8" Soil Temp. Average	20" Soil Temp. Average	40" Soil Temp. Average	2" Soil Temp. Average	4" Soil Temp. Average	8" Soil Temp. Average	20" Soil Temp. Average	40" Soil Temp. Average
October	8.16	8.24	8.69	9.58	10.07	7.42	8.06	8.66	9.54	9.82
November	4.00	4.16	4.72	6.08	7.23	3.35	4.11	4.82	6.13	6.92
December	1.78	2.00	2.55	3.94	5.25	0.71	1.49	2.31	3.75	4.72
January	1.16	1.33	1.75	2.86	4.01	0.20	0.84	1.53	2.66	3.65
February	0.93	1.04	1.41	2.34	3.35	-0.18	0.44	1.06	2.10	2.94
March	0.91	0.91	1.23	2.04	2.90	-0.14	0.39	0.89	1.74	2.48
April	3.02	2.82	2.72	2.69	3.02	2.18	2.30	2.36	2.29	2.50
May	9.42	8.81	8.16	6.56	5.64	8.57	8.32	7.76	6.34	5.31
June	14.12	13.47	12.68	10.56	8.91	12.50	12.25	11.61	9.83	8.29
July	16.22	15.57	15.01	13.09	11.40	14.97	14.71	14.12	12.35	10.74
August	16.48	15.98	15.61	14.15	12.77	15.07	15.04	14.70	13.50	12.18
September	13.46	13.22	13.26	12.77	12.19	12.51	12.78	12.83	12.43	11.77
Annual					7.22					6.89

**Lye Brook, VT**  
**Difference in Monthly Average Soil Temperature**  
**between Sensors in Forest Opening (sun) and under Forest Canopy (shade)**



**Lye Brook, VT: Difference in Monthly Average Soil Temperature**  
**between Sensors in Forest Opening and under Forest Canopy**

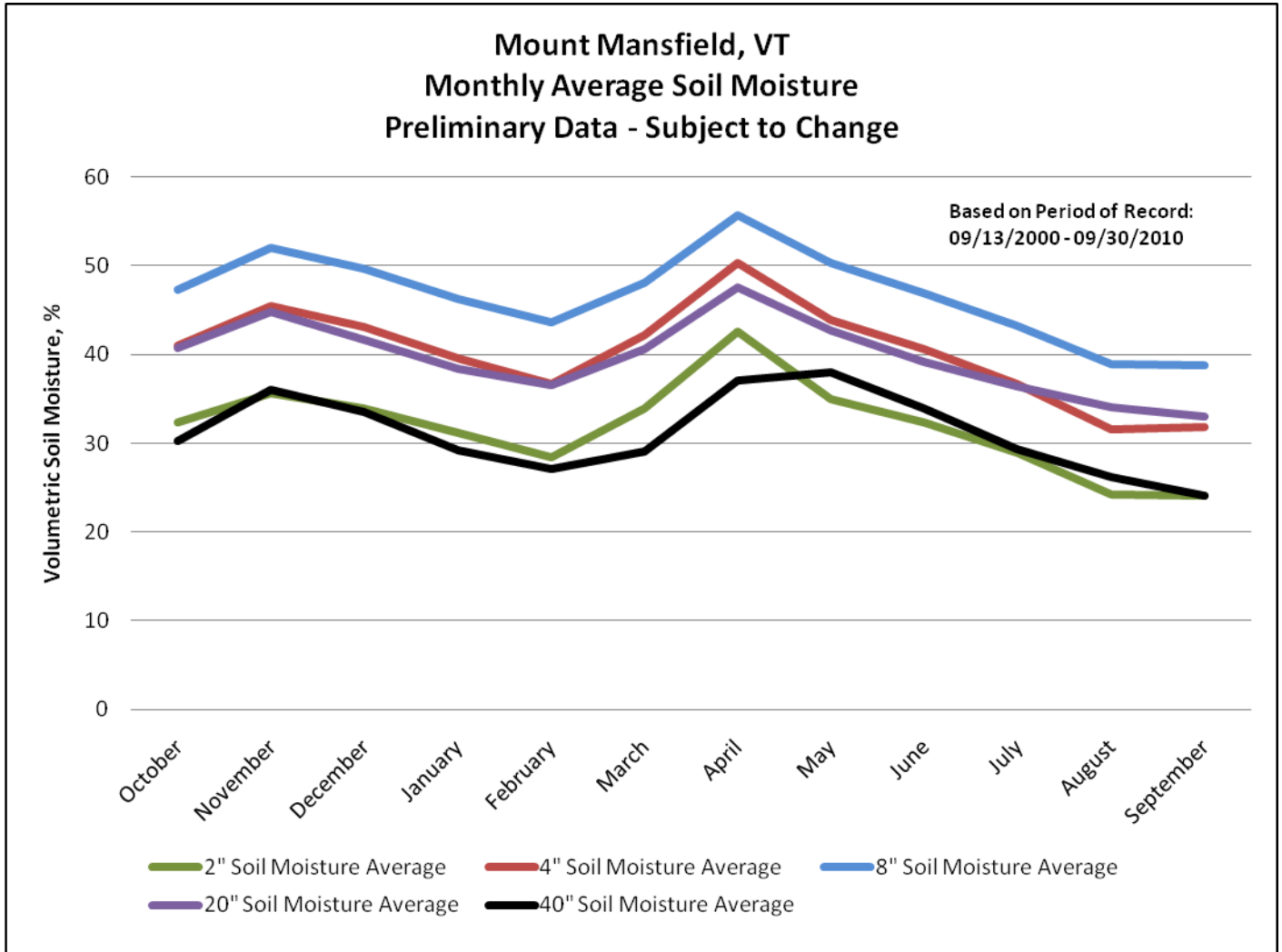
Month	2" Soil Temperature Average	4" Soil Temperature Average	8" Soil Temperature Average	20" Soil Temperature Average	40" Soil Temperature Average
October	0.74	0.18	0.03	0.04	0.25
November	0.65	0.05	-0.10	-0.05	0.31
December	1.07	0.51	0.24	0.19	0.53
January	0.96	0.49	0.22	0.20	0.36
February	1.11	0.60	0.35	0.24	0.41
March	1.05	0.52	0.34	0.30	0.42
April	0.84	0.52	0.36	0.40	0.52
May	0.85	0.49	0.40	0.22	0.33
June	1.62	1.22	1.07	0.73	0.62
July	1.25	0.86	0.89	0.74	0.66
August	1.41	0.94	0.91	0.65	0.59
September	0.95	0.44	0.43	0.34	0.42
Annual	1.04	0.57	0.43	0.33	0.45

Positive numbers indicate that Forest Opening is warmer;  
 negative number indicates that Forest Canopy is warmer.



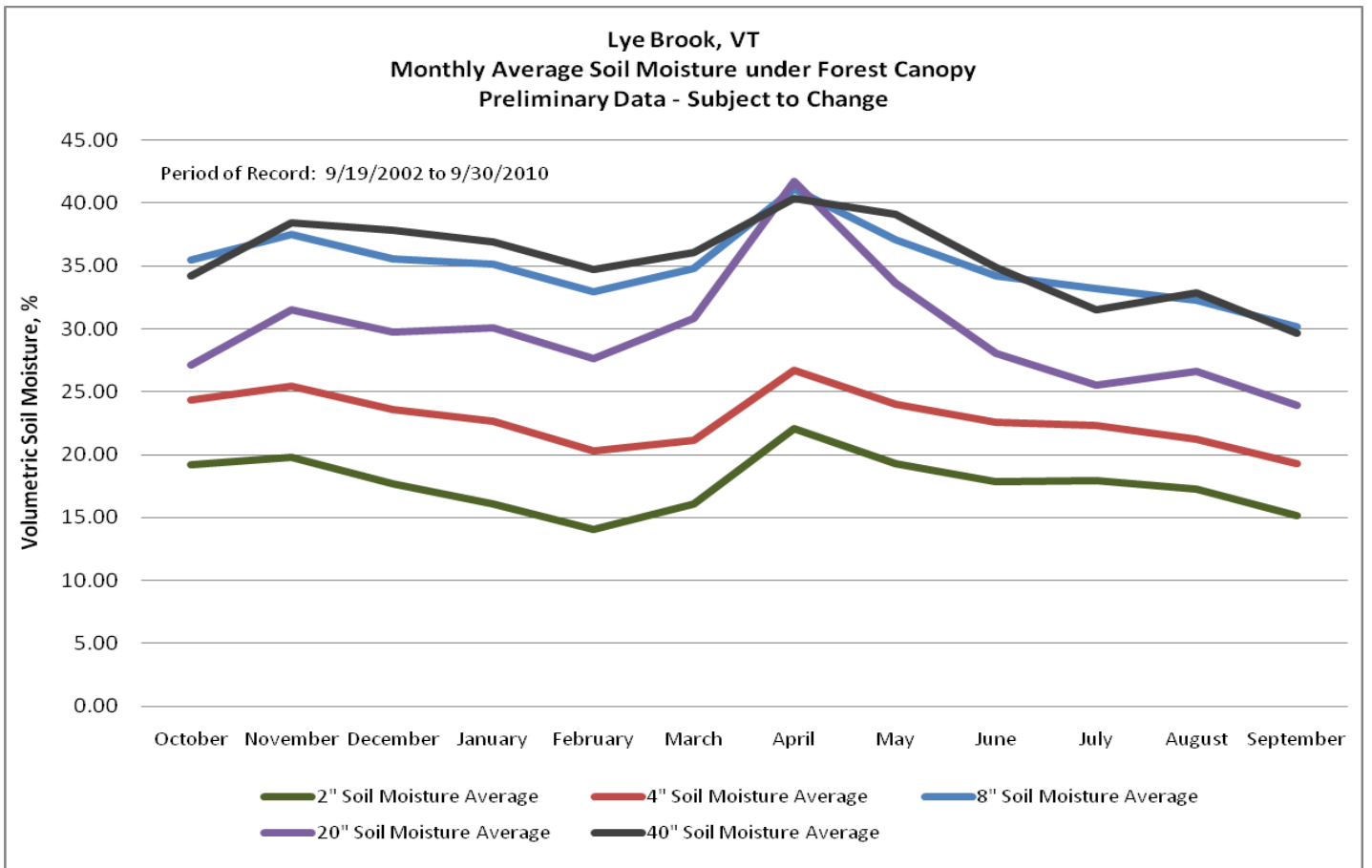
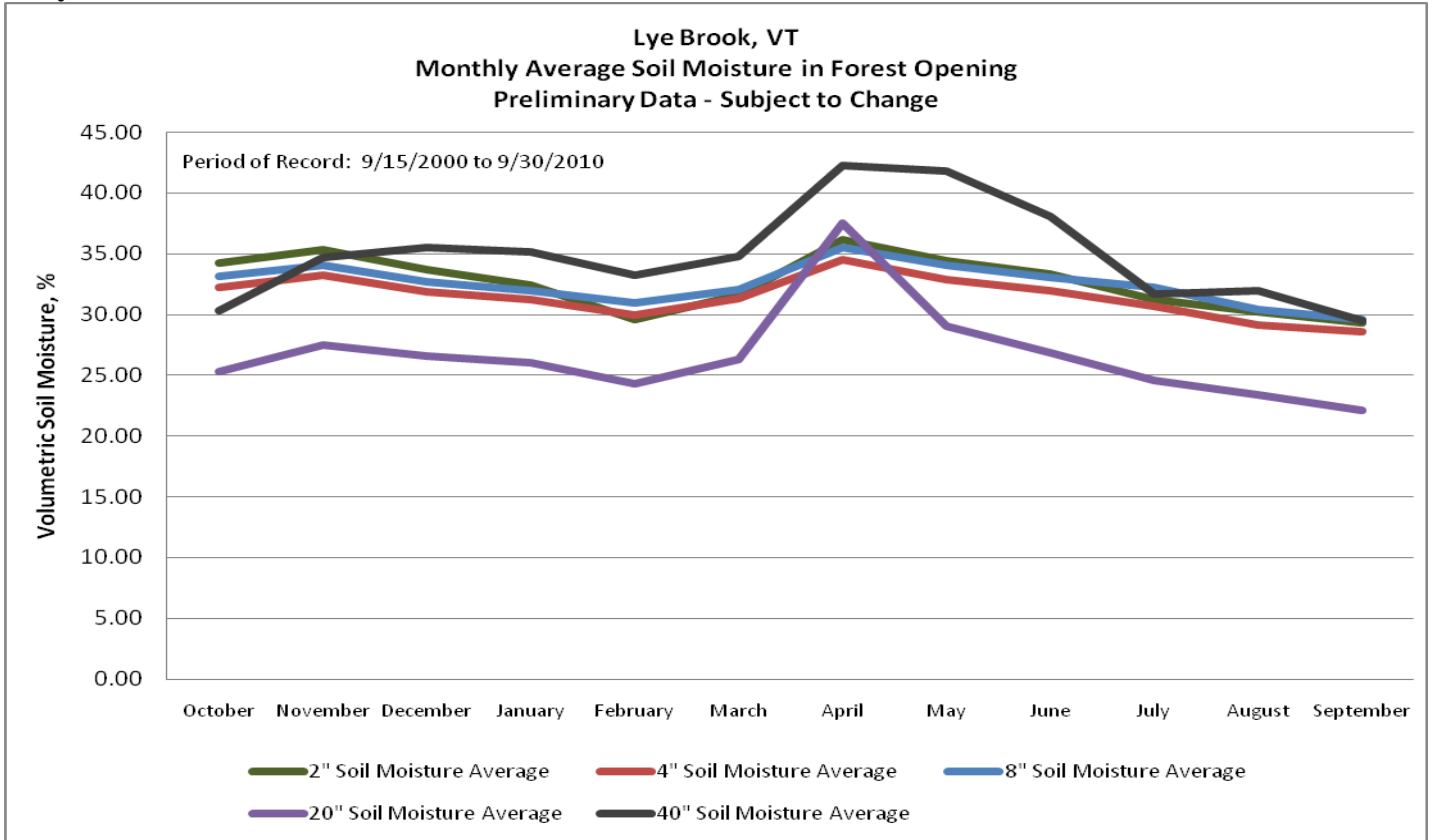
# Appendix 7. Monthly Average Soil Moisture Data

## 1. Mount Mansfield



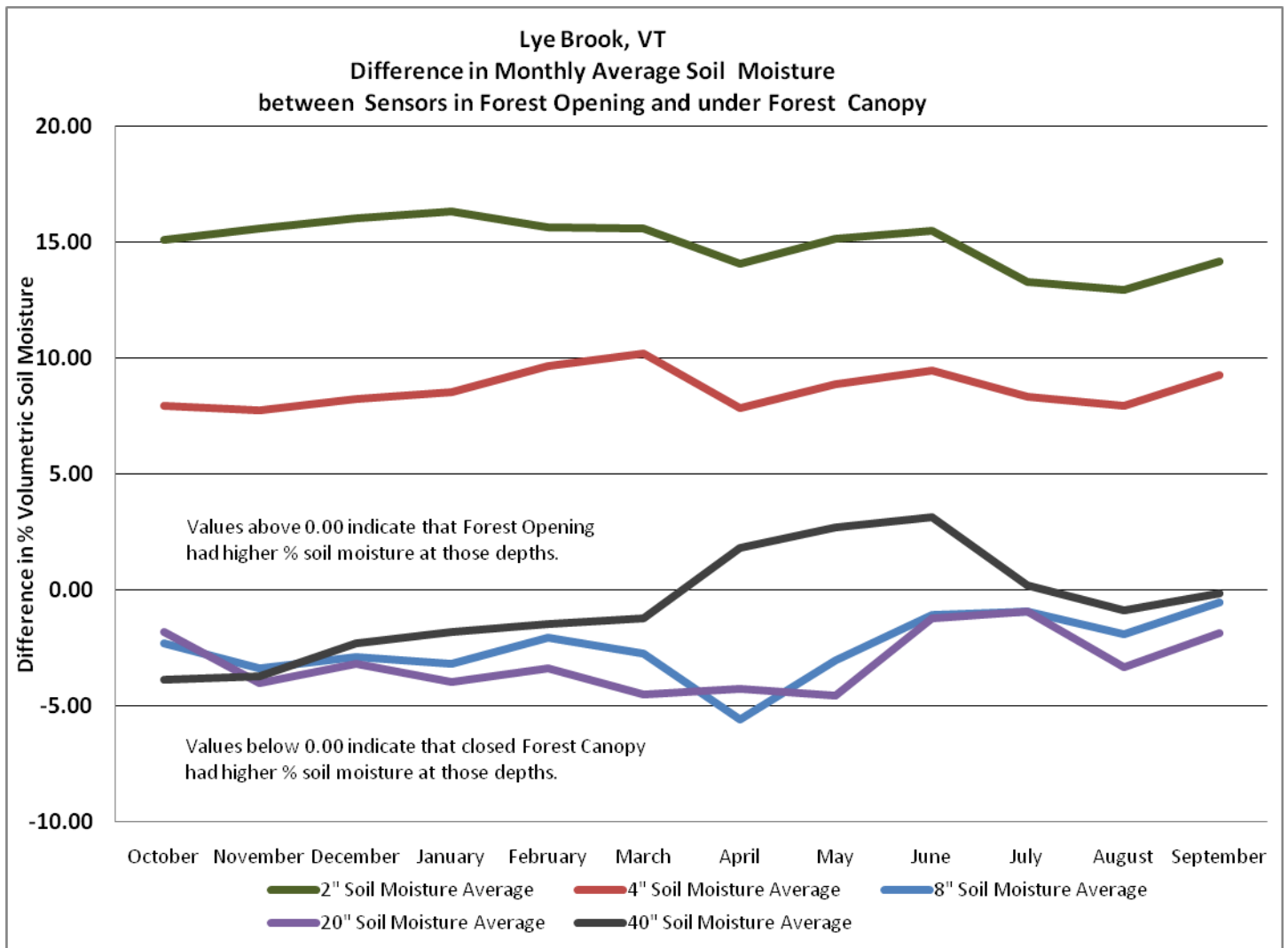
<b>Mount Mansfield, Monthly Average Soil Moisture (% by Volume), 9/13/2000 – 9/30/2010</b>					
<b>Month</b>	<b>2" Soil Moisture Average</b>	<b>4" Soil Moisture Average</b>	<b>8" Soil Moisture Average</b>	<b>20" Soil Moisture Average</b>	<b>40" Soil Moisture Average</b>
October	32.34	40.97	47.33	40.69	30.21
November	35.59	45.43	51.98	44.78	35.98
December	33.92	43.15	49.7	41.71	33.47
January	31.23	39.62	46.27	38.35	29.14
February	28.36	36.66	43.68	36.56	27.11
March	33.97	42.17	48.07	40.62	29.12
April	42.54	50.36	55.75	47.54	37.1
May	35.03	43.83	50.38	42.69	38.04
June	32.39	40.62	46.95	39.22	33.92
July	28.91	36.65	43.22	36.45	29.27
August	24.25	31.59	38.97	34.01	26.23
September	24.13	31.81	38.74	32.98	24.05

## 2. Lye Brook



## Lye Brook, Monthly Average Soil Moisture (% by Volume)

In Forest Opening						Under Forest Canopy					
Begin Date: 9/15/2000			End Date: 9/30/2010			Begin Date: 9/19/2002			End Date: 9/30/2010		
Month	2" Soil Moisture Average	4" Soil Moisture Average	8" Soil Moisture Average	20" Soil Moisture Average	40" Soil Moisture Average	Month	2" Soil Moisture Average	4" Soil Moisture Average	8" Soil Moisture Average	20" Soil Moisture Average	40" Soil Moisture Average
October	34.25	32.25	33.19	25.34	30.33	October	19.19	24.31	35.50	27.16	34.19
November	35.35	33.23	34.08	27.52	34.73	November	19.76	25.48	37.48	31.52	38.47
December	33.69	31.85	32.71	26.55	35.52	December	17.68	23.61	35.61	29.74	37.81
January	32.41	31.20	31.93	26.06	35.11	January	16.12	22.70	35.12	30.05	36.93
February	29.63	29.92	30.93	24.27	33.28	February	14.03	20.26	32.99	27.64	34.76
March	31.60	31.31	32.07	26.32	34.82	March	16.05	21.11	34.83	30.85	36.07
April	36.15	34.55	35.53	37.49	42.23	April	22.11	26.72	41.13	41.75	40.41
May	34.43	32.89	34.05	29.06	41.83	May	19.30	24.04	37.07	33.64	39.15
June	33.32	31.98	33.10	26.81	38.05	June	17.86	22.54	34.19	28.04	34.91
July	31.19	30.67	32.23	24.57	31.72	July	17.93	22.35	33.17	25.51	31.51
August	30.21	29.17	30.40	23.42	31.94	August	17.29	21.24	32.32	26.64	32.83
September	29.36	28.56	29.63	22.08	29.53	September	15.19	19.31	30.17	23.94	29.68

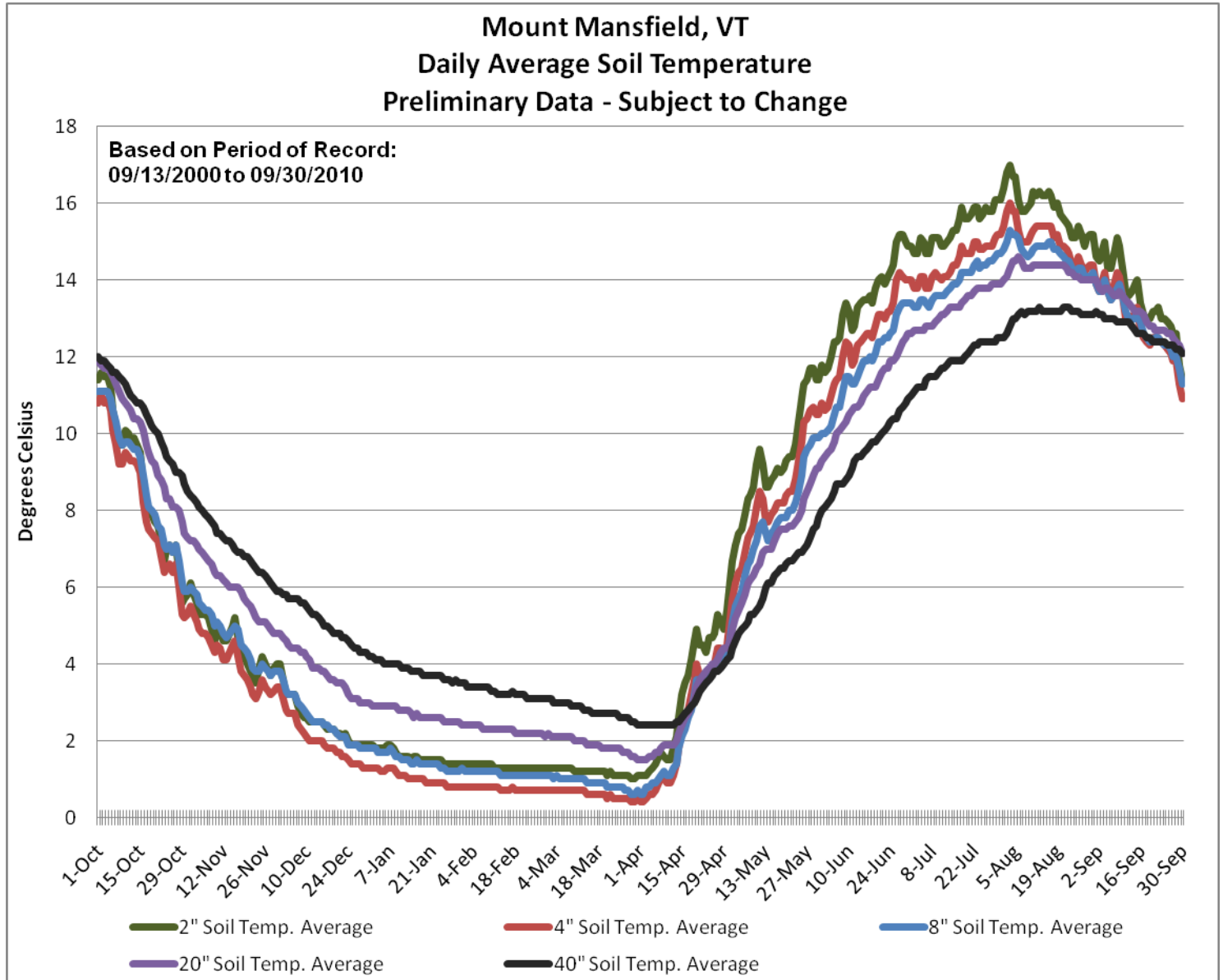


**Lye Brook: Difference in Monthly Average Soil Moisture between sensors**  
**in Forest Opening vs. under Forest Canopy**  
**(positive values=Forest Opening wetter; negative values=Forest Canopy wetter)**

Month	2" Soil Moisture Average	4" Soil Moisture Average	8" Soil Moisture Average	20" Soil Moisture Average	40" Soil Moisture Average
October	15.06	7.94	-2.31	-1.82	-3.86
November	15.59	7.75	-3.40	-4.00	-3.74
December	16.01	8.24	-2.90	-3.19	-2.29
January	16.29	8.50	-3.19	-3.99	-1.82
February	15.60	9.66	-2.06	-3.37	-1.48
March	15.55	10.20	-2.76	-4.53	-1.25
April	14.04	7.83	-5.60	-4.26	1.82
May	15.13	8.85	-3.02	-4.58	2.68
June	15.46	9.44	-1.09	-1.23	3.14
July	13.26	8.32	-0.94	-0.94	0.21
August	12.92	7.93	-1.92	-3.32	-0.89
September	14.17	9.25	-0.54	-1.86	-0.15
Annual	14.92	8.66	-2.48	-3.09	-0.64

# Appendix 8. Daily Average Soil Temperature Data

## 1. Mount Mansfield



SCAN Daily Averages			Station ID: 2041 - Mount Mansfield, Vermont		
Elements: Soil Temperature (degrees C)			Available Depths: 2 - 4 - 8 - 20 - 40 inches		
Begin Date: 9/13/2000		End Date: 9/30/2010			
Date	2" Soil Temp. Average	4" Soil Temp. Average	8" Soil Temp. Average	20" Soil Temp. Average	40" Soil Temp. Average
1-Oct	11.4	10.8	11.1	11.9	12
2-Oct	11.6	11	11.1	11.8	11.9
3-Oct	11.5	10.8	11.1	11.7	11.9
4-Oct	11.5	10.9	11.1	11.7	11.8

5-Oct	11.2	10.6	10.9	11.6	11.7
6-Oct	10.6	10.1	10.6	11.5	11.6
7-Oct	10.2	9.7	10.3	11.3	11.6
8-Oct	9.7	9.2	9.9	11.1	11.5
9-Oct	9.7	9.2	9.7	10.9	11.4
10-Oct	10.1	9.5	9.8	10.8	11.3
11-Oct	10	9.4	9.8	10.7	11.1
12-Oct	9.8	9.3	9.7	10.6	11
13-Oct	9.9	9.3	9.6	10.4	10.9
14-Oct	9.7	9.2	9.6	10.4	10.8
15-Oct	9.5	9	9.4	10.3	10.8
16-Oct	8.7	8.2	8.9	10.1	10.7
17-Oct	8.1	7.7	8.4	9.7	10.5
18-Oct	7.9	7.5	8.1	9.5	10.4
19-Oct	7.9	7.4	8	9.3	10.2
20-Oct	7.7	7.3	7.9	9.2	10.1
21-Oct	7.6	7.2	7.6	8.9	10
22-Oct	7.2	6.8	7.5	8.8	9.8
23-Oct	6.7	6.4	7.1	8.6	9.6
24-Oct	7	6.5	7	8.3	9.4
25-Oct	7.1	6.6	7.1	8.3	9.3
26-Oct	6.9	6.4	6.9	8.1	9.2
27-Oct	7.1	6.6	7.1	8.1	9
28-Oct	6.4	6	6.7	8	9
29-Oct	5.6	5.3	6.1	7.7	8.9
30-Oct	5.7	5.2	5.9	7.4	8.7
31-Oct	5.8	5.3	5.9	7.3	8.5
1-Nov	6.1	5.5	6	7.2	8.4
2-Nov	5.8	5.3	5.9	7.2	8.3
3-Nov	5.6	5.1	5.8	7.1	8.2
4-Nov	5.3	4.9	5.6	7	8.1
5-Nov	5.3	4.8	5.5	6.9	8
6-Nov	5.3	4.8	5.4	6.8	7.9
7-Nov	5.2	4.7	5.4	6.7	7.8
8-Nov	4.9	4.5	5.3	6.6	7.7
9-Nov	4.6	4.3	5	6.4	7.6
10-Nov	4.9	4.5	5.1	6.3	7.4
11-Nov	4.9	4.4	5	6.3	7.4
12-Nov	4.6	4.1	4.8	6.2	7.3
13-Nov	4.6	4.1	4.7	6.1	7.2
14-Nov	4.8	4.3	4.8	6	7.2
15-Nov	5	4.5	4.9	6	7.1
16-Nov	5.2	4.6	5	6	7
17-Nov	4.7	4.2	4.9	6	6.9
18-Nov	4.2	3.8	4.5	5.9	6.9
19-Nov	4.2	3.7	4.4	5.7	6.8
20-Nov	4	3.6	4.3	5.6	6.8

21-Nov	3.8	3.4	4.1	5.5	6.7
22-Nov	3.7	3.2	3.9	5.4	6.6
23-Nov	3.5	3.1	3.8	5.2	6.5
24-Nov	3.9	3.3	3.8	5.1	6.4
25-Nov	4.2	3.6	4	5.1	6.4
26-Nov	4	3.4	3.9	5.1	6.3
27-Nov	3.8	3.3	3.8	5	6.2
28-Nov	3.7	3.2	3.7	4.9	6.1
29-Nov	3.9	3.3	3.8	4.8	6
30-Nov	4	3.4	3.8	4.8	5.9
1-Dec	4	3.4	3.8	4.8	5.9
2-Dec	3.6	3.1	3.6	4.7	5.8
3-Dec	3.2	2.8	3.3	4.6	5.8
4-Dec	3.2	2.7	3.2	4.5	5.7
5-Dec	3.2	2.7	3.2	4.4	5.7
6-Dec	3.2	2.7	3.2	4.4	5.7
7-Dec	2.9	2.4	3	4.4	5.7
8-Dec	2.7	2.3	2.9	4.3	5.6
9-Dec	2.6	2.2	2.8	4.3	5.6
10-Dec	2.6	2.1	2.7	4.2	5.5
11-Dec	2.5	2	2.6	4.1	5.4
12-Dec	2.5	2	2.5	3.9	5.3
13-Dec	2.5	2	2.5	3.9	5.3
14-Dec	2.5	2	2.5	3.9	5.2
15-Dec	2.5	2	2.5	3.8	5.1
16-Dec	2.4	1.9	2.4	3.8	5
17-Dec	2.3	1.8	2.4	3.7	5
18-Dec	2.3	1.8	2.3	3.6	4.9
19-Dec	2.3	1.8	2.3	3.6	4.8
20-Dec	2.2	1.7	2.2	3.5	4.8
21-Dec	2.2	1.7	2.1	3.5	4.8
22-Dec	2.1	1.6	2.1	3.5	4.7
23-Dec	2.2	1.6	2.1	3.4	4.7
24-Dec	2	1.5	1.9	3.2	4.6
25-Dec	1.9	1.4	1.9	3.1	4.5
26-Dec	1.9	1.4	1.9	3.1	4.4
27-Dec	1.9	1.4	1.9	3.1	4.4
28-Dec	1.9	1.4	1.8	3	4.3
29-Dec	1.9	1.3	1.8	3	4.3
30-Dec	1.9	1.3	1.8	3	4.3
31-Dec	1.9	1.3	1.8	3	4.2
1-Jan	1.9	1.3	1.8	2.9	4.2
2-Jan	1.8	1.3	1.8	2.9	4.1
3-Jan	1.8	1.3	1.7	2.9	4.1
4-Jan	1.8	1.2	1.7	2.9	4.1
5-Jan	1.8	1.2	1.7	2.9	4
6-Jan	1.9	1.3	1.7	2.9	4

7-Jan	1.9	1.3	1.8	2.9	4
8-Jan	1.8	1.3	1.7	2.9	4
9-Jan	1.7	1.2	1.6	2.9	4
10-Jan	1.6	1.1	1.6	2.8	4
11-Jan	1.6	1.1	1.5	2.8	3.9
12-Jan	1.6	1.1	1.5	2.8	3.9
13-Jan	1.6	1	1.5	2.8	3.9
14-Jan	1.5	1	1.4	2.7	3.8
15-Jan	1.6	1	1.4	2.6	3.8
16-Jan	1.6	1	1.5	2.7	3.8
17-Jan	1.5	1	1.4	2.6	3.8
18-Jan	1.5	1	1.4	2.6	3.7
19-Jan	1.5	0.9	1.4	2.6	3.7
20-Jan	1.5	0.9	1.4	2.6	3.7
21-Jan	1.5	0.9	1.4	2.6	3.7
22-Jan	1.5	0.9	1.4	2.6	3.7
23-Jan	1.5	0.9	1.4	2.6	3.7
24-Jan	1.5	0.9	1.3	2.6	3.7
25-Jan	1.4	0.9	1.3	2.5	3.6
26-Jan	1.4	0.8	1.2	2.5	3.6
27-Jan	1.4	0.8	1.2	2.5	3.6
28-Jan	1.4	0.8	1.2	2.5	3.5
29-Jan	1.4	0.8	1.2	2.5	3.6
30-Jan	1.4	0.8	1.2	2.5	3.5
31-Jan	1.4	0.8	1.3	2.4	3.5
1-Feb	1.4	0.8	1.2	2.4	3.5
2-Feb	1.4	0.8	1.2	2.4	3.4
3-Feb	1.4	0.8	1.2	2.4	3.4
4-Feb	1.4	0.8	1.2	2.4	3.4
5-Feb	1.4	0.8	1.2	2.4	3.4
6-Feb	1.4	0.8	1.2	2.4	3.4
7-Feb	1.4	0.8	1.2	2.3	3.4
8-Feb	1.4	0.8	1.2	2.3	3.4
9-Feb	1.4	0.8	1.2	2.3	3.4
10-Feb	1.4	0.8	1.2	2.3	3.3
11-Feb	1.3	0.8	1.2	2.3	3.3
12-Feb	1.3	0.8	1.2	2.3	3.2
13-Feb	1.3	0.7	1.1	2.3	3.2
14-Feb	1.3	0.7	1.1	2.3	3.2
15-Feb	1.3	0.7	1.1	2.3	3.2
16-Feb	1.3	0.7	1.1	2.3	3.2
17-Feb	1.3	0.8	1.1	2.3	3.3
18-Feb	1.3	0.7	1.1	2.2	3.2
19-Feb	1.3	0.7	1.1	2.2	3.2
20-Feb	1.3	0.7	1.1	2.2	3.2
21-Feb	1.3	0.7	1.1	2.2	3.2
22-Feb	1.3	0.7	1.1	2.2	3.1



23-Feb	1.3	0.7	1.1	2.2	3.1
24-Feb	1.3	0.7	1.1	2.2	3.1
25-Feb	1.3	0.7	1.1	2.2	3.1
26-Feb	1.3	0.7	1.1	2.2	3.1
27-Feb	1.3	0.7	1.1	2.2	3.1
28-Feb	1.3	0.7	1.1	2.1	3.1
1-Mar	1.3	0.7	1.1	2.2	3.1
2-Mar	1.3	0.7	1.1	2.1	3.1
3-Mar	1.3	0.7	1	2.1	3
4-Mar	1.3	0.7	1.1	2.1	3
5-Mar	1.3	0.7	1	2.1	3
6-Mar	1.3	0.7	1	2.1	3
7-Mar	1.3	0.7	1	2.1	3
8-Mar	1.3	0.7	1	2.1	3
9-Mar	1.3	0.7	1	2.1	2.9
10-Mar	1.2	0.7	1	2	2.9
11-Mar	1.2	0.7	1	2	2.9
12-Mar	1.2	0.7	1	2	2.9
13-Mar	1.2	0.7	1	2	2.8
14-Mar	1.2	0.6	0.9	1.9	2.8
15-Mar	1.2	0.6	0.9	1.9	2.8
16-Mar	1.2	0.6	0.9	1.9	2.7
17-Mar	1.2	0.6	0.9	1.9	2.7
18-Mar	1.2	0.6	0.9	1.9	2.7
19-Mar	1.2	0.6	0.9	1.8	2.7
20-Mar	1.2	0.6	0.9	1.8	2.7
21-Mar	1.1	0.5	0.8	1.8	2.7
22-Mar	1.2	0.6	0.8	1.8	2.7
23-Mar	1.1	0.5	0.8	1.8	2.7
24-Mar	1.1	0.5	0.8	1.8	2.7
25-Mar	1.1	0.5	0.8	1.8	2.6
26-Mar	1.1	0.5	0.8	1.7	2.6
27-Mar	1.1	0.5	0.7	1.7	2.6
28-Mar	1.1	0.5	0.7	1.7	2.6
29-Mar	1	0.4	0.6	1.6	2.5
30-Mar	1	0.4	0.6	1.6	2.5
31-Mar	1.1	0.5	0.7	1.5	2.4
1-Apr	1.1	0.4	0.6	1.5	2.4
2-Apr	1.1	0.4	0.6	1.5	2.4
3-Apr	1.1	0.5	0.8	1.5	2.4
4-Apr	1.2	0.6	0.8	1.6	2.4
5-Apr	1.3	0.6	0.9	1.6	2.4
6-Apr	1.4	0.7	0.9	1.7	2.4
7-Apr	1.6	0.9	1	1.7	2.4
8-Apr	1.7	1	1.1	1.8	2.4
9-Apr	1.6	1	1.2	1.9	2.4
10-Apr	1.5	0.9	1.1	1.9	2.4

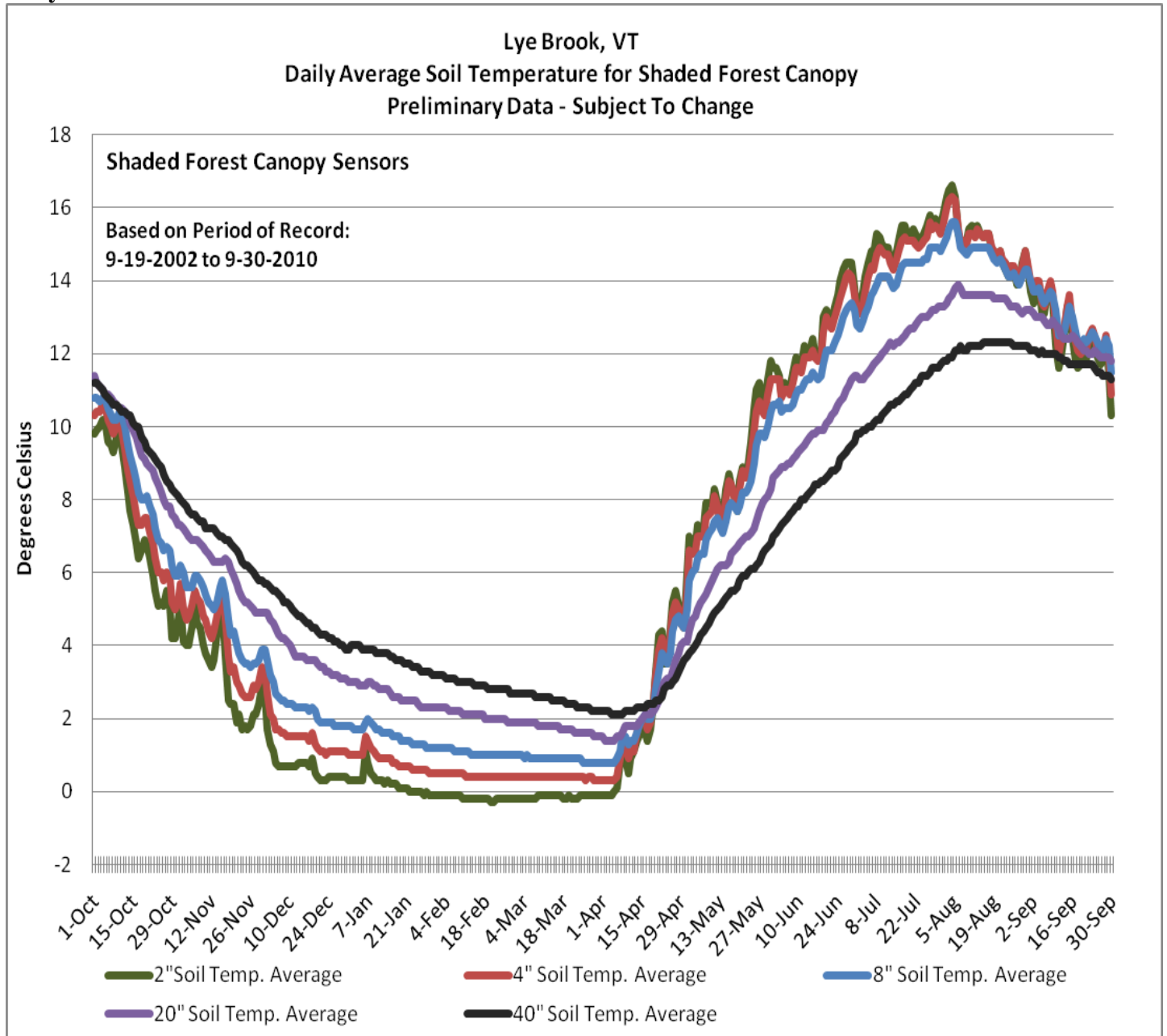
11-Apr	1.5	0.9	1.1	1.9	2.4
12-Apr	1.8	1.1	1.3	1.9	2.4
13-Apr	2.1	1.4	1.4	2	2.5
14-Apr	2.6	1.8	1.8	2.2	2.5
15-Apr	3.2	2.3	2.1	2.4	2.6
16-Apr	3.5	2.6	2.3	2.6	2.7
17-Apr	3.7	2.8	2.6	2.7	2.8
18-Apr	4.1	3.2	2.8	2.9	2.9
19-Apr	4.6	3.6	3.2	3.1	3
20-Apr	4.9	4	3.6	3.4	3.1
21-Apr	4.5	3.7	3.5	3.6	3.3
22-Apr	4.5	3.7	3.6	3.7	3.4
23-Apr	4.3	3.6	3.5	3.8	3.5
24-Apr	4.7	3.8	3.7	3.9	3.6
25-Apr	4.7	3.9	3.8	4	3.7
26-Apr	4.8	4	3.9	4	3.8
27-Apr	5.3	4.4	4.1	4.1	3.8
28-Apr	5.1	4.4	4.2	4.3	3.9
29-Apr	4.9	4.2	4.1	4.4	4
30-Apr	5.4	4.5	4.2	4.4	4.1
1-May	6.2	5.2	4.7	4.6	4.2
2-May	6.7	5.7	5.1	4.9	4.4
3-May	7.1	6.1	5.5	5.2	4.6
4-May	7.4	6.4	5.7	5.4	4.8
5-May	7.5	6.5	5.9	5.6	4.9
6-May	7.9	6.9	6.3	5.8	5
7-May	8.3	7.3	6.6	6.1	5.1
8-May	8.4	7.4	6.7	6.2	5.3
9-May	8.6	7.6	7	6.3	5.3
10-May	9.2	8.1	7.2	6.5	5.4
11-May	9.6	8.5	7.6	6.6	5.5
12-May	9.2	8.3	7.7	6.9	5.7
13-May	8.6	7.7	7.4	7	6
14-May	8.6	7.7	7.2	7	6.1
15-May	8.8	7.9	7.4	7	6.1
16-May	8.9	8	7.5	7.2	6.3
17-May	9.1	8.2	7.7	7.4	6.4
18-May	9	8.2	7.8	7.5	6.5
19-May	9.1	8.2	7.8	7.5	6.5
20-May	9.3	8.4	7.8	7.5	6.6
21-May	9.4	8.5	8	7.6	6.7
22-May	9.4	8.5	8	7.6	6.7
23-May	9.7	8.8	8.2	7.7	6.8
24-May	10.3	9.3	8.5	7.8	6.9
25-May	10.9	9.8	8.9	8	6.9
26-May	11.3	10.3	9.4	8.3	7
27-May	11.4	10.4	9.6	8.5	7.1

28-May	11.7	10.6	9.7	8.7	7.3
29-May	11.7	10.7	9.9	8.9	7.5
30-May	11.4	10.5	9.9	9.1	7.6
31-May	11.4	10.5	9.9	9.1	7.8
1-Jun	11.8	10.8	10	9.3	8
2-Jun	11.6	10.6	10	9.4	8.1
3-Jun	11.7	10.7	10.1	9.5	8.2
4-Jun	12	11	10.2	9.6	8.3
5-Jun	12.4	11.3	10.5	9.8	8.5
6-Jun	12.4	11.4	10.7	10	8.7
7-Jun	12.5	11.5	10.7	10.1	8.7
8-Jun	13.1	12	11.1	10.2	8.7
9-Jun	13.4	12.4	11.5	10.3	8.8
10-Jun	13.2	12.3	11.5	10.5	8.9
11-Jun	12.7	11.8	11.3	10.6	9.1
12-Jun	12.8	11.9	11.3	10.7	9.3
13-Jun	13.3	12.3	11.5	10.7	9.4
14-Jun	13.4	12.4	11.7	10.8	9.4
15-Jun	13.5	12.5	11.9	11	9.5
16-Jun	13.5	12.6	11.9	11.1	9.6
17-Jun	13.6	12.6	12	11.2	9.7
18-Jun	13.4	12.5	11.9	11.2	9.8
19-Jun	13.8	12.8	12.1	11.2	9.8
20-Jun	14	13.1	12.4	11.4	9.9
21-Jun	14.1	13.1	12.4	11.6	10
22-Jun	13.9	13	12.5	11.7	10.1
23-Jun	14.1	13.2	12.5	11.7	10.2
24-Jun	14.2	13.2	12.6	11.9	10.3
25-Jun	14.4	13.4	12.7	11.9	10.4
26-Jun	15	14	13.1	12	10.4
27-Jun	15.2	14.2	13.3	12.2	10.6
28-Jun	15.2	14.1	13.4	12.4	10.7
29-Jun	15	14	13.4	12.5	10.8
30-Jun	14.9	14	13.4	12.6	10.9
1-Jul	14.9	14	13.4	12.6	11
2-Jul	14.7	13.8	13.3	12.7	11.1
3-Jul	14.7	13.8	13.3	12.7	11.2
4-Jul	15.1	14.1	13.5	12.7	11.2
5-Jul	15	14.1	13.5	12.7	11.2
6-Jul	14.7	13.8	13.4	12.8	11.4
7-Jul	14.7	13.8	13.3	12.8	11.5
8-Jul	15.1	14.1	13.5	12.8	11.5
9-Jul	15.1	14.2	13.6	12.9	11.5
10-Jul	15.1	14.1	13.6	13	11.6
11-Jul	14.9	14	13.6	13.1	11.7
12-Jul	14.9	14.1	13.6	13.1	11.7
13-Jul	15	14.1	13.7	13.2	11.8

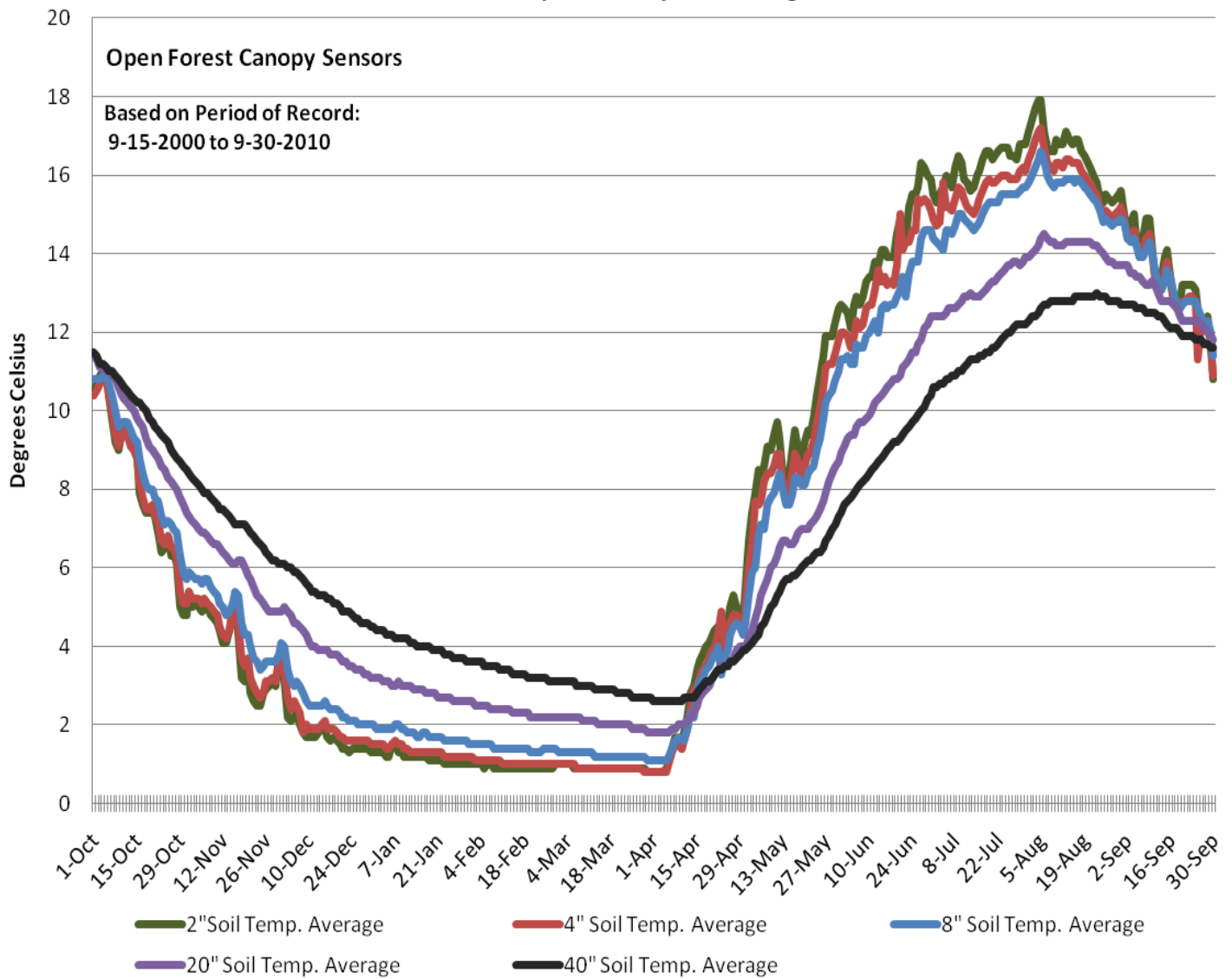
14-Jul	15.1	14.2	13.8	13.3	11.9
15-Jul	15.3	14.4	13.9	13.3	11.9
16-Jul	15.3	14.4	13.9	13.3	11.9
17-Jul	15.6	14.6	14	13.3	11.9
18-Jul	15.9	14.9	14.2	13.4	11.9
19-Jul	15.6	14.7	14.2	13.5	12
20-Jul	15.6	14.7	14.2	13.6	12.1
21-Jul	15.7	14.7	14.2	13.6	12.2
22-Jul	15.9	15	14.4	13.7	12.3
23-Jul	15.9	15	14.5	13.8	12.3
24-Jul	15.6	14.8	14.3	13.8	12.4
25-Jul	15.7	14.8	14.4	13.8	12.4
26-Jul	15.9	14.9	14.4	13.8	12.4
27-Jul	15.8	14.9	14.5	13.8	12.4
28-Jul	15.8	14.9	14.5	13.9	12.4
29-Jul	16.1	15.1	14.6	13.9	12.4
30-Jul	16.1	15.2	14.7	13.9	12.5
31-Jul	16.1	15.2	14.7	13.9	12.5
1-Aug	16.4	15.4	14.8	14	12.5
2-Aug	16.8	15.8	15	14.1	12.6
3-Aug	17	16	15.3	14.3	12.8
4-Aug	16.7	15.8	15.2	14.5	13
5-Aug	16.7	15.8	15.2	14.5	13
6-Aug	16.1	15.3	15.1	14.6	13.1
7-Aug	15.8	15	14.8	14.5	13.2
8-Aug	15.8	15	14.7	14.3	13.1
9-Aug	15.9	15	14.6	14.3	13.2
10-Aug	16	15.2	14.7	14.3	13.2
11-Aug	16.3	15.3	14.8	14.4	13.2
12-Aug	16.2	15.4	14.9	14.4	13.2
13-Aug	16.3	15.4	14.9	14.4	13.3
14-Aug	16.2	15.4	14.9	14.4	13.2
15-Aug	16.2	15.4	14.9	14.4	13.2
16-Aug	16.3	15.4	15	14.4	13.2
17-Aug	16.2	15.4	15	14.4	13.2
18-Aug	15.9	15.1	14.8	14.4	13.2
19-Aug	16	15.2	14.8	14.4	13.2
20-Aug	15.7	14.9	14.7	14.4	13.2
21-Aug	15.6	14.9	14.6	14.4	13.3
22-Aug	15.5	14.8	14.5	14.3	13.3
23-Aug	15.4	14.7	14.5	14.2	13.3
24-Aug	15.1	14.4	14.3	14.2	13.2
25-Aug	15.1	14.3	14.2	14.1	13.2
26-Aug	15.4	14.6	14.3	14.1	13.2
27-Aug	15.2	14.4	14.3	14	13.1
28-Aug	14.9	14.2	14.1	14	13.1
29-Aug	15.1	14.3	14.1	14	13.1

30-Aug	15.2	14.4	14.1	14	13.1
31-Aug	15.2	14.4	14.2	14	13.1
1-Sep	14.6	13.9	13.9	14	13.2
2-Sep	14.5	13.7	13.7	13.8	13.1
3-Sep	14.8	14	13.8	13.7	13.1
4-Sep	15	14.2	14	13.8	13
5-Sep	14.3	13.7	13.7	13.8	13
6-Sep	14.3	13.5	13.5	13.7	13
7-Sep	14.7	13.9	13.6	13.6	13
8-Sep	15.1	14.2	13.8	13.6	12.9
9-Sep	14.9	14.1	13.9	13.7	12.9
10-Sep	14.3	13.6	13.6	13.6	12.9
11-Sep	13.7	13	13.2	13.5	12.9
12-Sep	13.6	12.9	13	13.4	12.9
13-Sep	13.7	13	13	13.3	12.8
14-Sep	13.9	13.2	13	13.2	12.7
15-Sep	14	13.3	13.2	13.2	12.6
16-Sep	13.4	12.7	12.9	13.2	12.6
17-Sep	13.1	12.5	12.6	13.1	12.6
18-Sep	13	12.4	12.5	12.9	12.5
19-Sep	13	12.3	12.4	12.8	12.5
20-Sep	13.2	12.5	12.4	12.8	12.4
21-Sep	13.2	12.5	12.5	12.7	12.4
22-Sep	13.3	12.5	12.5	12.7	12.4
23-Sep	13	12.4	12.4	12.7	12.4
24-Sep	13	12.3	12.3	12.7	12.4
25-Sep	12.9	12.2	12.3	12.6	12.3
26-Sep	12.8	12.1	12.2	12.6	12.3
27-Sep	12.6	11.9	12	12.5	12.3
28-Sep	12.6	11.9	12	12.4	12.2
29-Sep	11.8	11.3	11.7	12.3	12.2
30-Sep	11.4	10.9	11.3	12.1	12.1

## 2. Lye Brook



**Lye Brook, VT**  
**Daily Average Soil Temperature for Open Forest Canopy**  
**Preliminary Data - Subject to Change**



SCAN Daily Averages						Station ID: 2042 Lye Brook, Vermont					
Element: Soil Temperature ( degrees C)						Available Depths: 2 - 4 - 8 - 20 - 40 inches					
In Forest Opening						Under Forest Canopy					
Begin Date: 9/15/2000 End Date: 9/30/2010						Begin Date: 9/19/2002 End Date: 9/30/2010					
Date	2" Soil Temp. Average	4" Soil Temp. Average	8" Soil Temp. Average	20" Soil Temp. Average	40" Soil Temp. Average	Date	2" Soil Temp. Average	4" Soil Temp. Average	8" Soil Temp. Average	20" Soil Temp. Average	40" Soil Temp. Average
1-Oct	10.4	10.4	10.8	11.5	11.5	1-Oct	9.8	10.3	10.8	11.4	11.2
2-Oct	10.7	10.5	10.8	11.3	11.4	2-Oct	9.9	10.4	10.8	11.2	11.2
3-Oct	10.9	10.7	10.8	11.1	11.2	3-Oct	10	10.4	10.7	11.1	11.1
4-Oct	11	10.8	10.9	11.1	11.2	4-Oct	10.2	10.6	10.8	11	11
5-Oct	11	10.8	10.9	11	11.1	5-Oct	10.2	10.6	10.8	10.9	10.9
6-Oct	10.4	10.4	10.7	11	11	6-Oct	9.6	10.2	10.5	10.9	10.8

7-Oct	9.8	10	10.4	10.9	11	7-Oct	9.5	10	10.3	10.8	10.7
8-Oct	9.2	9.4	10	10.8	10.9	8-Oct	9.3	9.8	10.2	10.7	10.6
9-Oct	9	9.1	9.6	10.6	10.8	9-Oct	9.7	10	10.2	10.6	10.6
10-Oct	9.5	9.4	9.7	10.4	10.7	10-Oct	9.9	10.2	10.4	10.5	10.5
11-Oct	9.6	9.5	9.7	10.3	10.6	11-Oct	9.5	9.9	10.3	10.5	10.4
12-Oct	9.4	9.4	9.7	10.2	10.5	12-Oct	8.9	9.4	10	10.4	10.4
13-Oct	9.2	9.1	9.5	10.1	10.4	13-Oct	8.2	8.8	9.5	10.3	10.3
14-Oct	9	9	9.3	10	10.3	14-Oct	7.7	8.5	9.2	10.1	10.3
15-Oct	8.8	8.8	9.2	9.8	10.2	15-Oct	7.3	8.1	8.9	9.9	10.1
16-Oct	7.9	8.2	8.8	9.7	10.2	16-Oct	6.8	7.6	8.5	9.7	10
17-Oct	7.6	7.8	8.4	9.6	10.1	17-Oct	6.4	7.3	8.2	9.5	10
18-Oct	7.4	7.5	8.1	9.3	10	18-Oct	6.6	7.3	8	9.2	9.7
19-Oct	7.4	7.5	8	9.1	9.8	19-Oct	6.9	7.5	8	9.1	9.6
20-Oct	7.4	7.6	8	9	9.7	20-Oct	6.8	7.5	8.1	9	9.4
21-Oct	7.3	7.3	7.8	8.9	9.6	21-Oct	6.4	7.1	7.8	8.9	9.3
22-Oct	6.9	7.2	7.7	8.8	9.5	22-Oct	5.9	6.8	7.6	8.8	9.2
23-Oct	6.4	6.7	7.3	8.6	9.4	23-Oct	5.5	6.4	7.2	8.6	9.1
24-Oct	6.5	6.6	7.1	8.5	9.3	24-Oct	5.1	6	6.9	8.4	9
25-Oct	6.8	6.8	7.2	8.3	9.2	25-Oct	5.2	6	6.8	8.2	8.9
26-Oct	6.3	6.5	7.1	8.2	9	26-Oct	5.1	5.8	6.6	8	8.7
27-Oct	6.4	6.5	7	8.1	8.9	27-Oct	5.5	6	6.7	7.8	8.5
28-Oct	6.1	6.3	6.9	8	8.8	28-Oct	5.1	5.9	6.6	7.8	8.4
29-Oct	5	5.4	6.3	7.8	8.7	29-Oct	4.2	5.2	6.2	7.6	8.3
30-Oct	4.8	5.1	5.9	7.6	8.6	30-Oct	4.2	5	5.9	7.5	8.2
31-Oct	4.8	5.1	5.7	7.4	8.5	31-Oct	4.7	5.2	5.9	7.3	8.1
1-Nov	5.4	5.4	5.9	7.3	8.4	1-Nov	5.2	5.7	6.2	7.3	8
2-Nov	5	5.2	5.8	7.2	8.3	2-Nov	4.1	5	6	7.2	7.9
3-Nov	5.1	5.2	5.7	7.1	8.2	3-Nov	4	4.7	5.6	7.1	7.8
4-Nov	5	5.2	5.7	7	8.1	4-Nov	4	4.8	5.6	7	7.7
5-Nov	4.9	5.1	5.6	6.9	8	5-Nov	4.5	5.1	5.6	6.9	7.6
6-Nov	5.2	5.2	5.7	6.9	7.9	6-Nov	5.1	5.5	5.9	6.9	7.6
7-Nov	5	5.1	5.7	6.8	7.9	7-Nov	4.6	5.3	5.9	6.9	7.5
8-Nov	4.8	5	5.5	6.7	7.8	8-Nov	4.5	5.2	5.8	6.8	7.4
9-Nov	4.7	4.9	5.4	6.6	7.7	9-Nov	4	4.8	5.6	6.7	7.4
10-Nov	4.6	4.8	5.3	6.6	7.6	10-Nov	3.8	4.7	5.4	6.6	7.2
11-Nov	4.4	4.5	5.1	6.5	7.5	11-Nov	3.6	4.4	5.2	6.5	7.2
12-Nov	4.1	4.3	5	6.4	7.5	12-Nov	3.4	4.2	5.1	6.4	7.2
13-Nov	4.1	4.2	4.8	6.3	7.4	13-Nov	3.6	4.4	5	6.3	7.2
14-Nov	4.4	4.4	4.9	6.2	7.3	14-Nov	4.3	4.8	5.2	6.3	7.1
15-Nov	5	4.9	5.1	6.1	7.2	15-Nov	5.1	5.4	5.6	6.3	7
16-Nov	5.3	5.2	5.4	6.1	7.1	16-Nov	5.1	5.6	5.8	6.3	7
17-Nov	4.3	4.6	5.3	6.2	7.1	17-Nov	3.7	4.7	5.4	6.4	6.9
18-Nov	3.2	3.7	4.6	6.2	7.1	18-Nov	2.5	3.7	4.7	6.3	6.9
19-Nov	3.1	3.5	4.3	6	7.1	19-Nov	2.4	3.3	4.3	6.1	6.8
20-Nov	3.4	3.7	4.3	5.8	7	20-Nov	2.4	3.4	4.4	5.9	6.7



21-Nov	2.8	3.2	4	5.7	6.9	21-Nov	1.9	3	4	5.7	6.6
22-Nov	2.6	3	3.7	5.5	6.8	22-Nov	2.1	2.9	3.8	5.5	6.5
23-Nov	2.5	2.8	3.6	5.3	6.7	23-Nov	1.7	2.7	3.6	5.3	6.3
24-Nov	2.5	2.7	3.4	5.2	6.6	24-Nov	1.8	2.6	3.5	5.2	6.2
25-Nov	2.8	2.8	3.5	5.1	6.5	25-Nov	1.7	2.6	3.5	5.2	6.2
26-Nov	2.9	3.1	3.6	5	6.4	26-Nov	1.8	2.6	3.4	5.1	6.1
27-Nov	3	3.1	3.6	4.9	6.3	27-Nov	2.1	2.9	3.5	5	6
28-Nov	3.1	3.2	3.6	4.9	6.2	28-Nov	2.1	2.8	3.5	4.9	5.9
29-Nov	3	3.1	3.6	4.9	6.2	29-Nov	2.4	3	3.6	4.9	5.8
30-Nov	3.7	3.6	3.8	4.9	6.1	30-Nov	2.9	3.4	3.9	4.9	5.8
1-Dec	3.9	3.9	4.1	4.9	6.1	1-Dec	2.6	3.3	3.9	4.9	5.7
2-Dec	3.1	3.4	4	5	6.1	2-Dec	1.7	2.7	3.6	4.9	5.7
3-Dec	2.2	2.7	3.4	4.9	6	3-Dec	1.3	2.1	3.2	4.7	5.6
4-Dec	2.1	2.4	3.1	4.8	6	4-Dec	1.1	2	3	4.6	5.5
5-Dec	2.2	2.6	3	4.6	5.9	5-Dec	0.8	1.7	2.7	4.5	5.5
6-Dec	2.3	2.5	3.1	4.6	5.9	6-Dec	0.7	1.7	2.6	4.3	5.4
7-Dec	2	2.3	3	4.5	5.8	7-Dec	0.7	1.6	2.5	4.2	5.3
8-Dec	1.8	1.8	2.8	4.4	5.7	8-Dec	0.7	1.6	2.5	4.2	5.2
9-Dec	1.7	2	2.6	4.3	5.6	9-Dec	0.7	1.5	2.4	4.1	5.2
10-Dec	1.7	1.9	2.5	4.1	5.5	10-Dec	0.7	1.5	2.4	4	5.1
11-Dec	1.7	1.9	2.5	4	5.4	11-Dec	0.7	1.5	2.4	3.9	5
12-Dec	1.7	1.9	2.5	4	5.4	12-Dec	0.7	1.5	2.3	3.7	4.9
13-Dec	1.8	1.9	2.5	3.9	5.3	13-Dec	0.8	1.5	2.3	3.7	4.8
14-Dec	1.9	2	2.5	3.9	5.3	14-Dec	0.8	1.5	2.3	3.7	4.8
15-Dec	1.9	2.1	2.6	3.9	5.3	15-Dec	0.8	1.5	2.3	3.7	4.7
16-Dec	1.7	1.9	2.5	3.9	5.2	16-Dec	0.8	1.5	2.3	3.6	4.6
17-Dec	1.6	1.9	2.4	3.8	5.2	17-Dec	0.7	1.4	2.2	3.6	4.6
18-Dec	1.7	1.9	2.4	3.8	5.1	18-Dec	0.9	1.6	2.3	3.6	4.5
19-Dec	1.6	1.8	2.4	3.8	5.1	19-Dec	0.5	1.3	2.2	3.6	4.5
20-Dec	1.5	1.7	2.3	3.7	5	20-Dec	0.4	1.2	2	3.5	4.4
21-Dec	1.4	1.7	2.2	3.6	4.9	21-Dec	0.3	1.1	1.9	3.4	4.3
22-Dec	1.4	1.6	2.2	3.6	4.9	22-Dec	0.3	1.1	1.9	3.4	4.3
23-Dec	1.3	1.6	2.1	3.5	4.9	23-Dec	0.3	1	1.9	3.3	4.3
24-Dec	1.4	1.6	2.1	3.5	4.8	24-Dec	0.4	1.1	1.9	3.3	4.2
25-Dec	1.4	1.6	2.1	3.4	4.7	25-Dec	0.4	1.1	1.9	3.2	4.2
26-Dec	1.4	1.6	2	3.4	4.7	26-Dec	0.4	1.1	1.8	3.2	4.1
27-Dec	1.4	1.6	2	3.4	4.6	27-Dec	0.4	1.1	1.8	3.2	4.1
28-Dec	1.4	1.6	2	3.3	4.6	28-Dec	0.4	1.1	1.8	3.1	4
29-Dec	1.4	1.6	2	3.3	4.6	29-Dec	0.4	1.1	1.8	3.1	4
30-Dec	1.3	1.5	2	3.2	4.5	30-Dec	0.4	1.1	1.8	3.1	3.9
31-Dec	1.3	1.5	2	3.2	4.5	31-Dec	0.3	1	1.8	3	3.9
1-Jan	1.3	1.5	1.9	3.2	4.4	1-Jan	0.3	1	1.8	3	4
2-Jan	1.3	1.5	1.9	3.2	4.4	2-Jan	0.3	1	1.7	3	4
3-Jan	1.3	1.5	1.9	3.1	4.4	3-Jan	0.3	1	1.7	3	4
4-Jan	1.2	1.4	1.9	3.1	4.3	4-Jan	0.3	1	1.7	2.9	4

5-Jan	1.2	1.4	1.9	3.1	4.3	5-Jan	0.3	1	1.7	2.9	3.9
6-Jan	1.5	1.5	1.9	3	4.3	6-Jan	1.1	1.5	1.9	2.9	3.9
7-Jan	1.5	1.6	2	3	4.2	7-Jan	0.8	1.4	2	3	3.9
8-Jan	1.3	1.5	2	3.1	4.2	8-Jan	0.5	1.2	1.9	3	3.9
9-Jan	1.3	1.5	1.9	3	4.2	9-Jan	0.4	1.1	1.8	2.9	3.9
10-Jan	1.2	1.4	1.9	3	4.2	10-Jan	0.3	1	1.7	2.9	3.8
11-Jan	1.2	1.4	1.8	3	4.2	11-Jan	0.3	0.9	1.7	2.8	3.8
12-Jan	1.2	1.3	1.8	3	4.1	12-Jan	0.3	0.9	1.6	2.8	3.8
13-Jan	1.2	1.3	1.8	2.9	4.1	13-Jan	0.2	0.9	1.6	2.8	3.8
14-Jan	1.2	1.3	1.7	2.9	4	14-Jan	0.3	0.9	1.6	2.8	3.8
15-Jan	1.2	1.3	1.7	2.9	4	15-Jan	0.2	0.9	1.6	2.7	3.7
16-Jan	1.2	1.3	1.8	2.9	4	16-Jan	0.2	0.8	1.5	2.6	3.7
17-Jan	1.2	1.3	1.8	2.8	4	17-Jan	0.2	0.8	1.5	2.6	3.6
18-Jan	1.1	1.3	1.7	2.8	4	18-Jan	0.1	0.7	1.5	2.6	3.6
19-Jan	1.1	1.3	1.7	2.8	3.9	19-Jan	0.1	0.7	1.4	2.5	3.6
20-Jan	1.1	1.3	1.7	2.8	3.9	20-Jan	0.1	0.7	1.4	2.5	3.5
21-Jan	1.1	1.3	1.7	2.7	3.9	21-Jan	0.1	0.7	1.4	2.5	3.5
22-Jan	1.1	1.3	1.7	2.7	3.9	22-Jan	0	0.7	1.4	2.5	3.5
23-Jan	1	1.2	1.6	2.7	3.8	23-Jan	0	0.6	1.3	2.5	3.4
24-Jan	1	1.2	1.6	2.7	3.8	24-Jan	0	0.6	1.3	2.5	3.4
25-Jan	1	1.2	1.6	2.7	3.8	25-Jan	0	0.6	1.3	2.4	3.4
26-Jan	1	1.2	1.6	2.6	3.7	26-Jan	0	0.6	1.3	2.3	3.3
27-Jan	1	1.2	1.6	2.6	3.7	27-Jan	-0.1	0.6	1.3	2.3	3.3
28-Jan	1	1.2	1.6	2.6	3.7	28-Jan	0	0.6	1.2	2.3	3.3
29-Jan	1	1.2	1.6	2.6	3.7	29-Jan	-0.1	0.5	1.2	2.3	3.3
30-Jan	1	1.2	1.6	2.6	3.6	30-Jan	-0.1	0.5	1.2	2.3	3.2
31-Jan	1	1.2	1.5	2.6	3.6	31-Jan	-0.1	0.5	1.2	2.3	3.2
1-Feb	1	1.2	1.5	2.6	3.6	1-Feb	-0.1	0.5	1.2	2.3	3.2
2-Feb	1	1.1	1.5	2.5	3.6	2-Feb	-0.1	0.5	1.2	2.3	3.2
3-Feb	1	1.1	1.5	2.5	3.6	3-Feb	-0.1	0.5	1.2	2.3	3.2
4-Feb	1	1.1	1.5	2.5	3.6	4-Feb	-0.1	0.5	1.2	2.3	3.1
5-Feb	0.9	1.1	1.5	2.5	3.5	5-Feb	-0.1	0.5	1.2	2.2	3.1
6-Feb	1	1.1	1.5	2.5	3.5	6-Feb	-0.1	0.5	1.2	2.2	3.1
7-Feb	1	1.1	1.5	2.4	3.5	7-Feb	-0.1	0.5	1.1	2.2	3.1
8-Feb	0.9	1.1	1.4	2.4	3.5	8-Feb	-0.1	0.5	1.1	2.2	3
9-Feb	0.9	1.1	1.4	2.4	3.5	9-Feb	-0.1	0.5	1.1	2.2	3
10-Feb	0.9	1.1	1.4	2.4	3.4	10-Feb	-0.2	0.5	1.1	2.1	3
11-Feb	0.9	1	1.4	2.4	3.4	11-Feb	-0.2	0.4	1.1	2.1	3
12-Feb	0.9	1	1.4	2.4	3.4	12-Feb	-0.2	0.4	1.1	2.1	3
13-Feb	0.9	1	1.4	2.4	3.4	13-Feb	-0.2	0.4	1	2.1	3
14-Feb	0.9	1	1.4	2.3	3.3	14-Feb	-0.2	0.4	1	2.1	2.9
15-Feb	0.9	1	1.4	2.3	3.3	15-Feb	-0.2	0.4	1	2.1	2.9
16-Feb	0.9	1	1.4	2.3	3.3	16-Feb	-0.2	0.4	1	2.1	2.9
17-Feb	0.9	1	1.4	2.3	3.3	17-Feb	-0.2	0.4	1	2.1	2.9
18-Feb	0.9	1	1.4	2.3	3.3	18-Feb	-0.2	0.4	1	2	2.9

19-Feb	0.9	1	1.4	2.3	3.2	19-Feb	-0.2	0.4	1	2	2.8
20-Feb	0.9	1	1.3	2.2	3.2	20-Feb	-0.3	0.4	1	2	2.8
21-Feb	0.9	1	1.3	2.2	3.2	21-Feb	-0.3	0.4	1	2	2.8
22-Feb	0.9	1	1.3	2.2	3.2	22-Feb	-0.2	0.4	1	2	2.8
23-Feb	0.9	1	1.3	2.2	3.2	23-Feb	-0.2	0.4	1	2	2.8
24-Feb	0.9	1	1.4	2.2	3.2	24-Feb	-0.2	0.4	1	2	2.8
25-Feb	0.9	1	1.4	2.2	3.2	25-Feb	-0.2	0.4	1	2	2.8
26-Feb	0.9	1	1.4	2.2	3.1	26-Feb	-0.2	0.4	1	1.9	2.8
27-Feb	0.9	1	1.4	2.2	3.1	27-Feb	-0.2	0.4	1	1.9	2.7
28-Feb	1	1	1.4	2.2	3.1	28-Feb	-0.2	0.4	1	1.9	2.7
1-Mar	1	1	1.3	2.2	3.1	1-Mar	-0.2	0.4	1	1.9	2.7
2-Mar	1	1	1.3	2.2	3.1	2-Mar	-0.2	0.4	1	1.9	2.7
3-Mar	1	1	1.3	2.2	3.1	3-Mar	-0.2	0.4	1	1.9	2.7
4-Mar	1	1	1.3	2.2	3.1	4-Mar	-0.2	0.4	0.9	1.9	2.7
5-Mar	1	1	1.3	2.2	3.1	5-Mar	-0.2	0.4	1	1.9	2.7
6-Mar	0.9	1	1.3	2.2	3.1	6-Mar	-0.2	0.4	0.9	1.9	2.7
7-Mar	0.9	0.9	1.3	2.2	3	7-Mar	-0.2	0.4	0.9	1.9	2.7
8-Mar	0.9	0.9	1.3	2.2	3	8-Mar	-0.2	0.4	0.9	1.9	2.6
9-Mar	0.9	0.9	1.3	2.1	3	9-Mar	-0.1	0.4	0.9	1.8	2.6
10-Mar	0.9	0.9	1.3	2.1	3	10-Mar	-0.1	0.4	0.9	1.8	2.6
11-Mar	0.9	0.9	1.3	2.1	3	11-Mar	-0.1	0.4	0.9	1.8	2.6
12-Mar	0.9	0.9	1.3	2.1	3	12-Mar	-0.1	0.4	0.9	1.8	2.6
13-Mar	0.9	0.9	1.2	2.1	2.9	13-Mar	-0.1	0.4	0.9	1.8	2.6
14-Mar	0.9	0.9	1.2	2	2.9	14-Mar	-0.1	0.4	0.9	1.8	2.5
15-Mar	0.9	0.9	1.2	2	2.9	15-Mar	-0.1	0.4	0.9	1.8	2.5
16-Mar	0.9	0.9	1.2	2	2.9	16-Mar	-0.1	0.4	0.9	1.8	2.5
17-Mar	0.9	0.9	1.2	2	2.9	17-Mar	-0.1	0.4	0.9	1.7	2.5
18-Mar	0.9	0.9	1.2	2	2.9	18-Mar	-0.2	0.4	0.9	1.7	2.5
19-Mar	0.9	0.9	1.2	2	2.9	19-Mar	-0.2	0.4	0.9	1.7	2.4
20-Mar	0.9	0.9	1.2	2	2.8	20-Mar	-0.1	0.4	0.9	1.7	2.4
21-Mar	0.9	0.9	1.2	2	2.8	21-Mar	-0.2	0.4	0.9	1.7	2.4
22-Mar	0.9	0.9	1.2	2	2.8	22-Mar	-0.2	0.4	0.9	1.6	2.4
23-Mar	0.9	0.9	1.2	2	2.8	23-Mar	-0.2	0.4	0.9	1.6	2.3
24-Mar	0.9	0.9	1.2	2	2.8	24-Mar	-0.1	0.4	0.9	1.6	2.3
25-Mar	0.9	0.9	1.2	1.9	2.7	25-Mar	-0.1	0.4	0.8	1.6	2.3
26-Mar	0.9	0.9	1.2	1.9	2.7	26-Mar	-0.1	0.3	0.8	1.6	2.3
27-Mar	0.9	0.9	1.2	1.9	2.7	27-Mar	-0.1	0.4	0.8	1.6	2.3
28-Mar	0.9	0.9	1.2	1.9	2.7	28-Mar	-0.1	0.4	0.8	1.6	2.2
29-Mar	0.9	0.8	1.2	1.9	2.7	29-Mar	-0.1	0.3	0.8	1.5	2.2
30-Mar	0.8	0.8	1.1	1.8	2.7	30-Mar	-0.1	0.3	0.8	1.5	2.2
31-Mar	0.8	0.8	1.1	1.8	2.7	31-Mar	-0.1	0.3	0.8	1.5	2.2
1-Apr	0.8	0.8	1.1	1.8	2.6	1-Apr	-0.1	0.3	0.8	1.5	2.2
2-Apr	0.8	0.8	1.1	1.8	2.6	2-Apr	-0.1	0.3	0.8	1.4	2.2
3-Apr	0.8	0.8	1.1	1.8	2.6	3-Apr	-0.1	0.3	0.8	1.4	2.2
4-Apr	0.8	0.8	1.1	1.8	2.6	4-Apr	-0.1	0.3	0.8	1.4	2.1

5-Apr	0.9	0.8	1.1	1.8	2.6	5-Apr	0	0.3	0.8	1.4	2.1
6-Apr	1.1	1	1.2	1.8	2.6	6-Apr	0.1	0.4	0.9	1.5	2.1
7-Apr	1.4	1.3	1.4	1.9	2.6	7-Apr	0.8	0.9	1.1	1.5	2.1
8-Apr	1.7	1.5	1.6	1.9	2.6	8-Apr	1.2	1.4	1.5	1.6	2.1
9-Apr	1.5	1.5	1.7	2	2.6	9-Apr	0.9	1.2	1.5	1.8	2.2
10-Apr	1.4	1.4	1.6	2	2.6	10-Apr	0.5	0.9	1.3	1.8	2.2
11-Apr	1.8	1.6	1.6	2	2.7	11-Apr	0.9	1.1	1.4	1.8	2.2
12-Apr	2.2	1.9	1.9	2.1	2.7	12-Apr	1.1	1.1	1.4	1.8	2.2
13-Apr	2.8	2.4	2.3	2.2	2.7	13-Apr	1.4	1.6	1.6	1.8	2.3
14-Apr	3	2.9	2.2	2.3	2.7	14-Apr	1.5	1.8	1.8	1.9	2.3
15-Apr	3.4	3	2.8	2.5	2.8	15-Apr	1.9	2	2	2	2.3
16-Apr	3.6	3.2	3.1	2.7	2.9	16-Apr	1.6	1.9	2.1	2.1	2.3
17-Apr	3.8	3.4	3.2	2.8	3	17-Apr	1.4	1.7	2	2.1	2.4
18-Apr	4	3.5	3.4	2.9	3.1	18-Apr	1.7	1.9	2	2.1	2.4
19-Apr	4.1	3.7	3.5	3	3.1	19-Apr	2.5	2.5	2.3	2.2	2.4
20-Apr	4.3	3.9	3.7	3.2	3.2	20-Apr	3.3	3.2	2.8	2.3	2.5
21-Apr	4.4	4	3.8	3.3	3.3	21-Apr	4.3	3.9	3.3	2.5	2.5
22-Apr	4.5	4.3	4	3.4	3.4	22-Apr	4.4	4.2	3.8	2.8	2.6
23-Apr	4	4.9	3.3	3.5	3.4	23-Apr	3.5	3.7	3.7	3	2.8
24-Apr	4	3.8	3.7	3.5	3.5	24-Apr	3.5	3.6	3.5	3.1	2.9
25-Apr	4.6	4.2	3.9	3.5	3.5	25-Apr	4.5	4.3	3.8	3.1	2.9
26-Apr	5	4.6	4.3	3.6	3.6	26-Apr	5.2	4.9	4.4	3.3	3
27-Apr	5.3	4.8	4.5	3.7	3.6	27-Apr	5.5	5.2	4.7	3.6	3.1
28-Apr	5	4.8	4.6	3.9	3.7	28-Apr	5.1	5	4.8	3.8	3.3
29-Apr	4.8	4.5	4.5	4	3.8	29-Apr	4.6	4.6	4.6	4	3.4
30-Apr	4.7	4.4	4.3	4	3.9	30-Apr	4.5	4.5	4.5	4.1	3.6
1-May	5.5	5	4.6	4	3.9	1-May	6	5.5	5	4.1	3.7
2-May	6.7	6	5.3	4.2	4	2-May	7	6.6	5.8	4.4	3.8
3-May	7.4	6.6	5.9	4.4	4.1	3-May	6.7	6.5	6	4.7	3.9
4-May	7.9	7.7	6	4.7	4.2	4-May	6.8	6.6	6.1	4.8	4
5-May	8.5	7.6	6.8	5	4.3	5-May	7.3	7	6.4	5	4.1
6-May	8.4	7.7	7.1	5.3	4.5	6-May	7.1	7	6.5	5.2	4.3
7-May	8.6	8.2	7	5.5	4.6	7-May	7.3	7	6.5	5.3	4.4
8-May	9.1	8.4	7.6	5.7	4.8	8-May	7.9	7.5	6.9	5.4	4.5
9-May	9	8.4	7.8	6	5	9-May	7.9	7.6	7.1	5.6	4.6
10-May	9.4	8.6	7.9	6.1	5.1	10-May	7.9	7.7	7.2	5.8	4.8
11-May	9.7	8.9	8.2	6.3	5.3	11-May	8.3	8.1	7.4	5.9	4.9
12-May	9.3	8.9	8.4	6.5	5.4	12-May	7.9	7.8	7.5	6.1	5
13-May	8.4	8.2	8	6.7	5.6	13-May	7.3	7.3	7.2	6.2	5.1
14-May	8.1	7.8	7.6	6.7	5.7	14-May	7.5	7.4	7.1	6.2	5.2
15-May	8.4	8	7.6	6.6	5.7	15-May	8.3	8	7.4	6.2	5.3
16-May	9.1	8.5	7.9	6.6	5.8	16-May	8.7	8.5	7.8	6.3	5.4
17-May	9.5	8.9	8.3	6.7	5.8	17-May	8.4	8.4	7.9	6.5	5.5
18-May	9	8.7	8.3	6.9	5.9	18-May	8.1	8.1	7.8	6.6	5.5
19-May	8.7	8.3	8.1	7	6	19-May	7.7	7.8	7.7	6.7	5.6

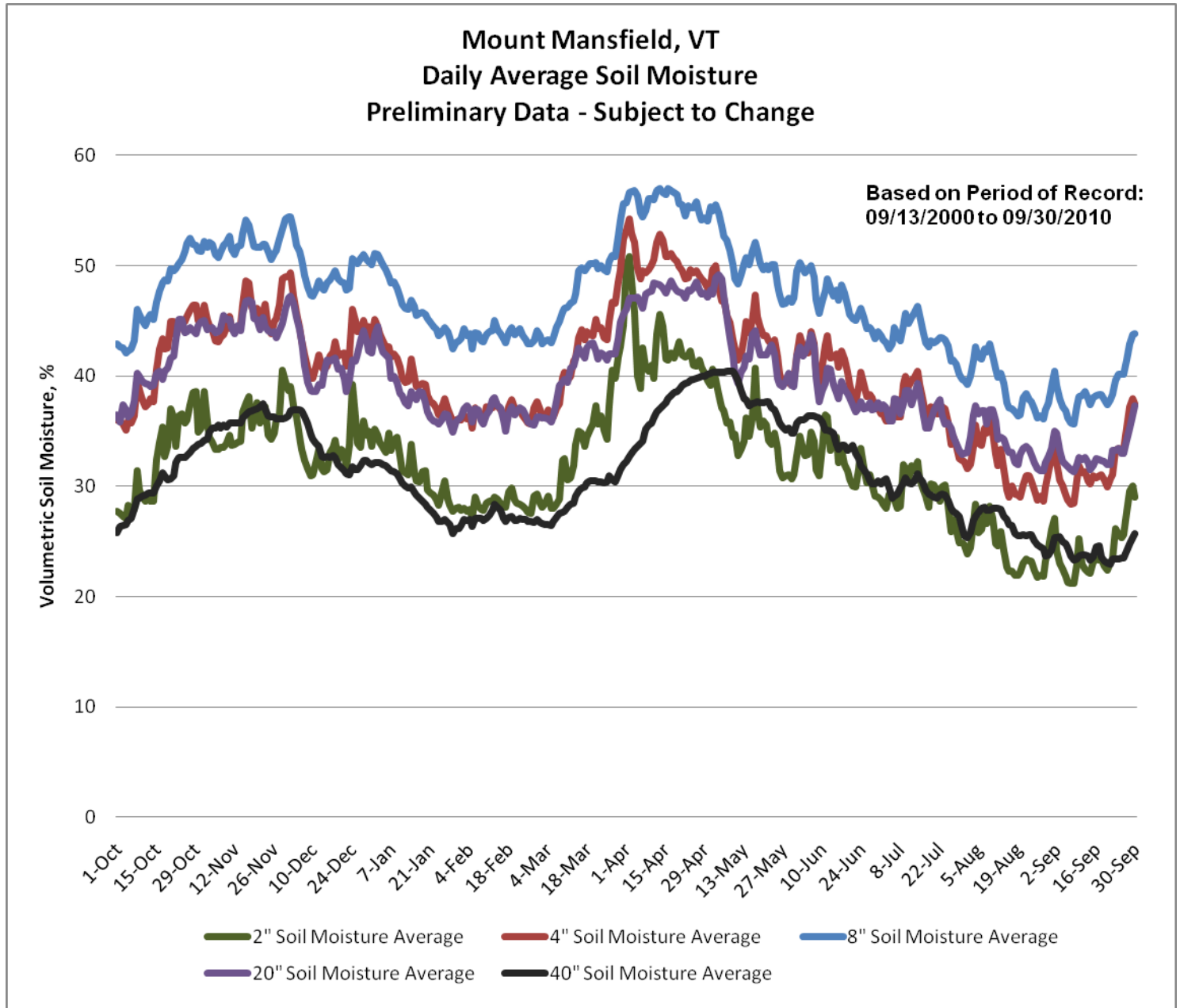
20-May	9.2	8.6	8.1	7	6.1	20-May	8.5	8.3	7.8	6.8	5.8
21-May	9.5	8.9	8.4	7	6.2	21-May	8.9	8.8	8.2	6.9	5.9
22-May	9.4	8.9	8.5	7.1	6.2	22-May	8.7	8.6	8.2	7	5.9
23-May	9.8	9.2	8.6	7.2	6.3	23-May	8.9	8.7	8.3	7	6
24-May	10.4	9.7	9	7.3	6.4	24-May	9.6	9.2	8.5	7.1	6.1
25-May	10.9	10.1	9.3	7.5	6.4	25-May	10.5	9.9	9	7.2	6.1
26-May	11.4	10.6	9.8	7.7	6.5	26-May	11	10.4	9.5	7.4	6.2
27-May	11.9	11.1	10.2	7.9	6.7	27-May	11.2	10.7	9.8	7.7	6.3
28-May	11.9	11.2	10.4	8.2	6.8	28-May	10.7	10.4	9.8	7.9	6.5
29-May	11.9	11.2	10.5	8.4	7	29-May	10.6	10.3	9.7	8	6.6
30-May	12.3	11.5	10.8	8.6	7.1	30-May	11.3	10.9	10	8.1	6.7
31-May	12.6	11.8	11	8.7	7.3	31-May	11.8	11.3	10.4	8.3	6.8
1-Jun	12.7	12	11.3	8.9	7.4	1-Jun	11.6	11.3	10.6	8.6	7
2-Jun	12.6	12	11.3	9.1	7.6	2-Jun	11.6	11.3	10.6	8.7	7.1
3-Jun	12.5	11.9	11.4	9.3	7.7	3-Jun	11.4	11.3	10.7	8.8	7.2
4-Jun	12.1	11.6	11.2	9.4	7.8	4-Jun	10.9	10.8	10.4	8.9	7.3
5-Jun	12.7	11.9	11.2	9.4	7.9	5-Jun	11.2	11	10.5	8.9	7.4
6-Jun	12.9	12.3	11.7	9.6	8	6-Jun	11.1	11	10.5	9	7.5
7-Jun	12.7	12.1	11.6	9.7	8.1	7-Jun	11	10.9	10.5	9	7.6
8-Jun	12.9	12.2	11.6	9.7	8.2	8-Jun	11.5	11.2	10.6	9.1	7.7
9-Jun	13.3	12.6	11.9	9.8	8.3	9-Jun	11.9	11.6	10.9	9.2	7.8
10-Jun	13.4	12.7	12	9.9	8.4	10-Jun	11.8	11.6	11	9.3	7.8
11-Jun	13.4	12.7	12.1	10	8.5	11-Jun	11.7	11.5	11	9.4	8
12-Jun	13.8	13.1	12.3	10.2	8.6	12-Jun	12.2	11.9	11.2	9.5	8
13-Jun	13.7	13.6	12	10.3	8.7	13-Jun	12	11.9	11.3	9.6	8.1
14-Jun	14.1	13.3	12.6	10.4	8.8	14-Jun	12.1	11.9	11.3	9.7	8.2
15-Jun	14.1	13.4	12.7	10.5	8.9	15-Jun	12.4	12.1	11.5	9.8	8.3
16-Jun	13.9	13.2	12.6	10.6	9	16-Jun	12	11.9	11.4	9.8	8.4
17-Jun	13.9	13.3	12.7	10.7	9.1	17-Jun	11.9	11.8	11.3	9.9	8.4
18-Jun	13.9	13.2	12.7	10.8	9.2	18-Jun	12.1	11.9	11.4	9.9	8.5
19-Jun	14.5	13.7	12.9	10.8	9.2	19-Jun	13	12.6	11.7	9.9	8.5
20-Jun	14.9	15	13.1	10.9	9.3	20-Jun	13.2	13	12.1	10.1	8.6
21-Jun	14.8	14.1	13.4	11.1	9.4	21-Jun	13	12.8	12.1	10.2	8.7
22-Jun	14.4	14.3	12.9	11.2	9.5	22-Jun	12.9	12.7	12.1	10.3	8.8
23-Jun	15.2	14.3	13.5	11.3	9.6	23-Jun	13.3	13	12.3	10.4	8.8
24-Jun	15.5	14.6	13.8	11.5	9.7	24-Jun	13.6	13.3	12.5	10.6	8.9
25-Jun	15.5	14.6	13.8	11.5	9.8	25-Jun	14	13.5	12.7	10.7	9.1
26-Jun	15.7	15.4	13.8	11.7	9.9	26-Jun	14.3	13.8	13	10.8	9.2
27-Jun	16.3	15.3	14.4	11.8	10	27-Jun	14.5	14.1	13.2	11	9.3
28-Jun	16.2	15.4	14.6	12.1	10.1	28-Jun	14.5	14.2	13.3	11.1	9.4
29-Jun	16	15.3	14.6	12.2	10.3	29-Jun	14.5	14.1	13.4	11.3	9.5
30-Jun	15.9	15.1	14.6	12.4	10.4	30-Jun	13.8	13.6	13.2	11.4	9.6
1-Jul	15.5	14.9	14.4	12.4	10.6	1-Jul	13.1	13.1	12.8	11.4	9.8
2-Jul	15.3	14.7	14.3	12.4	10.6	2-Jul	13.3	13.1	12.7	11.3	9.8
3-Jul	15.5	14.8	14.2	12.4	10.7	3-Jul	13.7	13.4	12.9	11.3	9.9

4-Jul	15.7	15.8	14.1	12.4	10.7	4-Jul	14.1	13.7	13.1	11.4	9.9
5-Jul	16	15.2	14.6	12.5	10.8	5-Jul	14.5	14.1	13.3	11.5	10
6-Jul	15.9	15.2	14.6	12.6	10.8	6-Jul	14.8	14.4	13.6	11.6	10
7-Jul	15.7	15.1	14.5	12.6	10.9	7-Jul	14.7	14.3	13.7	11.7	10.1
8-Jul	16.2	15.4	14.7	12.6	10.9	8-Jul	15.3	14.7	13.9	11.8	10.2
9-Jul	16.5	15.7	15	12.7	11	9-Jul	15.2	14.9	14.1	11.9	10.2
10-Jul	16.3	15.6	15	12.8	11	10-Jul	15	14.8	14.1	12	10.3
11-Jul	15.9	15.4	14.9	12.9	11.1	11-Jul	14.9	14.7	14.1	12.1	10.4
12-Jul	15.8	15.2	14.8	12.9	11.2	12-Jul	14.9	14.7	14.1	12.2	10.5
13-Jul	15.6	15.1	14.7	13	11.3	13-Jul	14.6	14.5	14	12.3	10.6
14-Jul	15.7	15	14.6	12.9	11.3	14-Jul	14.5	14.3	13.8	12.2	10.6
15-Jul	16	15.2	14.7	12.9	11.3	15-Jul	14.8	14.6	13.9	12.3	10.7
16-Jul	16.1	15.4	14.8	12.9	11.4	16-Jul	15.1	14.8	14.1	12.3	10.7
17-Jul	16.4	15.6	15	13	11.4	17-Jul	15.5	15.1	14.4	12.4	10.8
18-Jul	16.6	15.8	15.2	13.1	11.5	18-Jul	15.5	15.2	14.5	12.5	10.9
19-Jul	16.6	15.9	15.3	13.2	11.5	19-Jul	15.3	15.1	14.5	12.6	10.9
20-Jul	16.4	15.8	15.3	13.3	11.6	20-Jul	15.3	15.1	14.5	12.7	11
21-Jul	16.5	15.8	15.3	13.3	11.6	21-Jul	15.4	15.1	14.5	12.7	11.1
22-Jul	16.6	15.9	15.3	13.4	11.7	22-Jul	15.3	15	14.5	12.8	11.2
23-Jul	16.7	16	15.5	13.5	11.8	23-Jul	15.1	14.9	14.5	12.9	11.2
24-Jul	16.7	16	15.5	13.6	11.9	24-Jul	15.2	15	14.5	13	11.4
25-Jul	16.7	16	15.5	13.7	12	25-Jul	15.3	15.1	14.6	13	11.4
26-Jul	16.5	15.9	15.5	13.7	12	26-Jul	15.5	15.2	14.6	13	11.4
27-Jul	16.5	15.9	15.5	13.8	12.1	27-Jul	15.8	15.6	14.9	13.1	11.5
28-Jul	16.4	15.9	15.5	13.8	12.2	28-Jul	15.5	15.4	14.9	13.2	11.6
29-Jul	16.8	16.1	15.6	13.7	12.2	29-Jul	15.7	15.5	14.9	13.2	11.6
30-Jul	16.8	16.2	15.7	13.8	12.2	30-Jul	15.6	15.4	14.9	13.3	11.6
31-Jul	16.8	16.1	15.7	13.9	12.2	31-Jul	15.5	15.3	14.8	13.3	11.7
1-Aug	17.1	16.4	15.8	13.9	12.3	1-Aug	15.9	15.6	15	13.3	11.8
2-Aug	17.4	16.6	16	14	12.4	2-Aug	16.3	16	15.2	13.4	11.8
3-Aug	17.7	16.9	16.2	14.1	12.4	3-Aug	16.5	16.2	15.4	13.5	11.9
4-Aug	17.9	17.1	16.4	14.2	12.5	4-Aug	16.6	16.3	15.6	13.6	11.9
5-Aug	17.9	17.2	16.6	14.4	12.6	5-Aug	16.3	16.2	15.6	13.8	12.1
6-Aug	17.1	16.7	16.4	14.5	12.7	6-Aug	15.3	15.4	15.3	13.9	12.1
7-Aug	16.7	16.3	16	14.4	12.7	7-Aug	15.1	15.1	14.9	13.8	12.2
8-Aug	16.6	16.2	15.8	14.3	12.8	8-Aug	15	15.1	14.8	13.6	12.1
9-Aug	16.6	16.1	15.7	14.3	12.8	9-Aug	15.1	15	14.7	13.6	12.1
10-Aug	16.9	16.3	15.8	14.2	12.8	10-Aug	15.4	15.3	14.8	13.6	12.2
11-Aug	16.8	16.3	15.8	14.2	12.8	11-Aug	15.5	15.3	14.9	13.6	12.2
12-Aug	16.8	16.2	15.8	14.2	12.8	12-Aug	15.3	15.2	14.9	13.6	12.2
13-Aug	17.1	16.4	15.9	14.3	12.8	13-Aug	15.5	15.4	14.9	13.6	12.2
14-Aug	16.9	16.4	15.9	14.3	12.8	14-Aug	15.3	15.3	14.9	13.6	12.2
15-Aug	16.8	16.3	15.9	14.3	12.8	15-Aug	15.2	15.2	14.9	13.6	12.3
16-Aug	16.9	16.3	15.8	14.3	12.9	16-Aug	15.3	15.3	14.9	13.6	12.3
17-Aug	16.9	16.3	15.9	14.3	12.9	17-Aug	15.3	15.3	14.9	13.6	12.3

18-Aug	16.6	16.1	15.8	14.3	12.9	18-Aug	14.8	14.9	14.7	13.6	12.3
19-Aug	16.5	16	15.7	14.3	12.9	19-Aug	14.8	14.8	14.6	13.5	12.3
20-Aug	16.3	15.8	15.6	14.3	12.9	20-Aug	14.7	14.7	14.5	13.5	12.3
21-Aug	16.2	15.8	15.5	14.3	12.9	21-Aug	14.8	14.8	14.6	13.5	12.3
22-Aug	16	15.6	15.4	14.2	12.9	22-Aug	14.5	14.6	14.5	13.5	12.3
23-Aug	15.8	15.5	15.3	14.2	13	23-Aug	14.3	14.5	14.3	13.5	12.3
24-Aug	15.4	15.2	15.1	14.1	12.9	24-Aug	14.1	14.2	14.1	13.4	12.3
25-Aug	15.3	15	14.8	14	12.9	25-Aug	14.4	14.4	14.1	13.3	12.3
26-Aug	15.5	15.1	14.9	13.9	12.9	26-Aug	14.3	14.4	14.2	13.3	12.2
27-Aug	15.4	15	14.8	13.8	12.8	27-Aug	13.9	14	14	13.3	12.2
28-Aug	15.3	14.9	14.7	13.8	12.8	28-Aug	14	14.1	13.9	13.2	12.2
29-Aug	15.4	15	14.8	13.7	12.8	29-Aug	14.5	14.4	14.1	13.1	12.2
30-Aug	15.5	15.1	14.8	13.7	12.8	30-Aug	14.8	14.8	14.3	13.2	12.2
31-Aug	15.6	15.2	14.9	13.7	12.7	31-Aug	14.4	14.5	14.3	13.2	12.2
1-Sep	15	14.9	14.8	13.7	12.7	1-Sep	13.7	14	14	13.2	12.1
2-Sep	14.5	14.4	14.4	13.7	12.7	2-Sep	13.4	13.7	13.7	13.1	12.1
3-Sep	14.8	14.4	14.3	13.5	12.7	3-Sep	13.9	14	13.7	13	12.1
4-Sep	15	14.6	14.4	13.5	12.7	4-Sep	13.9	14	13.8	13	12
5-Sep	14.4	14.3	14.2	13.4	12.6	5-Sep	13.1	13.4	13.5	13	12.1
6-Sep	14	13.9	13.9	13.4	12.6	6-Sep	13.1	13.3	13.4	12.9	12
7-Sep	14.4	14.1	13.9	13.3	12.6	7-Sep	13.7	13.7	13.5	12.8	12
8-Sep	14.9	14.4	14.1	13.2	12.5	8-Sep	13.9	14	13.7	12.8	12
9-Sep	14.9	14.5	14.3	13.2	12.5	9-Sep	13.5	13.7	13.6	12.9	12
10-Sep	14.3	14.1	14.1	13.3	12.5	10-Sep	12.2	12.8	13.2	12.8	12
11-Sep	13.4	13.4	13.6	13.2	12.5	11-Sep	11.6	12	12.5	12.7	11.9
12-Sep	13.1	13	13.2	13	12.4	12-Sep	11.9	12.3	12.5	12.5	11.9
13-Sep	13.4	13.1	13.1	12.8	12.4	13-Sep	12.5	12.7	12.6	12.4	11.8
14-Sep	13.9	13.6	13.3	12.8	12.3	14-Sep	13.3	13.3	13	12.4	11.8
15-Sep	14.1	13.8	13.6	12.8	12.2	15-Sep	13.4	13.6	13.3	12.4	11.7
16-Sep	13.4	13.3	13.4	12.8	12.1	16-Sep	12.4	12.8	13	12.5	11.7
17-Sep	12.9	12.8	13	12.7	12.1	17-Sep	11.8	12.3	12.6	12.4	11.7
18-Sep	12.8	12.6	12.7	12.6	12.1	18-Sep	11.6	12.1	12.3	12.3	11.7
19-Sep	12.8	12.6	12.6	12.4	12	19-Sep	11.7	12	12.2	12.2	11.7
20-Sep	13.2	12.8	12.7	12.3	11.9	20-Sep	12.1	12.3	12.4	12.1	11.7
21-Sep	13.2	12.8	12.8	12.3	11.9	21-Sep	11.8	12.1	12.3	12.1	11.7
22-Sep	13.2	12.9	12.8	12.3	11.9	22-Sep	12.4	12.5	12.4	12	11.7
23-Sep	13.2	12.9	12.8	12.3	11.9	23-Sep	12.5	12.7	12.6	12	11.7
24-Sep	13.1	12.8	12.8	12.3	11.8	24-Sep	12.2	12.5	12.5	12.1	11.6
25-Sep	12.6	11.3	12.6	12.3	11.8	25-Sep	11.9	12.1	12.3	12	11.5
26-Sep	12.3	12.2	12.4	12.2	11.8	26-Sep	11.7	12	12.1	11.9	11.5
27-Sep	12.2	12.1	12.2	12.1	11.7	27-Sep	11.9	12.1	12.1	11.9	11.4
28-Sep	12.4	12.3	12.3	12	11.7	28-Sep	12.4	12.5	12.4	11.9	11.4
29-Sep	11.6	11.7	12	11.9	11.6	29-Sep	11.4	11.9	12.2	11.9	11.4
30-Sep	10.8	10.9	11.4	11.8	11.6	30-Sep	10.3	10.9	11.5	11.8	11.3

# Appendix 9. Daily Average Soil Moisture Data

## 1. Mount Mansfield



SCAN Daily Averages		Station ID: 2041 - Mount Mansfield, Vermont			
Element: Soil Moisture (% by volume)		Available Depths: 2 - 4 - 8 - 20 - 40 inches			
Begin Date: 9/13/2000		End Date: 9/30/2010			
Date	2" Soil Moisture Average	4" Soil Moisture Average	8" Soil Moisture Average	20" Soil Moisture Average	40" Soil Moisture Average
1-Oct	27.7	36	42.9	36.5	25.8
2-Oct	27.5	35.9	42.6	35.8	26.3
3-Oct	27.3	35.6	42.5	37.4	26.4
4-Oct	27.1	35.1	42.1	36.9	26.5
5-Oct	28.3	35.9	42.3	36.3	26.9
6-Oct	27.6	35.7	42.4	36.6	27.1



7-Oct	27.9	36.4	43.2	37.7	27.9
8-Oct	31.4	39.6	46	40.2	28.8
9-Oct	29.7	38.8	45.6	40	28.9
10-Oct	29	37.8	45	39.5	29.1
11-Oct	28.6	37.2	44.6	39.3	29.2
12-Oct	28.8	37.5	45.3	39.2	29.4
13-Oct	28.6	37.9	45.6	39	29.4
14-Oct	28.6	37.7	45.1	39.1	29.4
15-Oct	32.4	40.6	46.7	40.2	30
16-Oct	34	42.4	47.7	40.4	30.5
17-Oct	35.4	43.4	48.4	39.7	31.2
18-Oct	32.7	42.4	48.7	40.4	30.9
19-Oct	33.6	42.5	48.6	40.7	30.6
20-Oct	37	44.9	49.7	41.6	30.7
21-Oct	36.2	44.9	49.5	41.8	30.9
22-Oct	33.6	43.6	49.7	43.3	32.1
23-Oct	36.4	44.5	50.2	45.1	32.6
24-Oct	36.6	44.8	50.5	45.1	32.6
25-Oct	35.7	44.9	51.3	43.9	32.6
26-Oct	36	45.4	52	44	32.8
27-Oct	37.4	45.9	52.5	44.4	33.1
28-Oct	38.5	46.4	51.9	44.1	33.4
29-Oct	38.6	46.4	51.8	43.8	33.6
30-Oct	34.9	45	51.4	44.6	33.8
31-Oct	35.3	45	51.3	44.9	33.9
1-Nov	38.6	46.4	52.2	45	34.2
2-Nov	35.9	45.1	51.6	44.2	34.3
3-Nov	34.4	44.6	52.1	44.3	34.9
4-Nov	34	44.2	51.9	44.4	35.3
5-Nov	33.3	43.2	51	43.9	35.3
6-Nov	33.3	43.1	50.7	44	35.5
7-Nov	33.5	43.5	51.2	44.3	35.3
8-Nov	33.5	43.7	51.8	45.5	35.5
9-Nov	33.9	44.4	52.1	45.1	35.4
10-Nov	34.6	45.4	52.7	45.1	35.7
11-Nov	33.7	44.3	51.5	44.4	35.7
12-Nov	33.8	43.9	51	43.8	35.7
13-Nov	34	44.4	51.7	44.6	35.7
14-Nov	34.1	44.7	51.8	44.1	35.7
15-Nov	36.7	46.5	52.9	45.7	36.2
16-Nov	37.5	48.6	54.1	46.8	36.5
17-Nov	38.1	48.4	53.7	46.9	36.7
18-Nov	35.3	46.2	52.5	46.7	36.8
19-Nov	36.3	45.8	51.7	45.2	36.9
20-Nov	37.6	46.1	51.6	45.1	37
21-Nov	35.7	45.6	51.6	44.2	37.2
22-Nov	36.6	45.8	51.9	45.3	37.5
23-Nov	37.2	46.5	51.9	44.5	37
24-Nov	34.6	44.4	51.3	44.1	36.4
25-Nov	34.3	43.8	50.5	43.9	36.3
26-Nov	34.8	44.9	51.1	44	36.3
27-Nov	36.1	45.2	51.4	43.5	36.1
28-Nov	36.4	46.4	52.4	44.1	36.1
29-Nov	40.5	48.8	53.3	44.7	36.1
30-Nov	39.5	49	54.2	46	36.2
1-Dec	38.7	49	54.4	47	36.4

2-Dec	39	49.3	54.4	47.2	36.8
3-Dec	37.3	47.2	53.3	46.6	36.9
4-Dec	36.3	45.7	51.8	45.3	36.9
5-Dec	34.4	44.4	51.3	44.2	36.9
6-Dec	33.3	43.2	50.5	43.2	36.8
7-Dec	32.3	41.9	49.1	40.9	36.3
8-Dec	31.6	40.7	48.1	39.4	35.6
9-Dec	30.9	39.8	47.3	38.7	34.7
10-Dec	31	39.8	47.2	38.6	34.3
11-Dec	32.1	40.8	47.8	38.6	33.9
12-Dec	33.3	41.9	48.6	39.2	33.6
13-Dec	31.6	40.8	48	39.1	32.7
14-Dec	31.3	40.5	47.8	40.2	32.6
15-Dec	31.5	40.9	48.4	41.4	32.7
16-Dec	33.1	41.8	48.7	41.3	32.6
17-Dec	33.5	42.2	49.2	41.5	32.8
18-Dec	34.2	43.1	49.5	41.6	32.6
19-Dec	32.4	41.8	48.8	40.6	32
20-Dec	33.3	42	48.5	40.7	31.7
21-Dec	33.1	42.1	48.4	39.8	31.4
22-Dec	31.7	40.9	47.8	38.6	31.1
23-Dec	33.7	41.8	48	39.6	31
24-Dec	39.2	46	50.6	41.4	31.8
25-Dec	36.3	45	50.4	41.3	31.5
26-Dec	33.9	44	50.2	42	31.5
27-Dec	33.5	44	50.6	43.2	31.9
28-Dec	35.9	45	51	44.1	32.3
29-Dec	34.6	44	50.5	43.2	32.3
30-Dec	35	44.5	50.4	42.3	32.1
31-Dec	33.6	43.5	50.1	42.1	32
1-Jan	35.2	45.1	51.1	43.7	32.1
2-Jan	34.6	44.5	51	44.5	32.1
3-Jan	34	43.8	50.6	43.1	32.1
4-Jan	33.5	43.2	50.1	42.2	32
5-Jan	33.1	42.6	49.6	41.9	31.9
6-Jan	34.8	42.6	49	41.6	31.6
7-Jan	33.2	41.7	48.4	39.8	31.4
8-Jan	34.2	42	48.5	40	31.3
9-Jan	34.4	41.6	48	39.4	31.1
10-Jan	32.7	40.8	47.1	38.4	30.7
11-Jan	31.4	39.9	46.5	38.2	30.3
12-Jan	31.2	39.4	46.1	37.6	30
13-Jan	31	39.5	46	37.3	29.8
14-Jan	33.8	41.5	46.9	38.6	29.9
15-Jan	31.3	40	46.3	38.1	29.5
16-Jan	30.5	39	45.5	37.8	29.2
17-Jan	30.4	39.1	45.7	38.6	28.9
18-Jan	31.3	39.3	45.8	38.5	28.6
19-Jan	31.4	39.2	45.6	37.6	28.4
20-Jan	29.7	38.2	45.2	36.7	28.1
21-Jan	29.4	37.7	44.8	36.2	27.8
22-Jan	29.2	37.5	44.5	35.9	27.5
23-Jan	28.7	37	44.2	35.8	27.2
24-Jan	28.3	36.5	43.6	35.6	26.8
25-Jan	29.4	37.1	43.9	36	26.8
26-Jan	30.5	37.9	44.4	36.6	27

27-Jan	28.8	37	44	36.5	26.7
28-Jan	28.3	36.6	43.5	35.7	26.5
29-Jan	27.7	35.8	42.4	34.9	25.7
30-Jan	28	36	43	35.8	26.2
31-Jan	28.1	36.1	43.2	36.1	26.2
1-Feb	27.8	36	43.4	36.3	26.4
2-Feb	28	36.5	44.3	37	27
3-Feb	27.7	36.1	43.6	37.3	26.9
4-Feb	27.9	36.4	43.8	36.9	27
5-Feb	27.1	35.3	42.4	35.8	26.3
6-Feb	29	37.1	43.9	37	27.1
7-Feb	28.2	36.6	43.8	36.9	27.1
8-Feb	27.9	36.3	43.2	35.9	27.1
9-Feb	27.8	36	43.1	35.6	26.9
10-Feb	28.5	37.2	43.7	36.5	27.1
11-Feb	28.6	37.1	44	36.8	27.4
12-Feb	28.6	37.1	44.1	37.8	27.8
13-Feb	29	37.8	45	38	28.4
14-Feb	28.8	37.3	44.2	37.3	28.1
15-Feb	28.5	36.9	43.8	37.1	27.8
16-Feb	28.2	36.5	43.4	36	27.1
17-Feb	28.1	36.1	43	35	26.8
18-Feb	29.5	37.2	43.9	36.6	27.2
19-Feb	29.8	37.8	44.4	37.2	27.3
20-Feb	28.7	37	43.7	36.5	26.9
21-Feb	28.5	36.8	43.9	36.7	26.9
22-Feb	28.4	36.9	44.3	37.1	27.1
23-Feb	28.2	36.4	43.6	36.9	27
24-Feb	27.9	36	43.3	36.4	27
25-Feb	27.6	35.7	42.9	35.8	26.8
26-Feb	27.5	35.6	42.9	35.6	26.8
27-Feb	29.1	37.1	43.2	35.5	26.7
28-Feb	29.3	37.7	44.1	36.3	27
1-Mar	28.5	36.9	43.6	36.3	26.7
2-Mar	28.1	36.2	42.9	36.2	26.6
3-Mar	28.5	36.3	43.2	36.2	26.5
4-Mar	29.1	36.9	43.3	36.1	26.5
5-Mar	28	36	43	35.8	26.4
6-Mar	28	36.3	43.5	36.4	26.8
7-Mar	28.4	37	44.4	37.7	27.2
8-Mar	28.8	37.5	44.9	39.1	27.5
9-Mar	32.3	39.8	45.8	39.4	27.6
10-Mar	32.5	40.3	46.1	39.7	27.7
11-Mar	30.6	39.6	46.2	39.4	28.1
12-Mar	30.8	40	46.6	40.7	28.4
13-Mar	31.9	41.3	46.8	40.9	28.5
14-Mar	33.8	41.6	47.4	41.6	29.1
15-Mar	35	43.5	49.5	42.5	29.6
16-Mar	34.8	44.2	49.8	42.1	29.8
17-Mar	33.6	43.3	49.5	41.6	29.9
18-Mar	34.4	44	49.8	42.5	30.3
19-Mar	35.1	43.7	50.2	42.9	30.5
20-Mar	35.6	43.6	50.2	43	30.5
21-Mar	37.3	45.1	50.3	42.3	30.5
22-Mar	35.6	44.3	49.7	41.5	30.4
23-Mar	36.4	44.4	50	42.1	30.4

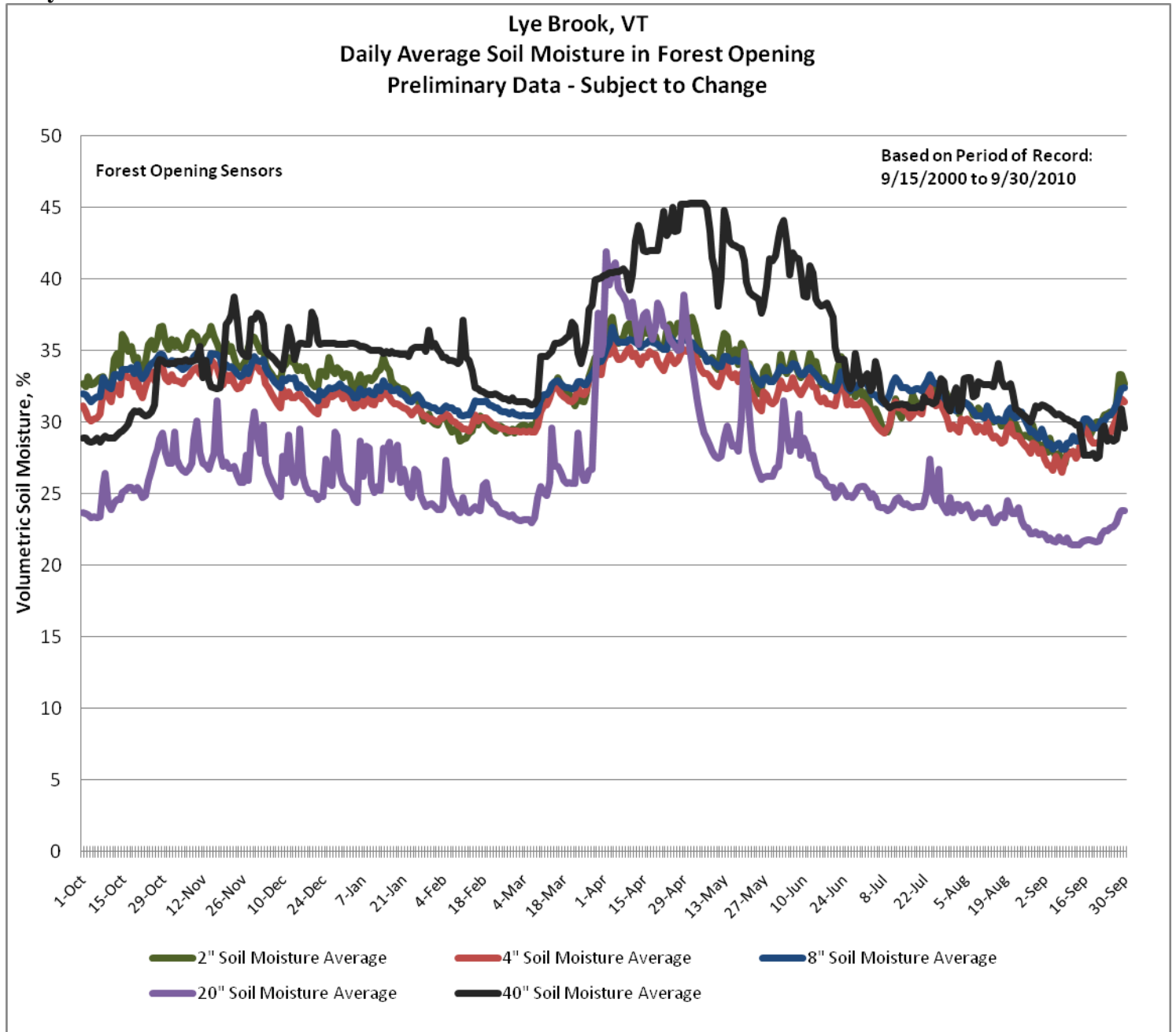
24-Mar	35.1	43.5	49.6	41.9	30.3
25-Mar	34.3	43.3	49.4	41.4	30.4
26-Mar	37.3	44.9	50.4	42	30.9
27-Mar	40.5	46.7	50.9	42	30.6
28-Mar	39.8	46.6	50.8	42	30.4
29-Mar	41.7	48.5	52.7	43.4	31
30-Mar	42.6	49.5	54	44.8	31.5
31-Mar	44.6	52.4	55.6	45.6	32
1-Apr	49.9	53.2	55.7	46	32.2
2-Apr	50.8	54.2	56.6	47	32.7
3-Apr	48.7	52.9	56.7	47	33
4-Apr	45.8	52.1	56.8	47	33.3
5-Apr	40	49.7	56.3	47.1	33.6
6-Apr	38.9	48.8	54.8	46.6	33.9
7-Apr	42.5	49.5	54.4	46.1	34.1
8-Apr	40.8	49.3	55	47.4	35.2
9-Apr	40.4	49.6	56.1	47.6	35.5
10-Apr	41	50.1	56.1	47.7	35.7
11-Apr	39.8	50.5	56	48.4	36.2
12-Apr	43.8	52.1	56.8	48.3	36.7
13-Apr	45.6	52.8	57	48.2	37
14-Apr	44.5	52.3	56.6	48	37.3
15-Apr	41.5	50.8	56.4	47.5	37.6
16-Apr	41.4	50.8	57	48	37.9
17-Apr	42.1	51.1	56.8	48.6	38.2
18-Apr	41.6	50.6	56.6	48.1	38.5
19-Apr	42.4	50.4	56.4	47.7	38.6
20-Apr	43.1	49.9	55.6	47.6	38.8
21-Apr	41.9	49.5	55.5	47.5	39.1
22-Apr	41.7	48.8	54.5	47	39.3
23-Apr	41.9	48.9	55.4	47.8	39.4
24-Apr	42.3	49.6	55.2	47.7	39.6
25-Apr	41	49.3	55.2	48	39.7
26-Apr	40.9	49.5	55.8	48.5	39.8
27-Apr	41.4	49.1	54.7	47.8	39.9
28-Apr	40.8	48.8	54.1	47.4	40
29-Apr	40.2	48.5	54.3	47.5	40
30-Apr	39.6	48	54	47.1	40.1
1-May	39.1	48.2	55.3	47.8	40.2
2-May	40.6	49.6	55	47.4	40.3
3-May	39.7	50	55.5	48.9	40.3
4-May	38.3	48.1	54.8	49.2	40.3
5-May	37.1	46.8	53.6	48.8	40.3
6-May	36.8	47	52.7	47.2	40.3
7-May	35.7	45.5	52.3	45.4	40.4
8-May	35.8	44.8	51.4	43.5	40.4
9-May	34.4	43.3	50.1	41.9	40.4
10-May	34.7	42.4	48.8	40.1	40.1
11-May	32.8	41.4	48.3	39.3	39.6
12-May	33.3	41.9	49.2	40.3	38.7
13-May	34.1	43.5	50.2	40.8	37.9
14-May	36.2	44.9	50.7	41.8	37.8
15-May	34.5	43.9	50.1	41.5	37.3
16-May	36.1	44.9	51.3	43.7	37.5
17-May	40.7	47.3	52.1	44.1	37.6
18-May	37.2	45.4	51.4	43	37.7

19-May	35.4	44.4	50.2	41.9	37.6
20-May	35.9	43.6	49.6	41.9	37.6
21-May	35.5	43.6	50	41.9	37.7
22-May	34.2	43.2	49.6	42.3	37.7
23-May	33.8	42.9	50.1	42.8	37.1
24-May	34.8	43.3	50.1	42	36.9
25-May	33.4	41.7	48.2	39.8	36.3
26-May	31.4	40.1	47.3	39.2	35.7
27-May	30.8	39.4	46.5	39	35.4
28-May	30.9	39.5	46.6	39.5	35.1
29-May	31	39.4	47	40.2	35.3
30-May	30.7	39.1	46.7	39.1	34.8
31-May	31	39.6	47	39	34.8
1-Jun	32.8	41.9	49.5	41.8	35.7
2-Jun	34.5	43.6	50.3	42.6	36
3-Jun	33.3	42.7	49.7	41.8	36
4-Jun	32.8	42.1	49.3	42.1	36.1
5-Jun	32.9	42.1	49.6	42.7	36.4
6-Jun	34.9	44	50	43.7	36.4
7-Jun	34.1	42.9	49	42.6	36.4
8-Jun	31.5	40.3	46.9	39.9	36.3
9-Jun	30.9	39.2	45.7	37.7	36.2
10-Jun	33.5	40.9	46.8	38.7	35.8
11-Jun	36.5	42.8	47.7	39.3	35.1
12-Jun	36.3	43.6	48.8	40.7	35.1
13-Jun	33.2	41.6	48	40.6	35
14-Jun	34.4	41.7	47.2	39.2	34.8
15-Jun	34.4	42	47.8	38.5	33.8
16-Jun	32.1	40.8	46.9	37.9	33.3
17-Jun	33.3	42.3	48.2	39.5	33.7
18-Jun	32	41.5	47.5	38.8	33.7
19-Jun	31.4	40.3	46.4	38.4	33.2
20-Jun	30.7	39.2	45.6	38	33.4
21-Jun	30	38.1	45.2	37.4	33.7
22-Jun	29.9	37.7	45	36.7	33
23-Jun	31.6	39	45.7	37.1	32.5
24-Jun	33.4	40.3	46.1	37.7	31.9
25-Jun	31.7	39.2	45.3	37	31.5
26-Jun	30.3	38.1	44.3	37.1	31.1
27-Jun	31	38.3	44.4	37.6	30.5
28-Jun	30.2	38	44.1	36.9	30.2
29-Jun	29.1	37.2	43.4	37	30.2
30-Jun	29	37.1	44	37.6	30.5
1-Jul	28.7	36.6	43.6	37	30.2
2-Jul	28.4	36.6	43.3	37.4	30.5
3-Jul	28	35.9	43	37.1	30.7
4-Jul	29.3	36.3	42.4	35.9	29.8
5-Jul	29	36.7	42.9	35.9	28.9
6-Jul	28.8	37.5	44.4	37.9	29.1
7-Jul	28	36.3	43.6	37.8	29.3
8-Jul	28.2	36.3	43.2	36.6	29.8
9-Jul	32	39.2	44.6	37.5	30.3
10-Jul	31.6	40	45.7	38.7	30.8
11-Jul	30.6	39	44.7	38.7	30.3
12-Jul	31.9	39.6	45.3	37.4	30.2
13-Jul	31.4	39.9	45.8	38.3	30.5

14-Jul	32.2	40.4	46.3	39.3	31.1
15-Jul	30.7	39.2	45.5	38.6	30.8
16-Jul	29.8	37.9	44.2	36.8	30.4
17-Jul	29.1	36.5	43	35.3	29.7
18-Jul	28.1	36	42.6	35.3	29.3
19-Jul	30.2	37.2	43.2	36	29.2
20-Jul	30.1	37	43	36.8	29
21-Jul	29.7	36.6	43.2	37.4	28.9
22-Jul	28.6	36.6	43.5	37.8	29.2
23-Jul	29.9	37.2	43.5	36.5	29.3
24-Jul	30.1	37	43.3	35.6	29.2
25-Jul	28.3	35.8	42.7	35.7	28.7
26-Jul	25.9	33.8	41.3	35.3	28
27-Jul	27	34.5	41.4	34.5	27.7
28-Jul	26.1	33.7	41.1	33.9	27.5
29-Jul	24.9	32.5	40.1	33.2	27.3
30-Jul	24.9	32.3	39.7	32.9	26.2
31-Jul	24.7	32.2	39.6	33	25.5
1-Aug	23.9	31.6	39.2	33.1	25.3
2-Aug	24.4	32	40	34.4	25.8
3-Aug	26.7	33.6	41.3	36.5	26.9
4-Aug	28.4	35.5	42.6	37.3	27.3
5-Aug	25.8	33.9	41.7	36.6	27.6
6-Aug	26.1	33.7	41.5	36.8	28
7-Aug	27.5	35.3	42.4	36.8	28.1
8-Aug	26.6	34.8	42.2	35.6	27.8
9-Aug	28.2	36.1	42.9	36.9	27.8
10-Aug	27.1	34.8	41.8	36.9	28
11-Aug	24.8	32.9	40.6	35.9	28
12-Aug	24.6	31.9	39.9	34.3	28
13-Aug	25.9	33.3	40.2	34.4	27.9
14-Aug	24.1	31.5	39.3	34.3	27.3
15-Aug	22.7	29.7	37.6	33.4	27
16-Aug	22.3	29	37.1	33.1	26.5
17-Aug	22.3	30	37	33.1	26.4
18-Aug	21.9	29.3	36.7	32.1	25.7
19-Aug	21.9	29.2	36.4	32	25.5
20-Aug	22.2	29	36.5	32.9	25.5
21-Aug	23	30.1	38	33.4	25.6
22-Aug	23.4	30.9	38.4	33.6	25.5
23-Aug	23.2	30.9	37.8	33.3	25.6
24-Aug	23.2	30.5	37.7	32.9	25.6
25-Aug	22.4	29.7	37	32.1	25.1
26-Aug	21.7	28.7	36.2	31.6	24.7
27-Aug	21.9	29.1	36.4	31.4	24.5
28-Aug	21.8	28.6	36.1	31.4	24.3
29-Aug	23.2	29.9	36.9	32.1	23.7
30-Aug	24.4	31.3	37.6	32.7	23.8
31-Aug	26.1	32.6	39	33.4	24.2
1-Sep	27.1	34.4	40.4	35	25.3
2-Sep	24.1	32.1	39.1	34.8	25.3
3-Sep	23	30.6	37.9	33.2	25.4
4-Sep	22.5	30	37.2	32.2	25
5-Sep	21.8	29.2	36.8	32	24.8
6-Sep	21.3	28.7	36.2	31.8	24.4
7-Sep	21.2	28.4	35.7	31.5	23.7

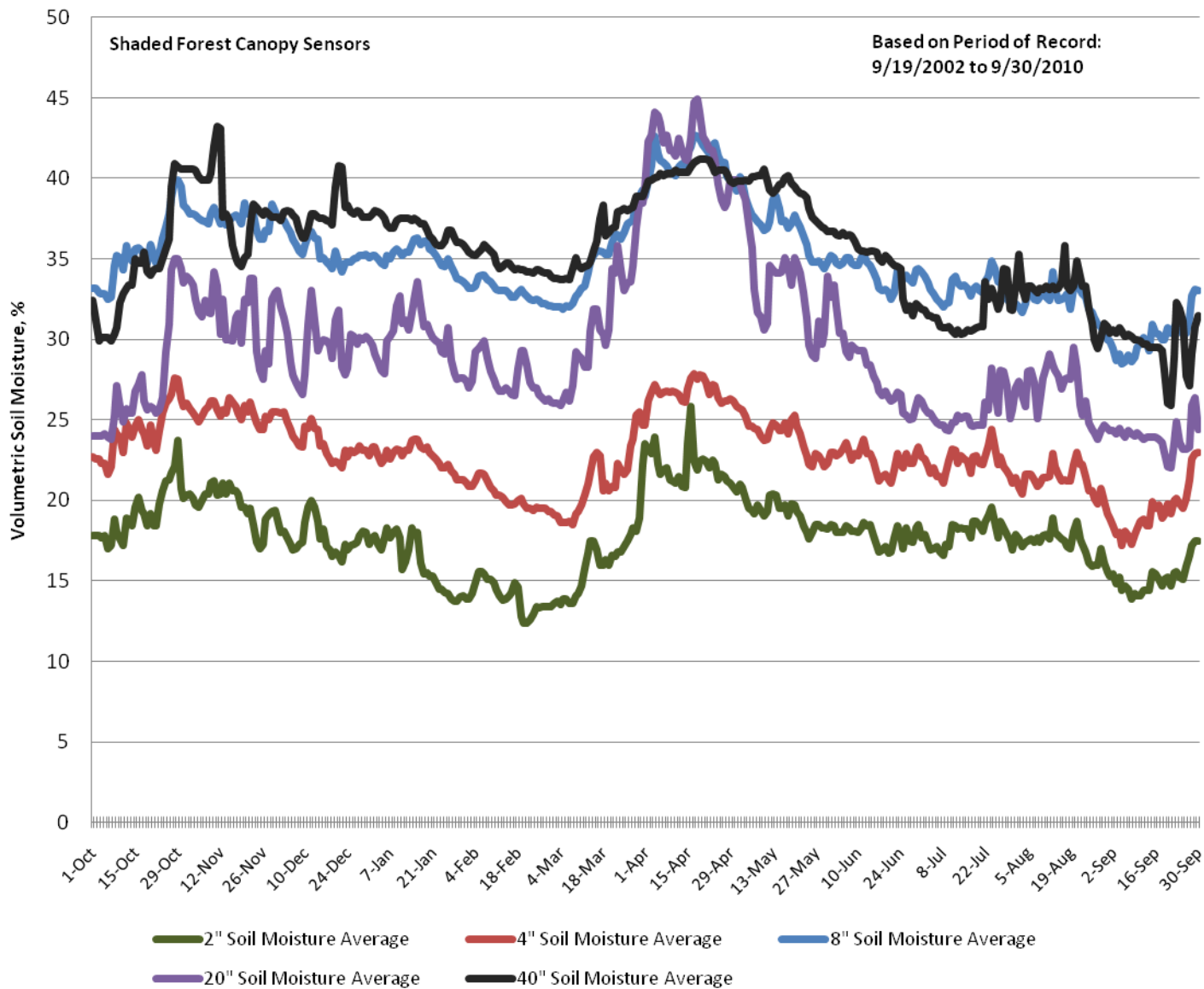
8-Sep	21.2	28.5	35.6	31.3	23.3
9-Sep	22.9	30.6	37.3	32	23.4
10-Sep	25.2	31.9	38.1	32.6	23.7
11-Sep	22.9	31.2	38.2	32.4	23.8
12-Sep	22.5	31.3	38.6	32.6	23.8
13-Sep	22.2	30.5	37.9	32.1	23.7
14-Sep	22.1	30.2	37.4	31.5	23.3
15-Sep	23.1	30.9	38	31.9	23.6
16-Sep	23.4	30.8	38.2	32.5	24.5
17-Sep	23.3	30.9	38.3	32.4	24.6
18-Sep	23.4	31	38.3	32.3	23.6
19-Sep	22.8	30.6	37.8	32.2	23.2
20-Sep	22.4	29.9	37.4	32	23
21-Sep	23.1	30.7	37.8	32	22.9
22-Sep	23.4	31	38.3	33.2	23.4
23-Sep	26.2	33.2	39.6	33.2	23.4
24-Sep	25.6	33.4	40.1	33.4	23.4
25-Sep	25.3	33.2	40.1	33	23.5
26-Sep	25.6	33.3	40.1	33	23.5
27-Sep	27.6	35.3	41.4	34.2	24.1
28-Sep	29.6	37.2	42.9	35.3	24.8
29-Sep	30	37.9	43.7	36.5	25.3
30-Sep	29	37.5	43.8	37.3	25.7

## 2. Lye Brook





Lye Brook, VT  
Daily Average Soil Moisture under Forest Canopy  
Preliminary Data - Subject to Change



SCAN Daily Averages			Station ID: 2042 Lye Brook, Vermont								
Element: Soil Moisture (% by volume)				Available Depths: 2 - 4 - 8 - 20 - 40 inches							
In Forest Opening						Under Forest Canopy					
Begin Date: 9/15/2000 End Date: 9/30/2010						Begin Date: 9/19/2002 End Date: 9/30/2010					
Date	2" Soil Moisture Average	4" Soil Moisture Average	8" Soil Moisture Average	20" Soil Moisture Average	40" Soil Moisture Average		2" Soil Moisture Average	4" Soil Moisture Average	8" Soil Moisture Average	20" Soil Moisture Average	40" Soil Moisture Average
1-Oct	32.7	31.1	32	23.7	28.9		17.8	22.7	33.2	24	32.4
2-Oct	32.5	30.7	31.9	23.6	28.9		17.8	22.6	33.2	24	31.2
3-Oct	33.2	30.3	31.7	23.5	28.7		17.8	22.6	32.9	24	29.9
4-Oct	32.6	30.1	31.4	23.3	28.6		17.7	22.3	32.8	24	30.1
5-Oct	32.7	30.2	31.6	23.4	28.7		17.8	22.3	32.8	24.1	30.1
6-Oct	32.9	30.3	31.8	23.3	28.9		17	21.6	32.5	23.9	30.1
7-Oct	33.1	30.6	31.8	23.4	28.6		17.2	22.1	32.6	23.8	29.9
8-Oct	33.2	32.2	33.1	25.6	28.9		18.8	24.4	34.6	25.2	30.3
9-Oct	32.8	32.3	32.9	26.4	29		18	24.1	35.2	27.1	30.7
10-Oct	32.6	31.8	32.5	24.3	28.9		17.6	23.9	35.1	25.8	32.3
11-Oct	32.4	31.4	32.3	23.9	28.9		17.2	23	34.3	24.9	32.8
12-Oct	34.4	32.7	33.3	24.4	28.9		18.9	24.8	35.8	25.7	33.2
13-Oct	34.8	32.4	33.3	24.6	29.1		18.8	24.5	35.2	25.4	33.4
14-Oct	33.9	31.9	33.1	24.6	29.3		18.4	23.9	34.9	25.4	33.4
15-Oct	36.1	33.4	33.7	25.1	29.4		19.6	24.6	35.6	26.8	35
16-Oct	35.8	33.3	33.7	25.2	29.6		20.2	25	35.7	27.2	34.7
17-Oct	34.9	33.1	33.7	25.4	29.9		19.4	24.4	35.5	27.8	34.7
18-Oct	35.3	33.2	33.8	25.4	30.5		19.2	24.1	35.3	26.2	35.4
19-Oct	34.3	32.5	33.4	25.2	30.8		18.4	23.4	34.7	25.6	34.2
20-Oct	34.5	33.1	34	25.4	30.7		19.2	24.7	35.9	25.8	34
21-Oct	33.7	32.1	33.4	25.2	30.8		18.4	23.6	35.2	25.7	34.3
22-Oct	33.3	31.7	33	24.7	30.6		18.4	23.1	34.7	25.4	34.4
23-Oct	34.2	32.5	33.3	24.9	30.4		19.8	24.3	35.3	25.6	34.4
24-Oct	35.4	33.1	33.8	25.9	30.5		20.6	25.4	36.3	26.4	35
25-Oct	35.7	33.5	34.1	26.6	30.7		21.2	26	37	29.2	35.6
26-Oct	35.1	32.9	34.2	27.5	31.2		21.3	26.3	37.8	30.9	36.2
27-Oct	35.8	33.8	34.5	28.1	34		21.7	26.6	38.8	34.3	39.5
28-Oct	36.6	34.1	34.7	28.8	34.4		22.1	27.6	39.8	35	40.9
29-Oct	36.7	33.8	34.7	29.2	34.3		23.7	27.5	39.9	35	40.7
30-Oct	35.5	33	34.2	27.8	34.1		20.7	26.3	39.5	34.4	40.6
31-Oct	35.1	32.8	34	27.1	34.1		20.1	25.8	38.3	33.5	40.6
1-Nov	35.8	33.3	34.3	27.1	34.1		20.3	26	38.1	33.9	40.6
2-Nov	35.3	32.9	34.2	29.3	34.1		20.4	25.7	37.8	33.7	40.6
3-Nov	35.7	32.9	34	27.4	34.2		20.1	25.4	37.8	33.4	40.6
4-Nov	35.3	32.8	33.9	26.9	34.2		19.7	25.2	37.7	32.5	40.5
5-Nov	35.1	32.7	33.7	26.6	34.2		19.6	24.9	37.5	31.7	40.1
6-Nov	35.2	33.1	33.8	26.5	34.4		20	25.2	37.4	31.4	39.9

7-Nov	36	33.2	34	26.7	34.2		20.4	25.6	37.3	32.4	39.9
8-Nov	36.3	33.5	34.3	27.1	34.2		20.4	25.8	37.2	31.7	39.9
9-Nov	36.1	33.7	34.6	28.8	34.3		21.1	26.2	37.8	31.6	40.3
10-Nov	36	33.8	34.8	30.1	34.4		21.2	26.2	38.2	34.2	42
11-Nov	35.3	33.4	34.7	27.9	35.3		20.3	25.6	37.7	33.3	43.2
12-Nov	35.5	33.2	34.3	27.1	33.1		20.4	25.2	37.2	30.3	43.1
13-Nov	35.9	33.5	34.3	27	34.3		21.1	25.6	37.3	32.5	37.6
14-Nov	36.1	33.3	34.2	26.7	32.9		20.4	25.4	37.1	30	37.8
15-Nov	36.7	34.4	34.8	27.2	32.5		21.1	26.4	37.4	30	37.4
16-Nov	36	34.1	34.7	27.8	32.4		20.6	26.1	37.6	29.9	35.8
17-Nov	35.5	33.8	34.7	31.5	32.3		20.6	25.8	37.7	31.3	35.1
18-Nov	34.9	33.2	34.5	27.8	32.4		20.4	25.4	37.6	31.6	34.7
19-Nov	34.5	32.6	33.6	26.9	33.8		19.6	25	37.2	29.8	34.5
20-Nov	35.6	33.3	34	27.2	36.8		19.6	25.9	38.5	32.5	35.1
21-Nov	34.9	32.9	33.8	26.8	37.1		19.2	25.5	37.8	32.3	35.3
22-Nov	35.3	33.3	33.9	26.8	37.5		19.5	26.1	38	33.8	37
23-Nov	34.5	32.7	33.7	26.9	38.7		18.5	25.4	37.8	33.8	38.4
24-Nov	33.8	32.3	33.4	26.3	37.2		17.4	24.8	36.8	29.2	38.2
25-Nov	33.8	32.4	33.2	25.8	35.1		17	24.4	36.2	28.1	37.9
26-Nov	34	32.8	33.3	25.8	34.7		17.3	24.4	36.2	27.5	37.7
27-Nov	34.4	33.1	33.8	27.7	34.6		18.8	25.2	36.8	29.3	38
28-Nov	35.2	32.9	33.4	25.9	34.6		19.1	25	36.7	28.5	37.8
29-Nov	36	33.7	34	29.2	37.2		19.3	25.5	38.4	32.5	37.6
30-Nov	35.9	34	34.6	30.7	37.2		19.4	25.5	37.9	32.9	37.6
1-Dec	35.4	33.9	34.3	29.1	37.6		18.8	25.5	37.6	33	37.6
2-Dec	34.9	33.5	34.2	27.8	37.5		18	25.4	37.5	32	37.4
3-Dec	35.2	33.5	34.4	29.8	36.8		18.1	25.5	37.4	31.3	37.9
4-Dec	34.1	32.7	33.8	27.2	35.1		17.7	24.9	37	30.4	38
5-Dec	33.7	32.4	33.4	26.4	34.7		17.3	24.4	36.6	28.6	37.9
6-Dec	33.4	32	33.2	25.9	34.6		16.9	24	36.2	27.8	37.7
7-Dec	33	31.6	32.8	25.5	34.4		17	23.7	35.9	27.3	37.5
8-Dec	33	31.3	32.6	25	34.1		17.3	23.4	35.5	26.9	36.8
9-Dec	32.9	31	32.4	24.8	33.9		17.4	23.3	35.3	26.6	36.3
10-Dec	33.8	32.3	33	27.6	33.7		18.6	24.6	35.8	27.8	36.3
11-Dec	34	31.8	32.9	26.4	35		19.6	24.5	36.4	30.9	36.9
12-Dec	34.5	32.1	33.1	29.1	36.6		20	25.1	36.7	33	37.8
13-Dec	34.2	31.7	33	26.5	35.8		19.6	24.5	36.3	31.2	37.8
14-Dec	34.1	31.7	33.1	25.8	34.4		18.7	24.4	36.2	29.3	37.6
15-Dec	33.6	31.9	32.4	26.5	35.3		17.6	23.4	35	29.7	37.5
16-Dec	33.9	32	32.6	29.5	35.5		18.2	23.5	35.1	30	37.5
17-Dec	33.6	31.6	32.4	26.3	35.5		17.1	22.9	34.8	29.9	37.4
18-Dec	33.9	31.5	32.3	25.5	35.4		16.9	22.6	34.6	29.6	37.3
19-Dec	33.1	31.2	32	25.1	35.4		16.5	22.3	34.4	28.8	37.1
20-Dec	32.7	30.9	31.9	25	37.7		16.8	22.4	35.5	31.2	39.5
21-Dec	32.5	30.7	31.7	25	37.2		16.6	22.3	34.8	31.8	40.8

22-Dec	32.5	30.6	31.5	24.6	35.7		16.2	22	34.2	28.3	40.7
23-Dec	33.5	31.7	32.2	24.8	35.4		17.3	23.1	34.7	27.8	38.2
24-Dec	33.5	31.2	31.9	24.8	35.5		16.9	22.7	34.8	28.2	38.3
25-Dec	33.2	31.2	32.1	27.4	35.5		17.2	23.1	34.8	30.3	37.9
26-Dec	34.5	32	32.4	25.7	35.5		17.3	23	35	30.2	37.8
27-Dec	33.7	31.8	32.3	25.6	35.5		17.4	23.1	35.1	29.7	38
28-Dec	33.4	31.9	32.4	29.3	35.5		17.8	23.4	35.2	30.1	37.9
29-Dec	33.8	32	32.5	29	35.4		18.1	23.1	35.2	30	37.6
30-Dec	33.6	32.1	32.7	26.5	35.4		18	23.1	35.3	30.2	37.6
31-Dec	33.1	31.6	32.4	25.7	35.4		17.3	22.8	35.1	30	37.6
1-Jan	33.4	32	32.3	25.4	35.4		17.7	23.3	35.2	29.6	37.8
2-Jan	33.3	31.7	32.2	25.3	35.5		17.8	23.3	35.2	29.1	38
3-Jan	32.5	31.2	32	25	35.5		17.3	22.8	35	28.6	37.9
4-Jan	32.2	31	31.7	24.6	35.5		16.9	22.3	34.7	28.1	37.8
5-Jan	32.7	31.1	31.7	24.4	35.4		17.7	22.6	34.6	27.9	37.5
6-Jan	33.3	31.8	32.3	28.7	35.3		18.3	23.1	35.2	29.9	37.1
7-Jan	32.5	31.1	31.9	26.2	35.3		17.7	22.6	35	30.2	36.9
8-Jan	33	31.5	32.1	28.3	35.2		18	23	35.4	30.5	36.9
9-Jan	33.1	31.7	32.2	28.2	35.1		18.2	23.2	35.6	32.1	37.4
10-Jan	32.9	31.3	32	25.7	35		17.7	23.1	35.4	32.7	37.5
11-Jan	33.1	31.2	31.9	25.1	35		15.7	22.8	35.2	31	37.5
12-Jan	33.5	32	32.5	25.5	35		16.2	23.1	35.4	31.2	37.5
13-Jan	33.7	31.6	32.2	25.2	35		16.9	23.1	35.4	30.6	37.5
14-Jan	34.5	32.2	32.9	28.2	34.8		18.3	23.7	35.9	31.7	37.4
15-Jan	33.9	31.9	32.5	28	34.9		17.9	23.8	36.2	32.5	37.5
16-Jan	33.6	31.8	32.5	28.6	34.8		18	23.8	36.3	33.6	37.4
17-Jan	32.9	31.5	32.2	26	34.9		16.1	23.3	35.9	32.1	37.2
18-Jan	32.6	31.3	32.2	27.9	34.8		15.4	23.2	36.1	30.8	37.2
19-Jan	32.5	31.3	32.3	28.4	34.8		15.5	23.3	36.1	30.9	36.8
20-Jan	32.3	31.1	32	25.8	34.7		15.3	23	35.6	30.5	36.4
21-Jan	32.3	31	31.9	26.7	34.7		15.3	22.8	35.5	30.1	36.2
22-Jan	32.2	30.9	31.7	25.8	34.7		14.9	22.6	35.2	29.9	35.9
23-Jan	31.8	30.8	31.5	25	34.6		14.5	22.3	34.9	29.8	35.8
24-Jan	31.6	30.5	31.4	24.7	35.1		14.5	22	34.6	29.2	35.8
25-Jan	31.8	30.8	31.7	26.7	35.2		14.3	22	34.5	29.1	36.1
26-Jan	31.7	31	31.9	26.5	35.2		14.2	22.2	35	30.7	36.8
27-Jan	30.8	30.7	31.6	24.9	35.2		13.9	21.8	34.5	28.7	36.8
28-Jan	30.1	30.4	31.2	24.4	35.2		13.7	21.6	34.1	27.9	36.3
29-Jan	30.2	30.4	31.2	24.1	34.9		13.7	21.3	33.8	27.5	36
30-Jan	30.6	30.2	31.1	24.2	36.4		14	21.3	33.7	27.6	36
31-Jan	30.1	30.2	31	24.3	35.3		14.1	21.3	33.6	27.6	35.9
1-Feb	29.9	30.1	31	24.1	35.5		13.9	21.1	33.4	27.4	35.6
2-Feb	29.8	30	30.8	23.9	35.1		13.9	20.9	33.2	27	35.4
3-Feb	30.3	30.3	30.8	23.9	34.8		14.2	20.9	33.2	27.4	35.3
4-Feb	30.3	30.3	30.9	24.1	34.5		14.9	21.2	33.3	29.2	35.2

5-Feb	30.3	30.6	31.1	27.3	34.5		15.6	21.7	33.9	29.4	35.4
6-Feb	29.7	30.4	31	25.4	34.3		15.6	21.7	34	29.7	35.6
7-Feb	29.3	30.1	31	24.7	34.3		15.4	21.6	34	29.9	35.9
8-Feb	29.5	30	30.8	24.3	34.2		15.1	21.2	33.7	28.8	35.7
9-Feb	29.2	29.8	30.8	24	34.1		15.1	20.8	33.6	28	35.5
10-Feb	28.7	29.7	30.5	23.7	34.2		14.9	20.6	33.3	27.5	35.3
11-Feb	28.8	29.5	30.4	24.7	37.1		14.5	20.3	33.1	27.1	34.7
12-Feb	28.9	29.5	30.5	23.8	34.5		14.1	20.3	33	26.8	34.4
13-Feb	29.2	29.4	30.5	23.7	34.3		13.8	20.2	33	26.8	34.5
14-Feb	29.4	29.7	30.9	23.9	33.6		13.9	19.9	33	27	34.7
15-Feb	30.3	30.5	31.5	24.1	32.4		14.1	19.7	32.8	26.8	34.7
16-Feb	29.8	30.1	31.4	23.9	32.3		14.3	19.7	32.6	26.6	34.5
17-Feb	30.4	30.3	31.4	23.8	32.2		14.9	19.8	32.6	26.5	34.3
18-Feb	30.2	30.3	31.4	25.6	32.1		14.6	20	32.9	28.2	34.4
19-Feb	30.1	30.3	31.5	25.8	32		12.8	20.1	33.1	29.3	34.3
20-Feb	29.7	30.1	31.2	24.6	31.9		12.4	19.8	32.9	29.3	34.3
21-Feb	29.5	29.9	31.1	24.3	31.9		12.4	19.5	32.7	28.4	34.2
22-Feb	29.4	29.8	31	24.2	32		12.6	19.5	32.5	27.3	34.2
23-Feb	29.5	29.7	31	24	31.9		12.9	19.4	32.4	27	34.1
24-Feb	29.7	29.6	30.8	23.7	31.8		13.4	19.6	32.5	27	34.3
25-Feb	29.6	29.5	30.7	23.6	31.6		13.3	19.5	32.4	26.6	34.3
26-Feb	29.2	29.5	30.7	23.5	31.6		13.4	19.5	32.2	26.4	34.2
27-Feb	29.3	29.4	30.6	23.4	31.5		13.4	19.5	32.2	26.2	34.1
28-Feb	29.5	29.4	30.7	23.5	31.7		13.4	19.3	32.1	26.3	34.1
1-Mar	29.2	29.4	30.6	23.3	31.5		13.4	19.3	32.1	26.1	33.9
2-Mar	29.5	29.4	30.5	23.2	31.4		13.6	19.1	32	26	33.8
3-Mar	29.7	29.3	30.4	23.1	31.4		13.7	19	32	26	33.8
4-Mar	29.8	29.4	30.5	23.2	31.4		13.5	18.6	32	25.9	33.7
5-Mar	29.7	29.3	30.4	23.2	31.4		13.9	18.6	31.9	26.2	33.7
6-Mar	29.6	29.4	30.4	23.2	31.3		13.9	18.6	32.1	26.7	33.8
7-Mar	29.8	29.3	30.4	23	31.2		13.6	18.7	32	26.2	33.7
8-Mar	29.5	29.3	30.4	23.3	31.3		13.6	18.5	32.2	27.1	34.4
9-Mar	30.6	29.7	30.7	24.7	31.6		14.1	19.2	32.7	29.2	35.1
10-Mar	31.3	30.7	31.6	25.5	34.6		14.2	19.3	32.8	29	34.6
11-Mar	31.6	31.1	31.9	25.1	34.6		14.7	19.7	33.2	28.8	34.4
12-Mar	31.7	31.2	31.9	24.9	34.6		15.8	20.3	33.3	28.3	34.5
13-Mar	32	31.7	32.2	25.8	34.8		16.7	21	34.1	28.3	34.6
14-Mar	32.3	32.2	32.6	29.6	34.9		17.5	21.7	34.8	30.5	34.8
15-Mar	32.6	32.5	32.8	26.9	35.5		17.5	22.7	35.2	31.9	35.5
16-Mar	33.1	32.4	32.9	26.9	35.5		16.9	23	35.5	31.9	36.1
17-Mar	32.6	32	32.7	26.5	35.6		16	22.8	35.5	30.6	37.5
18-Mar	32	31.8	32.5	25.9	35.7		16	20.6	35.4	30.3	38.3
19-Mar	32.3	31.6	32.4	25.7	35.9		16.3	21.1	35.3	29.6	36.4
20-Mar	32	31.5	32.4	25.8	36		16	20.6	35.3	30.6	36.6
21-Mar	31.7	31.4	32.3	25.7	37		16.6	20.9	36	34.4	36.9

22-Mar	31.1	31.6	32.4	25.7	36.7		16.5	20.8	36.5	34.1	37
23-Mar	31.8	32.4	32.8	29.2	34.8		16.8	22.3	36.5	35.8	37.9
24-Mar	31.5	32	32.8	26.7	34.1		16.8	21.9	36.2	34.3	38
25-Mar	31.4	31.9	32.6	25.9	34.9		17.1	21.6	36.6	33	38.1
26-Mar	31.9	32.1	32.6	25.9	35.6		17.5	21.9	37.2	33.5	38
27-Mar	33.2	33	33	26.6	37.9		17.9	23.4	37.3	33.6	38.1
28-Mar	33.8	33.1	33.3	26.7	38.2		18.3	23.8	37.4	34.5	38.2
29-Mar	34.5	33.3	33.8	32.3	39.9		18.1	25.3	38.5	36.9	38.9
30-Mar	34.1	33.4	34.2	37.6	40		18.9	25.5	38.9	38.5	38.9
31-Mar	33.8	33.3	34.2	34.7	40.1		22.2	24.7	39.3	38.5	38.9
1-Apr	35.1	34.2	34.5	35.5	40.2		23.5	24.7	38.9	39.4	39.2
2-Apr	36	34.7	35.1	41.9	40.3		23.2	26.2	39.8	42.3	39.8
3-Apr	36.9	34.7	35.5	39.6	40.4		22.9	26.7	40.8	42.7	39.9
4-Apr	37.3	35.5	36.6	40.7	40.4		23.9	27.2	42.6	44.1	40
5-Apr	36	34.8	35.9	41.1	40.5		22.2	26.8	41.5	43.9	40.1
6-Apr	35.5	34.4	35.6	39.4	40.5		21.6	26.6	41.1	43.4	40.3
7-Apr	35.8	34.4	35.6	39.1	40.6		21.9	26.7	41	42.2	40.2
8-Apr	35.9	34.5	35.6	38.8	40.7		22	26.8	40.8	42.7	40.3
9-Apr	36.7	34.9	35.6	38.4	40.4		21.3	26.7	40.4	41.7	40.3
10-Apr	36.9	35.2	35.8	37.3	39.2		21.2	26.8	40.3	41.7	40.3
11-Apr	36	34.6	35.7	38.4	40.3		21.1	26.7	40.2	41.4	40.5
12-Apr	35.8	34.8	35.6	36.8	42.7		21.5	26.6	40.7	42.5	40.4
13-Apr	35.7	34.2	35.4	35.4	43.7		20.9	26.2	40.9	41.7	40.4
14-Apr	35.8	34	35.2	36.4	43.3		20.8	26.1	40.8	41.2	40.4
15-Apr	36.7	34.6	35.4	37.5	42		23.5	26.9	41.6	41.1	40.4
16-Apr	36.2	34.5	35.5	37.7	41.9		25.8	27.6	41.9	42.5	40.7
17-Apr	36.2	34.9	35.7	36.5	42		22.4	27.9	42.7	44.7	41
18-Apr	35.8	34.7	35.6	35.8	42		21.9	27.5	42.6	44.9	41.1
19-Apr	36	34.7	35.5	36.7	42		22.4	27.8	42.5	44.1	41.2
20-Apr	35.5	34.2	35.4	38.3	42		22.6	27.7	42.1	42.6	41.2
21-Apr	35.2	33.9	35.2	37.8	43.3		22.4	27.3	41.8	42.3	41.2
22-Apr	35.1	33.6	35.1	36.7	44.7		22	26.6	41.5	41.8	41.1
23-Apr	36.4	34.2	35.1	36.6	43		22.5	27.2	42.1	41.7	40.7
24-Apr	36.8	34.7	36	35.8	43.4		22.3	27.1	42.2	41.1	40.4
25-Apr	36	34.3	35.7	35.5	45		21.3	26.4	41.4	39.6	40.5
26-Apr	36.2	34.1	35.5	35.3	43.3		21.6	26	41	38.7	40.5
27-Apr	36.9	34.3	35.5	35	43.4		21.5	26.2	41	38.2	40.5
28-Apr	36.8	34.8	35.6	35.1	45.2		21.2	26.2	40.1	38.5	40.3
29-Apr	36.8	35.1	35.8	38.9	45.2		21.1	26.3	39.9	39.9	39.8
30-Apr	36.5	34.9	35.7	36.8	45.2		20.8	26.2	39.6	39.9	39.7
1-May	36.3	35	35.6	35.1	45.3		20.5	25.8	39.2	39.9	39.8
2-May	37.3	35.1	35.6	34.1	45.3		21	25.7	40.1	39.6	39.8
3-May	36.7	34.6	35.3	32.6	45.3		20.8	25.6	39.8	39.2	39.8
4-May	35.7	34.2	35	31.2	45.3		20.1	25.2	38.8	38.7	39.9
5-May	34.7	33.7	34.9	30.1	45.3		19.5	24.6	38.2	37.1	39.8

6-May	34.7	33.4	34.7	29.2	45.3		19.4	24.6	37.7	35.7	40.1
7-May	34.2	33.4	34.2	28.8	44.9		19.2	24.5	37.6	33.1	40.1
8-May	34.4	33.2	34.4	28.3	43.3		19.7	24.4	37.3	31.7	40.2
9-May	34.5	32.8	34.2	28	41.5		19.4	24	37.1	31.4	40.2
10-May	33.9	32.6	34.1	27.6	40.6		19	23.7	36.8	30.6	40.6
11-May	33.7	32.5	33.9	27.5	38.1		19.3	23.8	36.9	31	39.8
12-May	35.2	33	33.9	27.6	40.1		20.3	24.3	37.3	34.6	39.3
13-May	36.2	34	34.6	28.9	44.8		20.4	24.8	38.7	34.3	39.1
14-May	36	34	34.6	29.7	43.9		20.3	24.7	38.9	34.1	39.3
15-May	34.9	33.4	34.3	29.2	42.7		19.5	24.3	38.1	34.1	39.6
16-May	34.5	33.1	34.2	28.3	42.4		19.5	24.3	37.3	34.2	39.6
17-May	35.1	33.4	34.4	28.4	42.3		19.7	24.8	37.4	35.1	40
18-May	34	32.8	34.2	28	42.2		19	24.1	36.9	34.5	40.2
19-May	35.5	33.4	34.3	30.2	42.1		19.8	25	37.2	33.4	39.7
20-May	35	33.3	34.4	34.9	41.3		19.7	25.3	37.7	35.1	39.5
21-May	34	32.9	34.1	33.6	39.8		19.3	24.6	37.4	34.7	39.3
22-May	34.1	32.3	33.8	30.4	39.1		19	24.1	37	34.1	39.1
23-May	33.4	31.9	33.5	28	38.9		18.4	23.4	36.4	32.9	39
24-May	32.7	31.5	33.2	27.1	38.7		18	22.8	35.9	31.3	38.8
25-May	32	31	32.8	26.5	38.6		17.6	22.2	35.2	29.6	38.1
26-May	32.3	30.8	32.6	26	37.6		18	22.1	34.8	29	37.6
27-May	33.5	32.1	33	26.1	38.1		18.5	22.9	34.8	28.8	37.4
28-May	33.9	31.9	33.1	26.2	39.5		18.5	22.8	34.9	31.1	37.2
29-May	33.1	31.4	32.8	26.2	41.4		18.3	22.4	34.6	29.7	37
30-May	32.8	31.3	32.8	26.2	41.3		18.3	22.1	34.4	30.4	36.9
31-May	33.1	31.5	33.1	26.8	41.6		18.2	22.3	34.8	33.9	36.7
1-Jun	33.4	32.2	33.5	26.9	42.9		18.5	23	35.2	32.6	36.7
2-Jun	34.7	32.9	33.9	28.1	43.6		18.4	23	35.1	33.4	36.7
3-Jun	33.7	32.4	33.6	31.5	44.1		18	22.8	34.7	32.1	36.5
4-Jun	33.4	32.3	33.6	29.5	42.6		18	22.9	34.6	30.4	36.4
5-Jun	33.9	32.4	33.7	28	40.3		18	23.2	34.7	30.4	36.6
6-Jun	34.8	33.1	34.1	28.7	41.8		18.4	23.6	35.1	29.2	36.4
7-Jun	33.9	32.5	34	28.4	41.5		18.3	23	35.1	28.9	36.5
8-Jun	33.4	32.1	33.5	30.6	41.4		18.1	22.5	34.7	29.6	36.4
9-Jun	33.1	31.9	33.3	27.7	40.5		18.1	22.9	34.6	29.4	36.1
10-Jun	33.4	32.3	33.3	28.9	38.8		18	22.8	34.6	29.3	35.6
11-Jun	33.7	32.7	33.7	28.3	38.7		18.3	23.4	35.1	29.3	35.5
12-Jun	34.8	33.2	33.8	27.5	40.9		18.6	23.8	35.3	29.3	35.5
13-Jun	34.1	32.5	33.5	27.7	40.4		18.4	22.9	34.8	28.4	35.4
14-Jun	34.2	32.4	33.3	26.8	38.6		18.5	22.9	34.6	28.4	35.5
15-Jun	33.6	31.7	33.1	26.3	38.3		17.8	22.4	34.2	27.7	35.5
16-Jun	32.6	31.4	32.8	26.1	38.1		17.2	21.7	33.7	27.3	35.4
17-Jun	33.1	31.7	32.7	26	38.2		16.8	21.2	33.2	26.8	35
18-Jun	32.6	31.3	32.5	25.6	38.3		16.9	21.5	33	26.5	34.8
19-Jun	32.3	31.3	32.5	25.4	37.8		17.1	21.6	33.1	26.8	35.2

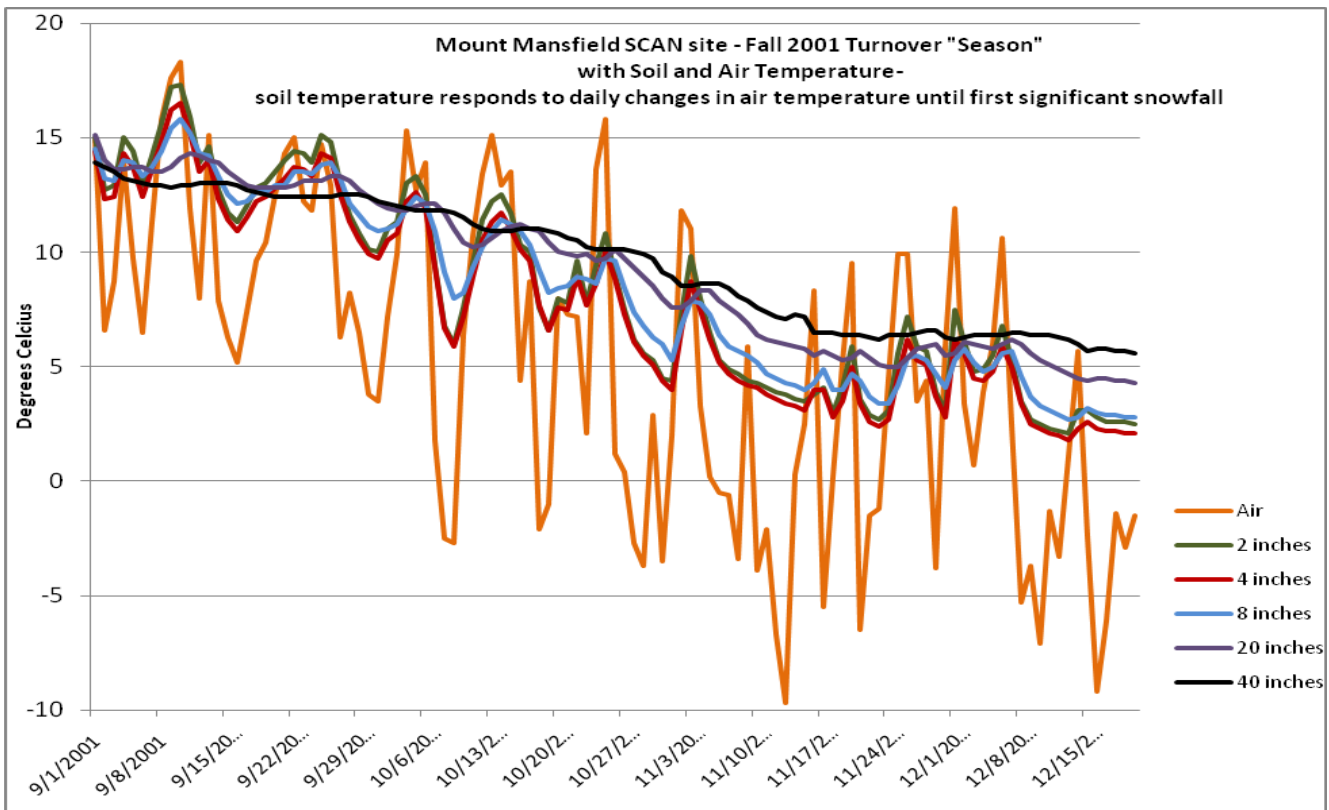
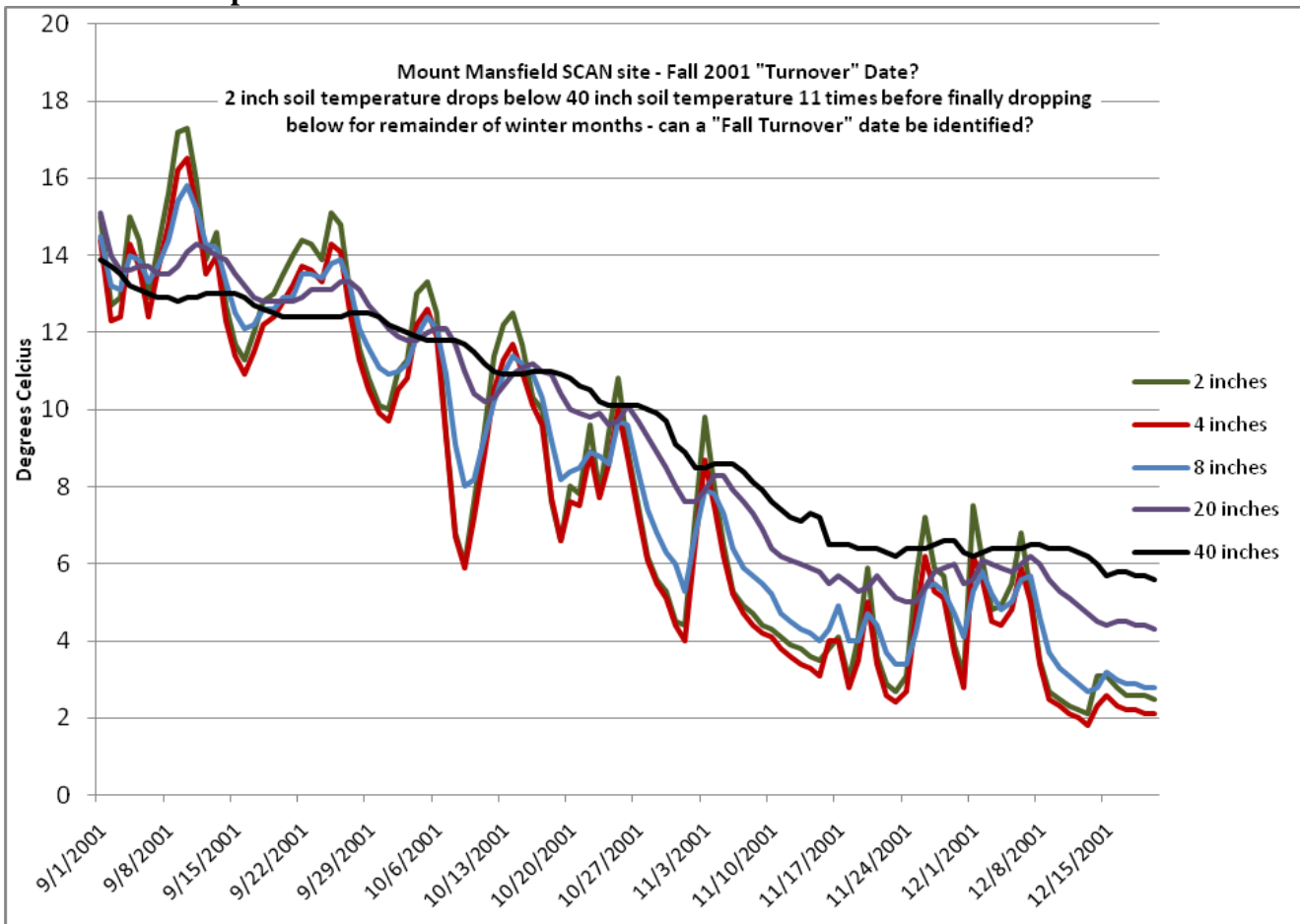
20-Jun	32.3	31.2	32.3	25.4	37.3		16.7	21.3	32.9	26.4	35
21-Jun	32.7	31.1	32.2	24.7	35.2		16.8	21.1	32.5	26.2	34.8
22-Jun	33.9	32.1	32.7	25	34.4		17.7	21.9	32.9	26.3	34.6
23-Jun	34.6	32.6	33.5	25.6	34.4		18.4	22.9	34.3	26.7	34.5
24-Jun	34.1	32.4	33.1	25.2	34.4		17.8	22.2	34	26.6	34.4
25-Jun	31.9	31.2	32.4	24.8	32.9		17	22	33.7	25.4	32.5
26-Jun	32.9	31.5	32.2	24.9	32.3		18.3	22.9	34	25.3	31.8
27-Jun	32.3	31.2	32.4	24.7	32.7		17.5	22.3	33.7	25	32.1
28-Jun	31.8	31.2	32.4	25	34.8		17.4	22.3	33.5	25.1	31.5
29-Jun	32.1	31.2	32.6	25.4	33.6		18.3	23	34.3	25.9	32.2
30-Jun	32.2	31.4	32.9	25.5	32.6		18.5	23.3	34.4	26.4	32.1
1-Jul	31.5	31.2	32.8	25.5	33.1		17.7	22.7	34.2	26.2	31.9
2-Jul	32.1	30.9	32.6	25.2	33.4		17.9	22.6	33.9	25.7	31.8
3-Jul	30.9	30.5	32.2	24.7	32.2		17.3	22.1	33.5	25.4	31.5
4-Jul	30.2	30.2	31.9	25	32.4		16.9	21.7	33.1	25.4	31.5
5-Jul	30.9	29.9	31.9	24.7	34.2		17	22	32.8	25.1	31.3
6-Jul	30.4	29.6	31.6	24.1	33.4		17.1	21.5	32.5	24.8	31.3
7-Jul	29.8	29.4	31.4	24	31.7		16.8	21.5	32.3	24.7	30.8
8-Jul	29.3	29.2	31.3	24	31.4		16.6	21.1	32	24.7	30.7
9-Jul	29.3	29.6	31.6	23.8	31.1		17.3	21.7	32.2	24.4	30.7
10-Jul	29.7	29.8	31.9	23.9	31		17.1	22.5	32.3	24.3	30.8
11-Jul	30.7	31	32.7	24.1	31.1		18.5	23.2	33.7	24.8	30.5
12-Jul	31.6	31.4	33.1	24.6	31.2		18.4	23.1	33.9	24.9	30.3
13-Jul	30.7	31	32.8	24.7	31.2		18.2	22.3	33.5	25.3	30.6
14-Jul	30.3	31	32.4	24.4	31.3		18.3	22.8	33.3	25.1	30.3
15-Jul	31.1	30.8	32.4	24.2	31.2		18.2	22.6	33.4	25.2	30.4
16-Jul	31.2	30.8	32.4	24.3	31.2		18.2	22.4	33.2	25.2	30.6
17-Jul	30.9	30.3	32.2	24.1	31		17.7	21.7	32.7	24.7	30.5
18-Jul	31.9	30.5	32.2	24	31		18.7	22.7	33.1	24.6	30.6
19-Jul	31.4	30.9	32.3	24.1	31		18.7	22.8	33.3	24.7	30.7
20-Jul	31.3	30.7	32.3	24.1	31.1		18.4	22.3	33	24.7	30.8
21-Jul	30.9	30.6	32.2	24.1	31		18.1	22.2	32.9	24.7	30.8
22-Jul	31.5	31.4	32.5	24.3	31.8		18.6	22.7	33.6	26.1	33.6
23-Jul	32	31.7	32.8	25.2	31.4		19	23.4	33.9	25.6	32.5
24-Jul	33.2	32.4	33.3	27.4	31.4		19.6	24.4	34.9	28.2	33.2
25-Jul	32.2	31.4	32.8	25.1	31.3		18.6	23.3	34.4	26.9	32.6
26-Jul	31.6	31.1	32.7	24.5	31.4		17.7	22.2	33.6	25.4	31.9
27-Jul	32.5	31.8	32.7	26.7	32.2		18.7	22.7	33.7	28.1	32.3
28-Jul	32.7	31.2	32.1	24.4	33		18.3	22.1	32.7	28	34.4
29-Jul	32.3	30.8	31.7	24	32.8		17.9	21.8	32.5	27.1	34.3
30-Jul	31.9	30.3	31.4	23.7	31.1		17.5	21.5	32.3	25.1	31.9
31-Jul	30.8	29.5	31	24.7	30.8		16.9	21.1	31.9	25.6	31.8
1-Aug	31.3	29.8	30.9	23.7	31.8		17.9	21.4	32.2	27	33.3
2-Aug	31.3	29.5	30.8	24.2	32.4		17.6	20.8	32	27.4	35.3
3-Aug	30.6	29.3	30.8	24.2	30.8		17.1	20.4	31.7	26.5	33.2



4-Aug	31.4	30.2	31.4	23.8	31		17.4	21.6	32.2	25.8	32.5
5-Aug	31.3	30.1	31.4	24.1	33		17.5	21.6	33	28	33.3
6-Aug	31.3	30.2	31.3	24.2	33.1		17.6	21.6	33.3	28.1	33.3
7-Aug	31.1	30	31	23.8	33.1		17.4	21.3	32.5	27.3	33.1
8-Aug	30.5	29.8	30.8	23.3	31.8		17.7	20.9	32.4	25.1	32.9
9-Aug	30.4	29.3	30.4	23.5	31.9		17.4	21	32.6	26.1	33.2
10-Aug	31	29.7	30.4	23.7	32.8		17.8	21.4	33	27.6	33.1
11-Aug	30.7	29.6	30.4	23.6	32.7		17.9	21.4	32.6	28.3	33.3
12-Aug	30.6	29.3	30.3	23.6	32.6		17.6	21.5	32.4	29.1	33.1
13-Aug	31	30	31.1	24	32.6		18.9	22.9	34.2	28.4	33.3
14-Aug	30.6	29.2	30.5	23.4	32.6		18	22.1	33.1	28.1	33.1
15-Aug	30	28.9	30.2	23	32.5		17.8	21.6	32.4	27.7	33.2
16-Aug	30.1	29	30.1	23	33.1		17.6	21.2	32.5	26.9	33.6
17-Aug	30.2	28.8	30.2	23.4	34.1		17.5	21.3	32.6	27.5	35.8
18-Aug	29.7	28.5	30.1	23.5	32.9		17.1	21.2	32.8	27.6	33.3
19-Aug	29.8	28.7	30.1	23.3	32.5		17	21.2	31.9	27.5	33
20-Aug	30.3	29.6	30.7	24.5	32.5		18.1	22.2	33.2	29.5	33.3
21-Aug	30.9	29.9	31	23.9	32.7		18.7	23	33.9	28.2	34.9
22-Aug	30	29.2	30.5	23.6	32.1		17.6	22.2	33.1	25.9	33.9
23-Aug	29.9	29	30.3	23.6	30.9		17.3	22.2	32.8	25.3	33.3
24-Aug	29.4	29	30.4	24	30.8		16.8	21.5	32.6	26.2	33.3
25-Aug	28.9	28.7	30.7	23.1	30.6		16.1	20.6	31.9	24.8	31.9
26-Aug	29.1	28.4	30.2	22.7	30.4		15.9	20.6	31.7	24.4	31
27-Aug	29	28.2	29.8	22.6	30.2		16	20.1	31.3	24.2	30
28-Aug	28.9	27.8	29.3	22.2	30		16	19.8	30.9	23.8	29.4
29-Aug	29.8	28.5	29.4	22.2	30.4		17	20.7	30.8	24.3	30.1
30-Aug	29	28.4	29.1	22.3	31.1		16.1	19.9	30.4	24.7	31
31-Aug	28.3	27.8	28.9	22.1	31		15.6	19.2	30	24.5	30.8
1-Sep	28.4	28.1	29.5	22.2	31.2		15.3	18.9	29.9	24.3	30.4
2-Sep	28.4	27.4	28.9	22.1	31.1		15.4	18.4	29.4	24.3	30.6
3-Sep	27.9	27	28.4	21.8	31		14.8	17.9	28.7	24.1	30.4
4-Sep	28.9	27	28.5	21.9	30.9		15.2	18	29.1	24.5	30.7
5-Sep	28	26.6	28.1	21.7	30.7		14.4	17.2	28.5	24.2	30.5
6-Sep	27.6	27.6	28.4	21.6	30.5		14.7	18.1	28.6	23.9	30.2
7-Sep	27.8	27.1	28.5	22	30.6		14.5	17.8	29	24.3	30.3
8-Sep	26.9	26.5	28.1	21.7	30.4		13.9	17.3	28.6	24.1	30.2
9-Sep	27.1	27.3	28.1	21.6	30.2		14.2	17.9	28.9	24	30
10-Sep	27.9	27.7	28.5	21.9	30.2		14.1	18.2	29.5	24.2	30
11-Sep	27.9	27.8	28.5	21.5	30.1		14.1	18.7	29.8	24	29.9
12-Sep	27.9	28	29	21.4	30		14.4	18.8	30.1	23.8	29.7
13-Sep	27.6	27.5	28.7	21.4	29.8		14.4	18.4	29.7	23.9	29.7
14-Sep	28	27.8	28.7	21.4	29.8		14.4	18.4	29.3	23.9	29.5
15-Sep	29.4	29.5	29.8	21.6	28.7		15.6	19.9	30.9	23.9	29.5
16-Sep	30	29.6	30.2	21.7	27.7		15.4	19.5	30.4	23.9	29.5
17-Sep	29.7	29.4	30.2	21.8	27.7		15.1	19.7	30.3	23.8	29.5

18-Sep	29.1	28.8	30	21.8	27.7		14.7	18.9	30	23.6	29.3
19-Sep	29.5	28.5	29.6	21.7	27.8		15.1	19.1	30	23	28.1
20-Sep	30	28.5	29.6	21.6	27.5		15.2	19.8	30.7	22.1	26
21-Sep	30	28.6	29.7	21.7	27.6		14.7	19.2	30.4	22	25.9
22-Sep	30	28.8	30.1	22.1	29.4		15.5	20	30.7	23.6	28.9
23-Sep	30.5	29	30.1	22.4	29.7		15.6	20.1	31	24.9	32.3
24-Sep	30.6	29.1	30.4	22.4	28.7		15.2	19.8	30.7	23.6	31.9
25-Sep	30.7	29.2	30.5	22.6	28.9		15.1	19.5	30.3	23.2	31.1
26-Sep	30.5	29.7	30.8	22.7	28.7		15.9	20.1	30.4	23.2	27.7
27-Sep	31.3	30.2	31.2	23	28.8		16.6	21.3	31.3	23.3	27.1
28-Sep	33.3	31.4	32	23.6	30		17.2	22.6	32.7	25.9	29.1
29-Sep	33.3	31.6	32.3	23.8	30.9		17.5	22.9	33.1	26.4	30.8
30-Sep	32.7	31.4	32.4	23.8	29.6		17.5	23	33	24.4	31.5

**Appendix 10. Fall Turnover season at Mount Mansfield SCAN site for 2001, September 2 thru December 7**



**NRCS National Water and Climate Center - Provisional Data  
Downloaded Historic Data for Fall 2001**

**Mount Mansfield Daily Soil Temperature, September - December 2001**

Shaded rows are dates where 2 inch soil temperature is lower than 40 inch soil temperature.

Date	Air Temp	2 inches	4 inches	8 inches	20 inches	40 inches
9/1/2001	14.9	15	14.4	14.5	15.1	13.9
9/2/2001	6.6	12.7	12.3	13.2	14	13.7
9/3/2001	8.7	12.9	12.4	13.1	13.6	13.5
9/4/2001	14	15	14.3	14	13.6	13.2
9/5/2001	9.7	14.4	13.7	13.9	13.7	13.1
9/6/2001	6.5	12.9	12.4	13.3	13.7	13
9/7/2001	11.3	14.2	13.6	13.7	13.5	12.9
9/8/2001	15.8	15.6	14.8	14.4	13.5	12.9
9/9/2001	17.6	17.2	16.2	15.4	13.7	12.8
9/10/2001	18.3	17.3	16.5	15.8	14.1	12.9
9/11/2001	11.9	15.9	15.2	15.2	14.3	12.9
9/12/2001	8	13.9	13.5	14.3	14.2	13
9/13/2001	15.1	14.6	14	14.2	14	13
9/14/2001	7.9	12.7	12.3	13.3	13.9	13
9/15/2001	6.3	11.7	11.4	12.5	13.5	13
9/16/2001	5.2	11.3	10.9	12.1	13.2	12.9
9/17/2001	7.4	12	11.5	12.2	12.9	12.7
9/18/2001	9.6	12.8	12.2	12.6	12.8	12.6
9/19/2001	10.4	13	12.4	12.6	12.8	12.5
9/20/2001	12.5	13.5	12.8	12.9	12.8	12.4
9/21/2001	14.3	14	13.2	12.9	12.8	12.4
9/22/2001	15	14.4	13.7	13.5	12.9	12.4
9/23/2001	12.2	14.3	13.6	13.5	13.1	12.4
9/24/2001	11.8	13.9	13.3	13.4	13.1	12.4
9/25/2001	14.7	15.1	14.3	13.8	13.1	12.4
9/26/2001	12.9	14.8	14.1	13.9	13.3	12.4
9/27/2001	6.3	13	12.5	13.2	13.3	12.5
9/28/2001	8.2	11.6	11.3	12.1	13.1	12.5
9/29/2001	6.5	10.8	10.5	11.6	12.7	12.5
9/30/2001	3.8	10.1	9.9	11.1	12.4	12.4
10/1/2001	3.5	10	9.7	10.9	12.1	12.2
10/2/2001	7.2	11	10.5	11	11.9	12.1
10/3/2001	9.9	11.3	10.8	11.2	11.8	12
10/4/2001	15.3	13	12.2	11.9	11.8	11.9
10/5/2001	12.7	13.3	12.6	12.4	12	11.8

10/6/2001	13.9	12.5	11.9	12.1	12.1	11.8
10/7/2001	1.8	9.4	9.3	10.9	12.1	11.8
10/8/2001	-2.5	6.8	6.7	9.1	11.7	11.8
10/9/2001	-2.7	6	5.9	8	11	11.7
10/10/2001	6.4	7.6	7.2	8.2	10.4	11.5
10/11/2001	10.7	9.5	8.9	9.3	10.2	11.2
10/12/2001	13.4	11.4	10.5	10.2	10.3	11
10/13/2001	15.1	12.2	11.3	10.9	10.6	10.9
10/14/2001	12.9	12.5	11.7	11.4	10.9	10.9
10/15/2001	13.5	11.7	11	11.2	11.1	10.9
10/16/2001	4.4	10.3	10.1	10.9	11.2	11
10/17/2001	8.7	10	9.6	10.3	11	11
10/18/2001	-2.1	7.6	7.7	9.2	10.9	11
10/19/2001	-1	6.6	6.6	8.2	10.4	10.9
10/20/2001	8	8	7.6	8.4	10	10.8
10/21/2001	7.3	7.8	7.5	8.5	9.9	10.6
10/22/2001	7.2	9.6	8.9	8.9	9.8	10.5
10/23/2001	2.1	7.8	7.7	8.8	9.9	10.2
10/24/2001	13.6	9.4	8.6	8.6	9.6	10.1
10/25/2001	15.8	10.8	10	9.7	9.7	10.1
10/26/2001	1.2	9	8.8	9.6	10.1	10.1
10/27/2001	0.4	7.5	7.3	8.4	9.7	10.1
10/28/2001	-2.7	6.2	6.1	7.4	9.3	10
10/29/2001	-3.7	5.6	5.5	6.8	8.9	9.9
10/30/2001	2.9	5.3	5.1	6.3	8.5	9.7
10/31/2001	-3.5	4.5	4.4	6	8	9.1
11/1/2001	2	4.4	4	5.3	7.6	8.9
11/2/2001	11.8	7.3	6.6	6.8	7.6	8.5
11/3/2001	11	9.8	8.7	7.9	7.9	8.5
11/4/2001	3.3	8	7.5	7.8	8.3	8.6
11/5/2001	0.2	6.5	6.2	7.3	8.3	8.6
11/6/2001	-0.5	5.3	5.2	6.4	7.9	8.6
11/7/2001	-0.6	4.9	4.7	5.9	7.6	8.4
11/8/2001	-3.4	4.7	4.4	5.7	7.3	8.1
11/9/2001	5.9	4.4	4.2	5.5	6.9	7.9
11/10/2001	-3.9	4.3	4.1	5.2	6.4	7.6
11/11/2001	-2.1	4.1	3.8	4.7	6.2	7.4
11/12/2001	-6.7	3.9	3.6	4.5	6.1	7.2
11/13/2001	-9.7	3.8	3.4	4.3	6	7.1

11/14/2001	0.3	3.6	3.3	4.2	5.9	7.3
11/15/2001	2.5	3.5	3.1	4	5.8	7.2
11/16/2001	8.3	3.8	4	4.3	5.5	6.5
11/17/2001	-5.5	4.1	4	4.9	5.7	6.5
11/18/2001	0.2	3	2.8	4	5.5	6.5
11/19/2001	5.2	4.1	3.5	4	5.3	6.4
11/20/2001	9.5	5.9	5	4.7	5.4	6.4
11/21/2001	-6.5	3.6	3.4	4.4	5.7	6.4
11/22/2001	-1.5	2.9	2.6	3.7	5.4	6.3
11/23/2001	-1.2	2.7	2.4	3.4	5.1	6.2
11/24/2001	4.5	3.1	2.7	3.4	5	6.4
11/25/2001	9.9	5.6	4.6	4.2	5	6.4
11/26/2001	9.9	7.2	6.2	5.4	5.4	6.4
11/27/2001	3.5	5.9	5.3	5.5	5.8	6.5
11/28/2001	4.4	5.7	5.1	5.3	5.9	6.6
11/29/2001	-3.8	3.9	3.7	4.7	6	6.6
11/30/2001	5.9	3.1	2.8	4.1	5.5	6.3
12/1/2001	11.9	7.5	6.2	5.3	5.6	6.2
12/2/2001	3.4	6.1	5.6	5.8	6.1	6.3
12/3/2001	0.7	4.8	4.5	5.2	6	6.4
12/4/2001	3.9	4.9	4.4	4.8	5.9	6.4
12/5/2001	6	5.5	4.8	5	5.8	6.4
12/6/2001	10.6	6.8	5.9	5.6	6	6.4
12/7/2001	2.5	5.3	5	5.7	6.2	6.5
12/8/2001	-5.3	3.5	3.4	4.6	6	6.5
12/9/2001	-3.7	2.7	2.5	3.7	5.6	6.4
12/10/2001	-7.1	2.5	2.3	3.3	5.3	6.4
12/11/2001	-1.3	2.3	2.1	3.1	5.1	6.4
12/12/2001	-3.3	2.2	2	2.9	4.9	6.3
12/13/2001	1.1	2.1	1.8	2.7	4.7	6.2
12/14/2001	5.7	3.1	2.3	2.8	4.5	6
12/15/2001	-2.4	3.1	2.6	3.2	4.4	5.7
12/16/2001	-9.2	2.8	2.3	3	4.5	5.8
12/17/2001	-6.1	2.6	2.2	2.9	4.5	5.8
12/18/2001	-1.4	2.6	2.2	2.9	4.4	5.7
12/19/2001	-2.9	2.6	2.1	2.8	4.4	5.7
12/20/2001	-1.5	2.5	2.1	2.8	4.3	5.6