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Stable Hydrogen and Oxygen Isotope Ratios for Selected Sites of the National Oceanic and Atmospheric Administration's Atmospheric Integrated Research Monitoring Network (AIRMoN)

Open-File Report 00-279

USGS
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Stable Hydrogen and Oxygen Isotope Ratios for Selected Sites of the National Oceanic and Atmospheric Administration's Atmospheric Integrated Research Monitoring Network (AIRMoN)

By Tyler B. Coplen and Richard Huang
431 National Center, Reston, VA 20192

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Reston, Virginia

2000

United States Department of the Interior

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Multiply	By	To obtain
inch (in)	25.40	millimeter
foot (ft)	0.3048	meter

Vertical datum: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929—a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

Stable Hydrogen and Oxygen Isotope Ratios for Selected Sites of the National Oceanic and Atmospheric Administration's Atmospheric Integrated Research Monitoring Network (AIRMoN)

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ABSTRACT

Increasingly, hydrologic studies require information on the isotopic composition of natural waters. This report presents stable hydrogen (δ^2H) and oxygen isotope ratios ($\delta^{18}O$) of precipitation samples from seven selected sites of the National Oceanic and Atmospheric Administration's Atmospheric Integrated Research Monitoring Network (AIRMoN) collected during the years 1992–1994.

INTRODUCTION

The ratio of the stable isotopes of hydrogen in terrestrial water varies in the environment by nearly a factor of two. The ratio of the stable isotopes of oxygen in terrestrial water varies by 5 percent. These relatively large seasonally and (or) climatically-induced variations allow hydrologists to solve practical problems, such as the identification or quantification of the source of a water, the determination of ground-water velocities, or determining the seasonality of aquifer recharge (Coplen and others, 2000). In favorable situations, hydrologists calculate isotope mass balances to determine the fraction of imported or anthropogenic recharge in well waters.

Information about the spatial and temporal variation of the ratios of the stable isotopes of hydrogen and oxygen in precipitation, ground water, and surface water is of fundamental use to hydrologists undertaking environmental studies. In order to provide such information, the U.S. Geological Survey (USGS) Isotope Fractionation Project in Reston, VA, analyzed more than 1,200 precipitation samples from seven sites (fig. 1) selected from the National Oceanic and Atmospheric Administration's (NOAA) Atmospheric Integrated Research Monitoring Network (AIRMoN). These samples were collected during the period 1992–1994.

AIRMoN is a network of the National Atmospheric Deposition Program (NADP), sponsored by the Air Resources Laboratory of NOAA (NOAA-ARL). Whereas the NADP was designed to characterize long-term trends in the chemical climate of the U.S. (see http://nadp.sws.uiuc.edu/default.html), AIRMoN (see http://www.arl.noaa.gov/research/programs/airmon.html and http://nadp.sws.uiuc.edu/AIRMoN) was designed to provide data with a greater temporal resolution. This short-term resolution is critical for (1) determining the effectiveness of emission controls mandated by the Clean Air Act, (2) evaluating the potential impacts of new sources of emissions on protected areas, such as Class I Wilderness Areas, and (3) identifying source/receptor relationships in atmospheric models. Currently, the AIRMoN network comprises nine sites where precipitation samples are collected daily or on an event basis. Data are available from some sites since October 1992. The daily sampling protocol permits a direct coupling with meteorological factors.

ANALYTICAL METHODS

The ratios of the stable isotopes of hydrogen and oxygen are expressed as δ (delta) values in parts per thousand (per mill or ‰) relative to Vienna Standard Mean Ocean Water (VSMOW) reference water and normalized (Gonfiantini, 1984; Coplen, 1994) on scales such that the hydrogen and oxygen isotopic composition of Standard Light Antarctic Precipitation (SLAP) reference water are −428‰ and -55.5‰ exactly, respectively. Thus, for stable hydrogen and oxygen isotope ratios:

$$\delta^2\mathrm{H}\ (\text{in}\ ‰) = \left[\frac{\left[{}^2\mathrm{H}/{}^1\mathrm{H}\right]_{sample}}{\left[{}^2\mathrm{H}/{}^1\mathrm{H}\right]_{\mathrm{VSMOW}}} - 1\right] 1000\ , \qquad (1)$$

Figure 1. Map of the United States showing sites for which hydrogen and oxygen isotope data are presented in this report.

and

$$\delta^{18}O \text{ (in ‰)} = \left[\frac{\left[{}^{18}O/{}^{16}O \right]_{sample}}{\left[{}^{18}O/{}^{16}O \right]_{VSMOW}} - 1 \right] 1000 . \quad (2)$$

Water samples for analysis of hydrogen isotopic composition were prepared using platinum equilibration of water with hydrogen gas (Coplen, Wildman, and Chen, 1991). Water samples for analysis of oxygen isotopic composition were prepared by equilibration with CO_2 at 25°C (Epstein and Mayeda, 1953). The 2-sigma uncertainties of stable hydrogen and oxygen isotope ratios are 2‰ and 0.2‰, respectively.

ISOTOPE RATIOS

The seven sites from which samples were collected and analyzed for this study are listed in Table 1. The stable hydrogen isotope-ratio values from these sites are shown in Figures 2 though 8, and they show seasonal variations as large as 100‰. The stable hydrogen and oxygen isotope data from these sites are presented in Table 2. For each site, the site code, the collection period and amount of sample is given. For most sites, both δ^2H and $\delta^{18}O$ values were determined; however, at some sites only one or the other isotope ratio was determined.

Table 1. Description of sites for which isotope data are presented in this report

Site ID	Site Code	Altitude meters above sea level	Latitude	Longitude
Underhill, VT	VT99	399	44°31'42"	72°56'45"
Penn State, PA	PA15	393	40°47'18"	77°56'45"
Oxford, OH	OH09	284	39°31'53"	84°43'27"
Bondville, IL	IL11	212	40°03'12"	88°22'19"
Walker Branch Watershed, TN	TN00	341	35°57'41"	84°17'14"
Lewes, DE	DE02	2	38°46'20"	75°05'57"
Tompkins County, NY	NY67	503	42°24'05"	76°39'32"

ACKNOWLEDGMENTS

We acknowledge NOAA's support of the AIRMoN program, without which this study could not have been undertaken. We thank J.K. Böhlke for preparing the figures and discussions about future work with AIRMoN samples. Thanks go to Van Bowersox and Jane Rothert at the Illinois State Water Survey/NADP Program Office for assistance in obtaining samples and sample information. Haiping Qi and L. Niel Plummer are thanked for making improvements to this report. This work was completed while one of us (RH) was on a Thomas Jefferson High School (Alexandria, Virginia) mentorship.

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Gonfiantini, R., 1984. Advisory Group Meeting on Stable Isotope Reference Samples for Geochemical and Hydrological Investigations, Vienna, 19-21 September 1983. Rep. to Director General, International Atomic Energy Agency, Vienna, 77 p.

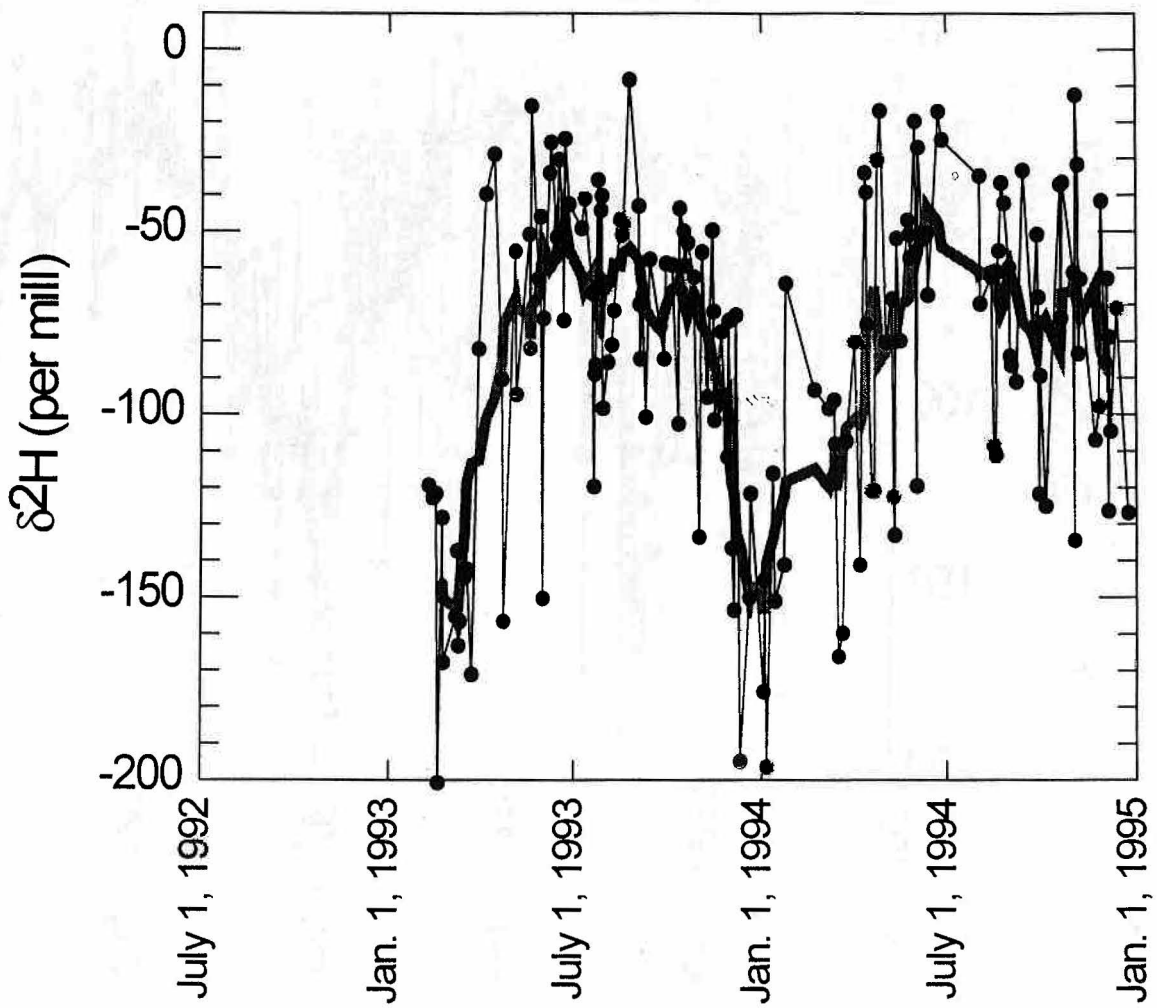

Figure 2. Stable hydrogen isotopic composition versus time for samples in this study from Underhill, VT (VT99). Solid circles indicate individual events. Shaded line is running average (n = 9).

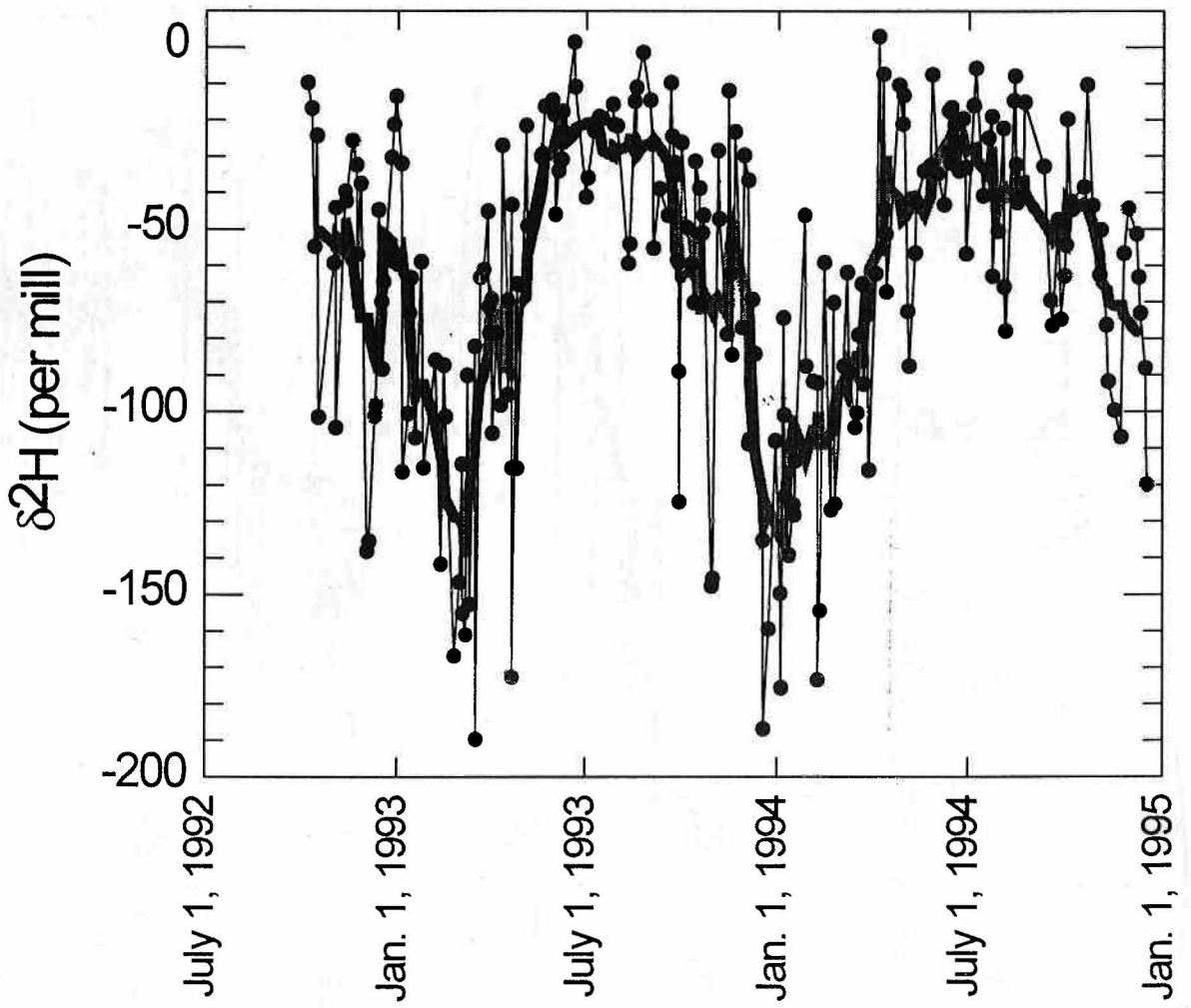

Figure 3. Stable hydrogen isotopic composition versus time for samples in this study from Penn State, PA (PA15). Solid circles indicate individual events. Shaded line is running average (n = 9).

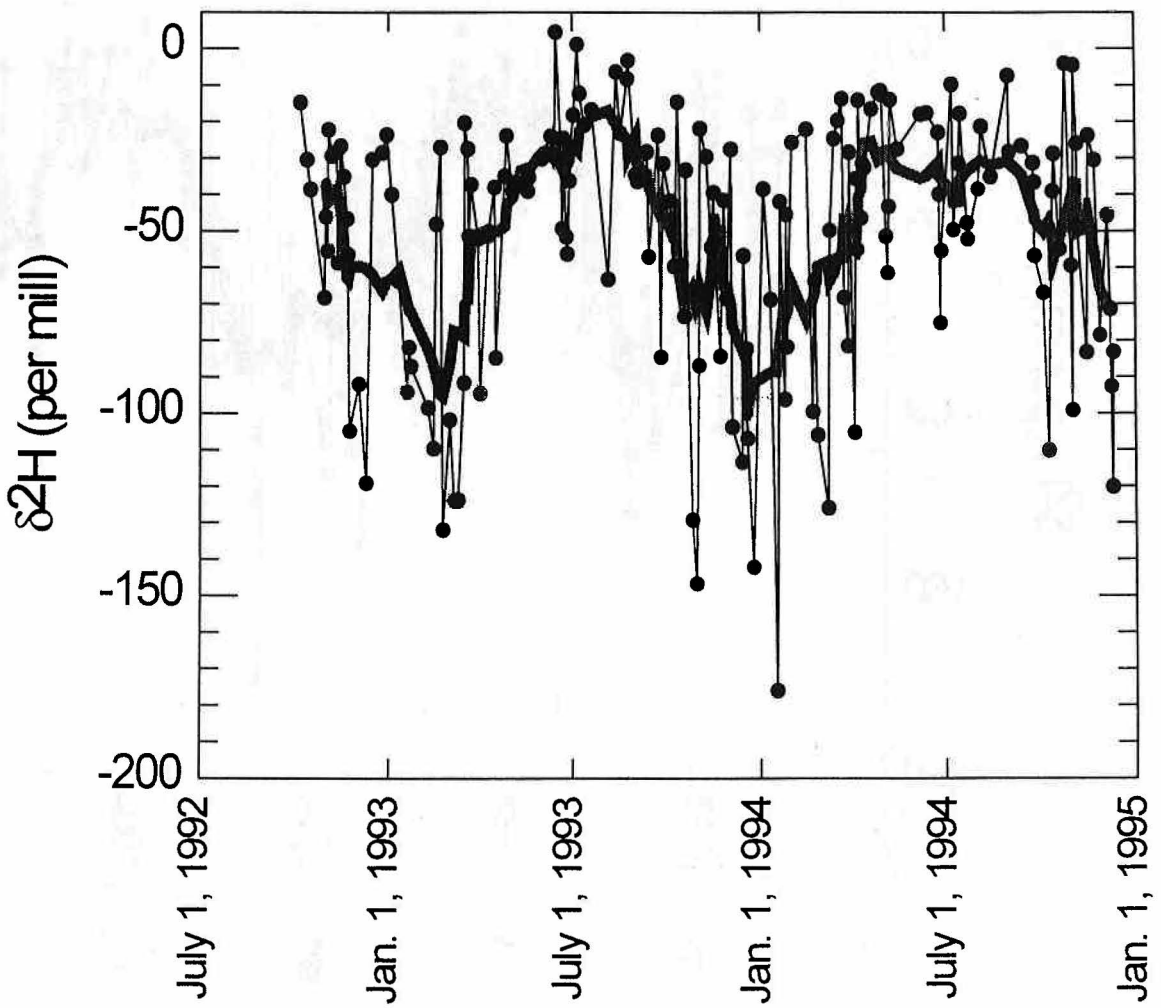

Figure 4. Stable hydrogen isotopic composition versus time for samples in this study from Oxford, OH (OH09). Solid circles indicate individual events. Shaded line is running average (n = 9).

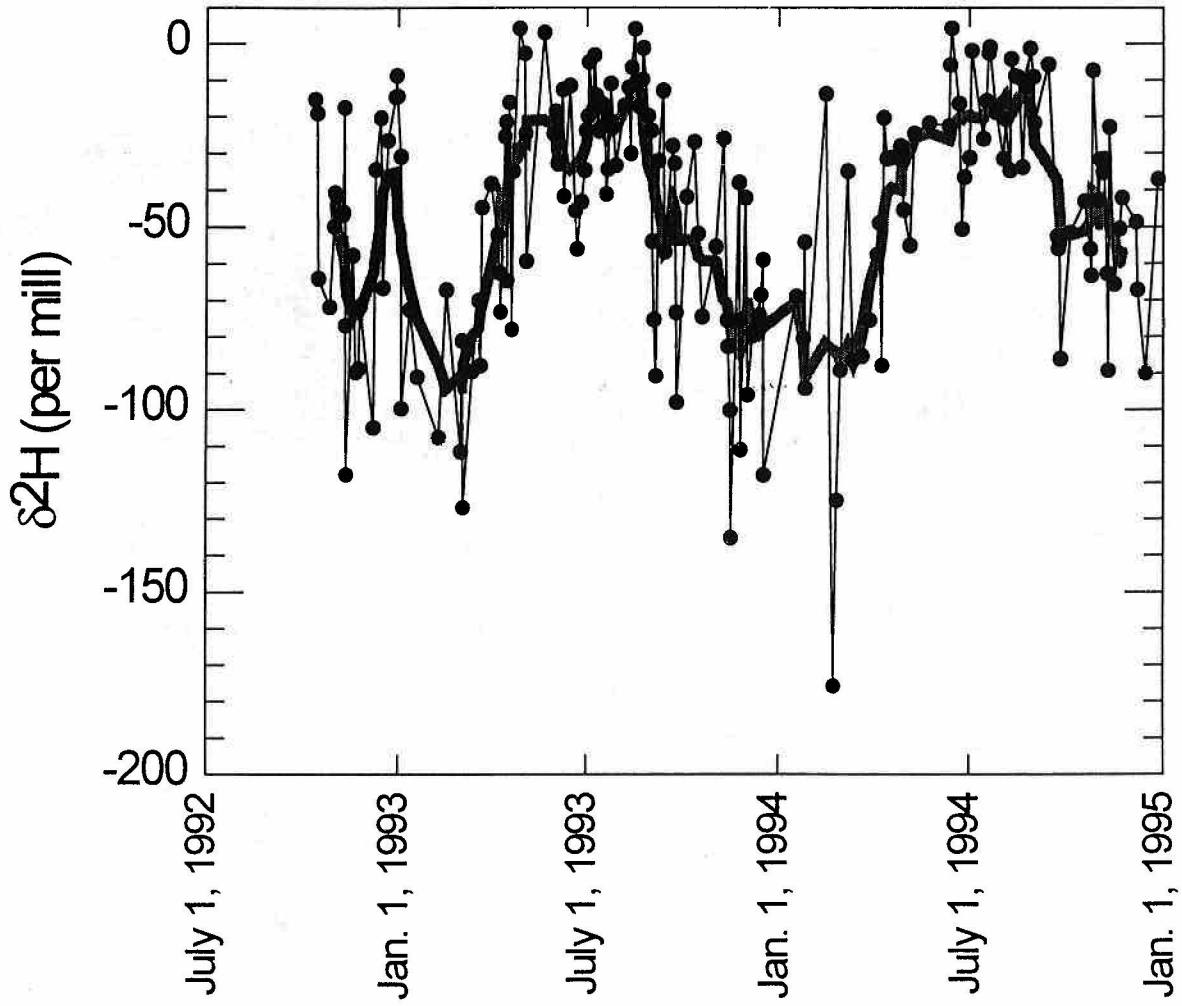

Figure 5. Stable hydrogen isotopic composition versus time for samples in this study from Bondville, IL (IL11). Solid circles indicate individual events. Shaded line is running average (n = 9).

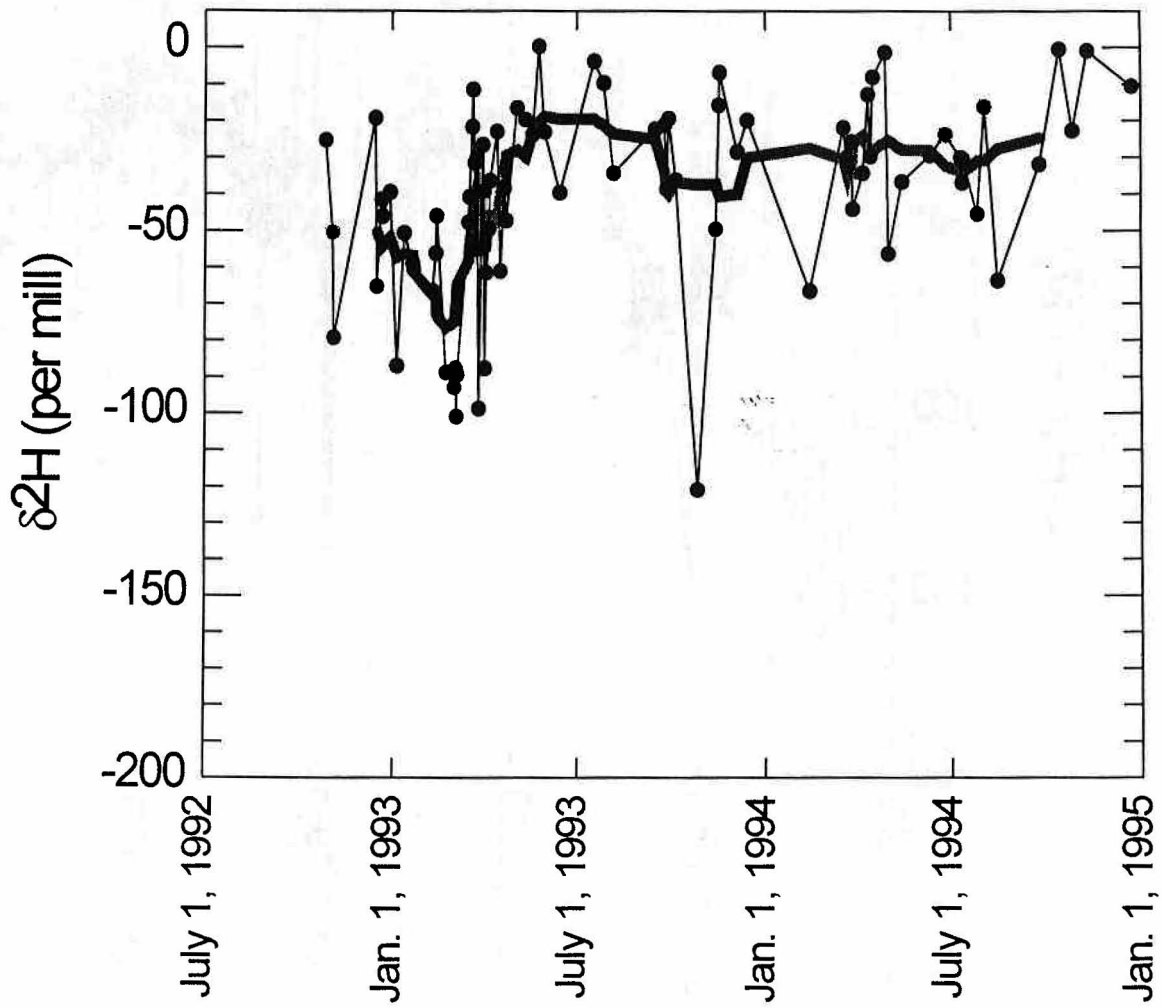

Figure 6. Stable hydrogen isotopic composition versus time for samples in this study from Walker Branch Watershed, TN (TN00). Solid circles indicate individual events. Shaded line is running average (n = 9).

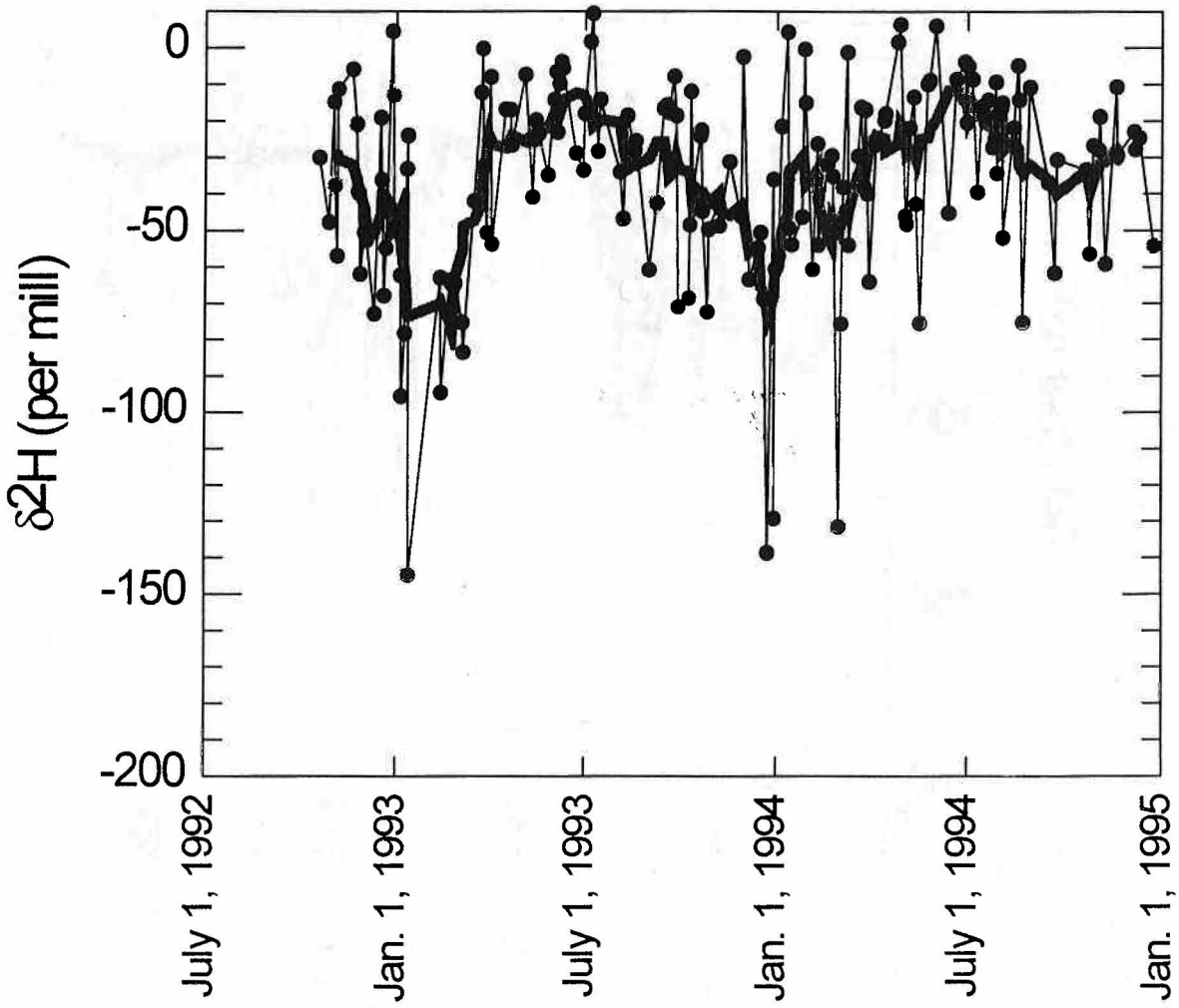

Figure 7. Stable hydrogen isotopic composition versus time for samples in this study from Lewes, DE (DE02). Solid circles indicate individual events. Shaded line is running average (n = 9).

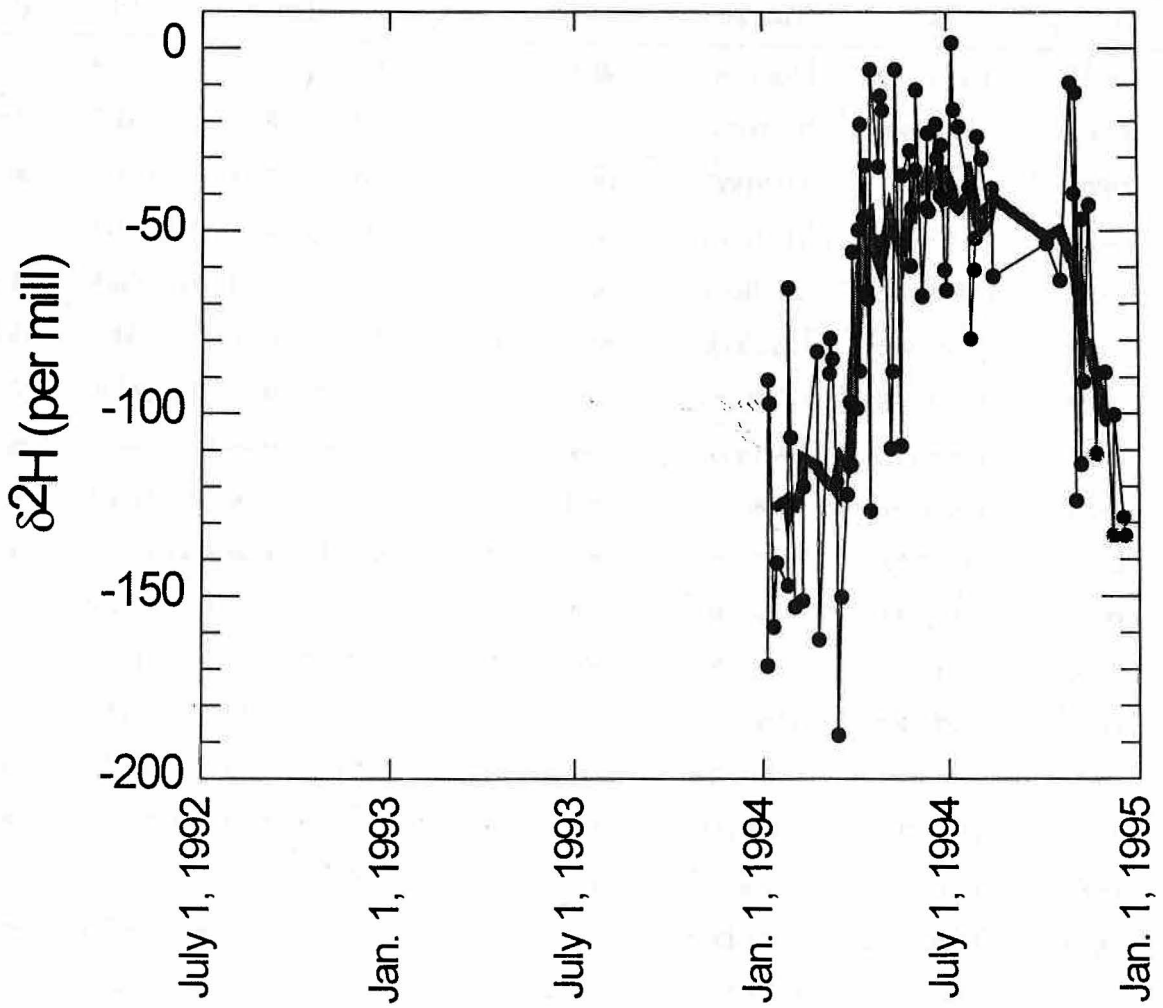

Figure 8. Stable hydrogen isotopic composition versus time for samples in this study from Tompkins County, NY (NY67). Solid circles indicate individual events. Shaded line is running average (n = 9).

Table 2. Isotope data for samples in this study

[Date on = date on which the sample bucket was installed on the collector, reported in Greenwich Mean Time (GMT) in month/day/year; Date off = date on which the sample bucket was removed from the collector, reported in GMT in month/day/year; Samp Wt = amount of precipitation used in calculating weighted-mean concentrations, in mg; NWS Precp = amount of precipitation as measured by the National Weather Service rain gage, in inches; BEL Precp = amount of precipitation as measured by the Belfort gage, in inches; δ^2H reported in per mill relative to VSMOW water; $\delta^{18}O$ reported in per mill relative to VSMOW water.]

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
DE02	10/19/1992	10/20/1992	450			-30.0	-5.90
DE02	10/28/1992	10/31/1992	1120		0.65	-47.7	-7.98
DE02	11/2/1992	11/3/1992	1897		1.08	-14.7	-4.23
DE02	11/3/1992	11/5/1992	307		0.16	-37.7	-5.68
DE02	11/5/1992	11/6/1992	593		0.40	-56.8	-8.63
DE02	11/6/1992	11/13/1992	605		0.40	-11.2	-3.31
DE02	11/20/1992	11/23/1992	210		0.12	-5.8	-1.74
DE02	11/24/1992	11/25/1992	276		0.15	-20.7	-4.15
DE02	11/25/1992	11/26/1992	2063		1.16	-39.3	-6.45
DE02	11/26/1992	11/27/1992	203		0.09	-39.8	-6.12
DE02	11/27/1992	11/28/1992	124		0.06	-61.8	-7.68
DE02	12/1/1992	12/2/1992	82		0.05	-50.6	-8.71
DE02	12/3/1992	12/5/1992	180		0.12	-52.5	-8.19
DE02	12/11/1992	12/12/1992	277		0.15	-72.8	-11.10
DE02	12/17/1992	12/18/1992	415		0.24	-19.1	-4.27
DE02	12/18/1992	12/20/1992	570		0.34	-36.1	-6.61
DE02	12/20/1992	12/21/1992	66		0.04	-67.7	-9.06
DE02	12/22/1992	12/23/1992	329		0.20	-54.8	-8.39
DE02	12/28/1992	12/29/1992	172		0.08	4.6	-1.68
DE02	12/29/1992	12/30/1992	929		0.52	-12.9	-3.50
DE02	12/30/1992	1/5/1993	854		0.45	-49.2	-7.09
DE02	1/5/1993	1/6/1993	721		0.37	-62.2	-8.51
DE02	1/6/1993	1/8/1993	805		0.50	-95.5	-12.53

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
DE02	1/9/1993	1/10/1993	452		0.35	-78.2	-11.33
DE02	1/11/1993	1/12/1993	293		0.20	-33.1	-5.90
DE02	1/12/1993	1/13/1993	174		0.11	-23.9	-4.31
DE02	1/13/1993	1/17/1993	101		0.07	-144.8	-18.87
DE02	2/12/1993	2/13/1993	1646		0.91	-62.9	-9.47
DE02	2/13/1993	2/14/1993	88		0.05	-94.5	-11.93
DE02	2/21/1993	2/22/1993	252			-63.6	-10.47
DE02	2/23/1993	2/26/1993	200		0.13	-64.6	-11.24
DE02	2/26/1993	2/27/1993	575		0.30	-64.4	-11.02
DE02	3/5/1993	3/6/1993	163		0.09	-75.3	-10.69
DE02	3/6/1993	3/9/1993	64		0.04	-83.4	-9.79
DE02	3/16/1993	3/18/1993	1210		0.62	-41.9	-7.83
DE02	3/23/1993	3/24/1993	304		0.18	-12.2	-3.24
DE02	3/24/1993	3/25/1993	66		0.04	-0.2	-1.75
DE02	3/25/1993	3/28/1993	1104		0.57	-32.5	-5.09
DE02	3/28/1993	3/30/1993	169		0.10	-50.5	-7.20
DE02	3/30/1993	4/1/1993	484		0.27	-25.2	-4.84
DE02	4/1/1993	4/2/1993	170		0.11	-7.9	-1.86
DE02	4/2/1993	4/3/1993	89		0.05	-53.6	-7.70
DE02	4/15/1993	4/17/1993	928		0.54	-16.8	-3.59
DE02	4/20/1993	4/21/1993	812		0.49	-16.9	-4.53
DE02	4/21/1993	4/27/1993	814		0.47	-26.5	-5.39
DE02	5/4/1993	5/6/1993	356		0.18	-7.3	-1.91
DE02	5/11/1993	5/13/1993	1108		0.64	-40.8	-6.53
DE02	5/13/1993	5/14/1993	1707		0.95	-25.0	-4.73
DE02	5/14/1993	5/17/1993	1393		0.80	-19.7	-4.58
DE02	5/17/1993	5/19/1993	1423		0.78	-23.4	-4.41

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
DE02	5/26/1993	6/1/1993	1083		0.67	-34.8	-5.58
DE02	6/1/1993	6/3/1993	249		0.14	-14.3	-4.71
DE02	6/3/1993	6/4/1993	72		0.05	-6.5	-3.59
DE02	6/4/1993	6/5/1993	159		0.09	-23.0	-4.02
DE02	6/6/1993	6/8/1993	61		0.04	-9.8	-1.27
DE02	6/8/1993	6/9/1993	210		0.12	-3.8	-1.08
DE02	6/9/1993	6/11/1993	123		0.07	-5.5	-1.45
DE02	6/22/1993	6/27/1993	432		0.25	-28.7	-4.90
DE02	6/29/1993	6/30/1993	423		0.24	-33.5	-4.82
DE02	6/30/1993	7/3/1993	276			-17.9	-3.41
DE02	7/6/1993	7/8/1993	928		0.54	1.8	-1.11
DE02	7/8/1993	7/9/1993	149		0.08	9.5	1.47
DE02	7/13/1993	7/15/1993	1818		1.05	-28.3	-5.20
DE02	7/15/1993	7/20/1993	921		0.53	-14.1	-3.73
DE02	8/3/1993	8/4/1993	853		0.49	-34.0	-5.28
DE02	8/6/1993	8/7/1993	1940		1.12	-46.8	-7.12
DE02	8/10/1993	8/17/1993	143		0.08	-18.5	-3.12
DE02	8/17/1993	8/18/1993	4452		2.56	-28.2	-4.33
DE02	8/18/1993	8/21/1993	588		0.34	-25.4	-4.70
DE02	8/31/1993	9/5/1993	250		0.15	-60.7	-8.92
DE02	9/7/1993	9/10/1993	6435		3.75	-42.5	-7.29
DE02	9/14/1993	9/17/1993	102		0.06	-16.5	-3.50
DE02	9/17/1993	9/18/1993	106		0.06	-15.6	-3.00
DE02	9/19/1993	9/21/1993	817		0.47	-17.6	-4.90
DE02	9/24/1993	9/26/1993	1283		0.75	-7.8	-3.64
DE02	9/26/1993	9/28/1993	381			-18.5	-4.33
DE02	9/28/1993	10/1/1993	726		0.40	-70.9	-11.18

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
DE02	10/8/1993	10/9/1993	281		0.16	-68.5	-9.15
DE02	10/9/1993	10/10/1993	377		0.22	-48.4	-7.96
DE02	10/10/1993	10/12/1993	1033		0.60	-11.9	-4.25
DE02	10/12/1993	10/13/1993	326		0.20	-38.6	-6.74
DE02	10/19/1993	10/20/1993	500		0.29	-24.1	-4.67
DE02	10/20/1993	10/21/1993	213		0.13	-22.5	-4.98
DE02	10/21/1993	10/22/1993	800		0.46	-44.7	-7.30
DE02	10/26/1993	10/27/1993	2319		1.34	-72.3	-10.32
DE02	10/27/1993	10/28/1993	513		0.30	-49.6	-7.97
DE02	11/5/1993	11/6/1993	352		0.20	-42.8	-7.49
DE02	11/6/1993	11/7/1993	432		0.23	-48.7	-8.16
DE02	11/16/1993	11/18/1993	1081		0.63	-31.2	-5.59
DE02	11/27/1993	11/28/1993	1897		1.05	-46.0	-7.34
DE02	11/29/1993	12/5/1993	415		0.24	-2.4	-2.25
DE02	12/5/1993	12/6/1993	2045		1.20	-63.4	-9.72
DE02	12/14/1993	12/16/1993	1281		0.74	-54.6	-8.32
DE02	12/16/1993	12/19/1993	144		0.08	-50.6	-8.29
DE02	12/19/1993	12/21/1993	2115		1.23	-68.7	-11.40
DE02	12/23/1993	12/24/1993	166		0.08	-138.6	-19.24
DE02	12/28/1993	12/29/1993	690		0.40	-36.0	-7.47
DE02	12/29/1993	12/30/1993	191		0.15	-129.2	-18.44
DE02	12/30/1993	1/2/1994	808		0.47	-60.5	-10.57
DE02	1/2/1994	1/4/1994	1010		0.58	-56.9	-8.64
DE02	1/5/1994	1/8/1994	973		0.55	-21.4	-5.42
DE02	1/11/1994	1/12/1994	404		0.23	4.4	-3.27
DE02	1/12/1994	1/13/1994	212		0.20	-49.2	-8.22
DE02	1/15/1994	1/18/1994	1816		1.05	-53.8	-9.10

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
DE02	1/25/1994	1/26/1994	667		0.38	-46.3	-7.35
DE02	1/27/1994	1/28/1994	341		0.20	-0.3	-2.08
DE02	1/28/1994	1/29/1994	857		0.48	-15.0	-3.35
DE02	2/4/1994	2/6/1994	294		0.17	-60.6	-9.88
DE02	2/8/1994	2/9/1994	1702		0.95	-26.2	-5.37
DE02	2/9/1994	2/10/1994	554			-53.9	-7.76
DE02	2/18/1994	2/22/1994	145		0.08	-31.9	-5.78
DE02	2/22/1994	2/23/1994	233		0.14	-29.4	-5.77
DE02	2/23/1994	2/24/1994	3692		2.15	-35.1	-6.39
DE02	3/1/1994	3/2/1994	824		0.48	-131.6	-18.35
DE02	3/3/1994	3/4/1994	48		0.03	-75.6	-10.32
DE02	3/5/1994	3/9/1994	89		0.05	-38.1	-6.08
DE02	3/9/1994	3/10/1994	453		0.25	-1.1	-2.29
DE02	3/10/1994	3/11/1994	2034		1.15	-54.0	-8.11
DE02	3/19/1994	3/22/1994	1050		0.60	-29.6	-6.09
DE02	3/22/1994	3/25/1994	454		0.25	-16.2	-3.12
DE02	3/25/1994	3/26/1994	303		0.15	-38.1	-5.54
DE02	3/26/1994	3/28/1994	2006		1.13	-16.8	-3.63
DE02	3/28/1994	3/29/1994	1541		1.40	-39.8	-6.58
DE02	3/30/1994	4/1/1994	1744		1.00	-64.0	-10.88
DE02	4/5/1994	4/7/1994	616		0.35	-26.4	-5.00
DE02	4/13/1994	4/14/1994	1808		1.01	-19.7	-4.33
DE02	4/14/1994	4/17/1994	205		0.10	-18.0	-3.15
DE02	4/26/1994	4/28/1994	188		0.10	1.7	-0.39
DE02	4/28/1994	5/2/1994	350		0.20	6.6	-1.35
DE02	5/3/1994	5/4/1994	113		0.06	-46.0	-6.25
DE02	5/4/1994	5/5/1994	1158		0.65	-48.1	-7.65

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
DE02	5/7/1994	5/8/1994	340		0.20	-21.8	-3.51
DE02	5/11/1994	5/13/1994	110		0.05	-13.5	-2.20
DE02	5/13/1994	5/16/1994	127		0.07	-42.6	-6.42
DE02	5/17/1994	5/19/1994	576		0.35	-75.5	-10.85
DE02	5/24/1994	5/25/1994	297		0.17	-9.9	-2.22
DE02	5/25/1994	5/26/1994	418		0.24	-9.3	-2.34
DE02	5/26/1994	5/27/1994	243		0.17	-8.8	-2.71
DE02	6/1/1994	6/2/1994	94		0.05	6.1	-0.58
DE02	6/13/1994	6/16/1994	3861		2.20	-45.1	-6.51
DE02	6/20/1994	6/24/1994	1344		0.75	-8.6	
DE02	6/28/1994	6/30/1994	1098		0.63	-3.8	
DE02	6/30/1994	7/1/1994	163		0.09	-20.3	
DE02	7/1/1994	7/4/1994	1761		1.02	-4.9	
DE02	7/5/1994	7/7/1994	936		0.54	-8.5	
DE02	7/10/1994	7/14/1994	700		0.41	-39.4	
DE02	7/14/1994	7/15/1994	346		0.20	-16.1	
DE02	7/16/1994	7/18/1994	283		0.18	-18.2	
DE02	7/20/1994	7/24/1994	1287		0.76	-14.2	
DE02	7/24/1994	7/25/1994	263		0.16	-27.0	
DE02	7/26/1994	7/27/1994	2024		1.19	-24.7	
DE02	7/27/1994	7/28/1994	147		0.07	-9.3	
DE02	7/28/1994	7/29/1994	2643		1.54	-34.2	
DE02	7/29/1994	7/30/1994	609		0.35	-18.0	
DE02	8/1/1994	8/2/1994	125		0.08	-16.5	
DE02	8/2/1994	8/3/1994	129		0.07	-14.9	
DE02	8/3/1994	8/6/1994	1333		0.77	-51.9	
DE02	8/13/1994	8/15/1994	2379		1.38	-21.7	

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
DE02	8/17/1994	8/18/1994	584		0.31	-4.8	
DE02	8/18/1994	8/22/1994	1100		0.65	-14.1	
DE02	8/22/1994	8/23/1994	275		0.16	-75.2	
DE02	8/28/1994	8/30/1994	147		0.10	-10.8	
DE02	9/15/1994	9/18/1994	1414		0.83	-36.9	
DE02	9/21/1994	9/22/1994	416		0.24	-61.5	
DE02	9/23/1994	9/27/1994	1824		1.05	-30.5	
DE02	10/20/1994	10/24/1994	922		0.53	-33.4	
DE02	10/24/1994	10/27/1994	201		0.12	-56.3	
DE02	10/27/1994	11/1/1994	309		0.16	-26.7	
DE02	11/1/1994	11/2/1994	436		0.25	-27.9	
DE02	11/2/1994	11/7/1994	434		0.25	-18.8	
DE02	11/8/1994	11/10/1994	385		0.20	-59.0	
DE02	11/18/1994	11/19/1994	742		0.41	-10.7	
DE02	11/19/1994	11/22/1994	1682		0.97	-29.3	
DE02	12/5/1994	12/6/1994	53		0.03	-22.8	
DE02	12/6/1994	12/10/1994	686		0.40	-27.7	
DE02	12/10/1994	12/11/1994	960		0.55	-24.6	
DE02	12/24/1994	12/25/1994	309		0.18	-54.1	
IL11	10/13/1992	10/15/1992	542		0.34	-15.2	-3.98
IL11	10/15/1992	10/16/1992	1378		0.76	-18.9	-4.56
IL11	10/16/1992	10/20/1992	305		0.17	-63.9	-10.29
IL11	10/27/1992	10/30/1992	185		0.13	-71.7	-10.55
IL11	10/31/1992	11/1/1992	4922		3.25	-49.8	-8.28
IL11	11/1/1992	11/2/1992	1539		0.99	-40.5	-7.11
IL11	11/3/1992	11/4/1992	486		0.29	-41.7	-7.46
IL11	11/8/1992	11/9/1992	241		0.15	-46.6	-8.10

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
IL11	11/9/1992	11/10/1992	1039		0.65	-45.9	-7.94
IL11	11/10/1992	11/11/1992	653		0.43	-17.4	-4.84
IL11	11/11/1992	11/12/1992	1144		0.71	-76.8	-11.03
IL11	11/12/1992	11/13/1992	415		0.23	-117.7	-16.14
IL11	11/18/1992	11/19/1992	160		0.09	-57.6	-9.44
IL11	11/21/1992	11/22/1992	1074		0.76	-89.6	-12.60
IL11	11/24/1992	11/25/1992	178		0.10	-88.6	-12.86
IL11	11/25/1992	11/26/1992	184		0.14	-71.5	-11.17
IL11	12/8/1992	12/10/1992	357		0.36	-104.8	-14.94
IL11	12/10/1992	12/15/1992	258		0.15	-34.3	-6.12
IL11	12/15/1992	12/16/1992	748		0.46	-20.2	-4.99
IL11	12/17/1992	12/20/1992	376		0.19	-66.4	-11.06
IL11	12/22/1992	12/29/1992	842		0.52	-26.4	-5.08
IL11	12/29/1992	12/30/1992	561		0.34	-14.5	-3.07
IL11	12/30/1992	12/31/1992	360		0.16	-8.6	-2.60
IL11	12/31/1992	1/3/1993	88		0.07	-14.3	-2.86
IL11	1/3/1993	1/4/1993	3852		2.17	-30.8	-5.51
IL11	1/4/1993	1/5/1993	280		0.17	-99.6	-13.24
IL11	1/12/1993	1/13/1993	344		0.17	-72.4	-10.67
IL11	1/19/1993	1/21/1993	1853		1.11	-90.9	-12.62
IL11	2/9/1993	2/12/1993	604		0.40	-107.6	-15.03
IL11	2/16/1993	2/21/1993	101		0.23	-67.1	-10.54
IL11	3/2/1993	3/3/1993	483		0.30	-111.4	-15.22
IL11	3/3/1993	3/4/1993	785		0.47	-80.9	-12.03
IL11	3/4/1993	3/5/1993	71		0.03	-126.8	-16.49
IL11	3/13/1993	3/16/1993	247		0.16	-89.3	-13.55
IL11	3/19/1993	3/20/1993	534		0.33	-69.9	-10.96

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
IL11	3/21/1993	3/22/1993	82		0.01	-87.7	-11.49
IL11	3/22/1993	3/23/1993	985		0.59	-44.6	-8.25
IL11	3/31/1993	4/1/1993	705		0.36	-38.2	-6.37
IL11	4/6/1993	4/8/1993	304		0.14	-52.0	-7.50
IL11	4/8/1993	4/9/1993	253		0.10	-62.4	-9.16
IL11	4/9/1993	4/13/1993	59		0.01	-73.0	-9.45
IL11	4/13/1993	4/14/1993	2947		1.82	-25.3	-5.33
IL11	4/14/1993	4/15/1993	521		0.31	-21.4	-4.31
IL11	4/15/1993	4/16/1993	102		0.04	-64.5	-9.13
IL11	4/17/1993	4/20/1993	1207		0.68	-16.1	-4.45
IL11	4/20/1993	4/21/1993	86		0.02	-77.8	-11.43
IL11	4/21/1993	4/25/1993	2325		1.41	-34.6	-6.23
IL11	4/27/1993	4/30/1993	330		0.15	4.3	-1.76
IL11	5/2/1993	5/3/1993	343		0.16	-2.6	-2.43
IL11	5/3/1993	5/4/1993	173		0.10	-24.4	-4.99
IL11	5/4/1993	5/5/1993	186		0.06	-59.2	-8.63
IL11	5/21/1993	5/23/1993	672		0.38	3.2	-1.20
IL11	5/30/1993	5/31/1993	819		0.44	-24.5	-4.84
IL11	6/1/1993	6/2/1993	553		0.32	-18.4	-2.57
IL11	6/3/1993	6/4/1993	1742		0.96	-32.6	-5.96
IL11	6/4/1993	6/5/1993	202		0.12	-32.8	-6.27
IL11	6/8/1993	6/9/1993	158		0.08	-12.5	-2.77
IL11	6/9/1993	6/10/1993	112		0.06	-41.6	-4.63
IL11	6/15/1993	6/20/1993	362		0.21	-11.5	-2.78
IL11	6/20/1993	6/22/1993	736		0.40	-45.5	-6.74
IL11	6/22/1993	6/25/1993	435		0.24	-55.9	-7.99
IL11	6/26/1993	6/29/1993	791		0.43	-43.0	-6.84

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
IL11	6/29/1993	6/30/1993	713		0.43	-34.6	-5.19
IL11	6/30/1993	7/1/1993	2586		1.45	-23.8	-4.33
IL11	7/2/1993	7/3/1993	509		0.30	-19.8	-3.46
IL11	7/3/1993	7/6/1993	96		0.04	-5.0	-1.23
IL11	7/7/1993	7/8/1993	398		0.24	-18.0	-3.58
IL11	7/8/1993	7/10/1993	191		0.10	-3.0	-1.07
IL11	7/10/1993	7/12/1993	452		0.26	-14.1	-2.60
IL11	7/13/1993	7/14/1993	1213		0.70	-24.0	-4.51
IL11	7/15/1993	7/16/1993	1072		0.60	-22.7	-4.30
IL11	7/16/1993	7/17/1993	368		0.20	-16.5	-3.67
IL11	7/18/1993	7/19/1993	1715		1.01	-17.3	-3.57
IL11	7/20/1993	7/21/1993	563		0.32	-40.9	-6.21
IL11	7/21/1993	7/23/1993	214	0.13	0.12	-34.1	-4.86
IL11	7/23/1993	7/24/1993	951	0.55	0.52	-21.1	-4.20
IL11	7/24/1993	7/25/1993	232	0.13	0.13	-10.9	-3.54
IL11	7/29/1993	8/1/1993	267	0.17	0.15	-33.2	-5.08
IL11	8/6/1993	8/10/1993	1077	0.66	0.61	-16.9	-3.37
IL11	8/10/1993	8/12/1993	2431	1.38	1.36	-11.9	-3.25
IL11	8/12/1993	8/13/1993	81	0.11	0.07	-29.9	-4.91
IL11	8/13/1993	8/16/1993	178	0.12	0.09	-6.4	-2.21
IL11	8/16/1993	8/17/1993	559	0.35	0.32	4.2	-0.99
IL11	8/17/1993	8/20/1993	1387	0.83	0.84	-10.4	-3.04
IL11	8/20/1993	8/23/1993	153	0.09	0.06	-17.2	-2.99
IL11	8/23/1993	8/24/1993	936	0.57	0.55	-9.8	-2.71
IL11	8/24/1993	8/25/1993	96	0.06	0.06	-1.1	-1.38
IL11	8/29/1993	8/31/1993	248	0.15	0.14	-19.7	-4.32
IL11	9/1/1993	9/2/1993	121	0.07	0.07	-23.8	-4.66

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
IL11	9/2/1993	9/3/1993	3676	2.25	2.25	-54.0	-8.38
IL11	9/4/1993	9/6/1993	454	0.26	0.26	-75.2	-10.85
IL11	9/6/1993	9/7/1993	114	0.08	0.05	-90.6	-12.99
IL11	9/8/1993	9/12/1993	817	0.51	0.48	-32.0	-5.35
IL11	9/12/1993	9/13/1993	105	0.08	0.05	-12.8	-1.60
IL11	9/14/1993	9/15/1993	3669	2.13	2.24	-56.7	-9.00
IL11	9/21/1993	9/23/1993	1194	0.75	0.70	-27.8	-5.44
IL11	9/23/1993	9/25/1993	110	0.07	0.07	-32.7	-5.69
IL11	9/25/1993	9/26/1993	752	0.45	0.41	-73.2	-10.36
IL11	9/26/1993	9/27/1993	1289	0.77	0.74	-97.9	-14.25
IL11	10/5/1993	10/9/1993	1732	1.06	1.04	-41.8	-7.13
IL11	10/12/1993	10/16/1993	1127	0.71	0.68	-26.9	-5.39
IL11	10/16/1993	10/17/1993	1968	1.18	1.16	-51.9	-8.64
IL11	10/20/1993	10/21/1993	1188	0.69	0.68	-74.4	-10.84
IL11	11/2/1993	11/3/1993	153	0.10	0.08	-55.3	-10.12
IL11	11/9/1993	11/13/1993	536	0.30	0.34	-25.8	-4.88
IL11	11/13/1993	11/14/1993	2067	1.18	1.17	-75.4	-10.16
IL11	11/14/1993	11/15/1993	228	0.13	0.11	-82.5	-11.17
IL11	11/16/1993	11/17/1993	1068	0.62	0.61	-100.0	-13.34
IL11	11/17/1993	11/18/1993	168	0.09	0.09	-135.2	-17.67
IL11	11/24/1993	11/25/1993	582	0.33	0.30	-37.9	-7.40
IL11	11/25/1993	11/26/1993	1214	0.78	0.65	-75.4	-11.60
IL11	11/26/1993	11/28/1993	471	0.28	0.20	-111.0	-17.19
IL11	11/30/1993	12/2/1993	746	0.48	0.46	-42.0	-8.01
IL11	12/3/1993	12/4/1993	406	0.23	0.22	-95.9	-13.73
IL11	12/7/1993	12/14/1993	538	0.31	0.24	-78.8	-11.38
IL11	12/14/1993	12/15/1993	115	0.07	0.05	-74.1	-12.01

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
IL11	12/15/1993	12/17/1993	104	0.06	0.06	-68.4	-11.31
IL11	12/17/1993	12/18/1993	103	0.06	0.05	-59.0	-10.20
IL11	12/18/1993	12/20/1993	138	0.10	0.07	-117.9	-16.91
IL11	1/18/1994	1/25/1994	195	0.15	0.12	-68.9	-10.39
IL11	1/25/1994	1/26/1994	563	0.35	0.30	-80.4	-11.54
IL11	1/26/1994	1/27/1994	477	0.27	0.27	-54.2	-8.48
IL11	1/27/1994	1/28/1994	979	0.60	0.54	-94.1	-13.07
IL11	2/15/1994	2/20/1994	64	0.06	0.02	-13.7	-3.17
IL11	2/23/1994	2/25/1994	98	0.08	0.06	-175.8	-23.72
IL11	2/26/1994	3/1/1994	276	0.12	0.05	-125.0	-17.29
IL11	3/1/1994	3/7/1994	790	0.45	0.41	-89.2	-13.12
IL11	3/8/1994	3/13/1994	107	0.06	0.05	-34.8	-6.52
IL11	3/13/1994	3/14/1994	105	0.06	0.04	-86.4	-11.87
IL11	3/22/1994	3/27/1994	854	0.55	0.52	-85.2	-12.57
IL11	3/29/1994	4/3/1994	897	0.56	0.50	-75.5	-11.93
IL11	4/5/1994	4/6/1994	422	0.25	0.19	-57.6	-9.46
IL11	4/7/1994	4/10/1994	1594	0.96	0.91	-48.8	-7.80
IL11	4/10/1994	4/11/1994	466	0.27	0.22	-87.8	-11.08
IL11	4/11/1994	4/12/1994	6605	3.66	3.52	-20.3	-4.57
IL11	4/14/1994	4/15/1994	736	0.44	0.42	-31.3	-5.27
IL11	4/19/1994	4/21/1994	134	0.10	0.06	-31.0	-2.53
IL11	4/27/1994	4/28/1994	1224	0.72	0.66	-27.9	-5.01
IL11	4/28/1994	4/29/1994	404	0.27	0.26	-29.1	-4.74
IL11	4/29/1994	4/30/1994	124	0.09	0.06	-31.8	-4.48
IL11	4/30/1994	5/1/1994	749	0.44	0.37	-45.2	-7.53
IL11	5/6/1994	5/7/1994	1696	1.03	0.94	-55.0	-8.70
IL11	5/10/1994	5/12/1994	403	0.23	0.22	-24.5	-4.49

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
IL11	5/24/1994	5/25/1994	1234	0.73	0.71	-21.7	-3.13
IL11	6/12/1994	6/13/1994	261	0.17	0.14	-22.4	-2.59
IL11	6/13/1994	6/14/1994	122	0.08	0.05	-5.7	-1.39
IL11	6/14/1994	6/21/1994	64	0.03	0.01	4.5	1.14
IL11	6/21/1994	6/24/1994	974	0.59	0.55	-16.3	-3.52
IL11	6/24/1994	6/25/1994	88	0.05	0.03	-50.5	-7.55
IL11	6/26/1994	6/27/1994	753	0.45	0.43	-36.3	-6.16
IL11	7/1/1994	7/3/1994	219	0.13	0.12	-31.2	
IL11	7/3/1994	7/4/1994	218	0.12	0.10	-1.8	
IL11	7/14/1994	7/17/1994	219	0.12	0.11	-25.9	
IL11	7/17/1994	7/19/1994	56	0.04	0.01	-15.5	
IL11	7/19/1994	7/20/1994	351	0.21	0.20	-2.4	
IL11	7/20/1994	7/21/1994	1159	0.68	0.68	-0.8	
IL11	7/26/1994	8/2/1994	82	0.04	0.03	-18.8	
IL11	8/2/1994	8/4/1994	1481	0.84	0.84	-31.3	
IL11	8/4/1994	8/8/1994	294	0.17	0.15	-20.7	
IL11	8/8/1994	8/9/1994	501	0.28	0.26	-34.5	
IL11	8/9/1994	8/11/1994	72	0.05	0.04	-4.1	
IL11	8/13/1994	8/14/1994	731	0.42	0.40	-8.8	
IL11	8/16/1994	8/20/1994	347	0.19	0.17	-9.1	
IL11	8/20/1994	8/21/1994	269	0.17	0.15	-33.6	
IL11	8/23/1994	8/27/1994	193	0.11	0.08	-11.3	
IL11	8/27/1994	8/29/1994	1374	0.81	0.78	-1.2	
IL11	8/30/1994	8/31/1994	1472	0.89	0.86	-9.0	
IL11	8/31/1994	9/5/1994	731	0.44	0.41	-21.5	
IL11	9/13/1994	9/17/1994	1135	0.64	0.68	-5.7	
IL11	9/22/1994	9/23/1994	396	0.24	0.22	-52.5	

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
IL11	9/23/1994	9/24/1994	588	0.36	0.32	-55.7	
IL11	9/24/1994	9/25/1994	115	0.06	0.04	-54.1	
IL11	9/25/1994	9/26/1994	1816	1.06	1.02	-85.9	
IL11	10/4/1994	10/9/1994	2155	1.30	1.25	-51.5	
IL11	10/18/1994	10/19/1994	867	0.54	0.51	-42.9	
IL11	10/23/1994	10/24/1994	113	0.07	0.06	-56.0	
IL11	10/24/1994	10/25/1994	181	0.12	0.09	-63.1	
IL11	10/25/1994	10/31/1994	269	0.17	0.16	-7.2	
IL11	10/31/1994	11/1/1994	1133	0.70	0.65	-42.8	
IL11	11/1/1994	11/4/1994	521	0.46	0.42	-31.6	
IL11	11/4/1994	11/5/1994	819	0.54	0.50	-35.1	
IL11	11/5/1994	11/6/1994	1442	0.79	0.76	-31.4	
IL11	11/8/1994	11/9/1994	1431	0.82	0.78	-62.6	
IL11	11/9/1994	11/10/1994	311	0.18	0.15	-89.1	
IL11	11/10/1994	11/14/1994	582	0.39	0.37	-22.8	
IL11	11/15/1994	11/20/1994	182	0.13	0.10	-65.5	
IL11	11/20/1994	11/21/1994	1101		0.67	-50.5	
IL11	11/22/1994	11/27/1994	624	0.36	0.38	-42.0	
IL11	12/6/1994	12/7/1994	1203	0.73	0.66	-48.6	
IL11	12/7/1994	12/9/1994	186	0.11	0.07	-67.1	
IL11	12/15/1994	12/17/1994	1022	0.60	0.54	-89.9	
IL11	12/27/1994	12/31/1994	96	0.05	0.04	-37.0	
NY67	1/5/1994	1/6/1994	168	0.13	0.10	-169.0	-22.50
NY67	1/6/1994	1/7/1994	522	0.37	0.34	-90.8	-13.84
NY67	1/7/1994	1/8/1994	492	0.29	0.27	-97.2	-14.57
NY67	1/11/1994	1/14/1994	426	0.21	0.15	-158.3	-21.48
NY67	1/14/1994	1/15/1994	78	0.05	0.03	-140.8	-21.43

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
NY67	1/25/1994	1/26/1994	504	0.29	0.28	-147.1	-20.19
NY67	1/26/1994	1/28/1994	1186	0.78	0.80	-65.6	-9.85
NY67	1/28/1994	1/30/1994	71	0.06	0.03	-106.5	-15.42
NY67	2/1/1994	2/8/1994	329	0.24	0.04	-152.9	-21.24
NY67	2/8/1994	2/9/1994	853	0.54	0.34	-151.3	-20.22
NY67	2/9/1994	2/14/1994	131	0.14	0.08	-119.9	-16.25
NY67	2/23/1994	2/24/1994	926	0.60	0.57	-82.9	-12.10
NY67	2/24/1994	2/26/1994	750	0.51	0.45	-161.9	-22.51
NY67	3/7/1994	3/8/1994	451	0.26	0.25	-88.9	-12.77
NY67	3/8/1994	3/10/1994	1313	0.71	0.73	-79.3	-11.66
NY67	3/10/1994	3/14/1994	682	0.41	0.35	-85.0	-13.43
NY67	3/14/1994	3/15/1994	353	0.20	0.17	-118.6	-16.17
NY67	3/15/1994	3/16/1994	291	0.20	0.17	-188.0	-24.57
NY67	3/18/1994	3/19/1994	277	0.17	0.15	-150.2	-20.70
NY67	3/24/1994	3/27/1994	492	0.32	0.28	-122.1	-16.62
NY67	3/27/1994	3/28/1994	210	0.14	0.10	-96.8	-13.42
NY67	3/28/1994	3/30/1994	118	0.07	0.06	-114.0	-16.09
NY67	3/30/1994	4/3/1994	255	0.14	0.04	-55.7	-9.88
NY67	4/3/1994	4/4/1994	125	0.06	0.12	-98.5	-14.31
NY67	4/5/1994	4/6/1994	85	0.07		-49.7	-8.09
NY67	4/6/1994	4/7/1994	1209	0.72	0.70	-88.3	-12.77
NY67	4/7/1994	4/10/1994	176	0.12	0.07	-20.8	-4.30
NY67	4/10/1994	4/12/1994	572	0.33	0.25	-46.5	-7.54
NY67	4/12/1994	4/13/1994	899	0.52	0.48	-32.1	-5.76
NY67	4/13/1994	4/14/1994	119	0.07	0.07	-66.2	-9.45
NY67	4/14/1994	4/16/1994	924	0.53	0.52	-68.5	-10.10
NY67	4/16/1994	4/17/1994	215	0.12	0.09	-126.7	-17.07

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
NY67	4/17/1994	4/25/1994	438	0.25	0.22	-5.8	-1.90
NY67	4/25/1994	4/27/1994	356	0.22	0.20	-32.4	-3.51
NY67	4/27/1994	4/29/1994	343	0.20	0.17	-13.1	-2.83
NY67	4/29/1994	5/1/1994	1440	0.87	0.82	-16.9	-4.11
NY67	5/6/1994	5/8/1994	822	0.50	0.45	-109.5	-14.86
NY67	5/8/1994	5/10/1994	346	0.21	0.15	-88.3	-12.48
NY67	5/12/1994	5/15/1994	104	0.08	0.05	-5.8	-1.33
NY67	5/16/1994	5/17/1994	279	0.22	0.20	-108.8	-14.73
NY67	5/18/1994	5/25/1994	322	0.19	0.16	-34.9	-5.47
NY67	5/25/1994	5/26/1994	622	0.38	0.34	-28.1	-5.30
NY67	5/26/1994	5/27/1994	265	0.19	0.15	-59.5	-9.48
NY67	5/27/1994	5/29/1994	71	0.05	0.05	-43.9	-4.94
NY67	5/31/1994	6/1/1994	1436	0.87	0.82	-33.4	-6.70
NY67	6/1/1994	6/6/1994	126	0.08	0.07	-11.5	-2.39
NY67	6/6/1994	6/11/1994	732	0.43	0.38	-67.8	-9.09
NY67	6/11/1994	6/12/1994	290	0.19	0.18	-43.6	-6.75
NY67	6/12/1994	6/13/1994	313	0.18	0.15	-23.2	-3.89
NY67	6/13/1994	6/14/1994	4186	2.57	2.48	-44.5	-7.30
NY67	6/20/1994	6/21/1994	64	0.05	0.05	-20.8	-3.51
NY67	6/21/1994	6/24/1994	708	0.44	0.38	-30.0	-5.72
NY67	6/24/1994	6/25/1994	1462	0.90	0.80	-40.4	-6.76
NY67	6/25/1994	6/27/1994	346	0.21	0.15	-26.5	-4.76
NY67	6/27/1994	6/28/1994	359	0.23	0.18	-41.2	-6.73
NY67	6/28/1994	6/30/1994	708	0.44	0.35	-60.7	
NY67	6/30/1994	7/2/1994	54	0.04	0.04	-66.2	
NY67	7/6/1994	7/7/1994	58	0.04	0.04	1.5	
NY67	7/7/1994	7/10/1994	745	0.44	0.25	-16.8	

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
NY67	7/12/1994	7/15/1994	299	0.21	0.15	-21.5	
NY67	7/22/1994	7/23/1994	447	0.24	0.05	-38.2	
NY67	7/23/1994	7/24/1994	262	0.15	0.12	-79.5	
NY67	7/27/1994	7/28/1994	788	0.48	0.43	-60.7	
NY67	7/28/1994	7/30/1994	575	0.35	0.35	-52.0	
NY67	7/30/1994	8/3/1994	525	0.31	0.28	-24.3	
NY67	8/3/1994	8/5/1994	885	0.55	0.50	-30.2	
NY67	8/9/1994	8/13/1994	332	0.18		-44.2	
NY67	8/13/1994	8/14/1994	3321	2.30	1.65	-38.5	
NY67	8/14/1994	8/18/1994	5687	3.42	2.95	-62.4	
NY67	10/5/1994	10/10/1994	261	0.16	0.16	-53.4	
NY67	10/18/1994	10/19/1994	573	0.35	0.30	-63.5	
NY67	10/28/1994	10/31/1994	638	0.37	0.35	-9.5	
NY67	10/31/1994	11/1/1994	2254	1.35	1.23	-39.7	
NY67	11/1/1994	11/2/1994	2157	1.35	1.25	-123.8	
NY67	11/2/1994	11/6/1994	132	0.07	0.06	-12.1	
NY67	11/6/1994	11/7/1994	86	0.06	0.04	-113.8	
NY67	11/8/1994	11/9/1994	241	0.16	0.17	-46.7	
NY67	11/9/1994	11/10/1994	114	0.07	0.08	-91.2	
NY67	11/15/1994	11/21/1994	645	0.40	0.12	-42.9	
NY67	11/21/1994	11/23/1994	453	0.32	0.10	-111.0	
NY67	11/23/1994	11/28/1994	973	0.64	0.55	-88.9	
NY67	11/30/1994	12/5/1994	1752	1.02	0.58	-88.6	
NY67	12/7/1994	12/8/1994	343	0.16	0.22	-133.4	
NY67	12/8/1994	12/10/1994	421	0.26	0.14	-100.3	
NY67	12/17/1994	12/19/1994	133	0.12	0.07	-128.5	
NY67	12/19/1994	12/24/1994	277	0.18	0.06	-133.4	

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
OH09	10/6/1992	10/9/1992	661	0.41	0.40	-14.7	-4.69
OH09	10/13/1992	10/16/1992	1597	0.95	0.95	-30.3	-5.68
OH09	10/16/1992	10/17/1992	92	0.06	0.06	-38.4	-6.63
OH09	10/30/1992	10/31/1992	101	0.09	0.08	-68.2	-9.54
OH09	10/31/1992	11/2/1992	633	0.39	0.36	-46.0	-7.81
OH09	11/2/1992	11/3/1992	472	0.27	0.27	-55.4	-8.72
OH09	11/3/1992	11/4/1992	94	0.05	0.06	-22.1	-4.05
OH09	11/6/1992	11/10/1992	249	0.15	0.15	-29.2	-5.12
OH09	11/11/1992	11/12/1992	933	0.59	0.57	-28.0	-6.19
OH09	11/12/1992	11/13/1992	1674	1.02	0.96	-58.5	-9.09
OH09	11/15/1992	11/18/1992	256	0.15	0.15	-26.5	-5.41
OH09	11/18/1992	11/21/1992	540	0.30	0.30	-35.0	-6.23
OH09	11/21/1992	11/22/1992	548	0.35	0.32	-46.6	-7.69
OH09	11/22/1992	11/23/1992	954	0.45	0.55	-56.4	-8.62
OH09	11/24/1992	11/25/1992	200	0.13	0.12	-104.7	-14.05
OH09	12/3/1992	12/10/1992	328	0.25	0.25	-91.9	-13.39
OH09	12/10/1992	12/11/1992	56	0.09	0.09	-119.1	-15.77
OH09	12/16/1992	12/20/1992	357	0.20	0.21	-30.3	-6.57
OH09	12/26/1992	12/30/1992	493	0.31	0.32	-28.4	-5.13
OH09	12/30/1992	12/31/1992	351	0.18	0.20	-23.5	-4.34
OH09	1/4/1993	1/5/1993	2365	1.39	1.39	-39.8	-7.10
OH09	1/11/1993	1/13/1993	296	0.19	0.20	-63.6	-9.53
OH09	1/19/1993	1/21/1993	1331	0.80	0.77	-94.0	-13.25
OH09	1/21/1993	1/22/1993	259	0.16	0.16	-81.8	-11.91
OH09	1/23/1993	1/24/1993	845	0.49	0.48	-87.0	-12.61
OH09	2/9/1993	2/12/1993	821	0.58	0.56	-98.4	-13.94
OH09	2/14/1993	2/16/1993	1022	0.57	0.65	-109.6	-15.44

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
OH09	2/17/1993	2/21/1993	613	0.41	0.40	-48.0	-8.51
OH09	2/21/1993	2/22/1993	213	0.12	0.15	-27.0	-5.56
OH09	2/23/1993	2/26/1993	678	0.52	0.45	-131.9	-18.36
OH09	3/2/1993	3/3/1993	254	0.19	0.17	-101.7	-13.59
OH09	3/6/1993	3/8/1993	267	0.18	0.15	-123.9	-16.41
OH09	3/10/1993	3/11/1993	87	0.07	0.07	-123.8	-15.87
OH09	3/16/1993	3/17/1993	215	0.17	0.15	-91.5	-13.24
OH09	3/17/1993	3/20/1993	134	0.13	0.14	-20.2	-5.47
OH09	3/20/1993	3/21/1993	105	0.10	0.10	-27.3	-6.26
OH09	3/21/1993	3/23/1993	498	0.31	0.29	-51.3	-8.58
OH09	3/23/1993	3/24/1993	127	0.07	0.06	-37.2	-6.49
OH09	3/30/1993	4/1/1993	712	0.47	0.41	-51.9	-7.85
OH09	4/1/1993	4/2/1993	73	0.09	0.06	-94.3	-12.44
OH09	4/9/1993	4/10/1993	1606	0.98	0.96	-50.0	-8.60
OH09	4/15/1993	4/16/1993	1391	0.82	0.81	-37.8	-6.11
OH09	4/16/1993	4/17/1993	153	0.10	0.09	-84.6	-12.27
OH09	4/25/1993	4/26/1993	2087	1.26	1.25	-34.8	-6.50
OH09	4/27/1993	4/30/1993	103	0.10	0.10	-23.8	-4.42
OH09	5/3/1993	5/4/1993	274	0.19	0.18	-38.9	-5.90
OH09	5/4/1993	5/5/1993	181		0.10	-36.6	-5.98
OH09	5/11/1993	5/13/1993	2285	1.40	1.33	-37.3	-6.33
OH09	5/18/1993	5/19/1993	429	0.30	0.27	-38.9	-6.39
OH09	5/19/1993	5/22/1993	48	0.01	0.01	-35.1	-3.39
OH09	6/1/1993	6/3/1993	146	0.10	0.09	-30.1	-3.68
OH09	6/10/1993	6/11/1993	48	0.03	0.03	-23.9	-3.32
OH09	6/12/1993	6/13/1993	200	0.12	0.11	-28.9	-4.47
OH09	6/13/1993	6/15/1993	500	0.30	0.30	-29.3	-4.64

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
OH09	6/15/1993	6/19/1993	129	0.08	0.07	4.7	-0.24
OH09	6/19/1993	6/21/1993	1580	0.92	0.91	-24.6	-5.07
OH09	6/21/1993	6/22/1993	230	0.15	0.13	-49.2	-7.40
OH09	6/22/1993	6/25/1993	49	0.03	0.03	-24.4	-3.72
OH09	6/25/1993	6/26/1993	1054	0.62	0.60	-51.5	-7.97
OH09	6/26/1993	6/28/1993	1130	0.65	0.65	-56.1	-7.87
OH09	6/28/1993	6/29/1993	284	0.18	0.15	-36.1	-5.03
OH09	6/29/1993	7/2/1993	477	0.30	0.26	-26.9	-4.50
OH09	7/2/1993	7/3/1993	146	0.10	0.09	-18.1	-3.09
OH09	7/6/1993	7/8/1993	469	0.28	0.29	1.3	-0.47
OH09	7/8/1993	7/12/1993	876	0.52	0.52	-12.2	-3.42
OH09	7/13/1993	7/17/1993	345	0.20	0.17	-20.8	-3.84
OH09	7/20/1993	7/25/1993	222	0.13	0.13	-16.7	-2.74
OH09	8/5/1993	8/7/1993	412	0.25	0.24	-63.1	-9.28
OH09	8/13/1993	8/17/1993	253	0.15	0.15	-6.3	-2.45
OH09	8/17/1993	8/20/1993	190	0.12	0.12	-23.0	-4.38
OH09	8/24/1993	8/25/1993	571	0.33	0.33	-8.2	-2.59
OH09	8/25/1993	8/27/1993	1163	0.67	0.68	-3.2	-1.44
OH09	9/1/1993	9/3/1993	2033	1.20	1.14	-34.5	-5.76
OH09	9/3/1993	9/4/1993	111	0.08	0.05	-36.2	-6.15
OH09	9/12/1993	9/13/1993	2194	1.28	1.27	-28.2	-3.99
OH09	9/14/1993	9/15/1993	219	0.14	0.14	-57.0	-8.97
OH09	9/23/1993	9/24/1993	171	0.11	0.11	-23.6	-4.27
OH09	9/26/1993	9/27/1993	101	0.08	0.08	-84.6	-12.35
OH09	9/28/1993	10/2/1993	821	0.49	0.49	-31.5	-5.01
OH09	10/5/1993	10/9/1993	795	0.42	0.44	-41.7	-7.23
OH09	10/9/1993	10/10/1993	579	0.34	0.33	-59.6	-9.70

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
OH09	10/12/1993	10/16/1993	66	0.04	0.04	-14.6	-4.47
OH09	10/16/1993	10/17/1993	608	0.38	0.38	-59.3	-9.31
OH09	10/19/1993	10/20/1993	3580	2.16	2.12	-73.3	-10.83
OH09	10/20/1993	10/21/1993	1100	0.68	0.64	-33.3	-5.84
OH09	10/26/1993	10/30/1993	68	0.07	0.06	-129.3	-17.85
OH09	10/30/1993	10/31/1993	207	0.24	0.22	-146.7	-20.11
OH09	11/2/1993	11/3/1993	160	0.10	0.11	-86.9	-13.69
OH09	11/3/1993	11/5/1993	191	0.12	0.12	-21.8	-5.94
OH09	11/9/1993	11/13/1993	1670	0.97	0.94	-29.5	-5.34
OH09	11/14/1993	11/15/1993	1848	1.08	1.08	-54.4	-7.91
OH09	11/16/1993	11/17/1993	2422	1.39	1.38	-39.4	-6.55
OH09	11/17/1993	11/18/1993	369	0.27	0.22	-52.8	-7.87
OH09	11/23/1993	11/26/1993	150	0.09		-84.2	-11.52
OH09	11/26/1993	11/27/1993	1138	0.65	0.63	-41.6	-7.85
OH09	11/29/1993	12/3/1993	426	0.25	0.25	-68.4	-11.29
OH09	12/3/1993	12/4/1993	668	0.45	0.45	-27.5	-6.38
OH09	12/4/1993	12/5/1993	703	0.50	0.53	-103.7	-14.50
OH09	12/14/1993	12/15/1993	605	0.38	0.36	-113.4	-15.79
OH09	12/15/1993	12/18/1993	89	0.06	0.06	-56.7	-10.09
OH09	12/18/1993	12/19/1993	82	0.05	0.05	-82.3	-12.64
OH09	12/19/1993	12/21/1993	225	0.15	0.16	-106.9	-15.77
OH09	12/25/1993	12/26/1993	100	0.09	0.09	-142.2	-19.17
OH09	1/4/1994	1/7/1994	334	0.28	0.28	-38.4	-8.10
OH09	1/11/1994	1/12/1994	220	0.13	0.12	-68.7	-11.06
OH09	1/17/1994	1/20/1994	130	0.18	0.19	-176.0	-23.28
OH09	1/20/1994	1/25/1994	105	0.06	0.06	-41.9	-7.23
OH09	1/25/1994	1/26/1994	852	0.49	0.49	-96.1	-13.85

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
OH09	1/26/1994	1/27/1994	854	0.49	0.47	-45.4	-7.95
OH09	1/27/1994	1/28/1994	1026	0.67	0.64	-81.6	-11.59
OH09	2/1/1994	2/8/1994	387	0.21	0.12	-25.6	-5.76
OH09	2/15/1994	2/21/1994	262	0.14	0.14	-22.0	-4.68
OH09	2/21/1994	2/23/1994	538	0.37	0.35	-99.4	-13.69
OH09	2/23/1994	2/26/1994	170	0.09	0.09	-63.5	-10.96
OH09	2/26/1994	3/1/1994	99	0.08	0.08	-105.9	-15.21
OH09	3/8/1994	3/10/1994	297	0.40	0.37	-126.0	-16.84
OH09	3/10/1994	3/14/1994	136	0.07	0.07	-49.7	-8.80
OH09	3/14/1994	3/18/1994	73	0.05	0.04	-24.5	-4.71
OH09	3/18/1994	3/21/1994	291	0.16	0.14	-19.5	-2.65
OH09	3/22/1994	3/24/1994	110	0.05	0.04	-13.6	-3.25
OH09	3/24/1994	3/27/1994	609	0.39	0.35	-68.1	-9.84
OH09	3/28/1994	3/29/1994	132	0.07	0.05	-81.4	-11.83
OH09	3/29/1994	4/3/1994	307	0.16	0.12	-28.3	-5.96
OH09	4/3/1994	4/4/1994	652	0.39	0.34	-105.2	-15.41
OH09	4/5/1994	4/6/1994	568	0.38	0.33	-35.5	-6.66
OH09	4/6/1994	4/7/1994	217	0.14	0.13	-55.0	-8.99
OH09	4/7/1994	4/10/1994	4962	2.98	2.88	-14.0	-4.00
OH09	4/10/1994	4/11/1994	89	0.03	0.03	-46.3	-4.71
OH09	4/11/1994	4/12/1994	1884	1.12	1.07	-31.4	-5.99
OH09	4/13/1994	4/16/1994	133	0.08	0.06	-32.4	-4.34
OH09	4/20/1994	4/27/1994	353	0.22	0.23	-16.4	-2.77
OH09	4/27/1994	4/29/1994	1880	1.11	1.09	-11.8	-3.18
OH09	4/29/1994	4/30/1994	859	0.52	0.48	-11.5	-3.22
OH09	4/30/1994	5/1/1994	1128	0.68	0.67	-12.5	-3.92
OH09	5/4/1994	5/6/1994	214	0.13	0.11	-51.4	-8.11

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
OH09	5/6/1994	5/7/1994	604	0.41	0.37	-61.4	-9.16
OH09	5/7/1994	5/8/1994	442	0.28	0.25	-43.2	-7.41
OH09	5/8/1994	5/12/1994	132	0.09	0.08	-13.9	-3.02
OH09	5/15/1994	5/16/1994	117	0.08	0.07	-27.4	-4.37
OH09	6/7/1994	6/13/1994	430	0.27	0.25	-17.9	-2.46
OH09	6/13/1994	6/17/1994	464	0.27	0.26	-17.5	-3.18
OH09	6/24/1994	6/25/1994	132	0.10	0.07	-22.8	-4.55
OH09	6/25/1994	6/26/1994	1495	0.89	0.86	-39.8	-6.75
OH09	6/26/1994	6/27/1994	1711	1.03	0.99	-75.1	
OH09	6/27/1994	6/30/1994	175	0.12	0.10	-55.3	
OH09	7/7/1994	7/9/1994	794	0.47	0.46	-9.8	
OH09	7/9/1994	7/14/1994	310	0.19	0.19	-49.6	
OH09	7/14/1994	7/15/1994	187	0.11	0.10	-31.4	
OH09	7/15/1994	7/22/1994	154	0.09	0.09	-17.7	
OH09	7/22/1994	7/23/1994	3186	1.97	1.88	-47.6	
OH09	7/23/1994	7/28/1994	556	0.34	0.33	-52.1	
OH09	8/2/1994	8/5/1994	991	0.59	0.60	-38.3	
OH09	8/5/1994	8/12/1994	142	0.08	0.08	-21.2	
OH09	8/14/1994	8/21/1994	258	0.17	0.20	-34.9	
OH09	8/31/1994	9/1/1994	334	0.20	0.19	-7.3	
OH09	9/1/1994	9/5/1994	161	0.10	0.10	-28.1	
OH09	9/13/1994	9/17/1994	559	0.33	0.33	-26.6	
OH09	9/24/1994	9/25/1994	71	0.05	0.04	-31.2	
OH09	9/25/1994	9/26/1994	186	0.12	0.10	-36.4	
OH09	9/26/1994	9/27/1994	994	0.61	0.59	-56.6	
OH09	10/4/1994	10/9/1994	511	0.33	0.33	-66.8	
OH09	10/9/1994	10/13/1994	75	0.06	0.05	-110.1	

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
OH09	10/13/1994	10/14/1994	258	0.28	0.27	-38.9	
OH09	10/14/1994	10/19/1994	213	0.14	0.14	-28.7	
OH09	10/20/1994	10/25/1994	183	0.13	0.12	-54.8	
OH09	10/25/1994	10/31/1994	223	0.14	0.14	-3.9	
OH09	10/31/1994	11/1/1994	326	0.21	0.20	-59.3	
OH09	11/1/1994	11/2/1994	154	0.15	0.12	-99.1	
OH09	11/2/1994	11/5/1994	196	0.19	0.17	-4.4	
OH09	11/5/1994	11/6/1994	646	0.40	0.39	-25.8	
OH09	11/6/1994	11/10/1994	1785	1.09	1.10	-48.7	
OH09	11/15/1994	11/16/1994	612	0.44	0.44	-83.2	
OH09	11/16/1994	11/21/1994	318	0.18	0.18	-23.7	
OH09	11/22/1994	11/28/1994	1660	1.02	1.04	-30.4	
OH09	11/28/1994	12/5/1994	590	0.44	0.43	-78.4	
OH09	12/5/1994	12/7/1994	69	0.04	0.03	-45.6	
OH09	12/8/1994	12/9/1994	952	0.54	0.54	-71.3	
OH09	12/9/1994	12/10/1994	741	0.44	0.42	-92.5	
OH09	12/10/1994	12/11/1994	620	0.38	0.37	-120.1	
OH09	12/11/1994	12/17/1994	1178	0.72	0.72	-83.1	
PA15	10/6/1992	10/9/1992	291		0.18	-9.5	-4.03
PA15	10/10/1992	10/11/1992	220		0.10	-16.7	-4.21
PA15	10/13/1992	10/15/1992	459			-54.6	-7.71
PA15	10/15/1992	10/17/1992	165		0.08	-24.2	-4.34
PA15	10/17/1992	10/19/1992	170		0.09	-101.3	-14.47
PA15	10/31/1992	11/2/1992	370		0.26	-59.2	-9.97
PA15	11/2/1992	11/3/1992	1671		1.12	-44.0	-8.04
PA15	11/3/1992	11/6/1992	599		0.36	-104.2	-14.74
PA15	11/11/1992	11/12/1992	424		0.29	-39.5	-7.30

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
PA15	11/23/1992	11/25/1992	692		0.46	-56.7	-9.00
PA15	11/26/1992	11/27/1992	133		0.06	-37.4	-6.35
PA15	12/3/1992	12/5/1992	170		0.09	-138.1	-19.40
PA15	12/5/1992	12/10/1992	278		0.10	-135.4	-18.58
PA15	12/10/1992	12/11/1992	3380		1.70	-101.0	-15.25
PA15	12/11/1992	12/12/1992	1085		0.44	-98.1	-14.66
PA15	12/13/1992	12/16/1992	165			-44.6	-7.28
PA15	12/16/1992	12/17/1992	658		0.37	-69.8	-10.50
PA15	12/17/1992	12/18/1992	299		0.14	-88.2	-12.44
PA15	12/18/1992	12/20/1992	206		0.11	-64.3	-9.94
PA15	12/26/1992	12/28/1992	75		0.02	-30.2	-6.99
PA15	12/28/1992	12/29/1992	90		0.10	-21.1	-5.69
PA15	12/30/1992	12/31/1992	322		0.18	-13.5	-2.98
PA15	1/4/1993	1/5/1993	1003		0.62	-31.9	-5.83
PA15	1/6/1993	1/11/1993	134		0.10	-116.3	-16.01
PA15	1/11/1993	1/12/1993	239		0.10	-100.4	-13.94
PA15	1/12/1993	1/13/1993	373		0.26	-72.9	-10.75
PA15	1/13/1993	1/14/1993	330		0.19	-63.2	-9.50
PA15	1/18/1993	1/22/1993	1276		0.55	-107.0	-15.19
PA15	1/23/1993	1/25/1993	482			-58.9	-8.01
PA15	1/26/1993	1/29/1993	73		0.05	-115.2	-15.23
PA15	2/6/1993	2/12/1993	294		0.18	-85.8	-12.68
PA15	2/12/1993	2/13/1993	1017		0.58	-141.6	-19.17
PA15	2/14/1993	2/16/1993	619		0.33	-87.2	-13.28
PA15	2/16/1993	2/17/1993	993		0.54	-101.3	-14.30
PA15	2/25/1993	2/26/1993	208		0.13	-166.7	-22.64
PA15	3/2/1993	3/4/1993	121		0.06	-146.6	-18.80

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
PA15	3/4/1993	3/5/1993	2570		1.21	-114.2	-15.92
PA15	3/5/1993	3/6/1993	450		0.40	-155.1	-20.70
PA15	3/8/1993	3/9/1993	358		0.21	-161.0	-21.08
PA15	3/9/1993	3/11/1993	335		0.18	-90.0	-13.22
PA15	3/12/1993	3/13/1993	409		0.17	-152.6	-20.95
PA15	3/16/1993	3/17/1993	184		0.11	-82.1	-12.89
PA15	3/18/1993	3/21/1993	130		0.06	-189.7	-25.24
PA15	3/21/1993	3/24/1993	1266		0.74	-63.2	-10.48
PA15	3/24/1993	3/28/1993	398		0.22	-61.1	-8.57
PA15	3/28/1993	3/29/1993	278		0.18	-45.0	-7.10
PA15	3/29/1993	3/30/1993	244		0.14	-71.1	-9.44
PA15	3/30/1993	4/1/1993	1028		0.64	-78.4	-11.22
PA15	4/1/1993	4/2/1993	231		0.17	-69.2	-10.23
PA15	4/2/1993	4/3/1993	274		0.16	-105.8	-14.96
PA15	4/6/1993	4/10/1993	908		0.54	-78.4	-11.29
PA15	4/10/1993	4/11/1993	1084		0.74	-98.1	-13.70
PA15	4/11/1993	4/16/1993	3659		2.25	-26.9	-5.68
PA15	4/16/1993	4/17/1993	2091		1.27	-69.5	-10.37
PA15	4/17/1993	4/18/1993	62		0.01	-95.2	-13.10
PA15	4/20/1993	4/21/1993	1541		0.94	-43.2	-7.09
PA15	4/21/1993	4/22/1993	963		0.54	-115.2	-16.16
PA15	4/22/1993	4/23/1993	483		0.36	-172.6	-23.43
PA15	4/25/1993	4/26/1993	1113		0.67	-65.0	-10.18
PA15	4/26/1993	4/27/1993	1904		1.24	-115.4	-16.13
PA15	5/4/1993	5/5/1993	1183		0.69	-21.5	-4.18
PA15	5/5/1993	5/6/1993	315		0.15	-49.0	-6.94
PA15	5/18/1993	5/19/1993	770		0.47	-30.1	-5.49

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
PA15	5/19/1993	5/20/1993	48		-7.77	-29.5	-5.13
PA15	5/22/1993	5/24/1993	113		0.04	-16.2	-1.39
PA15	5/29/1993	5/31/1993	309		0.14	-14.5	-3.81
PA15	5/31/1993	6/1/1993	700		0.41	-18.5	-4.02
PA15	6/1/1993	6/4/1993	148		0.07	-45.8	-7.14
PA15	6/4/1993	6/5/1993	74		0.02	-33.8	-5.67
PA15	6/7/1993	6/8/1993	334		0.17	-30.9	-4.84
PA15	6/8/1993	6/9/1993	1610		0.96	-17.6	-3.30
PA15	6/9/1993	6/10/1993	631		0.38	-23.3	-4.34
PA15	6/19/1993	6/20/1993	58		0.01	1.5	-0.40
PA15	6/20/1993	6/21/1993	683		0.35	-10.8	-2.83
PA15	6/30/1993	7/2/1993	789		0.47	-41.1	-6.73
PA15	7/2/1993	7/3/1993	1929		1.20	-35.9	-6.31
PA15	7/8/1993	7/12/1993	313		0.19	-22.9	-4.05
PA15	7/13/1993	7/15/1993	623		0.35	-19.1	-3.33
PA15	7/16/1993	7/19/1993	73		0.03	-19.6	-3.56
PA15	7/26/1993	7/27/1993	384		0.19	-15.7	-3.49
PA15	7/27/1993	7/29/1993	68		1.25	-21.2	-4.65
PA15	7/30/1993	8/3/1993	83		0.04	-21.5	-3.28
PA15	8/10/1993	8/11/1993	1188		0.74	-59.3	-8.77
PA15	8/11/1993	8/12/1993	1777		1.05	-54.0	-8.24
PA15	8/16/1993	8/17/1993	228		0.09	-14.8	-2.91
PA15	8/17/1993	8/18/1993	60		0.02	-28.3	-4.70
PA15	8/18/1993	8/20/1993	112		0.02	-11.0	-2.56
PA15	8/24/1993	8/25/1993	189		0.08	-1.3	-0.91
PA15	8/31/1993	9/1/1993	141		0.08	-14.6	-3.26
PA15	9/2/1993	9/3/1993	359		0.22	-26.7	-5.12

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
PA15	9/3/1993	9/4/1993	2264		1.37	-55.2	-8.63
PA15	9/9/1993	9/10/1993	218		0.13	-38.8	-6.51
PA15	9/17/1993	9/18/1993	309		0.16	-46.1	-7.82
PA15	9/20/1993	9/21/1993	275		0.14	-9.8	-3.42
PA15	9/21/1993	9/22/1993	239		0.12	-24.5	-5.01
PA15	9/23/1993	9/24/1993	431		0.27	-31.7	-5.78
PA15	9/24/1993	9/26/1993	1474		0.92	-35.1	-6.47
PA15	9/26/1993	9/27/1993	942		0.56	-58.3	-9.31
PA15	9/27/1993	9/28/1993	1589		0.99	-59.1	-9.56
PA15	9/28/1993	9/29/1993	327		0.19	-88.9	-13.12
PA15	9/29/1993	9/30/1993	267		0.15	-124.7	-17.67
PA15	9/30/1993	10/3/1993	163		0.10	-26.2	-5.32
PA15	10/5/1993	10/10/1993	72		0.02	-49.5	-8.01
PA15	10/10/1993	10/12/1993	142		0.07	-59.3	-9.92
PA15	10/12/1993	10/13/1993	76		0.04	-70.1	-10.64
PA15	10/13/1993	10/17/1993	378		0.21	-31.3	-6.04
PA15	10/17/1993	10/18/1993	538		0.38	-38.7	-7.19
PA15	10/19/1993	10/20/1993	643		0.40	-70.5	-10.66
PA15	10/20/1993	10/21/1993	426		0.30	-50.9	-8.24
PA15	10/21/1993	10/22/1993	101		0.04	-46.2	-7.23
PA15	10/30/1993	10/31/1993	1283		0.88	-147.6	-20.11
PA15	10/31/1993	11/1/1993	699		0.23	-145.6	-19.93
PA15	11/4/1993	11/5/1993	80			-28.4	-6.08
PA15	11/5/1993	11/6/1993	225		0.12	-47.2	-8.24
PA15	11/13/1993	11/14/1993	775		0.48	-78.7	-11.10
PA15	11/14/1993	11/15/1993	605		0.36	-12.0	-2.95
PA15	11/16/1993	11/17/1993	323		0.19	-62.0	-9.27

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
PA15	11/17/1993	11/18/1993	529		0.28	-54.7	-8.19
PA15	11/18/1993	11/20/1993	141		0.07	-84.4	-12.44
PA15	11/20/1993	11/27/1993	219		0.12	-23.2	-6.50
PA15	11/27/1993	11/28/1993	5910			-76.9	-11.46
PA15	11/29/1993	12/3/1993	114		0.05	-29.7	-6.09
PA15	12/3/1993	12/4/1993	197		0.09	-36.5	-7.53
PA15	12/4/1993	12/5/1993	1243		0.92	-108.6	-15.02
PA15	12/5/1993	12/7/1993	55		0.02	-107.5	-14.92
PA15	12/7/1993	12/10/1993	624		0.36	-69.3	-10.91
PA15	12/10/1993	12/11/1993	659		0.40	-84.2	-12.59
PA15	12/18/1993	12/19/1993	207		0.11	-135.2	-19.06
PA15	12/19/1993	12/21/1993	435		0.24	-186.9	-24.90
PA15	12/24/1993	12/26/1993	68		0.08	-159.3	-21.67
PA15	12/30/1993	1/4/1994	1161		0.66	-108.0	-15.44
PA15	1/4/1994	1/5/1994	799		0.35	-149.6	-20.33
PA15	1/5/1994	1/6/1994	99		0.05	-175.5	-23.09
PA15	1/6/1994	1/7/1994	207		0.12	-74.3	-11.89
PA15	1/7/1994	1/8/1994	523		0.27	-100.8	-14.66
PA15	1/8/1994	1/12/1994	481		0.25	-123.0	-17.75
PA15	1/12/1994	1/13/1994	169		0.10	-139.2	-19.45
PA15	1/16/1994	1/17/1994	229		0.12	-125.4	-18.34
PA15	1/17/1994	1/18/1994	299		0.18	-128.2	-18.96
PA15	1/18/1994	1/26/1994	1101		0.50	-113.3	-15.95
PA15	1/26/1994	1/28/1994	2341			-46.1	-8.03
PA15	1/28/1994	1/29/1994	128		0.08	-87.4	-11.83
PA15	2/4/1994	2/8/1994	865		0.50	-91.6	-13.84
PA15	2/8/1994	2/9/1994	1042		0.60	-92.1	-12.88

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
PA15	2/9/1994	2/11/1994	192		0.11	-173.4	-21.90
PA15	2/11/1994	2/12/1994	207		0.15	-154.4	-19.65
PA15	2/14/1994	2/21/1994	379		0.22	-59.1	-8.84
PA15	2/21/1994	2/23/1994	1540		0.82	-126.8	-17.10
PA15	2/23/1994	2/24/1994	571		0.33	-70.1	-10.69
PA15	2/25/1994	2/26/1994	503		0.29	-125.2	-18.27
PA15	3/5/1994	3/8/1994	608		0.33	-87.5	-12.15
PA15	3/8/1994	3/10/1994	1952		1.08	-61.9	-9.41
PA15	3/10/1994	3/16/1994	183		0.10	-89.0	-11.55
PA15	3/16/1994	3/18/1994	68		0.04	-104.2	-15.01
PA15	3/18/1994	3/19/1994	573		0.34	-100.3	-14.71
PA15	3/19/1994	3/22/1994	1575		1.02	-78.9	-11.73
PA15	3/22/1994	3/24/1994	244		0.12	-65.0	-7.74
PA15	3/24/1994	3/27/1994	1141		0.68	-92.3	-12.93
PA15	3/27/1994	3/28/1994	275		0.16	-73.4	-10.22
PA15	3/29/1994	3/30/1994	81		0.04	-115.9	-16.27
PA15	4/4/1994	4/7/1994	1406		0.88	-62.1	-9.28
PA15	4/7/1994	4/10/1994	153		0.06	3.1	-0.67
PA15	4/10/1994	4/11/1994	811		0.49	-55.1	-8.23
PA15	4/11/1994	4/12/1994	686		0.59	-7.3	-2.63
PA15	4/12/1994	4/13/1994	482		0.26	-44.5	-7.09
PA15	4/13/1994	4/14/1994	395		0.22	-51.3	-7.99
PA15	4/14/1994	4/16/1994	317		0.23	-67.2	-9.72
PA15	4/26/1994	4/29/1994	722		0.42	-10.4	-3.39
PA15	4/29/1994	4/30/1994	914		0.56	-21.1	-4.12
PA15	4/30/1994	5/1/1994	997		0.58	-13.2	-3.64
PA15	5/4/1994	5/6/1994	315		0.18	-72.5	-10.47

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
PA15	5/6/1994	5/8/1994	2038		1.29	-87.4	-12.39
PA15	5/11/1994	5/12/1994	598		0.38	-56.5	-8.23
PA15	5/12/1994	5/16/1994	196		0.11	-42.7	-6.32
PA15	5/19/1994	5/25/1994	698		0.42	-34.0	-5.22
PA15	5/25/1994	5/26/1994	1104		0.65	-32.4	-6.01
PA15	5/27/1994	6/1/1994	104		0.06	-7.5	-2.93
PA15	6/1/1994	6/7/1994	2823		1.78	-34.6	-5.96
PA15	6/7/1994	6/11/1994	467		0.27	-43.2	-7.05
PA15	6/11/1994	6/12/1994	398		0.23	-28.7	-6.07
PA15	6/12/1994	6/13/1994	297		0.18	-17.4	-3.42
PA15	6/13/1994	6/14/1994	59		0.03	-31.7	-4.87
PA15	6/14/1994	6/17/1994	62		0.03	-16.5	-2.22
PA15	6/17/1994	6/18/1994	350		0.20	-21.3	-3.12
PA15	6/18/1994	6/21/1994	469		0.27	-25.9	-4.72
PA15	6/21/1994	6/25/1994	129		0.05	-33.9	-5.48
PA15	6/25/1994	6/27/1994	144		0.08	-19.6	
PA15	6/27/1994	6/28/1994	149		0.08	-33.0	
PA15	6/28/1994	6/30/1994	624		0.36	-56.7	
PA15	7/5/1994	7/7/1994	618		0.38	-16.0	
PA15	7/7/1994	7/10/1994	151		0.08	-5.7	
PA15	7/14/1994	7/15/1994	2113		1.35	-40.7	
PA15	7/19/1994	7/22/1994	415		0.24	-24.9	
PA15	7/22/1994	7/23/1994	1452		0.90	-19.0	
PA15	7/23/1994	7/24/1994	251		0.13	-62.8	
PA15	7/26/1994	7/28/1994	821		0.53	-40.6	
PA15	7/28/1994	7/30/1994	226		0.12	-50.5	
PA15	8/2/1994	8/3/1994	375		0.22	-22.3	

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
PA15	8/3/1994	8/5/1994	1251		0.75	-65.8	
PA15	8/5/1994	8/6/1994	91		0.05	-77.8	
PA15	8/12/1994	8/13/1994	481		0.28	-14.6	
PA15	8/13/1994	8/14/1994	758		0.47	-7.8	
PA15	8/14/1994	8/15/1994	1176		0.72	-32.3	
PA15	8/15/1994	8/18/1994	5773		4.00	-42.6	
PA15	8/21/1994	8/22/1994	1017		0.62	-40.6	
PA15	8/22/1994	8/29/1994	952		0.56	-15.1	
PA15	9/9/1994	9/10/1994	136		0.08	-32.7	
PA15	9/16/1994	9/18/1994	2739		1.70	-69.5	
PA15	9/18/1994	9/23/1994	820		0.64	-76.3	
PA15	9/23/1994	9/26/1994	437		0.24	-47.3	
PA15	9/26/1994	9/29/1994	224		0.12	-74.6	
PA15	9/29/1994	9/30/1994	56		0.03	-62.8	
PA15	9/30/1994	10/1/1994	701		0.42	-54.3	
PA15	10/1/1994	10/2/1994	173		0.09	-19.7	
PA15	10/4/1994	10/10/1994	53		0.03	-42.3	
PA15	10/17/1994	10/20/1994	562		0.33	-38.4	
PA15	10/20/1994	10/25/1994	69		0.03	-10.2	
PA15	10/25/1994	11/1/1994	1334		0.88	-43.5	
PA15	11/1/1994	11/2/1994	658		0.47	-62.5	
PA15	11/2/1994	11/6/1994	135		0.07	-50.1	
PA15	11/8/1994	11/10/1994	1199		0.82	-76.2	
PA15	11/10/1994	11/16/1994	96		0.05	-91.7	
PA15	11/16/1994	11/17/1994	674		0.44	-99.5	
PA15	11/22/1994	11/24/1994	75		0.03	-106.8	
PA15	11/24/1994	11/28/1994	3582		2.05	-56.6	

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
PA15	11/28/1994	12/5/1994	2152		1.33	-44.2	
PA15	12/6/1994	12/7/1994	137		0.07	-51.3	
PA15	12/8/1994	12/10/1994	339		0.19	-63.2	
PA15	12/10/1994	12/11/1994	796		0.54	-72.9	
PA15	12/15/1994	12/17/1994	445		0.23	-88.0	
PA15	12/17/1994	12/25/1994	303		0.18	-119.7	
TN00	10/27/1992	10/28/1992	731			-25.2	-5.25
TN00	11/3/1992	11/4/1992	1487			-50.3	-7.75
TN00	11/4/1992	11/5/1992	380			-79.1	-11.14
TN00	12/15/1992	12/16/1992	1770		0.69	-19.1	-4.98
TN00	12/16/1992	12/17/1992	2632		1.21	-65.1	-9.91
TN00	12/21/1992	12/22/1992	1028		0.15	-41.3	-7.18
TN00	12/22/1992	12/23/1992	2873		1.37	-45.9	-7.17
TN00	12/29/1992	1/5/1993	2082		0.88	-39.3	-6.50
TN00	1/5/1993	1/8/1993	1059			-86.8	-12.10
TN00	1/12/1993	1/13/1993	146			-50.5	-7.57
TN00	1/20/1993	1/21/1993	698			-58.9	-9.22
TN00	1/21/1993	1/25/1993	1754			-60.4	-8.99
TN00	2/9/1993	2/12/1993	1152			-66.4	-10.20
TN00	2/12/1993	2/13/1993	170			-56.0	-8.43
TN00	2/13/1993	2/16/1993	1155			-45.8	-8.21
TN00	2/22/1993	2/26/1993	767			-88.7	-12.94
TN00	3/2/1993	3/3/1993	416			-92.8	-12.88
TN00	3/3/1993	3/4/1993	1531			-87.6	-11.80
TN00	3/4/1993	3/5/1993	77			-100.8	-13.83
TN00	3/5/1993	3/8/1993	130			-89.2	-12.14
TN00	3/16/1993	3/17/1993	521			-47.5	-9.16

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
TN00	3/17/1993	3/20/1993	112			-40.7	-4.29
TN00	3/20/1993	3/21/1993	105			-21.6	-4.19
TN00	3/21/1993	3/22/1993	111			-11.3	-3.56
TN00	3/22/1993	3/23/1993	3852			-31.5	-6.20
TN00	3/23/1993	3/24/1993	395			-54.8	-8.47
TN00	3/24/1993	3/26/1993	99			-29.9	-4.70
TN00	3/26/1993	3/27/1993	1743			-98.6	-13.54
TN00	3/30/1993	3/31/1993	292			-26.4	-4.15
TN00	3/31/1993	4/1/1993	632			-39.0	-6.48
TN00	4/1/1993	4/2/1993	222			-87.6	-12.93
TN00	4/2/1993	4/5/1993	696			-61.4	-9.21
TN00	4/5/1993	4/6/1993	82			-49.3	-7.20
TN00	4/6/1993	4/10/1993	1480			-36.3	-6.71
TN00	4/13/1993	4/16/1993	1522			-22.9	-4.92
TN00	4/16/1993	4/17/1993	87			-61.0	-9.03
TN00	4/20/1993	4/21/1993	1483			-38.3	-6.65
TN00	4/22/1993	4/26/1993	1534			-47.1	-7.85
TN00	5/3/1993	5/4/1993	864			-16.4	-3.65
TN00	5/11/1993	5/14/1993	957			-19.6	-4.12
TN00	5/18/1993	5/19/1993	1655			-23.7	-4.69
TN00	5/25/1993	5/26/1993	224			0.4	-1.36
TN00	5/30/1993	5/31/1993	1406			-23.0	-4.46
TN00	6/14/1993	6/15/1993	855			-39.5	-6.62
TN00	7/18/1993	7/20/1993	892			-3.7	-1.43
TN00	7/27/1993	7/28/1993	1935			-9.5	-2.07
TN00	8/5/1993	8/6/1993	2709			-34.3	-6.14
TN00	9/15/1993	9/16/1993	887		0.54	-22.3	-4.66

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
TN00	9/24/1993	9/25/1993	486		0.27	-21.0	-4.33
TN00	9/26/1993	9/27/1993	1840		1.01	-38.5	-6.64
TN00	9/28/1993	10/3/1993	382		0.26	-19.3	-4.47
TN00	10/5/1993	10/10/1993	532		0.31	-36.2	-6.43
TN00	10/26/1993	10/30/1993	971		0.63	-120.9	-16.55
TN00	11/13/1993	11/15/1993	1930		1.13	-49.5	-8.08
TN00	11/16/1993	11/17/1993	196		0.10	-15.6	-3.41
TN00	11/17/1993	11/18/1993	533		0.30	-6.8	-2.90
TN00	12/4/1993	12/5/1993	4581		2.78	-28.5	-6.09
TN00	12/14/1993	12/15/1993	584		0.40	-19.8	-6.15
TN00	2/13/1994	2/21/1994	1060		1.25	-66.5	-10.12
TN00	3/18/1994	3/21/1994	72		0.05	-21.8	-3.35
TN00	3/21/1994	3/22/1994	416		0.25	-30.0	-5.14
TN00	3/22/1994	3/25/1994	1642		0.95	-32.3	-4.87
TN00	3/26/1994	3/27/1994	4280		2.43	-25.7	-5.12
TN00	3/27/1994	3/28/1994	3978		2.30	-44.0	-7.05
TN00	4/6/1994	4/7/1994	458		0.25	-34.3	-5.69
TN00	4/11/1994	4/13/1994	3994		2.32	-12.7	-3.39
TN00	4/13/1994	4/16/1994	3691		2.15	-29.7	-5.37
TN00	4/16/1994	4/28/1994	495		0.28	-8.0	-2.80
TN00	4/28/1994	5/1/1994	362		0.21	-1.3	-0.51
TN00	5/1/1994	5/4/1994	1400		0.84	-56.2	-8.31
TN00	5/14/1994	5/15/1994	376		0.23	-36.6	-6.02
TN00	6/10/1994	6/11/1994	691		0.40	-29.4	-4.71
TN00	6/25/1994	6/27/1994	4917		2.80	-23.8	
TN00	7/10/1994	7/11/1994	148		0.08	-30.1	
TN00	7/11/1994	7/12/1994	739		0.43	-36.8	

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
TN00	7/12/1994	7/13/1994	631		0.35	-30.6	
TN00	7/26/1994	7/27/1994	1795		1.00	-45.3	
TN00	8/2/1994	8/3/1994	199		0.11	-16.0	
TN00	8/15/1994	8/16/1994	516		0.30	-63.6	
TN00	9/24/1994	9/25/1994	272		0.13	-31.8	
TN00	10/14/1994	10/19/1994	241		0.12	-0.4	
TN00	10/26/1994	11/1/1994	279		0.17	-22.6	
TN00	11/10/1994	11/21/1994	96		0.05	-0.8	
TN00	12/23/1994	12/31/1994	242		0.13	-10.5	
VT99	2/9/1993	2/13/1993	1202		0.79	-119.3	-16.07
VT99	2/13/1993	2/14/1993	332		0.24	-122.7	-17.26
VT99	2/16/1993	2/17/1993	183		0.30	-121.7	-17.67
VT99	2/18/1993	2/19/1993	91		0.05	-200.7	-28.07
VT99	2/22/1993	2/23/1993	292		0.18	-128.2	-18.14
VT99	2/23/1993	2/24/1993	120		0.10	-167.8	-23.34
VT99	3/7/1993	3/9/1993	190		0.12	-155.2	-20.73
VT99	3/9/1993	3/10/1993	85		0.10	-137.3	-18.67
VT99	3/10/1993	3/11/1993	441		0.28	-163.2	-22.30
VT99	3/11/1993	3/12/1993	60		0.05	-156.6	-20.76
VT99	3/16/1993	3/18/1993	157		0.25	-144.4	-19.97
VT99	3/18/1993	3/21/1993	442		0.28	-142.3	-19.71
VT99	3/23/1993	3/24/1993	91		0.06	-171.0	-22.05
VT99	3/30/1993	4/2/1993	203		0.19	-81.9	-11.78
VT99	4/6/1993	4/11/1993	203		0.07	-39.7	-5.72
VT99	4/14/1993	4/17/1993	1286		0.76	-28.7	-5.16
VT99	4/22/1993	4/23/1993	950		0.60	-90.2	-13.30
VT99	4/23/1993	4/24/1993	450		0.60	-156.6	-20.52

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
VT99	5/5/1993	5/6/1993	425		0.48	-55.3	-8.04
VT99	5/6/1993	5/7/1993	411		0.21	-94.5	-13.27
VT99	5/19/1993	5/20/1993	315		0.20	-50.7	-8.29
VT99	5/20/1993	5/21/1993	1086		0.59	-81.8	-12.22
VT99	5/21/1993	5/25/1993	1209		0.67	-15.6	-3.54
VT99	5/28/1993	5/29/1993	306		0.20	-62.8	-10.09
VT99	5/30/1993	6/1/1993	686		0.37	-45.9	-7.34
VT99	6/1/1993	6/2/1993	67		0.03	-150.3	-19.84
VT99	6/2/1993	6/6/1993	869		0.50	-73.5	-10.52
VT99	6/8/1993	6/9/1993	114		0.06	-33.9	-4.86
VT99	6/9/1993	6/10/1993	1365		0.78	-25.5	-4.69
VT99	6/15/1993	6/16/1993	1379		0.79	-51.5	-8.07
VT99	6/17/1993	6/19/1993	1094		0.66	-30.3	-5.25
VT99	6/21/1993	6/22/1993	233		0.12	-49.1	-7.84
VT99	6/22/1993	6/23/1993	461		0.25	-74.2	-10.60
VT99	6/23/1993	6/27/1993	201		0.10	-24.5	-3.57
VT99	6/27/1993	6/28/1993	263		0.14	-42.4	-6.70
VT99	7/9/1993	7/12/1993	878		0.50	-49.0	-7.58
VT99	7/12/1993	7/13/1993	125		0.06	-40.9	-5.88
VT99	7/20/1993	7/21/1993	142		0.07	-66.7	-9.55
VT99	7/21/1993	7/22/1993	450		0.25	-119.7	-15.69
VT99	7/22/1993	7/23/1993	1110		0.68	-88.9	-12.77
VT99	7/23/1993	7/24/1993	258		0.16	-86.3	-12.30
VT99	7/25/1993	7/27/1993	1292		0.75	-35.8	-6.33
VT99	7/27/1993	7/28/1993	1874		1.15	-64.6	-9.84
VT99	7/28/1993	7/29/1993	1220		0.70	-44.2	-7.27
VT99	7/29/1993	7/30/1993	1134		0.70	-40.2	-6.90

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
VT99	7/30/1993	7/31/1993	221		0.10	-98.2	-13.68
VT99	8/4/1993	8/5/1993	315		0.20	-85.6	-12.02
VT99	8/8/1993	8/9/1993	470		0.27	-80.8	-11.67
VT99	8/10/1993	8/11/1993	1469		0.85	-71.4	-10.80
VT99	8/16/1993	8/17/1993	143		0.08	-46.7	-6.14
VT99	8/18/1993	8/19/1993	136		0.08	-50.8	-8.04
VT99	8/19/1993	8/21/1993	928		0.53	-47.7	-7.51
VT99	8/25/1993	8/28/1993	132		0.06	-8.3	-1.85
VT99	9/3/1993	9/4/1993	1480		0.88	-42.9	-7.21
VT99	9/4/1993	9/5/1993	175		0.09	-69.7	-9.92
VT99	9/5/1993	9/7/1993	370		0.19	-84.7	-12.69
VT99	9/7/1993	9/10/1993	1298		0.75	-67.0	-10.14
VT99	9/10/1993	9/11/1993	193		0.08	-100.7	-14.25
VT99	9/14/1993	9/16/1993	905		0.53	-57.5	-9.61
VT99	9/24/1993	9/26/1993	458		0.25	-75.7	-9.99
VT99	9/28/1993	9/29/1993	253		0.14	-84.6	-12.49
VT99	9/30/1993	10/2/1993	1355		0.77	-58.7	-9.77
VT99	10/6/1993	10/10/1993	986		0.66	-59.0	-9.68
VT99	10/12/1993	10/13/1993	858		0.54	-102.5	-14.91
VT99	10/13/1993	10/17/1993	477		0.27	-43.6	-6.90
VT99	10/17/1993	10/18/1993	403		0.25	-49.9	-7.78
VT99	10/18/1993	10/21/1993	391		0.23	-59.3	-8.81
VT99	10/21/1993	10/22/1993	441		0.30	-53.0	-8.38
VT99	10/27/1993	10/28/1993	502		0.32	-62.4	-9.97
VT99	11/1/1993	11/2/1993	671		0.45	-133.6	-18.23
VT99	11/4/1993	11/6/1993	742		0.43	-55.6	-9.26
VT99	11/9/1993	11/13/1993	72		0.04	-95.1	-13.36

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
VT99	11/14/1993	11/15/1993	801		0.55	-49.6	-8.11
VT99	11/15/1993	11/16/1993	141		0.08	-71.7	-10.58
VT99	11/16/1993	11/18/1993	281		0.18	-101.4	-14.48
VT99	11/23/1993	11/29/1993	2010		1.12	-77.2	-11.21
VT99	11/29/1993	11/30/1993	76		0.05	-111.6	-16.79
VT99	11/30/1993	12/3/1993	303		0.15	-74.2	-12.17
VT99	12/3/1993	12/5/1993	587		0.35	-136.6	-18.06
VT99	12/5/1993	12/7/1993	361		0.20	-153.5	-20.68
VT99	12/7/1993	12/11/1993	483		0.28	-72.8	-10.99
VT99	12/11/1993	12/12/1993	412		0.37	-194.8	-26.58
VT99	12/20/1993	12/21/1993	291		0.19	-150.0	-20.41
VT99	12/21/1993	12/22/1993	1473		0.87	-121.7	-16.64
VT99	1/3/1994	1/4/1994	149		0.08	-175.8	-23.19
VT99	1/4/1994	1/5/1994	859		0.53	-145.2	-19.69
VT99	1/6/1994	1/7/1994	94		0.06	-196.5	-25.48
VT99	1/12/1994	1/14/1994	90		0.09	-116.0	-16.82
VT99	1/14/1994	1/15/1994	149		0.14	-151.0	-20.90
VT99	1/23/1994	1/24/1994	129		0.12	-141.2	-19.10
VT99	1/25/1994	1/28/1994	302		0.23	-64.1	-9.61
VT99	2/22/1994	2/24/1994	586		0.46	-93.2	-12.79
VT99	3/8/1994	3/10/1994	910		0.60	-98.4	-13.38
VT99	3/13/1994	3/14/1994	562		0.36	-96.0	-14.44
VT99	3/14/1994	3/16/1994	567		0.35	-108.0	-15.37
VT99	3/17/1994	3/18/1994	185		0.10	-166.2	-22.53
VT99	3/21/1994	3/22/1994	653		0.34	-159.8	-20.72
VT99	3/25/1994	3/28/1994	286		0.17	-107.3	-14.94
VT99	4/2/1994	4/4/1994	957		0.56	-80.0	-12.19

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
VT99	4/7/1994	4/8/1994	304		0.20	-141.1	-19.00
VT99	4/12/1994	4/13/1994	85		0.05	-33.9	-5.18
VT99	4/13/1994	4/14/1994	492		0.28	-39.1	-6.01
VT99	4/14/1994	4/17/1994	1566		0.97	-75.2	-11.05
VT99	4/19/1994	4/21/1994	159		0.10	-120.7	-16.99
VT99	4/21/1994	4/22/1994	116		0.07	-120.8	-17.24
VT99	4/24/1994	4/26/1994	678		0.39	-30.4	-5.20
VT99	4/27/1994	4/28/1994	444		0.25	-16.8	-3.77
VT99	5/3/1994	5/7/1994	441		0.23	-80.1	-10.98
VT99	5/9/1994	5/10/1994	128		0.07	-68.3	-9.50
VT99	5/10/1994	5/11/1994	76		0.04	-122.5	-16.40
VT99	5/11/1994	5/13/1994	170		0.08	-133.0	-18.04
VT99	5/13/1994	5/16/1994	527		0.30	-51.9	-7.31
VT99	5/17/1994	5/18/1994	367		0.21	-79.7	-11.24
VT99	5/24/1994	5/25/1994	491		0.28	-46.8	-7.36
VT99	5/25/1994	5/26/1994	254		0.11	-50.7	-7.74
VT99	5/26/1994	5/27/1994	1671		1.00	-57.2	-9.11
VT99	5/31/1994	6/1/1994	1654		0.94	-19.7	-4.18
VT99	6/1/1994	6/2/1994	208		0.08	-55.4	-7.78
VT99	6/2/1994	6/3/1994	472		0.25	-119.5	-16.42
VT99	6/3/1994	6/7/1994	2606		1.45	-26.9	-4.88
VT99	6/7/1994	6/8/1994	188		0.10	-50.6	-7.90
VT99	6/8/1994	6/12/1994	422		0.25	-52.0	-8.11
VT99	6/12/1994	6/13/1994	1299		0.73	-50.4	-7.98
VT99	6/13/1994	6/14/1994	362		0.20	-67.2	-9.06
VT99	6/23/1994	6/26/1994	66		0.02	-17.0	
VT99	6/26/1994	6/28/1994	292		0.11	-24.8	

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
VT99	8/2/1994	8/3/1994	1330		0.77	-34.7	
VT99	8/3/1994	8/5/1994	2359		1.47	-69.6	
VT99	8/14/1994	8/15/1994	626		0.37	-62.2	
VT99	8/16/1994	8/18/1994	877		0.60	-108.5	
VT99	8/18/1994	8/19/1994	132		0.09	-111.1	
VT99	8/19/1994	8/21/1994	1974		1.25	-60.9	
VT99	8/21/1994	8/22/1994	2586		1.55	-55.3	
VT99	8/23/1994	8/26/1994	1039		0.62	-36.6	
VT99	8/26/1994	8/27/1994	465		0.25	-42.1	
VT99	8/31/1994	9/1/1994	377		0.22	-59.8	
VT99	9/1/1994	9/2/1994	148		0.07	-84.0	
VT99	9/2/1994	9/6/1994	244		0.18	-86.4	
VT99	9/7/1994	9/8/1994	298		0.16	-91.0	
VT99	9/13/1994	9/14/1994	2154		1.26	-33.2	
VT99	9/23/1994	9/24/1994	324		0.16	-76.2	
VT99	9/27/1994	9/28/1994	192		0.10	-50.8	
VT99	9/28/1994	9/29/1994	164		0.11	-67.8	
VT99	9/29/1994	9/30/1994	766		0.45	-121.7	
VT99	9/30/1994	10/5/1994	172		0.14	-89.3	
VT99	10/5/1994	10/6/1994	188		0.09	-125.1	
VT99	10/19/1994	10/20/1994	153		0.09	-37.0	
VT99	10/20/1994	10/21/1994	2387		1.35	-73.5	
VT99	10/21/1994	11/1/1994	1564		0.85	-36.5	
VT99	11/1/1994	11/2/1994	343		0.17	-61.1	
VT99	11/2/1994	11/3/1994	591		0.40	-134.5	
VT99	11/3/1994	11/5/1994	295		0.12	-12.5	
VT99	11/5/1994	11/6/1994	353		0.22	-31.6	

Table 2. Isotope data for samples in this study (cont.)

Site Code	Date on	Date off	Samp Wt	NWS Precp	BEL Precp	δ^2H	$\delta^{18}O$
VT99	11/6/1994	11/7/1994	203		0.15	-83.3	
VT99	11/8/1994	11/22/1994	342			-63.0	
VT99	11/22/1994	11/26/1994	519		0.35	-106.9	
VT99	11/26/1994	11/28/1994	184		0.30	-97.7	
VT99	11/28/1994	11/29/1994	556		0.36	-41.6	
VT99	12/2/1994	12/4/1994	69		0.05	-85.6	
VT99	12/4/1994	12/5/1994	116		0.05	-62.7	
VT99	12/5/1994	12/6/1994	1491		0.85	-126.3	
VT99	12/6/1994	12/7/1994	224		0.11	-78.7	
VT99	12/7/1994	12/11/1994	109		0.20	-104.6	
VT99	12/13/1994	12/18/1994	255		0.10	-70.8	
VT99	12/24/1994	12/29/1994	273		0.20	-126.9	