## CLOUD WATER CHEMISTRY AND MERCURY DEPOSITION



In Partial Fulfillment of the Requirements for the Degree of Master of Science

1007

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## Cloud Water Deposition and Throughfall Chemistry in a High Elevation Spruce-Fir Forest at Mt. Mansfield. Vermont in the management of the second seco

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Site	Elevation (meters)		Cloud H <sub>2</sub> O (cm yr <sup>-1</sup> )	Cloud (%) frequency	Reference	
Mt. Mansfield, V	1204	1998	<b>92</b> ρ 26ª	25 <sup>b</sup>	Lawson et al. (1999)	
Whiteface Mt., NY Mt.Moosilauke, NH	1225 1220	1986-90 1990	81.1 40.5	222 1000	Miller et al. (1993a)	
Mt. Moosilauke, NH Madonna Mt., VT	1220 1110 1110	1980-81 1980-81 1970	84.0 154.0 76.0	40 		
	1050 1350 1483	1986-89 1986-89 1987	28.4 153.5 127.0	10 36 42		

a.

b.

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		-				_			-		
Element ( $\Pi g L^{-1}$ )	Al	Cr	Mn	Ni	Cu	Zn	As	Rb	Sr	Cd	<u>Pb</u>
Cloudwater (n=9)											
Mean	7.92	0.09	1.73	0.24	0.51	5.52	<u>0.13</u>	0.07	0.30	0.03	0.58
Std. dev.	31.60	0.19	5.33	0.58		12.08		0.34	1.42	0.16	2.56
Median	6.82	0.10	1.52	0.24	0.56	, 4.06		0.13	0.51	0.03	0.93
Maximum	101.31	0.63	.7.30	1.90	3.64	5791.8Q		1.08	<b>4.6</b> 1	0.52	8.17
Minimum	2.01		0.29	0.05	0.12	13-110	n'	0.03	0.04	0.01	0.11
Throughfall (n=10)											
Mean	17.32	011	40.93	0.64	0.99	6.91	0.18	2.53	1.18	0.07	0.76
Std. dev.	13.79				0.36	6.76	0.12	3.14	1.73	0.09	0.49
Median	15.94				1.03	3.74	0.13	2.06	0.53	0.04	0.62
Maximum	55.58				1.61	23.94	0.39	10.26	4.62	0.27	1.54
Minimum	7.10				0.54	2.94	0.07	0.52	0.17	0.01	0.27
Nat-throughfall.	9.40	0.02	39.20	0.40	0.48	.39	0.05		0.88	0.05	0.18
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a. Enrichment factor calculated as mean throughfall divided by mean cloud water

Hg (ng L <sup>-1</sup> )	Paired co	ollections	
	Cloud water (n=7)	Throughfall (n=9)	
Mean	.7.5.1.	17.49	
Std. Dev		6.62	
Median		16.47	
Maximum		33.30	
Minimum		9.95	
Net Throughfall (TF-C	W)	9.97	
Enrichment factor (TE		2.3	

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	Date	8/18	8/26	<u> 2410.</u>	10/1*	Total	Units
Hø	Throughfall Cloud	15.02 7.52	* 33.9	13.47 *	19.58 4.83 55		ng L <sup>-</sup>
Hg	712	37-2- 3774-444	125-32 447-12 10:53/2	Class Class Class Class	<u>191-iui</u> Classi	j Gultani Lineit	ng m
Cloud Deposition Rates	Hg Water	3.91 0.52	9.74 0.29	3.86 0.33	6.47 1.34ª	ı	ng m <sup>-4</sup> hr <sup>-</sup> mm h <sup>-</sup> '

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