

## **SUPPLEMENTARY MATERIALS**

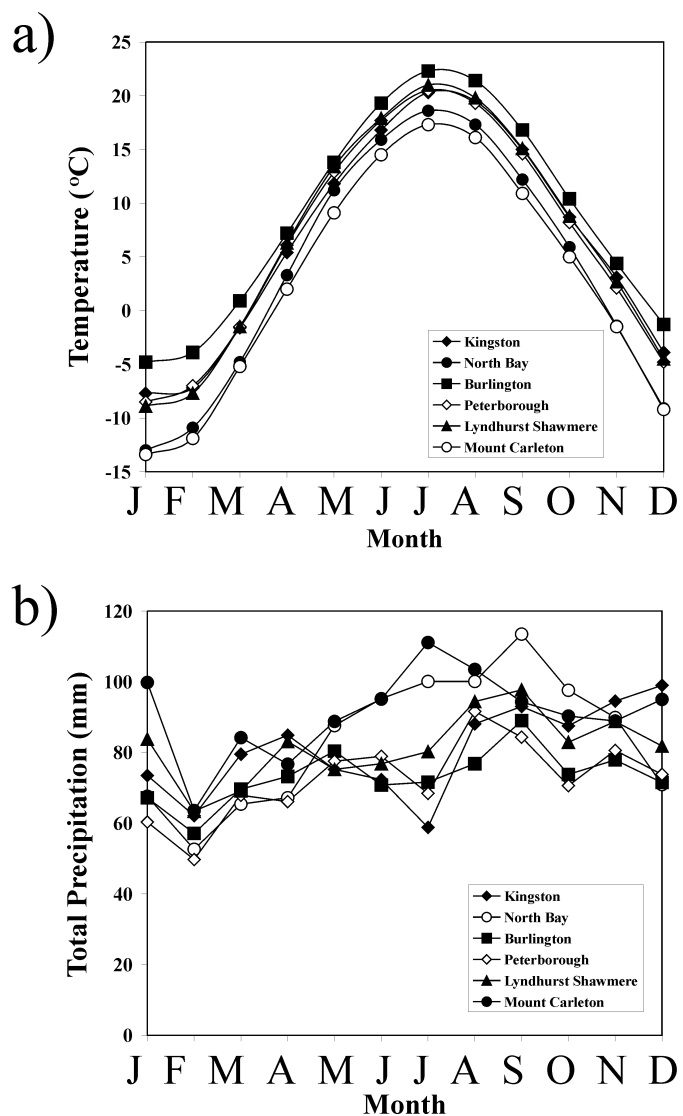
### **Carbon and Nitrogen Isotope Variations in Tree-Rings as Records of Perturbations in Regional Carbon and Nitrogen Cycles**

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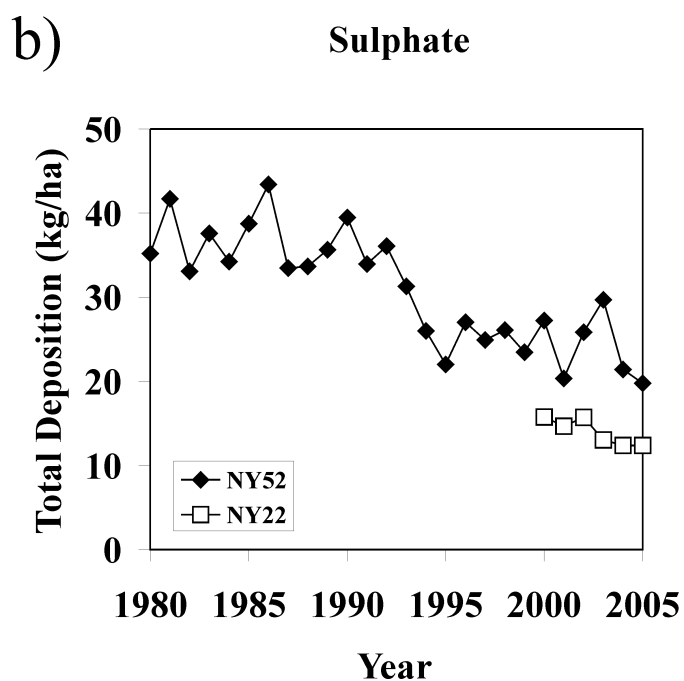
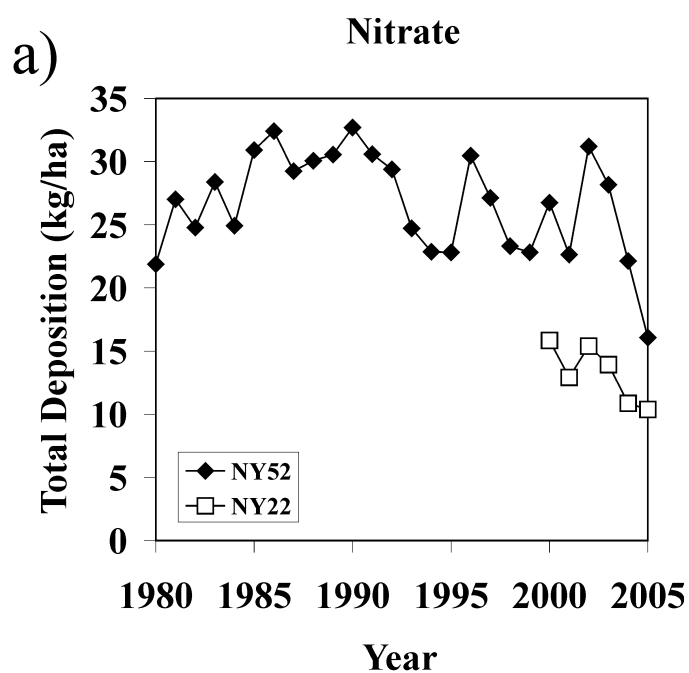
**7 Pages**

**2 Figures**

**3 Tables**



**Figure S1.** Meteorological data from the Meteorological Service of Canada. Lyndhurst Shawmere is the closest station to the Lake Opinicon site, and Mount Carleton is the closest station to the Murray Brook, NB site. Data are average (1971-1991) monthly total precipitation.



**Figure S2.** Nitrate (a) and Sulphate (b) total deposition data for sites NY52 and NY22 from the National Atmospheric Deposition Program monitoring sites (National Atmospheric Deposition Program (NRSP-3). 2006. NADP Program Office, Illinois State Water Survey, 2204 Griffith Dr., Champaign, IL 61820).

**Table S1a.** Spearman Rank Correlation Table for nitrogen isotope data since 1860. Data has been smoothed with a 5-point moving average prior to analysis. The top number is the Spearman rank coefficient ( $r_s$ ), the bottom number is the corresponding p-value (2-tailed).

	Ontario West			Ontario East and New Brunswick			
	Burlington	Peterborough	North Bay	L. Opinicon	Kingston North	Kingston East	New Brunswick
Burlington	1						
Peterborough	0.298 0.034	1					
North Bay	0.728 <0.0001	0.384 0.009	1				
L. Opinicon	0.310 0.027	0.334 0.015	0.392 0.007	1			
Kingston North	0.046 0.749	0.684 <0.0001	0.178 0.222	0.152 0.263	1		
Kingston East	0.030 0.834	0.577 <0.0001	0.071 0.631	0.449 <0.002	0.296 0.029	1	
New Brunswick	0.054 0.734	0.226 0.144	-0.155 0.322	0.013 0.936	-0.254 0.103	0.286 0.064	1

**Table S1b.** Spearman Rank Correlation Table for nitrogen isotope data since 1945. Data has been smoothed with a 5-point moving average prior to analysis. The top number is the Spearman rank coefficient ( $r_s$ ), the bottom number is the corresponding p-value (2-tailed).

	Ontario West			Ontario East and New Brunswick			
	Burlington	Peterborough	North Bay	L. Opinicon	Kingston North	Kingston East	New Brunswick
Burlington	1						
Peterborough	0.513 0.008	1					
North Bay	0.725 <0.002	0.799 <0.0001	1				
L. Opinicon	0.635 <0.002	0.743 <0.0001	0.785 <0.0001	1			
Kingston North	0.578 0.003	0.779 <0.0001	0.713 <0.002	0.510 0.008	1		
Kingston East	0.210 0.276	0.543 0.004	0.277 0.153	0.266 0.162	0.349 0.070	1	
New Brunswick	-0.694 <0.002	-0.518 0.006	-0.653 <0.002	-0.532 0.005	-0.545 0.005	0.116 0.542	1

**Table S2.** Spearman Rank Correlation Table for carbon isotope data since 1860. Data has been smoothed with a 5-point moving average prior to analysis. The top number is the Spearman rank coefficient ( $r_s$ ), the bottom number is the corresponding p-value (2-tailed).

	Ontario West			Ontario East and New Brunswick			
	Burlington	Peterborough	North Bay	L. Opinicon	Kingston North	Kingston East	New Brunswick
Burlington	1						
Peterborough	0.317 0.019	1					
North Bay	0.485 0.002	0.670 <0.0001	1				
L. Opinicon	0.434 <0.002	0.420 <0.002	0.582 <0.002	1			
Kingston North	0.725 <0.0001	0.348 0.011	0.701 <0.0001	0.598 <0.0001	1		
Kingston East	0.558 <0.0001	0.594 <0.0001	0.576 <0.002	0.619 <0.0001	0.711 <0.0001	1	
New Brunswick	-0.407 0.011	-0.708 <0.0001	-0.415 0.011	0.044 0.787	-0.129 0.424	-0.283 0.073	1

**Table S3a.** Spearman Rank Correlation Table for relationship between carbon and nitrogen isotope data since 1860. Data has been smoothed with a 5-point moving average prior to analysis.

	Site	Spearman Rank Coefficient ( $r_s$ )	p-value (2-tailed)
Ontario West	Burlington	0.465	<0.002
	Peterborough	0.533	<0.002
	North Bay	0.496	<0.002
Ontario East And New Brunswick	L. Opinicon	0.552	<0.0001
	Kingston North	0.388	0.004
	Kingston East	0.336	0.008
	New Brunswick	-0.427	0.007

**Table S3b.** Spearman Rank Correlation Table for relationship between carbon and nitrogen isotope

ata since 1945. Data was not smoothed prior to analysis.

	Site	Spearman Rank Coefficient ( $r_s$ )	p-value (2-tailed)
Ontario West	Burlington	0.281	0.049
	Peterborough	0.433	<0.002
	North Bay	0.372	0.019
Ontario East and New Brunswick	L. Opinicon	0.401	0.003
	Kingston North	0.310	0.023
	Kingston East	0.164	0.201
	New Brunswick	-0.140	0.379