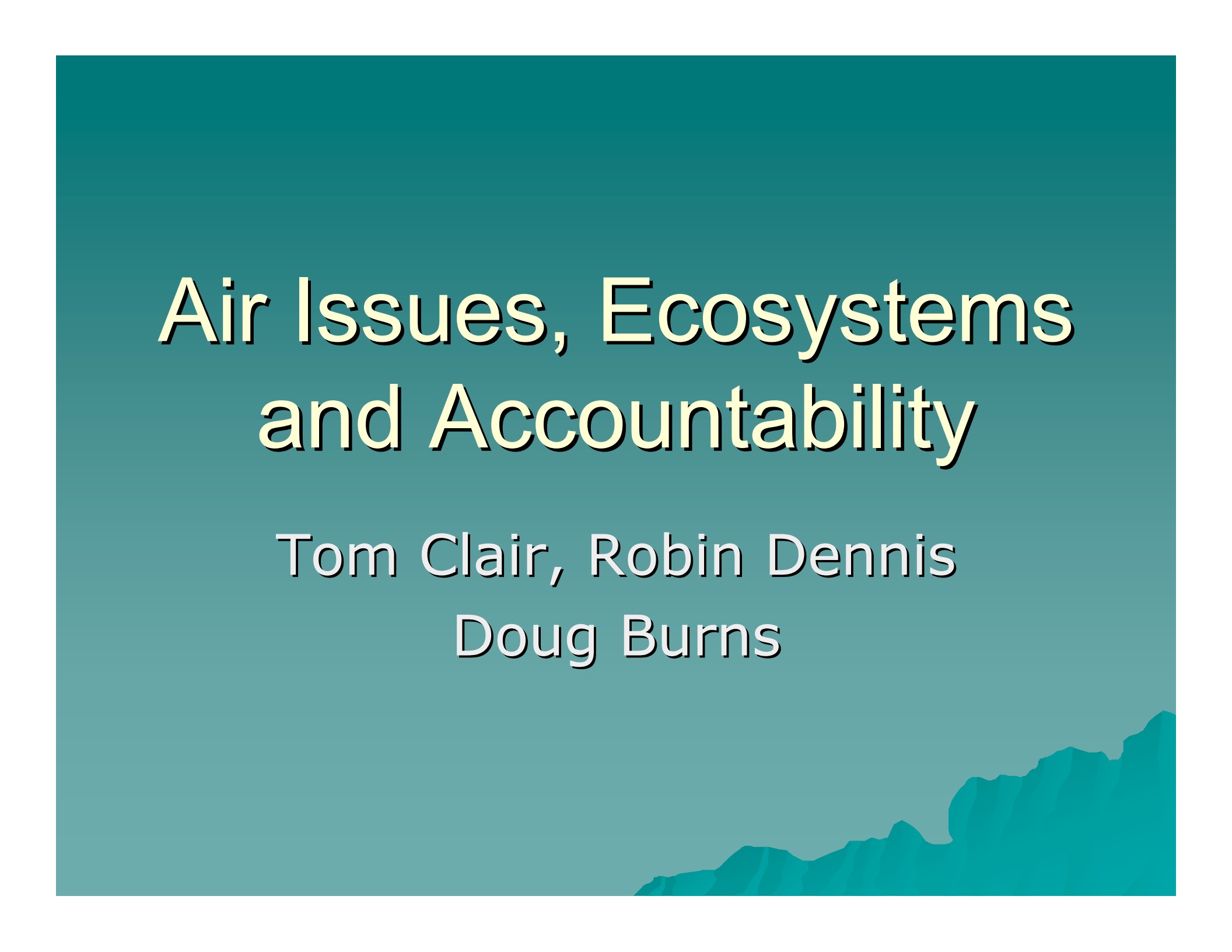



Air Issues, Ecosystems and Accountability

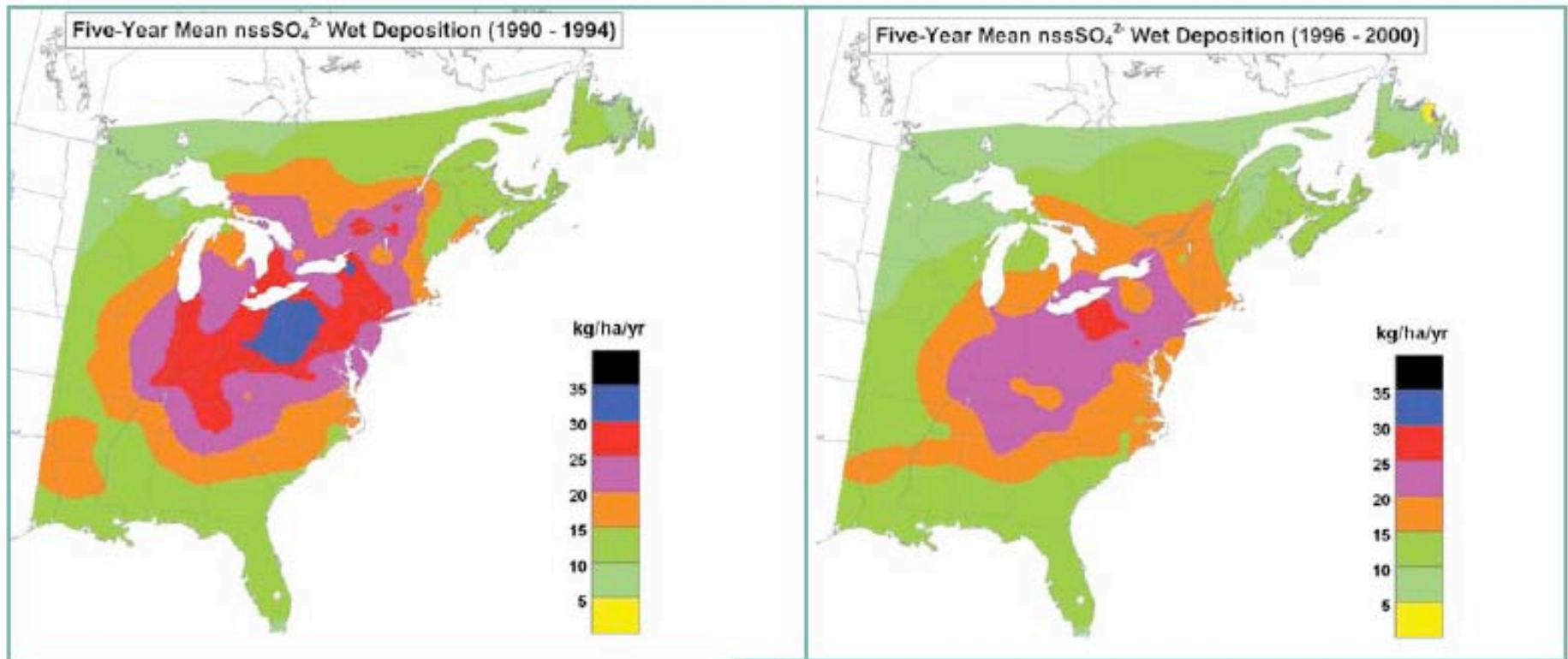
Tom Clair, Robin Dennis
Doug Burns



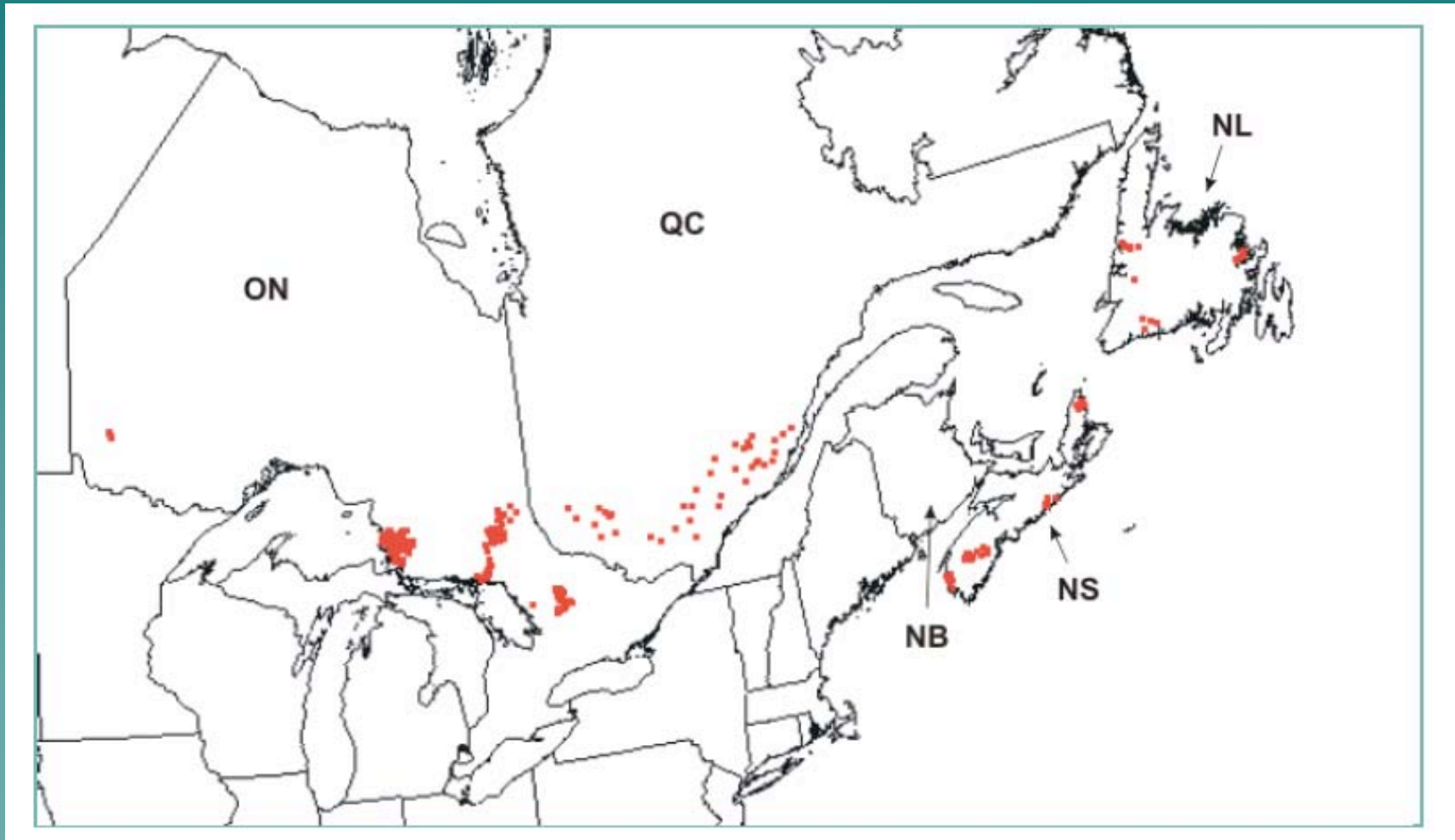
Main issues between Ecosystems and the atmosphere

- ◆ Acidification
 - ◆ Eutrophication
 - ◆ Mercury contamination
 - ◆ Ground level ozone
 - ◆ UVB changes
 - ◆ Climate change
- 
- A decorative graphic at the bottom right of the slide, consisting of a silhouette of a mountain range in shades of teal and light blue.

Acidification



Lake locations



Lake chemistry

		Newfoundland (21 lakes)			Nova Scotia (69 lakes)			Quebec (38 lakes)			Ontario (638 lakes ⁵)		
		n	%	Sig. Slope	n	%	Sig. Slope	n	%	Sig. Slope	n	%	Sig. Slope
Sulphate ² ($\mu\text{eq/L}$)	Increasing Trends	0	0 (0)		0	0 (3)		0	0 (3)		5	1 (17)	4.65
	Decreasing Trends	9	43 (100)	-0.75	32	46 (97)	-0.97	28	74 (97)	-2.10	182	29 (83)	-5.01
	No Significant Trends	12	57		37	54		10	27		451	71	
Nitrate ³ ($\mu\text{eq/L}$)	Increasing Trends	NA			NA			NA			26	4 (57)	0.19
	Decreasing Trends	NA			NA			NA			23	4 (43)	-0.36
	No Significant Trends	NA			NA			NA			576	92	
pH	Increasing Trends	0	0 (57)		4	6 (72)	0.02	18	47 (89)	0.03	74	12 (74)	0.06
	Decreasing Trends	0	0 (43)		4	6 (28)	-0.02	0	0 (11)		7	1 (26)	-0.04
	No Significant Trends	21	100		61	88		20	53		557	87	
Alkalinity ($\mu\text{eq/L}$)	Increasing Trends	0	0 (14)		1	1 (16)	0.77	17	45 (84)	1.32	94	15 (70)	3.10
	Decreasing Trends	1	5 (86)	-0.88	24	35 (84)	-1.04	0	0 (16)		10	2 (30)	-1.66
	No Significant Trends	20	95		44	64		21	55		533	84	
Base Cations ^{2,4} ($\mu\text{eq/L}$)	Increasing Trends	0	0 (43)		0	0 (35)		0	0 (5)		4	1 (12)	11.9
	Decreasing Trends	0	0 (57)		3	4 (65)	-1.26	26	68 (95)	-2.07	198	34 (88)	-5.10
	No Significant Trends	21	100		66	96		12	32		388	66	
DOC (mg/L)	Increasing Trends	2	10 (90)	0.11	13	19 (80)	0.18	10	26 (58)	0.07	45	7 (57)	0.13
	Decreasing Trends	0	0 (10)		1	1 (20)	-0.37	3	8 (42)	-0.08	17	3 (43)	-0.23
	No Significant Trends	19	90		55	80		25	66		571	90	

Modeled Mercury deposition

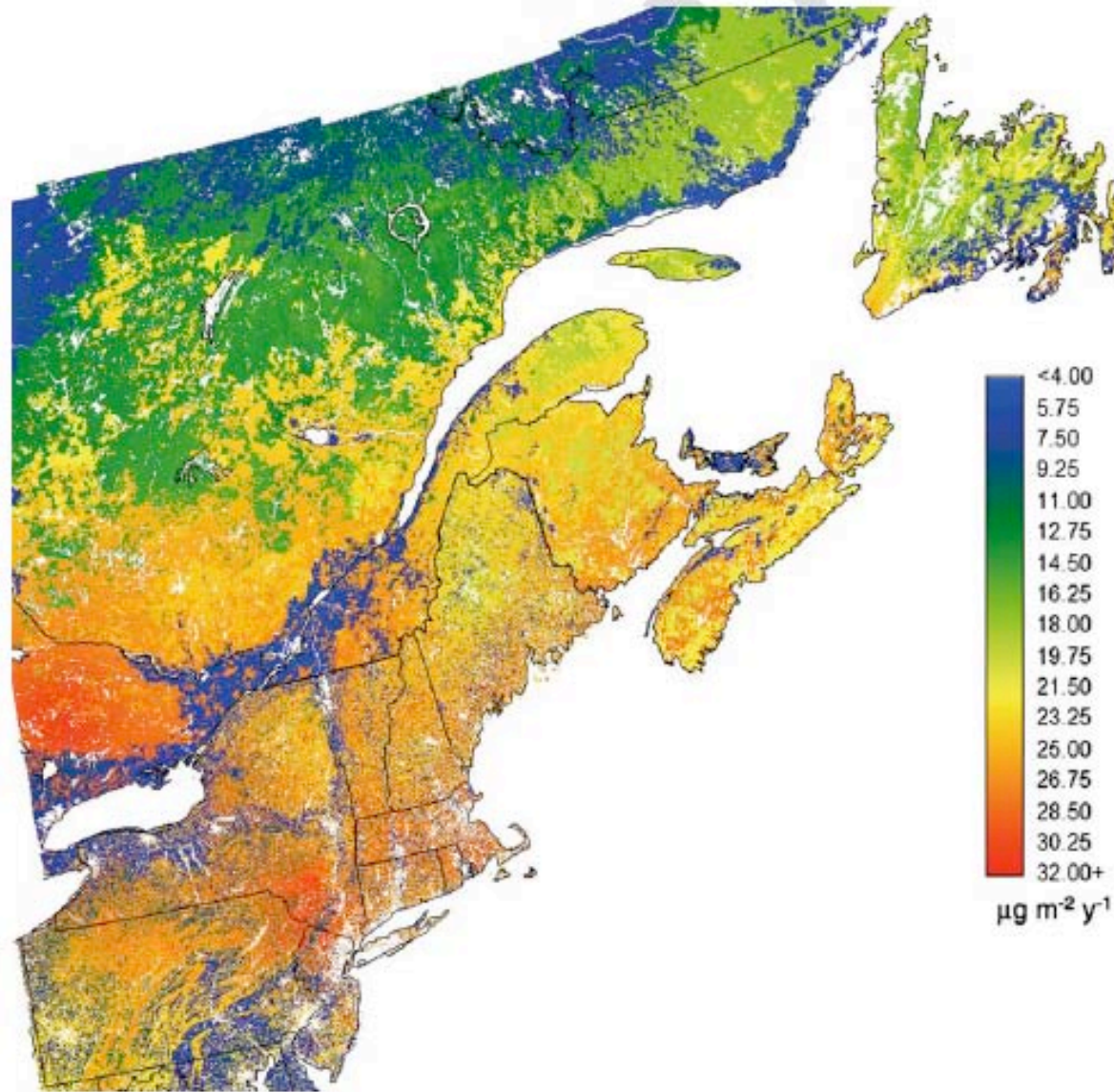
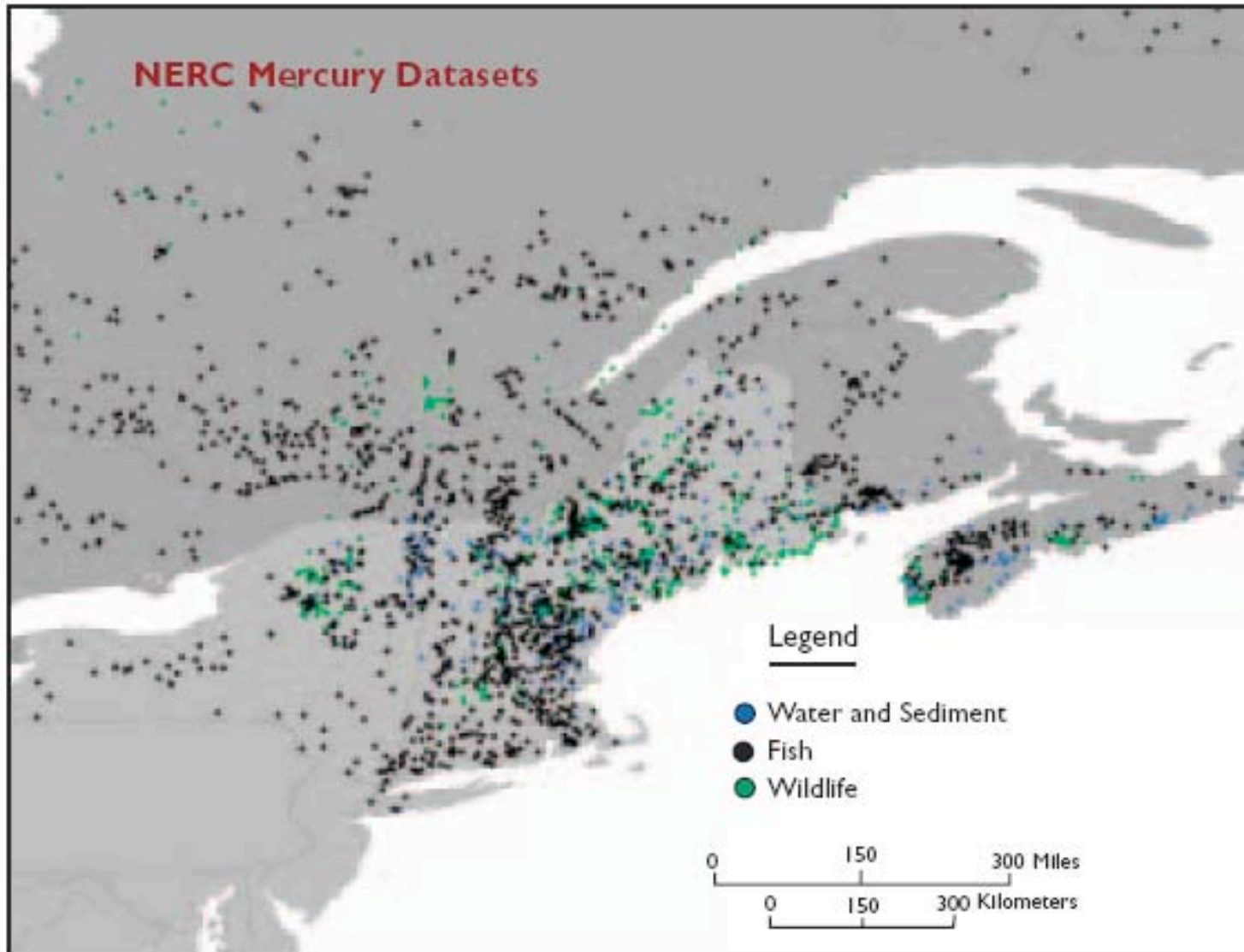


Figure 5. Estimated total mercury deposition (wet + dry) in $\mu\text{g m}^{-2} \text{y}^{-1}$ to rural areas. Deposition was not estimated for areas

Measured Hg sites



Conclusions

- ◆ Accountability? – more like hypothesis testing sometimes
- ◆ It can be done with ecosystems, but can require extensive monitoring systems (which are usually not something people want to spend \$\$ on)