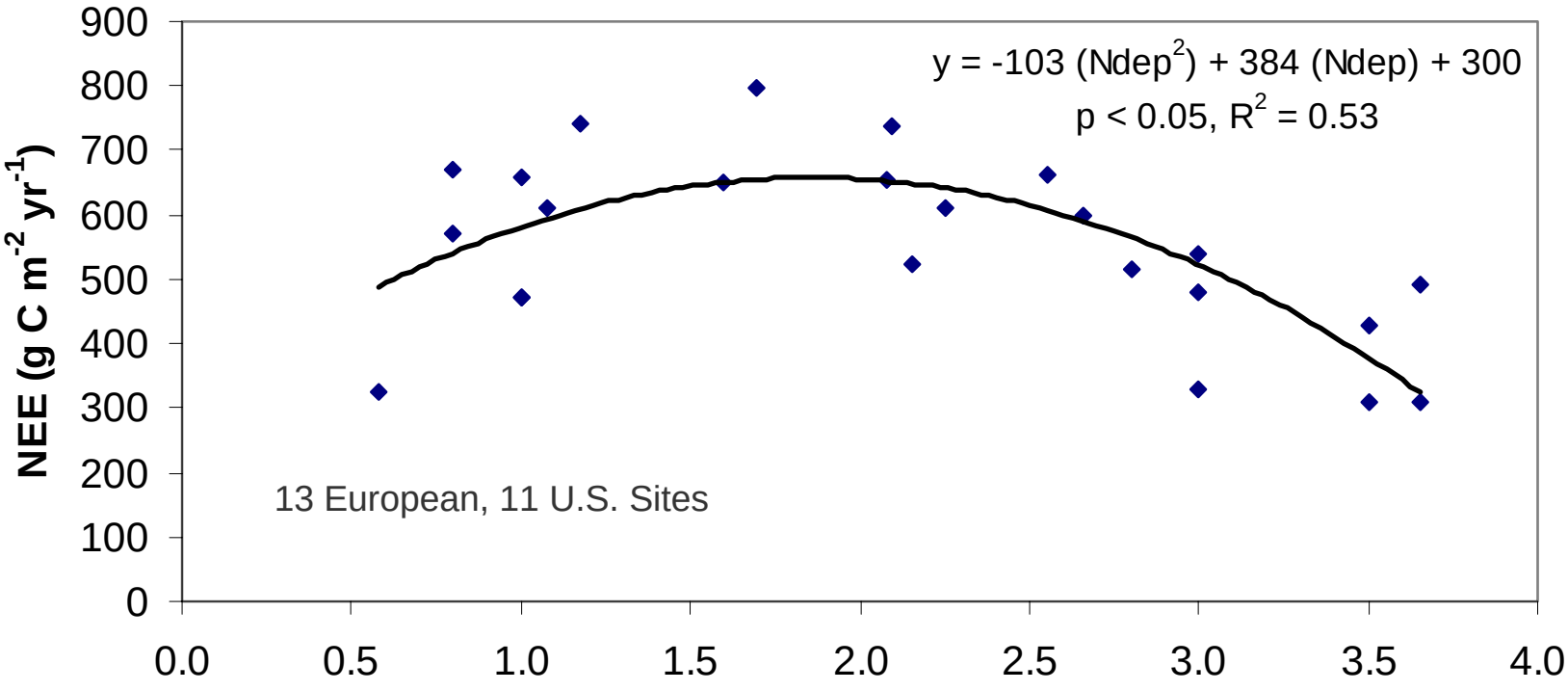
Forest Net Ecosystem Carbon Exchange (NEE) Dependence

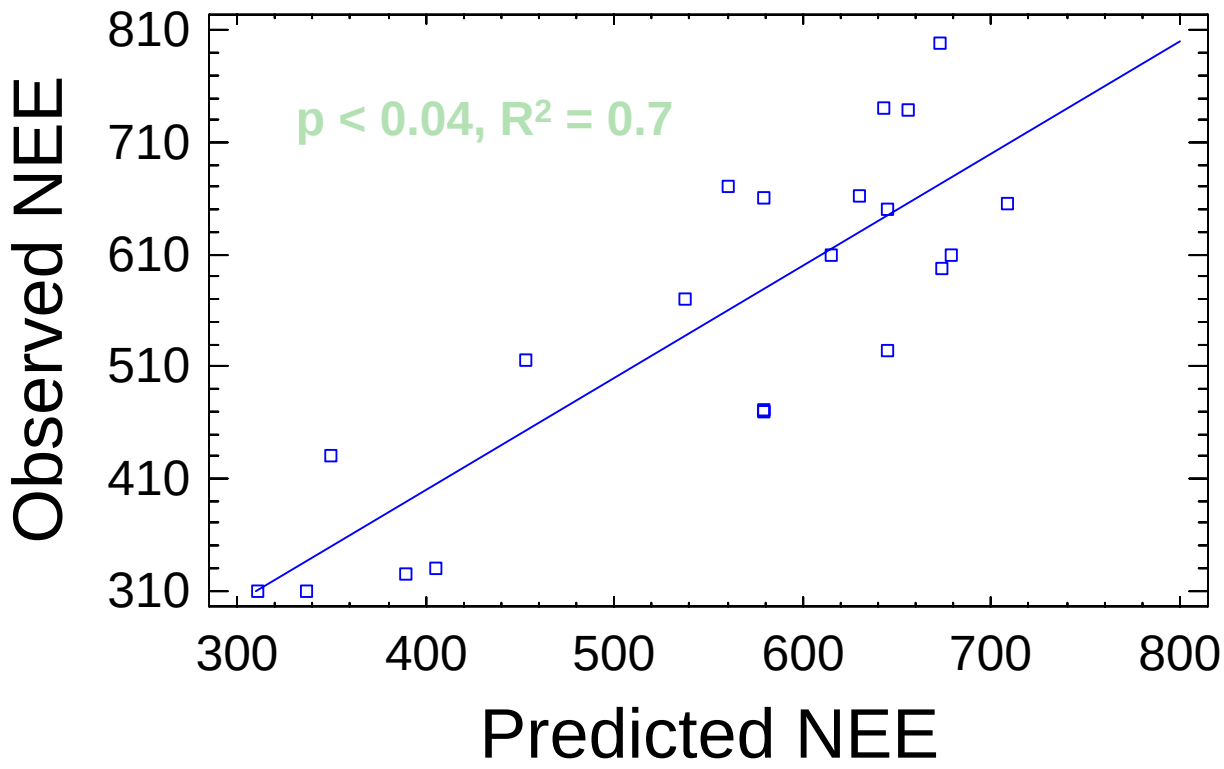


Sievering, H., Hui, D., Tomaszewski, T. (2003)

24 Sites used in Statistical Modeling

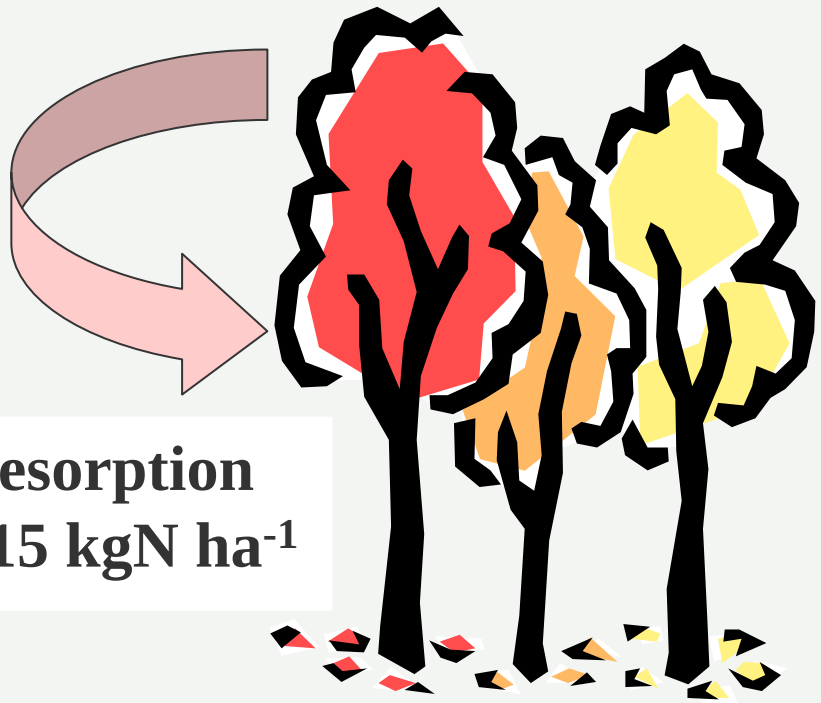
Country	Site	Latitude	Longitude	Precipitation	NEE	Atmos Ndep
				mm yr^{-1}	g C $m^{-2}yr^{-1}$	g N m^{-2} yr^{-1}
Belgium	Brasschaat	51.3	4.5167	767	310	3.5
Germany	Solling FL	51.7667	9.7667	1045	310	3.7
OR	Metolius	44.5	-121.6224	595	324	0.6
Germany	Tharandt	50.9667	13.6333	724	330	3
France	Bordeaux	44.0833	0.0833	936	430	3.5
Italy	Collelongo	41.8667	13.6333	1180	470	1
Italy	Collelongo	41.8667	13.6333	1180	472	1
Germany	Tharandt	50.9667	13.6333	724	480	3
Germany	Solling FL	51.7667	7.7667	1045	490	3.6
Belgium	Vielsalm	50.3	6	792	515	2.8
TN	Walker branch	35.9583	-84.2874	1350	525	2.2
Germany	Tharandt	50.9667	13.6333	724	540	3
UK	Griffin	56.6167	-3.8	1100	570	0.8
TN	Walker branch	35.9583	-84.2874	1682	597	2.7
Florida	Alachua County	29.7333	-82.1583	1585	610	1.1
TN	Walker branch	35.9583	-84.2874	1245	610	2.3
NC	Duke forest	35.8667	-79.9833	1305	650	1.6
TN	Walker branch	35.9583	-84.2874	1613	656	2.1
Italy	Collelongo	41.8667	13.6333	1180	660	1
TN	Walker branch	35.9583	-84.2874	1435	662	2.6
UK	Griffin	56.6167	-3.8	1200	670	0.8
TN	Walker branch	35.9583	-84.2874	1387	739	2.1
Florida	Alachua County	29.7333	-82.1583	1391	740	1.2
Florida	Alachua County	29.7333	-82.1583	1425	798	1.7
			Mean	**1200 mm yr^{-1}**	**550 gC m^{-2} yr^{-1}**	**2 gN m^{-2} yr^{-1}**

NEE = 138 + 0.23(Precip) - 69(Ndep^2) + 242(Ndep)



Canopy N Uptake and New Growth N Requirement at Niwot Ridge, CO Subalpine Forest

Atmospheric N to Canopy
2-3 kgN $ha^{-1}yr^{-1}$



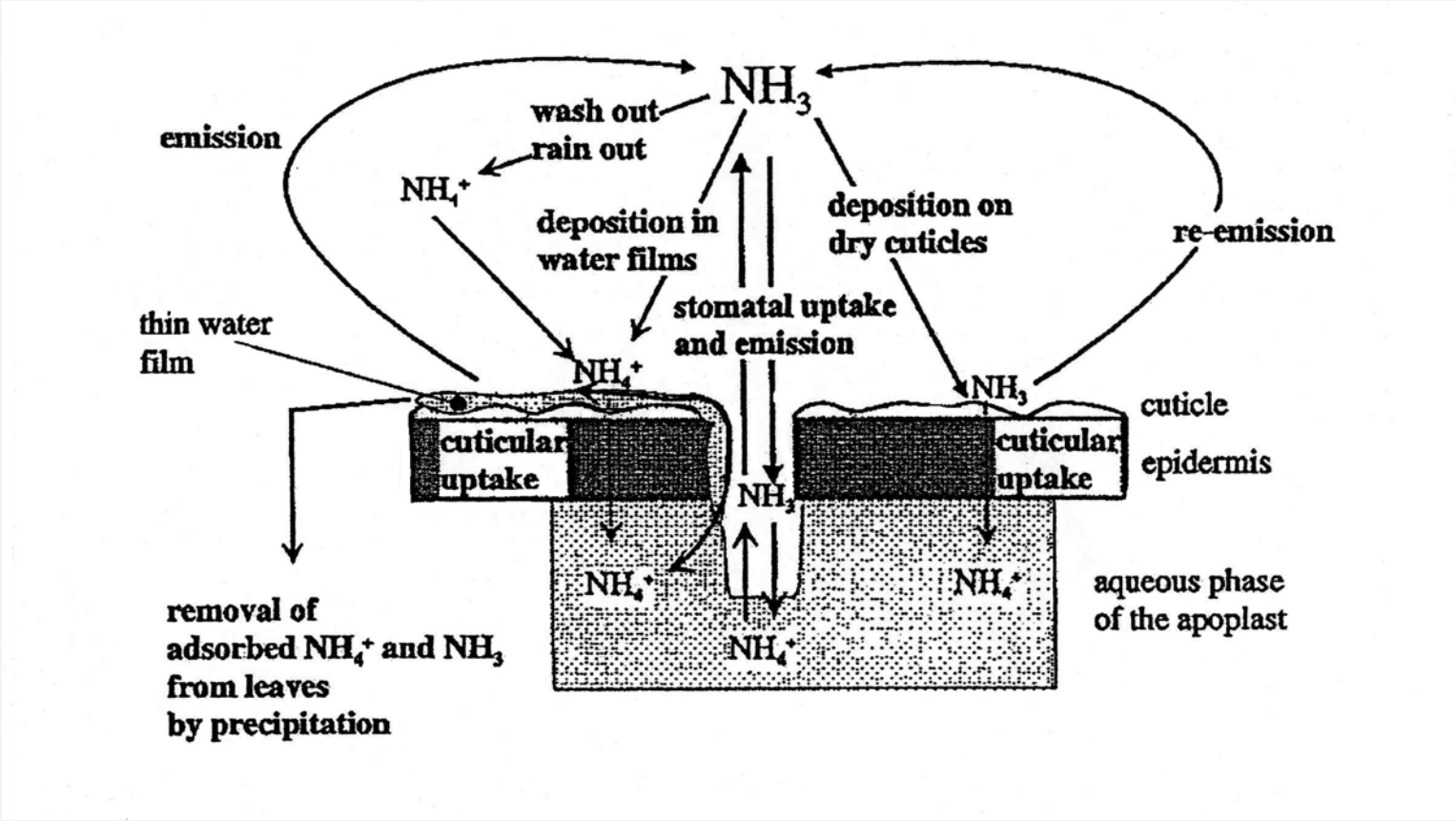
New Growth N yr^{-1}

Foliage	20-25 kgN ha^{-1}
Brch/Twig	2-3 kgN ha^{-1}

Resorption
~15 kgN ha^{-1}

Soil/Root contributed about 5 kgN $ha^{-1}yr^{-1}$

NH_3 - Canopy Interactions



Net Atmospheric N to Canopy a function of

Wet Deposition of NH_4, NO_3, and organic N

Cloud/Fog Deposition of NH_4 and NO_3

Dry Deposition of HNO_3,NO_x,and **NH_3**

Throughfall loss from Canopy as NH_4, NO_3, or orgN

Emission, Deposition and Re-emission of NH_3

Net Ecosystem Carbon Exchange (NEE) may, thus, strongly depend on NH_3 exchange