



DCMR Milieudienst Rijnmond

Assessing impacts of interventions

Innsbruck, 16th Sept. 2013, Miriam Weber



Action Plans
Noise Abatement Act

low noise
pavement

dB reduction

perception

Assumptions and hypotheses



A: The population response to noise abatement measures and subsequent changes in noise exposure is in line with dose-response relations for annoyance



H: The population response to a decrease in noise exposure experiences a greater benefit (in terms of annoyance reduction) than predicted with dose-response relations (cf. Van Kamp & Brown, 2013)



NOISE CONTROL FOR QUALITY OF LIFE

Rotterdam studies introduced



- Type 2 changes (cf Brown & Van Kamp, 2009), i.e.
 - low noise pavement and noise barrier
 - resulting in decrease of noise exposure levels from (road) traffic
 - in residential areas and in urban parks
- ROAM and QUADMAP studies
 - similar approaches of calculating and measuring noise exposure and field surveys/questionnaires on perception of sound, well-being, annoyance etc.
 - before and after intervention



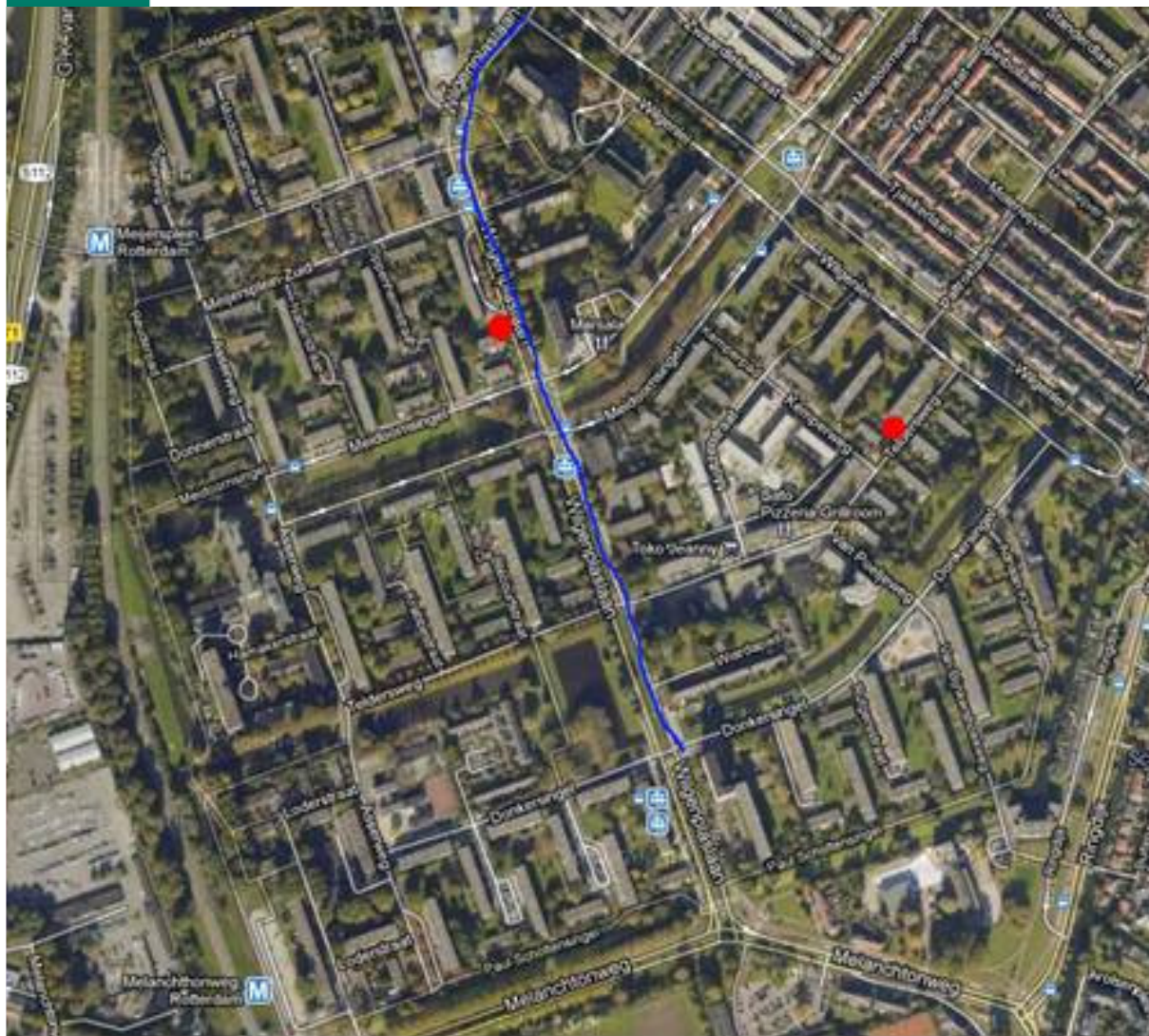
NOISE CONTROL FOR QUALITY OF LIFE

ROAM: interventions (1)



→ Selection of intervention group (> 2.5 dB exposure reduction) and control group (no changes in exposure)

ROAM: interventions (2)



Wilgenplaslaan:
bricks -> low noise
pavement

ROAM: interventions (3)

	Dag dB(A)	Avond dB(A)	Nacht dB(A)	Lden dB
Gemeten niveau*	62.6	60.4	54.9	64.2
Berekend niveau	62.3	61.2	53.9	63.7
Verschil gemeten - berekend	0.3	-0.8	1.0	0.5



ROAM: interventions (4)

	Percentage		Adressen		Inwoners		Gehinderden		Ernstig gehinderden	
	%A	%HA	voor	na	voor	na	voor	na	voor	na
<35	0	0	149	149	343	343	0	0	0	0
35-40	0	0	0	0	0	0	0	0	0	0
40-45	4	0	528	544	1214	1251	49	50	0	0
45-50	8	3	1153	1157	2652	2661	212	213	80	80
50-55	14	5	1701	1742	3912	4007	548	561	196	200
55-60	21	8	1100	1056	2530	2429	531	510	202	194
60-65	30	13	682	833	1569	1916	471	575	204	249
65-70	41	20	512	344	1178	791	483	324	236	158
70-75	54	30	7	7	16	16	9	9	5	5
>75	61	37	0	0	0	0	0	0	0	0
Eindtotaal			5832	5832	13414	13414	2302	2242	922	887

afname # gehinderden: **60**

afname # ernstig gehinderden: **35**

QUADMAP: interventions (1)

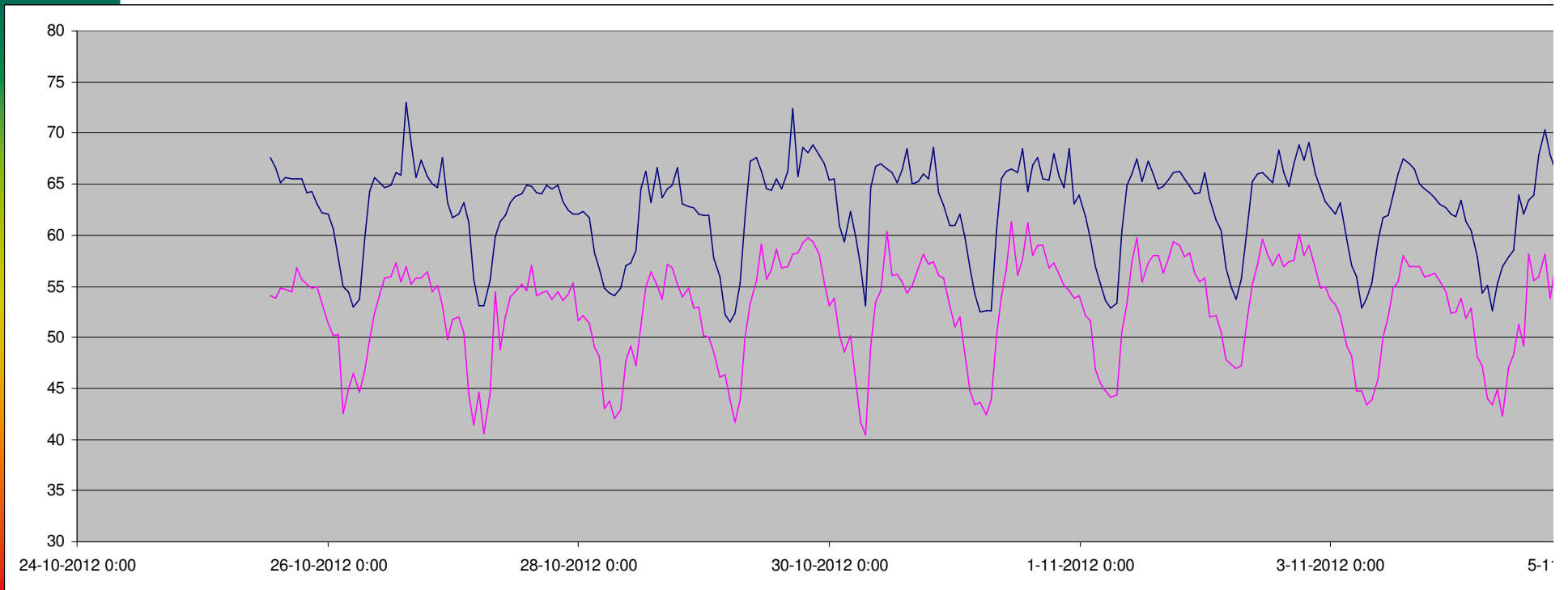


Spinozapark -
Spinozaweg



NOISE CONTROL FOR QUALITY OF LIFE

QUADMAP: interventions (3)



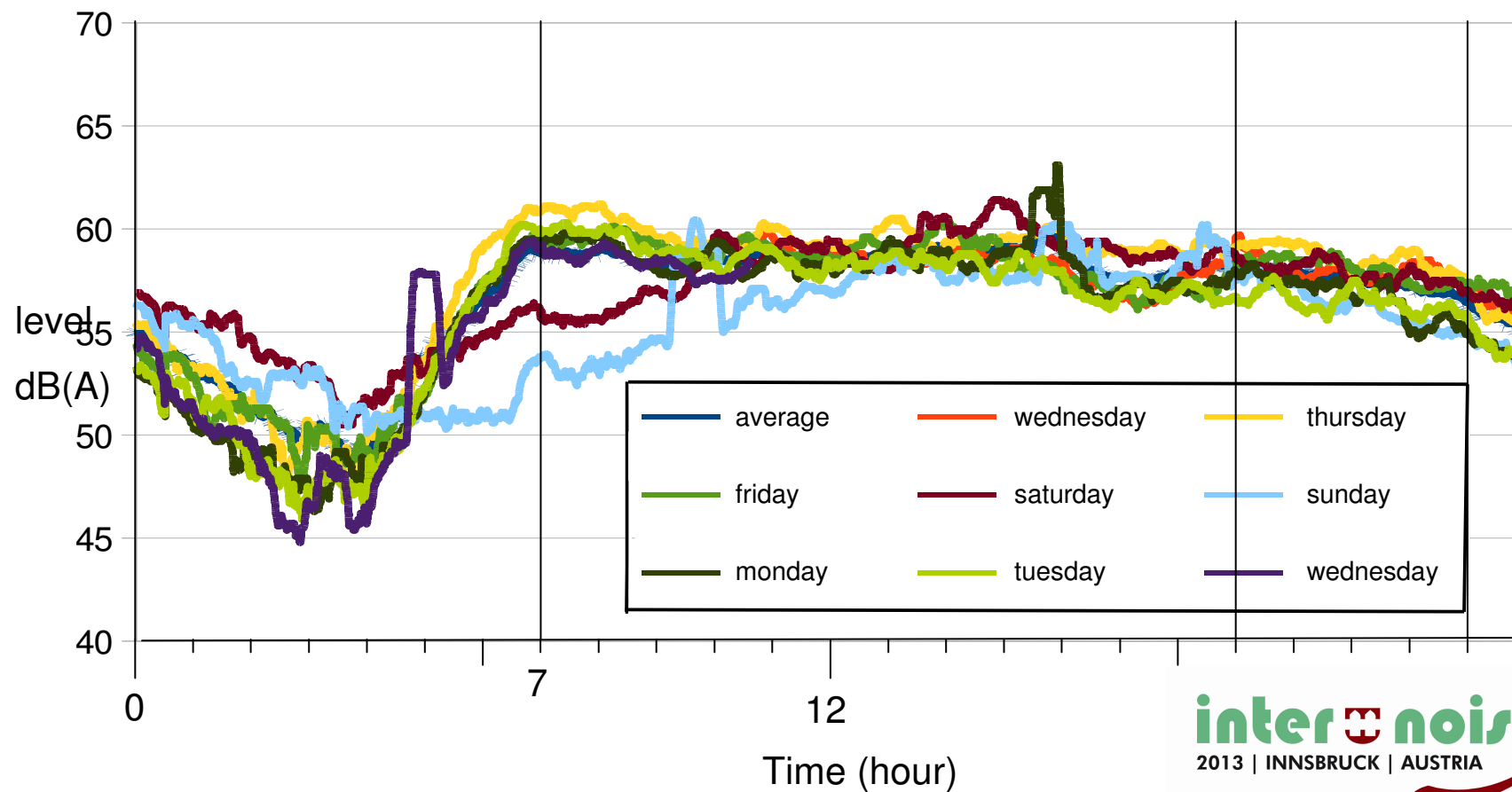
Spinozaweg Leq

QUADMAP: interventions (4)

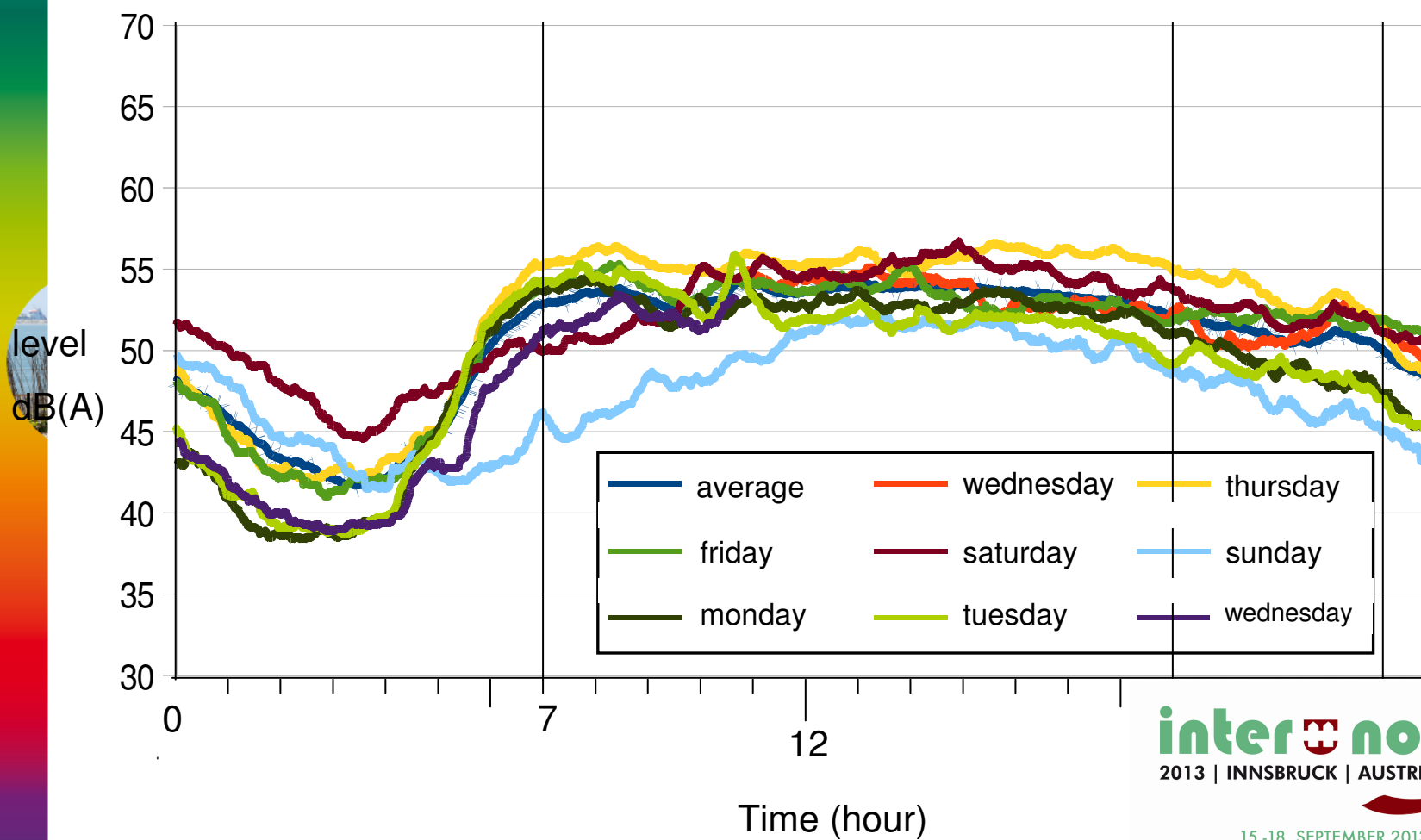
Intervention	Reduction		Effect Lden > 55 and exposure reduction > 2,51 dB	
	Number A	Number HA	Number dwellings	Number exposed population
Length 1140 m	61	36	240	552



Some figures: L10



Some figures: L90



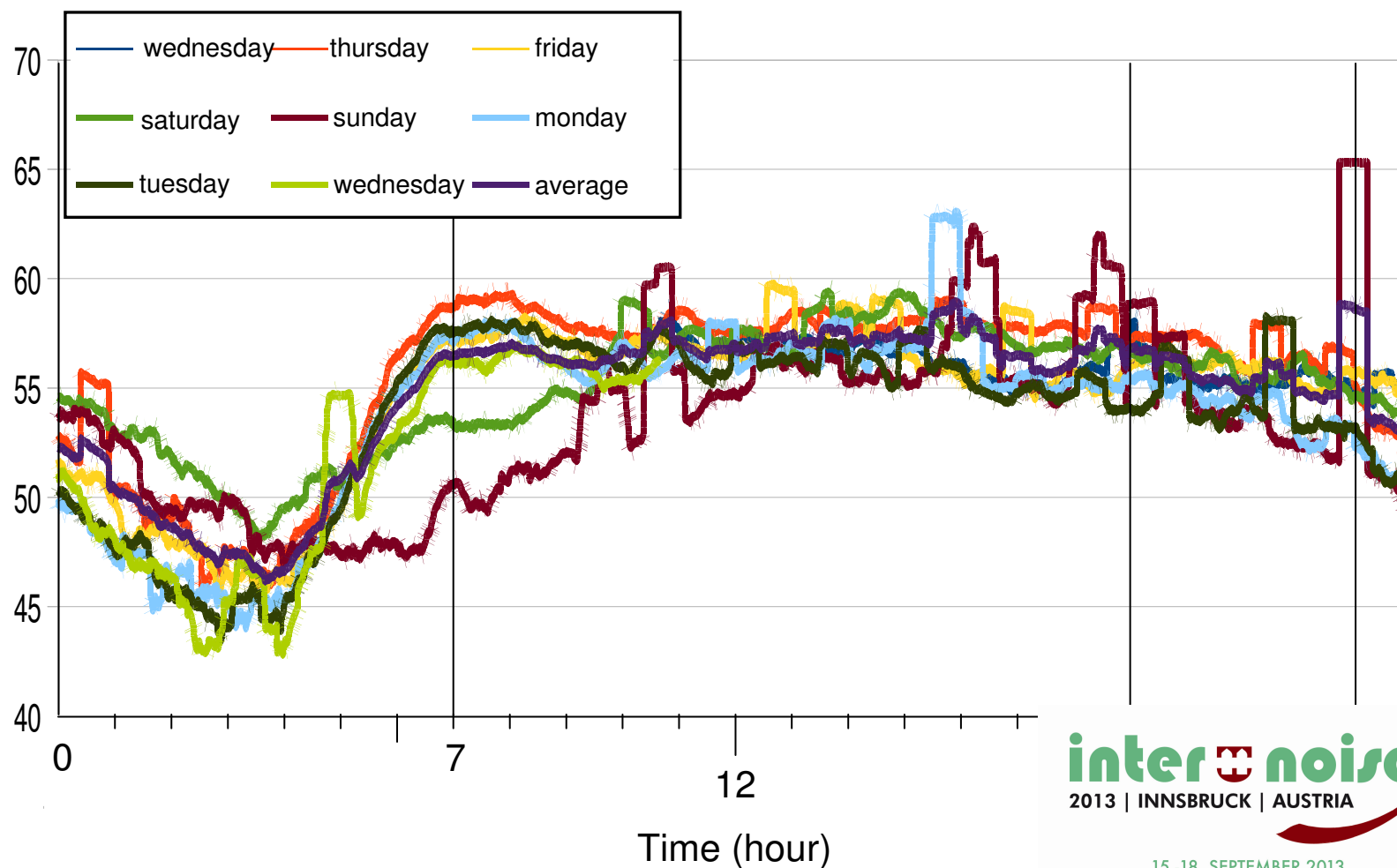
inter noise
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15.-18. SEPTEMBER 2013

NOISE CONTROL FOR QUALITY OF LIFE

Some figures: Leq,30minutes

level
dB(A)

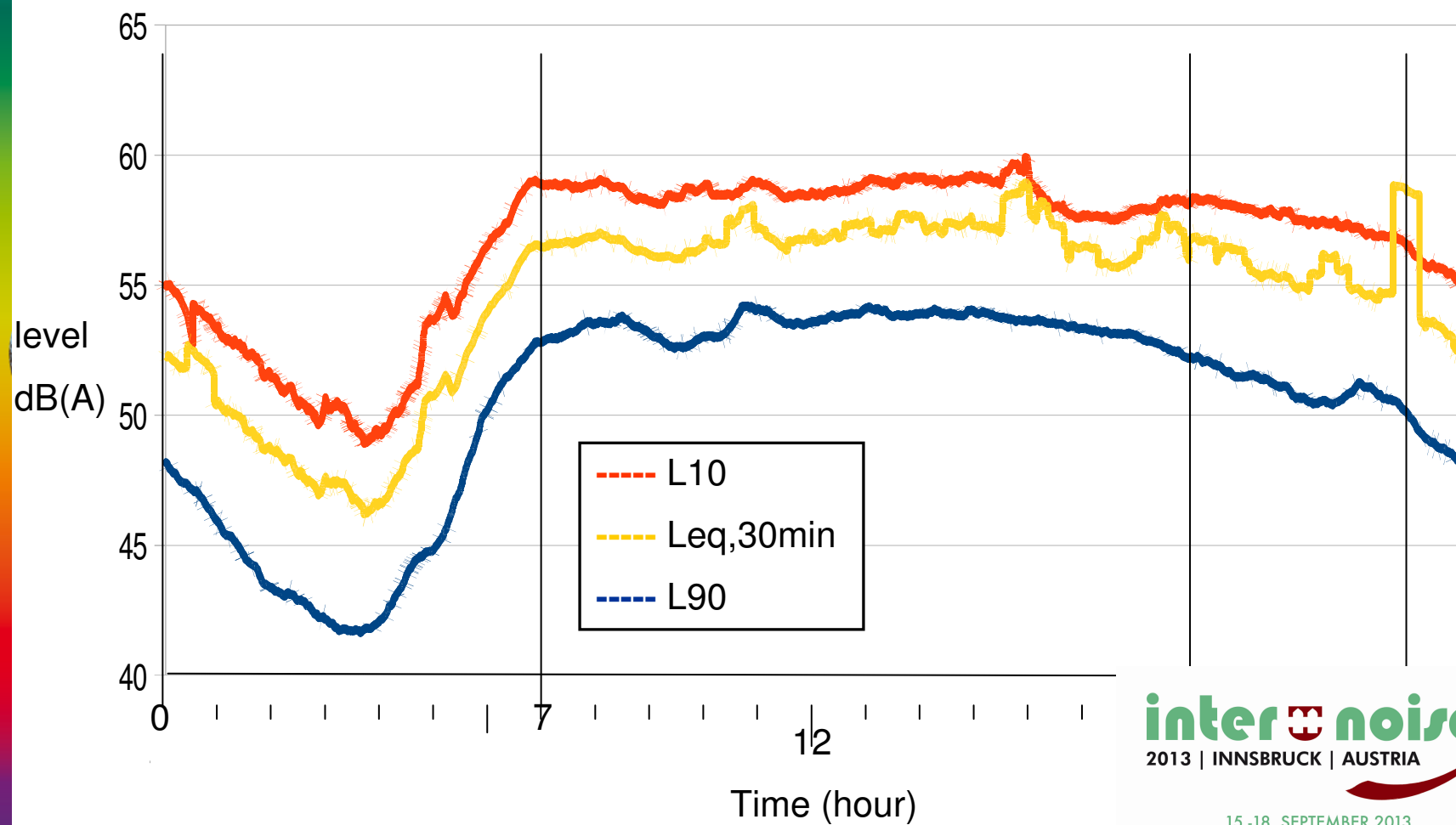


inter noise
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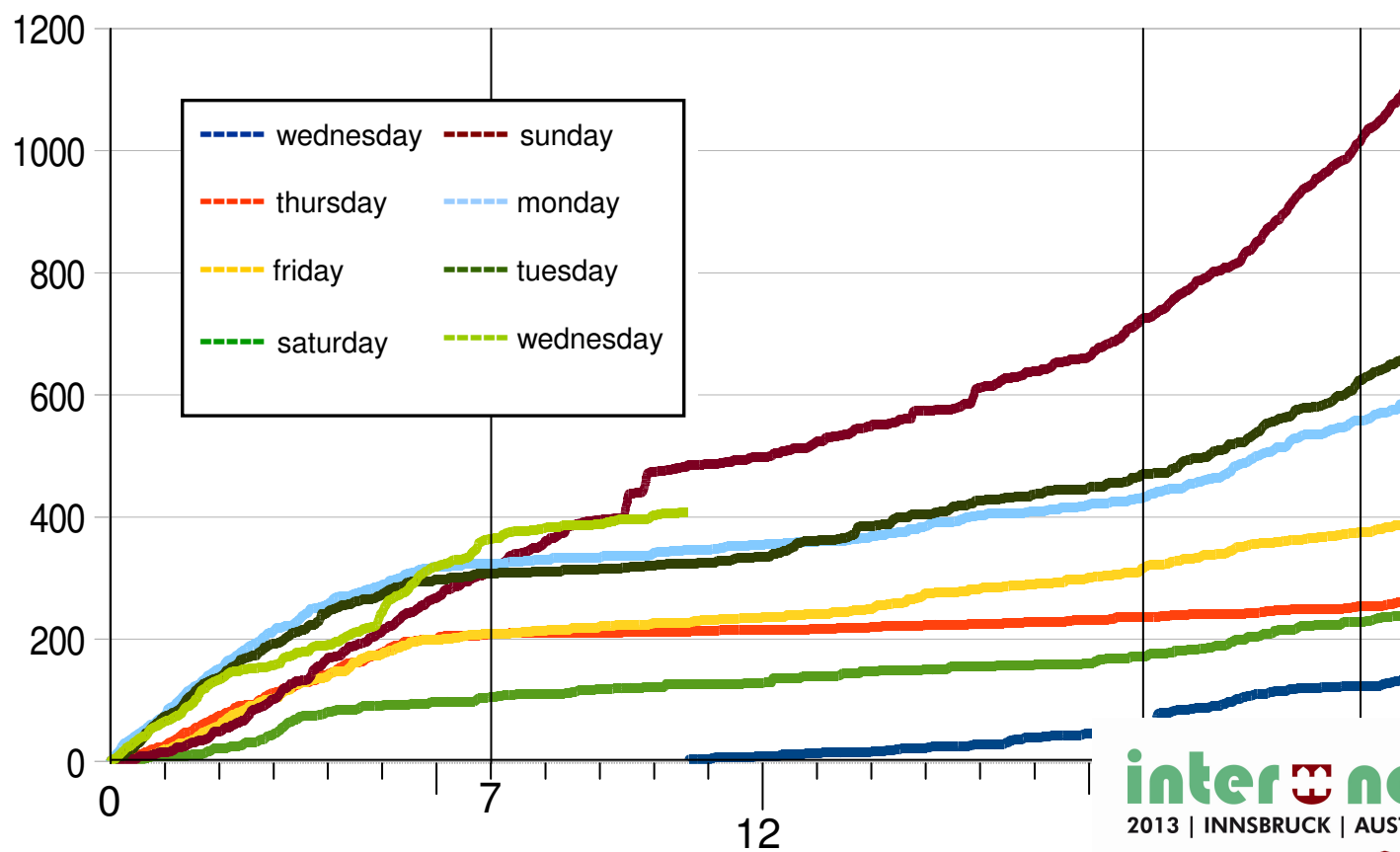
15.-18. SEPTEMBER 2013

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Some figures: weekly averages



Event count per day



Some figures (1)

	Audibility		
	Traffic	Humans	Nature
Soundscape evaluation	,269**	,266*	-,042
Overall quality			



Some figures (3)

	Soundscape and differentials									
	Upbeat	Unknown	Characteristic	Discontinuous	Annoying	Noisy	Chaotic	Mindboggling	Boring	Artificial
Soundscape evaluation	,561**		,560**		,606**	,331**	,332**		,460**	,497**
Overall quality	,29*									

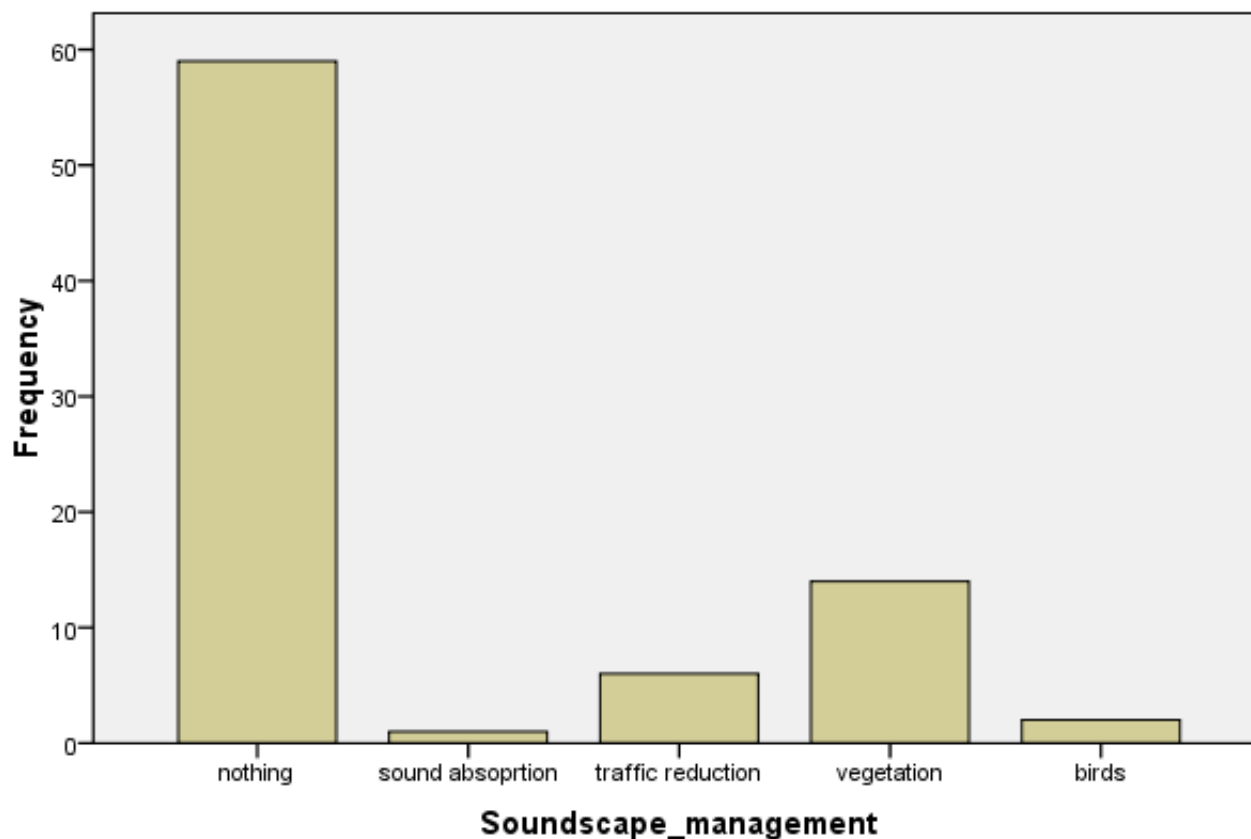


	Other qualities									
	Air quality	Safety	Maintenance	Materials	Entrance	Soundscape	Nature	Climate	Visual	Smell
Soundscape evaluation										
Overall quality			,304**	,394**		,213*	,390**		,524**	,284**

Future steps and challenges: intervention effect

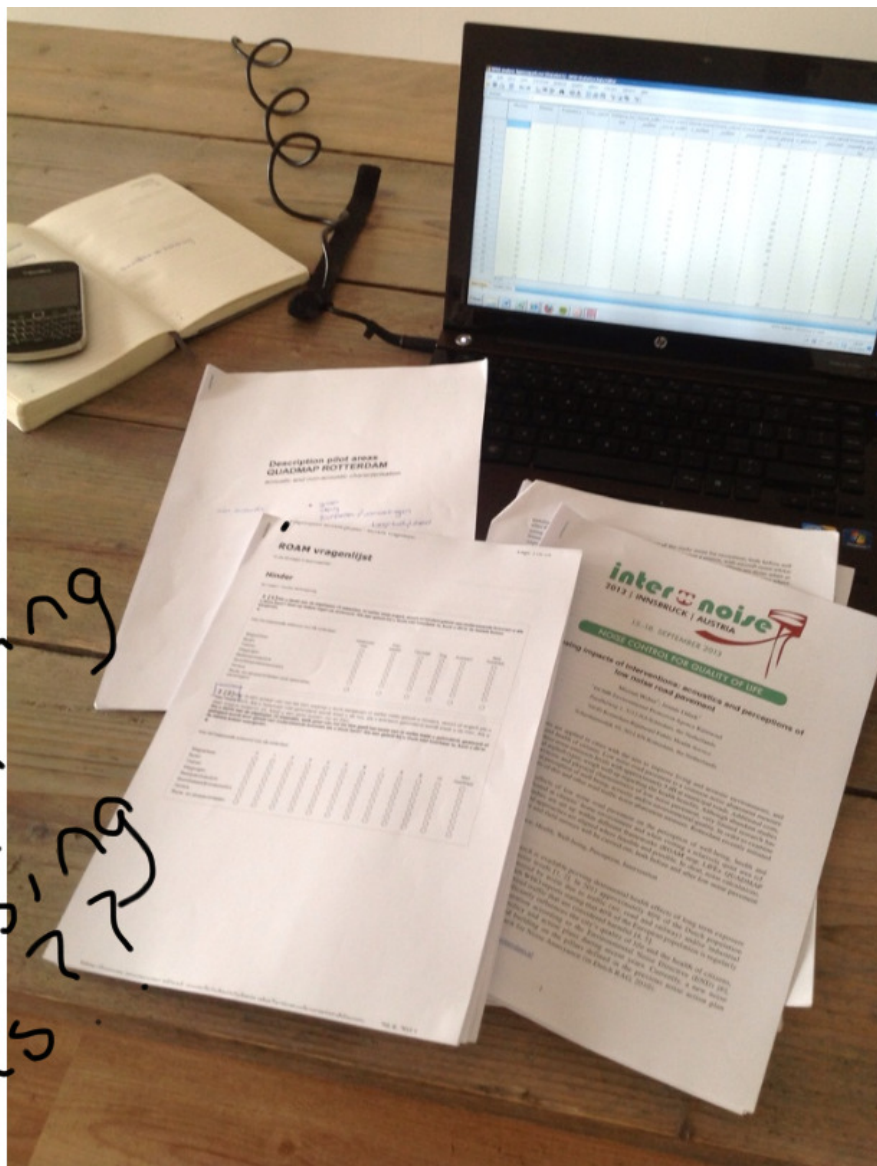
Correlations

	Sound traffic audible	Soundscape management
Sound_traffic_audible	1	-,271*
	81	81
Soundscape management	-,271*	1
	81	82



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missie
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98. 30.12.13
99. 31.12.13
100. 1.1.14



Discussion

- Which acoustic indicator links best with perception and appraisal of sound environment?
- Could this acoustic indicator (better) predict population responses to changes (increase and/or decrease) in noise exposure in terms of annoyance?
- Or could this acoustic indicator predict population responses to changes in noise exposure in *other* (well being or health) variables?
- Will population responses to changes in noise exposure differ in both situations (at home and in a park)?



Further questions and updates on research results:

Miriam Weber

Head of Noise Department

DCMR Environmental Protection Agency

E miriam.weber@dcmr.nl

