25/05/2017

Resultados de las medidas de O_3 y NO_2 en superficie

EGAR idaea

GOBIERNO DE ESPAÑA · MINISTERIO DE AGRICULTURA Y PESCA, ALIMENTACIÓN Y MEDIO AMBIENTE

¡MADRID! ÁREA DE GOBIERNO DE MEDIO AMBIENTE Y MOVILIDAD

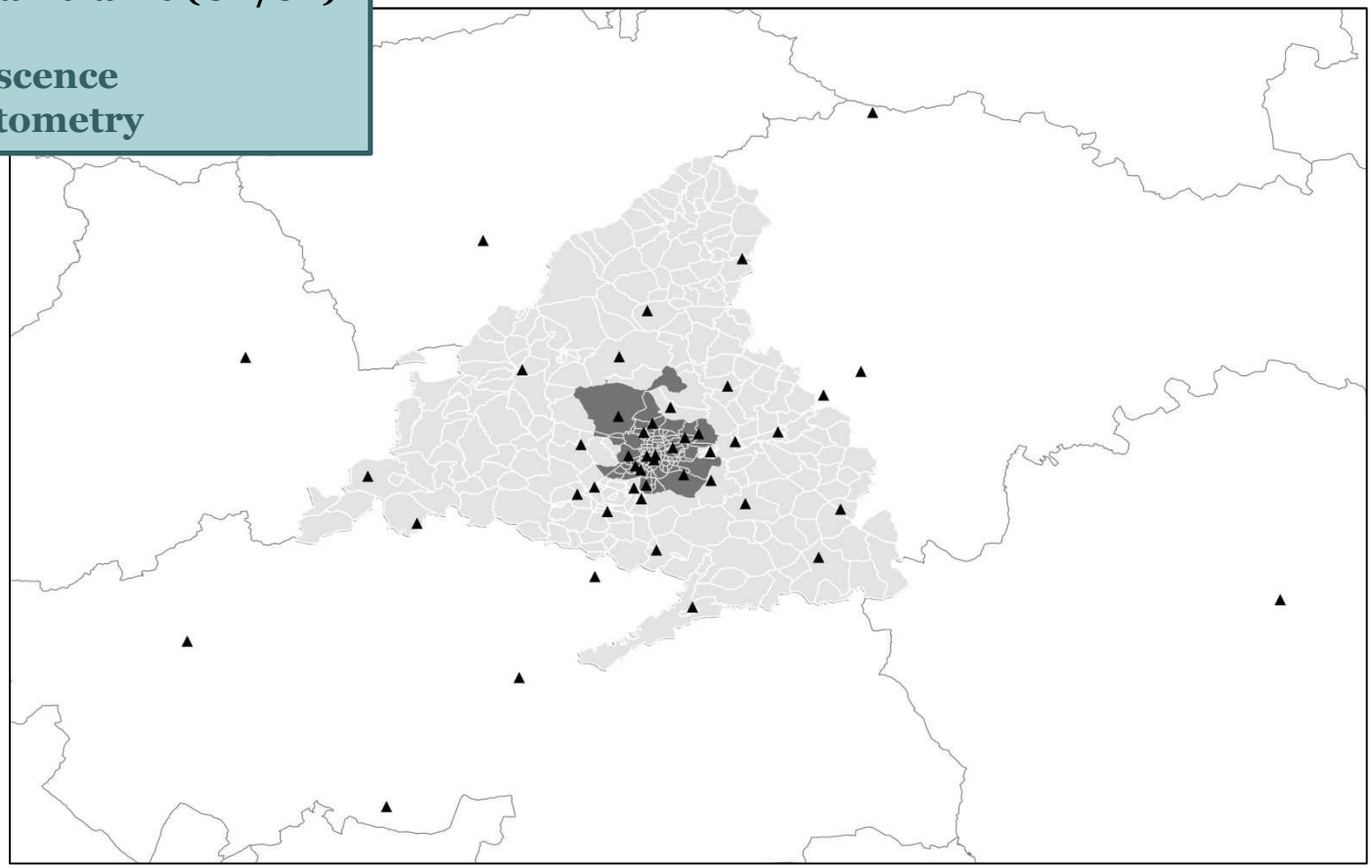
CEAM · UPV EHU · Ciemat · Instituto de Salud Carlos III · POLITÉCNICA

AEMet Agencia Estatal de Meteorología · GOBIERNO DE ESPAÑA · MINISTERIO DE ECONOMÍA, INDUSTRIA Y COMPETITIVIDAD · Aix Marseille université · UNIVERSITY OF BIRMINGHAM

Methodology

- 7 remote (RBREM)
- 3 rural (RB)
- 25 urban/suburban (UB/SB)
- 2 urban-industrial (UI)
- 12 urban/suburban-traffic (UT/ST)

NO_2 chemiluminescence
O_3 ultraviolet photometry

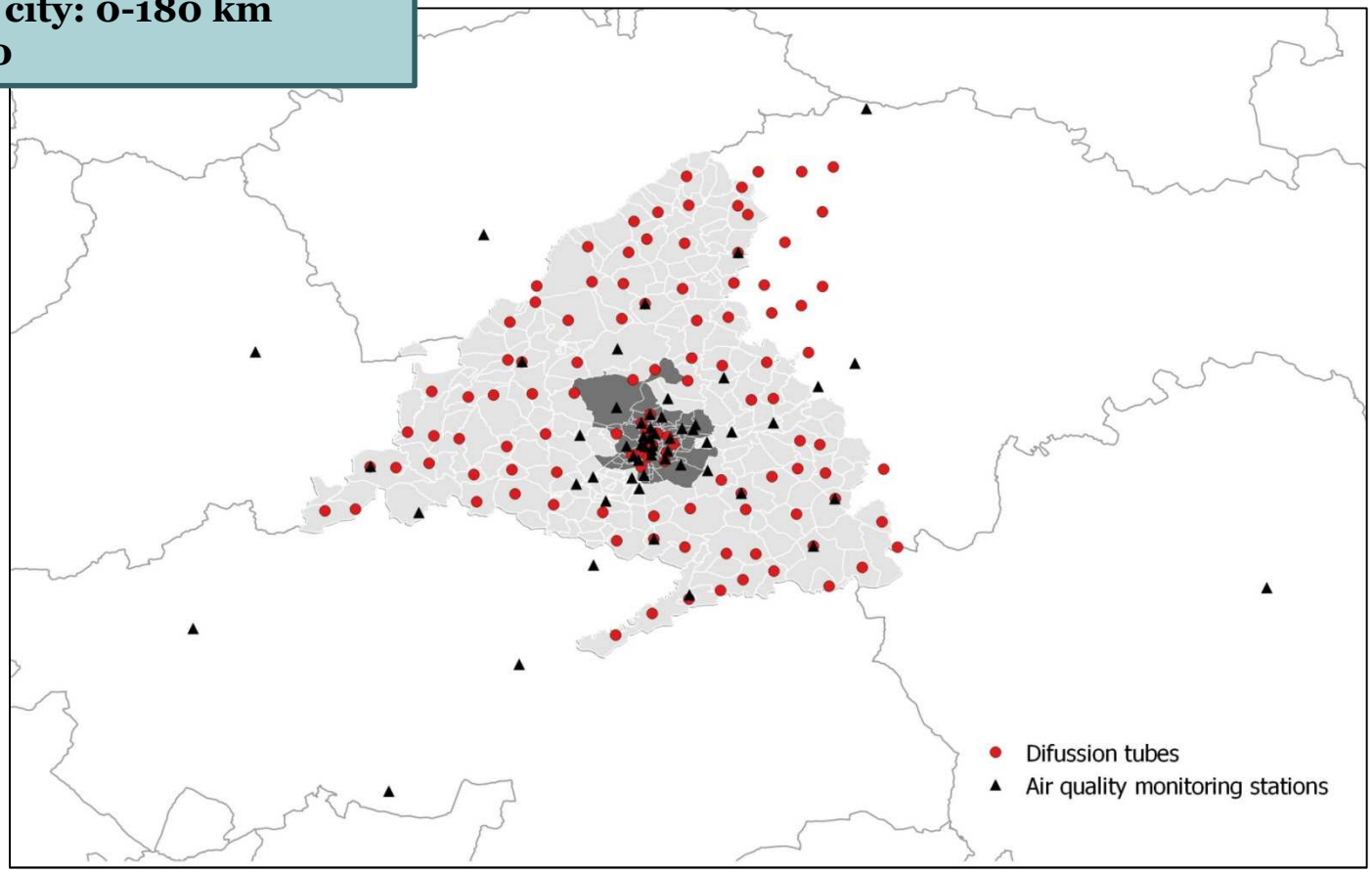


Methodology

+ 112 Difussion tubes

147 NO_2+O_3 sampling points

Distance from the city: 0-180 km
Altitude: 470-2260



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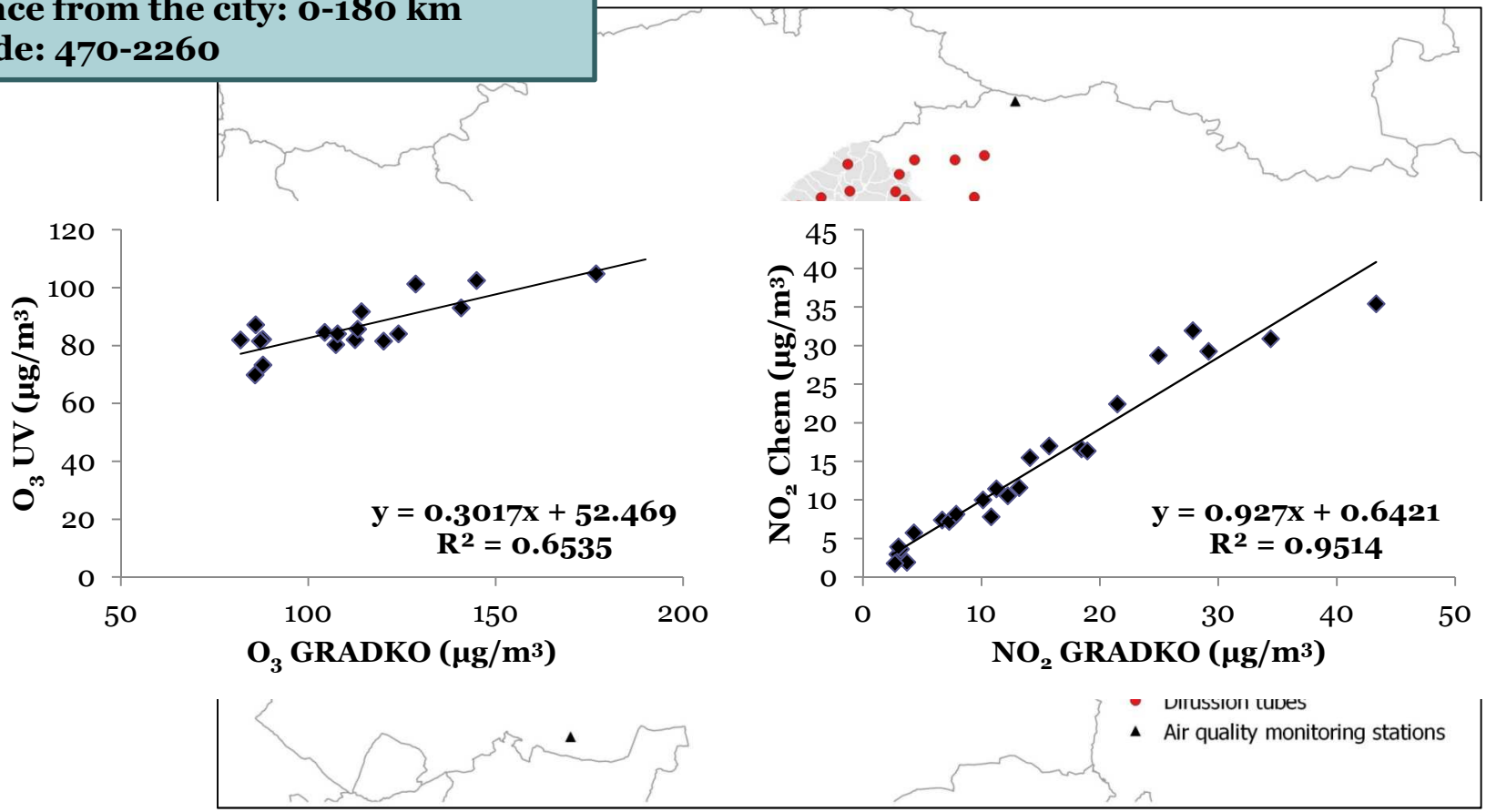
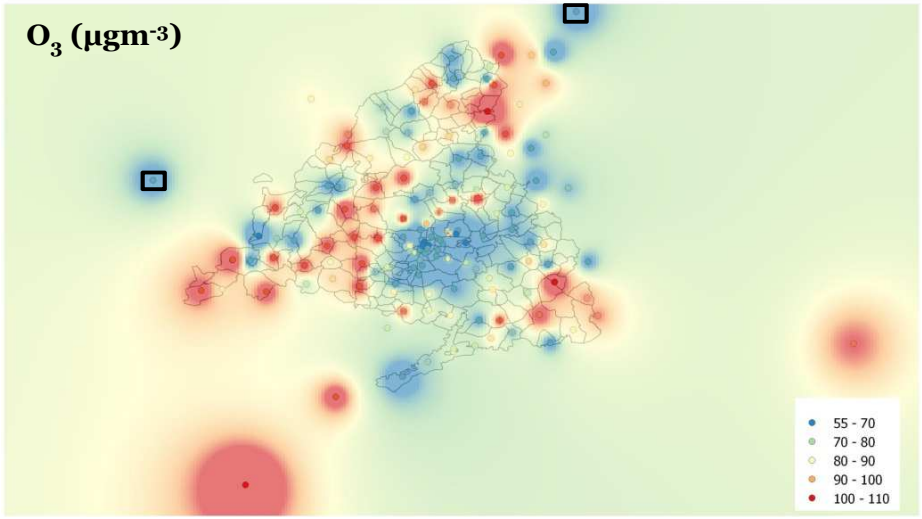
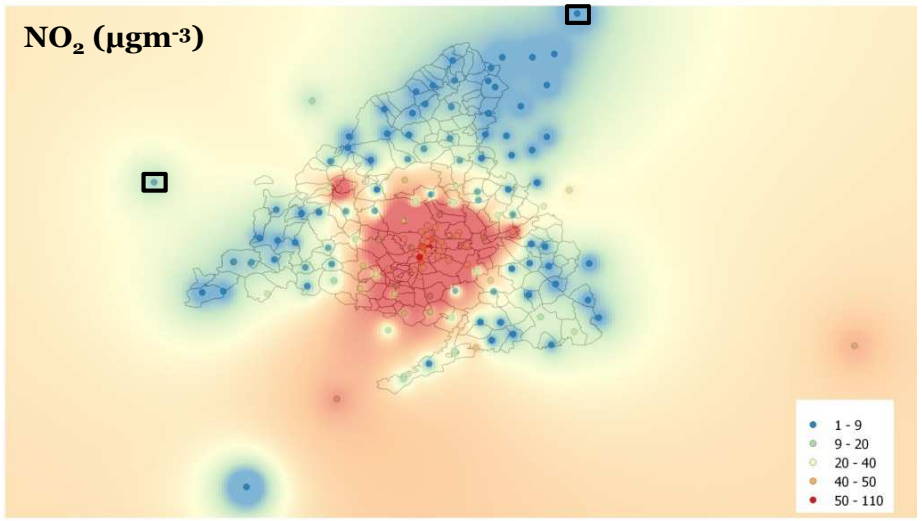


Spatial distribution





	O_3 (µgm-3)	NO_2 (µgm-3)	O_X (µgm-3)
Median	82.9	9.6	96.0
Min.	59.6	1.4	74.5
Max.	106.5	106.7	179.3
St. Dev.	7.4	13.9	12.0

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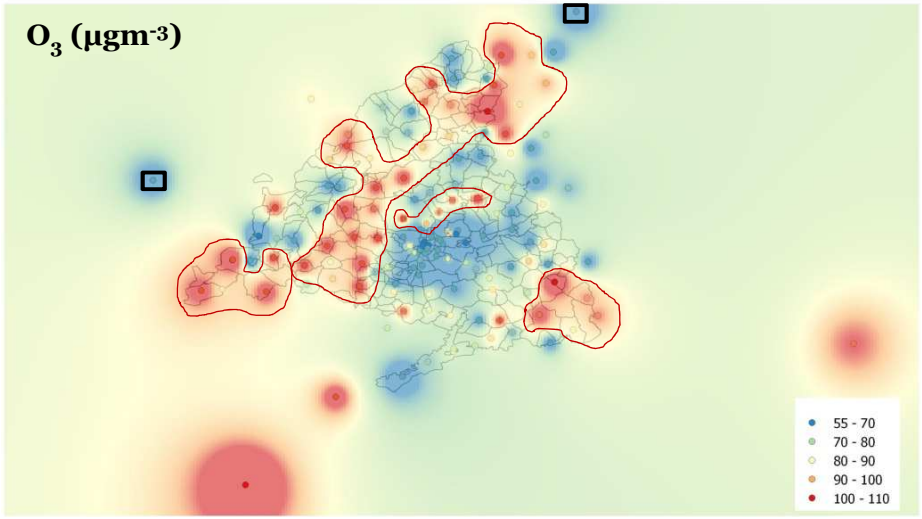
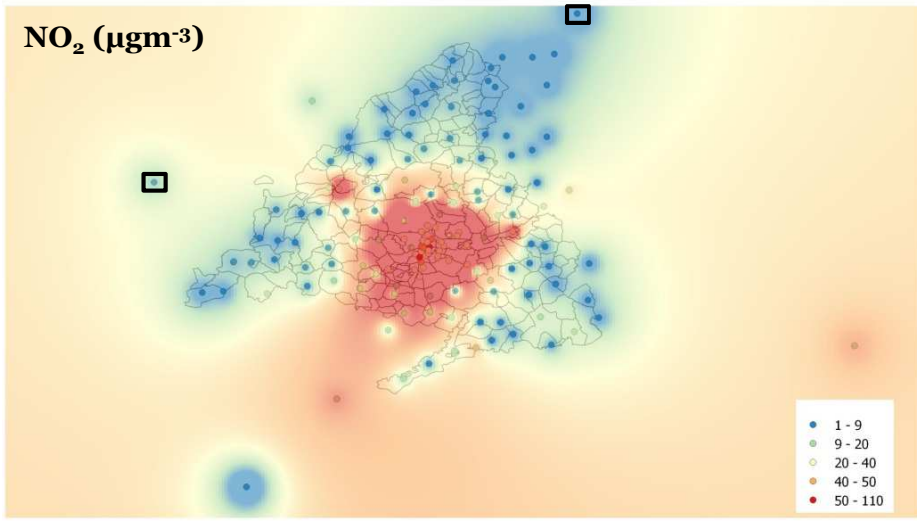
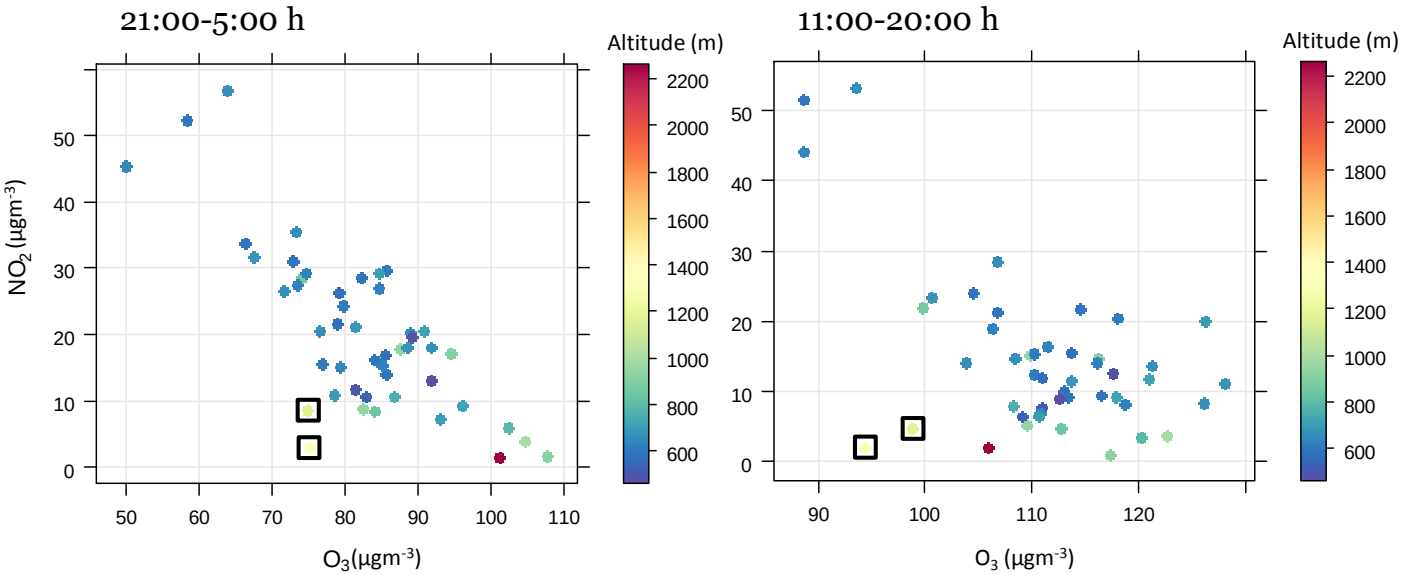
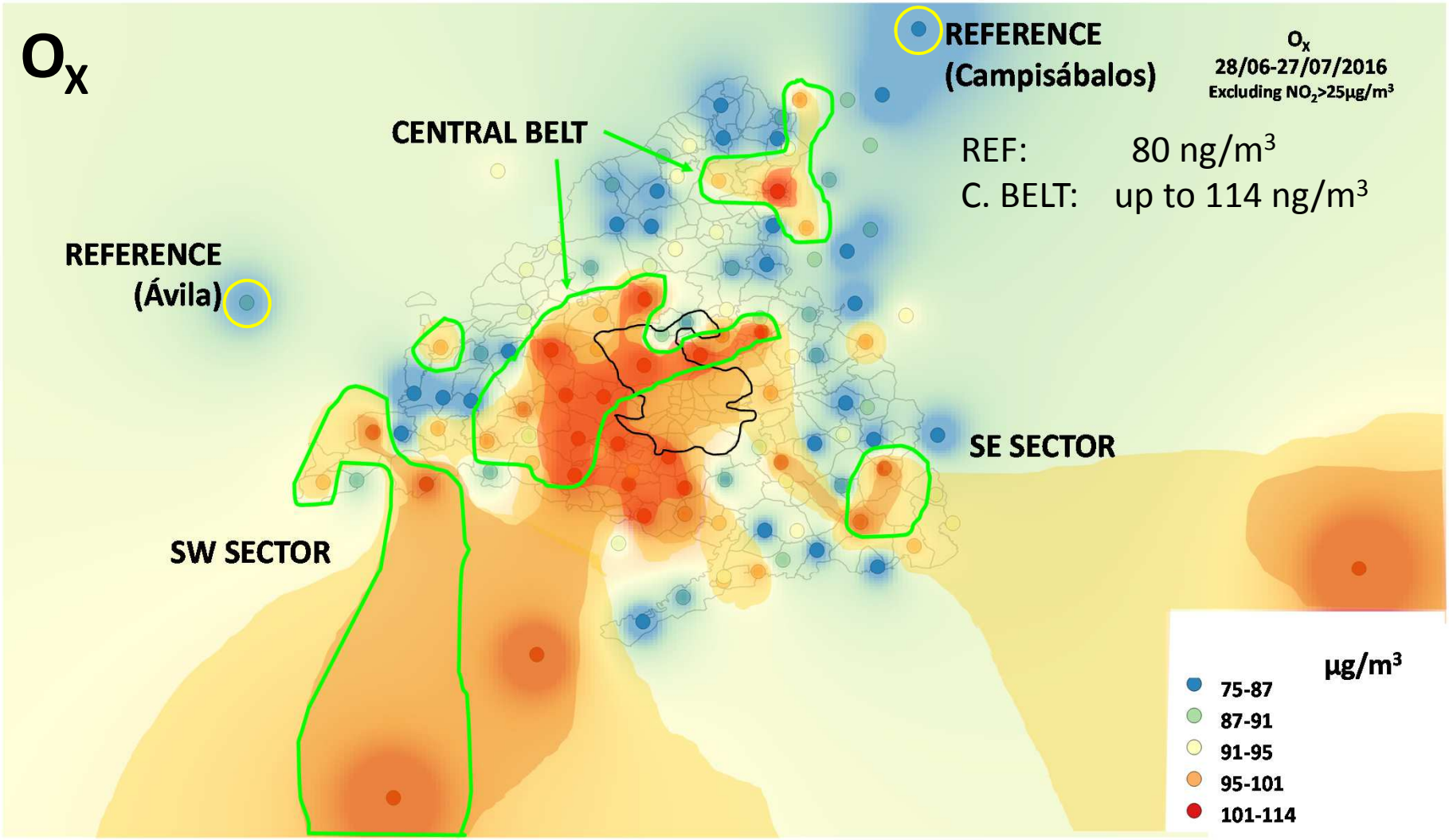






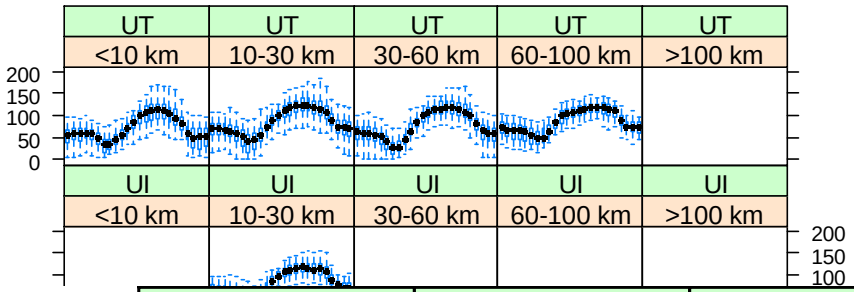
Selection of **reference stations**, interpreted as a proxy of O_3 regional contribution

Spatial distribution

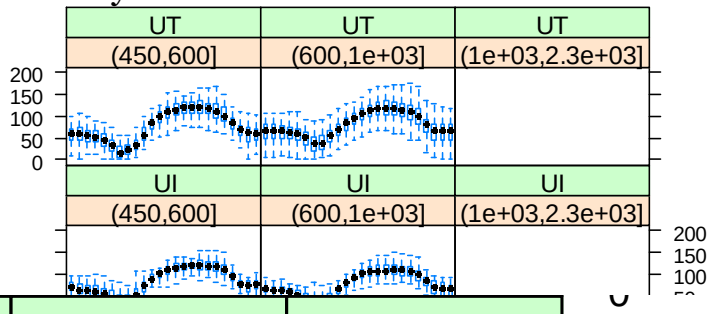


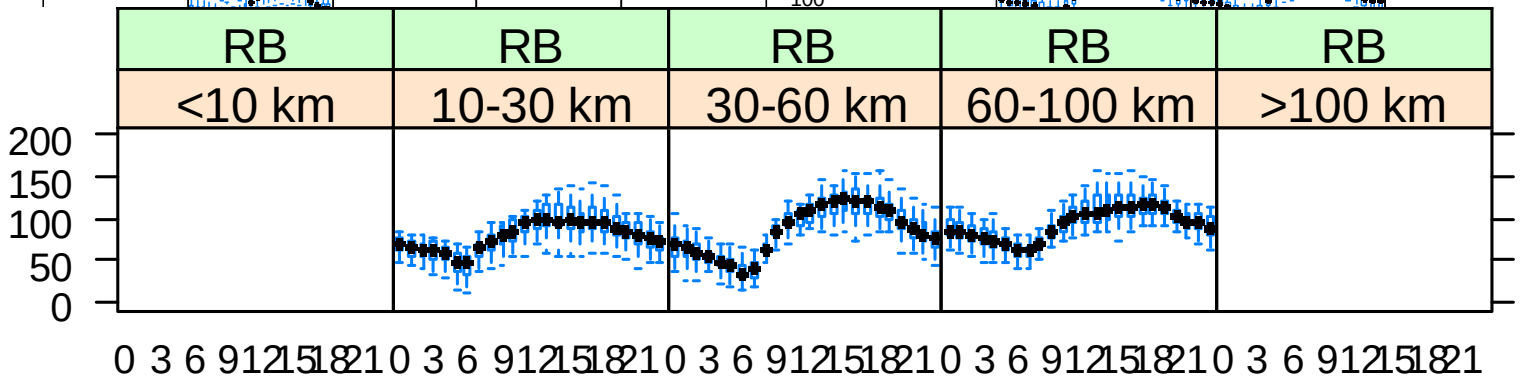
Daily cycle-Time of Daily Peak Ozone

By distance to the city

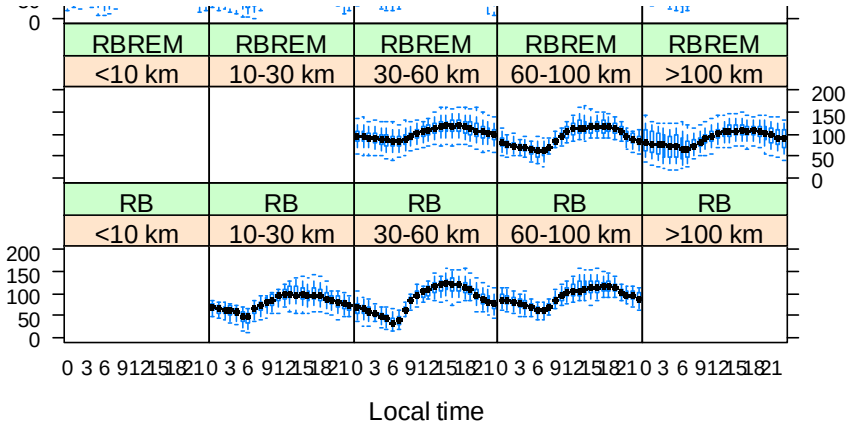


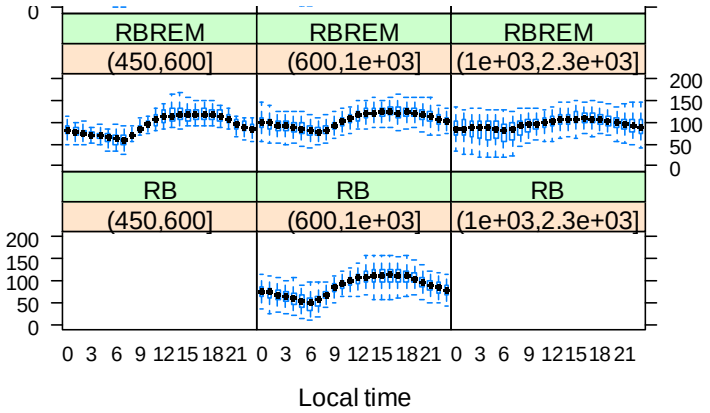
By altitude





Local time





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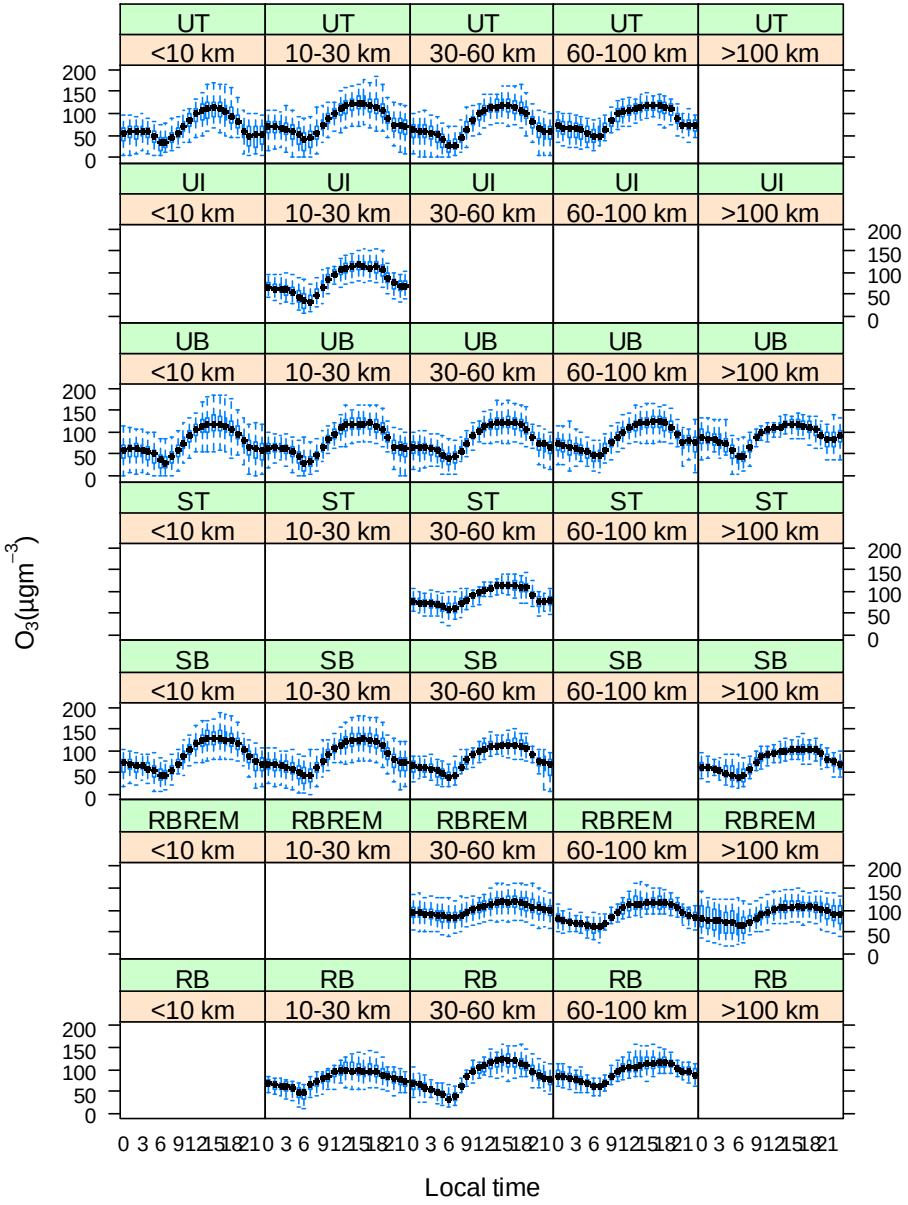

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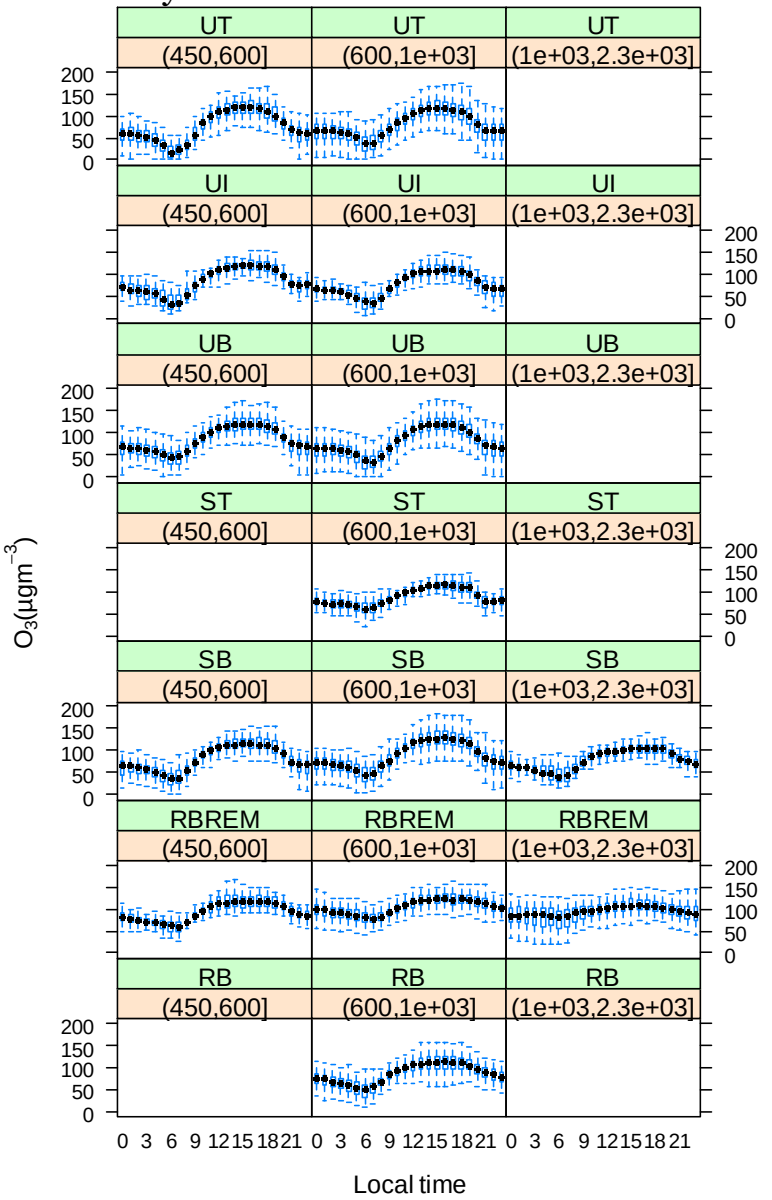
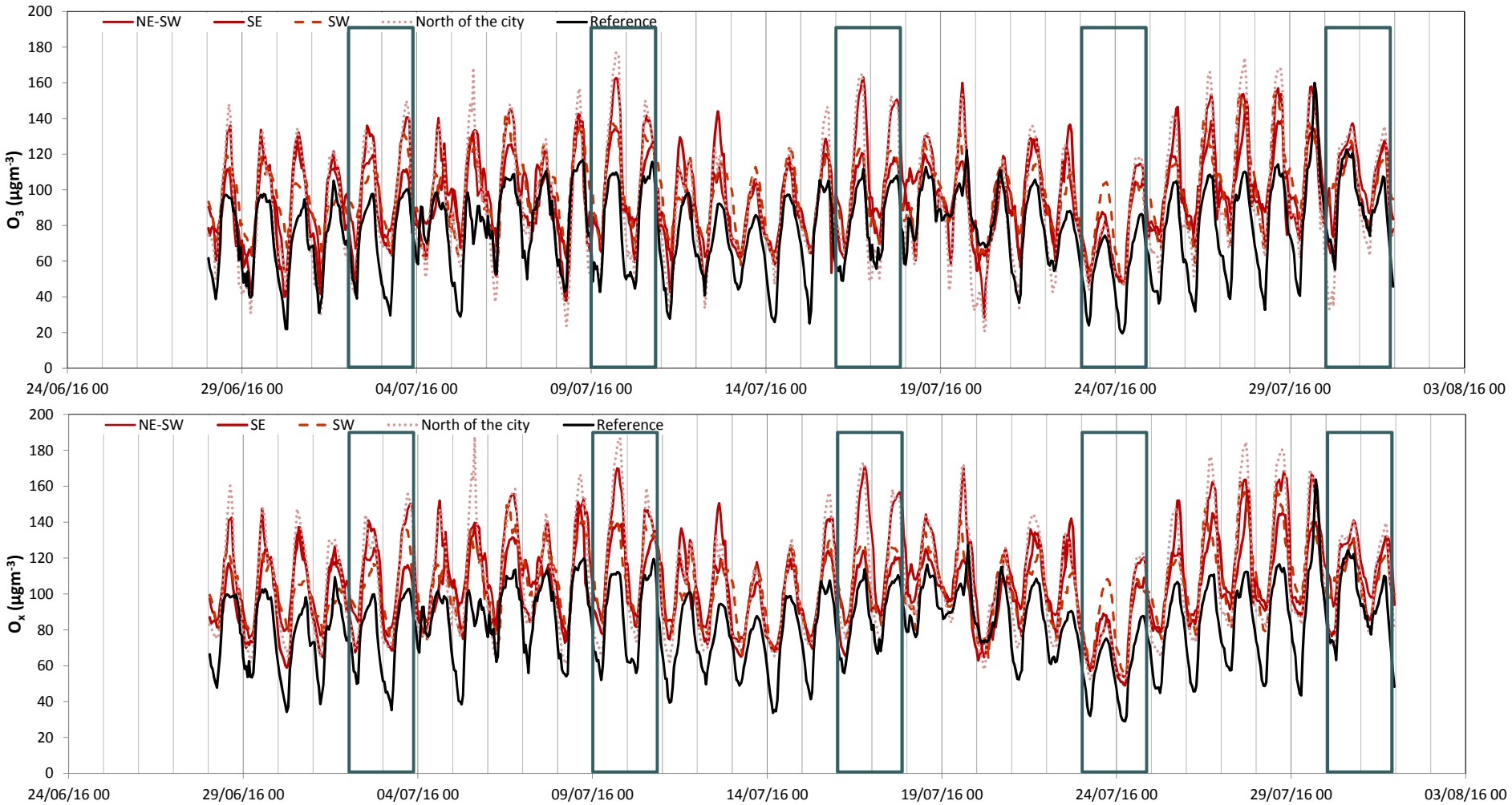


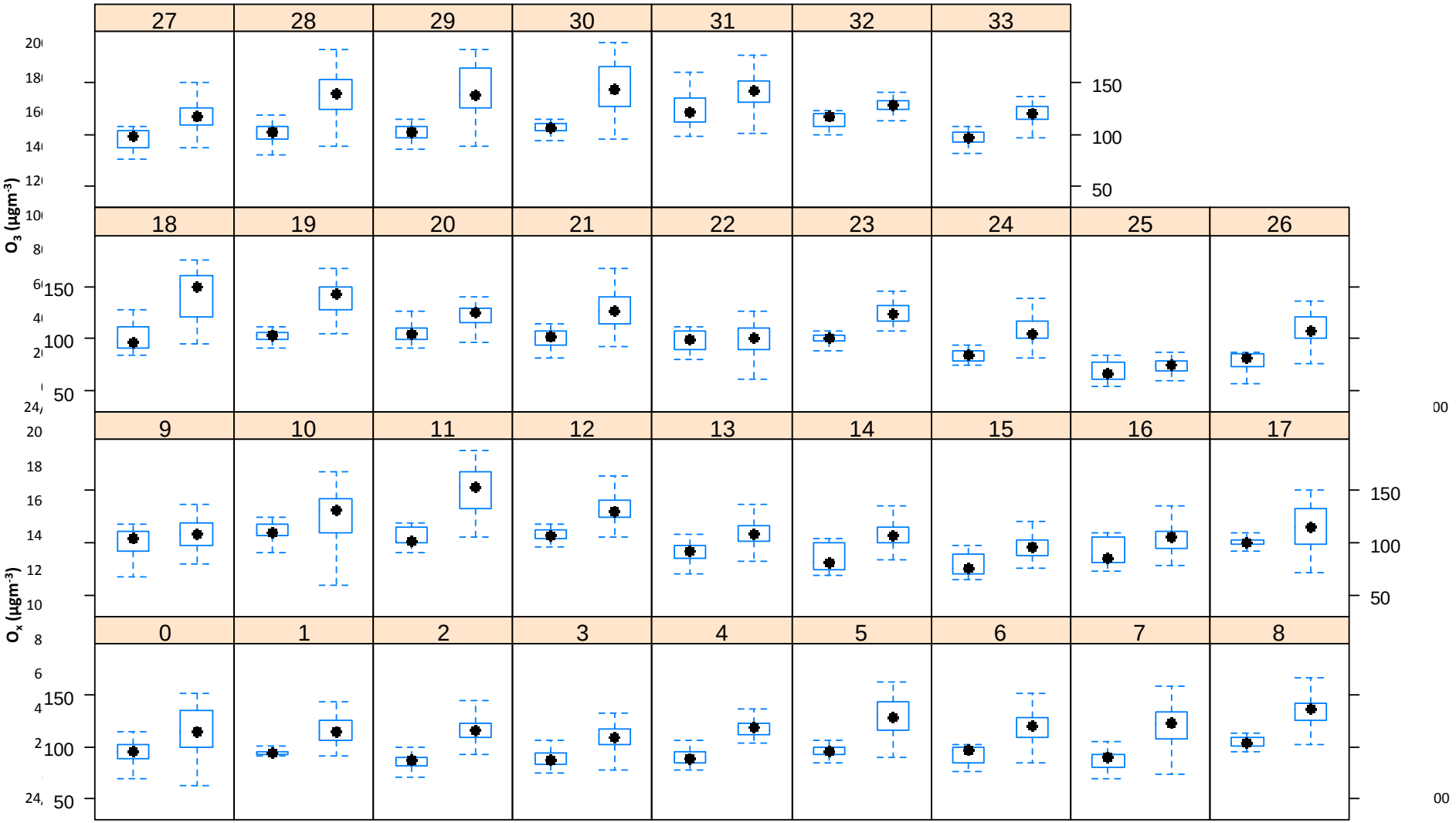
Time series-Differences between areas

Reference vs NE-SW belt+North of the city



Time series-Differences between areas

O_x (μgm^{-3}) Reference vs NE-SW belt+North of the city



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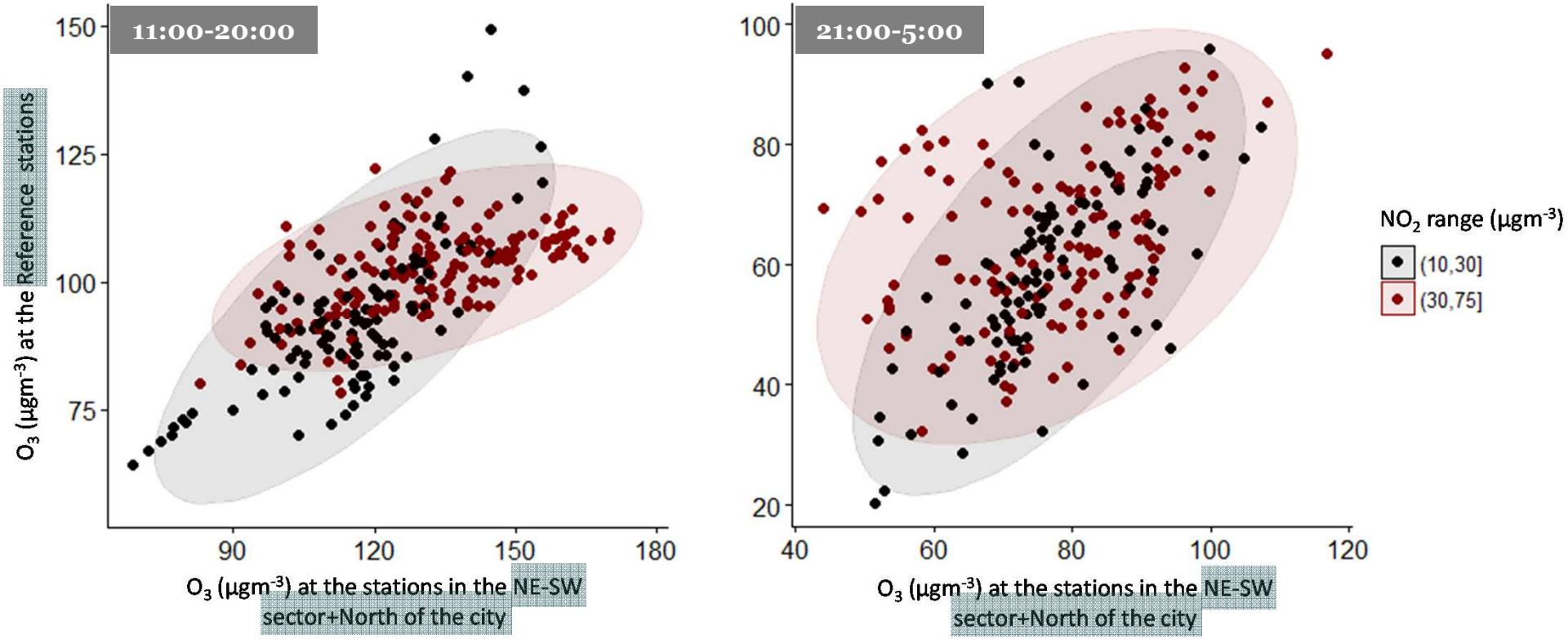
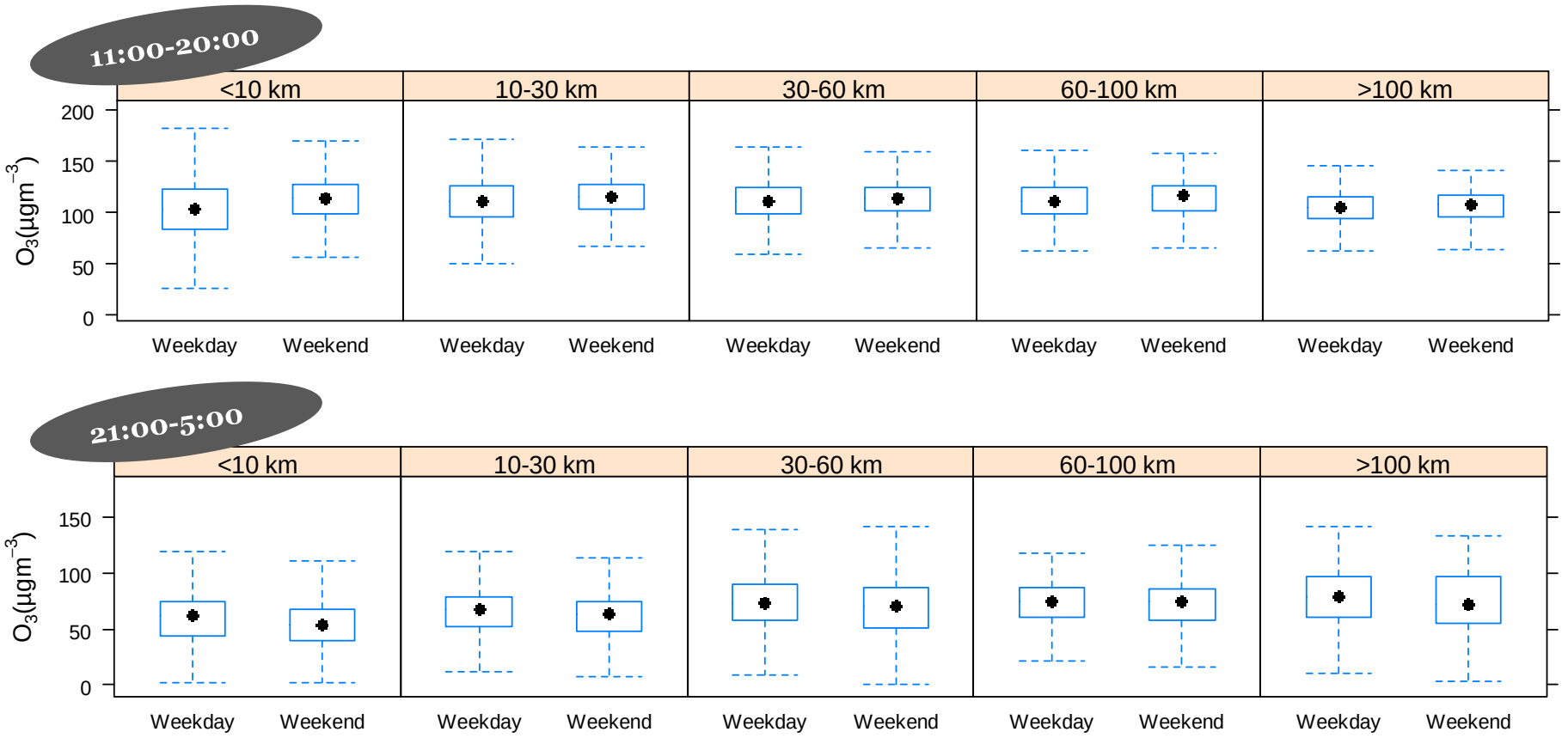


Weekday-Weekend comparison



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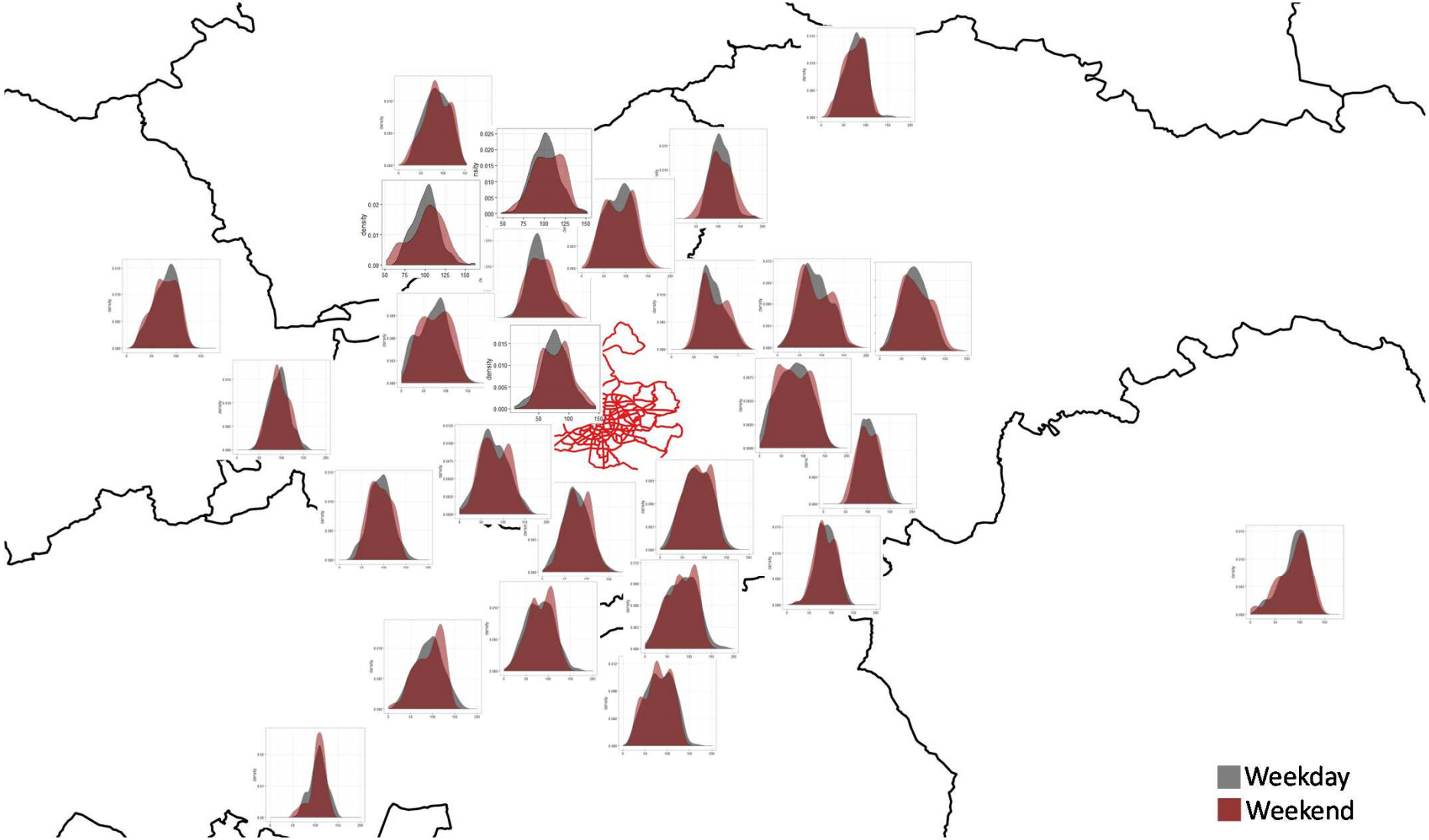

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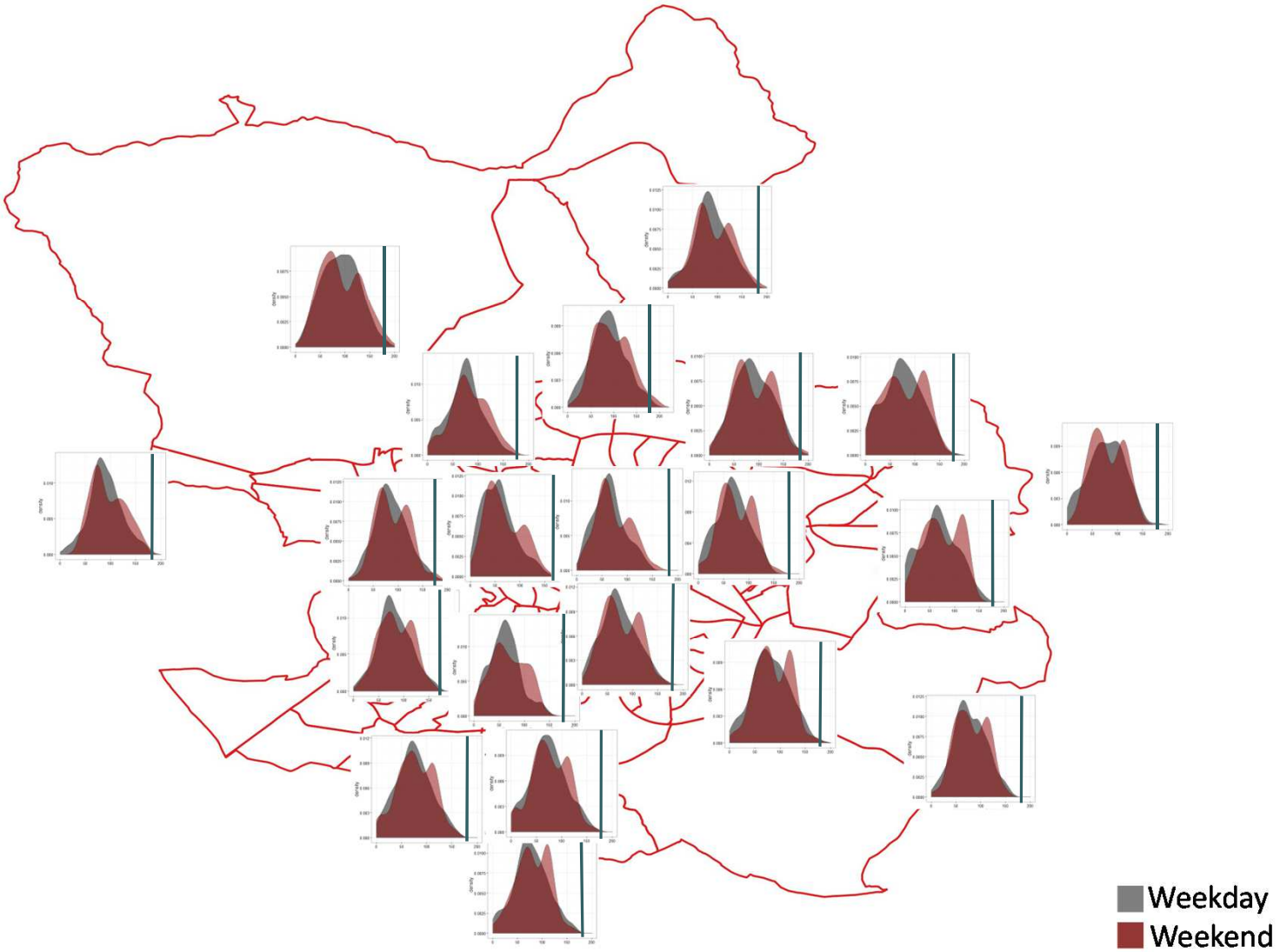
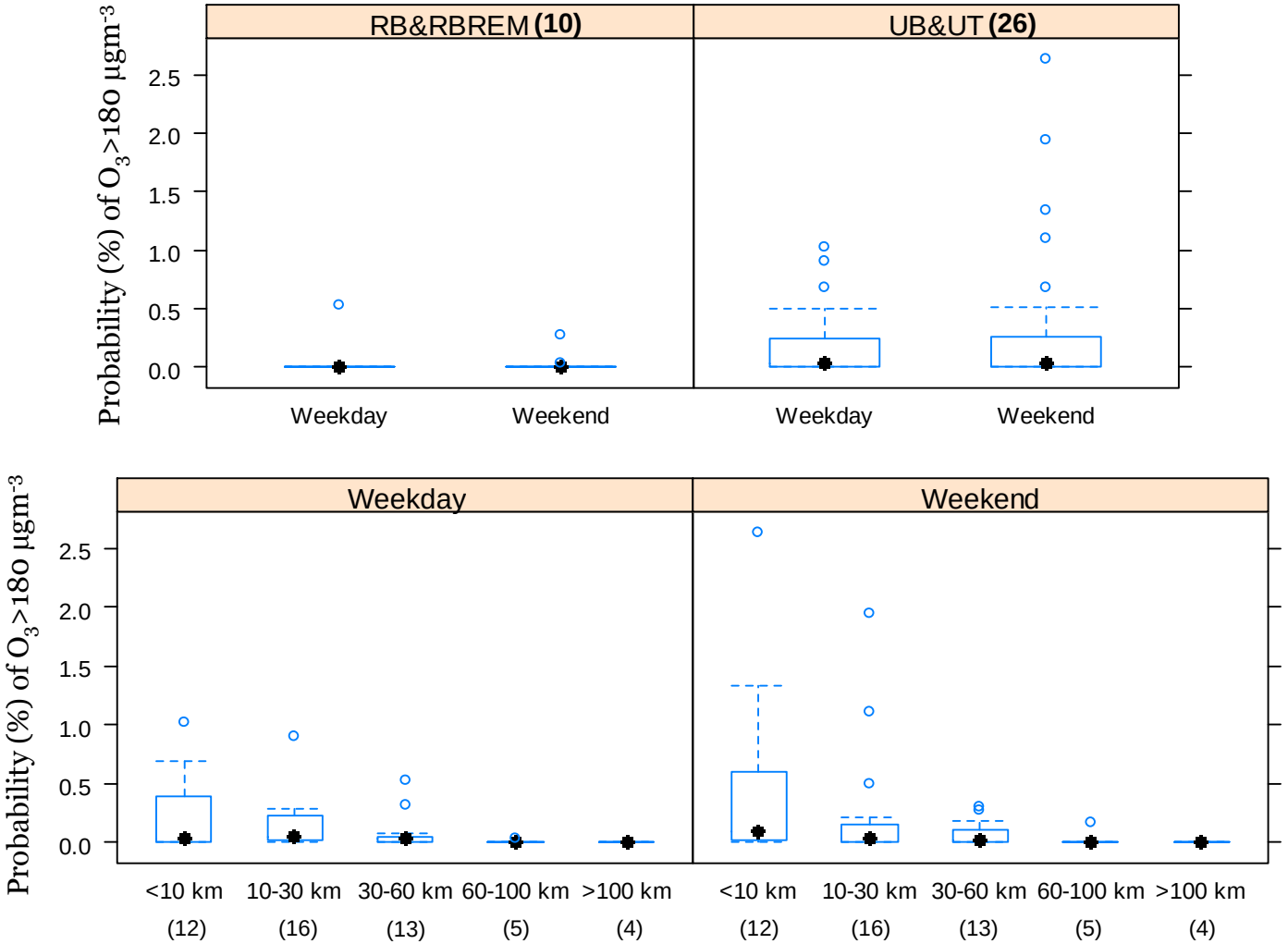


Weekday-Weekend comparison

Probability of O_3>180 µgm^{-3}



Conclusions

- Two monitoring stations were identified as reference measurement points, considered as a proxy of external regional O_3 contribution

- The highest O_3 concentrations were recorded at the north of the city and at the central NE-SW belt.

- An important regional contribution was evidenced according to the O_3 concentrations distribution at the reference sites

- A dependence of extreme O_3 concentrations on the Madrid urban plume was suggested through two approaches:

1. the highest differences between reference and high O_3-stations (proxy of local production) mostly recorded for elevated daily NO_2 concentrations; and
2. the probability of exceedance of the population information threshold is higher near the city, and it is always higher at UB and UT than at RB and RBREM stations

- A marked "O_3 weekday/weekend effect" was not observed in the Madrid basin in July 2016, obtaining similar median concentrations regardless the location of the station

MUCHAS GRACIAS

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