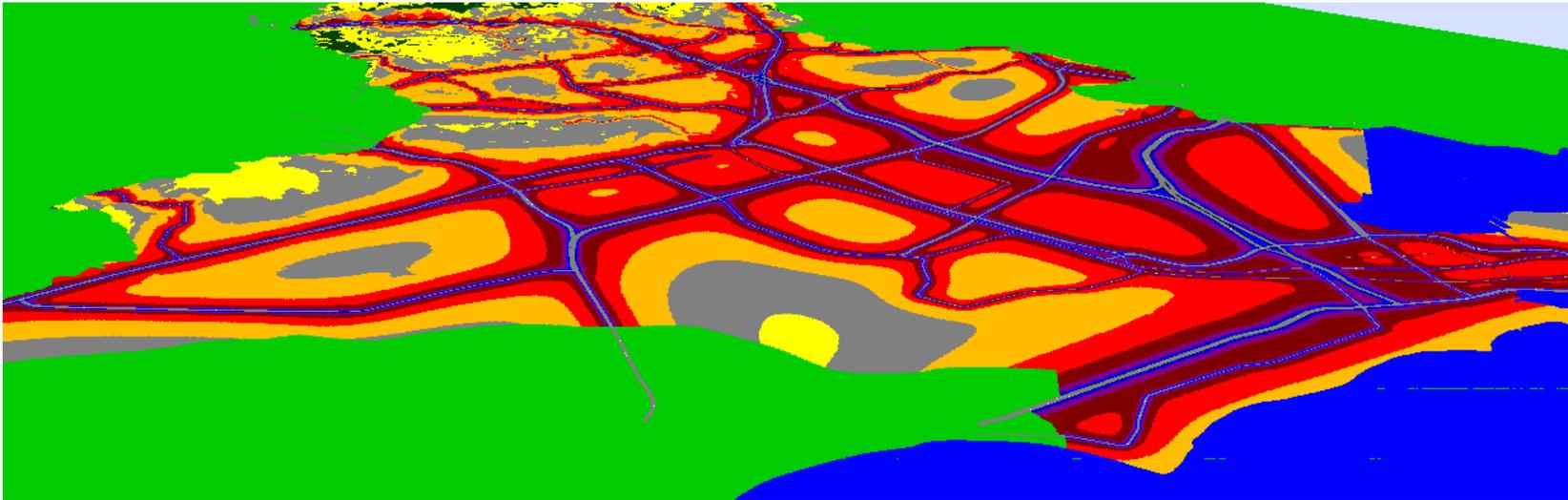


Noise Mapping San Juan - Puerto Rico

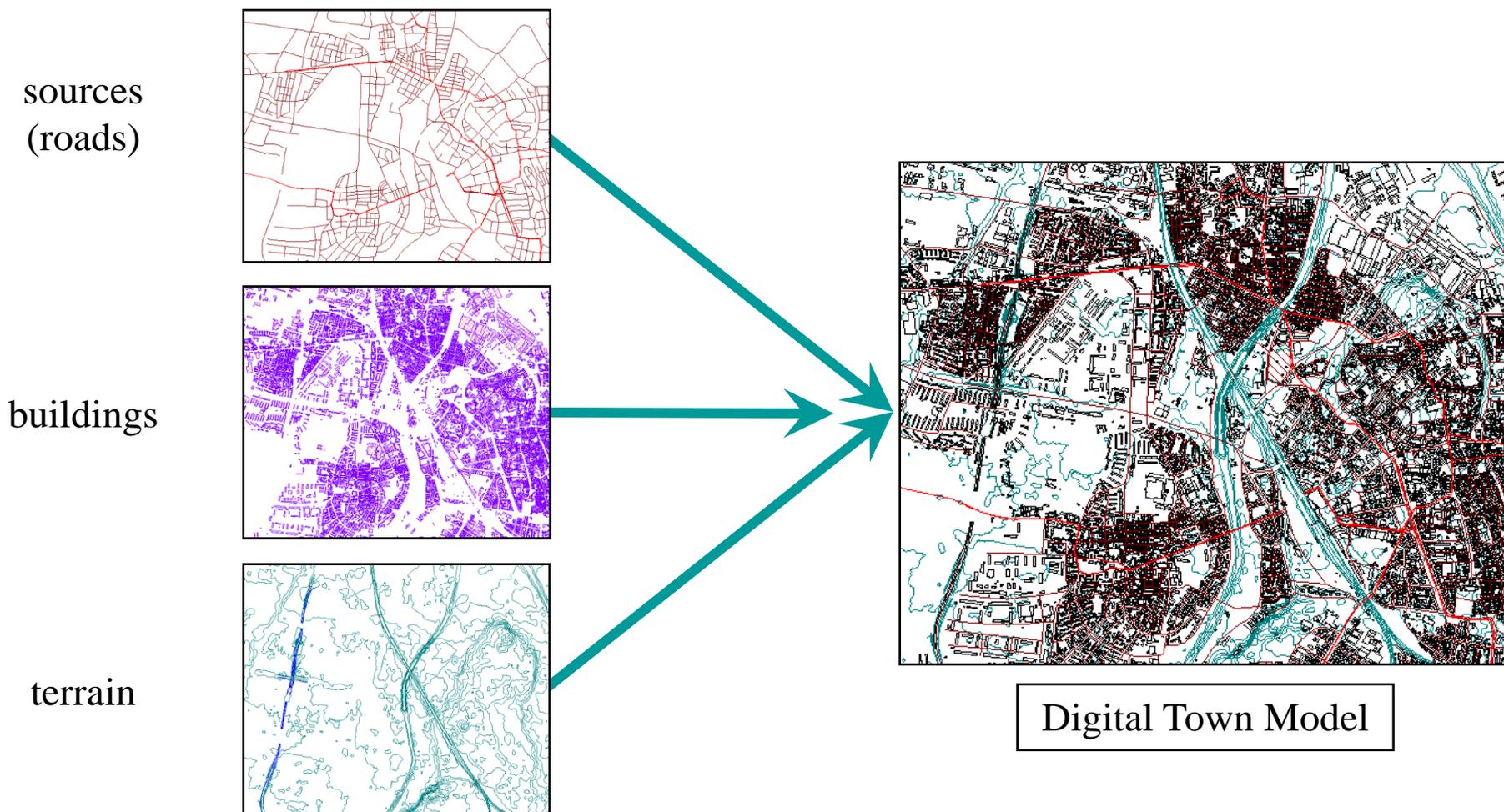


Heinrich A. Metzen¹, Igor Dormuth²

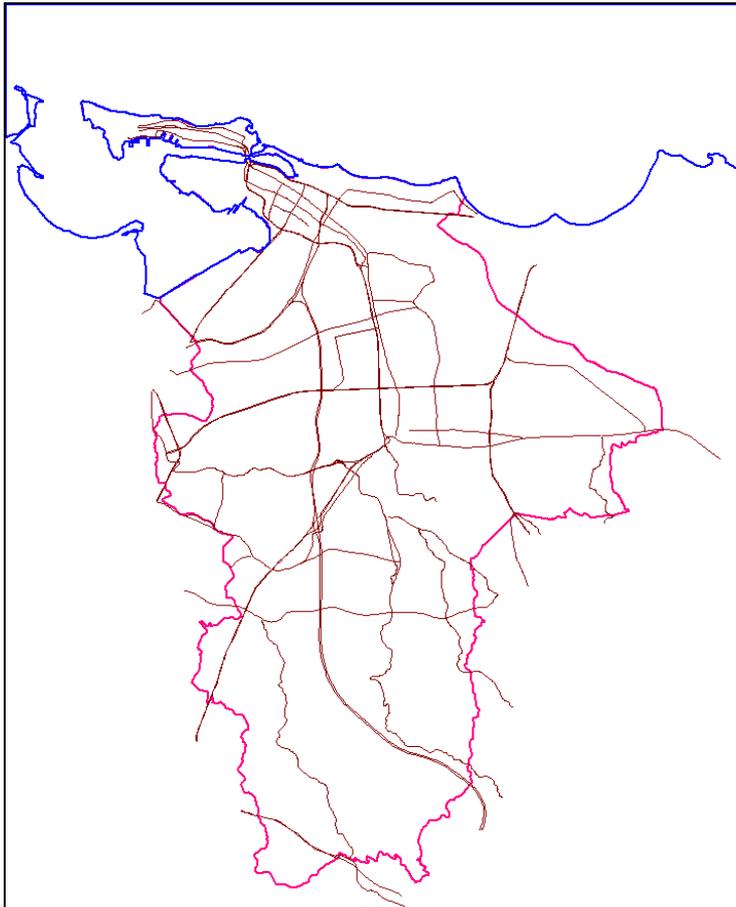
¹Datakustik GmbH, Gewerbering 5, D-86926 Greifenberg

²ACCON GmbH, Gewerbering 5, D-86926 Greifenberg

Generation of a Digital Town Model



Input Data - Road Network



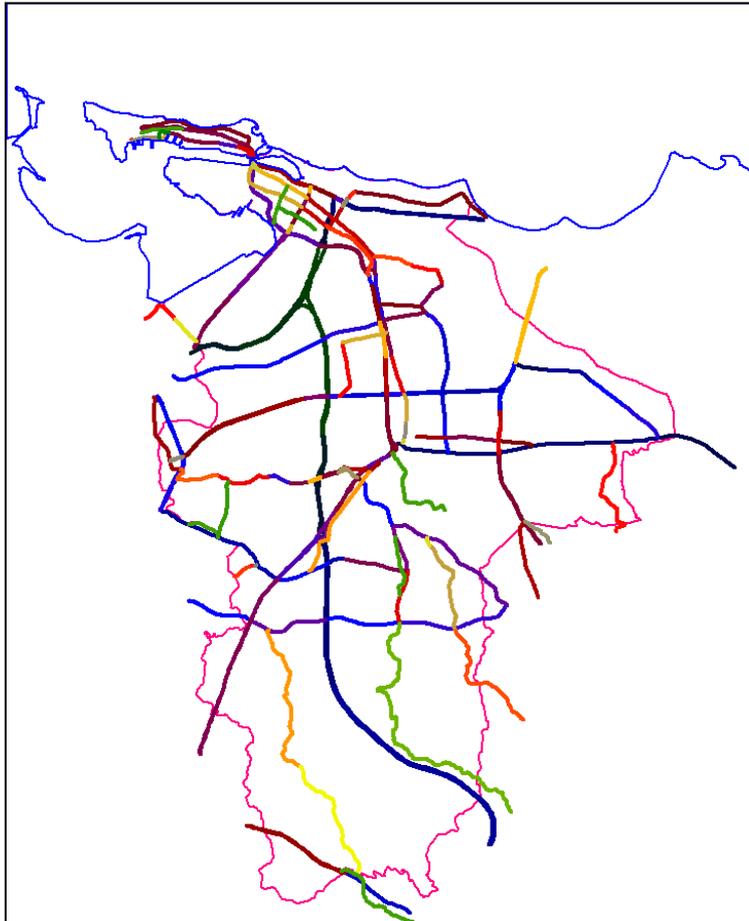
total road length: 280 km

distribution of traffic AADT:

AADT classe (veh/day)		road length
from	to	(km)
	1000	2.8
1000	5000	21.0
5000	10000	5.7
10000	20000	70.4
20000	50000	113.6
50000		66.9

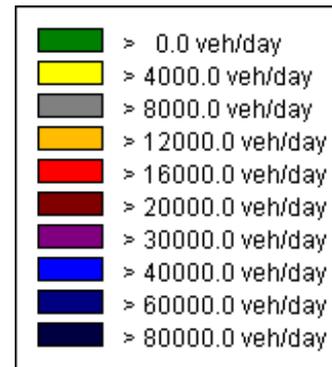
roads
coast line
municipal border

Distribution of Traffic Load



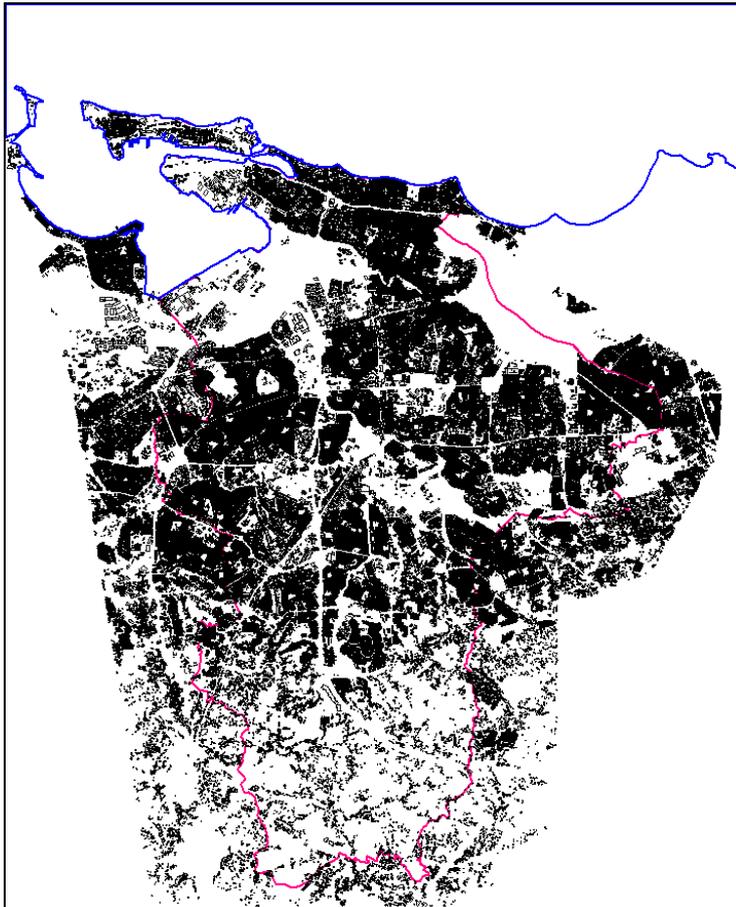
road sections coloured based on their AADT-data

legend:



coast line
municipal border

Input Data - Buildings



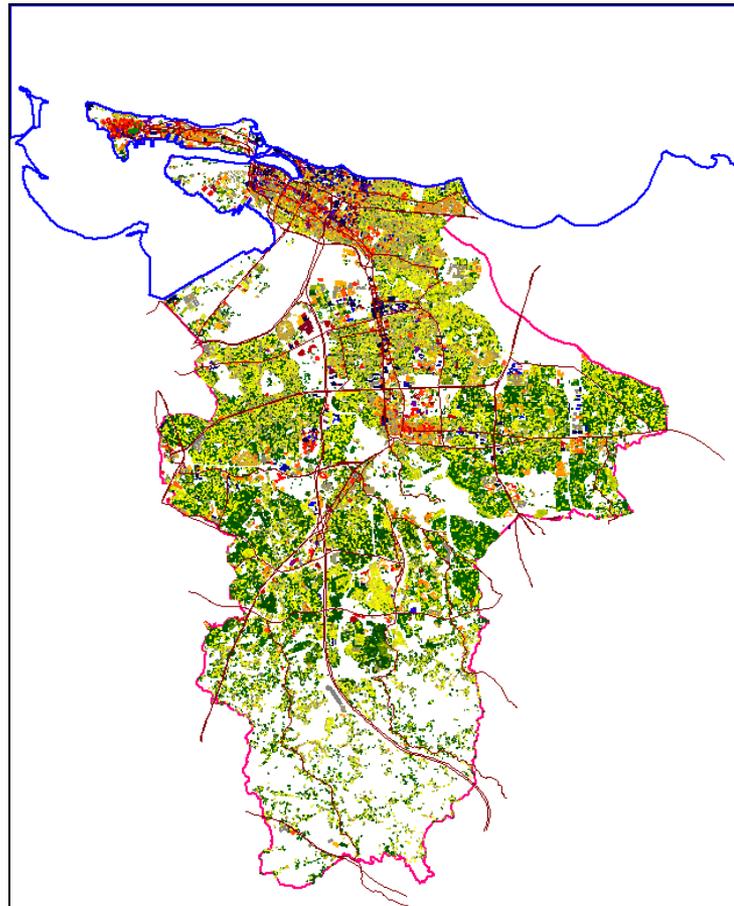
total number of buildings within San Juan municipal border: 111562

building height in classes:

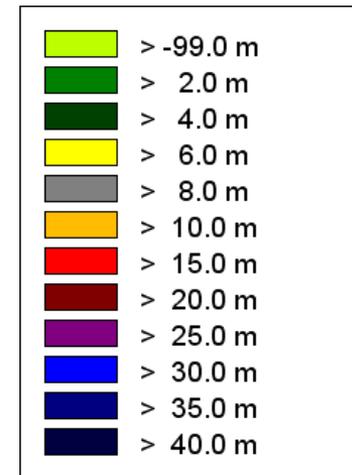
building height from	(m) to	No. of buildings
	3	18442
3	4	43870
4	6	24672
6	8	17736
8	10	3442
10	20	2697
20	50	602
50		92

buildings
coast line
municipal border

Distribution of Building Heights



legend:

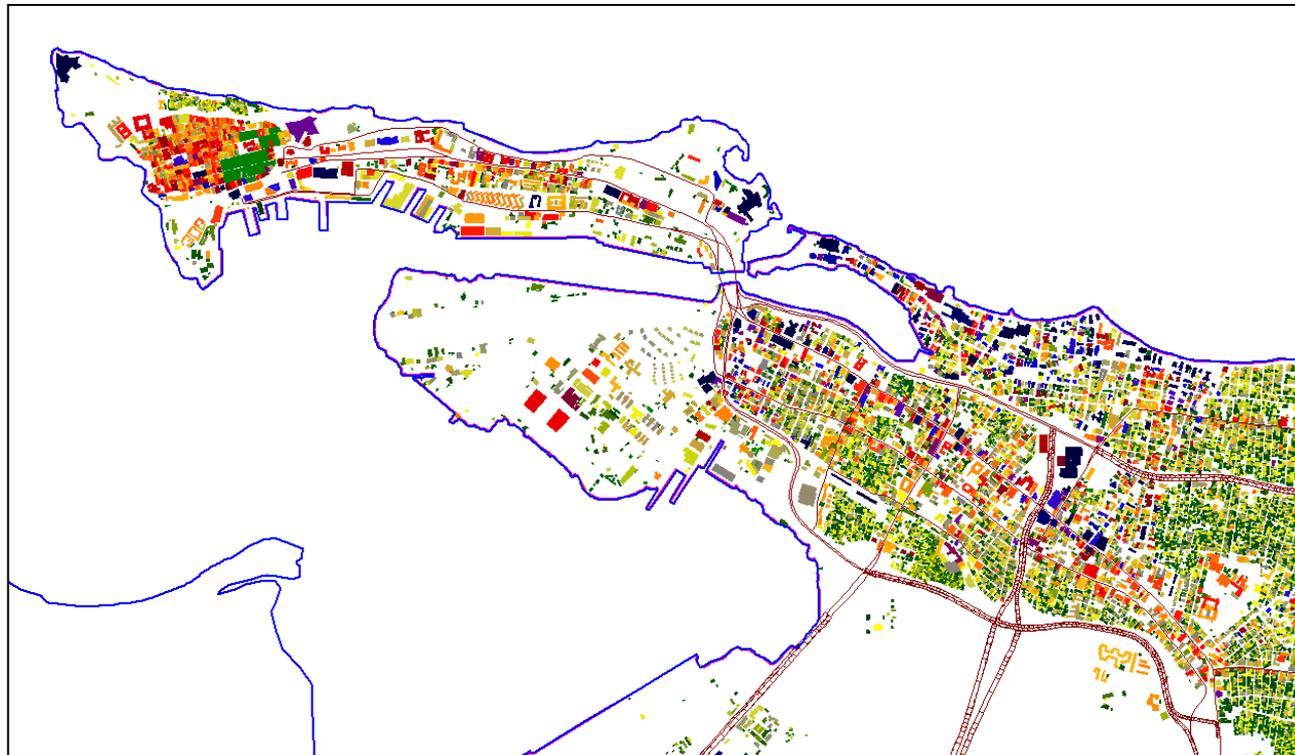


coast line

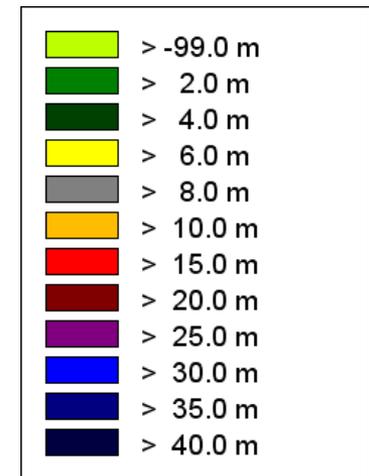
municipal border

Distribution of Building Heights

- San Juan town centre -



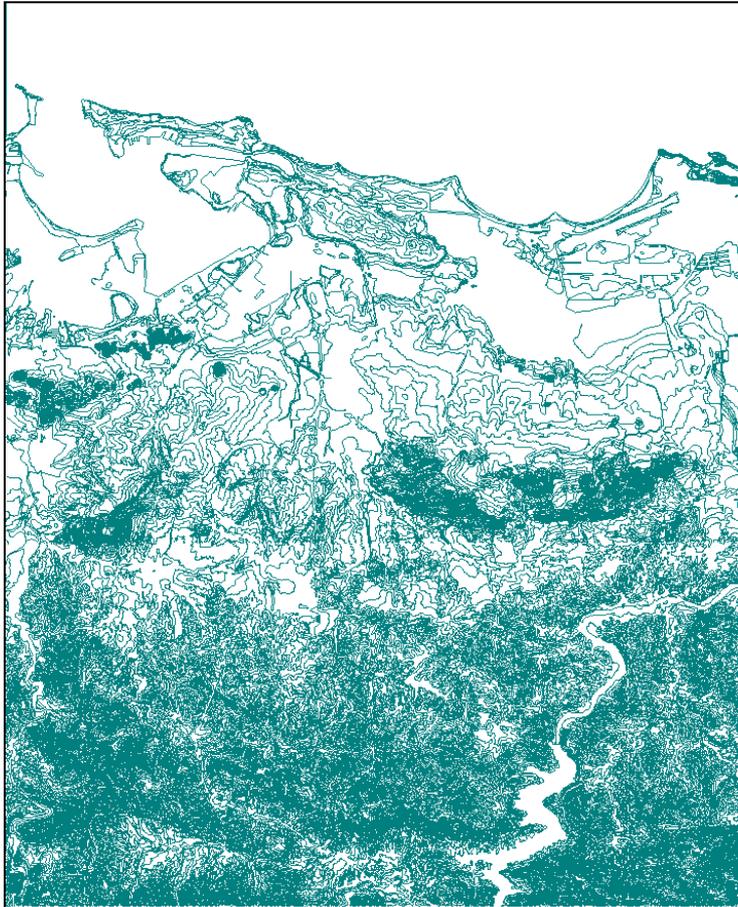
legend:



coast line

municipal border

Input Data - Terrain Model

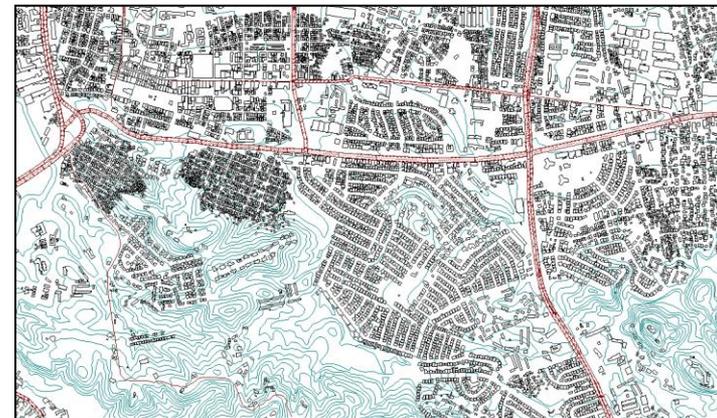
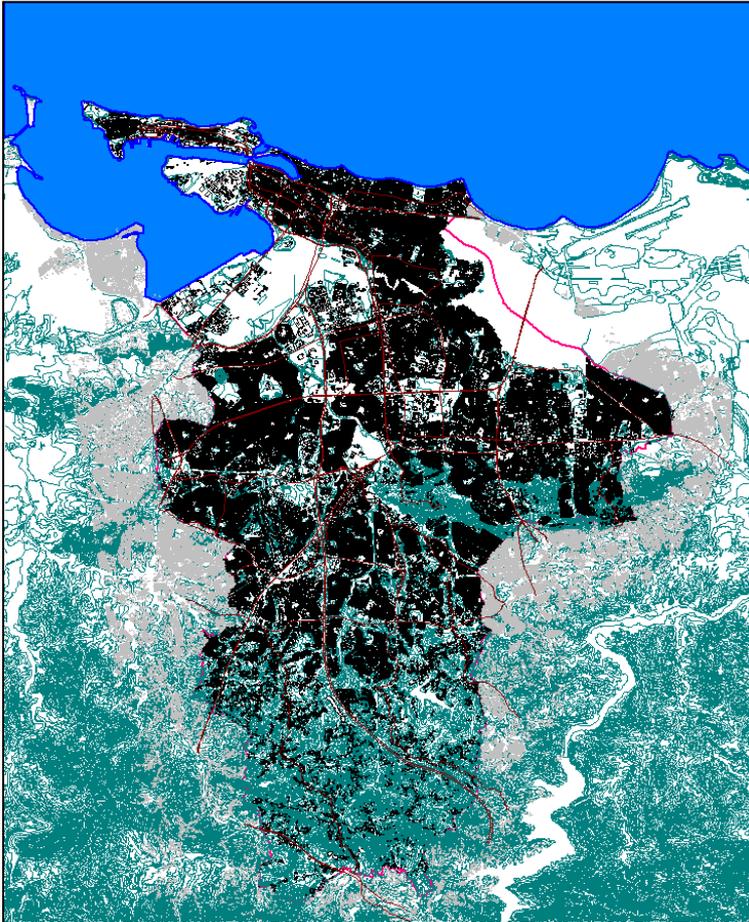


modifications due:

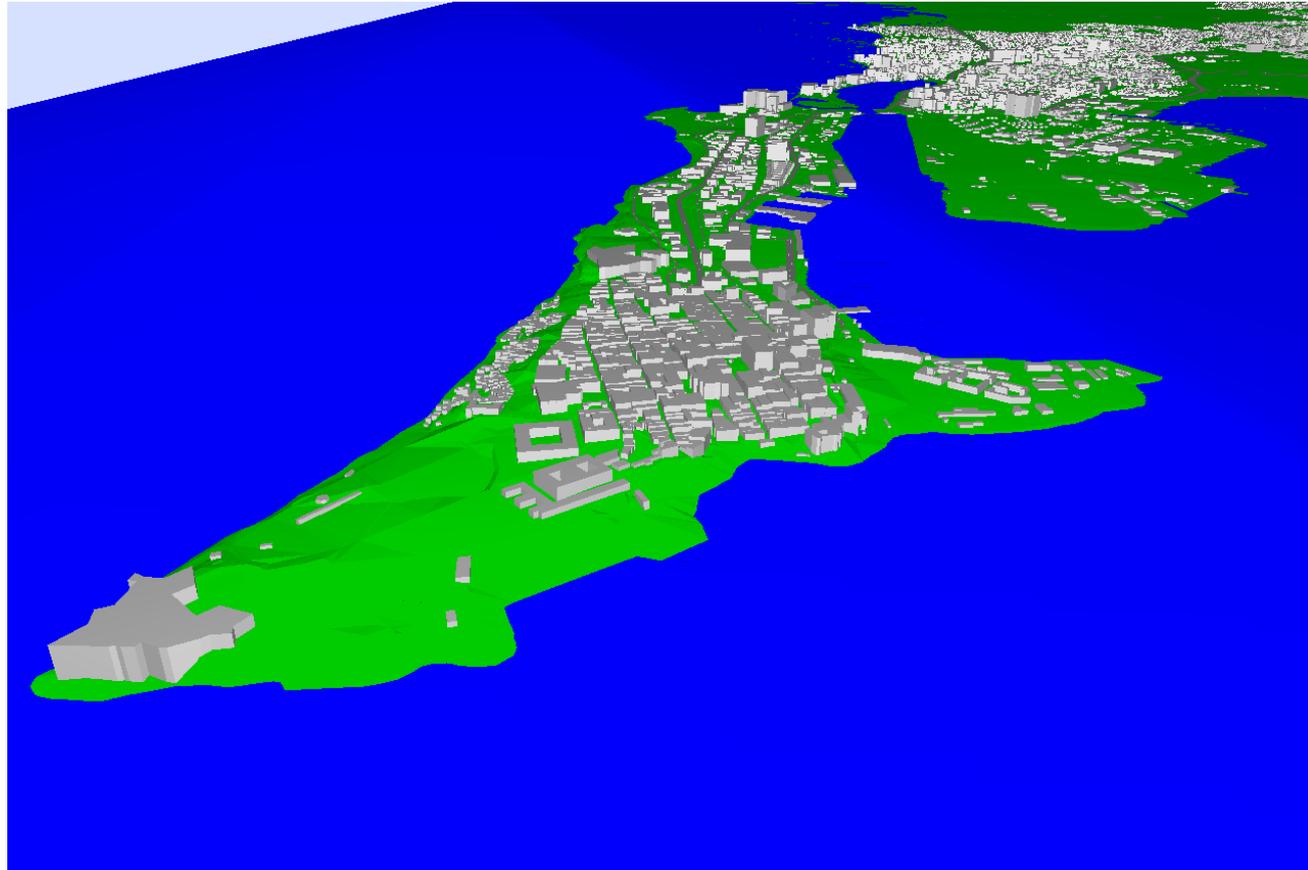
- absolute heights corrected
- arbitrary splines deleted
- coast line at $h=0$ m was missing:
coast line modelled from contour
line at 1 m height by a parallel line
at 5 m distance

San Juan - Digital Town Model

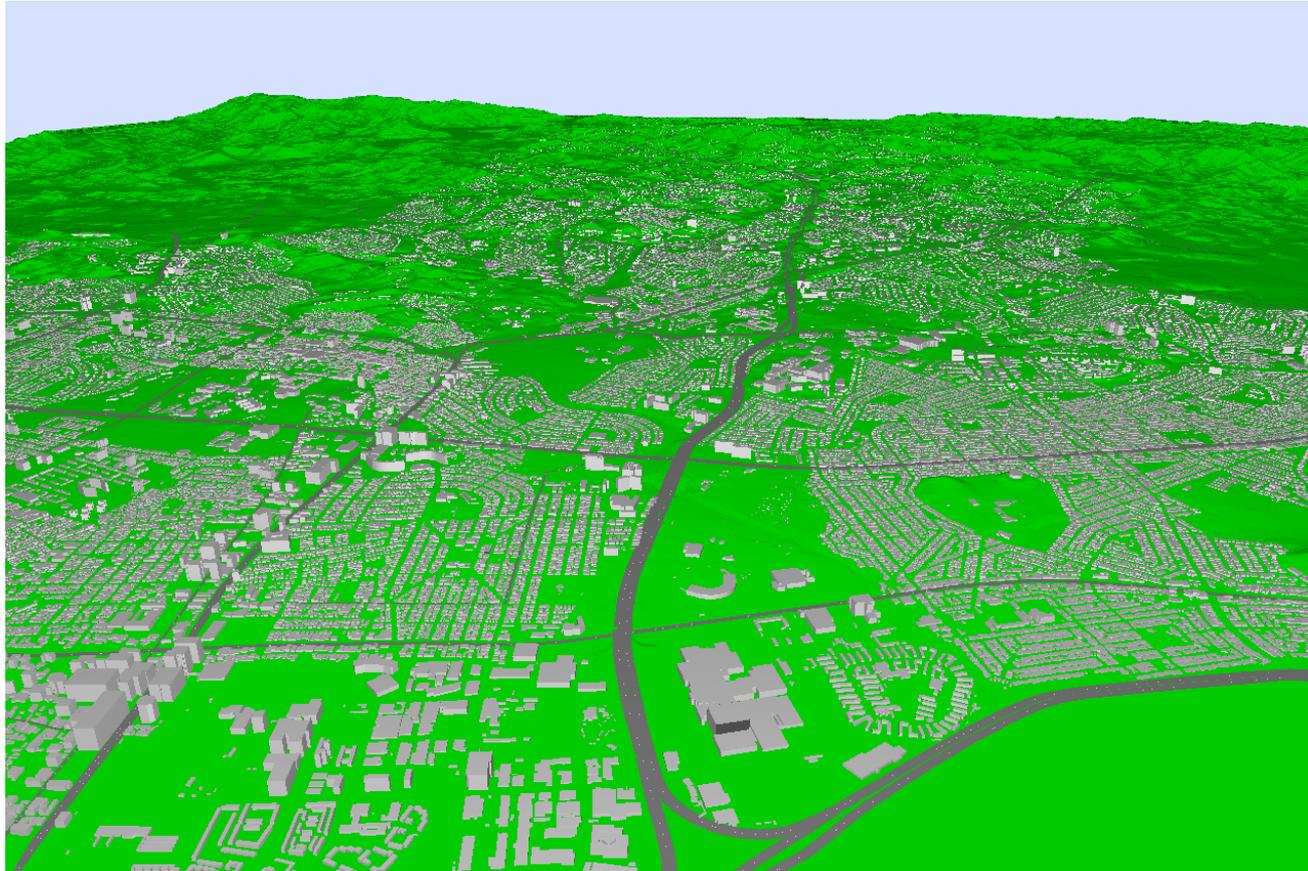
total town area: 128 km²



San Juan - 3D-Views



San Juan - 3D-Views



Calculation Standards/Guidelines

Road Noise: German Guideline RLS-90, edition 1990

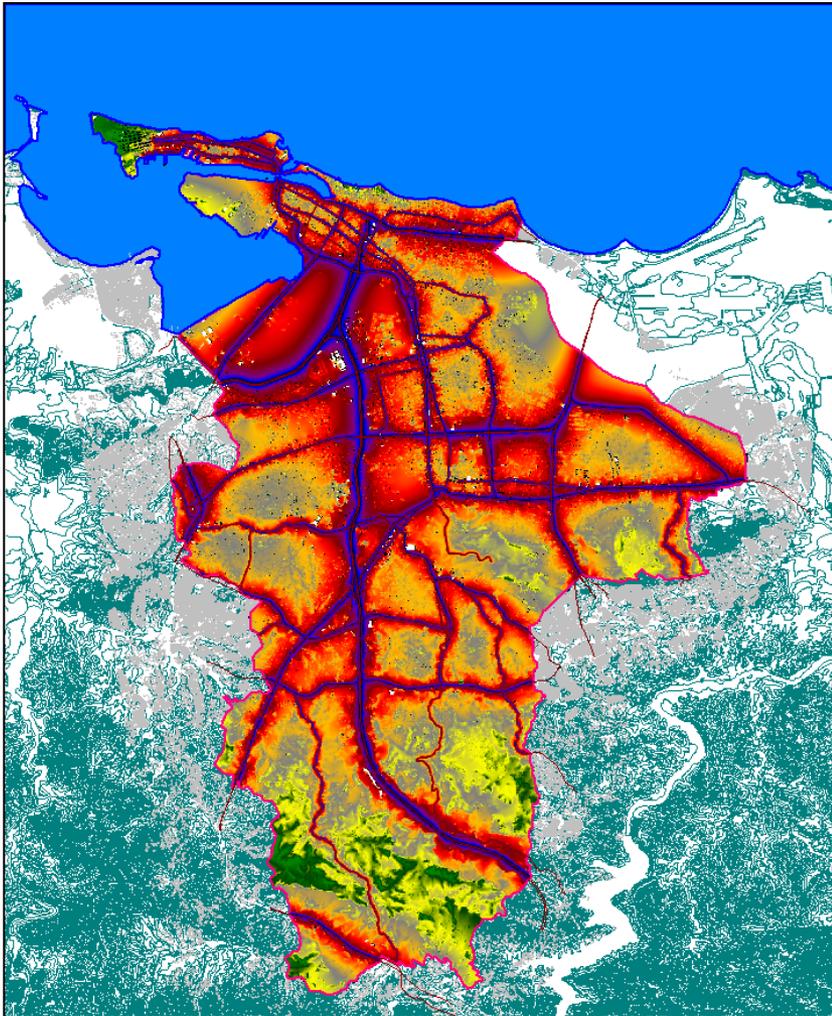
RLS-90 calculates:

- 1st reflection order
- two outermost tracks separately
- no lateral diffraction
- no attenuation due to foliage

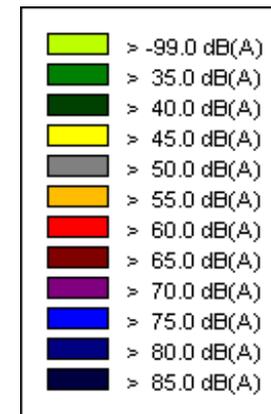
CadnaA - Configurations of Calculation

- 1st reflection order
- grid interpolation 9*9
- max. search radius for sources: 2500 m
- no projection of line & area sources
- ground absorption included (porous ground)
- evaluation parameters: L_{day} (6 am - 10 pm)
 L_{night} (10 pm - 6 am)

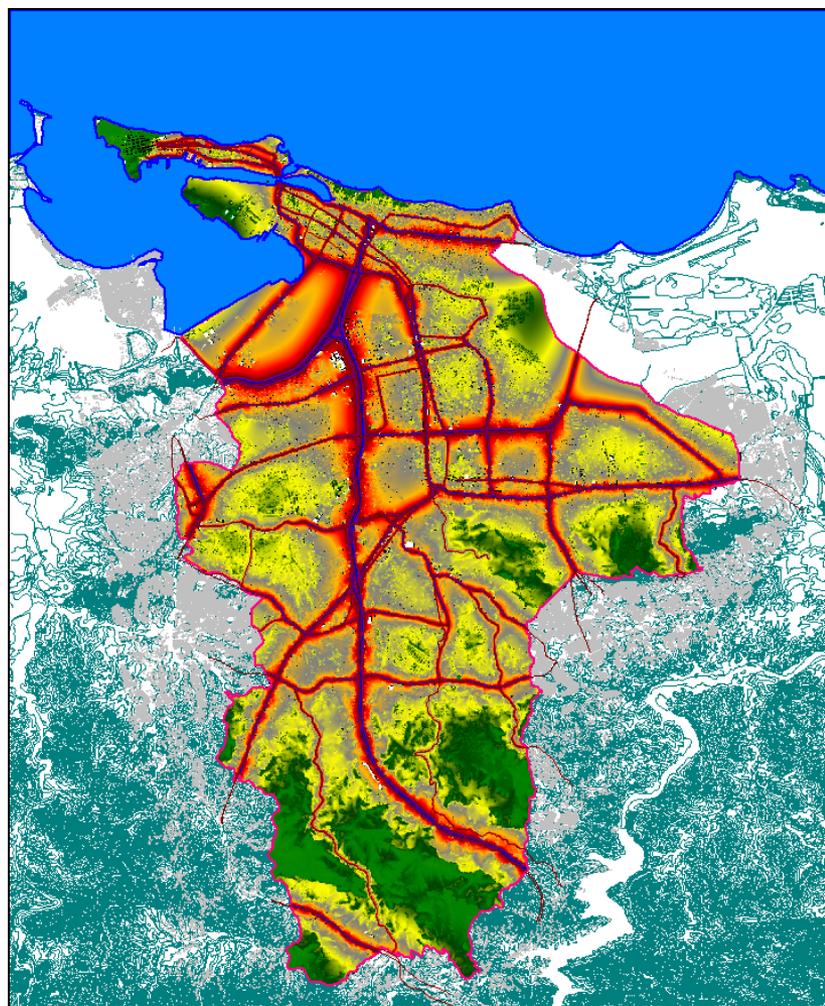
San Juan - Daytime Grid



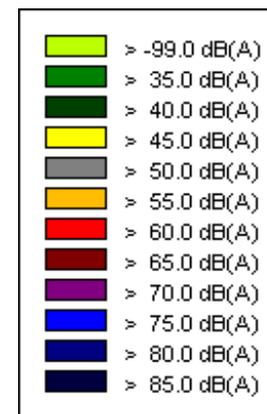
SPL (dB(A))		subjected area day (km ²)
from	to	
	50	23.3
50	55	26.7
55	60	28.9
60	65	20.9
65	70	11.3
70	75	6.4
75		8.3



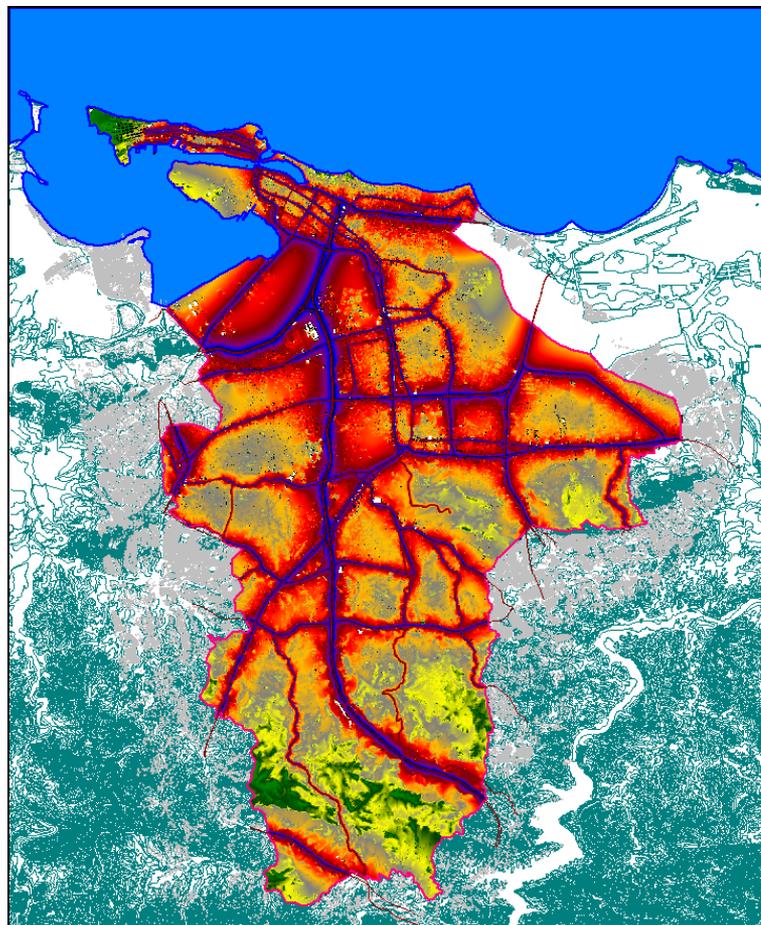
San Juan - Nighttime Grid



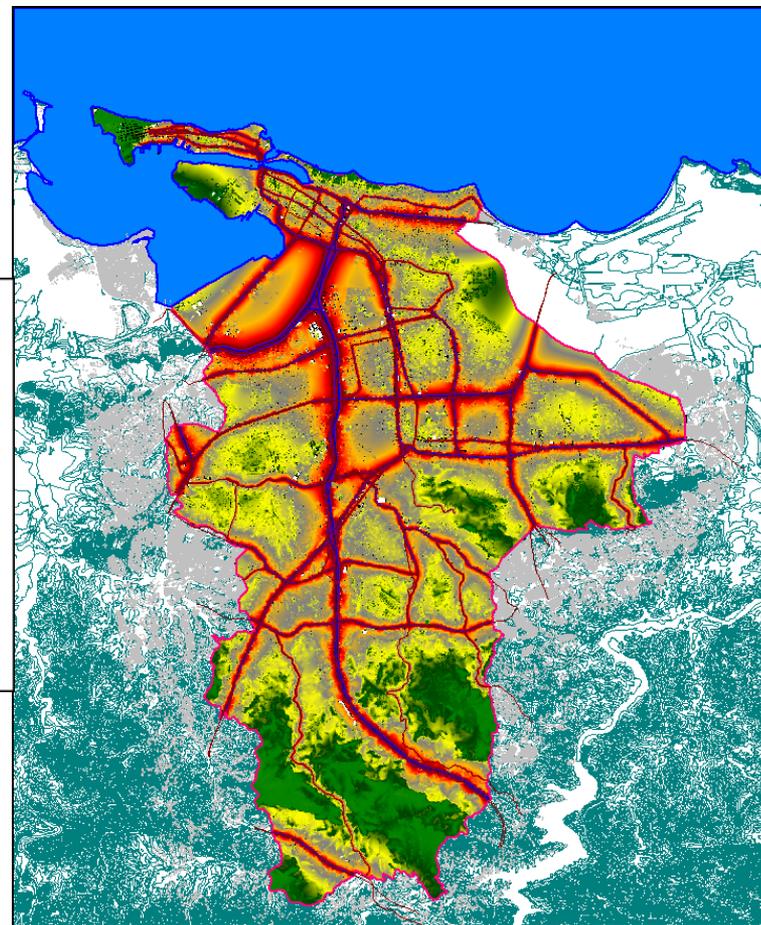
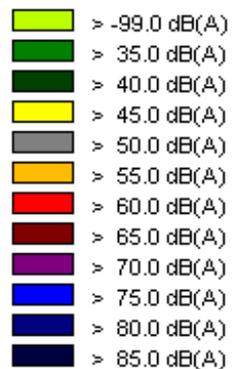
SPL (dB(A))		subjected area night (km ²)
from	to	
	50	64.6
50	55	25.5
55	60	16
60	65	8.5
65	70	5.1
70	75	4.2
75		1.9



San Juan - Comparison Day/Night Grids



Day



Night

San Juan - 3D-Views incl. Grid



San Juan - 3D-Views incl. Grid

