

Microclima outdoor

Valutazioni EX-ANTE

Aree di progetto



Kristian Fabbri - 29 Settembre 2017

Simulazioni Dott.sa Marianna Nardino



Ferrara

Ferrara

Ferrara

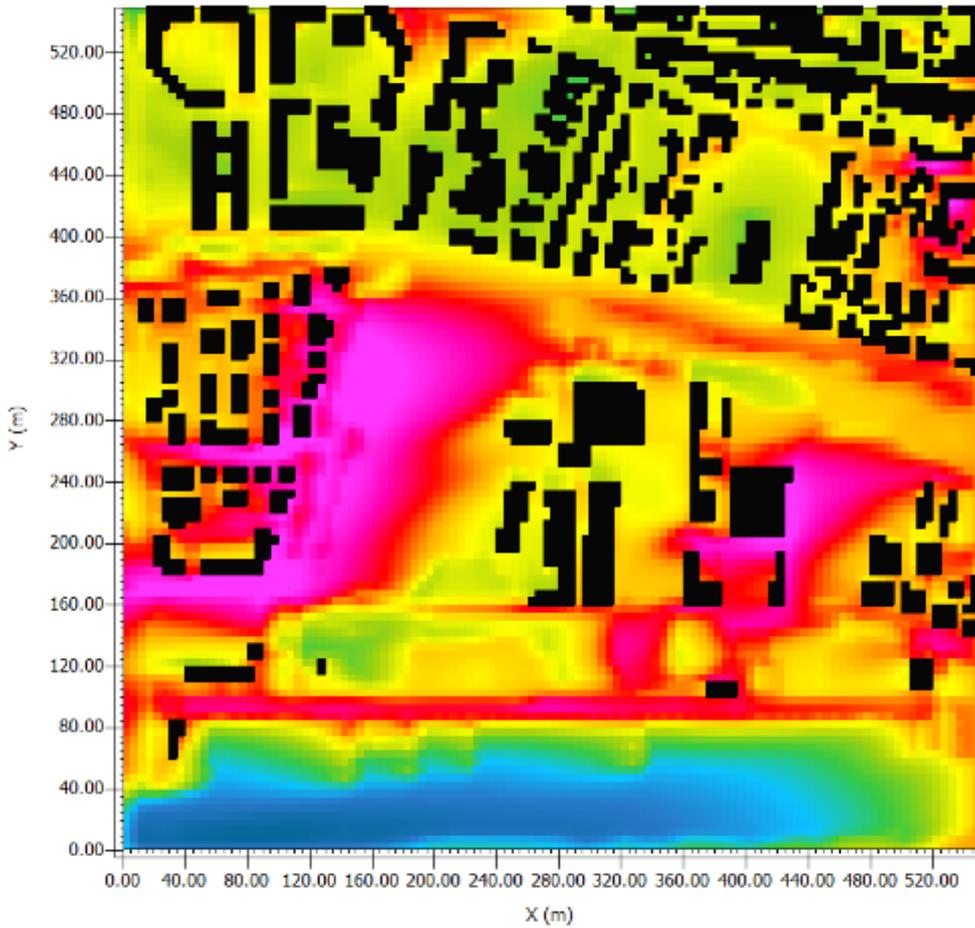
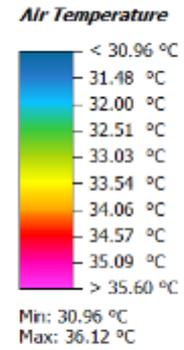


Figure 1: Sim Ferrara
14:00:00 24.06.2017
x/y Out at k=4 (z=1.8000 m)



Temperatura dell'aria a 1.8 m di altezza alle ora 14:00
I valori maggiori sono registrati nelle aree dei parcheggi. L'effetto del canale Darsena è evidente dalle temperature mostrate.

Ferrara

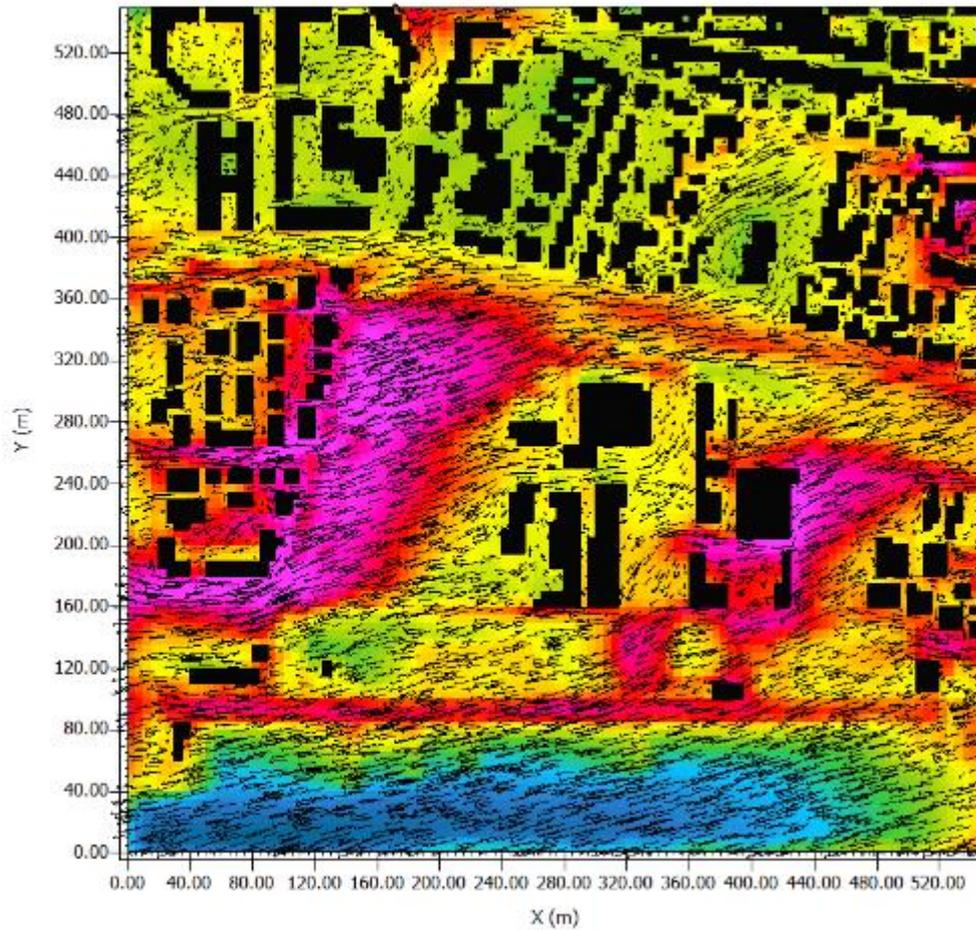
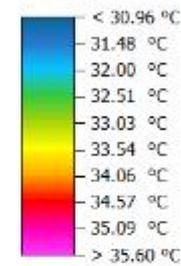


Figure 1: Sim Ferrara
14:00:00 24.06.2017
x/y Cut at z=4 (z=1.8000 m)

Air Temperature



Min: 30.96 °C
Max: 36.12 °C

Flow v

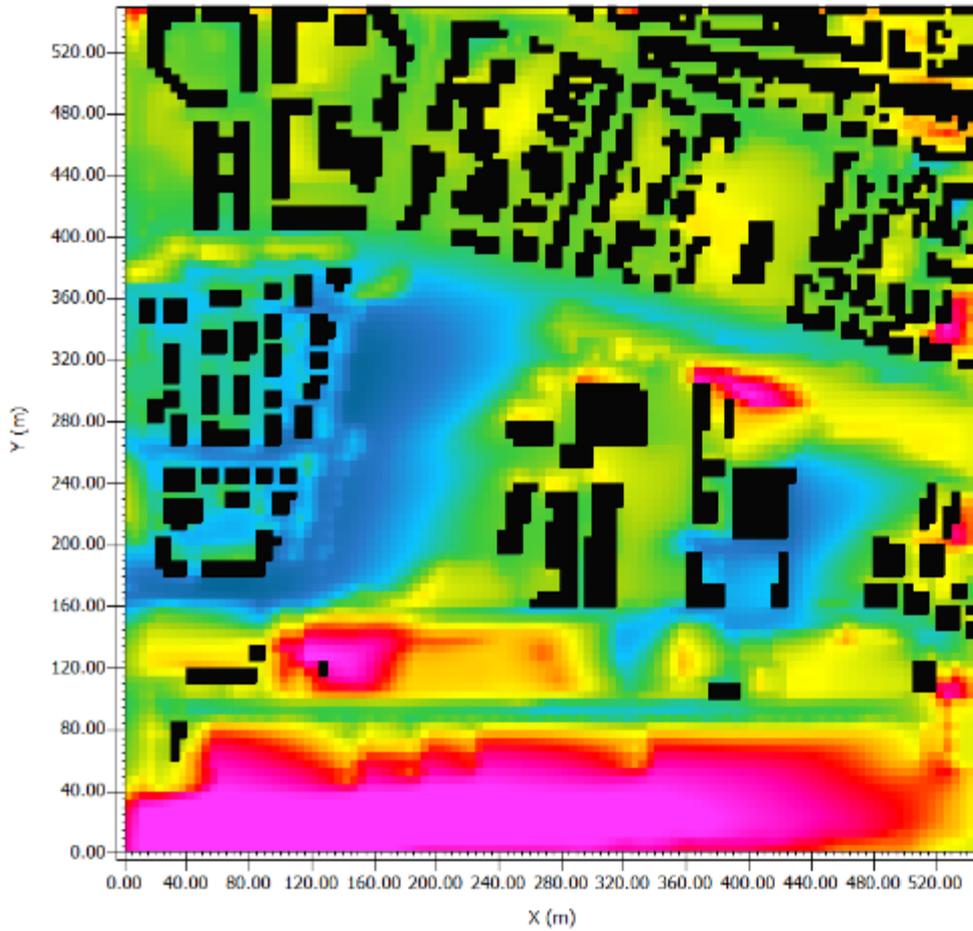
- 0.60 m/s
- 1.20 m/s
- 1.80 m/s
- 2.40 m/s
- 3.00 m/s



Flusso del vento a 1.8 m di altezza alle ore 14:00

Il grafico mostra come si incanala il vento nella geografia del luogo. Input importante che può dare considerazioni per il progetto

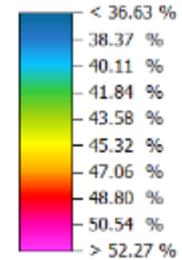
Ferrara



Sim Ferrara 14:00:00
24.06.2017
x/y Cut at k=1 (z=1.8000 m)

**Umidità Relativa a 1.8
m di altezza alle ore
14:00**
Il grafico

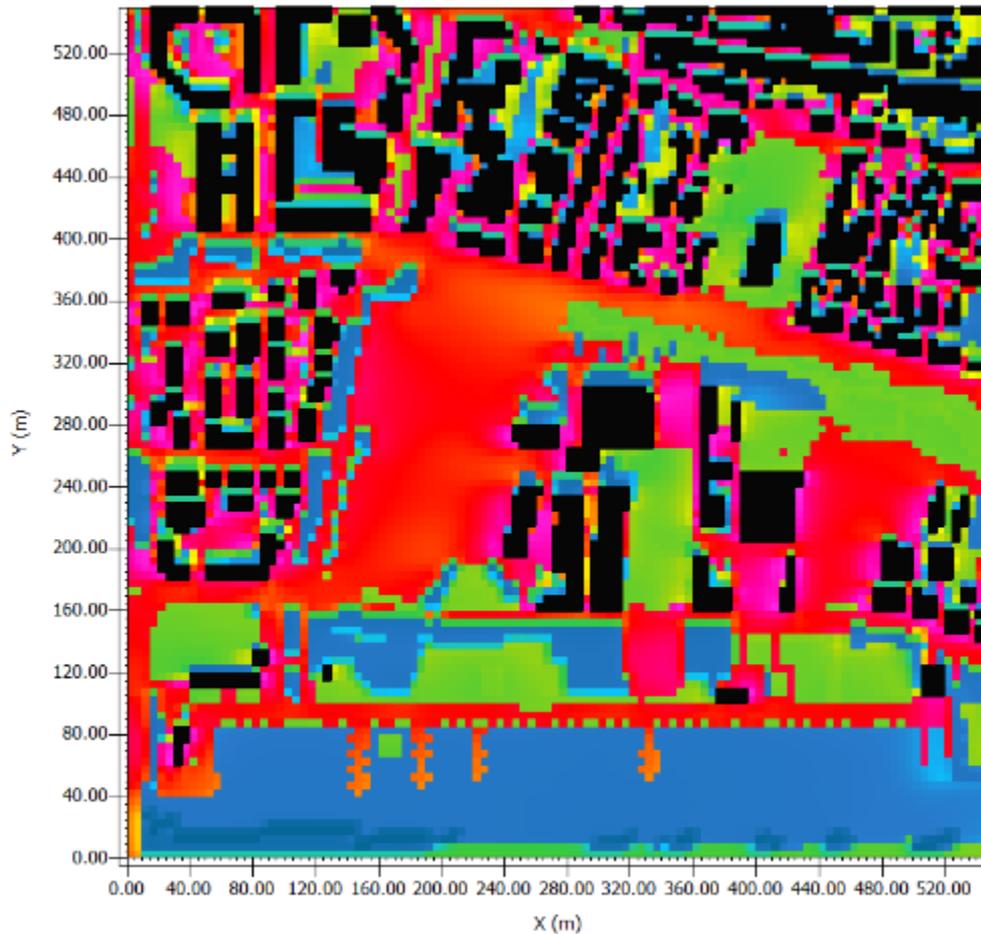
Relative Humidity



Min: 36.63 %
Max: 54.01 %

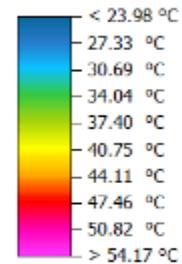


Ferrara



Sim Ferrara 14:00:00
24.06.2017
x/y Cut at k=0 (z=0.0000 m)

T Surface

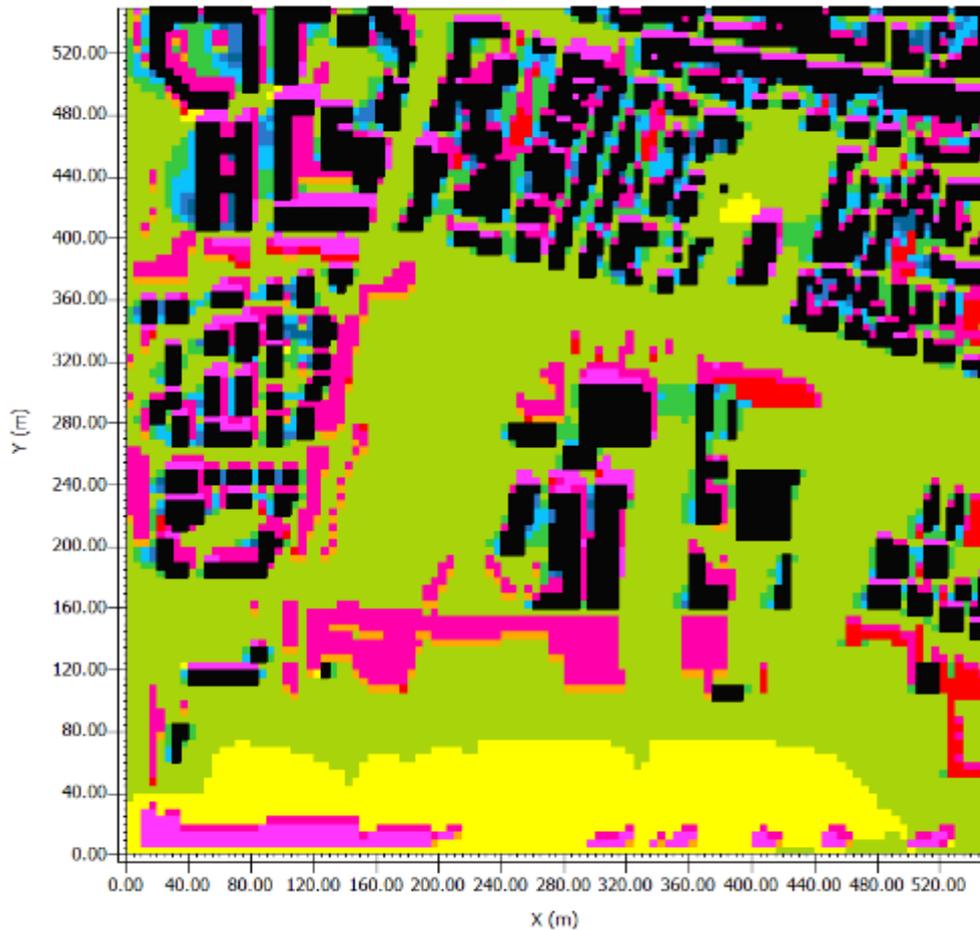


Min: 23.98 °C
Max: 57.53 °C

Temperatura superficiale alle ore 14:00

Il grafico mostra le temperature radianti dei materiali alla superficie quindi si distingue l'asfalto dalla vegetazione e dall'acqua.

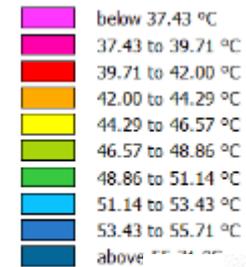
Ferrara



Sim Ferrara 14:00:00
24.06.2017
x/y Cut at k=4 (z=1.8000 m)

**PET a 1.8 m di altezza
alle ore 14:00**
Il grafico

PET



Mn: 35.14 °C
Max: 58.00 °C

PET physiological effective temperature

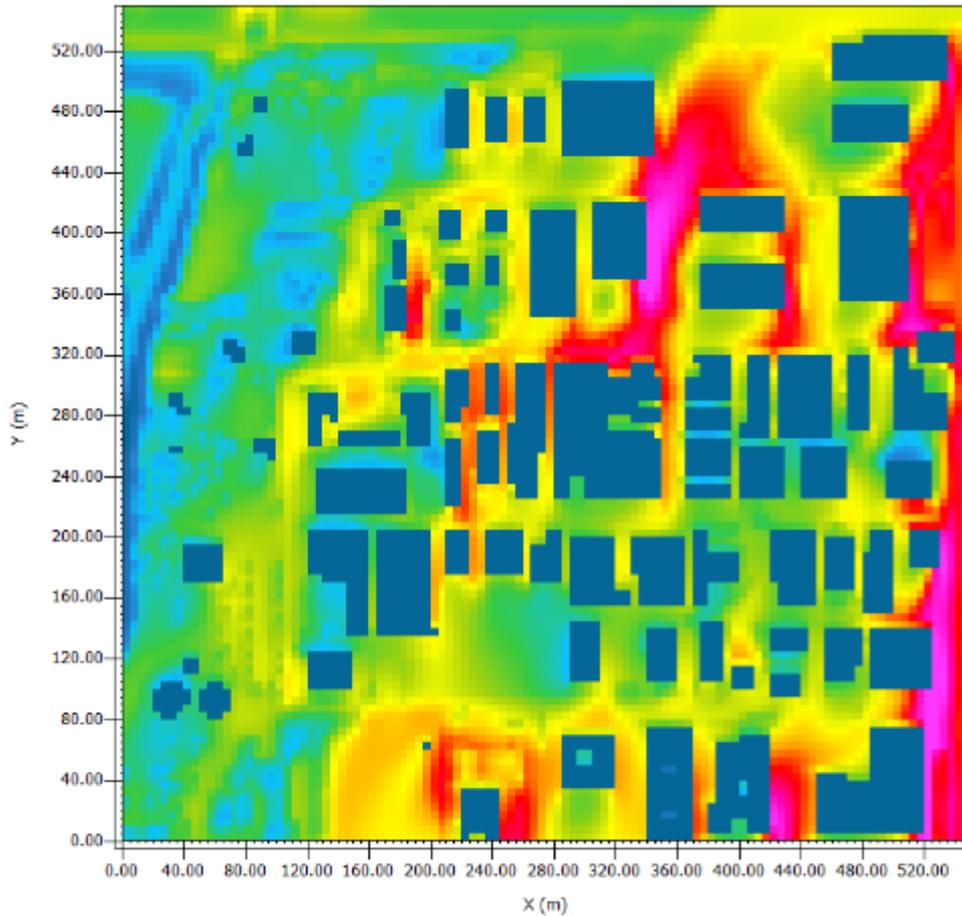
PMV	PET (°C)	Thermal perception	Grade of physiological stress
-3.5	4	Very cold	Extreme cold stress
-2.5	8	Cold	Strong cold stress
-1.5	13	Cool	Moderate cold stress
-0.5	18	Slightly cool	Slight cold stress
0.5	23	Comfortable	No thermal stress
1.5	29	Slightly warm	Slight heat stress
2.5	35	Warm	Moderate heat stress
3.5	41	Hot	Strong heat stress
		Very hot	Extreme heat stress



San Lazzaro (BO)

San Lazzaro

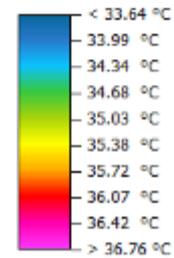
San Lazzaro (BO)



SanLazR3 14:00 24.06.2017

x/y Schnitt bei k=4 (z=1.8000 m)

Air Temperature



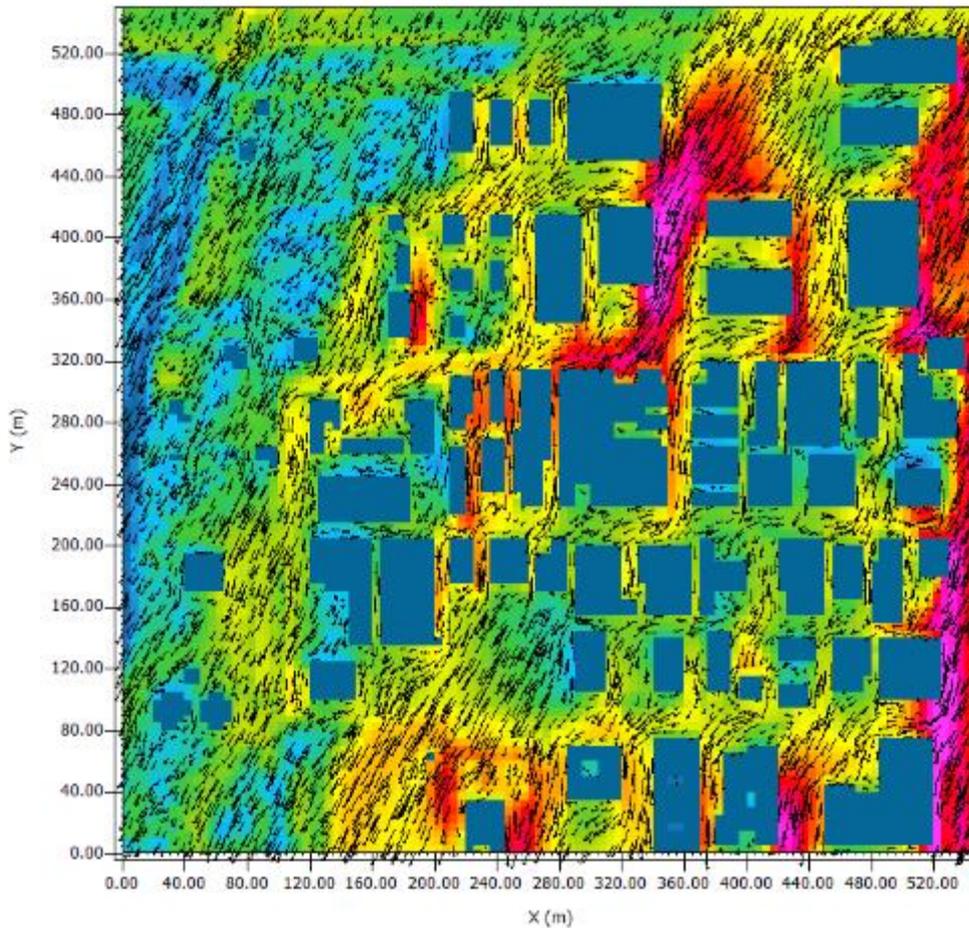
Min: 33.64 °C

Max: 37.11 °C



**Temperatura dell'aria
a 1.8 m di altezza alle
ora 14:00
I valori.**

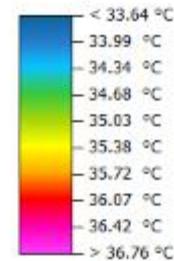
San Lazzaro (BO)



SanLazR3 14:00 24.06.2017

x/y Schnitt bei k=4 (z=1.8000 m)

Air Temperature



Min: 33.64 °C

Max: 37.11 °C

Flow v

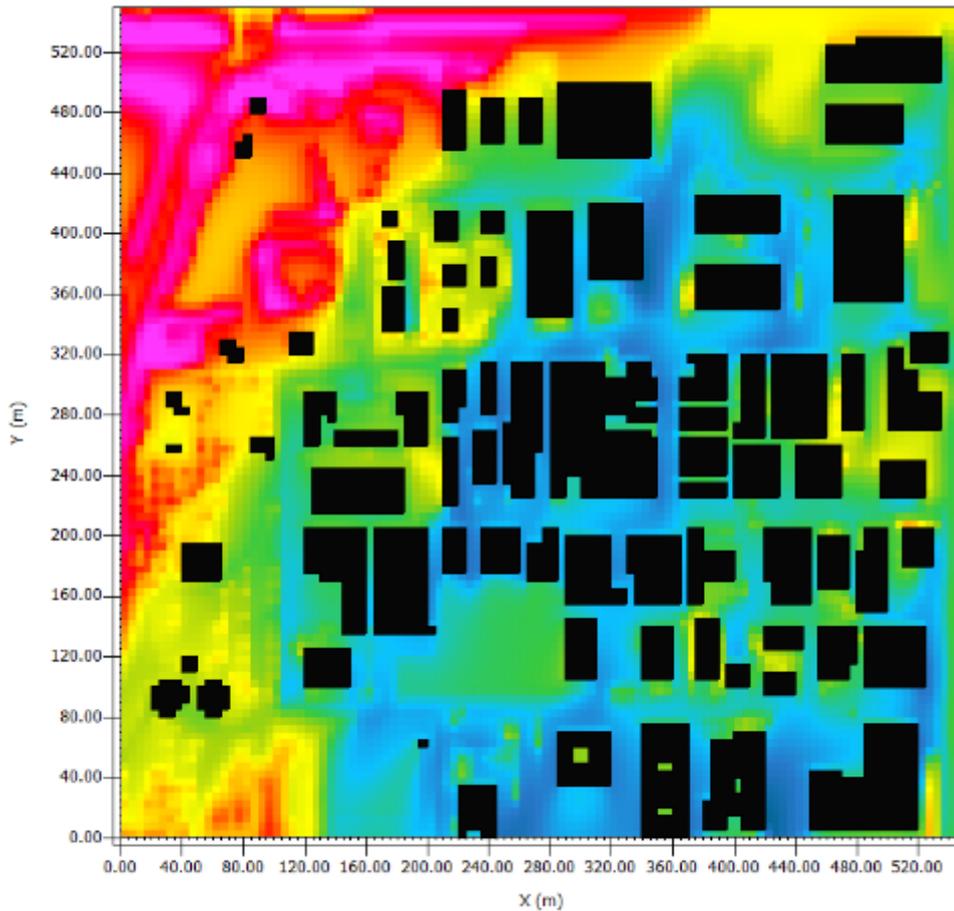
- 0.60 m/s
- 1.20 m/s
- 1.80 m/s
- 2.40 m/s
- 3.00 m/s



Flusso del vento a 1.8 m di altezza alle ore 14:00

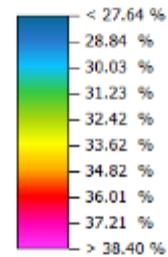
Il grafico mostra come si incanala il vento nella geografia del luogo. Input importante che può dare considerazioni per il progetto

San Lazzaro (BO)



SanLazR3 14:00 24.06.2017
x/y Cut at k=4 (z=1.8000 m)

Relative Humidity

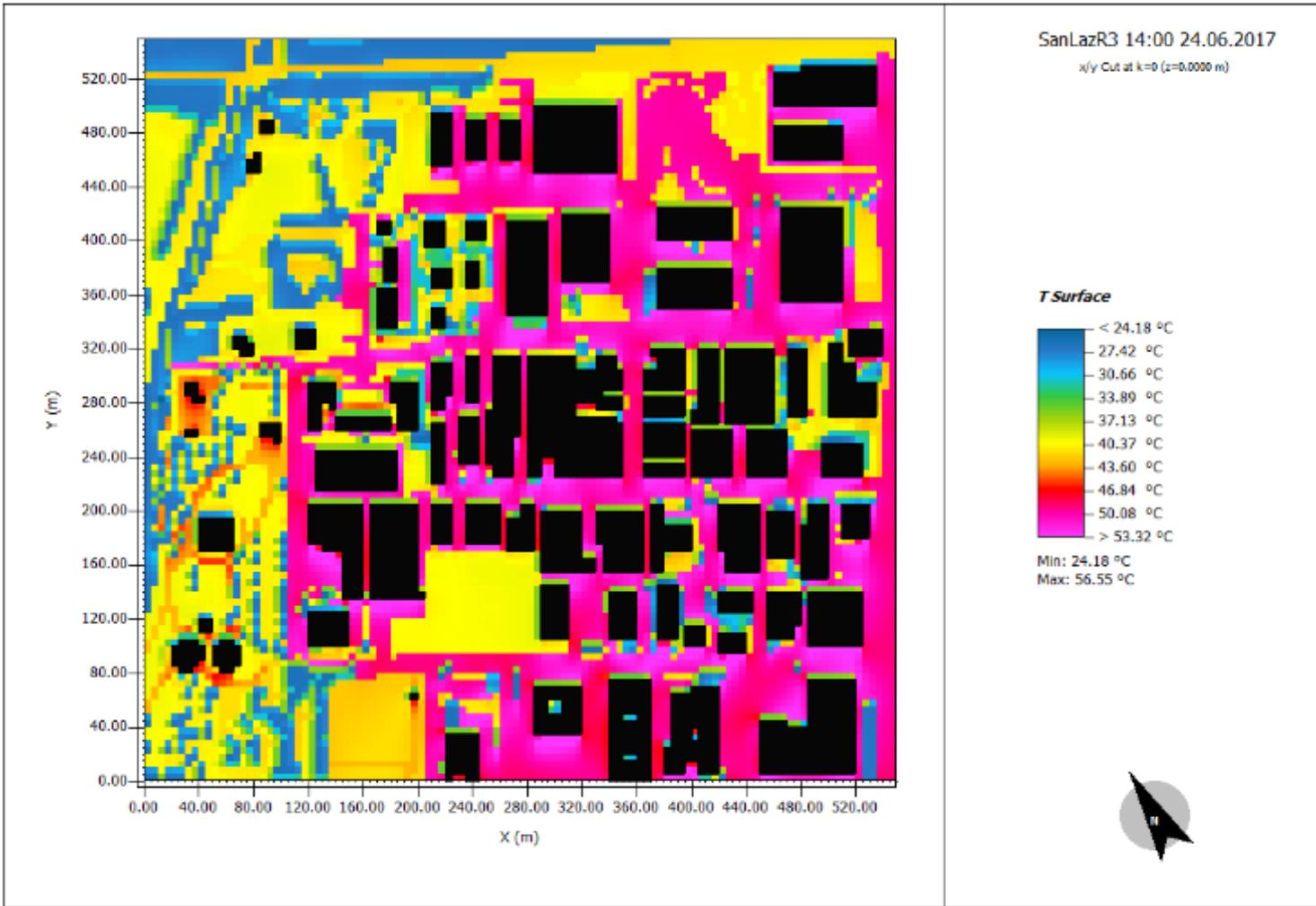


Min: 27.64 %
Max: 39.60 %



**Umidità Relativa a 1.8
m di altezza alle ore
14:00**
Il grafico

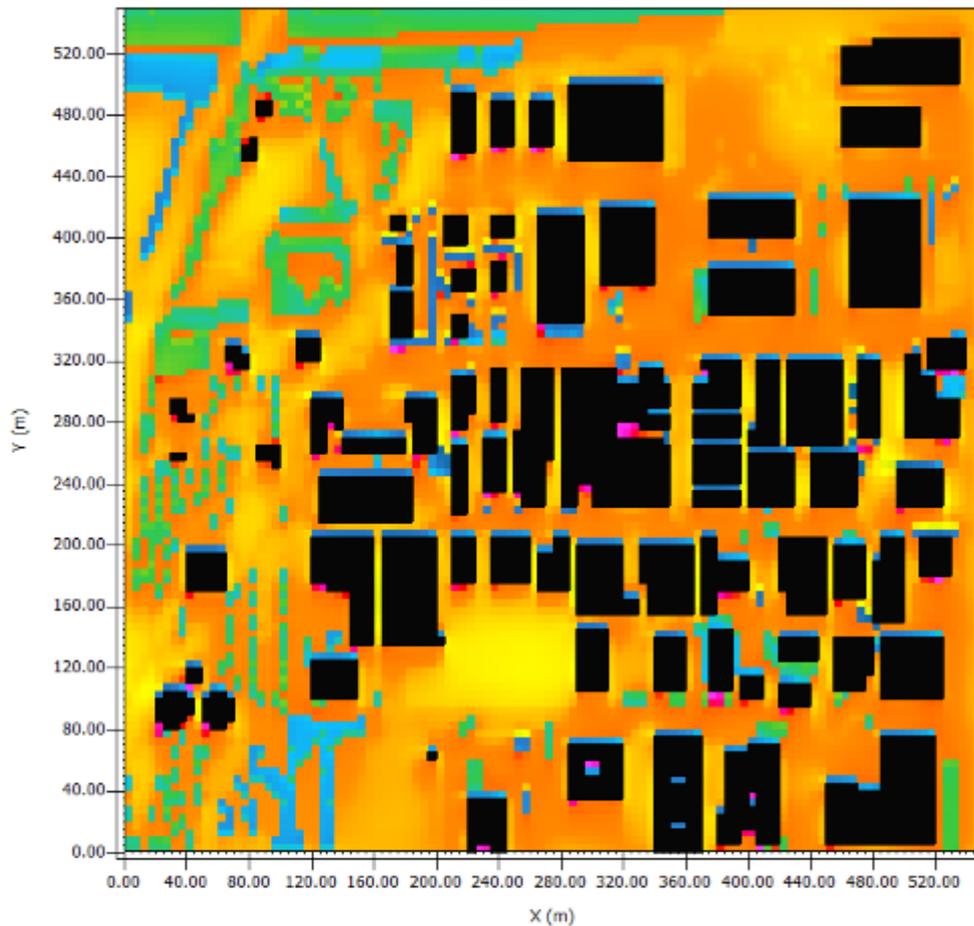
San Lazzaro (BO)



Temperatura superficiale alle ore 14:00

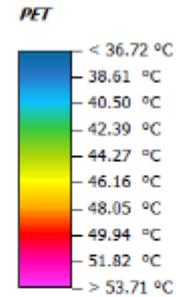
Il grafico mostra le temperature radianti dei materiali alla superficie quindi si distingue l'asfalto dalla vegetazione e dall'acqua.

San Lazzaro (BO)



SanLazR3 13:00:00 24.06.2017

x/y Cut at k=4 (z=1.8000 m)



Min: 36.72 °C
Max: 55.60 °C

**PET a 1.8 m di altezza
alle ore 14:00**
Il grafico

PET physiological effective temperature

PMV	PET (°C)	Thermal perception	Grade of physiological stress
-3.5	4	Very cold	Extreme cold stress
-2.5	8	Cold	Strong cold stress
-1.5	13	Cool	Moderate cold stress
-0.5	18	Slightly cool	Slight cold stress
0.5	23	Comfortable	No thermal stress
1.5	29	Slightly warm	Slight heat stress
2.5	35	Warm	Moderate heat stress
3.5	41	Hot	Strong heat stress
		Very hot	Extreme heat stress





Ravenna

Ravenna

Ravenna

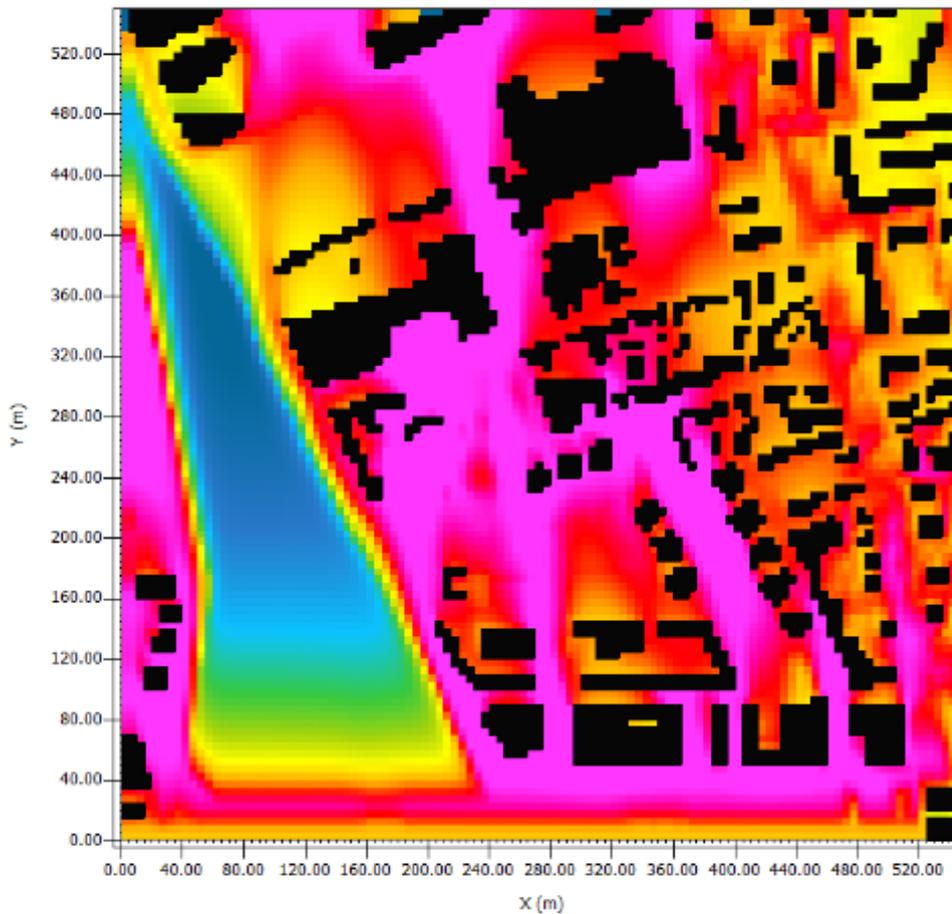
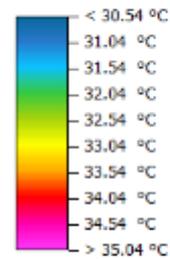


Figure 1: Ravenna Rebus3
14:00 24.06.2017
x/y Cut at k=4 (z=1.8000 m)

Air Temperature



Min: 23.54 °C
Max: 37.21 °C

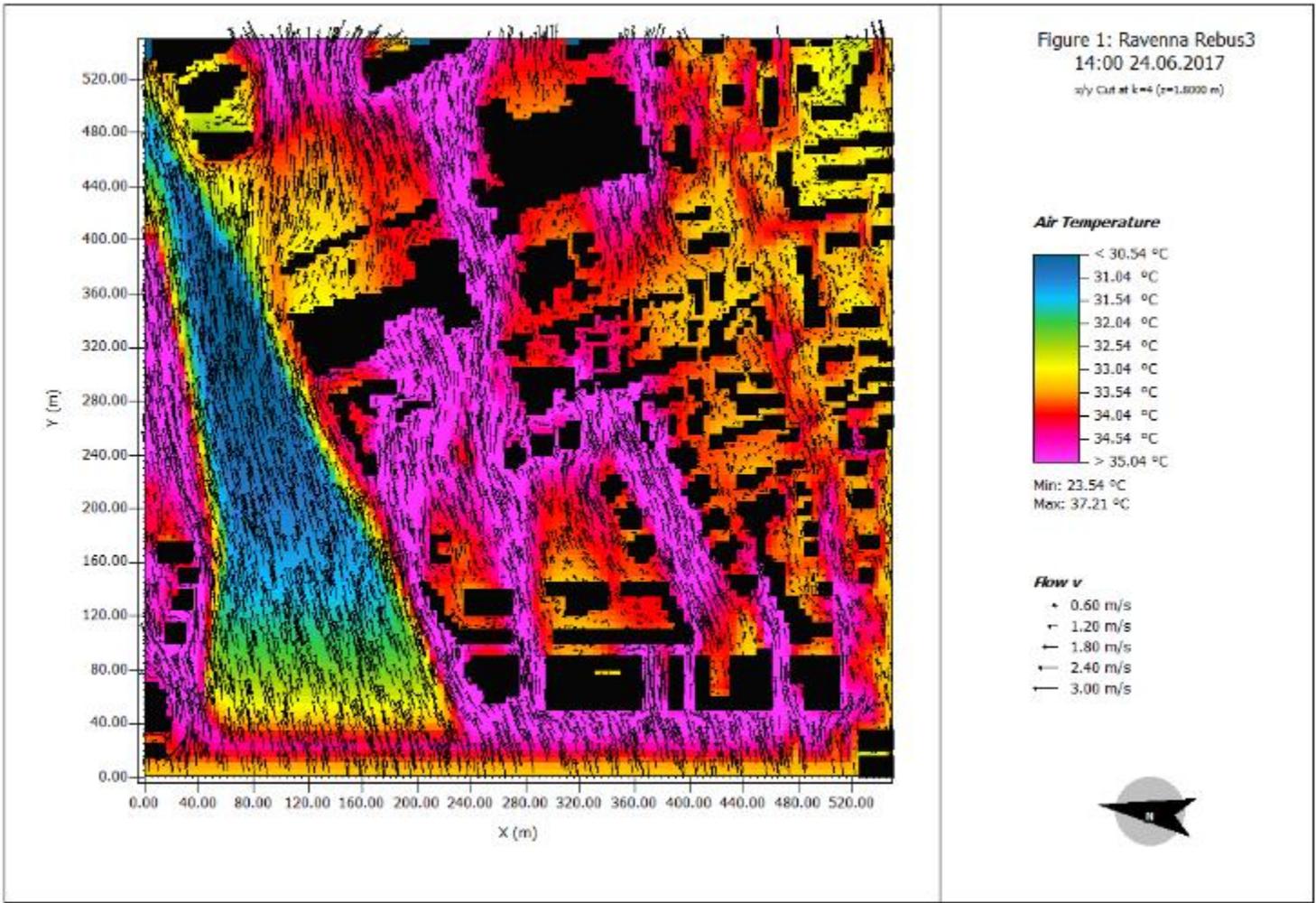


Temperatura dell'aria a 1.8 m di altezza alle ora 14:00

I valori maggiori sono registrati nelle aree dei parcheggi.

L'effetto del canale Darsena è evidente dalle temperature mostrate.

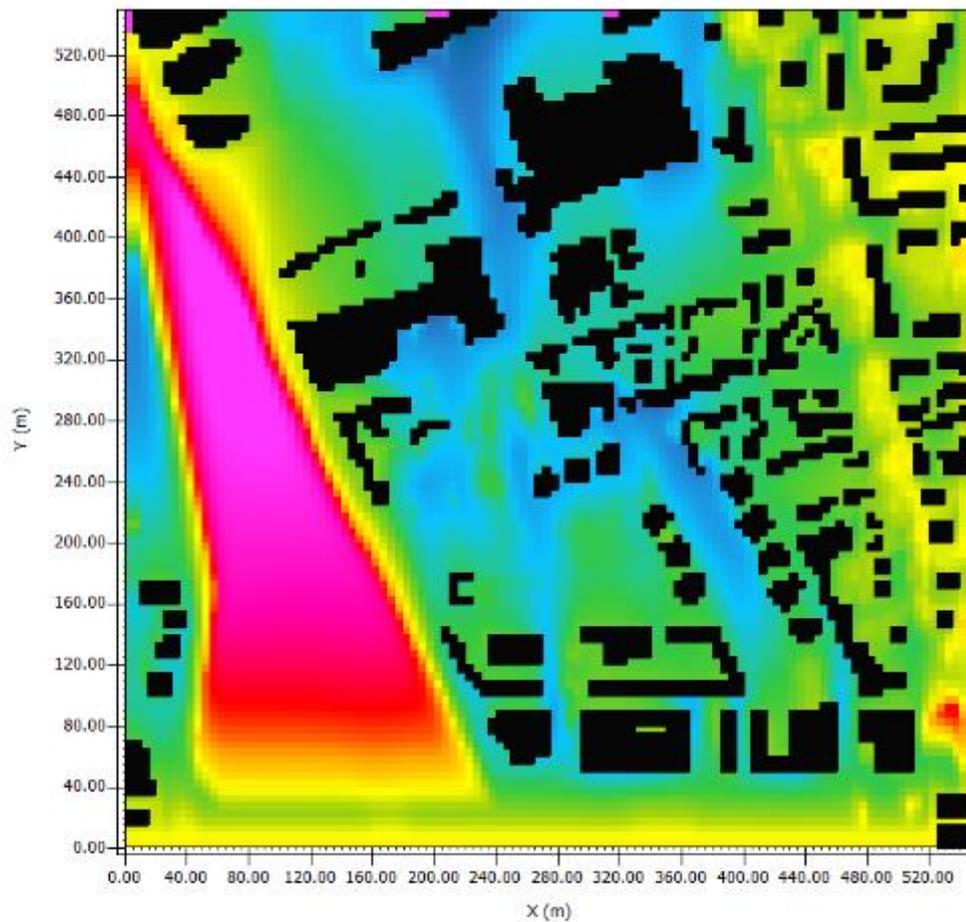
Ravenna



Flusso del vento a 1.8 m di altezza alle ore 14:00

Il grafico mostra come si incanala il vento nella geografia del luogo. Input importante che può dare considerazioni per il progetto

Ravenna



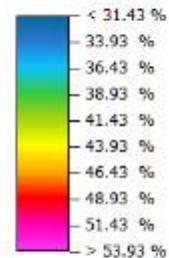
Ravenna Rebus3 15:00

24.06.2017

x/y Cut at k=4 (z=1.8000 m)

**Umidità Relativa a
1.8 m di altezza alle
ore 14:00**
Il grafico

Relative Humidity

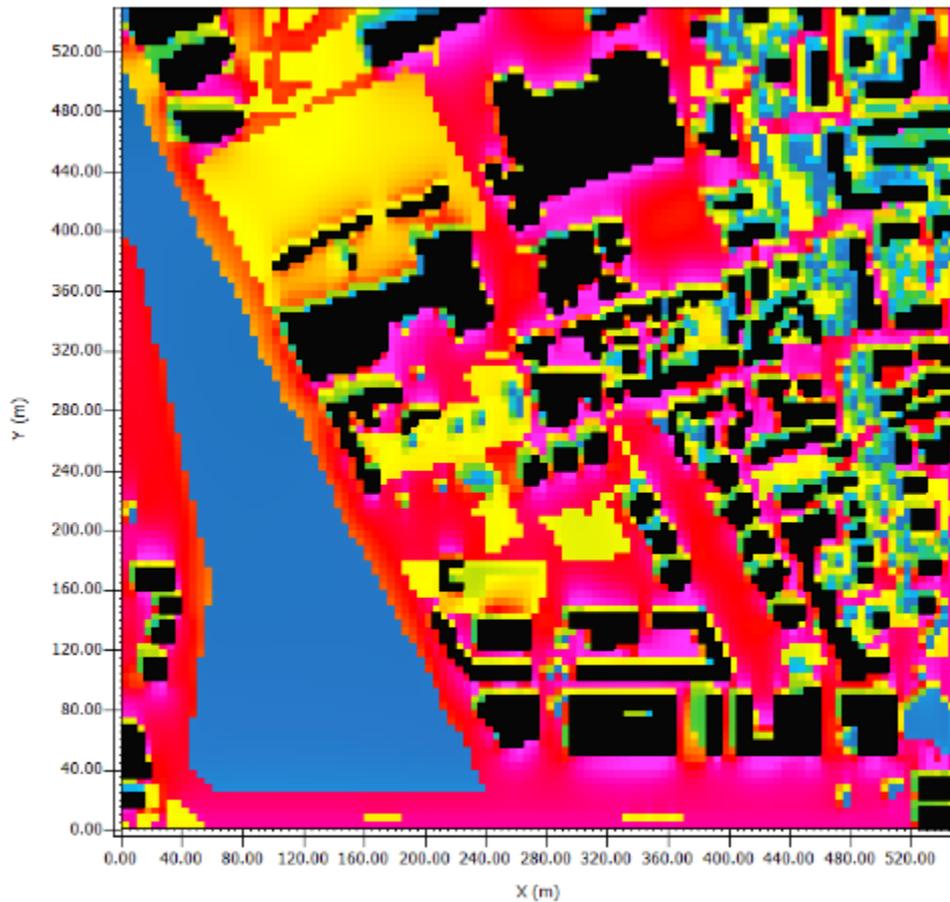


Min: 31.43 %

Max: 67.47 %

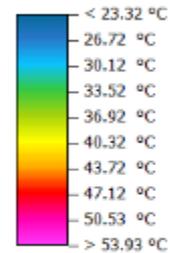


Ravenna



Ravenna Rebus3 14:00
24.06.2017
x/y Cut at k=0 (z=0.0000 m)

T Surface



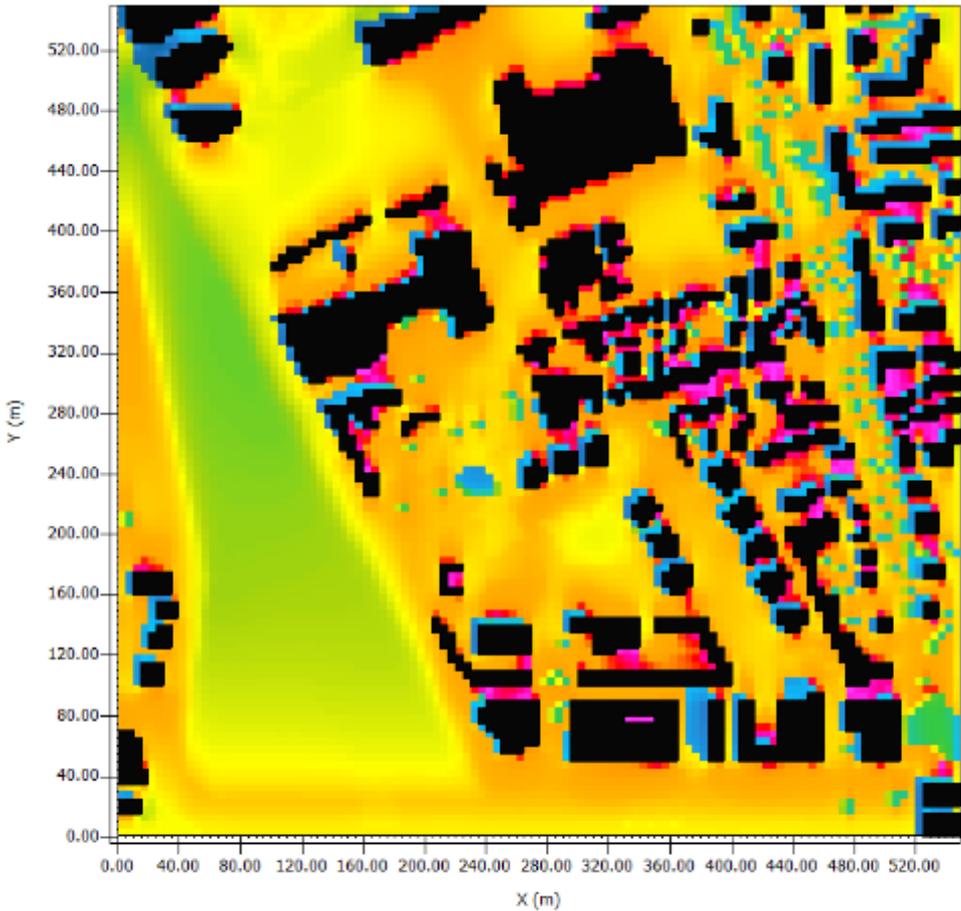
Min: 23.32 °C
Max: 57.33 °C



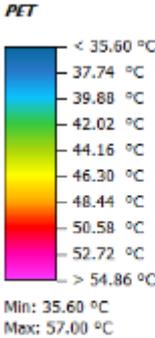
Temperatura superficiale alle ore 14:00

Il grafico mostra le temperature radianti dei materiali alla superficie quindi si distingue l'asfalto dalla vegetazione e dall'acqua.

Ravenna



Ravenna Rebus3 13:00:00
 24.06.2017
 -y Out at k=4 (z=1.8000 m)



**PET a 1.8 m di altezza
 alle ore 14:00**
 Il grafico

PET physiological effective temperature

PMV	PET (°C)	Thermal perception	Grade of physiological stress
-3.5	4	Very cold	Extreme cold stress
-2.5	8	Cold	Strong cold stress
-1.5	13	Cool	Moderate cold stress
-0.5	18	Slightly cool	Slight cold stress
0.5	23	Comfortable	No thermal stress
1.5	29	Slightly warm	Slight heat stress
2.5	35	Warm	Moderate heat stress
3.5	41	Hot	Strong heat stress
		Very hot	Extreme heat stress





Grazie