



# URBAN MODEL: ÆVUS2 & CITTA'

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WG3b session

# Tested configurations

- ISA and AHF from EXTPAR → **REF**
- ISA and AHF from LCZ → **LCZ**
- 2-D urban external parameters from LCZ → **LMV**  
(curb\_bldfr, curb\_bldh, curb\_h2w)

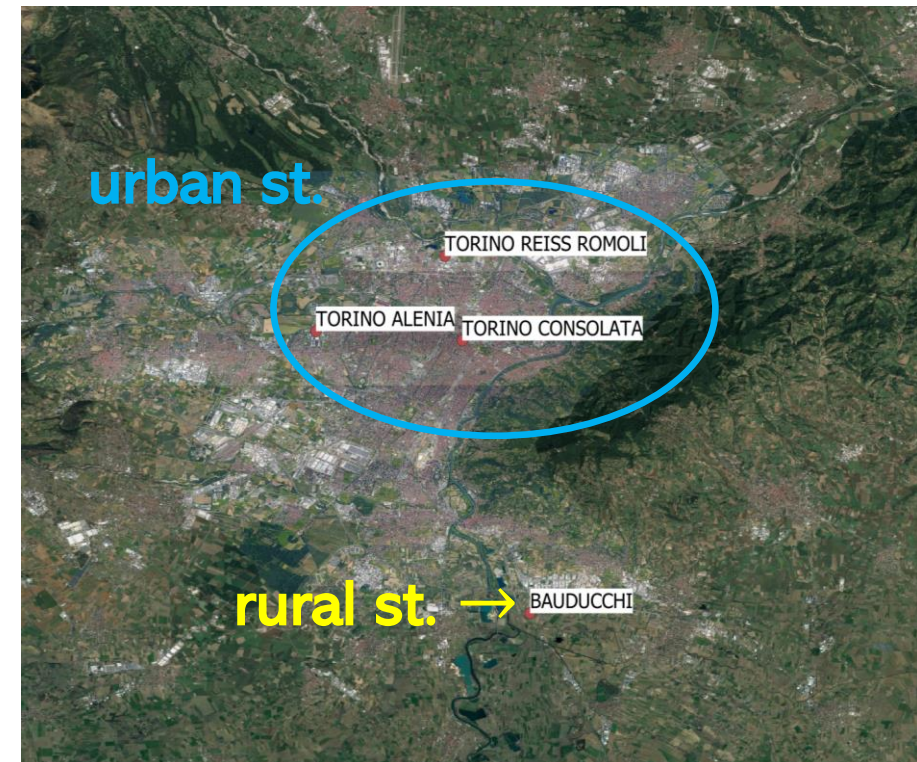
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- lold\_tur=.false.
- ntiles=2
- itype\_canopy=2
- cskinc=-1.
- cimpl=150.

- REF\_TUF (same as “REF” but lterra\_urb=.false.)

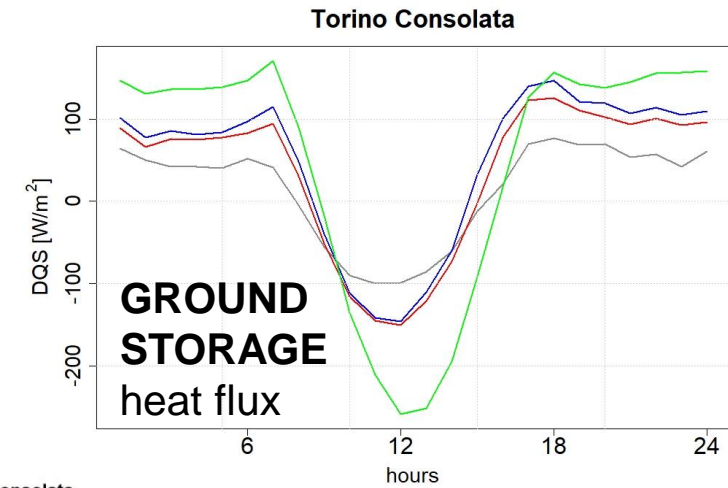
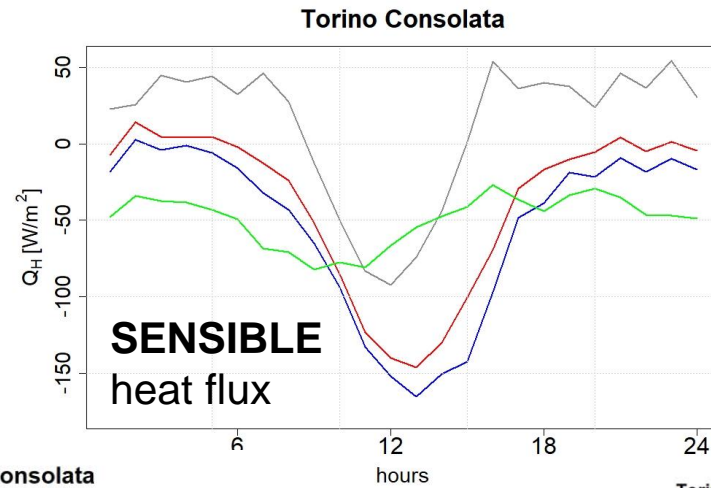
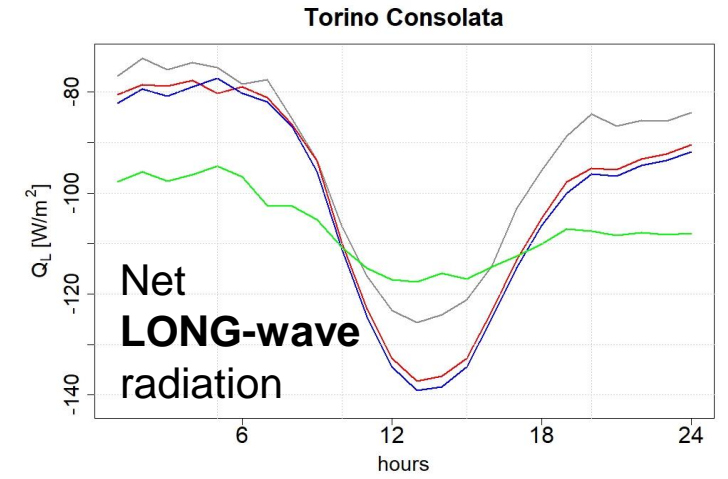
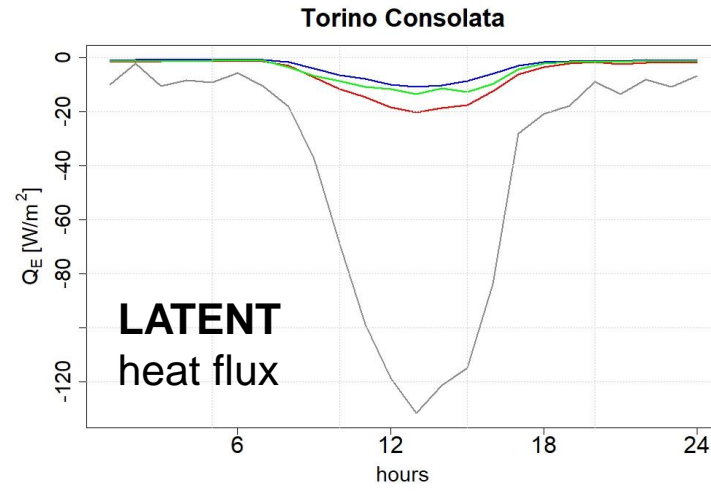
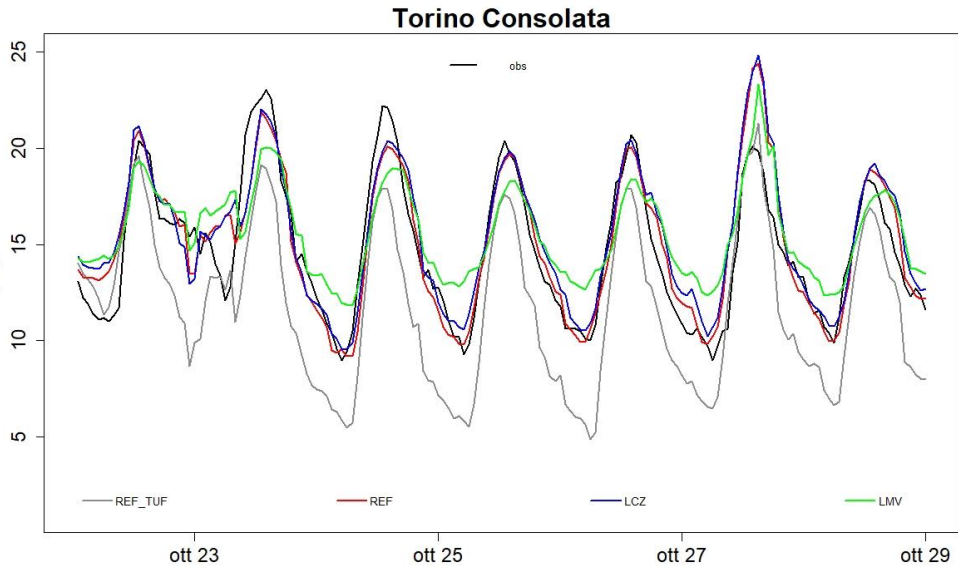
Legend for the fluxes in the next slides

- QK: net short-wave radiation
- QL: net long-wave radiation
- QH: sensible heat flux
- QE: latent heat flux
- DQS: ground storage heat flux
- Conservation of energy:  
 $DQS = - (QH+QE+QK+QL)$

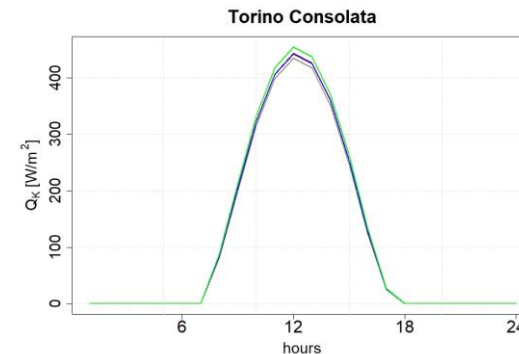
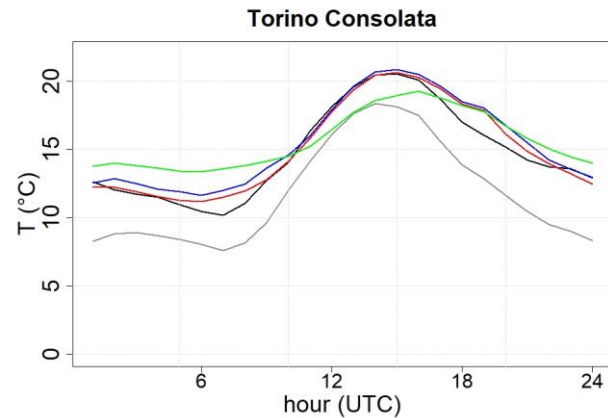


# T2m & fluxes Autumn 2017

— REF\_TUF  
— REF  
— LCZ  
— LMV



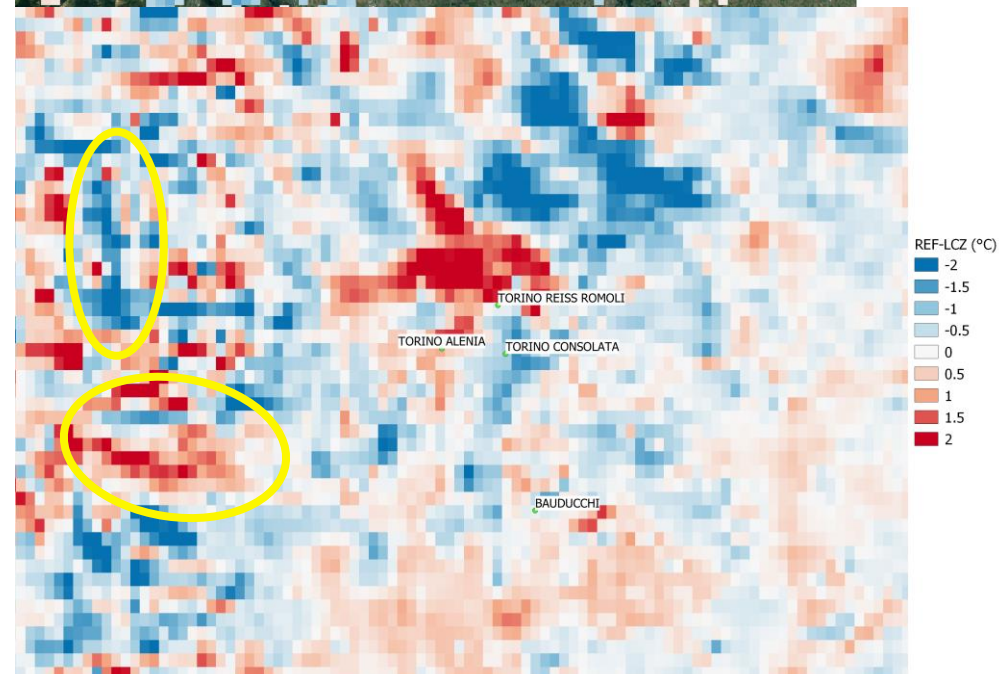
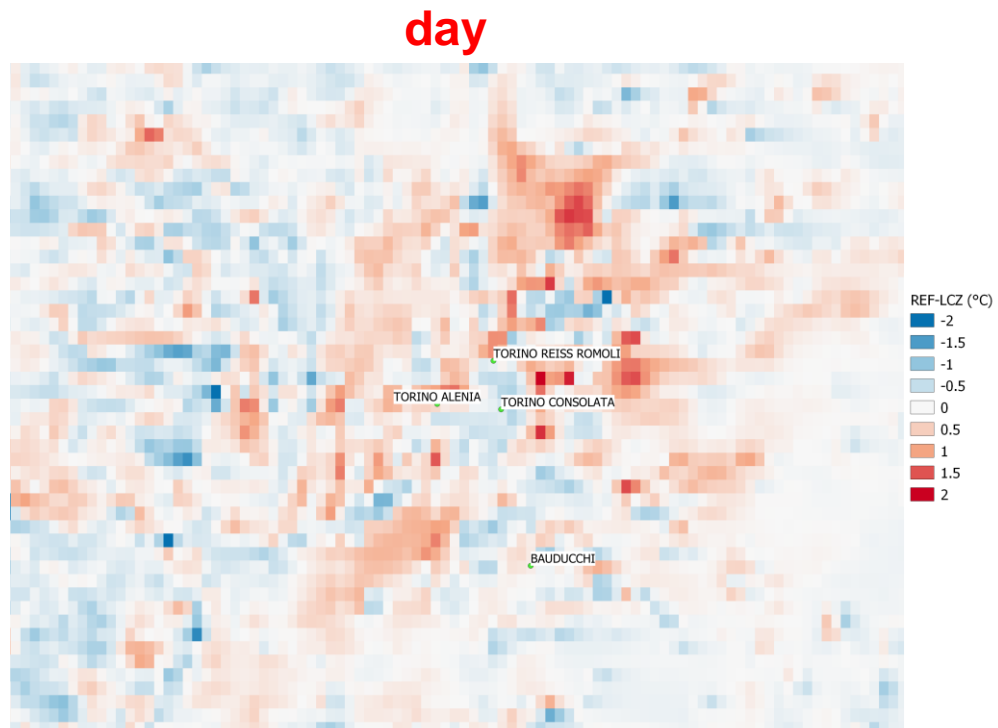
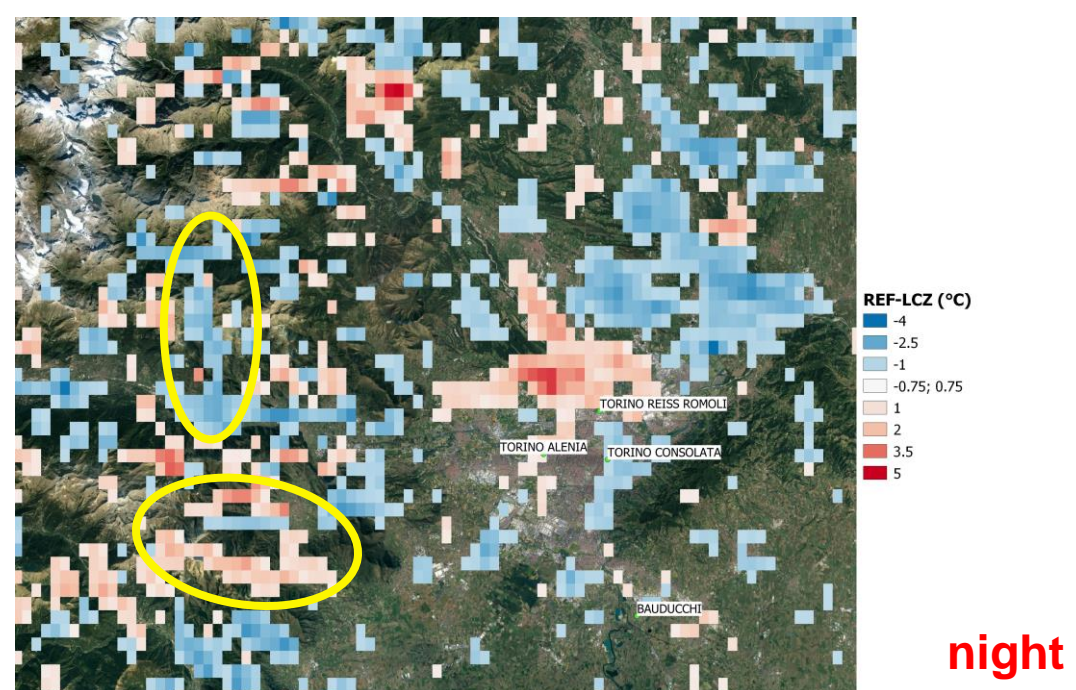
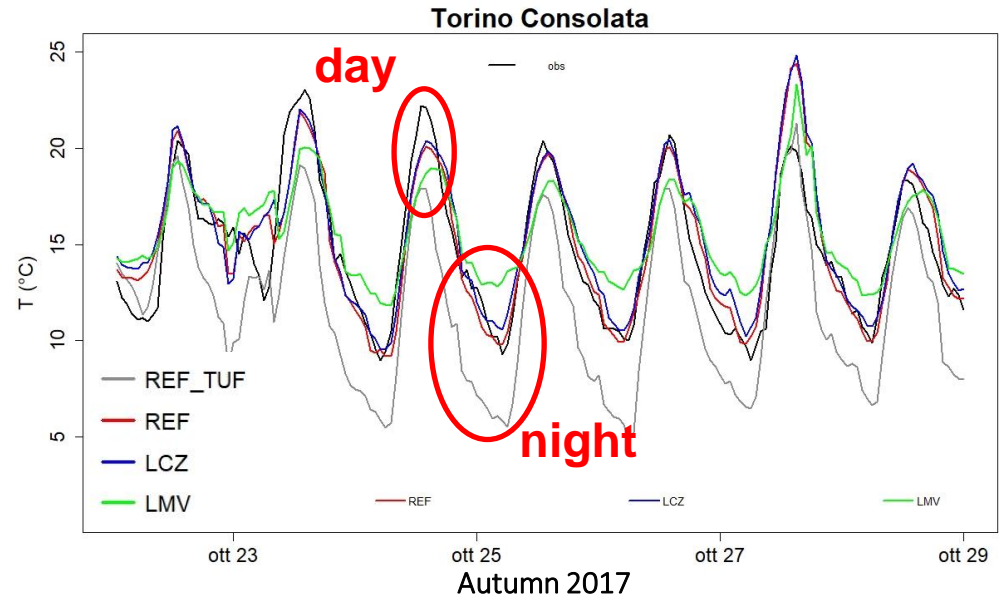
	URB_FR_BLD	URB_H2W	URB_H_BLD
Constant values (in REF and LCZ)	0.67	1.5	15
Torino Consolata (in LMV)	0.5	1.25	15

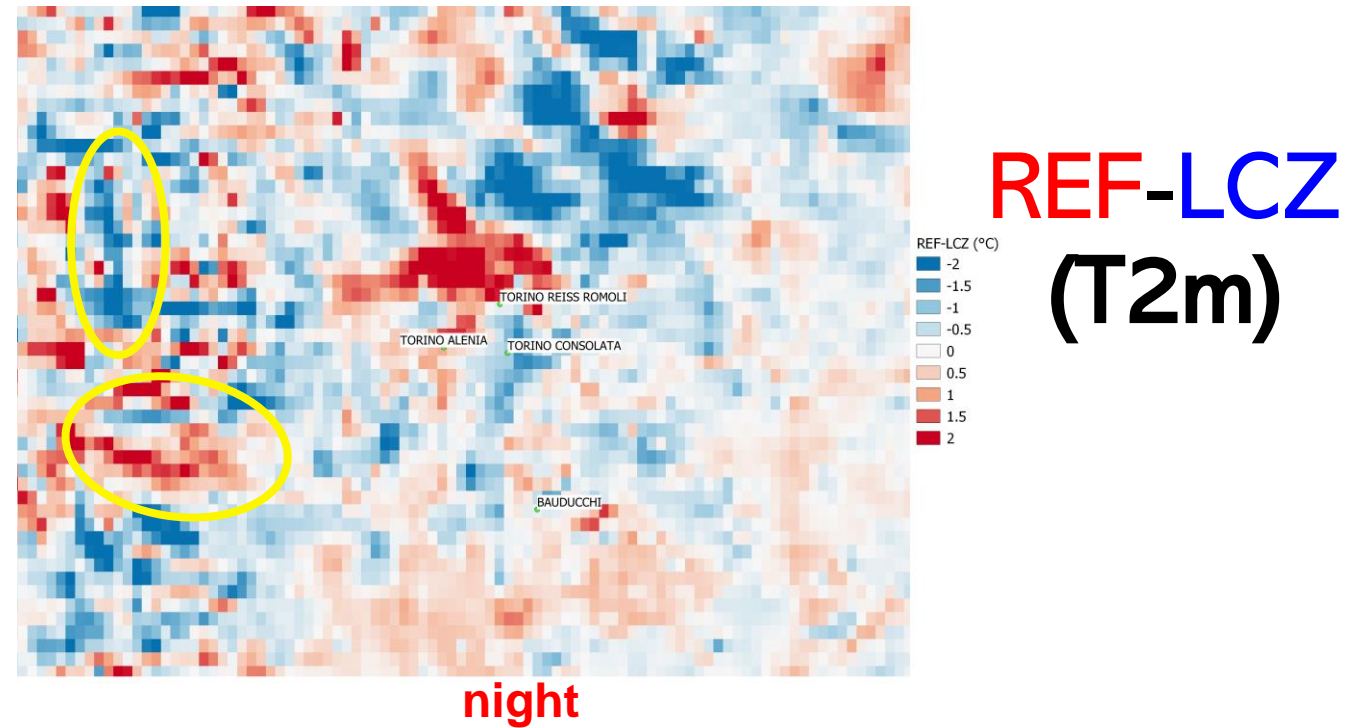
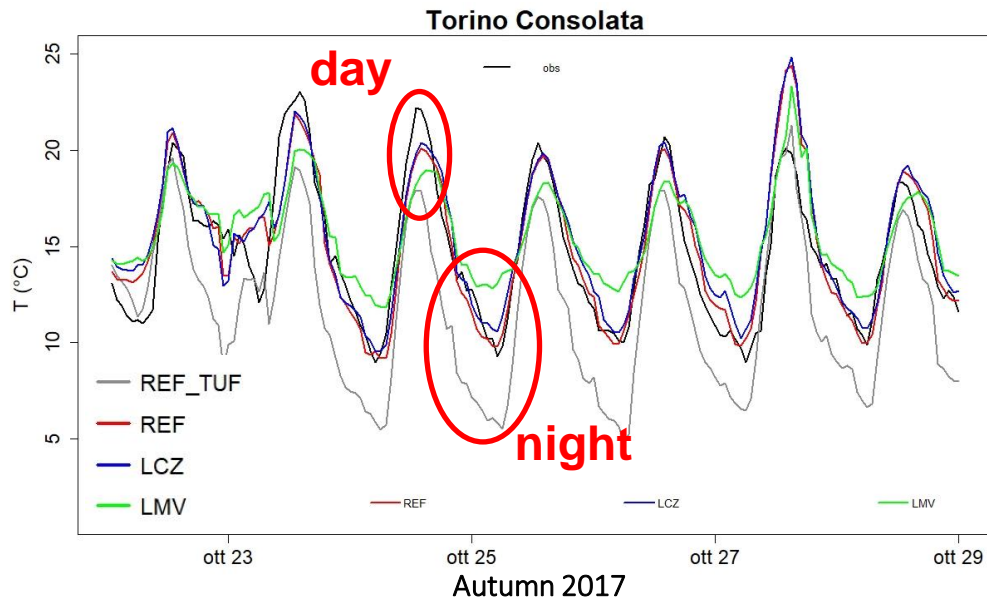


→ Negligible differences in net SHORT-wave radiation



# T2m: REF-LCZ





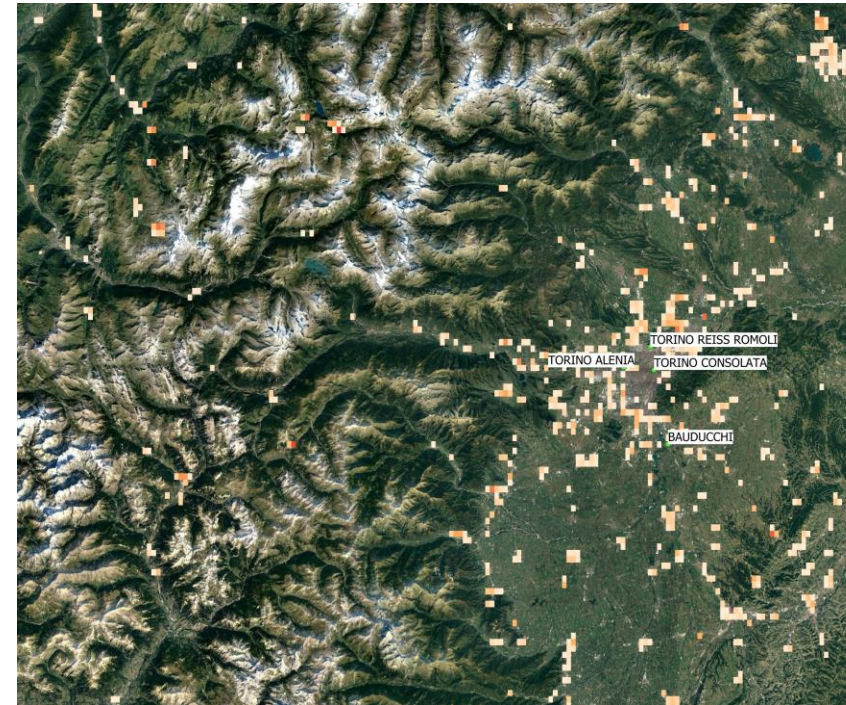
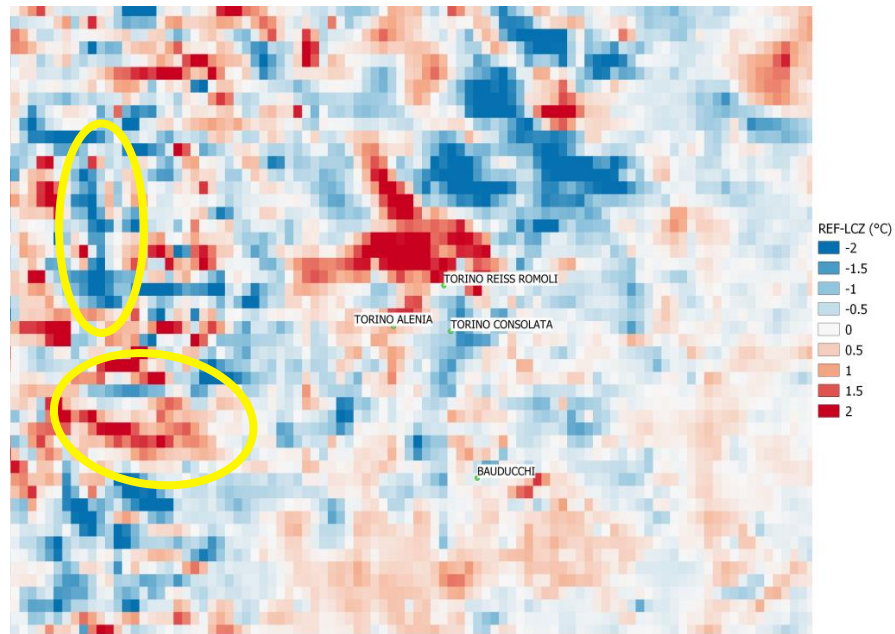
- The differences between **REF** and **LCZ** sims are in the parameters **ISA** and **AHF** only
- The points in which the differences are higher are around ridges and/or valleys
- Even if **ISA** & **AHF** are equal to zero in the **highlighted** zones (West, nearby the mountains), it seems that **TERRA URB** still influences the t2m

Urban stations→ Ext. parameters ↓	Torino Consolata	Torino Alenia	Torino Reiss Romoli
<b>AHF (EXTPAR)</b>	25.944	21.011	20.186
<b>AHF (LCZs)</b>	35	23.080	21.723
<b>ISA (EXTPAR)</b>	0.931	0.618	0.669
<b>ISA (LCZs)</b>	0.900	0.590	0.643



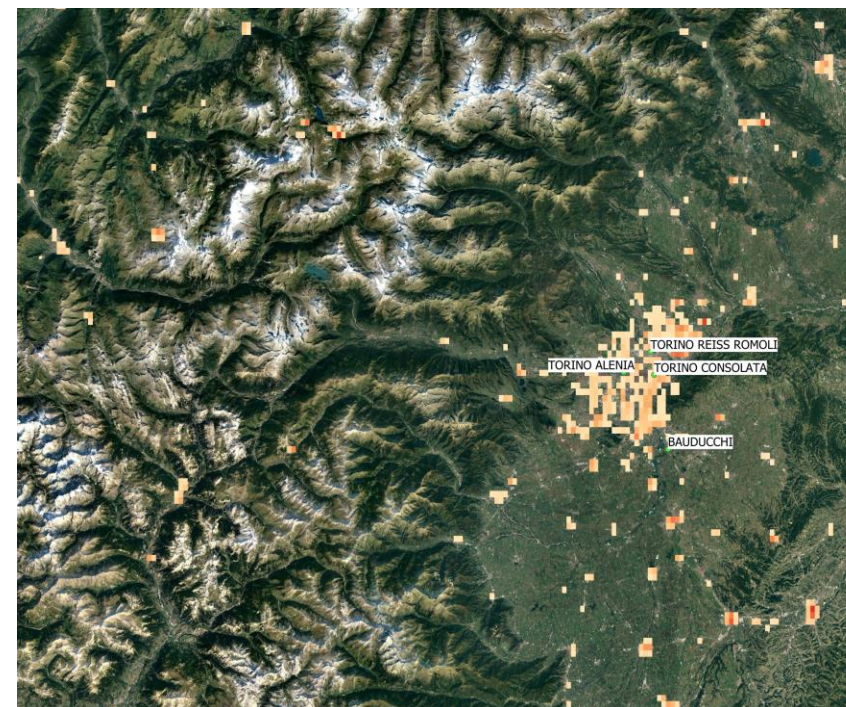
# REF-LCZ (T2m)

night



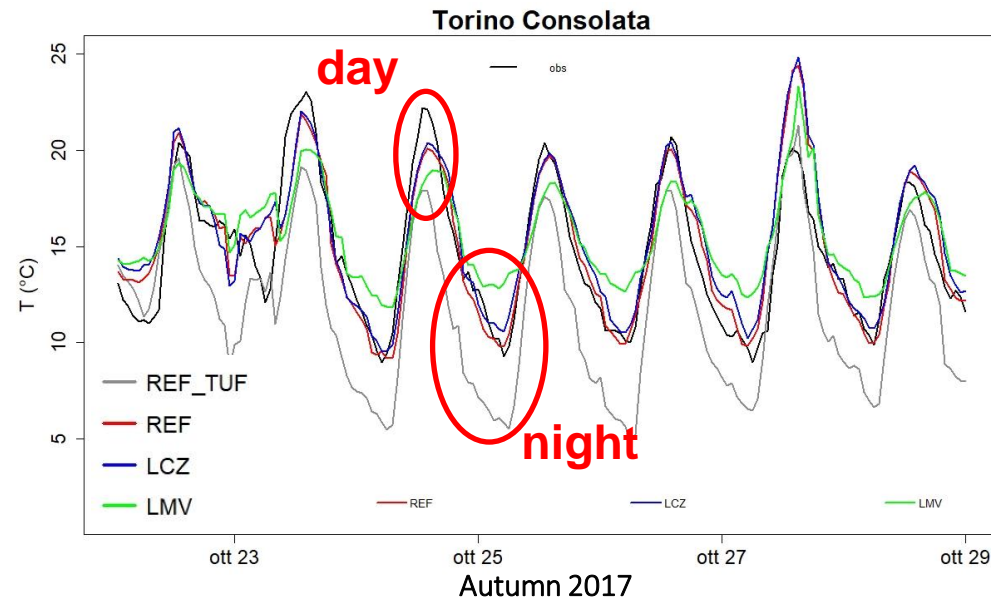
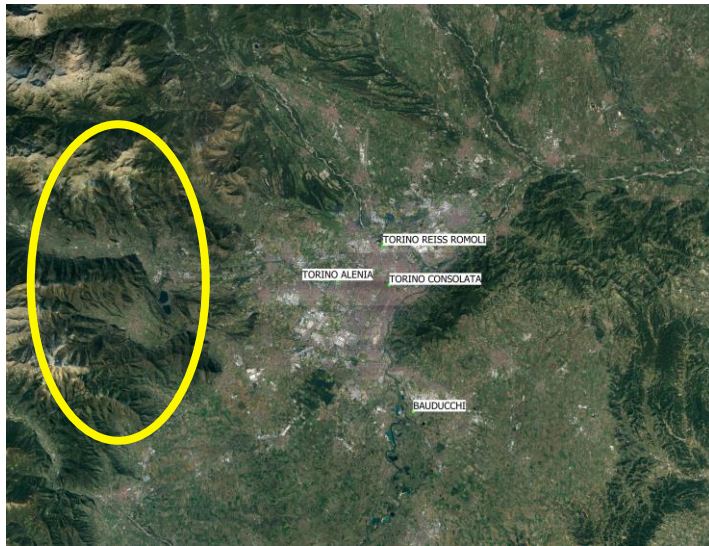
Differences in URBAN areas only (correct!)

Urban stations→ Ext. parameters ↓	Torino Consolata	Torino Alenia	Torino Reiss Romoli
AHF (EXTPAR)	25.944	21.011	20.186
AHF (LCZs)	35	23.080	21.723
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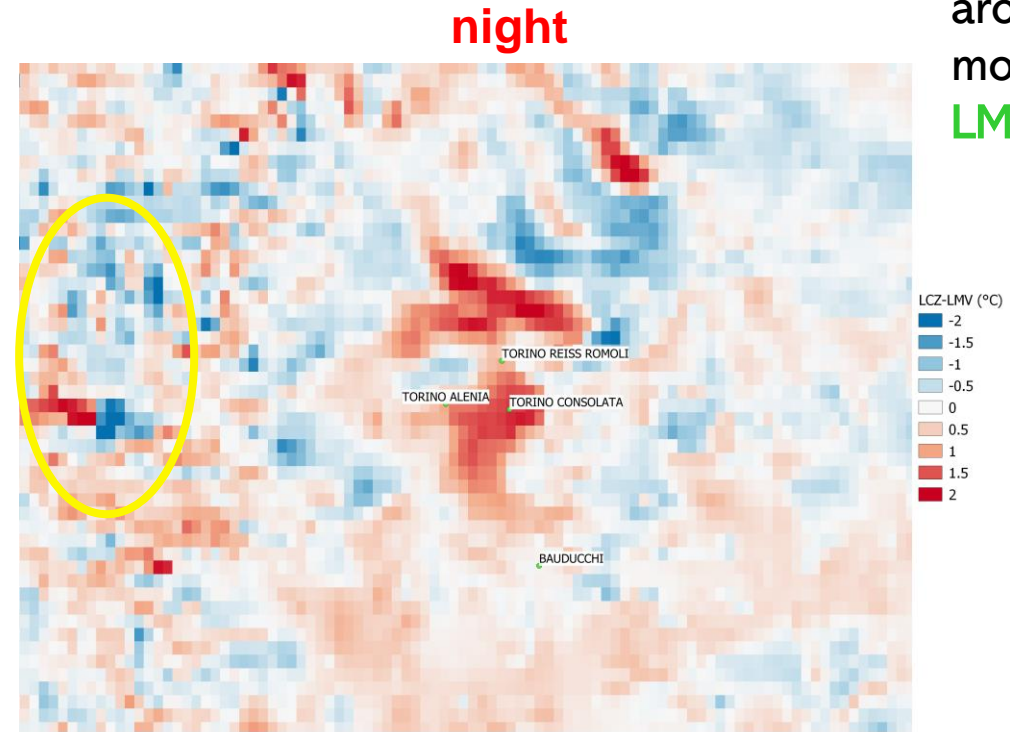
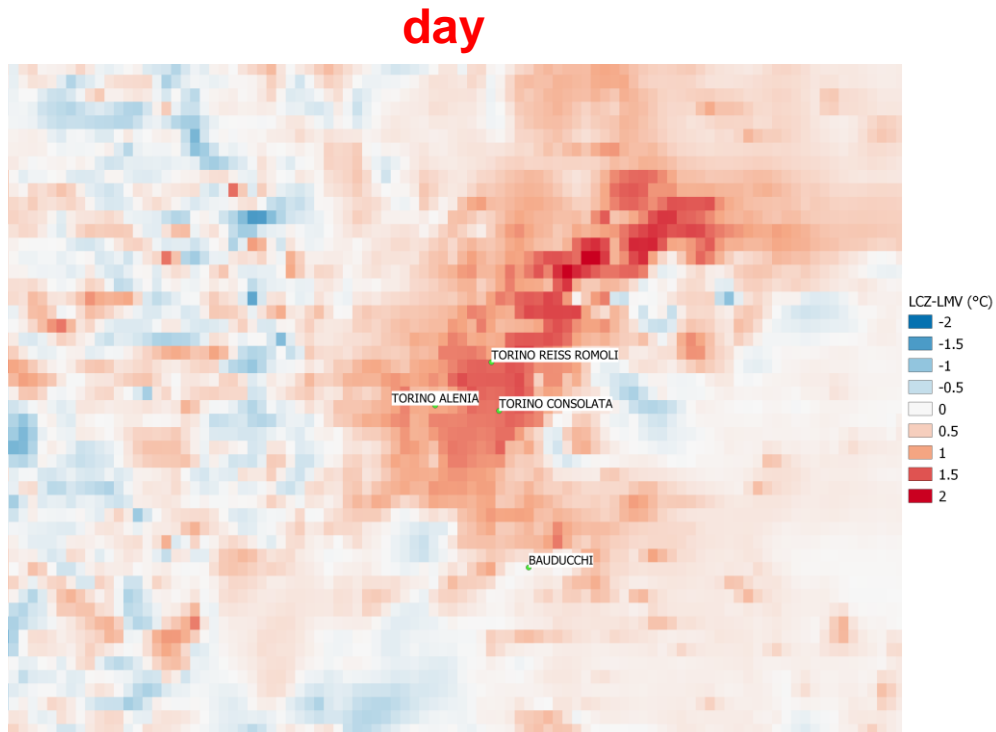




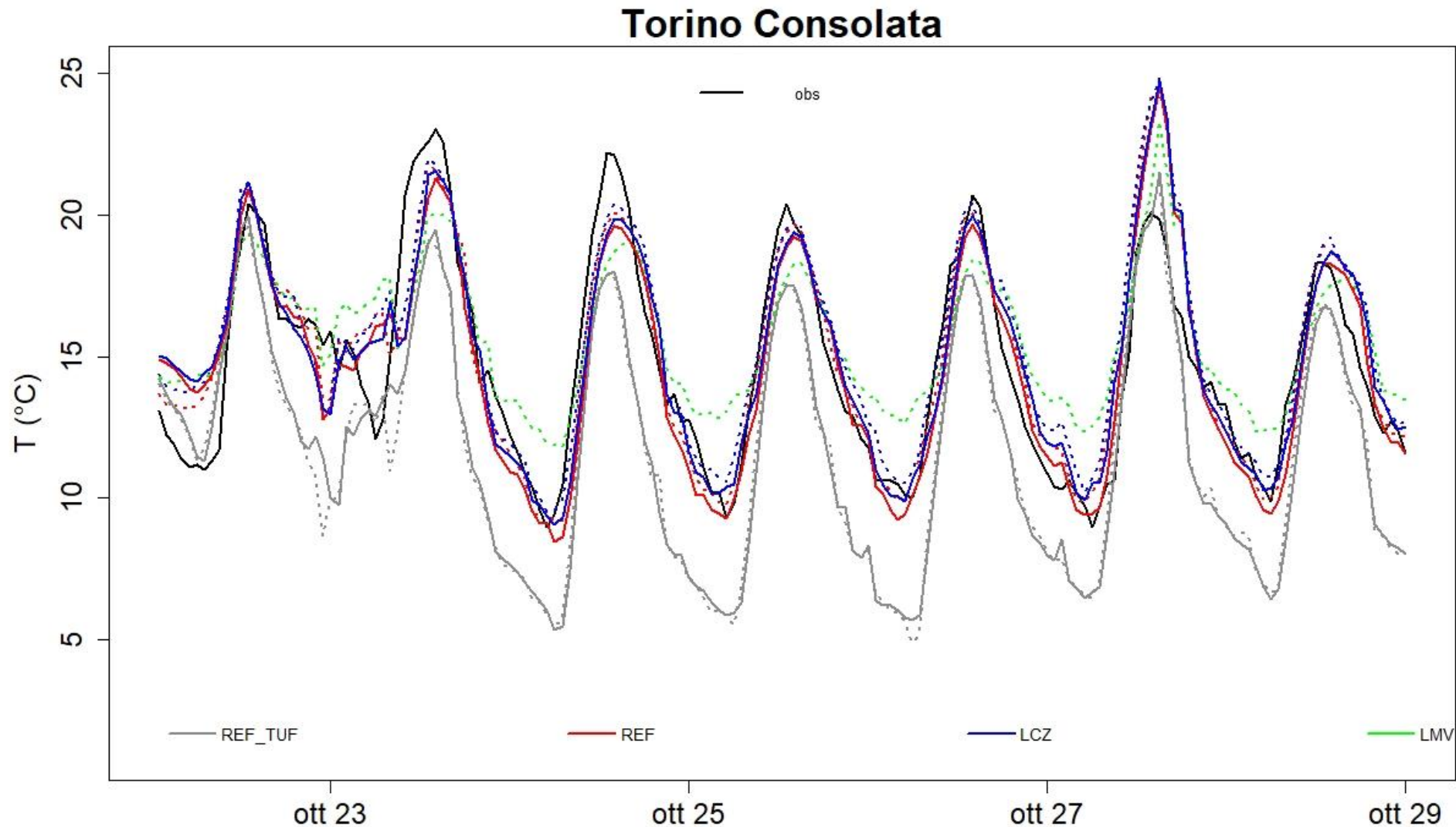
# T2m: LCZ-LMV



Same (strange) trend found around the mountains for **LMV** sim.



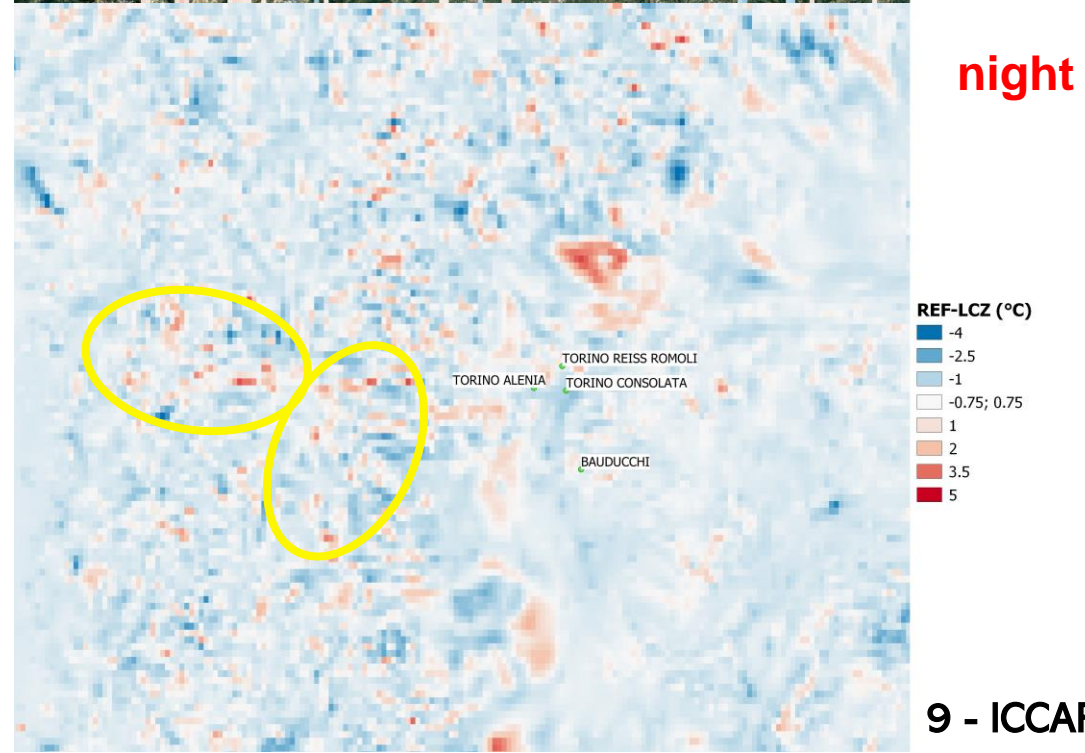
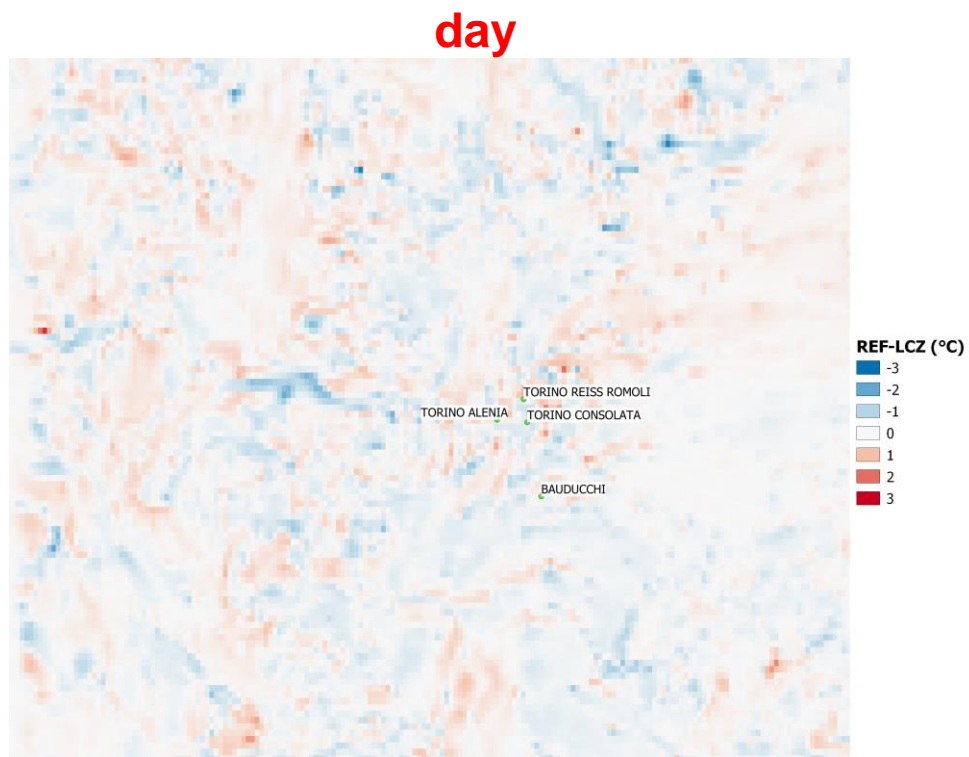
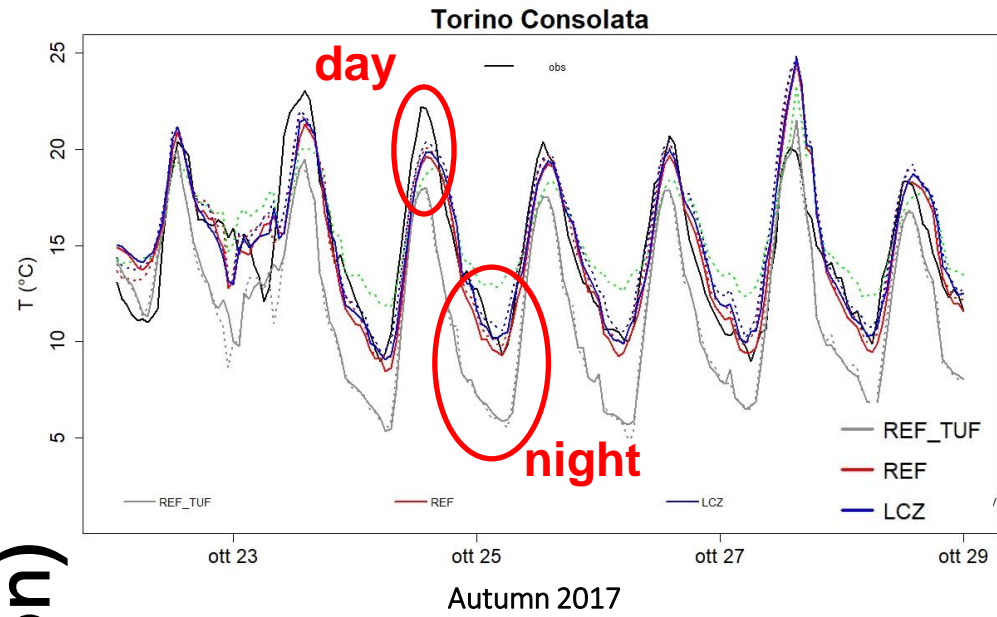
# Test with the latest version (COSMO 5.10)



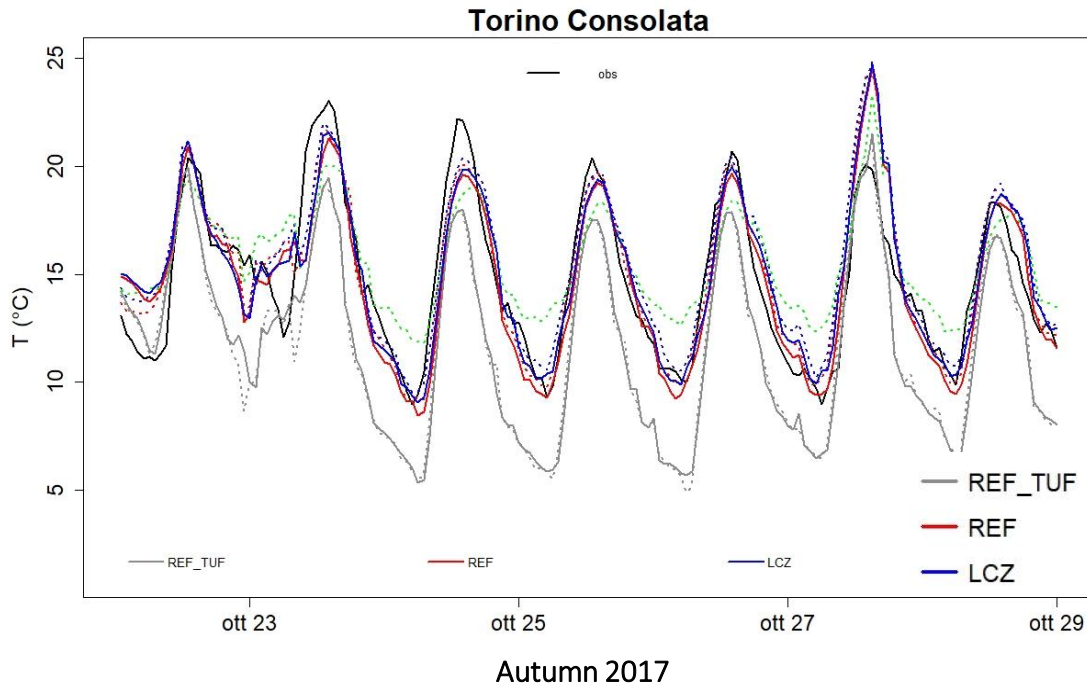
- Black continuous line = **OBSERVED DATA**
- Dotted lines: **old** COSMO version
- CONTINUOUS lines: **latest** COSMO version



# T2m: REF-LCZ (new version)



# Open discussion



- Problem: we tried to run the **LMV** simulation\* with COSMO 5.10, but it **failed**
- How to solve the bad results around the mountains? They affect the outcomes around Turin !  
→ problems with slopes

\***NAMELIST:** lterra\_urb=.true., ntiles=2, itype\_canopy=2, cskinc=-1., cimpl=150., curb\_bldfr=-1, curb\_bldh=-1, curb\_h2w=-1