



# PP CITTA'

## ICON TESTS

**Massimo Milelli, Francesca Bassani, Valeria Garbero**

**13 September 2022, 24th COSMO General Meeting**

[www.cimafoundation.org](http://www.cimafoundation.org)



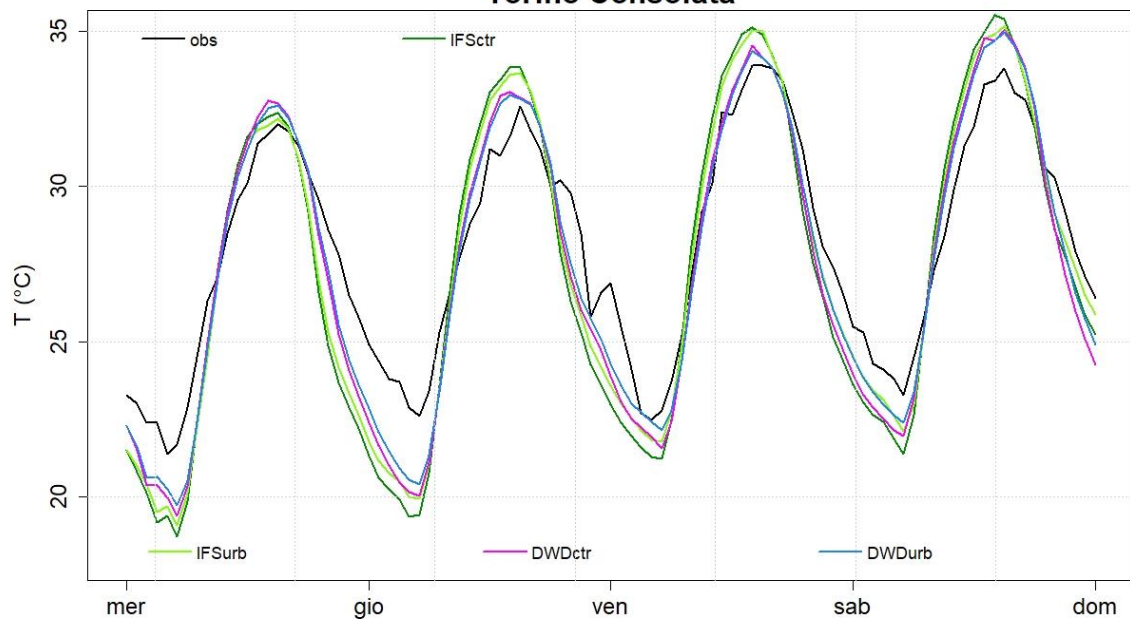


## Hindcast simulations:

- 2021081100 – 2021081500 (96h)
- Heat wave over north-west of Italy
- IFS 9km -> ICON 900m
- ICON 7km -> ICON 3.5km -> ICON 1.8km -> ICON 900m
- ICON v2.6.4 (master) with TERRA\_URB and KBMO (invers Stanton number, see Wouters et al., 2016)

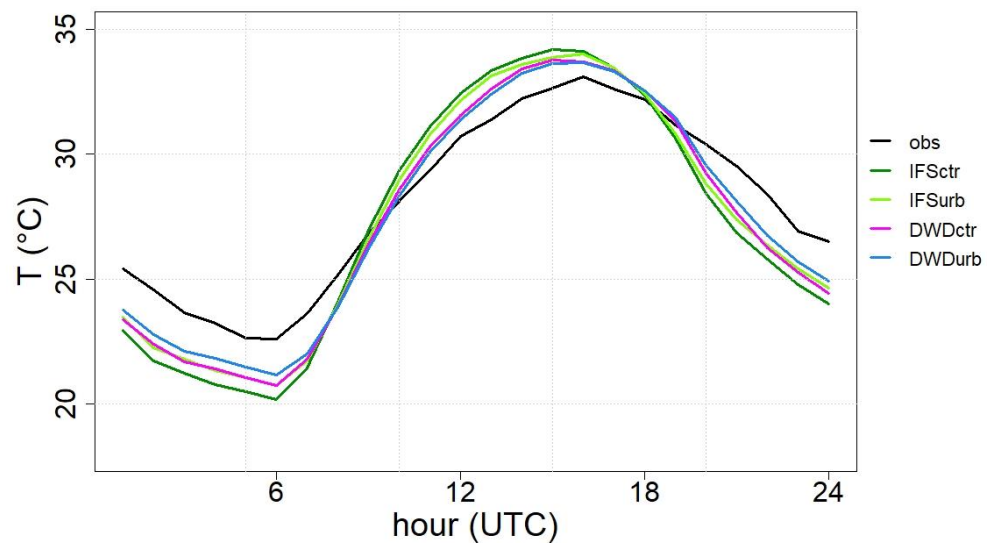


**Torino Consolata**

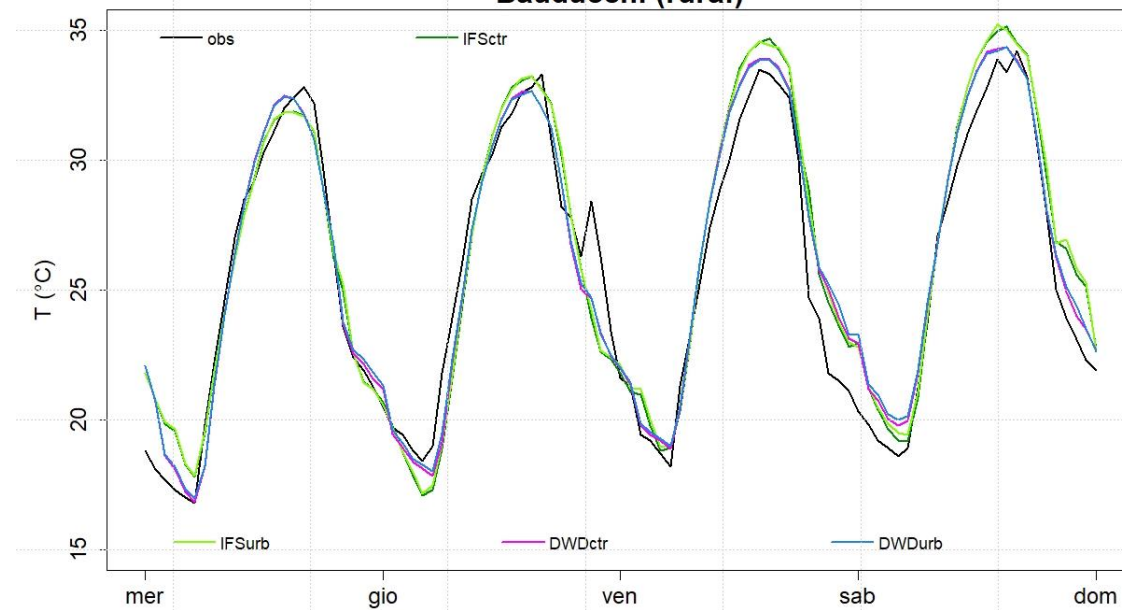


**urban**

**Torino Consolata**

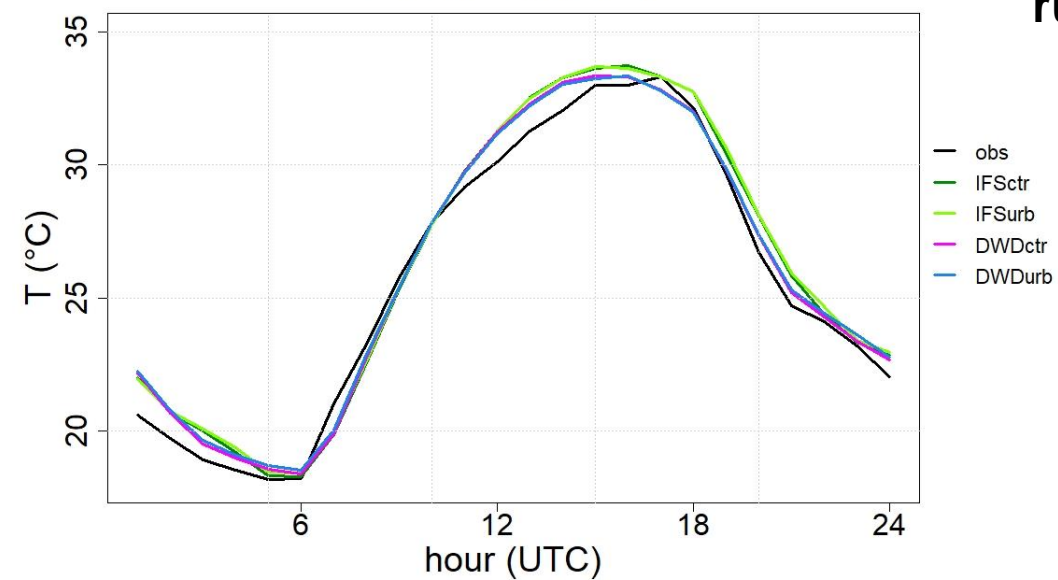


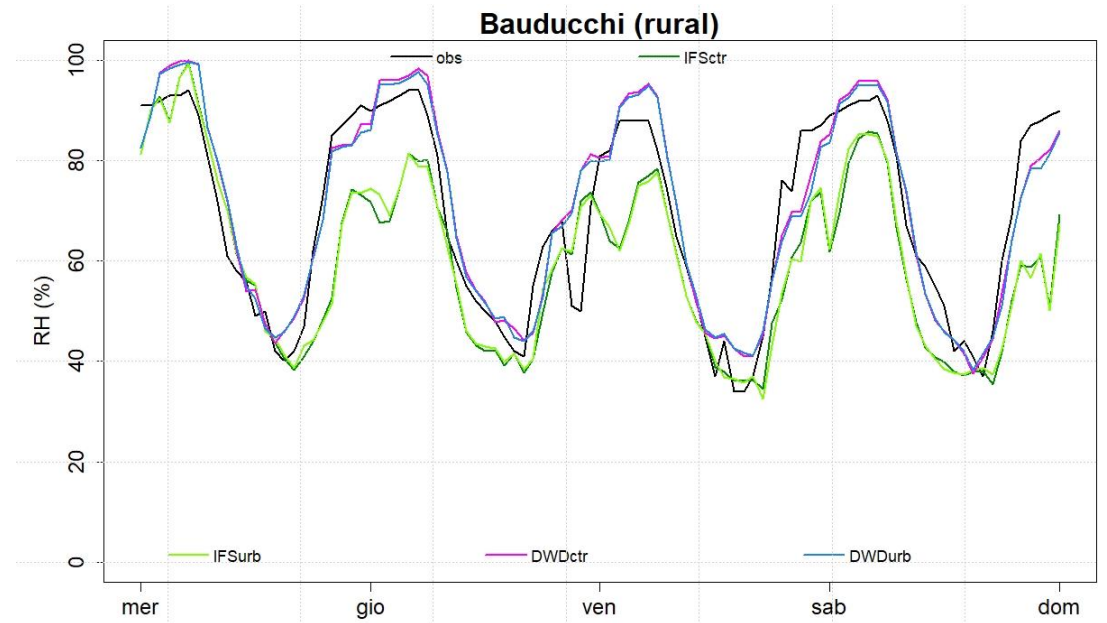
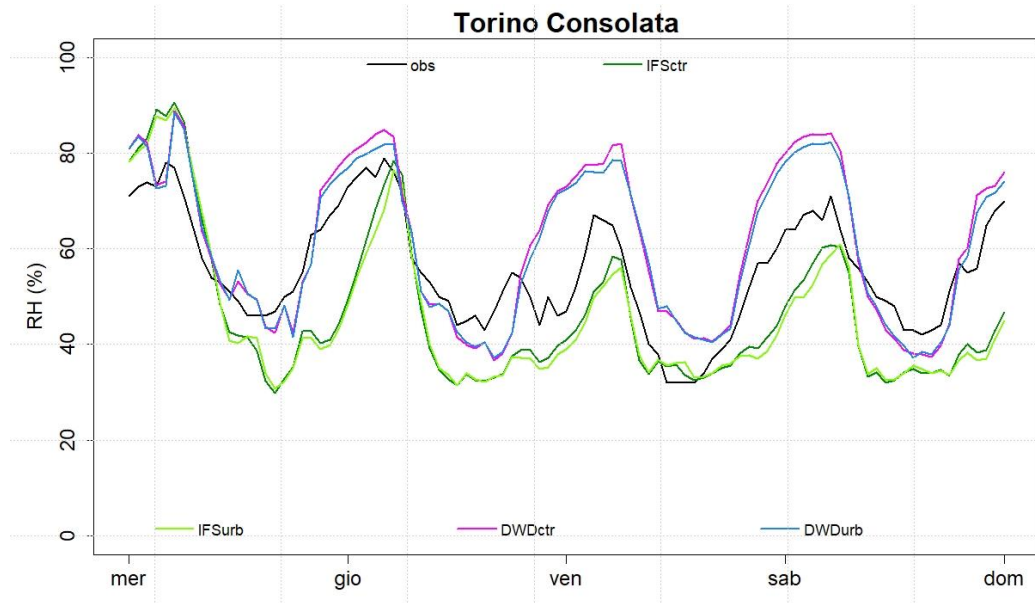
**Bauducchi (rural)**



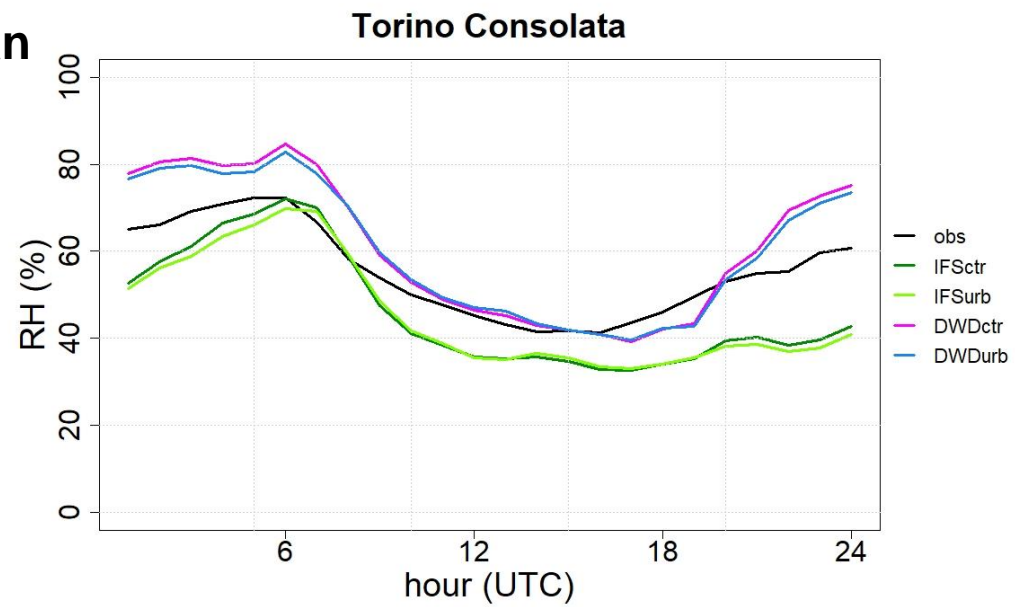
**Bauducchi (rural)**

**rural**

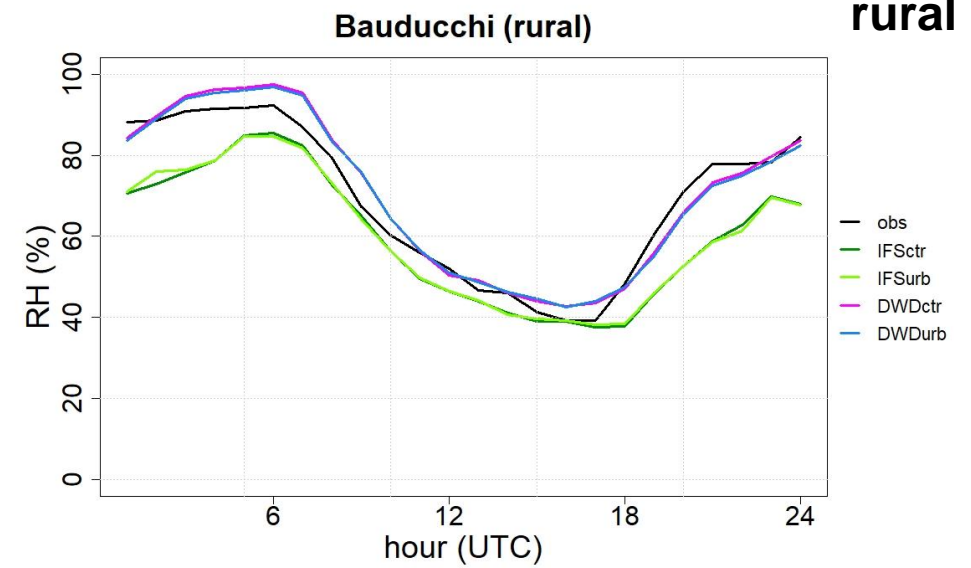




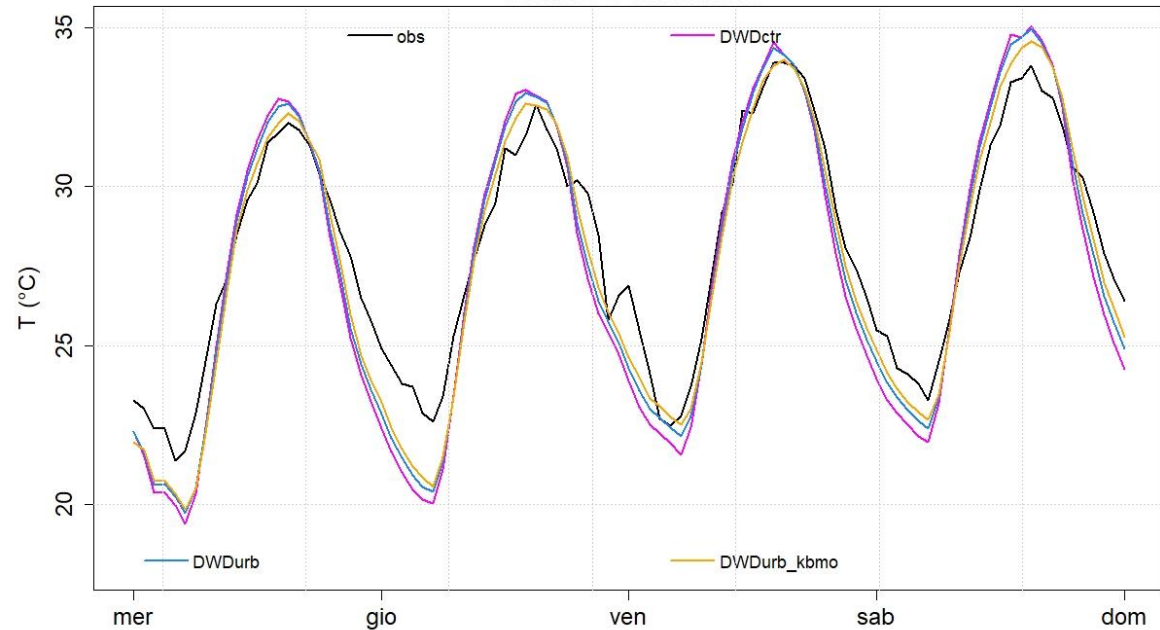
**urban**



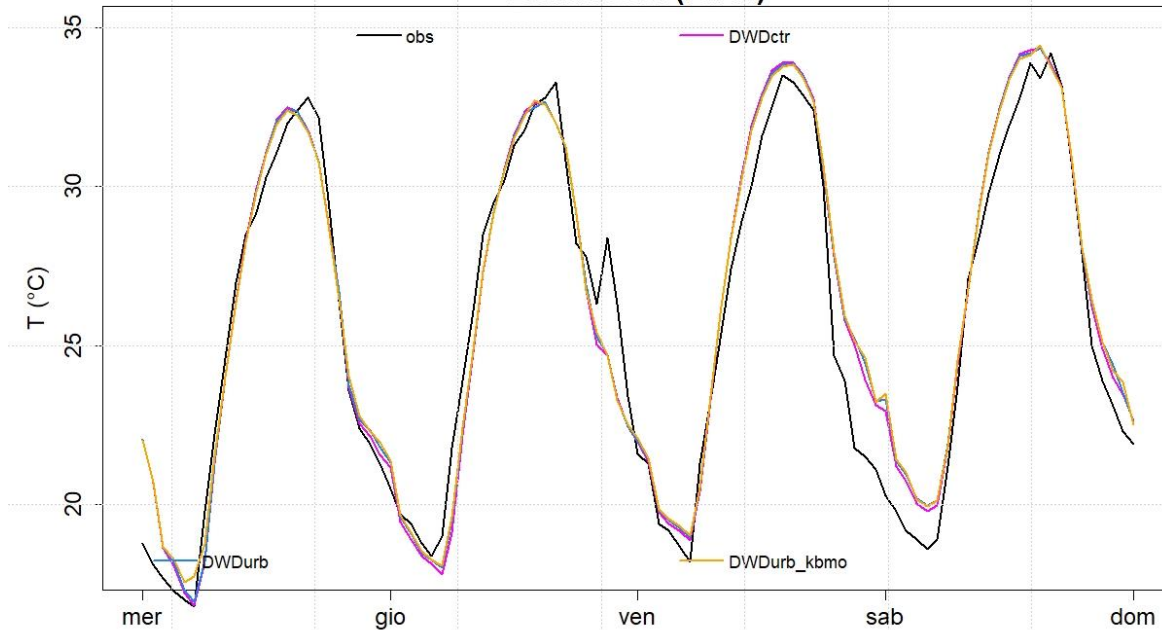
**rural**



**Torino Consolata**

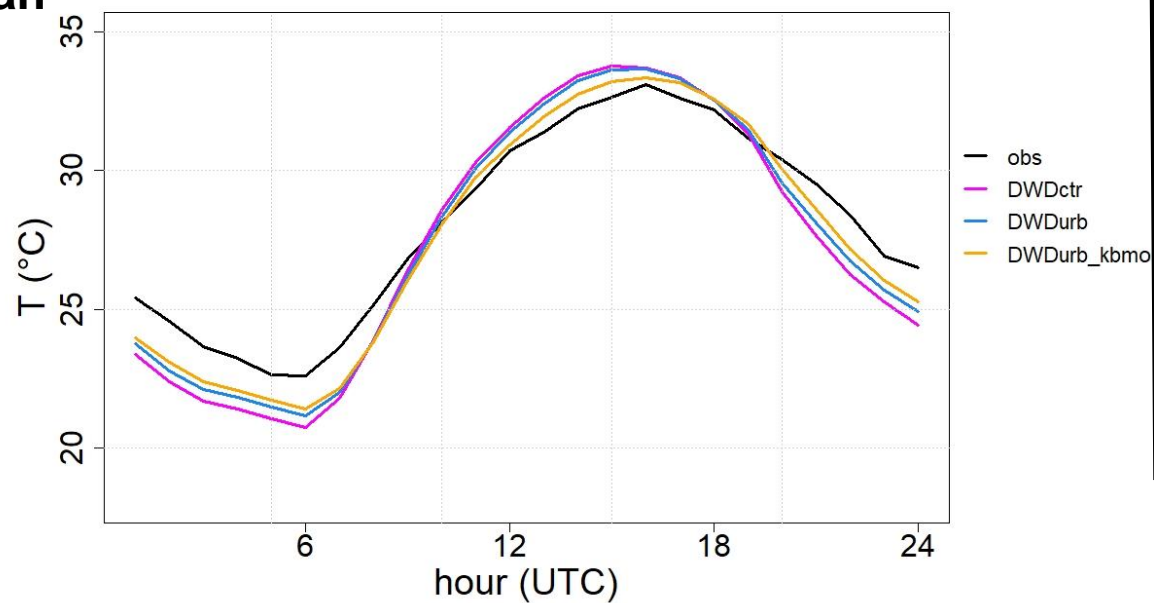


**Bauducchi (rural)**



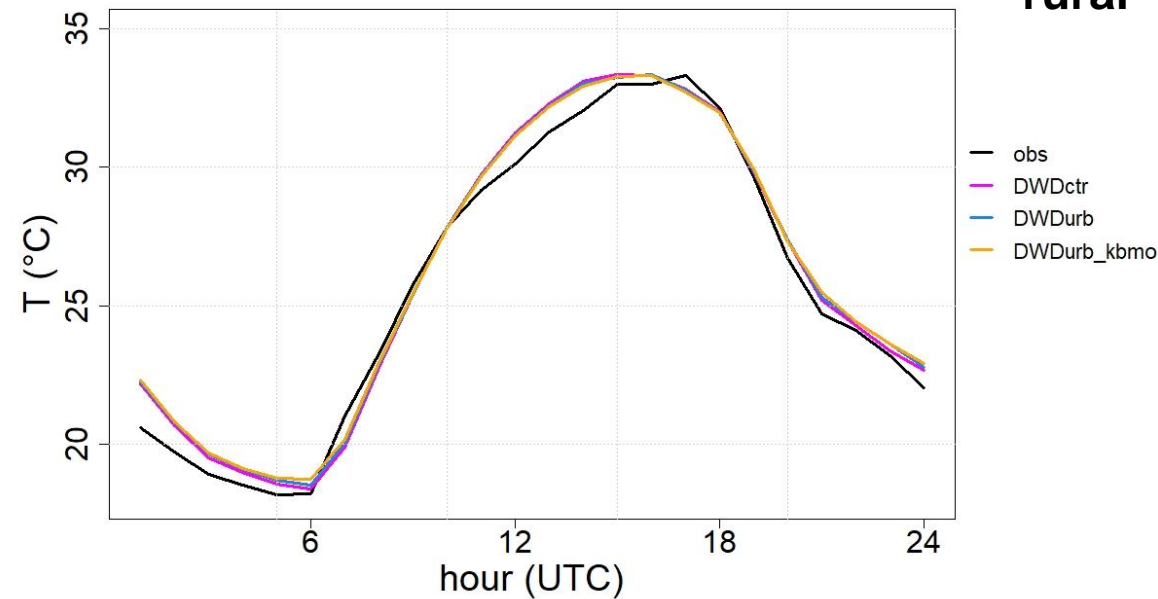
**urban**

**Torino Consolata**



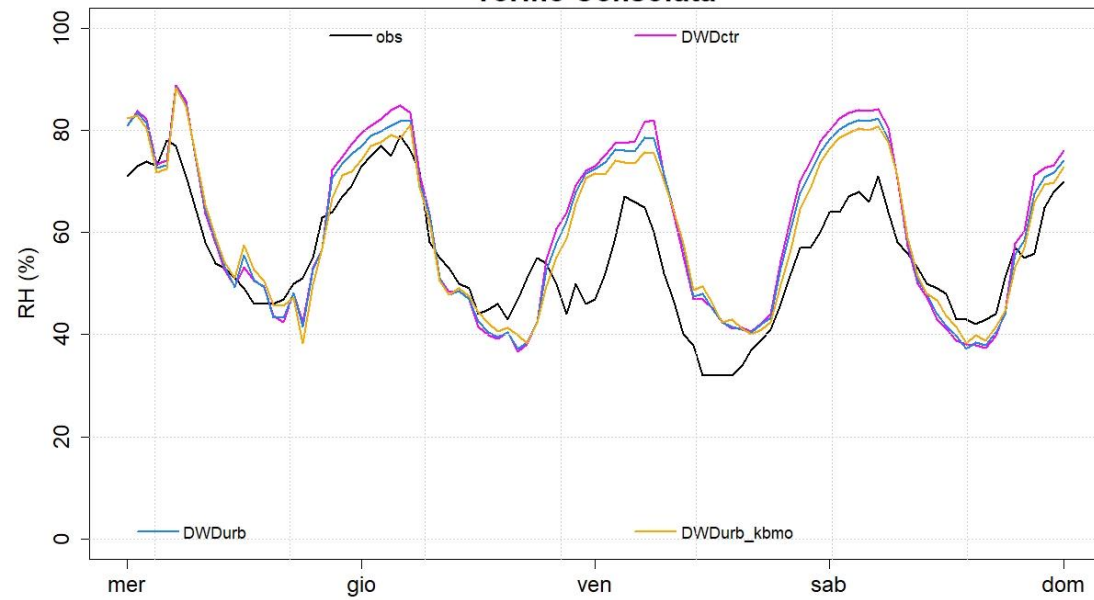
**Bauducchi (rural)**

**rural**

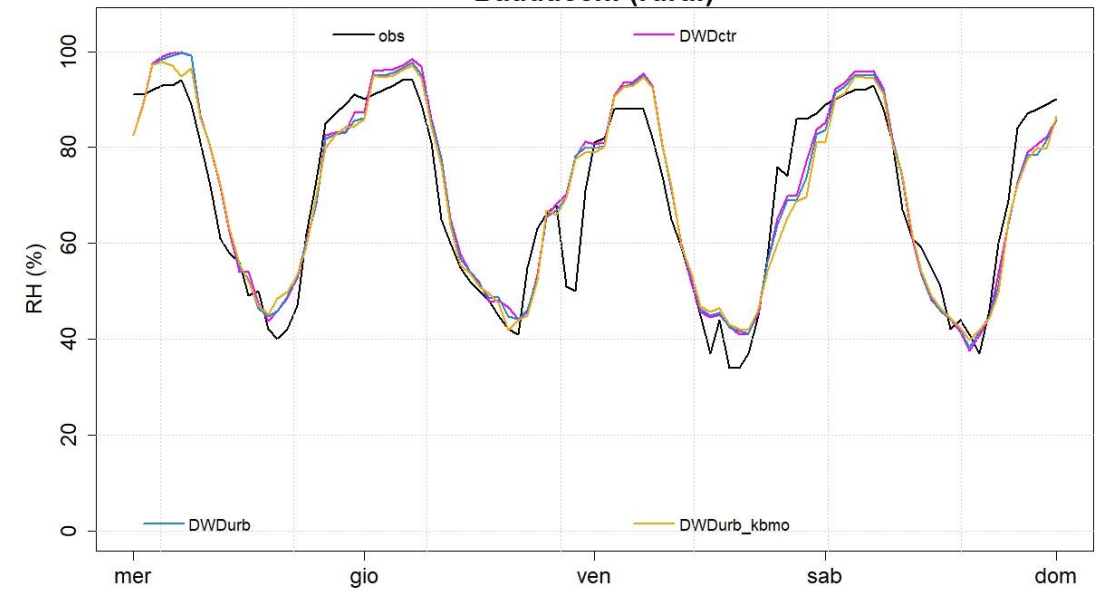




**Torino Consolata**

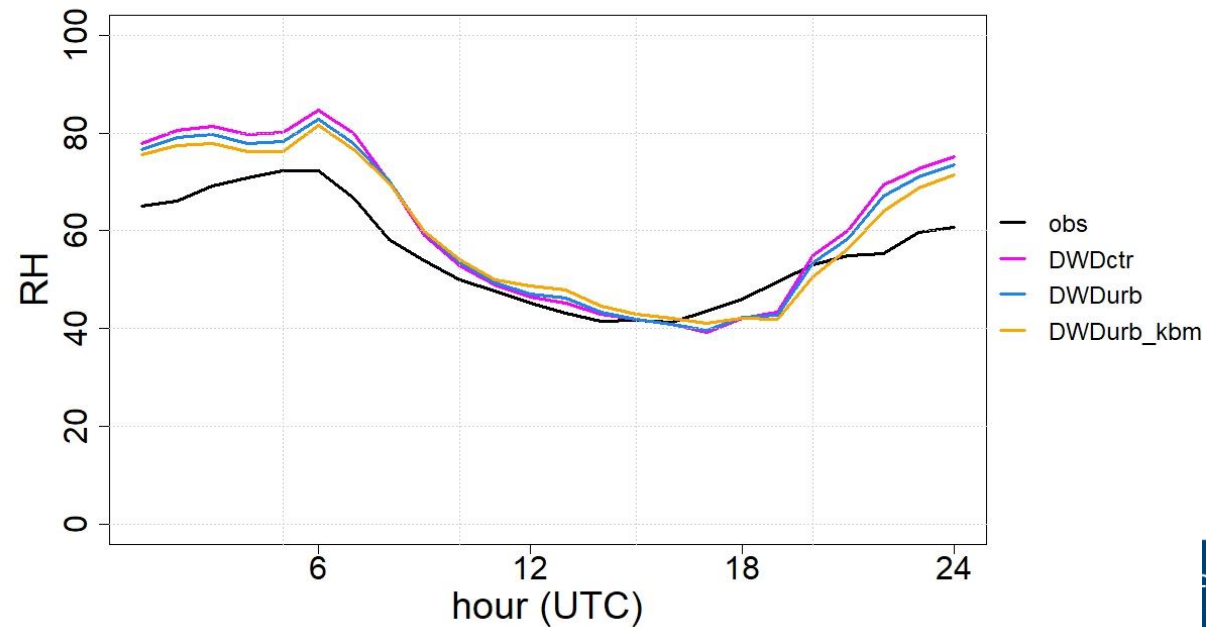


**Bauducchi (rural)**



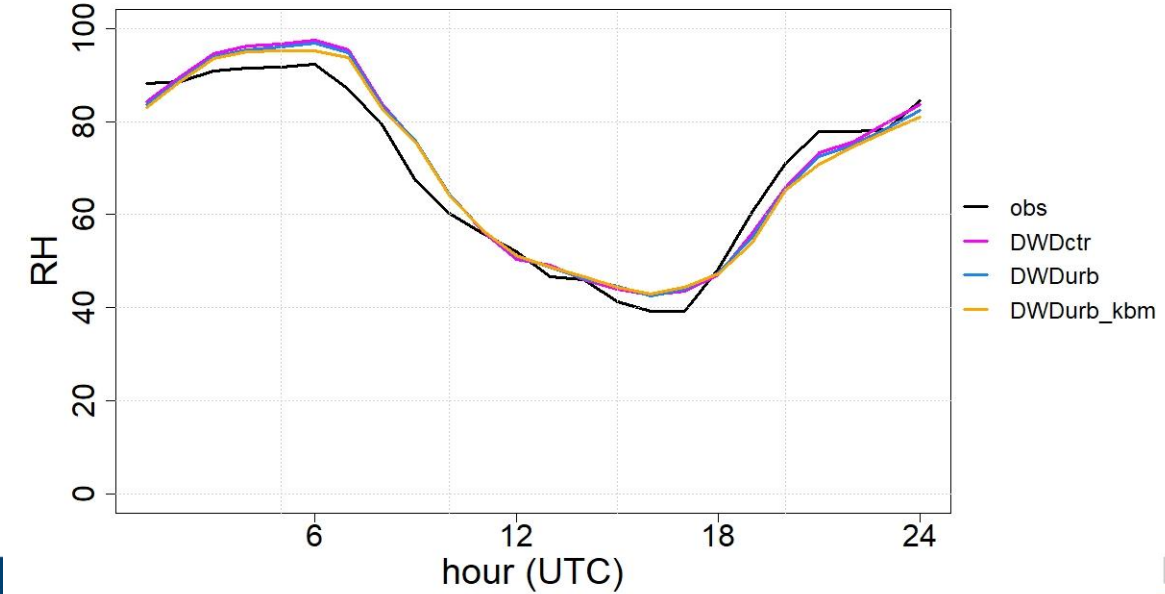
**urban**

**Torino Consolata**



**Bauducchi (rural)**

**rural**





+1°C

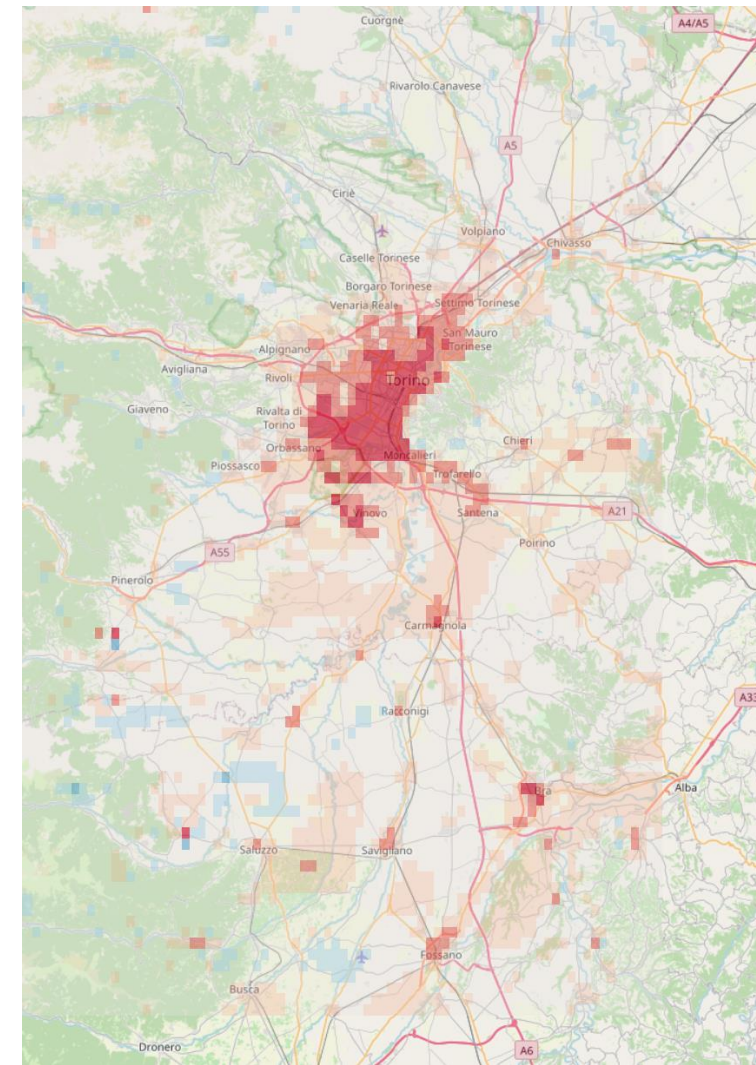
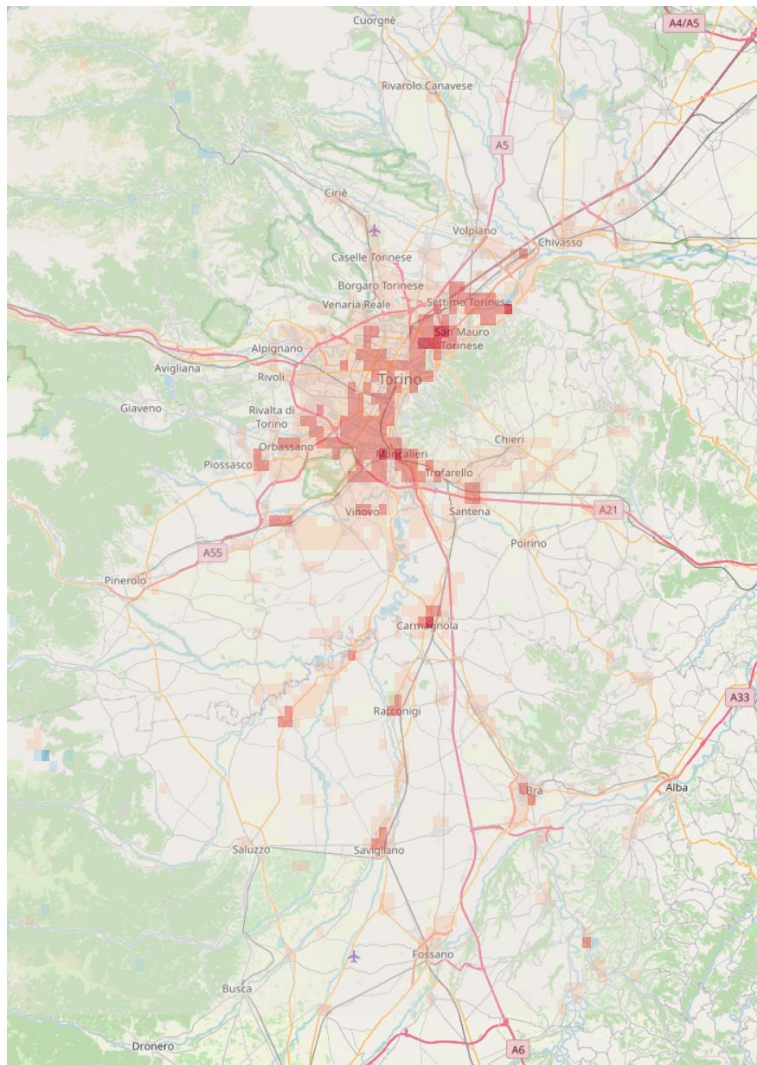
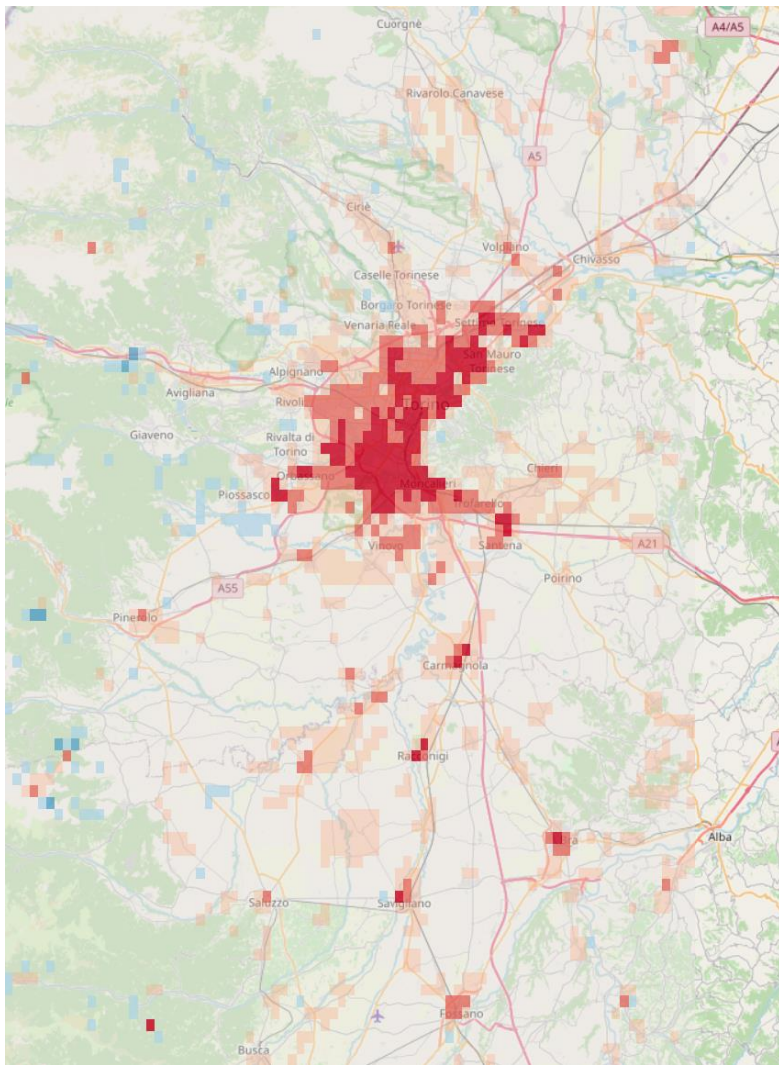
20210814 05UTC

DWD-KBMO

DWD

IFS

0°C



-1°C

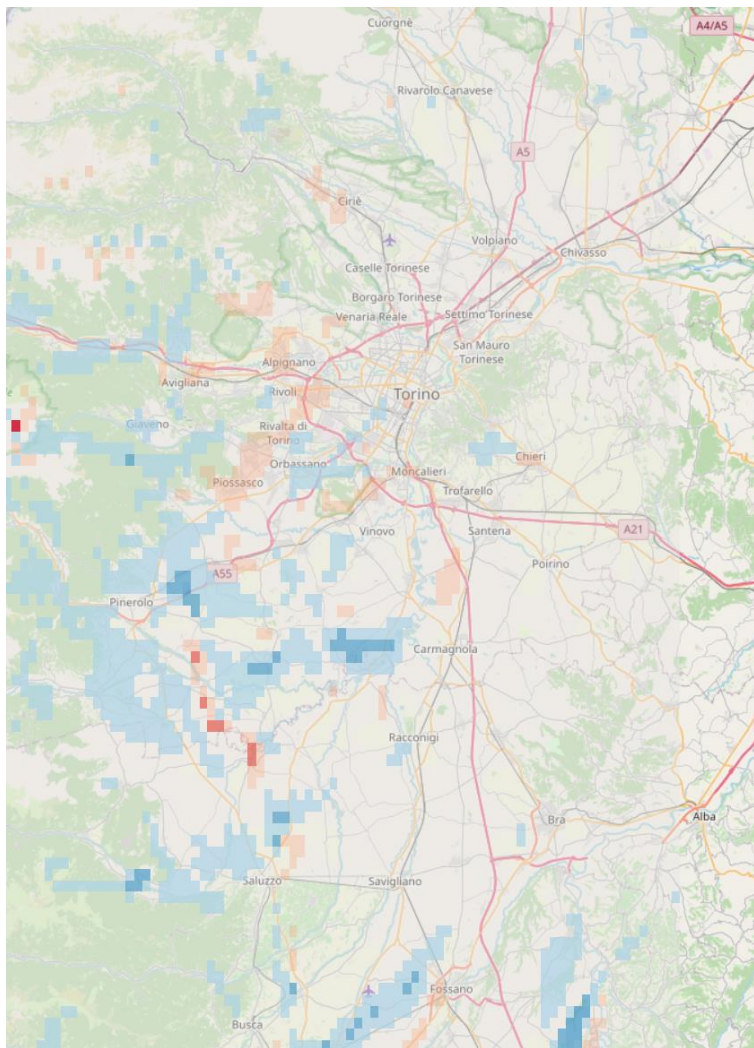
Differences between the sims with  
TU on and CTR during nighttime



+1°C

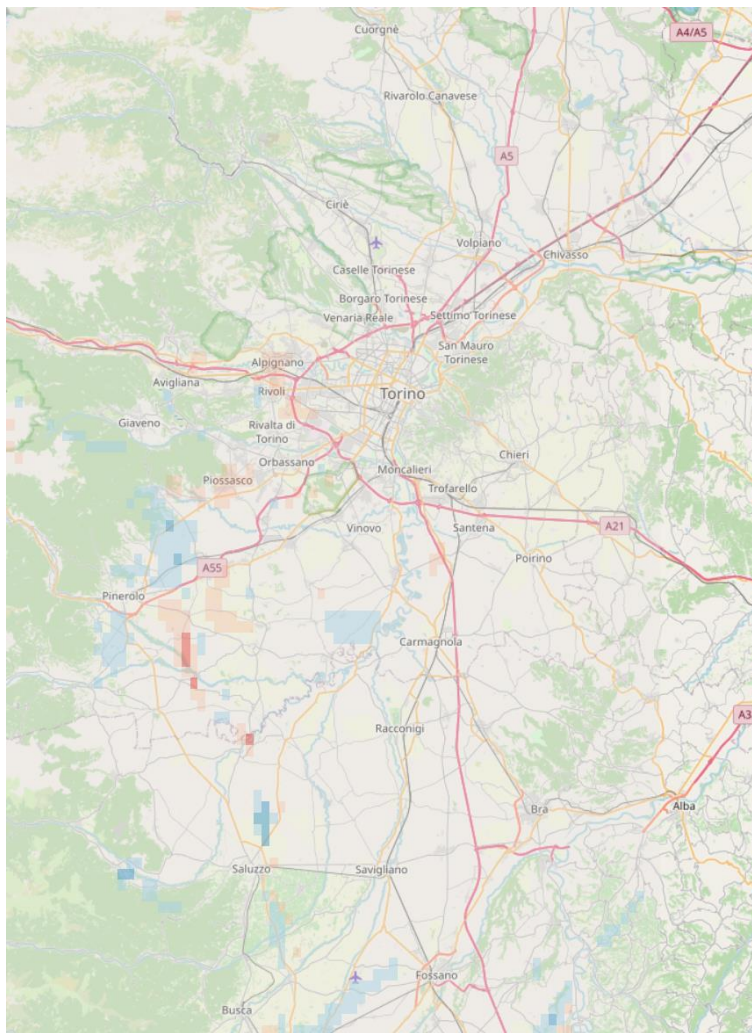
DWD-KBMO

0°C

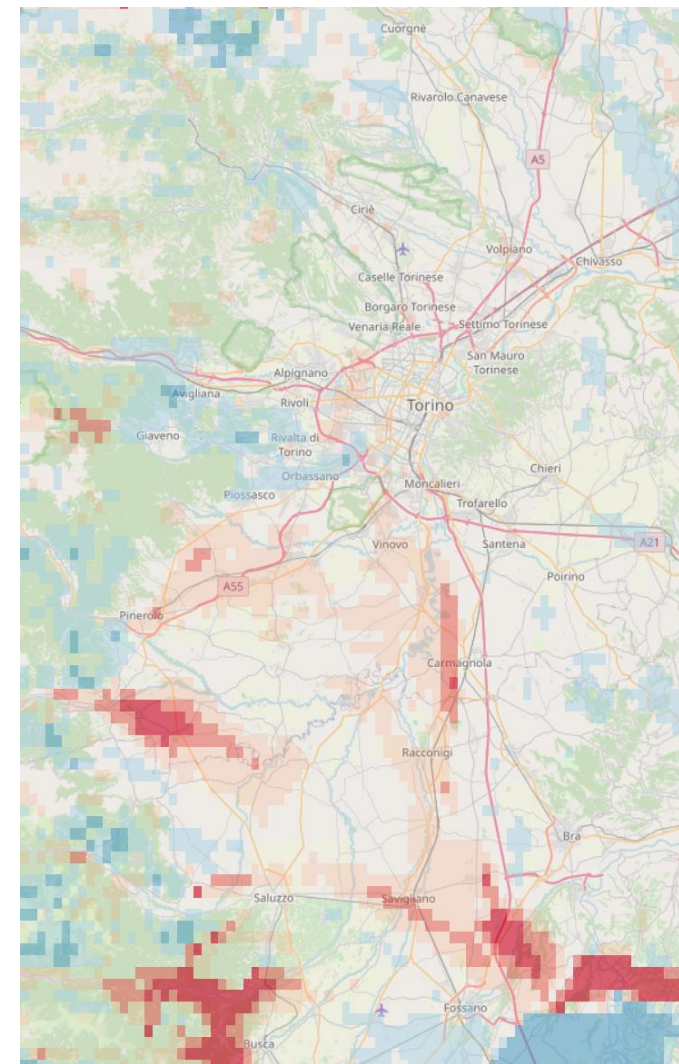


20210813 17UTC

DWD



IFS



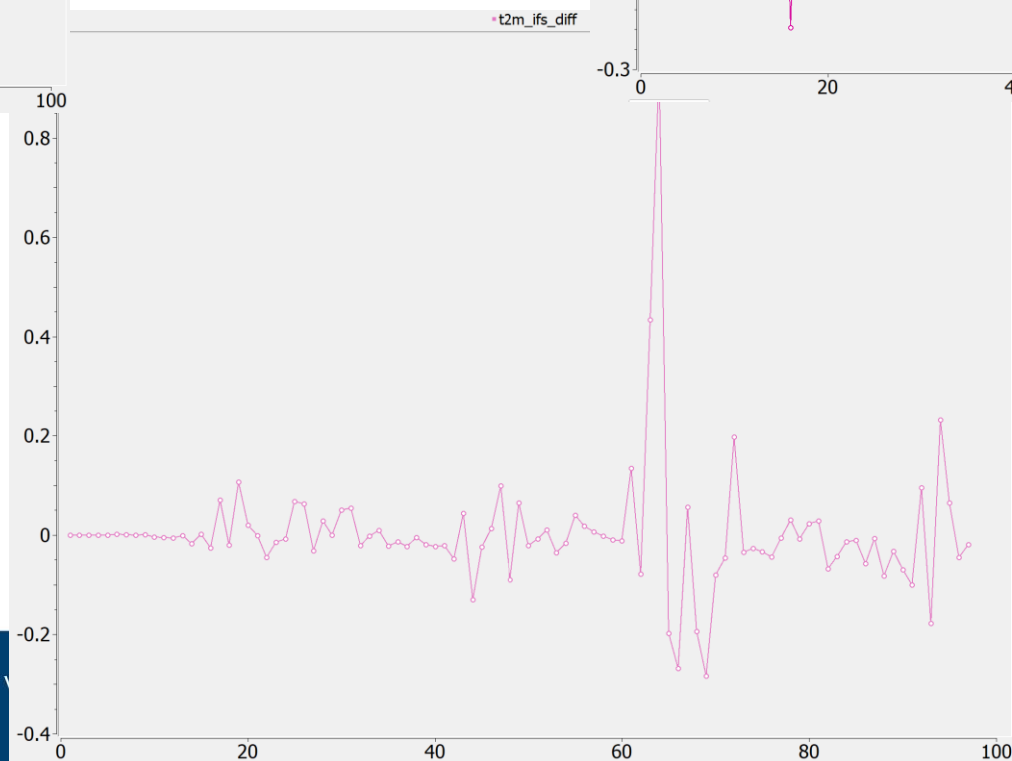
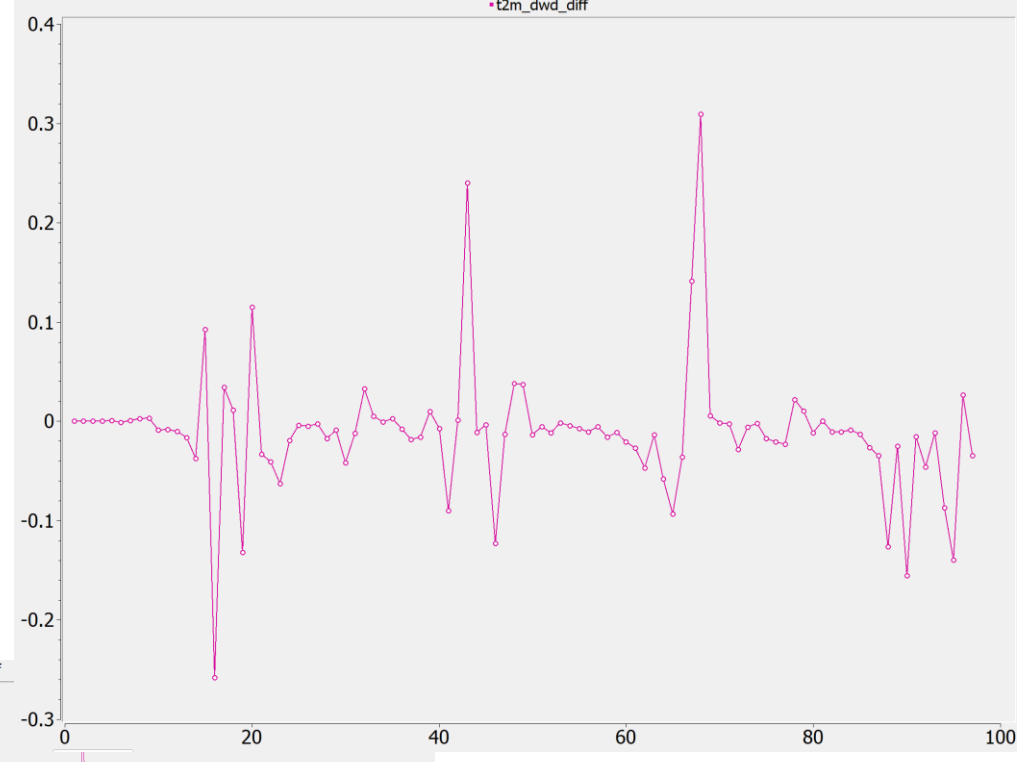
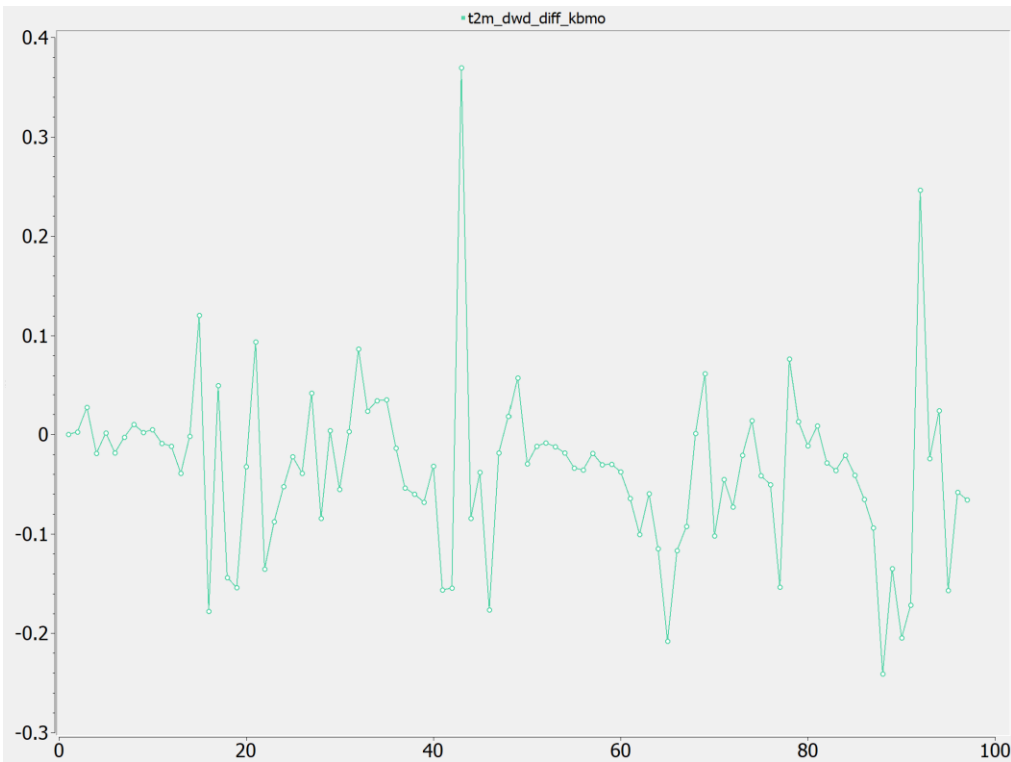
-1°C

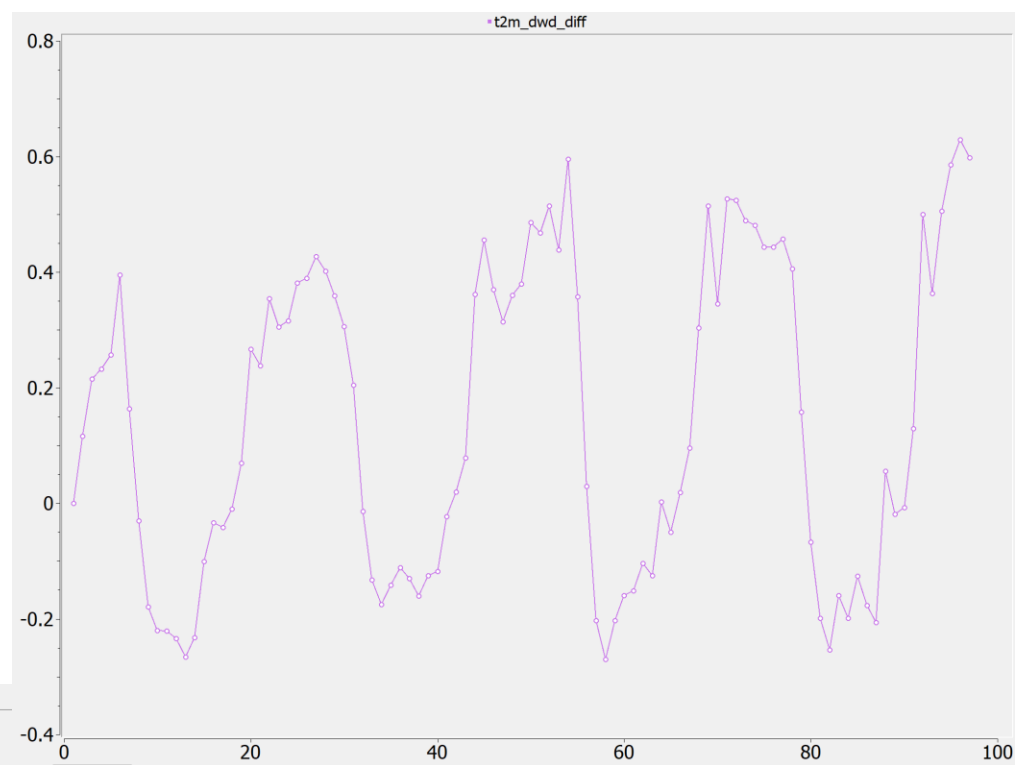
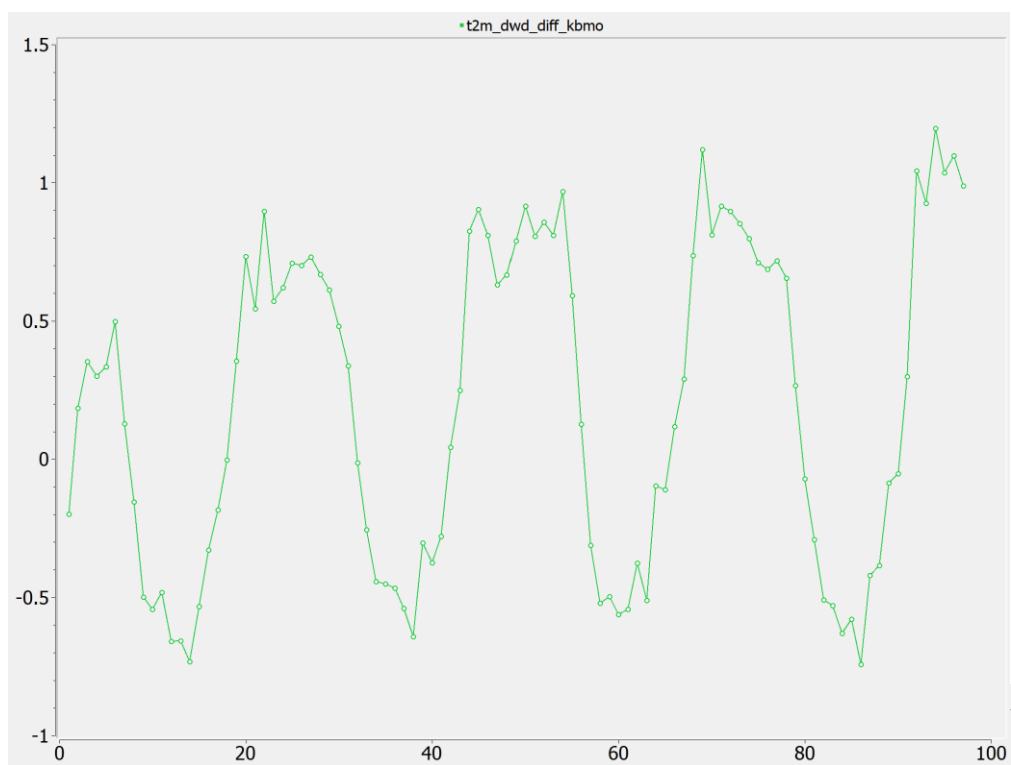
Differences between the sims with  
TU on and CTR during daytime



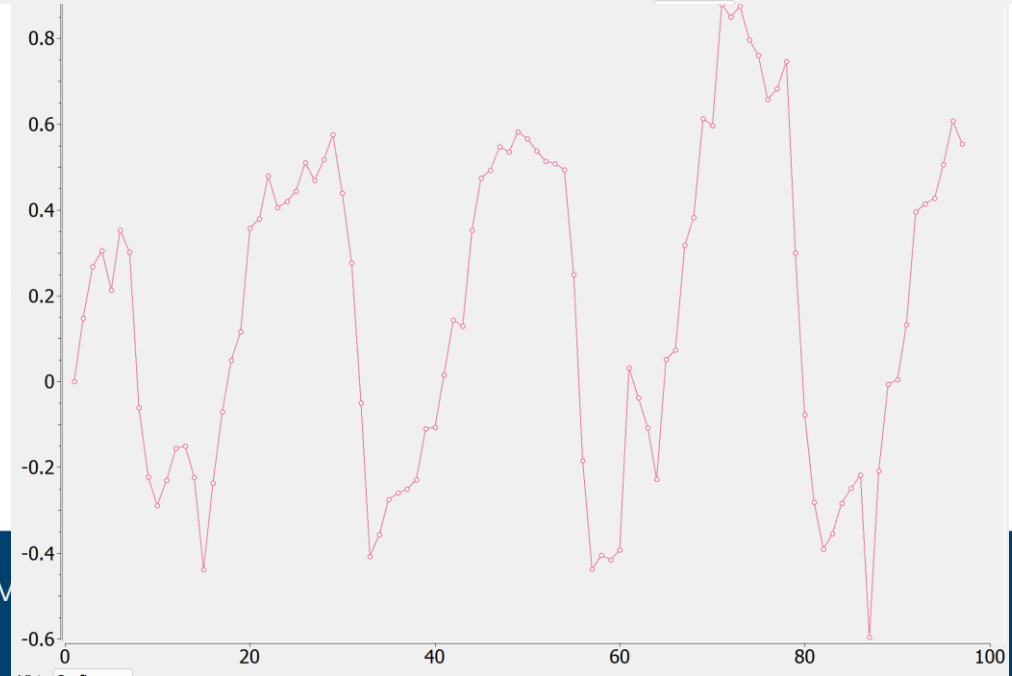
# Differences between the sims with TU on and CTR in a rural grid point

WY





**Differences  
between the sims  
with TU on and  
CTR in a urban  
grid point**



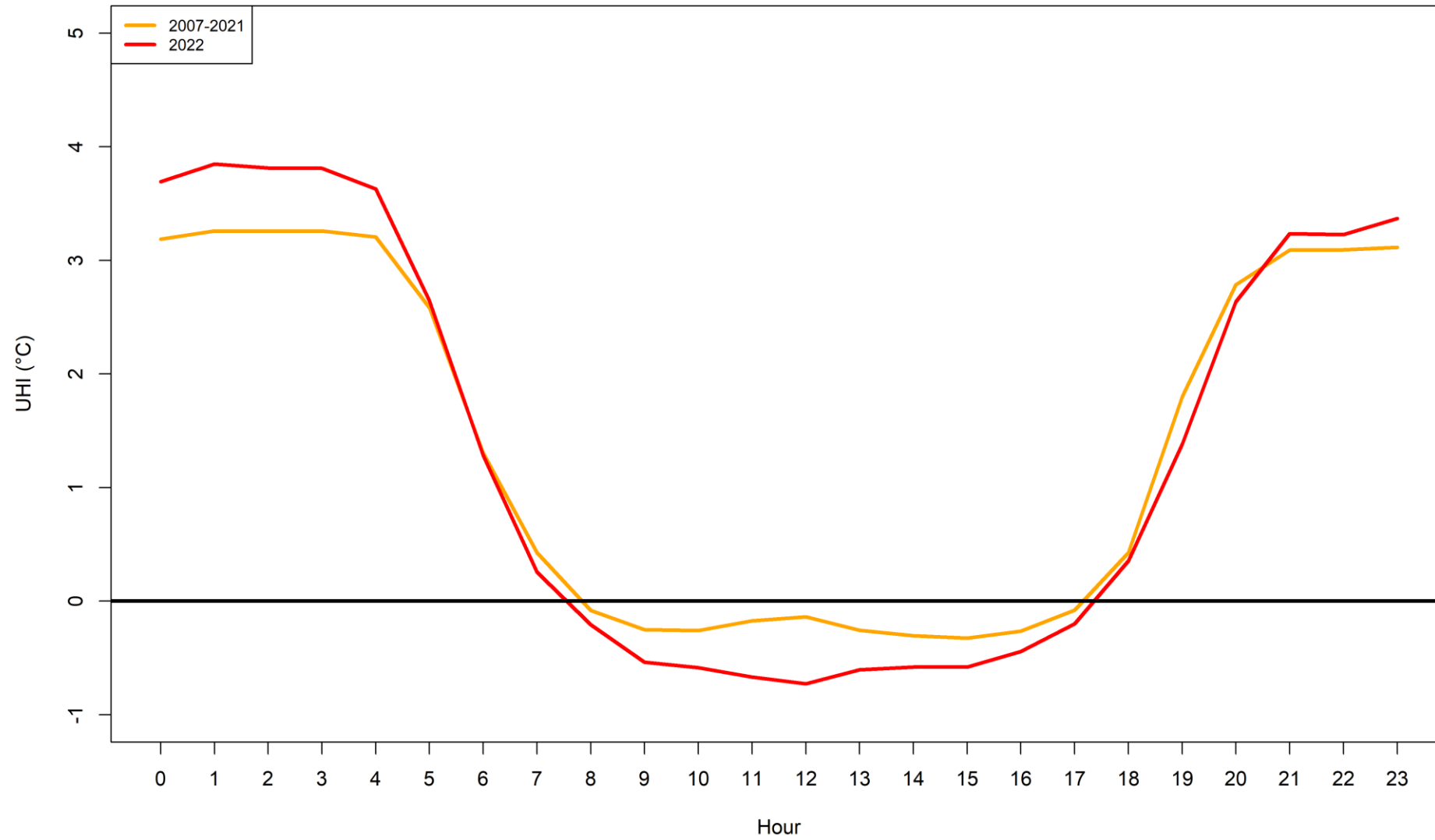


- Some unrealistic spatial pattern with IFS ICs/BCs
- Also with ICON ICs/BCs, although much more reasonable

Next steps:

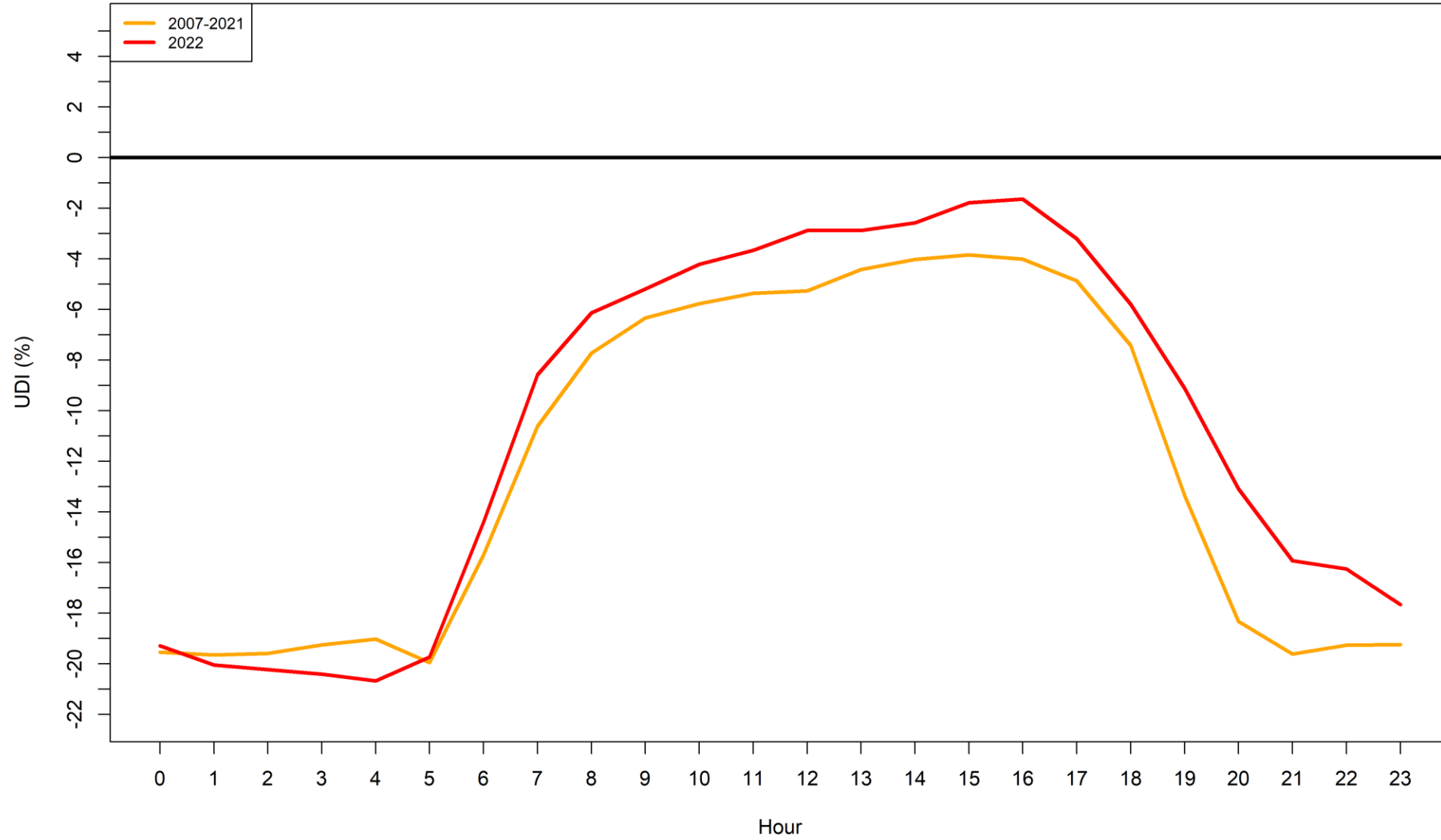
- IFS ICs/BCs with ICON soil variables
- Is the namelist reasonable or does it need changes ?
- What about tiles ?
- Study of the June-July 2022 period with strong heat wave over Italy, see next slides with Humidex index (Masterson & Richardson, 1979)

*Mean daily cycle of UHI (June-July)*

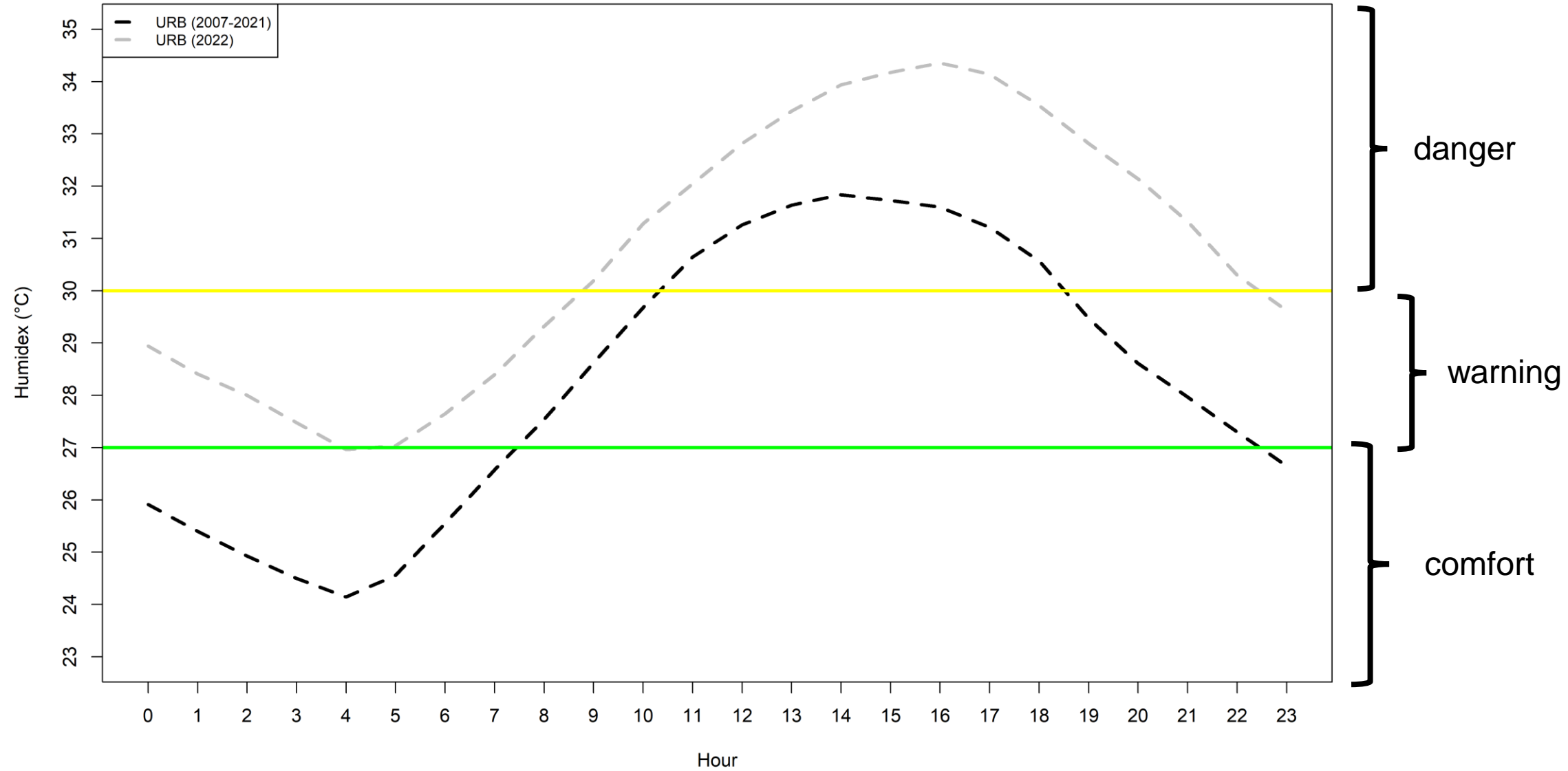




*Mean daily cycle of UDI (June-July)*

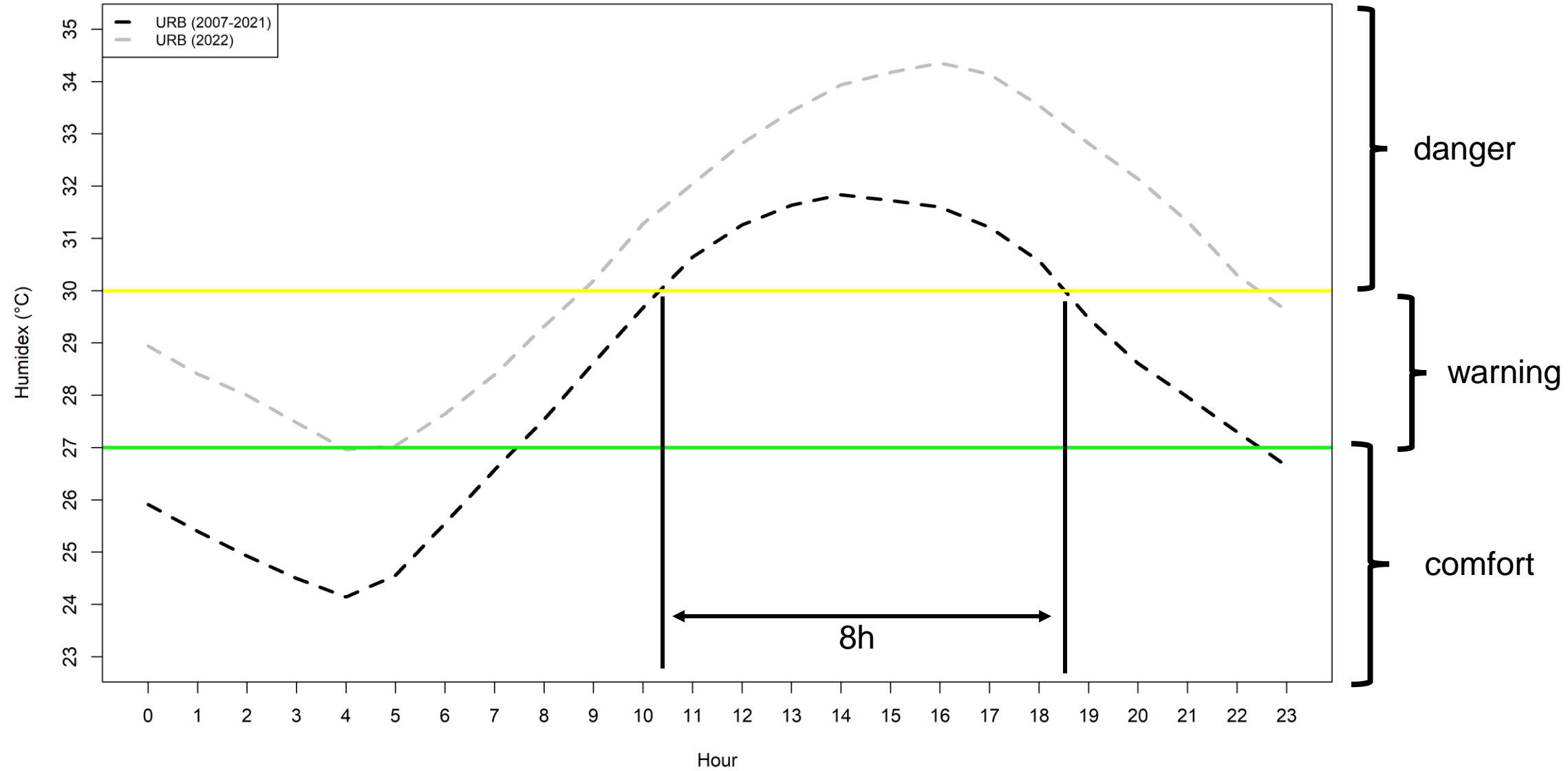


*Mean daily cycle of T2m (June-July)*

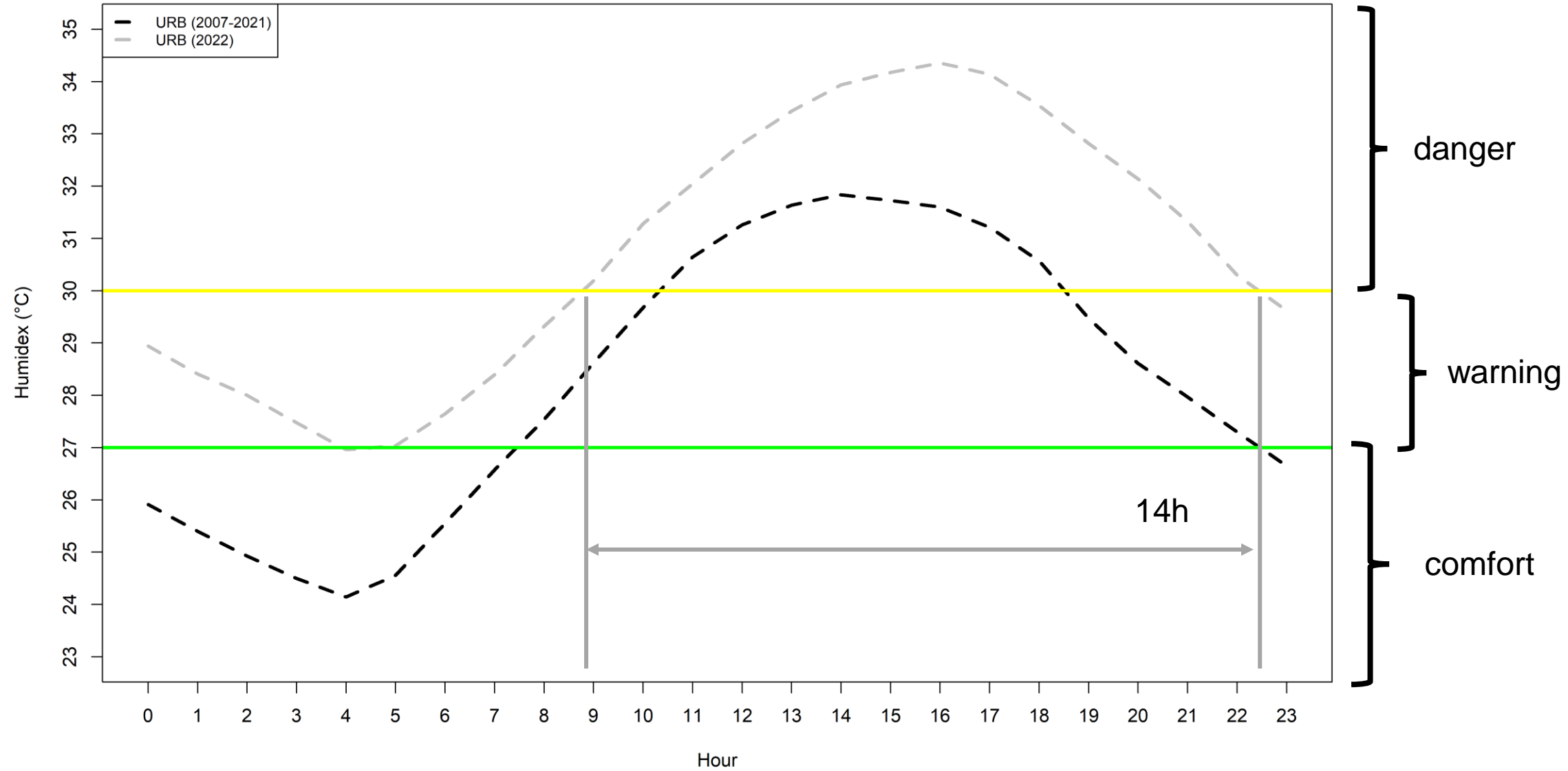




*Mean daily cycle of T2m (June-July)*

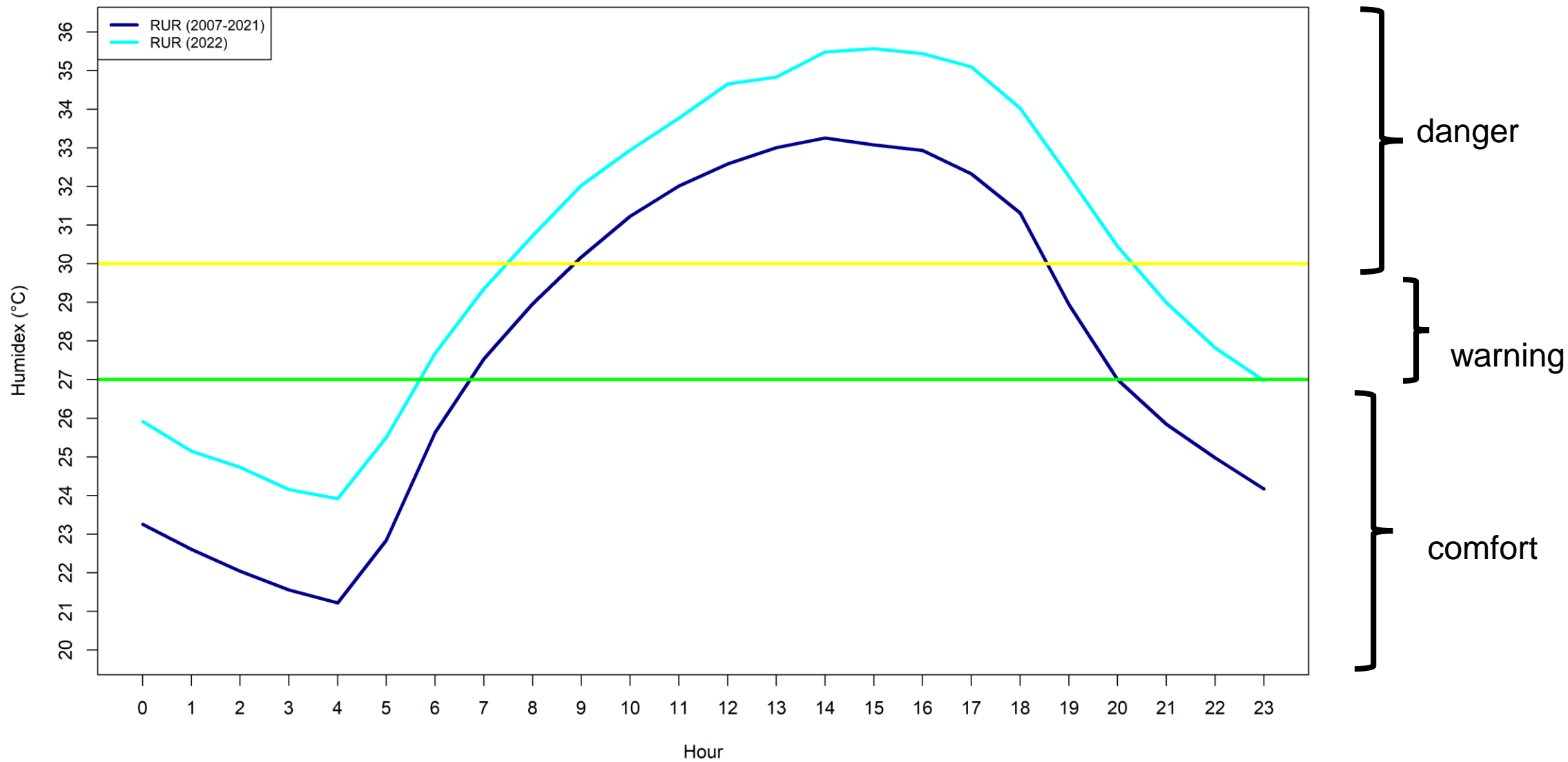


*Mean daily cycle of T2m (June-July)*

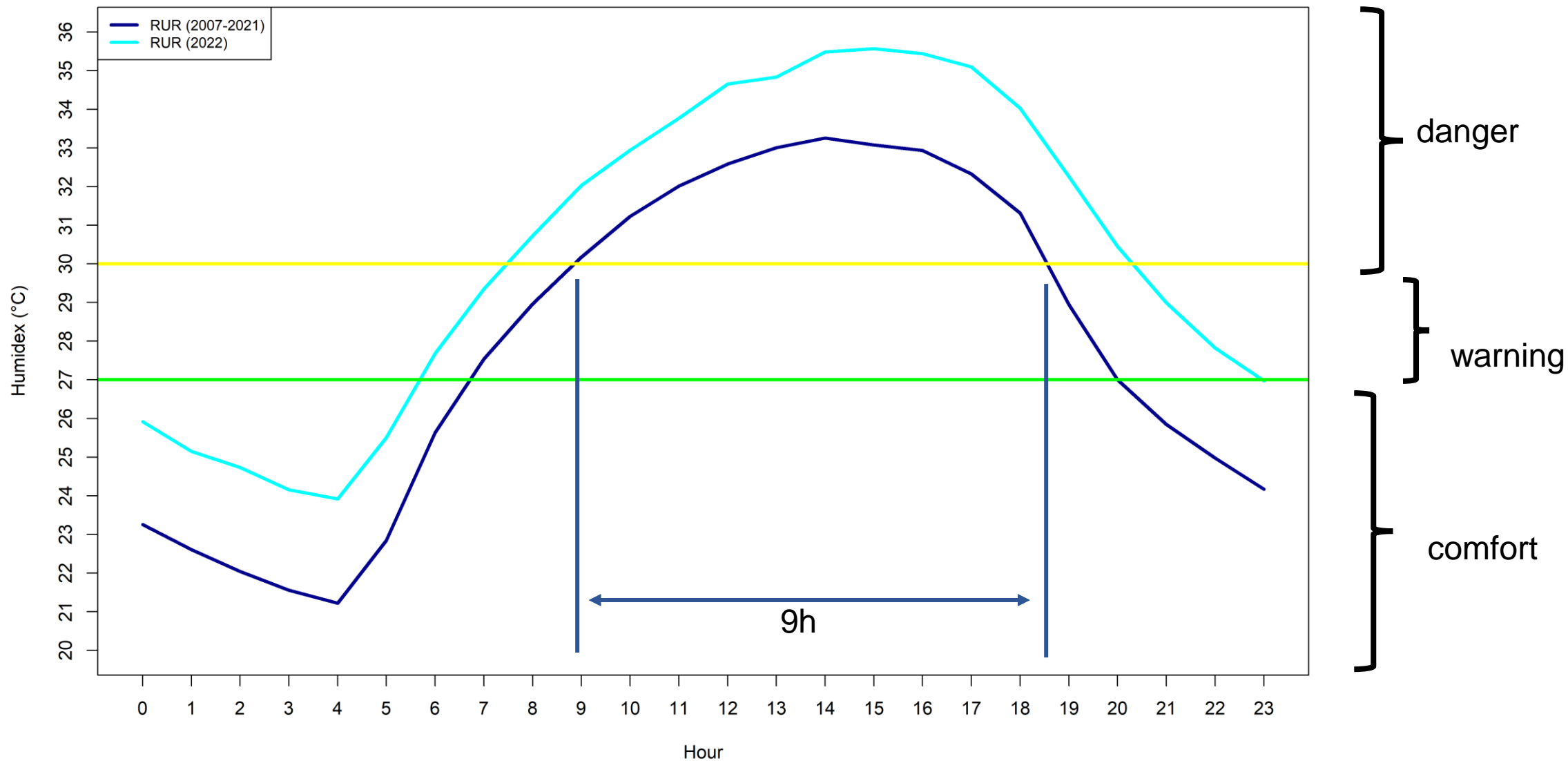




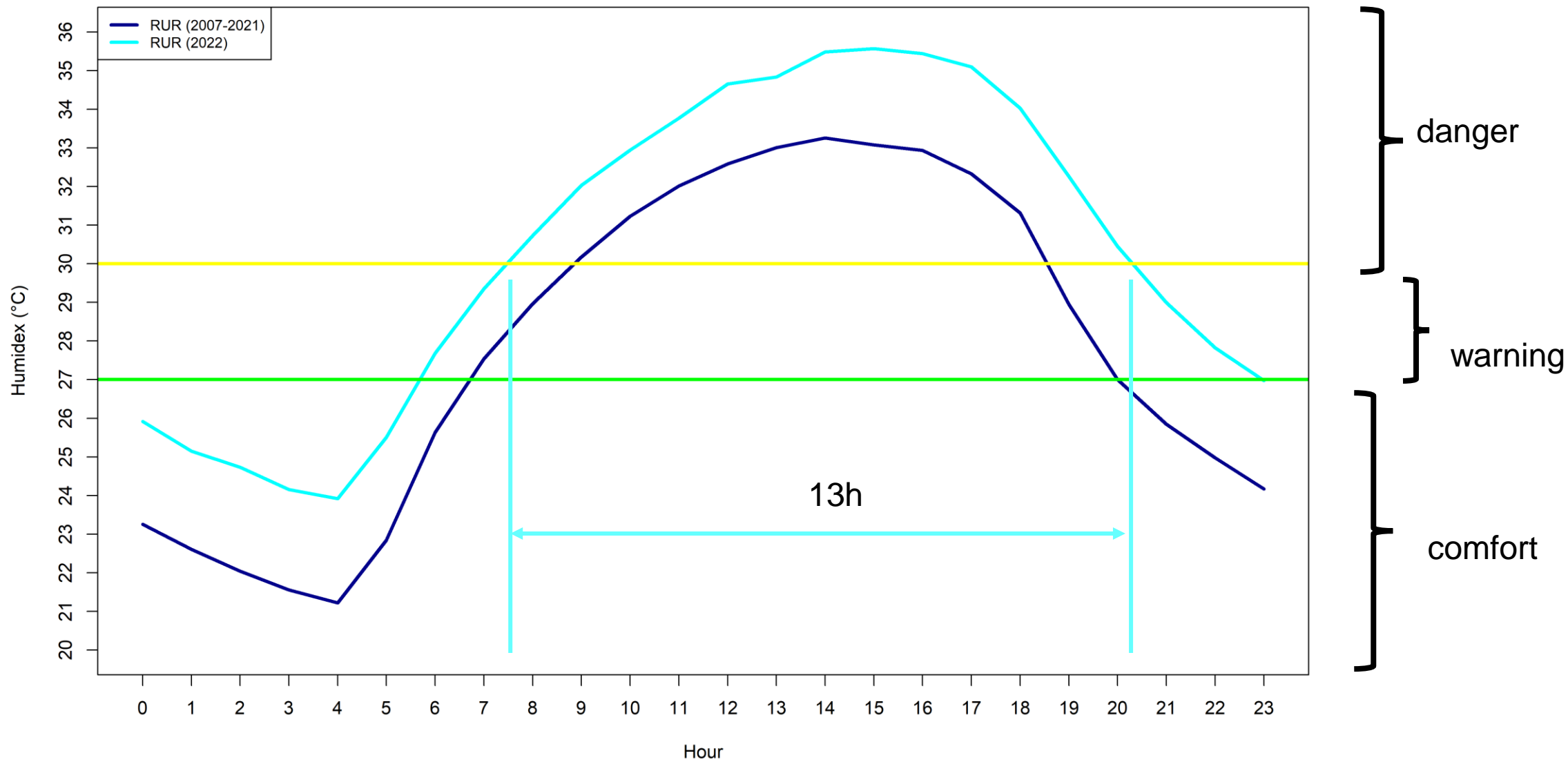
Mean daily cycle of T2m (June-July)



Mean daily cycle of T2m (June-July)



Mean daily cycle of T2m (June-July)







**Thanks for the attention**



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