

## PP CITTA Applications in NMA

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National Meteorological Administration

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# Model Set-Up

- Initial & LBC data from ICON global
- 00UTC run / 48 forecast hours
- Output regular lat/lon grid (grib2)
  - $reg\_lon\_def = 17.5, 0.025, 32.5$
  - $reg\_lat\_def = 41.5, 0.025, 50.5$

	dx	IC/LBC	Vert. lev.	dt	ant.
<b>ICON-2.8km</b>	0.025	ICON global	65	24s	78h

## Settings (based on oper run)

version	2.6.5
lshallowconv_only	true
lgrayzone_deepconv	false
radiation	ecRad
rlam_heat	10.0
compiler	gcc

$cell = 147260$

$nv = 3$

$Vertex = 74184$

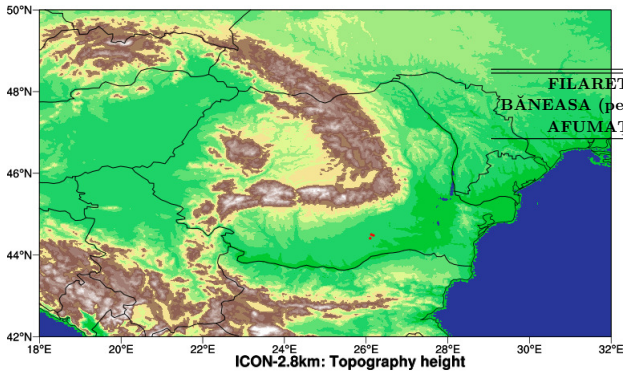
$Mlev = 1$

$nclass\_lu = 23$

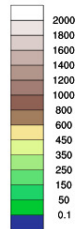
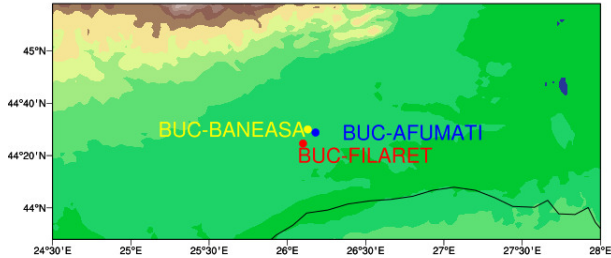
# Experiments Set-Up

Exp.	lterra_urb	lurbalb albedo	lurbahf anthropo. heat flux	itype_kbmo itype_eisa
Iv265NOU*	F	F	F	NA
Iv265UAA	T	T	T	2,3
Iv265URB	T	F	F	2,3
Iv265UAL	T	T	F	2,3
Iv265UAH	T	F	T	2,3
* $\approx$ oper				

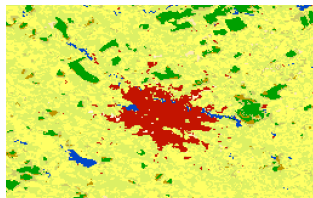
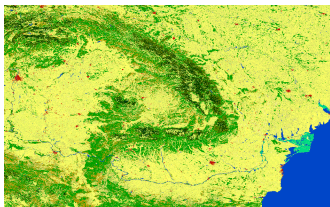
**Period:** 1-6 July 2022



Station	Elevation (in m)		
	Real	Model	Diff.
FILARET (urban)	82.0	90.37	8.37
BANEASA (peri-urban)	90.0	86.50	-3.5
AFUMAȚI (rural)	90.0	84.40	-5.6

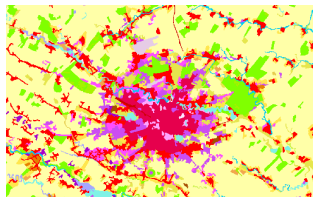






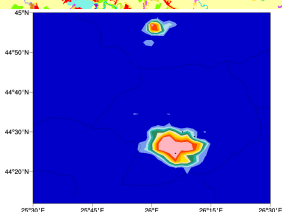
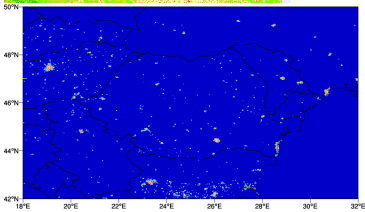
## GLC2009

■ 190 Artificial surfaces and associated areas (Urban areas >50%)

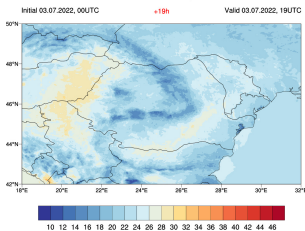
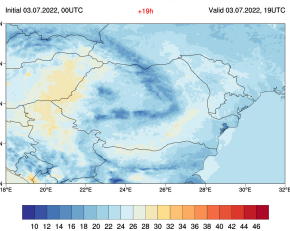
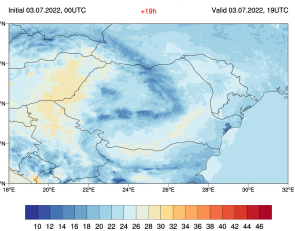
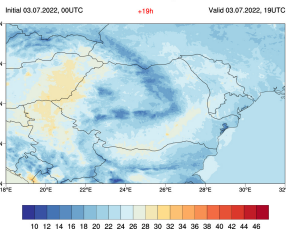
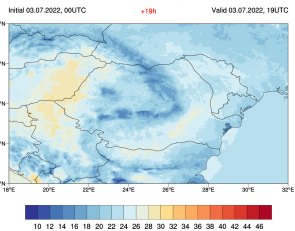


## CORINE2018

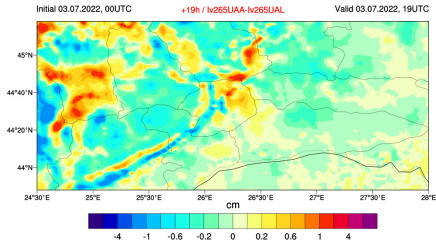
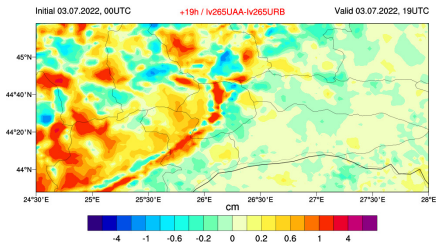
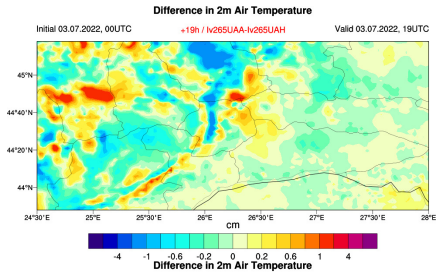
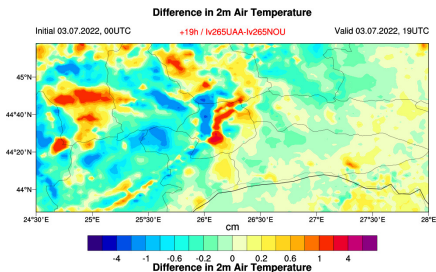
- 111 - Continuous urban fabric
- 112 - Discontinuous urban fabric
- 121 - Industrial or commercial units
- 122 - Road and rail networks and associated infrastructure
- 123 - Port areas
- 124 - Airports
- 131 - Mineral extraction sites
- 132 - Dump sites
- 133 - Construction sites
- 141 - Green urban areas
- 142 - Sport and leisure facilities

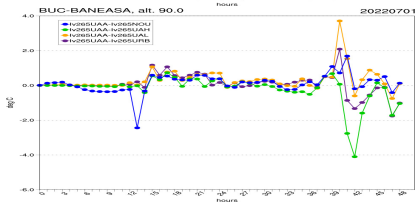
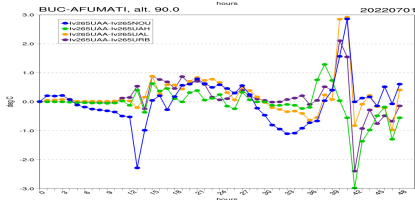
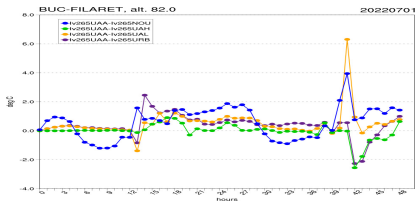


# 03.07.2022 + 19 hours

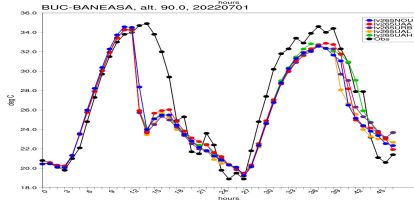
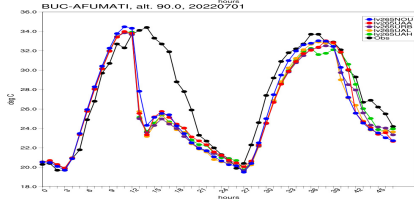
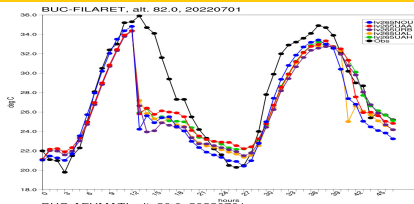
**Iv265NOU: 2m Air Temperature****Iv265UAA: 2m Air Temperature****Iv265URB: 2m Air Temperature**

# $\Delta T_{2m}$ (*lterra\_urb* : *true* – *exps.*)

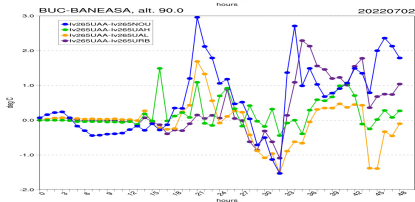
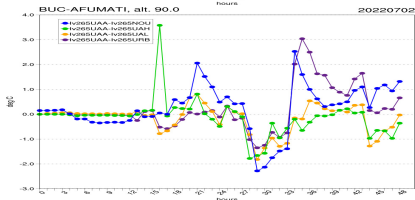
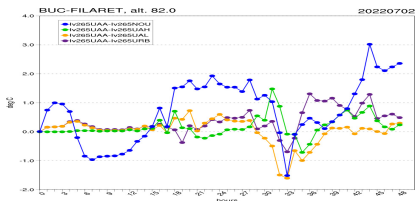




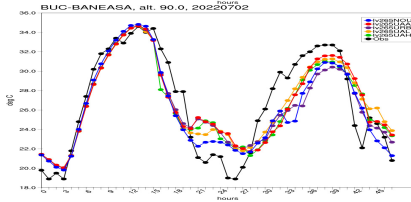
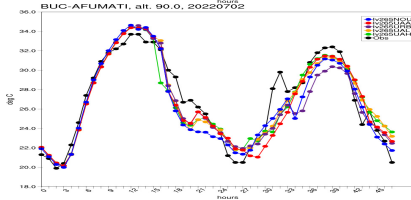
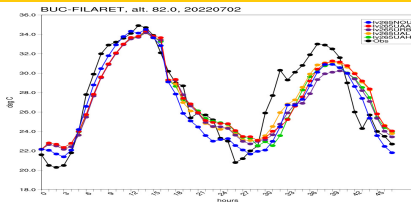
*Difference to urban*



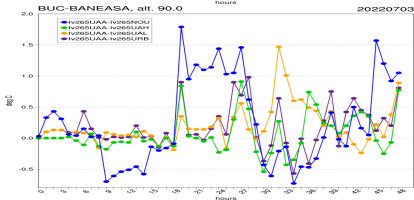
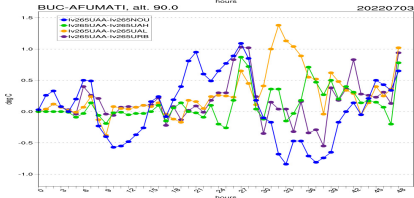
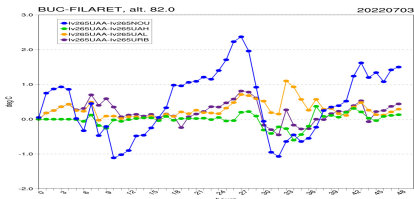
*Comparison against observations*



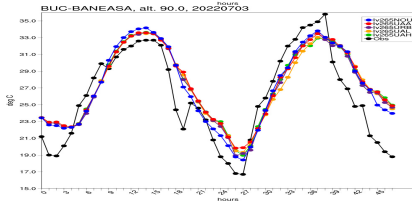
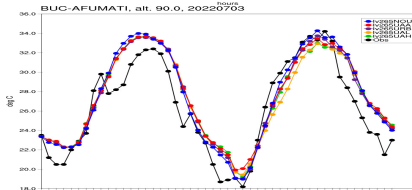
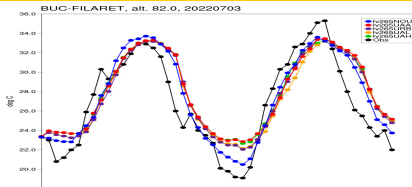
*Difference to urban*



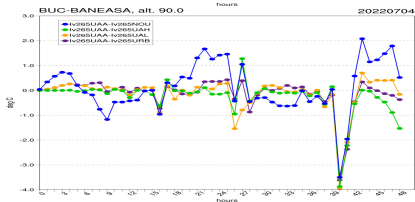
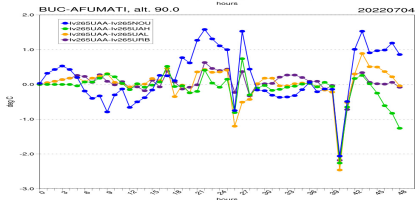
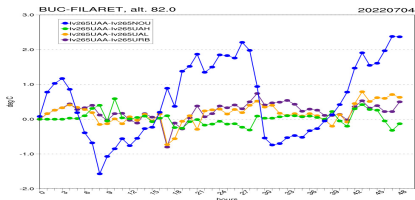
*Comparison against observations*



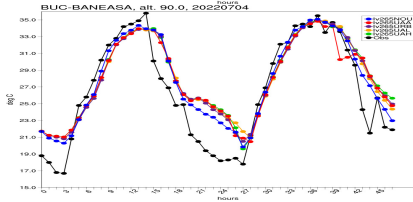
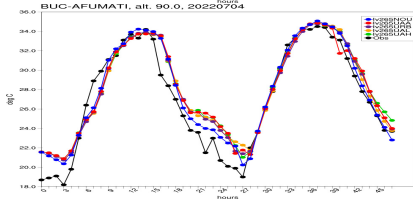
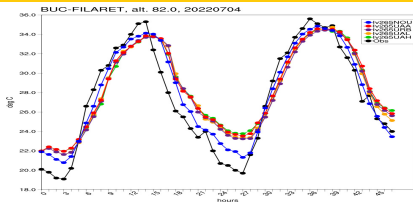
*Difference to urban*



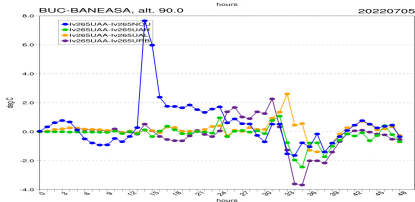
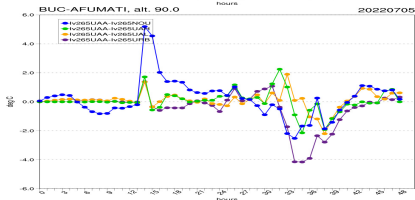
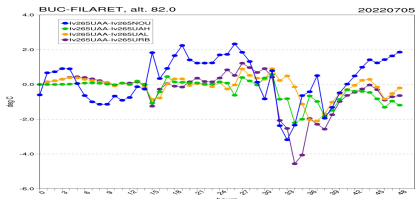
*Comparison against observations*



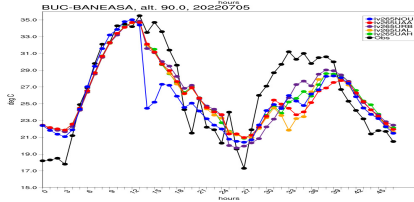
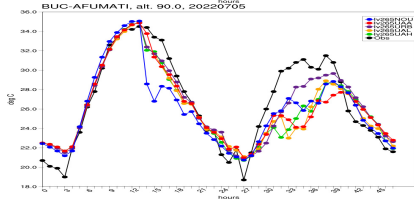
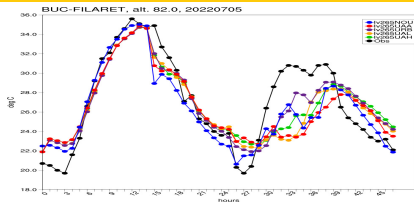
*Difference to urban*



*Comparison against observations*



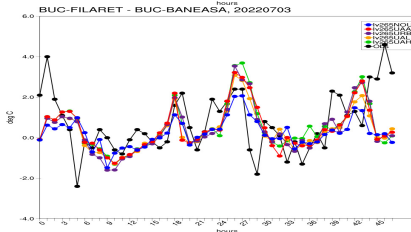
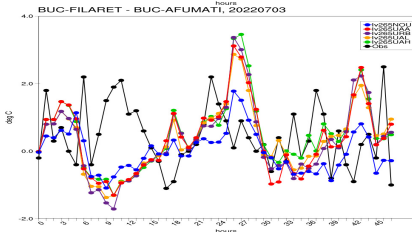
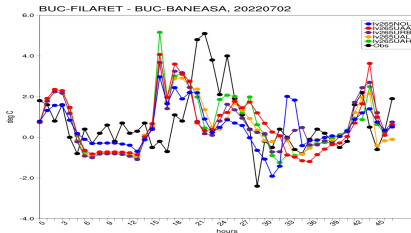
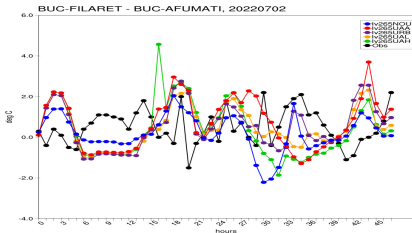
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*Comparison against observations*



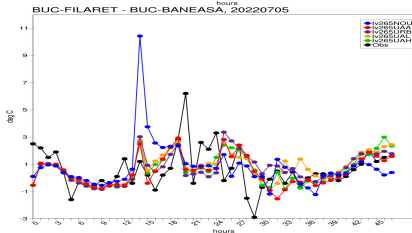
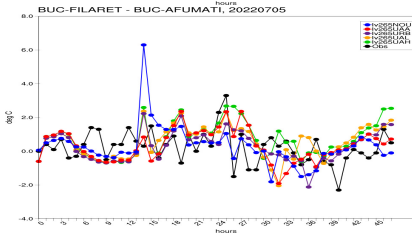
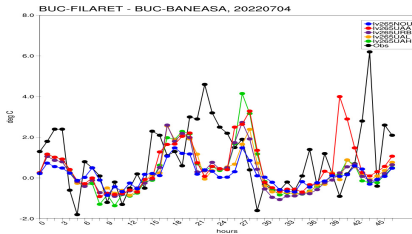
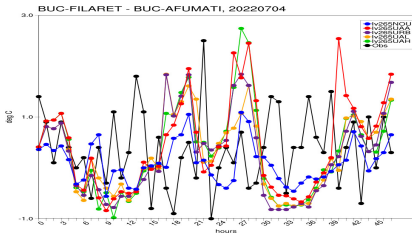
# Bucharest UHI representation



*Urban - Rural*

*Urban - Periurban*

# Bucharest UHI representation

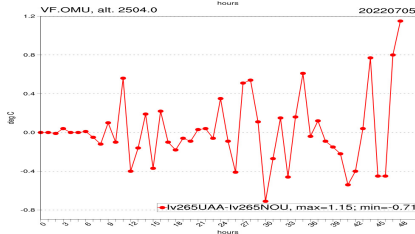
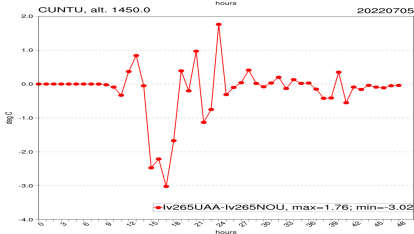
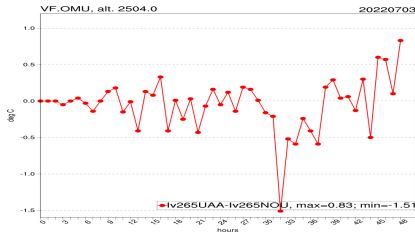
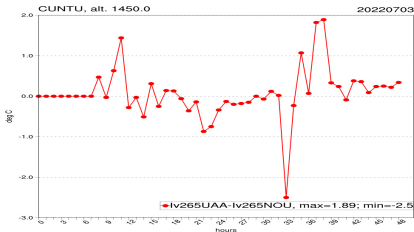


*Urban - Rural*

*Urban - Periurban*

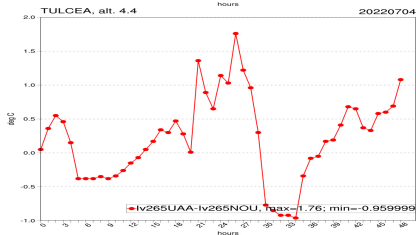
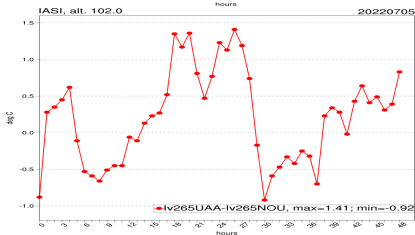
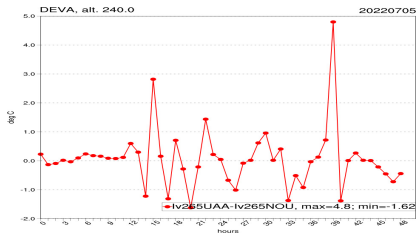
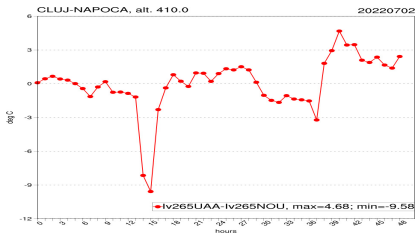
# Observations for Romanian stations

- differences for mountain stations more reduced  $\approx \in (-1, 1)$



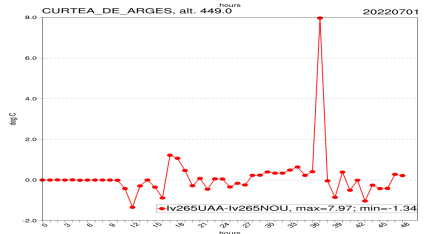
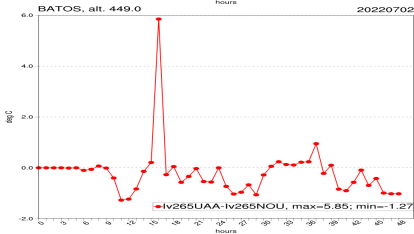
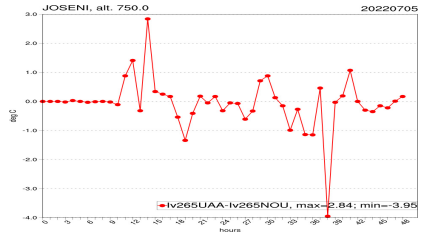
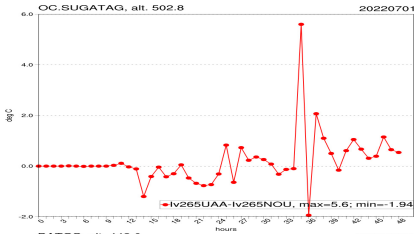
# Observations for Romanian stations

- differences for cities/towns  $\approx \in (-2, 2)$ , a few peaks outside  $\approx (-3, 3)$ , esp.  $> +30$  hours
- differences for cities/towns in Eastern and South-Eastern areas slightly more reduced



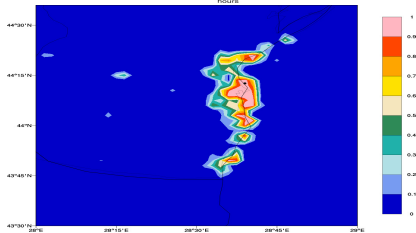
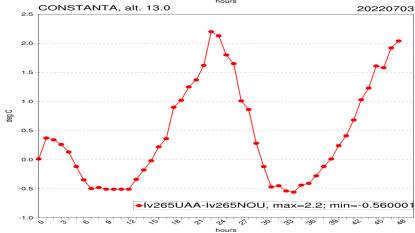
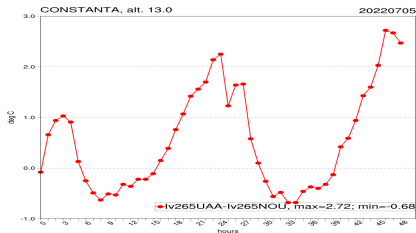
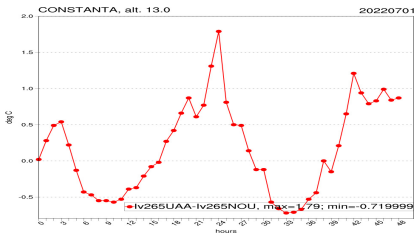
# Observations for Romanian stations

● large differences for some rural stations around +15 hours and +36-39 hours



# Observations for Romanian stations

● station with very visible diurnal cycle: Constanța (seaside city, harbour)



## Near Future Actions

Tests for a longer, more representative period of time (more intense UHI).

Configure and test ICON-RO\_1km resolution.

Compute statistics for the experiments presented today.

Short analysis for other stations/cities, to assess an overall impact for the entire Romanian territory.

Thank you!

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Tests for a longer, more representative period of time (more intense UHI).

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**Thank you!**