

## **C-SRNWP**

# **Parallel session on surface aspects 2023**

Patrick Samuelsson (SMHI)  
Chair of Surface Expert team

## Agenda of Parallel session on surface aspects

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**Wednesday 08:45 - 10:30 UTC**

**[Microsoft teams link](#)**

- **Patrick Samuelsson and Sandro Oswald: “Status of the C-SRNWP project on ESA-CCI land cover”**
- **Jan-Peter Schulz, P. Mercogliano, M. Adinolfi, C. Aprea, F. Bassani, E. Bucchignani, A. Campanale, D. Cinquegrana, R. Dumitrache, G. Fedele, V. Garbero, W. Interewicz, A. Iriza-Burca, A. Jaczewski, P. Khain, Y. Levi, B. Maco, A. Mandal, M. Milelli, M. Montesarchio, M. Raffa, A. Reder, L. Uzan, H. Wouters and A. Wyszogrodzki: “A new urban parameterisation for the ICON atmospheric model”**
- **Rafiq Hamdi: “Implementing drip irrigation underneath plastic mulch in SURFEX: application on a typical Mountain-Oasis-Desert System in Northwest China”**
- **Samuel Viana and Metodija Shapkalijevski: “Testing the roughness sublayer in SURFEX: Implications for vegetation- atmosphere coupling”**
- **Discussion**

# Status of the C-SRNWP project on ESA-CCI land cover

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The EUMETNET Assembly decided in 2020 to support our proposal of a three year position (2021-2023) dedicated to “Evaluation and updates of ESA-CCI global land cover map for NWP needs”.

The position has been held by Doctor Sandro Oswald at Austrian Met Service, GesoSphere Austria

Sandro has now delivered updated ESA-CCI land cover maps!

A Supervisory team is connected to the position:

- Patrick Samuelsson (SMHI, chair of C-SRNWP Surface Expert team)
- Ekaterina Kurzeneva (FMI)
- Bolli Pálmason (IMO)



# Status of the C-SRNWP project on ESA-CCI land cover

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[The updated land cover files are provided in this google drive directory](#)

Data are available both as netCDF and GeoTIFF files. In short the updates mean that the original ESA-CCI global land cover is complemented with two main information:

- The original data includes only one class for urban cover. The updated files include 10 different covers with urban information based on the Local Climate Zones.
- The original data includes only one class for water. The updated files include a separation between sea, lake and river waters.

[Please refer to this report by Sandro et al. for more detailed information.](#)

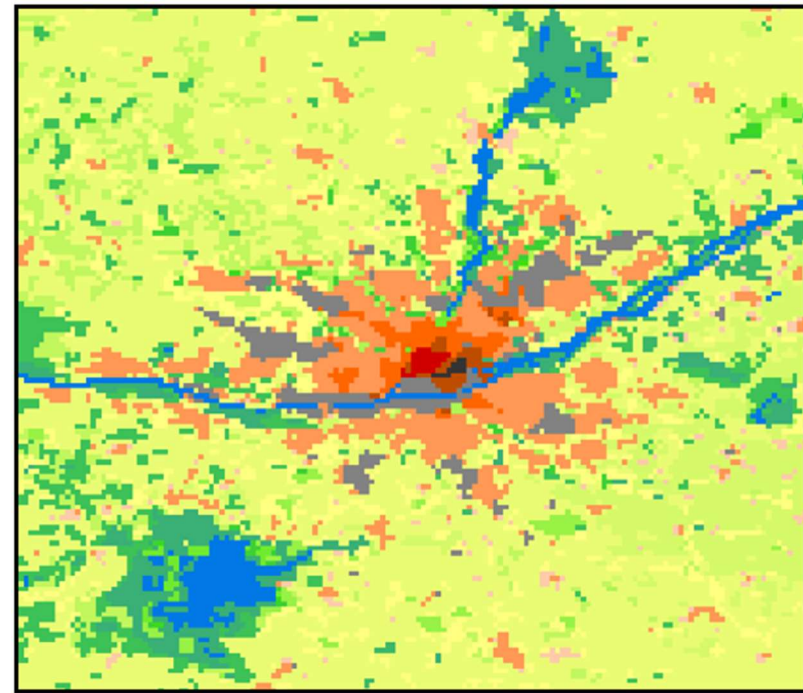
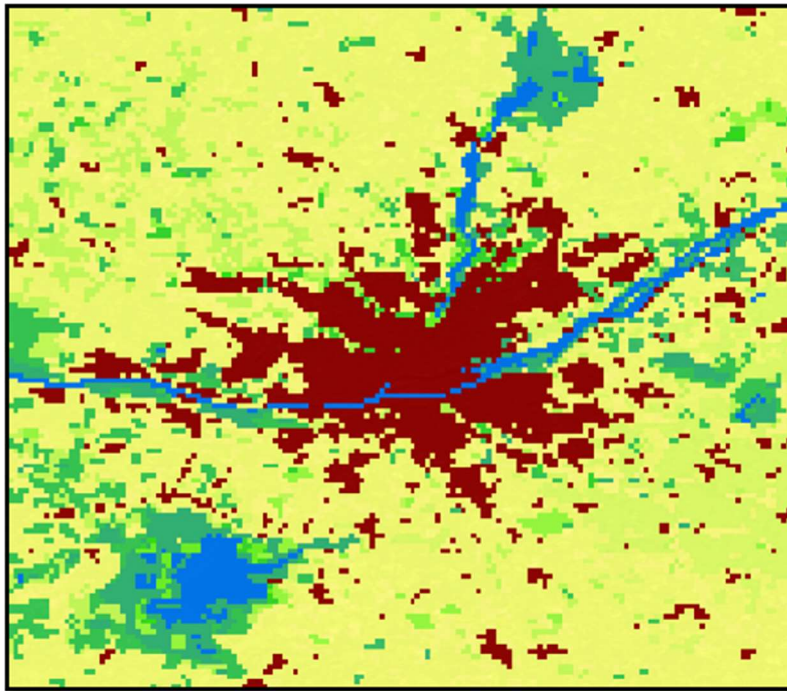
**A big THANKS to Sandro for his work!!**

# Status of the C-SRNWP project on ESA-CCI land cover

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## Urban example

Area around Nantes, France with the  
ESA-CCI classification and the corrected LCZ urban classes





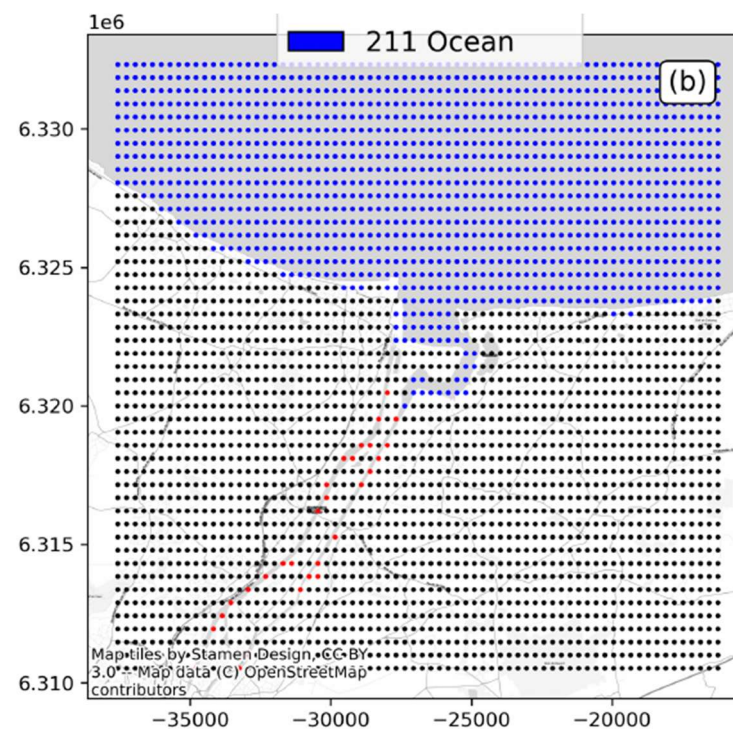
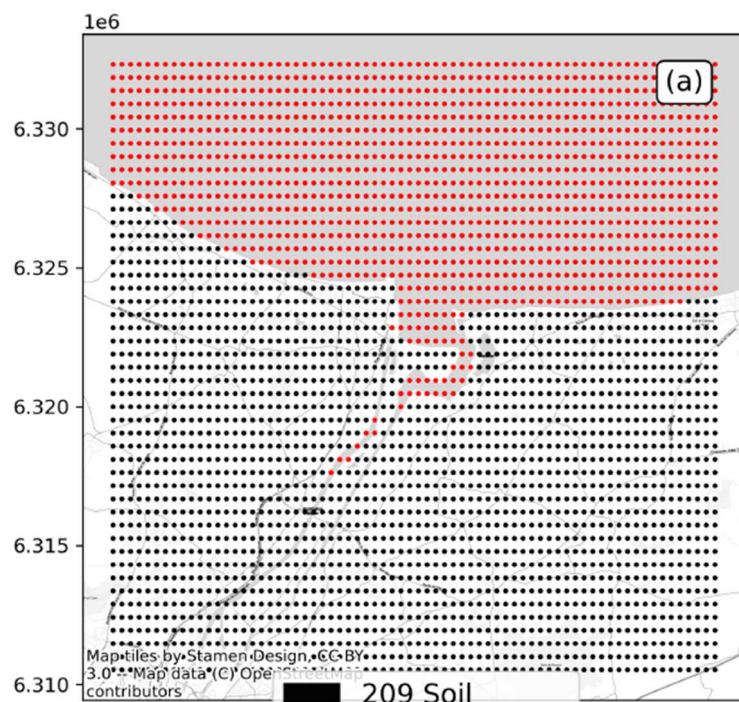
# Status of the C-SRNWP project on ESA-CCI land cover

## Water example

Area around Caen, France with the  
ESA-CCI classification

and the corrected LCZ water classes

**Water**  
**Land**



**Sea/Ocean**  
**Lake**  
**River**  
**Land**

# Status of the C-SRNWP project on ESA-CCI land cover

**Table 2.** All classes of the ESA-CCI land cover product including the proposed urban classes given by the Local Climate Zones (marked in light orange) with a further class description including the building fraction and the height of roughness elements, and the new classes for water bodies (marked in light cyan). Sources: [1] and [5]

Description	Number of Class	Vegetation fraction	Building fraction	Height of roughness elements
No Data	0			
Rainfed cropland	10,11,12	-	-	
Irrigated cropland	20	-	-	
Mosaic cropland/natural vegetation (tree, shrub, herbaceous cover)	30	> 50% / < 50%	-	-
Mosaic natural vegetation/cropland	40	> 50% / < 50%	-	-
Tree cover, broadleaved, evergreen	50	-	-	-
Tree cover, broadleaved, deciduous	60,61,62	-	-	-
Tree cover, needleleaved, evergreen	70,71,72	-	-	-
Tree cover, needleleaved, deciduous	80,81,82	-	-	-
Tree cover, mixed leaf type	90	-	-	-
Mosaic tree and shrub/herbaceous cover	100	> 50% / < 50%	-	-
Mosaic herbaceous cover/tree and shrub	110	> 50% / < 50%	-	-
Shrubland	120,121,122	-	-	-
Grassland	130	-	-	-
Lichens and mosses	140	-	-	-
Sparse vegetation (tree, shrub, herbaceous cover)	150,151, 152,153	-	-	-
Tree cover, flooded, fresh or brakish water	160	-	-	-
Tree cover, flooded, saline water	170	-	-	-
Shrub or herbaceous cover, flooded, fresh-saline or brakish water	180	-	-	-

Compact highrise (Dense mix of tall buildings with few or no trees.)	190	< 10*	40-60	> 25
Compact midrise (Dense mix of midrise buildings with few or no trees.)	191	< 20*	40-70	10-25
Compact lowrise (Dense mix of lowrise buildings with few or no trees.)	192	< 30*	40-70	3-10
Open highrise (Open arrangement of tall buildings with a few trees.)	193	30 – 40*	20-40	> 25
Open midrise (Open arrangement of midrise buildings with a few trees.)	194	20 – 40*	20-40	10-25
Open lowrise (Open arrangement of lowrise buildings with a few trees.)	195	30 – 60*	20-40	3-10
Lightweight lowrise (Dense mix of single story buildings with few or no trees.)	196	< 30*	60-90	2-4
Large lowrise (Open arrangement of large lowrise buildings with few or no trees.)	197	< 20*	30-50	3-10
Sparsely built (Sparse arrangement of small buildings with many trees.)	198	60 – 80*	10-20	3-10
Heavy industry (Lowrise and midrise industrial structures.)	199	40 – 50*	20-30	5-15
Bare areas	200,201,202	-	-	-
River/flat fresh water	210	-	-	-
Sea/saline water	211	-	-	-
Lake	212	-	-	-
Permanent snow and ice	220	-	-	-

# Status of the C-SRNWP project on ESA-CCI land cover

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## Reporting of issues in the data set

**Next step is to find a platform where all members of the C-SRNWP can report and collect all issues and improvements of the ESA-CCI land cover product.** So far, the authors have considered the platform Gitlab where diverse codes, tickets for issues and milestones can be created.

All issues can be converted to a comprehensive document, which would be sent to interested people and EUMETNET/C-SRNWP consortium. Geosphere Austria has already implemented an external Gitlab server where all members can be registered by the IT department of Geosphere Austria and issues/improvements of the ESA-CCI land cover product are managed by the authors



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## Comments

The updated/corrected ESA-CCI global land cover map represents the year 2020 but institutes now seem to look for time-variable input in their physiography.