

Tool for local government or „laypeople“

Environmental hazards for the elderly

Select the city

Brussels


Currently one institution is present for both cities.

Tartu Eluringikeskus

Brussel Senior's Serenity

In the future here will be another selector for the institution

Population Danger index



Age Group	N	City
Less than 15 years	236038	Brussels
From 15 to 29 years	251955	Brussels
From 30 to 49 years	377064	Brussels
From 50 to 64 years	202179	Brussels
From 65 to 84 years	133538	Brussels
85 years or over	25555	Brussels

Population data from Eurostat database and Statistics Estonia



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Motivation

- Population ageing
- Share of over 65 year olds up to one third by 2050 (Estonia)
- Dementia: Estonia 23 000 persons, EU 8.9 millions
- Residential care homes: Estonia 22 000 persons (1.6% of population)
- Stronger vulnerability to heat observed for women and for people living in the most built-up municipalities [1]

[1] Demoury, C., Aerts, R., Vandeninden, B., Van Schaeybroeck, B., & De Clercq, E. M. (2022). Impact of short-term exposure to extreme temperatures on mortality: A multi-city study in Belgium. *International journal of environmental research and public health*, 19(7), 3763.

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Policy areas

- Resilience to climate change (heat) in elderly (but can be used by others)
- Mitigating heat risks
- Social care in municipalities
- City planning



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Dashboard

- R flexdashboard
- 2 regions (Tartu, Brussels)
- 3x3 km observation area around the institutions
- Two timepoints (warm and normal)



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Data sources

Combination:

- Sentinel 2 (LEAF AREA INDEX)
- Sentinel 3 (SLSTR BAND 8)
- Population census 2021 (Eurostat and Statistics Estonia)
- Points of interest (residential care homes)
 - Estonian Land Board register
 - Open data Brussels



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Earth Observation: from Space to European Statistics

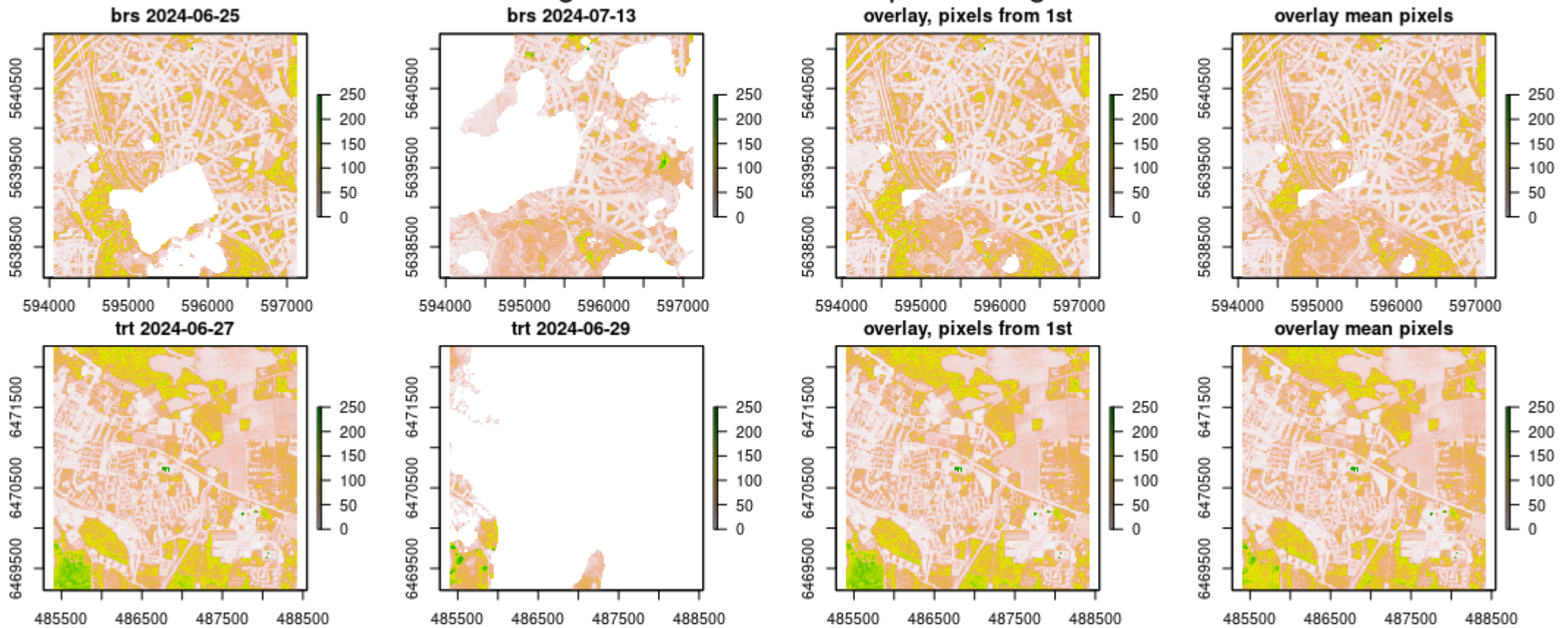
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Cloud cover and mosaicking

Getting LAI from two incomplete images



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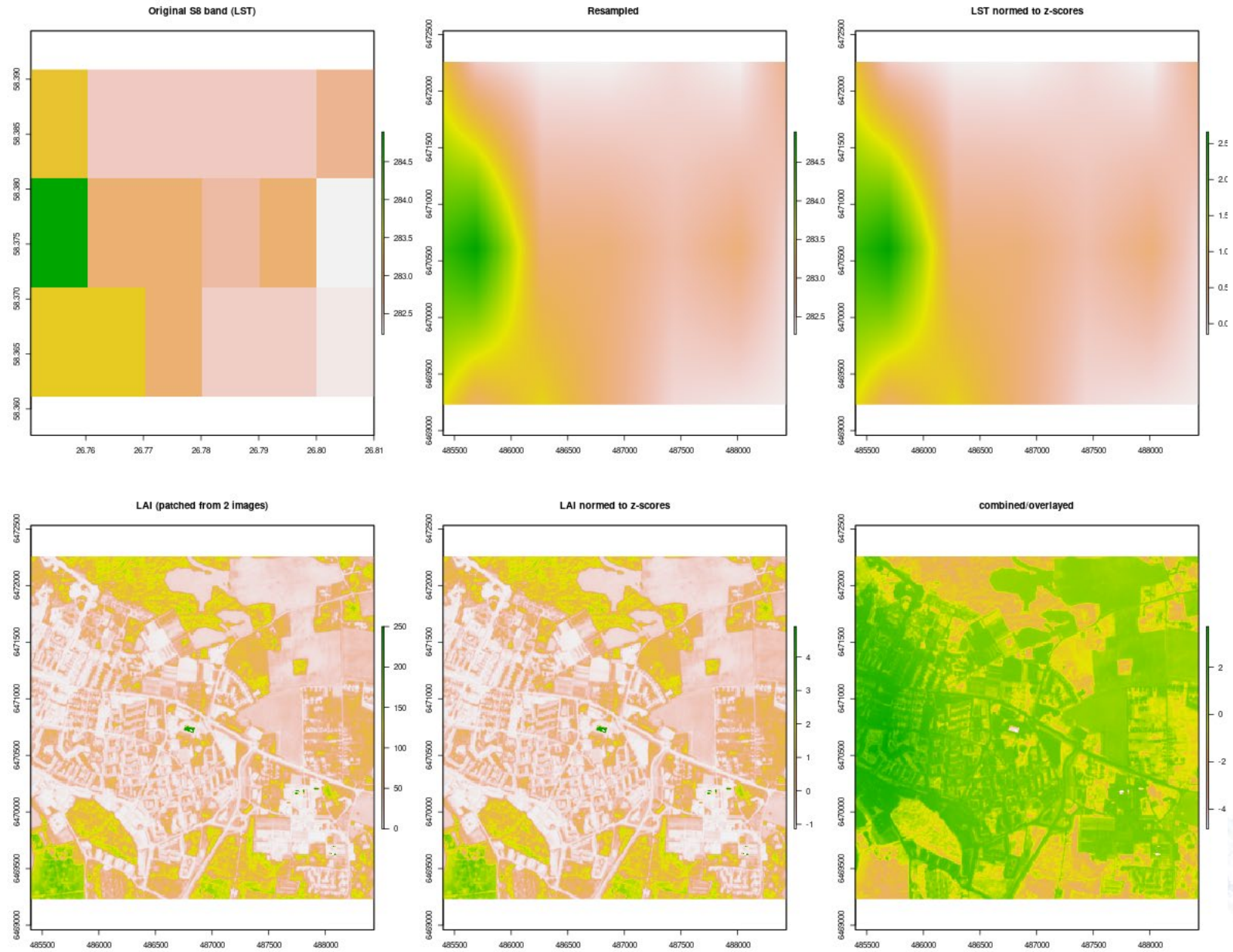
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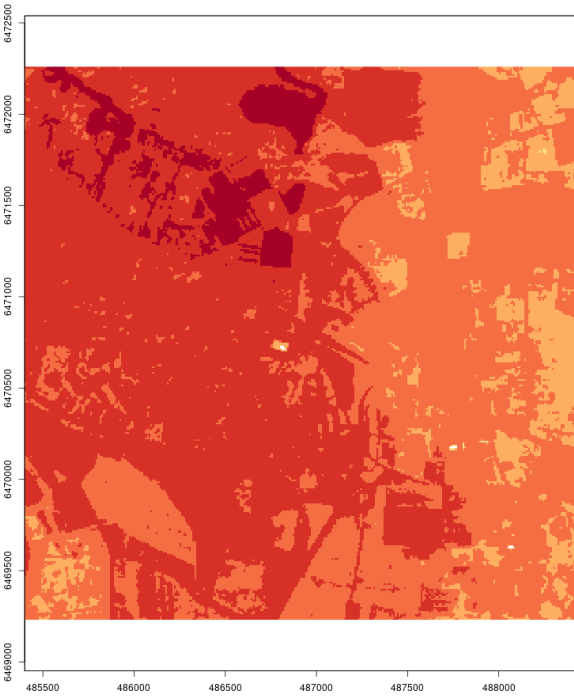
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Preprocessing and combining LAI and LST

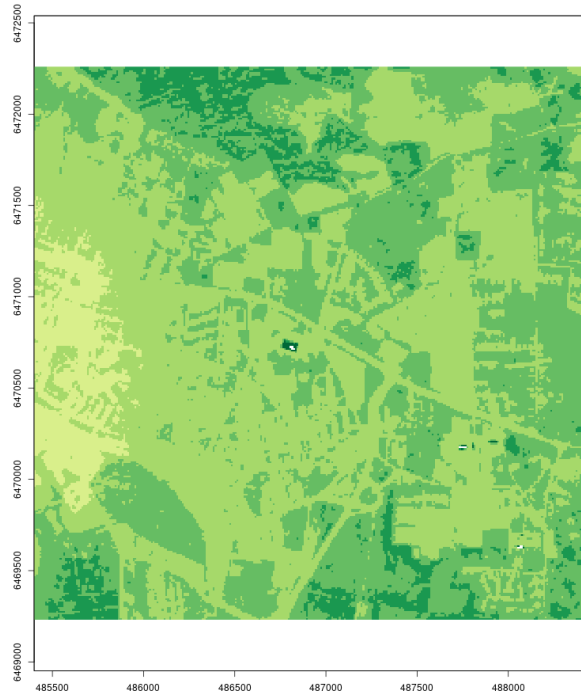


Normalizing based on heatwave days VS the same period – requires a theory-informed decision

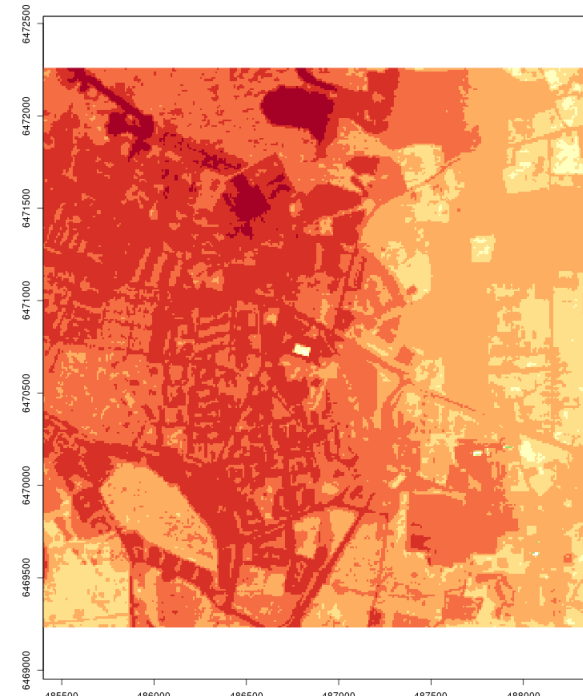
Heat danger, Tartu heatwave



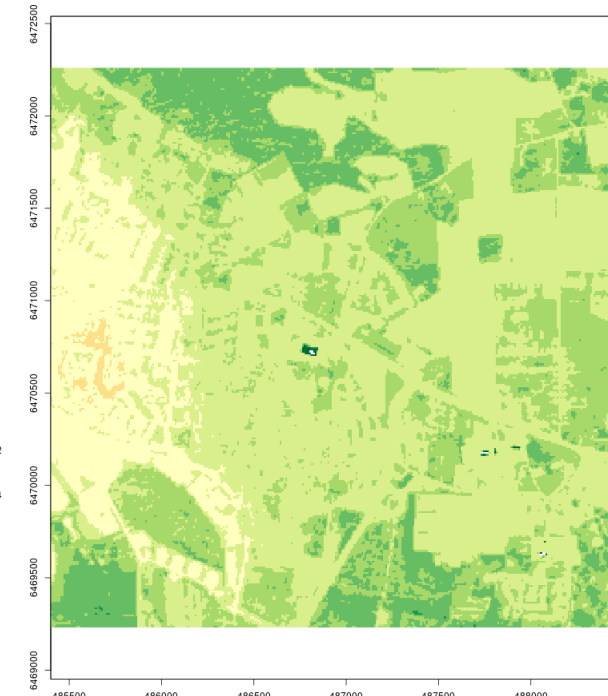
Heat danger, Tartu early Sept.



Heat danger, Tartu heatwave, normalized by same period

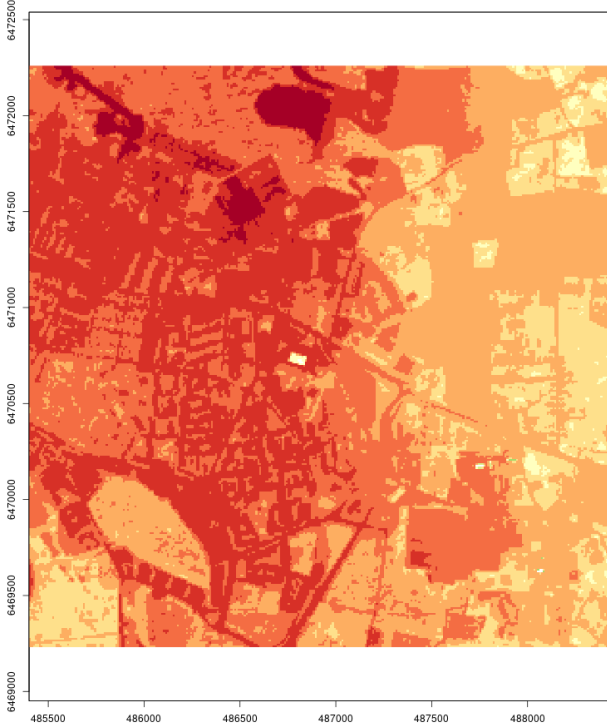


Heat danger, Tartu early Sept., normalized by same period

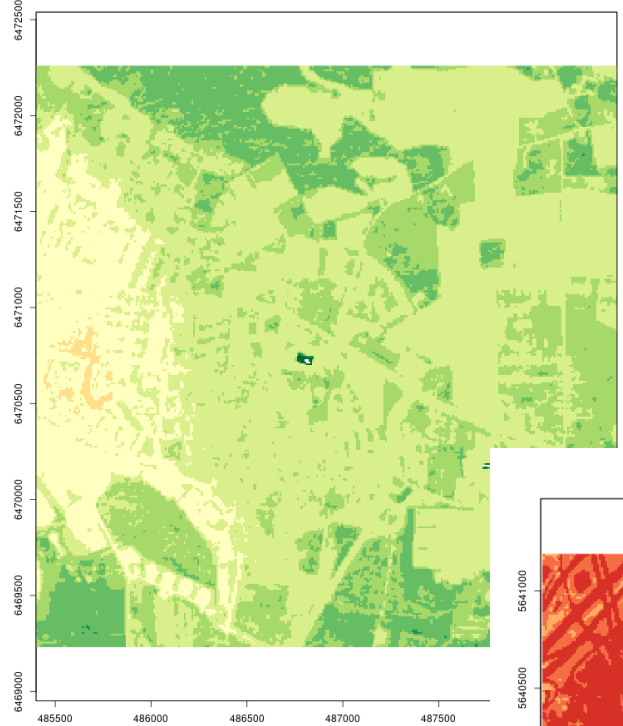


Results: Tartu and Brussels during heatwave vs September

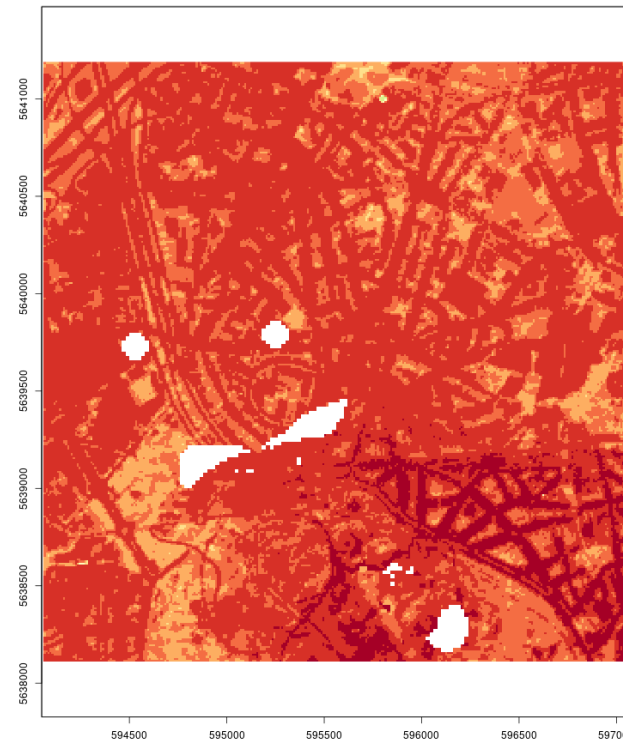
Heat danger, Tartu heatwave, normalized by same period



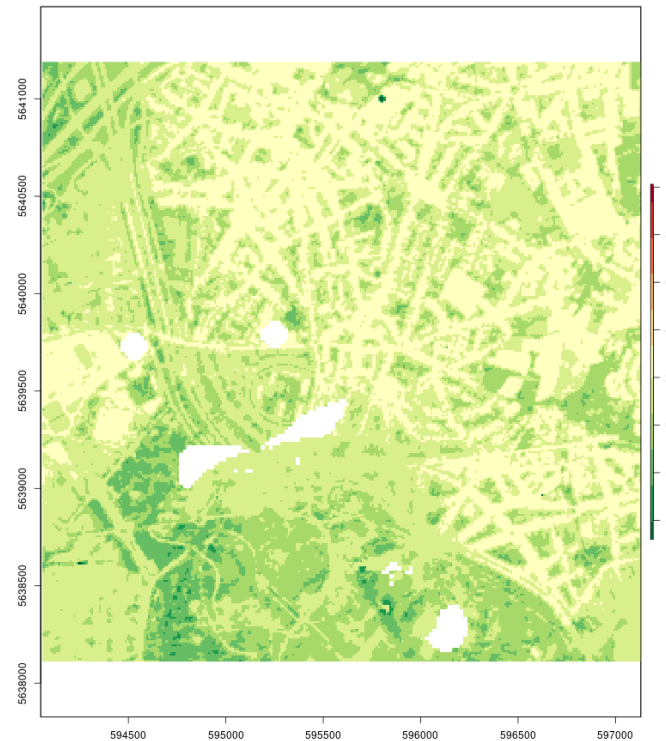
Heat danger, Tartu early Sept., normalized by same period



Heat danger, Brussels heatwave, normalized by same period



Heat danger, Brussels early Sept., normalized by same period



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Thank you!