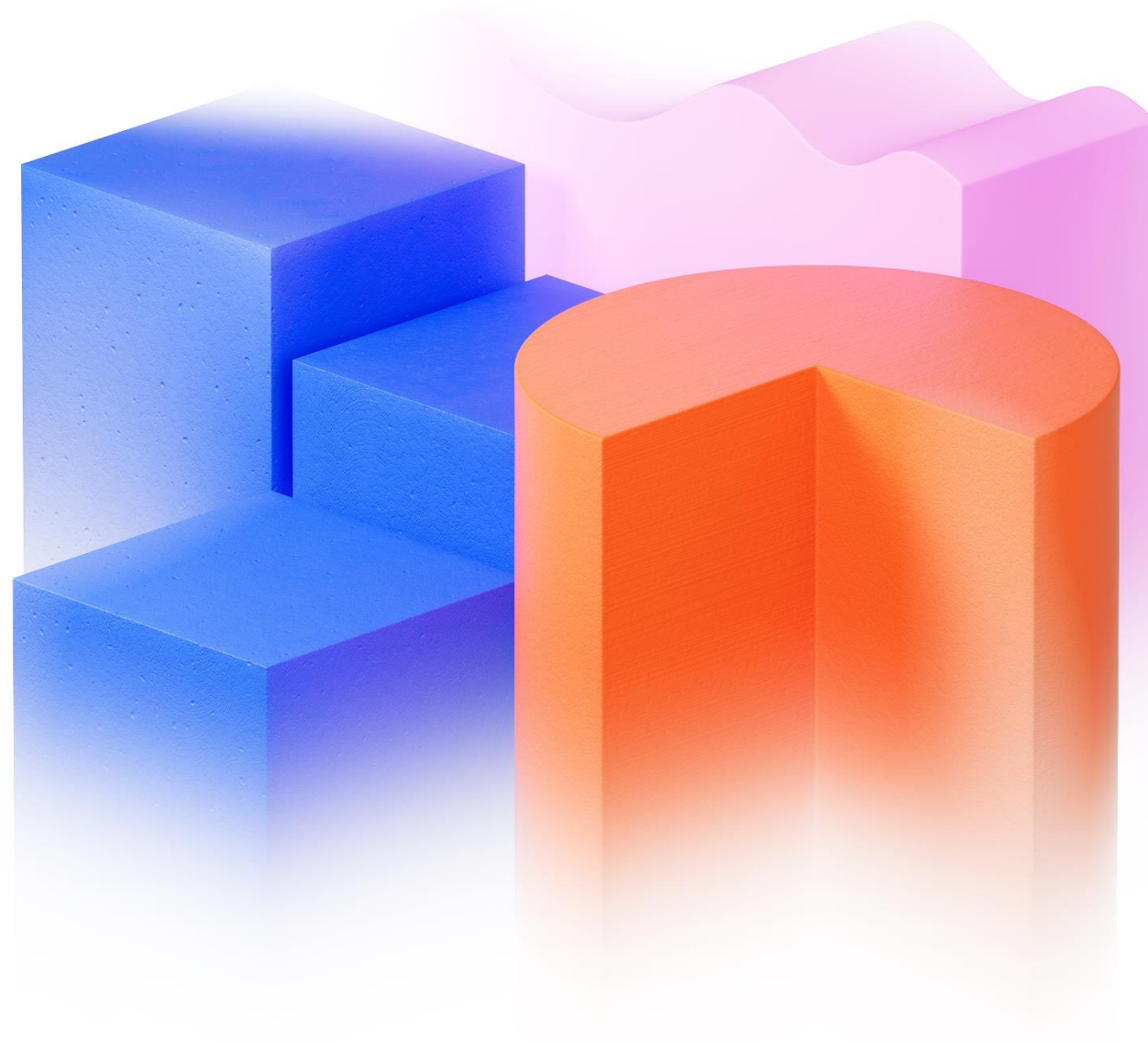


Calculating local climate regulation in Sweden

Nils Brown, Frida Hellman, Jerker Moström
Environmental Accounts
Statistics Sweden



Introduction and aim

- Statistics Sweden is developing capacity to produce and report indicators according to the revised European Regulation on environmental accounts

- Indicator for local climate regulation:

”the reduction of temperature in cities, due to the effect of urban vegetation, in degrees Celcius on days exceeding 25 degrees Celcius”

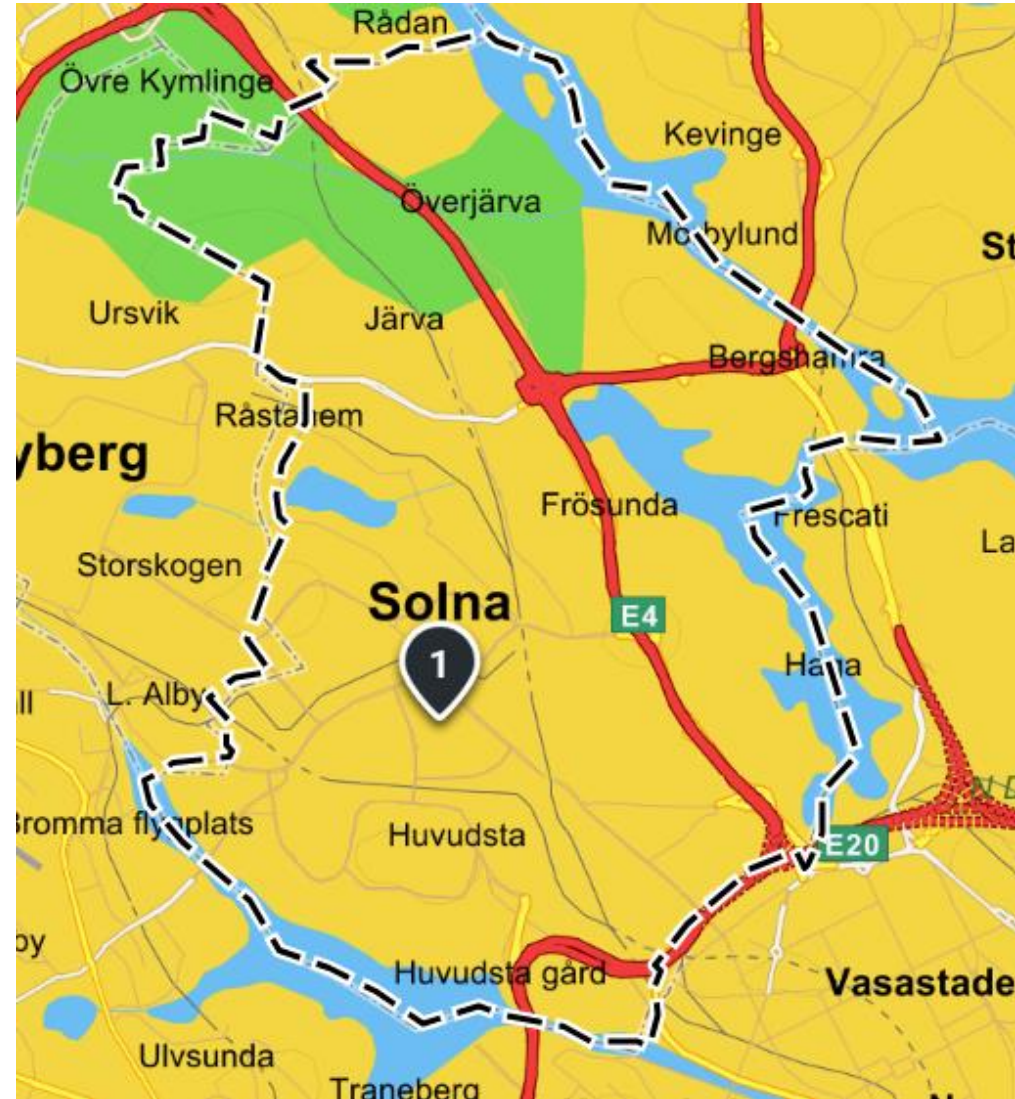
Aim of the work:

- To apply high-resolution (spatial and temporal) air temperature data to determine the length of the cooling season for reporting the ecosystem service local climate regulation
- To evaluate the effect that differing definitions of urban areas have on the value of indicators for measuring and reporting the local climate regulation service.

Methods – applying definitions of urban

- Following definitions of urban areas applied:
 - HD CLUSTER - DEGURBA Cities only
 - HD CLUSTER plus BUFFER - DEGURBA Cities plus a periurban area
 - Local administrative units that include the DEGURBA cities
- There are 27 DEGURBA-defined cities in Sweden
- Cooling in these "cities" was calculated using otherwise default parameters with the INCA tool for May – August 2018

Areas inside the dotted lines are urban according to local administrative area



Welcome to Malmö



Methods – calculating the length of the cooling period

- Input temperature dataset from the Swedish Meteorological and Hydrological office:
 - Maximum daily temperature
 - 2.5 km x 2.5 km resolution (low resolution!)
 - April – September
 - Degrees latitude and longitude for each area

- Four cities considered:
 - Greater Gothenburg
 - Greater Malmö
 - Greater Stockholm
 - Umeå

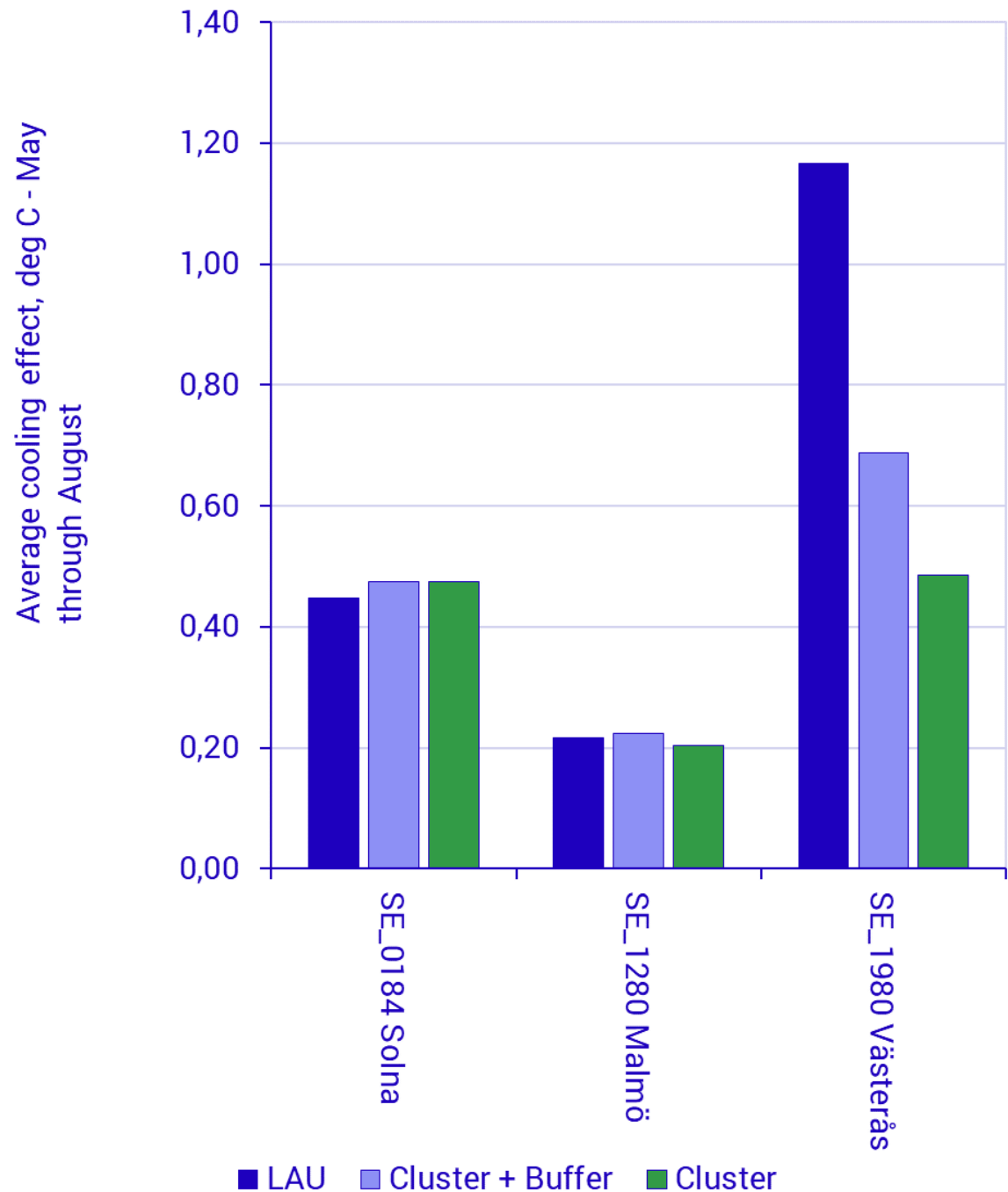
- Three area concepts applied to the cities:
 - City core
 - Greater urban area
 - Local administrative unit (Umeå only)

Note the limitation of the data resolution

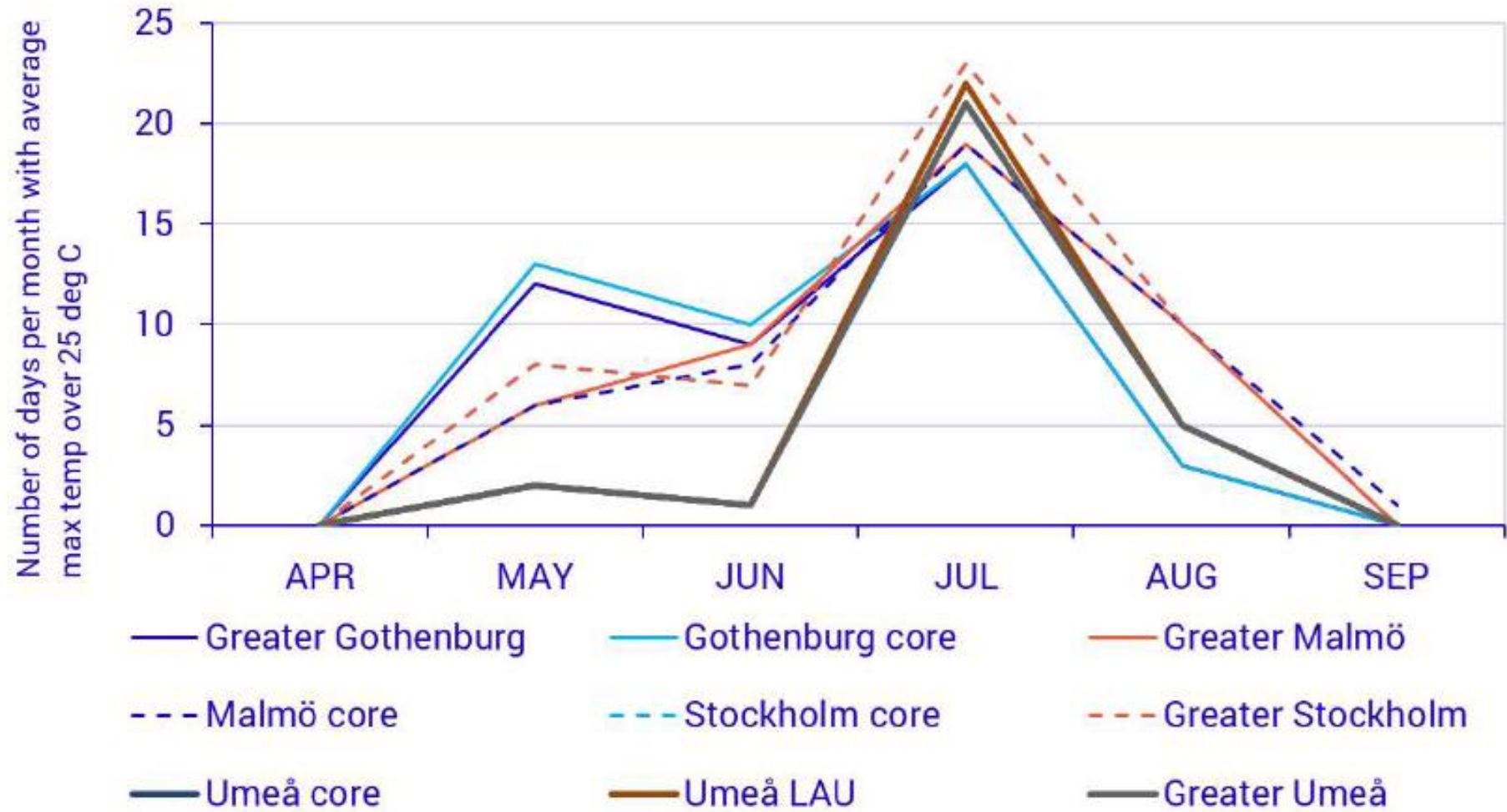
- For each city, the number of days exceeding 25 deg C in each month of 2018 was calculated, April – Sept

Local administrative unit urban definition can give higher cooling effect

Noted for over half of all cities included in the assessment



Variation in the length of the cooling period



Conclusions

- The method developed can be used to report the length of the cooling period according to the European regulation
- Statistics Sweden will use the urban ecosystem area definition when calculating urban ecosystem services

Thanks!

Täna teid!

Tack!