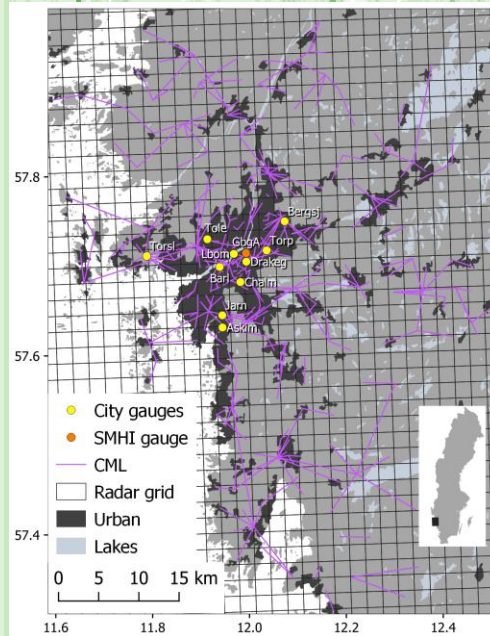
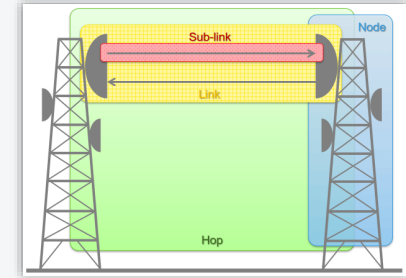


Open data from microwave links, radar and gauges published to boost rainfall research and applications (OpenMRG)

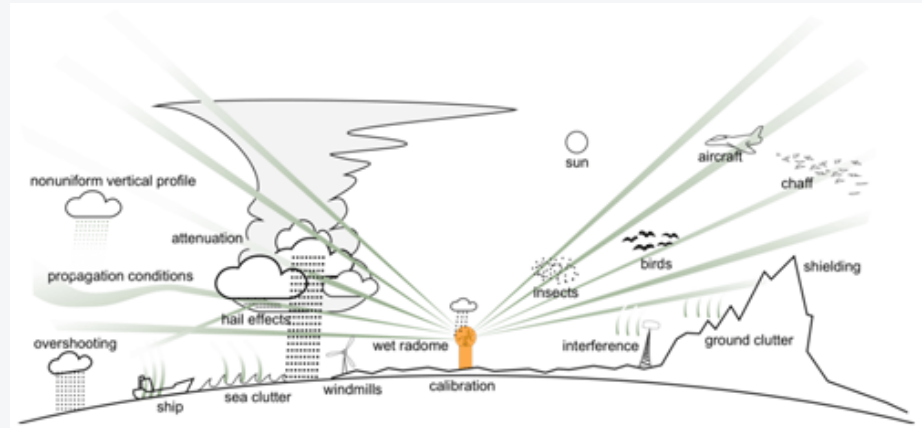


- 607 million measurements
- 364 commercial microwave links (CMLs)
- C-band radar reflectivity
- Local gauges and national weather station
- Summer 2015 in Gothenburg, Sweden

Andersson, J. C. M., Olsson, J., van de Beek, R. (C.Z.), and Hansryd, J.: OpenMRG: Open data from Microwave links, Radar, and Gauges for rainfall quantification in Gothenburg, Sweden, Earth Syst. Sci. Data, <https://doi.org/10.5194/essd-14-5411-2022>, 2022

Motivation

- CMLs can act as opportunistic sensors of rainfall, as complement to conventional gauges, and radar
- Access to CML data typically restricted → hinderance to research & innovation
- Aim:
 - Make much more CML data available to all!
 - Share CML data along with conventional measurements to facilitate comparision and algorithm development
- Same spirit as Špačková et al. (2021), Fencí et al. (2020, 2021), Overeem (2019), Habi (2020), van Leth (2018)



Gauges

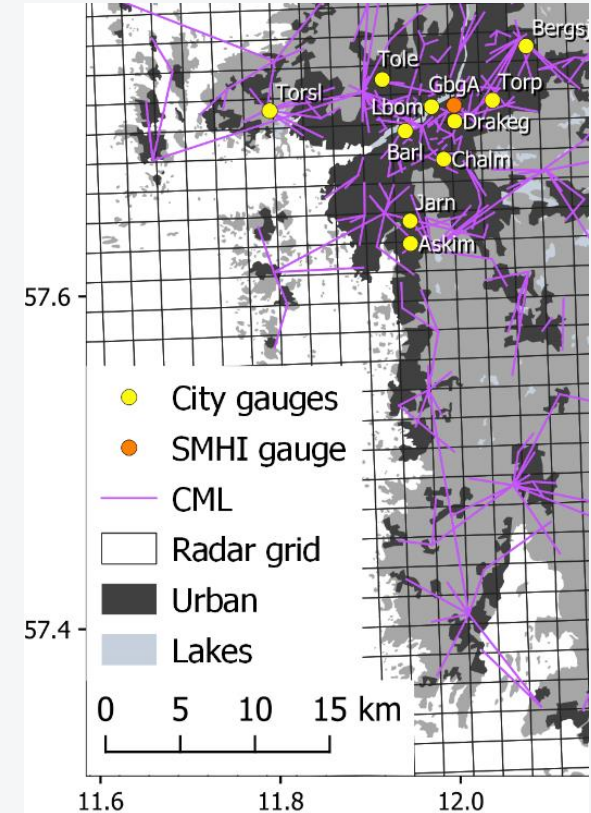
- Ten 1-min rain gauges
- One meteo. station with 15-min precip. + temperature, humidity, pressure, wind speed & direction



Source: kisters.net, 2024



Source: SMHI, 2024

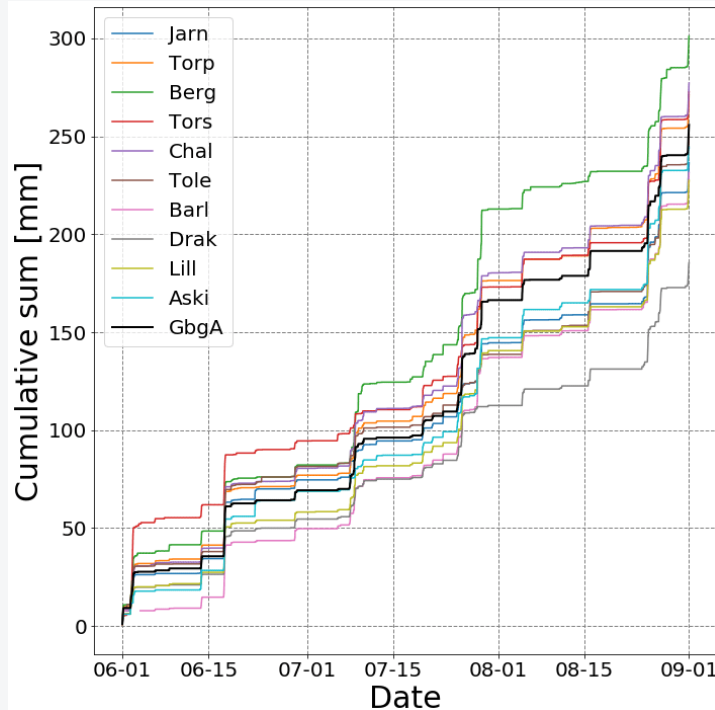
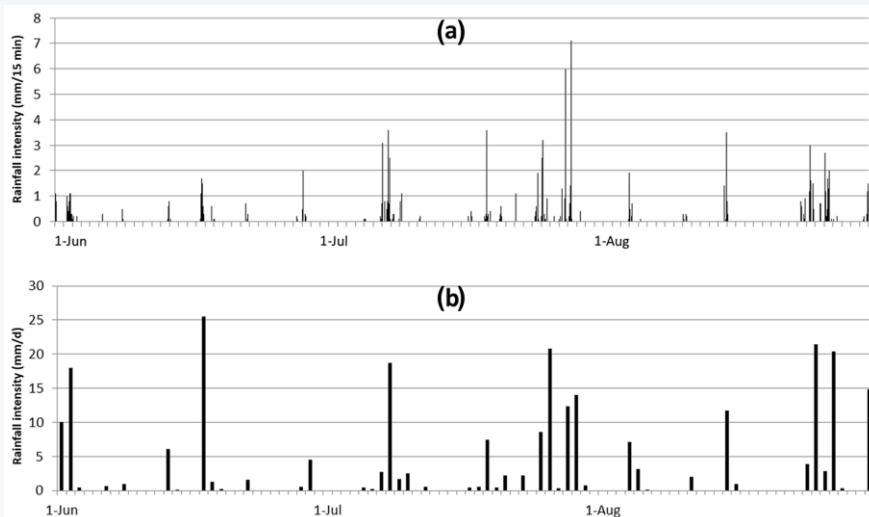


Gauges

- 100% data collection
- 2015 was a normal summer, rain-wise: ~260mm accumulated, 5%/50% wet fraction @ 15min/daily, some high-intensity events

Good correspondence among gauges

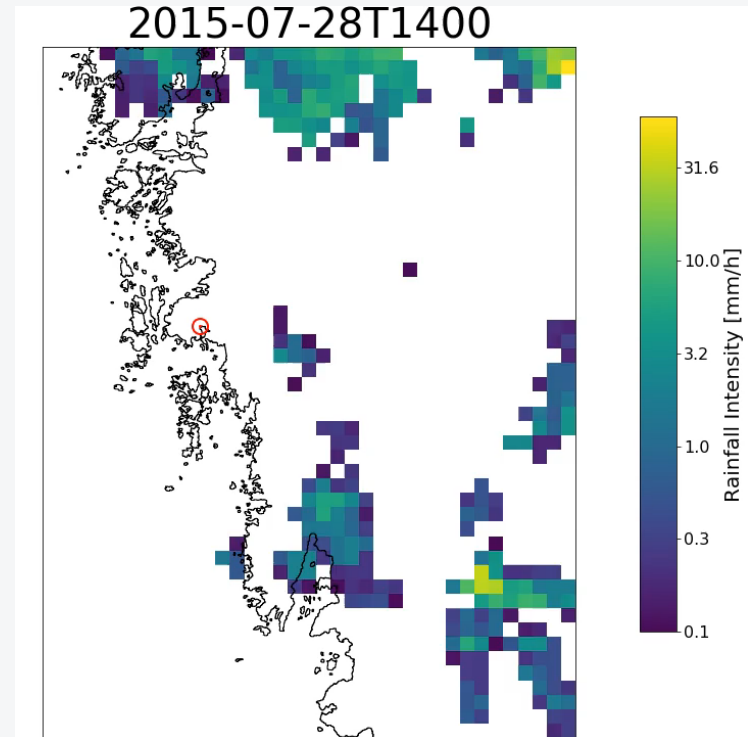
Rain time series JJA 2015



Weather radar

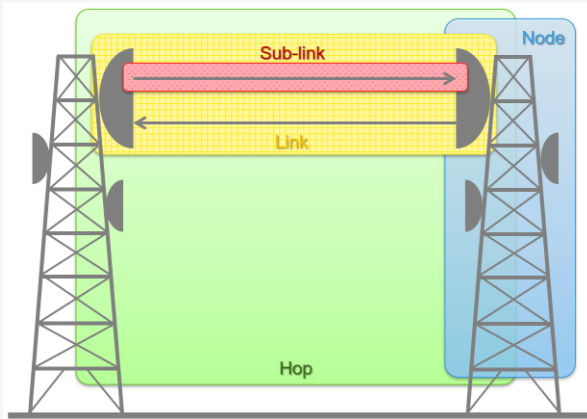
- Swedish operational C-band radar composite
- Reflectivity data (dBZ)
- Grid at 2 km & 15-min resolution
- 99.6% time steps with data for ≥ 1 radar pixel
- 46.6 million measurements

Animation of rain event Red circle = Torslanda gauge



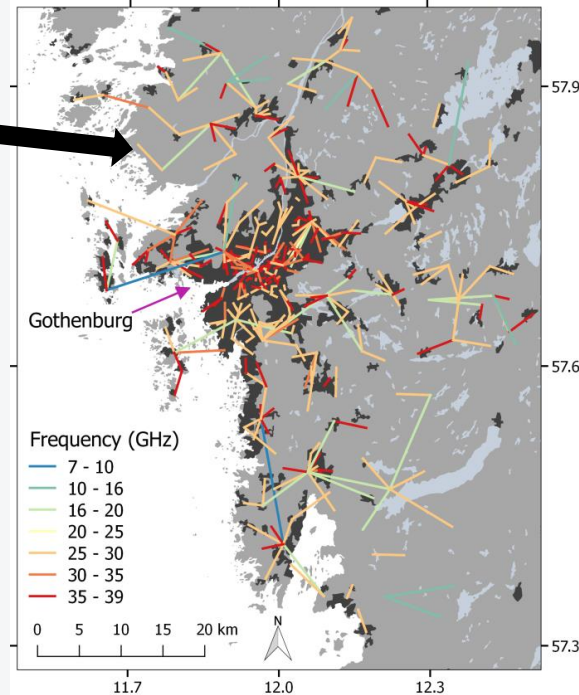
Commercial Microwave Links (CMLs)

CML terms

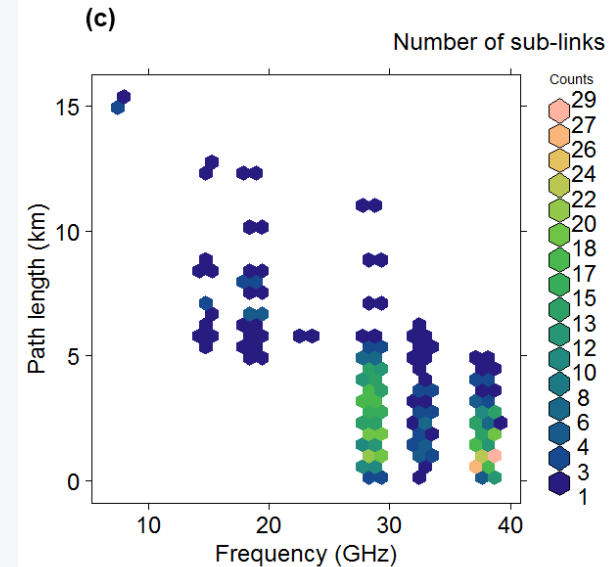


- 364 CMLs in Gothenburg, Sweden
- 10-second resolution
- True coordinates
- Received & transmitted signal levels

Dense CML network



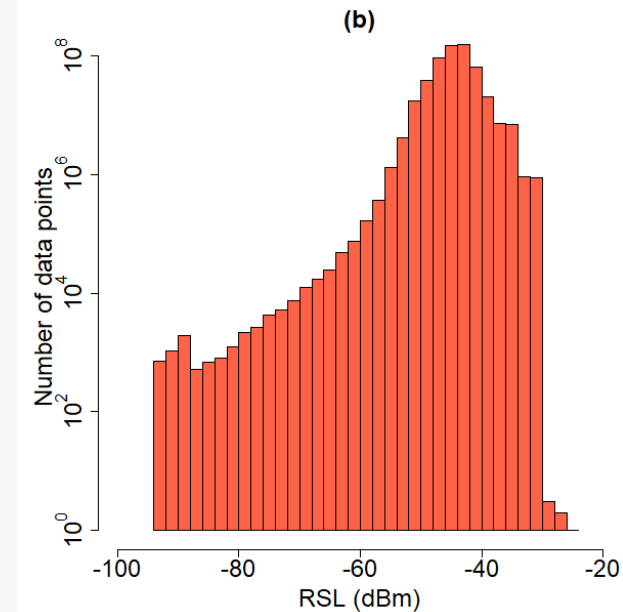
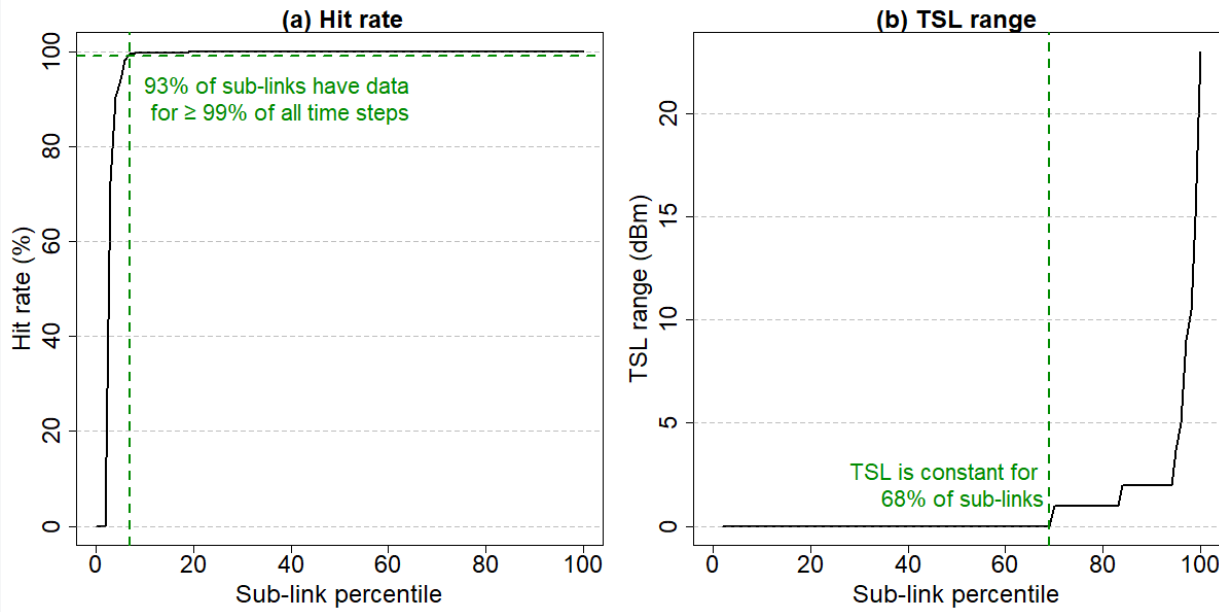
Characteristics



Commercial Microwave Links (CMLs)

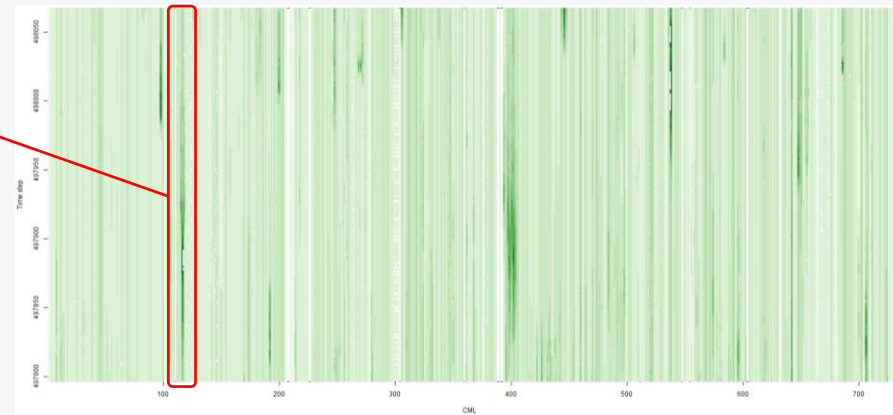
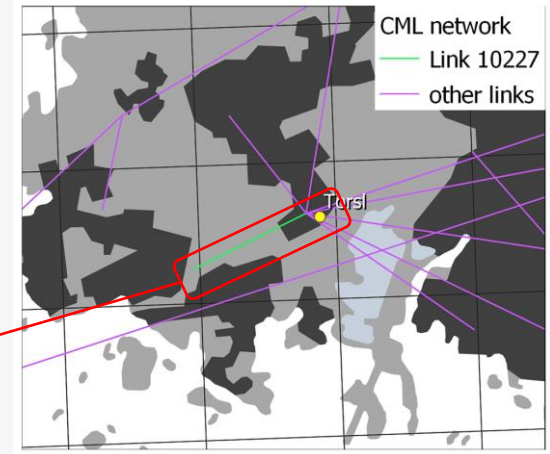
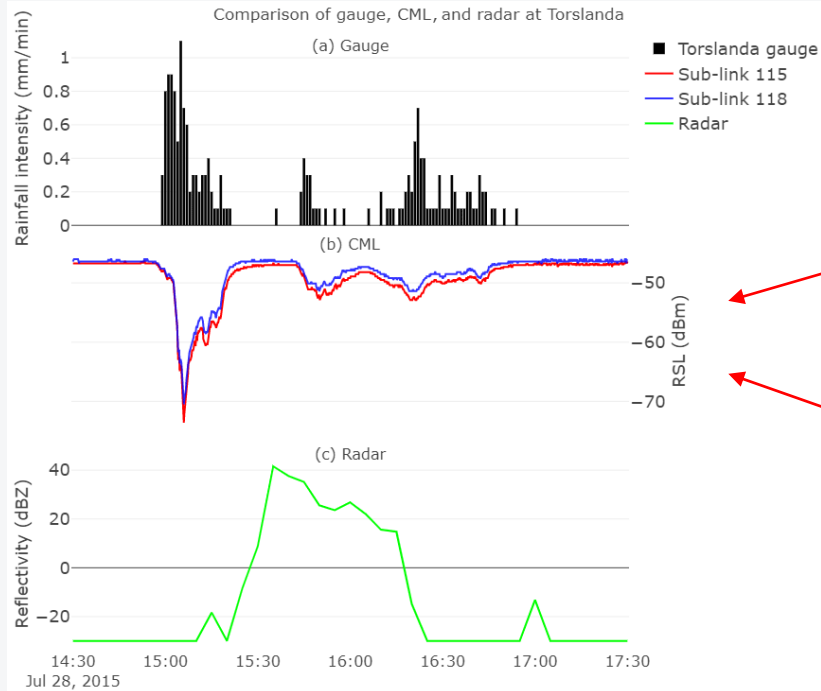
- Successful data collection
- 561 million measurements

Good RSL spread →
information on many rain
intensity levels



Torslanda gauge 25th July 2015

- Intense rain event (> 60 mm/h)
- CMLs capture dynamics better than radar



Thank you!

Article



Data



Contact

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