

Analysis of spatial representativeness in Friuli Venezia Giulia

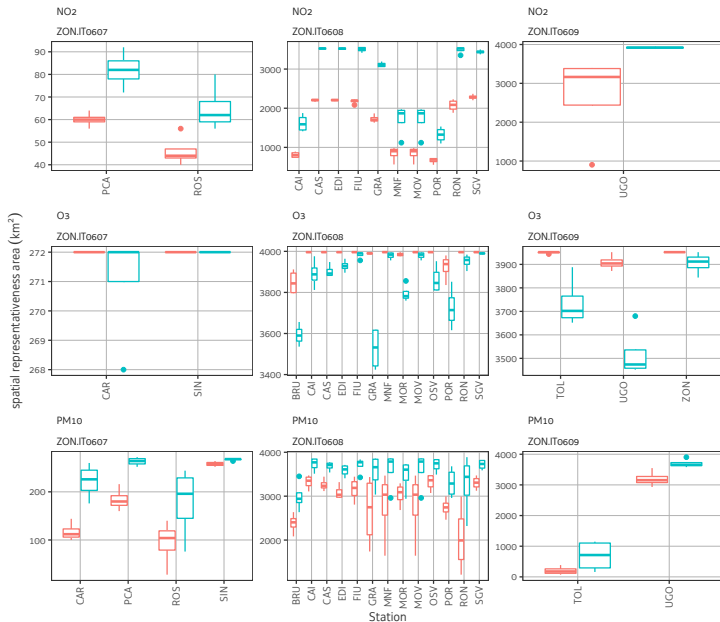
fixed threshold vs uncertainty-dependent threshold

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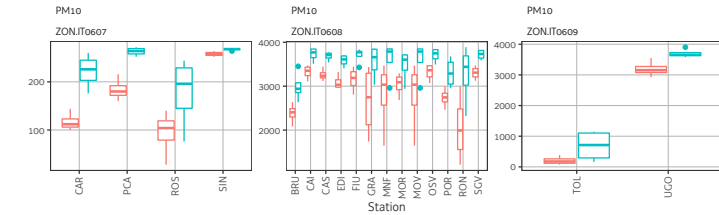
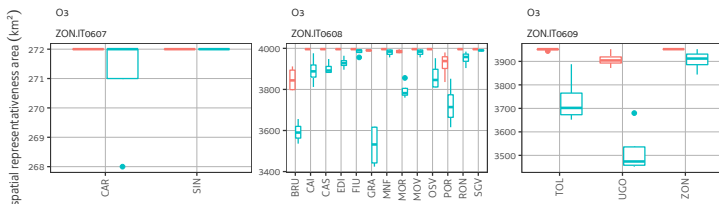
- ▶ pollutants: PM₁₀, NO₂, O₃
- ▶ each pollutant considered separately
- ▶ AQ index: annual mean modelled concentration
- ▶ two methods:
 - fixed threshold**
 - ▶ similarity criterion: concentration in range $c_{station} \pm 20\%$ (relative tolerance)
 - ▶ absolute cutoff: concentration in range $c_{station} \pm 2\mu\text{g}/\text{m}^3$ (absolute tolerance) is ok, even if similarity criterion is not satisfied
 - uncertainty-dependent threshold (UDT)** similarity criterion: concentration in range $c_{station} \pm U_{95}(c_{station})$ ¹
- ▶ spatial representativeness (SR) region can be discontinuous
- ▶ SR region is limited to the IPR AQ zone

¹as described in the Guidance [Janssen et al., 2017] and implemented in R package *dartle* [Bonafè, 2020]

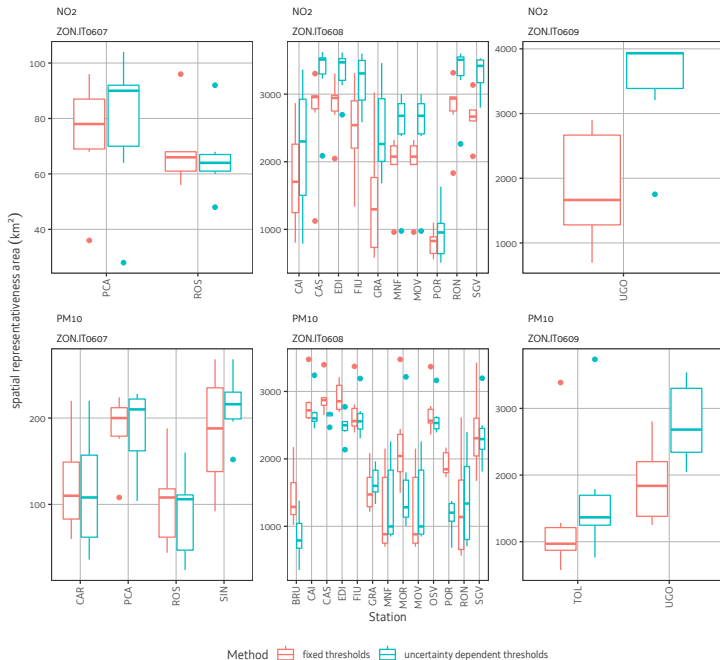
- ▶ domain: Friuli Venezia Giulia (north-eastern Italy)
- ▶ two models:
 - ▶ FARM (chemistry-transport model, 2 km resolution)
 - ▶ KED (kriging with external drift, same grid)
- ▶ only background stations
- ▶ periods: 2015–2020 (KED), 2017–2020 (FARM)

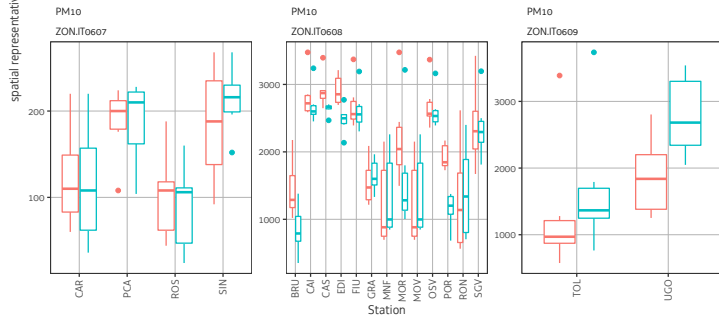
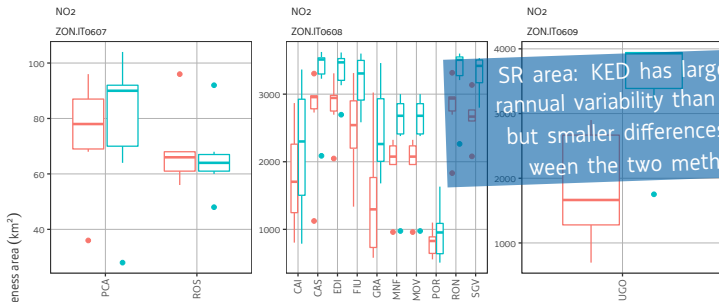


Method  fixed thresholds  uncertainty dependent thresholds



Method ▢ fixed thresholds ▢ uncertainty dependent thresholds







Bonafè, G. (2020).

dartle: Air Quality Model Benchmarking.

R package version 0.1.2.



Janssen, S., Guerreiro, C., Viaene, P., Georgieva, E., and Thunis, P. (2017).

Guidance document on modelling quality objectives and benchmarking.