DEPARTMENT OF ENVIRONMENTAL SCIENCE
AARHUS UNIVERSITY

Spatial inventory for Dublin

FAIRMODE Pilot Exercise Meeting

February 26, 2018

Baveno

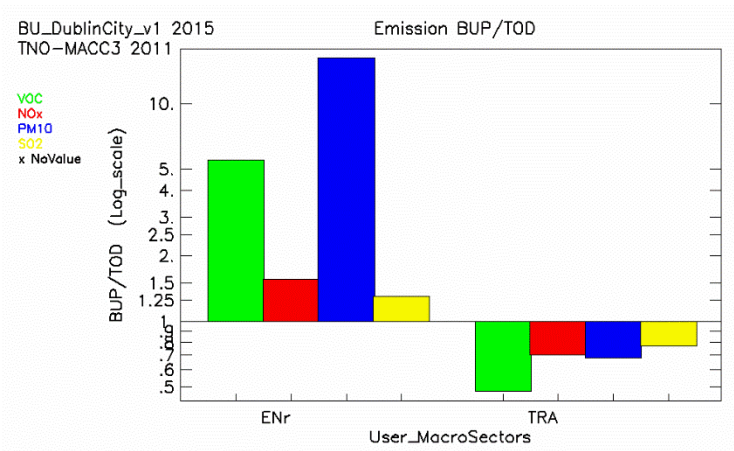
Pilot Exercise for Dublin - Main conclusions

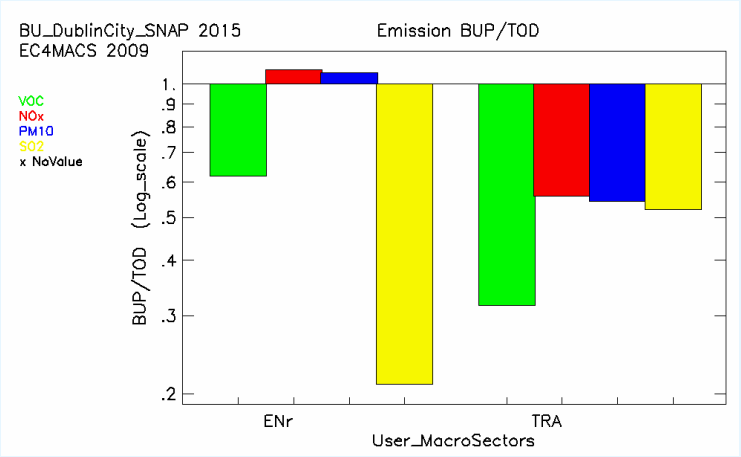
- The national model for Ireland already included bottom-up data to the extent possible → difficult to refine the inventory substantially → not a lot gained by comparing the Dublin inventory to the EMEP0.1x0.1
- Useful to zoom in on a smaller geographical area as outliers and inaccurate spatial proxies gets revealed
- The benchmarking tools are useful, but requires a lot of effort to interpret and understand the results – focus has been on small-combustion and road transport
- Future improvements could mainly be achieved by developing more accurate spatial proxies by combining more spatial and statistical datasets

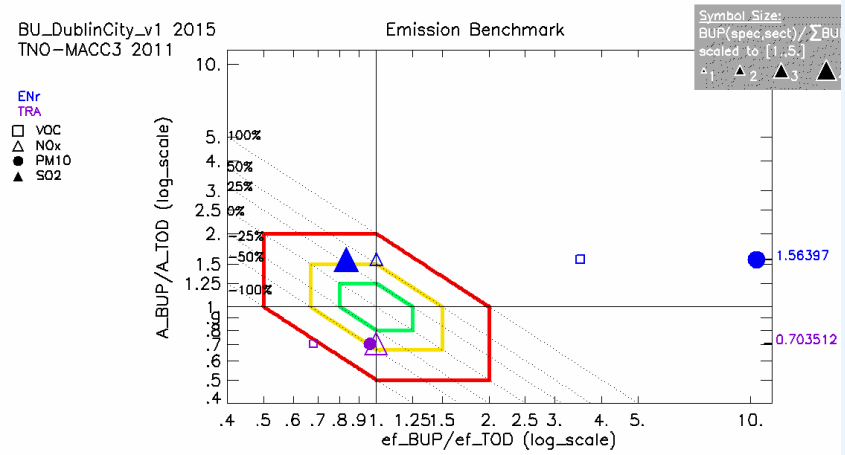
Delta tool on emissions - Dublin

- Comparing BUP and TODs is useful to check if emission are of the same level. Differences are expected due to the methodology, and the BUP emissions varied between being larger or smaller than the TOD emission, for different TODs, sectors and pollutants.
- Differences is expected due to comparison of different years; e.g. road transport show large increase in Dublin during the later years.
- The diamond diagram highlights sectors/pollutants with largest differences; S2 is a major source to PM_{10} and is seen to be overestimated in the TOD compared to the BUP.
- It would be useful if absolute emission values could also be compared and not only ratios.

Delta tool on emissions - Dublin







- Comparison with MACC3 (top left) and EC4MACS (top right)
- Diamond diagram highlighting TOD overestimation of PM_{10}

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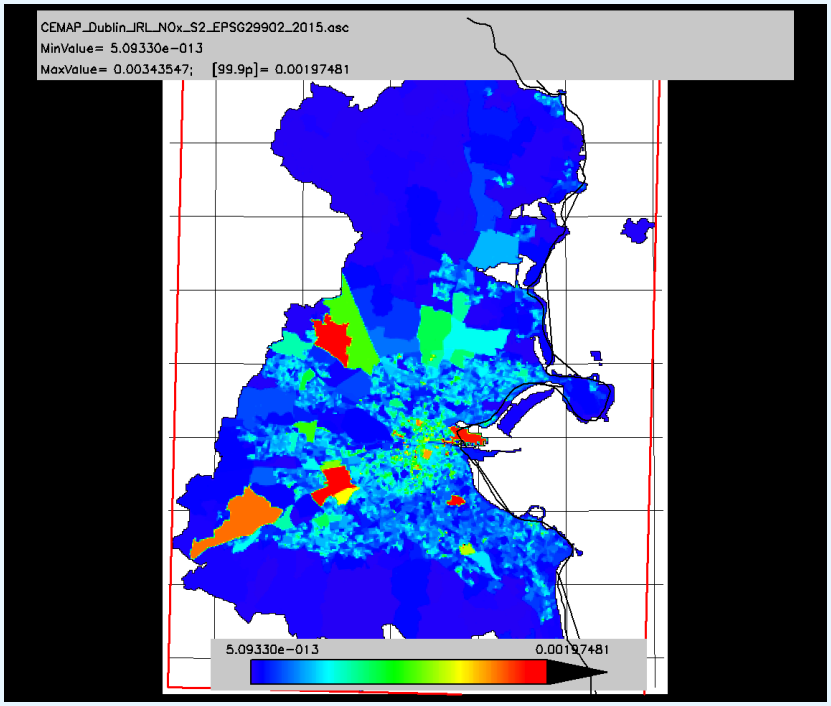
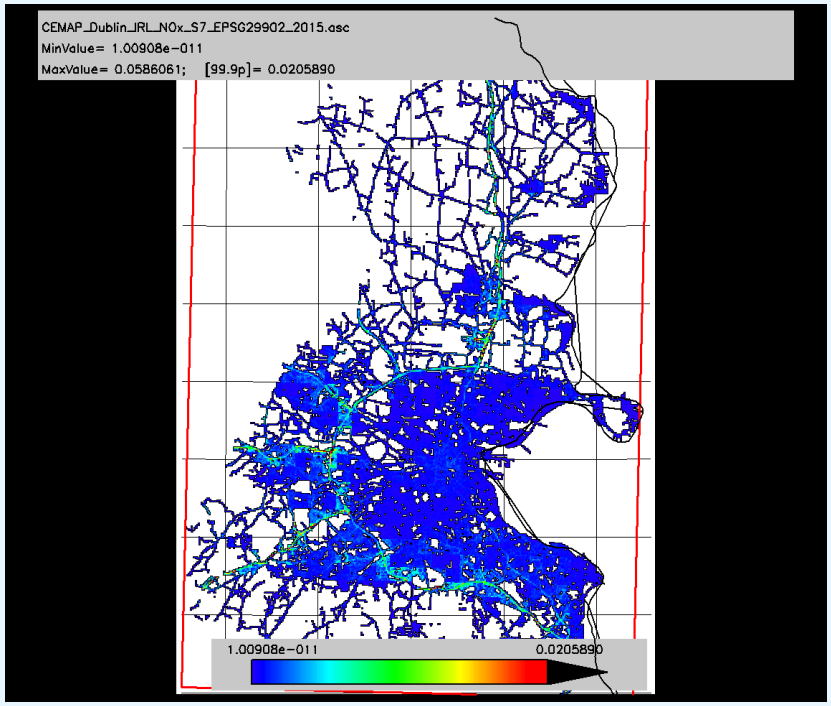
Composite mapping on emissions – Dublin

- The composite mapping tool is a great tool to check the format of the input data and gives help to solve errors.
- The maps gives a good overview of emission levels and patterns, and thereby preventing apparent errors.
- The output text file is a very nice feature for further evaluation of the outcome from the tool.

Composite mapping on emissions – Dublin

› NOx emissions from sector S2 (left) and S7 (right)





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Additional comments - Dublin

- Further elaboration of the Delta-tool user-guide with guidance on interpretation of the results from the Delta-tool would be helpful, e.g. with offset in the publication "A novel approach to screen and compare bottom-up vs. top-down emission inventories" by Thunis et al.
- It could be good with the opportunity to compare national total emissions in addition to the sectoral comparisons.

Thank you for your attention!

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