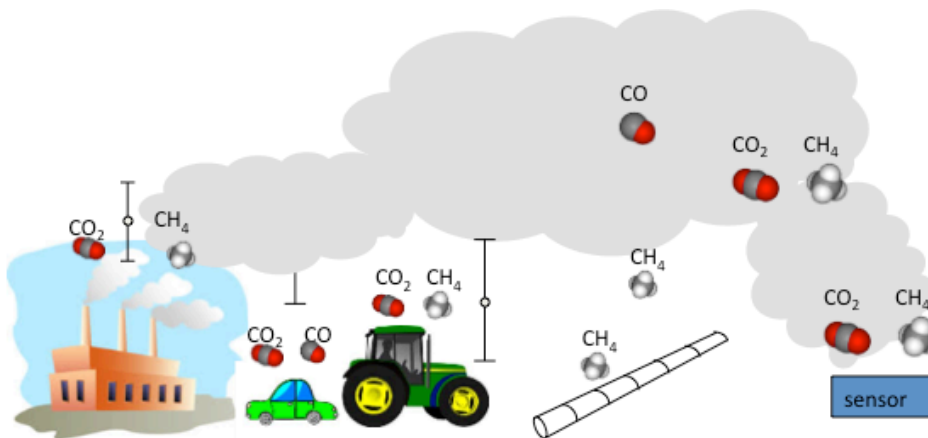


Bachelor Thesis

Urban Emission Estimates Using Atmospheric Observations



“Bottom up”: $E = \text{individual emission} \times \text{economic activity}$

“Top down”: $C = C_0 + H(E)$

E : Emission flux [$\mu\text{mole m}^{-2} \text{s}^{-1}$]

C : Concentration [ppm]

H : Atmospheric “transfer function”

More than 50% of the world population lives in cities, where 70% of fossil fuel carbon dioxide comes from. Very recently European Commission set up a carbon emission reduction target of 80%-95% below 1990 levels by 2050. Therefore monitoring and control of urban emissions is extremely important to achieve that goal. The “Top-down” method assesses emissions of greenhouse gases and pollutants by using atmospheric observations and atmospheric transport models.

The tasks of this thesis are:

- 1) Literature study of the methodologies that are used to determine the urban emission flux (E , unit: $\mu\text{mol/m}^2/\text{s}$) using atmospheric observations (C , unit: ppm).
- 2) Analyze recent atmospheric measurements from Berlin and/or Boston with standard statistical methods.
- 3) Combine the measurements with an existing atmospheric transport model to assess the emission flux.

Contact: Prof. Jia Chen (Room: N1512), jjachen@tum.de



Technische Universität München



Fakultät für
Elektro- und Informationstechnik

Professur für Umweltsensorik
und Modellierung

Prof. Dr.-Ing. Jia Chen

Briefanschrift:
TUM - MST
80290 München

Warensendung:
TUM - MST
Theresienstr. 90 / N5
80333 München

Tel +49.89.289.23350
Fax +49.89.289.23348

jia.chen@tum.de
www.mst.ei.tum.de