



## **Comparison of new IPCC AR5 global anthropogenic emissions with RETRO inventory**

Angelika Heil, Cornelia Richter, and Martin Schultz

ICG-2 / Forschungszentrum Jülich GmbH, Global Modelling, Jülich, Germany (c.richter@fz-juelich.de)

Since 2007 more than half of the world's population lives in an urban environment. Beside many other challenges most large cities have problems with their air quality. Thus a growing fraction of humans is exposed to e.g. high ozone and particulate matter concentrations, which are known to be harmful to health. As they are emission hotspots, huge urban agglomerations not only have local effects but globally influence the chemical air composition and with it the climate.

Within the EU FP7 CityZen project a series of different scale models is employed in order to analyze the impacts of air pollution hot spots on regional and global air quality including potential future changes for various climate scenarios. A crucial part for the simulations are the emission inventories used. Therefore a comparison of the RETRO inventory and the new IPCC AR5 anthropogenic emissions with focus on the CityZen case study regions has been performed, as a preparatory step for modelling work within CityZen. Differences, especially in  $\text{NO}_x$ , CO emissions and their emission ratio were analyzed and evaluated. The new IPCC AR5 anthropogenic emission data were found to better reflect spatial emission patterns and gradients of metropolitan areas and for this reason to be suitable for global modelling studies of megacities' air quality and climate impact.