reporting AQI – methods

Air Quality Index (AQI) is a metric on a sliding scale that informs the public on the quality of air and the associated near-term health impacts

An example of air quality index levels and associated health warnings

0 to 50	Good	Air quality is satisfactory for all
51 to 100	Moderate	Health concern for very vulnerable population
101 to 150	Unhealthy (for some)	Health concern for vulnerable population
151 to 200	Unhealthy (for all)	Health concern for all
201 to 300	Very unhealthy	Severe health concern for all
300+	Hazardous	Health alert for all

PM	SO_2	NO_2	CO	O_3
particulate matter with size <10mm and <2.5mm	Sulfur Dioxide	Nitrogen Dioxide	Carbon Monoxide	Ozone

TOP-DOWN APPROACH

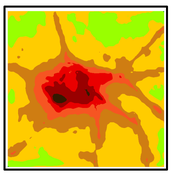
network of reliable and continuous monitoring stations, reporting data in real time, representative of the mix of sources and geographical spread

data management center, for quality control, quality assurance, archiving, and processing of the ambient concentrations from the network of stations

calculated using concentrations of six pollutants; linked to their respective health related break points for each of the color codes

AQI is reported through newspapers, television, radio, mobile apps, internet

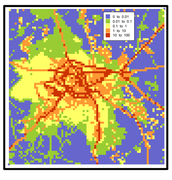
BOTTOM-UP APPROACH



concentration maps for all the criteria pollutants linked to the AQI methodology, from the dispersion model simulations

Monitoring data should used for validating the dispersion model simulations

computational servers, capable of handling high volume 3D meteorological and emission datasets, to run regional and urban chemical transport dispersion models



gridded emissions at desired spatial resolution - preferably @ 1 km for urban air scales

uncertainty can be high, depending on input data quality & spatial proxies

activity and emission factors database for all known sectors – e.g., transport (road, rail, air, and water), industry, power generation, domestic, open waste and biomass burning, road and construction dust, domestic and commercial cooking and heating, dust storms, sea salt, open fires, and lightning

Top-down approach is an expensive, but straight forward application, as long as the monitoring network is large enough to provide the necessary spatial representativeness of the city; otherwise, bottom-up method is more suitable, if the emissions inventory is well established. Ideally, a combination of both is a good practice.

Send your questions and comments to simair@urbanemissions.info