



ICAO

ENVIRONMENT



# ICAO Airport Air Quality Manual

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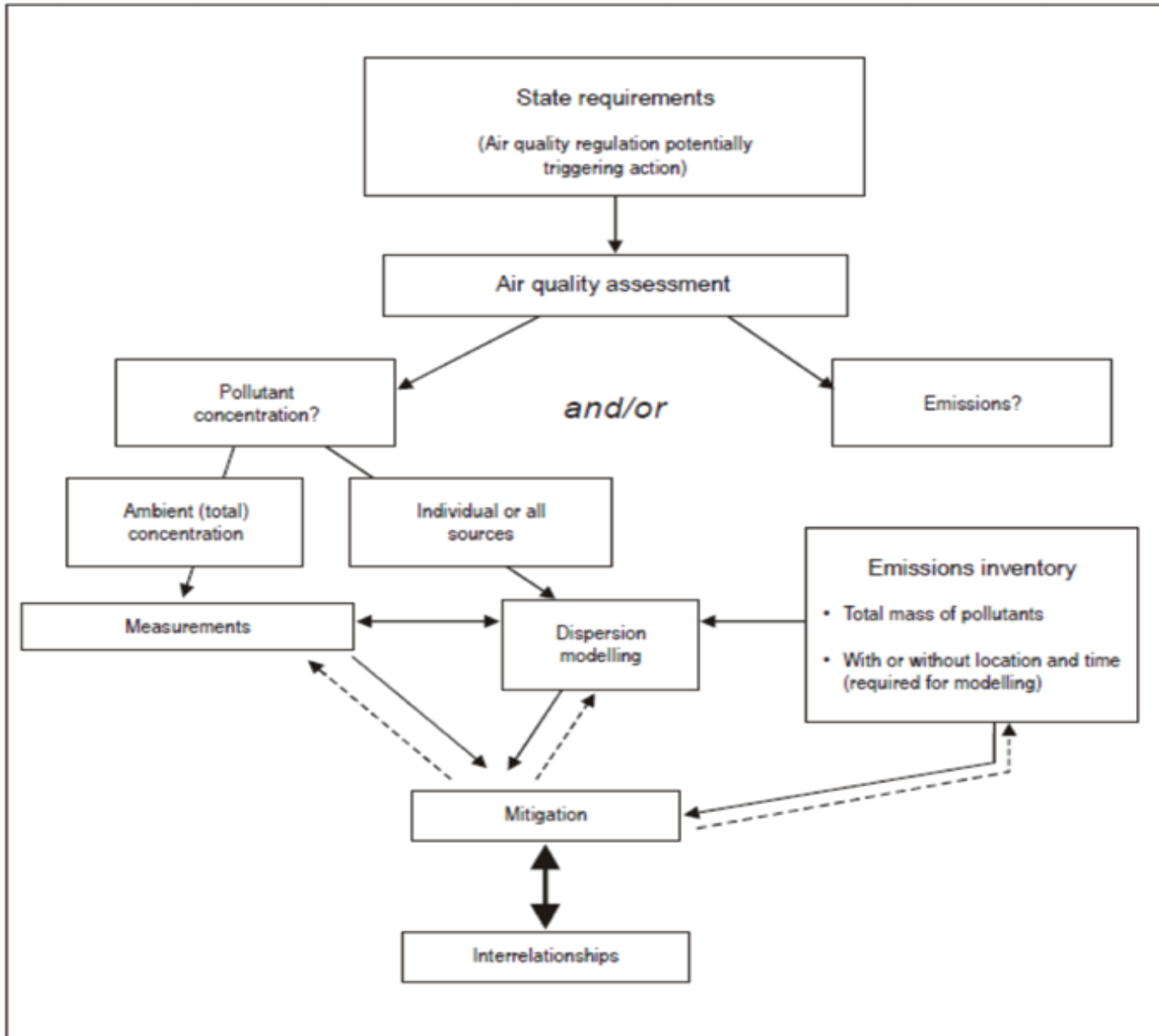


- The ICAO Airport Air Quality Manual
- Emissions Inventories
- Pollution Concentrations and Dispersion Modelling
- Summary



- ICAO has been involved with airport-related emissions for many years.
- Guidance material on airport-related air quality was published in 2011:
  - Help States implement best practices to assess airport air quality;
  - ICAO Doc 9889.





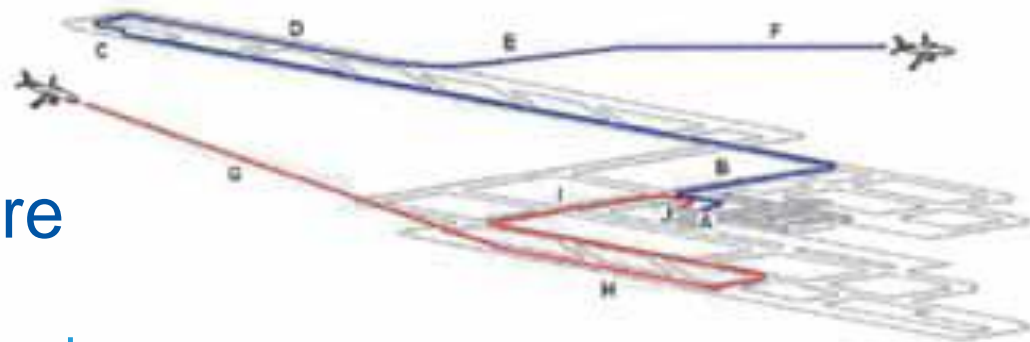
- An emissions inventory gives the total mass of emissions released into the environment.
- Provides a basis for reporting, compliance, and mitigation planning.
- Emissions inventory objectives can include:
  - Collecting information on emissions;
  - Benchmarking emissions against legal requirements;
  - Creating input data for dispersion models;
  - Establishing mitigation programme baselines.



- Aircraft main engines, at times, receive the most attention in an inventory
  - Usually the dominant airport-related source.
- The Landing Take-Off (LTO) Cycle can be used for simple emissions inventory calculations.

- The actual arrival and departure phases of operations may be more appropriate:

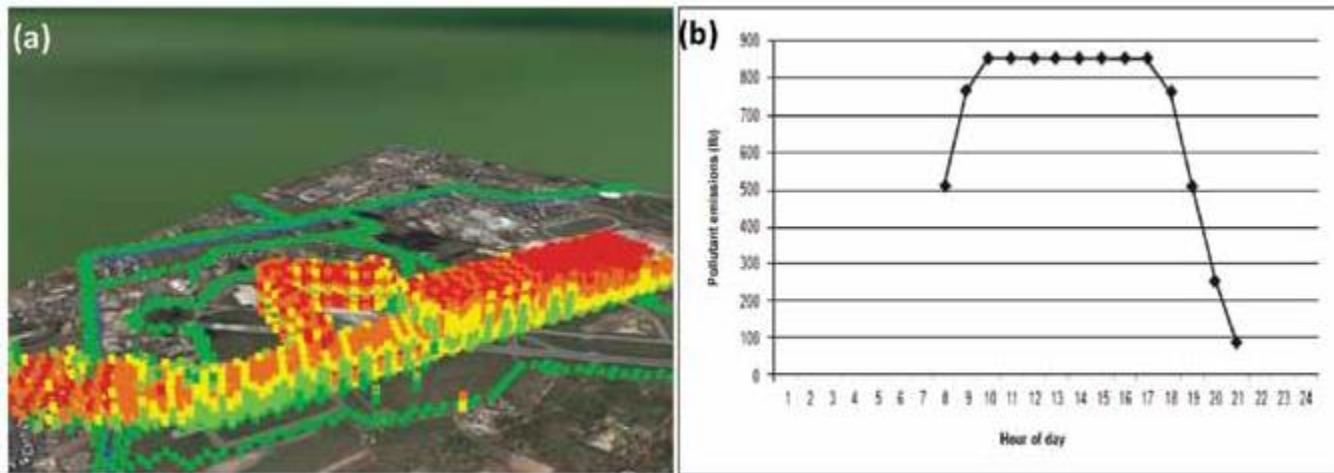
- e.g. for departure: Engine start, Taxi to runway, Holding on ground Take-off roll to lift-off, Initial climb to power cutback.



*An Example Operational Flight Cycle.*



- Emissions occur at multiple locations during various time periods;
  - Stationary sources such as generators;
  - Mobile sources such as the aircraft.
- The dispersion of emissions requires both temporal and spatial considerations.



(a) An Example 3-dimensional Geospatial Emissions Inventory; and (b) a Diurnal Profile Plot of Emissions Mass.



- Atmospheric dispersion modelling is required to estimate the local ambient concentrations.
- The results form the basis for LAQ impact studies
  - Used to demonstrate compliance with required regulations and standards.
- Existing pollution concentrations can also be assessed by in-situ observation of ambient conditions
  - This assessment method can include contributions from other nearby and distant sources.
- Modelling results and ambient observations can be used for evaluating existing or historical conditions.



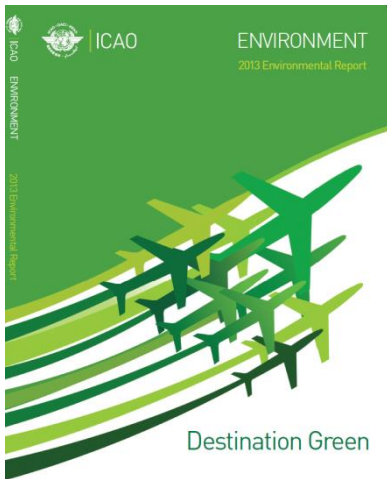


- Emissions inventory, concentrations and dispersion modelling, and ambient observation elements can be used individually or in combination.
- The aim is to aid the process of understanding airport air quality, reporting, and compliance and/or mitigation planning.
- Subsequent air quality mitigation can have beneficial results for the:
  - total emissions mass;
  - concentration model results;
  - measured pollutant concentrations.





# For more information on ICAO activities on LAQ and Airport Air Quality...



ICAO Web Page  
[www.icao.int/](http://www.icao.int/)

THANK YOU

