

Air quality



Air pollution is both an environmental and a social problem. This research line is based on the necessity of developing air quality models as a tool that allow to identify the sources and processes determining air quality and predict pollution episodes.

Summary

Air pollution is a problem in developed and developing countries and transcends all scales with in the atmosphere from the local to the global scale with handovers and feedbacks at each scale of interaction. In this framework, the air quality modelling group develop and exploit Air Quality Models (AQMs) which are numerical representations of the atmospheric processes that allow to gain understanding about the behaviour of pollutants in the atmosphere, especially the relation between natural and anthropogenic emissions, atmospheric transport, chemistry and deposition.

The group applies AQM with high spatial resolution (from 12 km to 1 km) for targeting the urban air quality. Further developments are coupling AQM with street canyon models which are essential to accurately reproduce the dispersion of pollutants along streets. AQM for source apportionment studies are used to define efficient air quality plans because they determine the contribution to pollution of main socio-economic activities and surrounding administrative areas together with the transboundary transport of

pollution. The [CALIOPE system](#) (“CALIdad del aire Operacional Para España”) is an operational forecast system which provides high-resolution short-term predictions for air quality in Europe, Spain and its main urban areas. CALIOPE compiles main developments of the group the BSC as the integration of the in-house chemical transport model, the NMMB/BSC-CTM, in the current operational system based on WRF-CMAQ.

Objectives

1. Air quality modelling development, evaluation and improvement from global to local.
2. Air quality assessment: source attribution and identification of processes affecting air pollution in regional air quality in Europe and Spain
3. Air quality forecast: improvement, development and maintenance of an air quality system that predict with high spatial and temporal resolution air quality for Europe and Spain

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