



Assessment of the impact of the resolution using the regional air quality model BOLCHEM

R. Cesari (1), M. D'Isidoro (2), A. Maurizi (2), M. Mircea (2), F. Tampieri (2)

(1) Institute of Atmospheric Sciences and Climate (ISAC) - CNR Lecce, Italy, (2) Institute of Atmospheric Sciences and Climate (ISAC) - CNR Bologna, Italy

This work aims at exploring the impact of a fine-scale description of meteorology and dispersion properties of the atmosphere on air quality modelling, and at evaluating the sensitivity of numerical simulations to refinements in the dynamics. The need to work with different model set-up in spatial and temporal scales, as occurs when global to regional and local simulations must be performed, stimulates this investigation also in the perspective of more effective ability in bridging among different scales. In detail, spatial resolution affects for instance the precipitation patterns, the local circulations (land-sea and valley breezes, ...), the boundary layer representation (height, stability, ...), and the treatment of dispersion properties. Some sample cases are discussed, based on numerical simulations performed using the regional air quality model BOLCHEM. Effects on removal processes, on vertical dispersion near the ground, and on long-range tropospheric transport are analysed in detail.