

## 6.08 TESTING A NON-HYDROSTATIC LAM AT VERY HIGH RESOLUTION

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The Po Valley, in the Northern part of Italy, is a densely populated and heavily industrialized region. Air pollution episodes often occur with low wind conditions, when local circulation regimes become very important: sea breeze, mountain breeze, valley circulations, effects of the urban areas.

Exactly in such situations the mesoscale meteorological models show their limitations in representing local scale phenomena, but also mass-consistent pre-processors are often not able to reproduce satisfactory interactions of the atmosphere with the complexity of the terrain.

Non-hydrostatic Limited Area Models could improve the meteorological input in such critical conditions. A nested version of the non-hydrostatic model Lokal Modell at high resolutions (7, 2.8 and 1.1 km) is evaluated against measurements. The main features of the simulations are analyzed, focusing on two large urban areas of the Po Valley, Turin and Bologna, with special attention to that meteorological parameters which are relevant for air quality modelling (like as wind, vertical velocity, temperature profiles and surface heat fluxes).

First analysis show that very high resolution (1.1 km) improves the representation of the valley circulation, increases the intensity and the variability of the vertical velocity, modifies temperature profiles, sometimes enhances thermal inversions.