Calculation and analysis of forecast error covariance for the regional data assimilation in the costal area.

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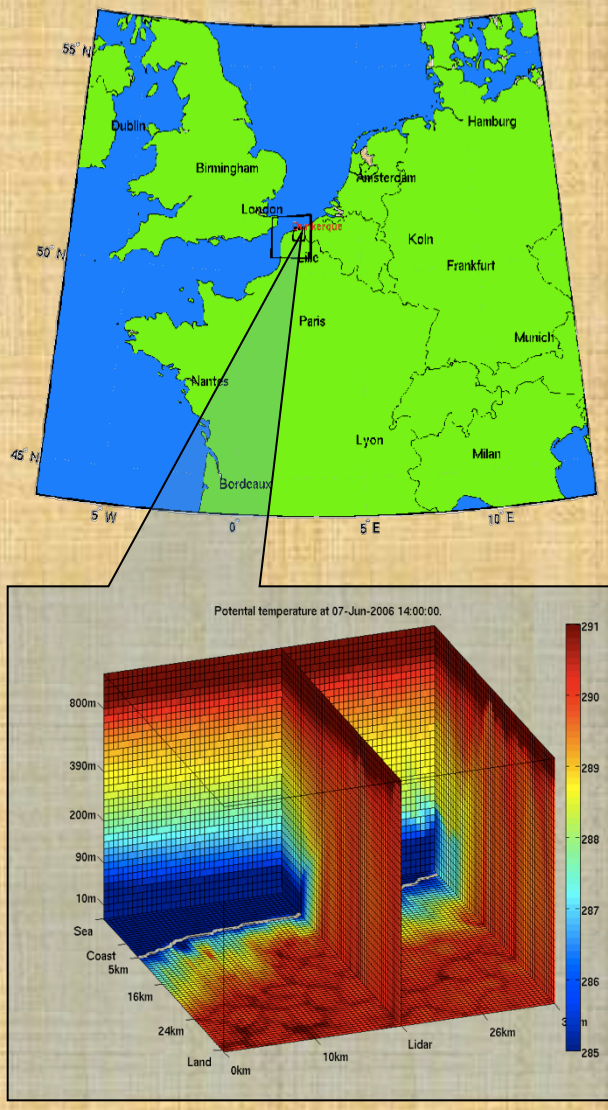
Calculation of ***B***

- MESO-NH model (3 nested models)
- Smallest model 70x70x68, resolution: 500m
- Background covariance matrix ***B***, 10^{14} elements
- Calculation - NMC method
- PCA for ***B*** approximation



Structure of PCs

- Number of PCs - Kaiser's rule
- The calculated PC for the potential temperature and wind components has the following particularities:
  - North–south structures due to sea-land interactions
  - Horizontal layers
  - Fine structures similar to convective patterns (for the high-order PC)

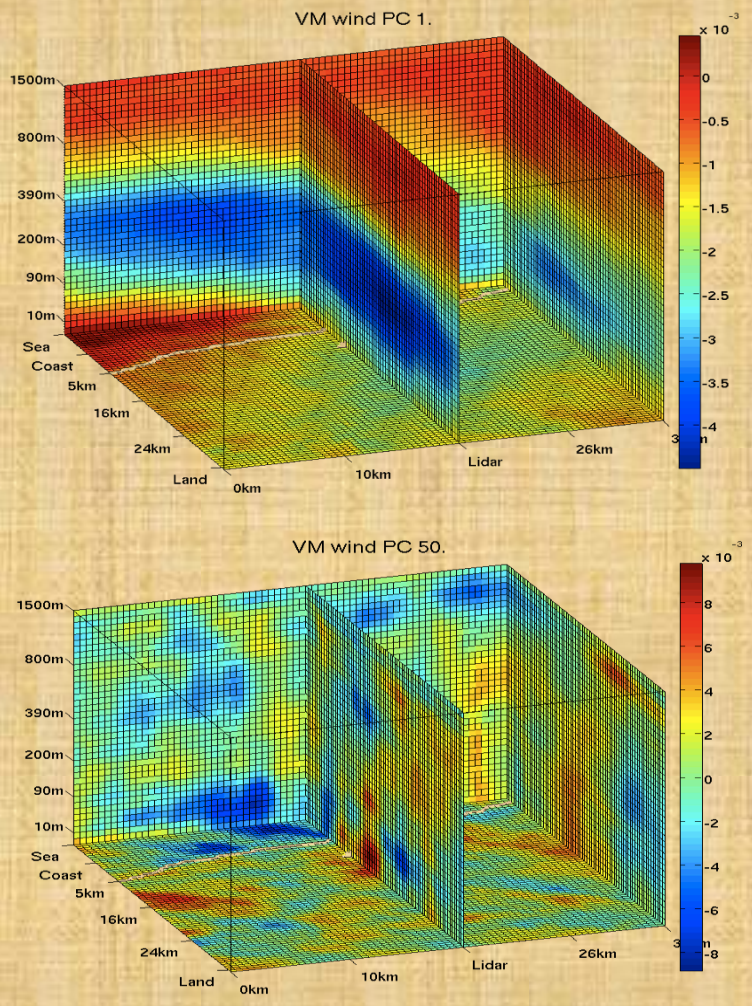


Fig. First and fifth PC for North-South wind component

Conclusions and Perspectives

- The most part of the model error variability lies in ABL
- The PCA allows efficiently approximating ***B*** matrix
- The PC structures correspond to local atmospheric dynamics

- Application of background error covariance matrix ***B*** obtained for better sea breeze description by the data assimilation
- Improvement of ***B*** by implication of additional simulation data