



## **Numerical modelling and parametric study of the atmospheric dispersion after radionuclide releases: the Chernobyl accident and the Algeciras incident. Comparison with observation data**

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The attempts of modelling the release following upon the Chernobyl accident and the Algeciras incident are reported. Computing power and observation database are used for sensitivity and parametric studies. The meteorological mesoscale model MM5 is nudged with the ERA-40 reanalysis to simulate the meteorological conditions used by the dispersion model, POLAIR3D.

In case of the Chernobyl accident the points of interest are many: the representativity of the meteorological simulations is evaluated using observations with a special focus on precipitation events. The radionuclide dispersion, the dry deposition and scavenging simulated by POLAIR3D are compared with European measurements of activities and depositions. Results of the sensitivity studies are done to evaluate the impact of the deposition parameterisations and source-term characteristics (height of release, quantities). The time dynamic of the contaminated cloud is also investigated with regard to the arrival time on different countries.

Similarly, for the Algeciras release, sensitivity to the meteorological fields, source term and depletion processes are analysed. For the available activity concentrations in the air, data-model comparisons are performed.