Meteorological Uncertainty of atmospheric Dispersion model results (MUD): Final Report of the NKS-B MUD activity

The MUD project addresses assessment of uncertainties of atmospheric dispersion model predictions, as well as optimum presentation to decision makers. Previously, it has not been possible to estimate such uncertainties quantitatively, but merely to calculate the 'most likely' dispersion scenario. However, recent developments in numerical weather prediction (NWP) include probabilistic forecasting techniques, which can be utilised also for atmospheric dispersion models.

The ensemble statistical methods developed and applied to NWP models aim at describing the inherent uncertainties of the meteorological model results. These uncertainties stem from e.g. limits in meteorological observations used to initialise meteorological forecast series. By perturbing the initial state of an NWP model run in agreement with the available observational data, an ensemble of meteorological forecasts is produced. In MUD, corresponding ensembles of atmospheric dispersion are computed from which uncertainties of predicted radionuclide concentration and deposition patterns are derived.

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