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T1.3-P12. Sensitivity analysis of a short distance atmospheric dispersion model applied to the Fukushima disaster

Atmospheric dispersion models are used in case of accidental releases of radionuclides to minimize the population exposure and to assess short and long term environmental and sanitary impact. The present study is a sensitivity analysis of the IRSN's short distance Gaussian model pX (part of the C3X operational platform), applied on the Fukushima disaster case. Results are compared with those of a long-range Eulerian model obtained in a previous study. The Morris screening method was first used to roughly estimate the sensitivity of a set of outputs and to rank the inputs by their influences. The input ranking is highly dependent on the considered output. This first step revealed that interactions and non-linearity are much more pronounced with the short range model than with the long range one. The Sobol screening method was then used to obtain more quantitative results on the same set of outputs. Contrary to the long-range results dominated by a few inputs, here the influence is shared more evenly between the inputs. Variables such as the emission height and stability become preponderant at local scale. The sensitivity analysis was carried out with several Gaussian parameterizations, and the different results obtained are discussed.

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