

Use of Lagrangean particle model for air pollution dispersion for radioactive risk assessment in complex terrain

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In this work an experience of using Lagrangean Particle model Spray (in AriaIndustry package from Arianet, Italy) for risk assessment at Krško Nuclear Power Plant in Slovenia will be described. The model calculates dilution coefficients in automatic mode (every half hour) without operator assistance. It is using meteorological data from several automatic stations covering local complex orography. Model results are used by NPP experts for dose projection algorithms in case of an emergency situation. Described application is an example of good practice of automatic use of highly efficient numerical model for routine risk assessment calculations in complex terrain.

The presentation will firstly explain practical programming problems and limitations that have to be solved when planing to use Lagrangean particle model and 3D mass consistent wind field model for automatic batch runs without operator assistance. Than problems that arise from complex orography will be described. A statistical overview of one year of continuous system operation will be given to show possible operating problems.

In the second part of presentation air pollution modeling experiences from one year of operation will be given. Previously a Gaussian model (according to RG 1.145) was used. A detailed analysis of results differences and agreements of both models will be given to show the extents of complex terrain influence. Typical situations will be analyzed using Kohonen self organizing neural network as a non-linear sorting tool. Finally a resume of experiences will be given that prove the need of using advance numerical models in highly complex terrain applications like the one at Krško.