JUNE 2015

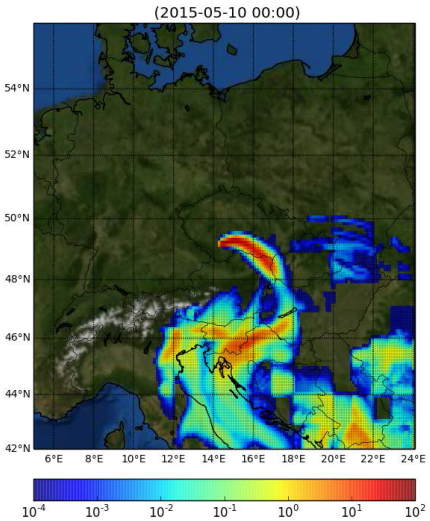
CZ09 Czech-Norwegian Research Programme

7F14287 - STRADI

VÁCLAV ŠMÍDL, Institute of Information Theory and Automation

Source-Term Determination of Radionuclide Releases by Inverse Atmospheric Dispersion Modelling

This project brings together experts in information theory with experts in atmospheric dispersion modelling, to tackle a particularly difficult and highly relevant scientific problem. The overall goal of this project is to develop methods for determining the source term of an accidental release of radionuclides or other hazardous substances into the atmosphere which is suitable for both real-time application (e.g., for emergency preparedness) and assessment of environmental damages. The focus of the project is on determination of activity of an accidental release of rafiadiation from a nuclear power plant using measurements of gamma doses (or combination of gamma doses and concentrations) but the method will be equally useable for other atmospheric point-source releases, and may also lead to improvements in related fields (e.g., determination of greenhouse gas sources).



Simulation of radiation spread in case of Temelin nuclear disaster

In order to achieve this objective, we need to improve the tools used for atmospheric dispersion modelling as well as the statistical tools used for inverse modelling. All partners of this project contributed novel ideas in various aspect of this problem in their previous work. Combination of expertise of NILU in atmospheric modelling with that of UTIA and EPFL in uncertainty modelling and statistical inference allows us to provide even better results. We believe that our results will be useful for a wider class of inverse modelling problems and significantly contribute to the basic results of environmental research. We have established contacts with national and international radiation protection authorities and offer our results for immediate use for their own applications.

PROJECT PARTNER:

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"Participation on the project allows me to be in touch with the latest results of atmospheric modelling and contribute my own ideas and improvements in the field. It is exciting that I can contribute to protection of our environment. "

Radek Hofman, researcher

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