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The Role of Deposition in Atmospheric Transport of Radionuclides

For the project flexRISK, which was devoted to the investigation of risks and hazards from hypothetical severe nuclear power plant accidents in Europe, atmospheric transport has been simulated for noble gases (no dry and wet deposition) and aerosols (with dry and wet deposition). Simulations were done for 2,800 cases distributed over 10 years so that climatological representativity is given. Source locations were 88 nuclear power plant sites in Europe, Armenia, Turkey, and Iran. The simulation domain covers Europe, the Mediterranean with the North African coast, the Near East and parts of the Middle East. By comparing these simulations for selected source locations, detectable thresholds of xenon-133 and barium-140 or caesium-137 can be derived and compared. It shall also be shown which errors are incurred if deposition is neglected for an aerosol-bound species.

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