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Application of RASCAL 4.2 to estimate the Fukushima Accident Source Term

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This paper presents some results obtained using the fast-running code RASCAL-4.2 as applied to the Fukushima Daiichi accident. Using similar NPPs already present in the RASCAL database of US NPPs and introducing appropriate accident event sequences for each Units at Fukushima, it is possible to evaluate the amounts of radioactive material released to the atmosphere. The sequences used for the calculations have been reconstructed from TEPCO data (ventings, explosions etc.) and from accurate best-estimate code simulations (core dewatering times) published by other research groups worldwide. However, to properly represent the real Source Terms we had to advance an hypothesis on the real release pathway, which consists in a direct release from drywells instead of from wetwells. There are indeed several indications that wetwell lines couldn' t work properly. Moreover some numerical hypotheses on the release rates for ventings and explosions have been introduced. The obtained results are comparable with other numerical evaluations available in the open literature.

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