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# Seeking for the rational basis of the Median Model: the optimal combination of multi-model ensemble results

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Abstract. In this paper we present an approach for the statistical analysis of multi-model ensemble results. The models considered here are operational long-range transport and dispersion models, also used for the real-time simulation of pollutant dispersion or the accidental release of radioactive nuclides.

We first introduce the theoretical basis (with its roots sinking into the Bayes theorem) and then apply this approach to the analysis of model results obtained during the ETEX-1 exercise. We recover some interesting results, supporting the heuristic approach called "median model", originally introduced in Galmarini et al. (2004a, b).

This approach also provides a way to systematically reduce (and quantify) model uncertainties, thus supporting the decision-making process and/or regulatory-purpose activities in a very effective manner.

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