

Interactive comment on “Global risk of radioactive fallout after nuclear reactor accidents” by J. Lelieveld et al.

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We thank referee#1 for the encouraging review and the annotations to our manuscript. We have included nearly all of them. However, we are not allowed to include the copyright protected image in Nature to compare with figure 1. Thus we prefer to make use of the parts of the underlying data that are available to us and remake the figure, maintaining the same color scale as our simulated results to enable the comparison; we have also included a link to the Nature website that directly shows the image to facilitate the comparison: <http://www.nature.com/nature/journal/v440/n7087/full/440982a.html>

Comment on p. 31211, l.9/10: we agree that it is unsatisfactory that emission data are often not officially published, but this is unfortunately the situation. Indeed, for Chernobyl there is much information available and we have included several references. For
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Fukushima several preliminary publications are available, and it may be expected that more will follow.

Comment on p. 31211, l.18: By integrating the model calculated deposition over a year we capture the total deposition of ^{137}Cs . For our risk assessment it is not directly relevant that in reality the deposition occurs over a much shorter period, since we are not considering individual events, rather accumulated exposure risks over longer time periods. The total deposition per year is not dependent on the duration of the emission period, but rather on the meteorological conditions. By taking a year we capture all possible meteorological conditions, which is important as major accidents could occur during any season and under any type of meteorological situation. Ref#2 also mentioned this point and in the revised manuscript we explain this more clearly: “The duration of the emission period is not decisive for these calculations since the total deposition onto the ground is the appropriate parameter for our risk assessment, and by integrating over a year we capture the annual range of meteorological conditions, thus providing a statistical representation of the atmospheric transport and deposition pathways over the different seasons. In reality the total deposition may occur over a much shorter time period, as was the case with the Chernobyl accident. However, for our calculations the total deposition within one year is relevant, rather than the actual time period of any individual accident (below we assess the contamination risk per year).”

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 31207, 2011.