

Interactive comment on “Strategies and effectiveness of land decontamination in the region affected by radioactive fallout from the Fukushima nuclear accident: A review” by Olivier Evrard et al.

Anonymous Referee #1

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SOIL-2019-43 Strategies and effectiveness of land decontamination in the region affected by radioactive fallout from the Fukushima nuclear accident: A review

This review describes the effects of the Fukushima Dai-ichi Nuclear Power Plant (FD-NPP) accident in March 2011. This review describes the spatial extent of the decontaminated zone and the remediation strategies in different environments (including schedule and costs). The issues of the impacts of remediation activities on dosimetry and large volume of waste generated are also discussed. They conclude that the strategy of removing the surface layer of the soil concentrating ^{137}Cs was effective

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in cultivated land at a catchment scale avoiding its transformation into source of contamination. Discussion and conclusion they are extremely interesting and provocative. This manuscript adheres to the journal's standards. The research meets the applicable standards for the research integrity. The research output, in terms of novelty, scores good uniqueness. The level of clarity is well above the threshold of acceptability. Potentially, its potential impact upon the international scientific community of reference is good. The article is presented in an intelligible manner. This work is interesting and deserves to be published.

Title: 20 words. It can be shortened Abstract: OK. Keywords: REVISE. The keywords, together with title and abstract function in a system comparable to a chain reaction. Once the keywords have assisted the Reader find the suitable paper and its title has fruitfully drawn in the attention, it is up to the abstract to further activate the interest and keep their curiosity. So, these three elements must work together and not replicate each other. Introduction: OK Conclusion: OK. If confirmed. Figures: REVISE. Figure 1 unnecessary (in case, move to Supplementary Material), I would suggest to shift Figure 6 here. Figure 2 is quite useless (please, add geographical coordinates). This figure is rather unnecessary, a kmz file would be more useful. References: REVISE.

In particular (page.row): 2.63 This section, including Figure 1, it is purely of a methodological nature, being a review, and, in my opinion, it takes away the bite from the paper. 2.72 Also in my opinion, a review is the right interface where 'grey literature' becomes scientific literature, *sensu stricto*. Precisely, it must be the responsibility of the authors to insert unpublished and reliable information. The fact that a job has been peer-reviewed, *per se*, is not a guarantee of total reliability. As, on the other hand, official documents (published in languages other than English, as mostly in Japanese in this case) are certainly not unreliable. My advice is to insert that grey literature useful to enrich the review of data and interpretations. Converting Table 1 into individual references. 3.96 I would begin by telling, briefly, what happened. Mentioning, for instance, the International Nuclear and Radiological Event

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Scale (INES) introduced by the International Atomic Energy Agency. And, discussing, comparatively (e.g. Ivanov et al. 1997, Rosén et al. 1999. And the, already quoted, doi>10.1016/j.scitotenv.2013.10.029), the two Level 7 INES Major accidents. 3.113 I would mention that the sievert is a derived unit of ionizing radiation dose in the International System of Units and is a measure of the human health effect of ionizing radiation 4.144 what interchanged means, exactly? 4.163 A term of comparison would help the Reader. For instance, the whole EU budget was at some €37 billion in 2017. 5.192 Please, discuss this issue comparatively (e.g. doi> 10.1021/es980788+) 6.258 Please, discuss this issue comparatively (e.g. Santschl et al. 1990) 12.505 This section deserve more room and comparative discussion (e.g. Rosén et al. 1999)

References Ivanov YA et al. 1997. Migration of ¹³⁷Cs and ⁹⁰Sr from Chernobyl fallout in Ukrainian, Belarussian and Russian soils. *J. Environ. Radioactivity* 35, 1-21 Rosén K et al. 1999. Migration of radiocaesium in Swedish soil profiles after the Chernobyl accident, 1987-1995. *J. Environ. Radioactivity* 46, 45-66 Santschl PH et al. 1990. The self-cleaning capacity of surface waters after radioactive fallout evidence from European waters after Chernobyl, 1986-1988. *Environ. Sci. Techn.* 24, 519-527

The manuscript represent a substantial contribution to scientific progress within the scope of SOIL (interdisciplinary, mainly). The results are discussed in a thorough and balanced way (consideration of related and relevant work, including appropriate references need some reworking). Scientific results and conclusions are presented in a clear, concise, and quite well-structured way.

Recommendation: Major revision is required

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