

Interactive comment on “Spatial radionuclide deposition data from the 60 km area around the Chernobyl nuclear power plant: results from a sampling survey in 1987” by Valery Kashparov et al.

Anonymous Referee #3

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General Comments

The reviewed manuscript presents the results of radionuclide activity surveys conducted on surficial soils in April and May of 1987 within a 60 km radius of the Chernobyl nuclear power plant, which experienced a catastrophic release of fuel and fission products beginning on April 26, 1986. The stated goal of the authors is to provide the resultant dataset and methodological details specifically to inform dose reconstructions oriented toward human and wildlife impact evaluations and management. Overall the manuscript is well structured and written. The authors presented a detailed overview of

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the accident and radionuclide emission timeline, including sufficient information to orient the reader on the fuel emission and remediation, meteorological and depositional processes that contributed to the resultant spatio-temporal pattern of fuel/fission product fallout in the study area. Methodological details were clear, but too brief (a moderate issue), and the connectivity between the dataset and the target applications were well articulated. The data access portal is easy to use, and the dataset and attendant metadata are well organized, but spatial data reporting was insufficient (a moderate issue). Figures were used effectively throughout the manuscript, but in some cases were difficult to read (a minor issue). For these reasons (detailed below) I recommend publication after major revisions.

Specific Comments

The following moderate to minor issues should be addressed in the revised manuscript:

1. Methodological details were insufficient to fully evaluate the gamma spectrometry analyses used to estimate radionuclide activities (moderate revisions). The authors only reported on gamma spectrometer device and sample geometry, however further details on instrument calibration and spectral analysis procedures are necessary to evaluate the approach used to estimate activities and measurement error.
2. Methodological details were insufficient to fully evaluate the accuracy of the sample site locations, and sample site locations were reported in a manner that does not readily support spatial applications of the fallout radionuclide dataset (moderate revisions). The authors used a local, radial coordinate system centered on the Chernobyl plant with 10 degrees spacing between radians and a fixed spacing scheme along radians. Sample location were chosen by superimposing this scheme on 'maps and [the] local landscape,' and reported using only the study's local polar coordinate system. The precision of sample locations generated in this manner is likely quite low. Furthermore, without any additional information, dataset users that convert these local coordinates to values in a geographic coordinate system will each introduce further error. I suggest

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that the authors report their study locations using a specified geographic coordinate system, and detail the manner in which this conversion was produced, including an estimate of location error.

Technical Corrections

Many of the figures are difficult to read and/or have minor structural issues. Please do not include any text that is unreadable because of size/resolution issues. If text is necessary, then it must be large enough to read (e.g. Figure 1 lat/long, scale, legend labels, etc.). Also, a small panel illustrating the study location in the broader geographic region would be helpful in Figure 1. In Figure 5 please label each axis in the same fashion.

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2019-174>, 2020.