

Review ESSD-2019-156, atmospheric radioactivity dose rates over the North Pacific

Data download easily and cleanly from Zenodo link. Colletion of g01 to g14 folders each holding multiple .csv files. I believe one could find and re-assemble data to reproduce, e.g., one of the panels of Figure 14, but that effort would require significant time and work on the part of users. More seriously, as itemized below, this reviewer can not verify nor trust the author's descriptions in the text. I urge editors to reject and authors to revise and perhaps resubmit.

Specific comments:

P2L4: FNPP disaster happened 11 March 2011, not 11 April 2011?

P4L49: Again, this date seems wrong? FNPP disaster happened 11 March 2011, not 11 April 2011?

P5L62: "are openly and openly available"? You mean 'freely and openly available' or simply 'openly available'?

P5L63,64: "data will aid the validation of atmospheric models for modeling atmospheric 64 dispersions of radioactive materials from the nuclear power plant". Confusing and redundant. I think you mean 'data will assist evaluation and validation of models of atmospheric dispersions of radioactive materials from the nuclear power plant'?

P5L81: These dates imply that monitoring started very soon after the earthquake, tsunami and disruption at FNPP1? E.g. 11 March 2011 or very soon thereafter. Thus earlier dates of earthquake occurring on 11 April 2011 cannot be correct? Table 1 confirms start dates of 03/2011.

P6L85-89: Give us the manufacturer's specs for these sensors! Accuracy? Precision? Normal operating temperatures? Software version if any?

P6L102: What does the parenthetical phrase "(1 July 1996)" indicate here? The dates of the most recent confirmation of ¹³⁷Cs concentrations/activities? This date occurs in neither Figure 1 nor Table 2? Please clarify?

P7L110: "are consistently within 90designated dose rates". What does this mean. Can the authors provide a standard uncertainty, e.g. \pm sd or \pm 95%, or percentiles as used in the Figures?

P7L113: "(within 5(packages G03, G05, G06, and G07))."? Something missing here? From Figure 1, data from sensor G09, also a G10 sensor, look as good as data from G03, G05, G06, and G07?

P7L127: "taken at three locations". The G01 sensor moved small distances between port locations with time? Each time? Figure nor Table give the reader any information about how the authors sampled these three locations. Later, we learn 00UT and 06UT each day, but, again, sensor moved among three locations or locations changed with time? If the former, authors should have good error/uncertainty statistics. If the latter, readers needs to know exactly when the locations changed? Given data files and Figures 4, 5 and 6, it appears that all three locations were sampled each day. Authors need to clarify!

P8L141: "50 cm and 10 cm above the ground at the attic". 50 cm and 10 cm not very high. Confusion here? These measurements taken each day? G01 data folder shows three files: a4, outdoor and vessel. A4 = Gate? Outdoor = ATTIC? Vessel = over the water at the port? Only _outdoor file shows obs related to height above ground? No height-related differences?

P8L149 and following: I can not find or confirm these data. First, the authors mean the highest individual data (from twice daily measurements), not the "highest monthly radioactive dose". Second, in the _outdoor data file, I find maximum values of 0.50 and 0.49 microSv/h. Nothing to show how the authors got 0.40 or 0.45. I find no values of 0.45 in that entire table?

We get no information of how the authors processed or filtered these data. Did they average all directional measurements, e.g. N, E, W, S, together? Did they add UP and DOWN measurements, to take an average of 6 separate data points? Did they give preference to 50 cm vs 10 cm? Did they even analyze 50 cm vs 10 cm or UP vs DOWN? All the data files hold this basic structure (time, N, E, W, S, UP, DOWN), with additional lat lon data from the ships, but reader gets no idea about averaging, filtering, etc.

P8L151 and following: "0.18 Sv/h in March 2012" I can not find nor reproduce that value. I calculate an average of 0.12 for March 2012 with a max of 0.14 (22 data points). What gives? "0.15 Sv/h in March 2013"? I can not find nor reproduce that value (I calculate average 0.10, max 0.12, for 20 data points), nor any of the following values listed in this paragraph.

Figure 4: vertical blue lines indicate years after FNPP accident?

Figure 5 (and many other figures): The dose meter data in all these figures shows discrete rather than continuous values. One might suspect bit noise but we get no information about data resolution. We do see the impact of the start-to-end calibration because these discrete values clearly decline in magnitude over time while still retaining their discrete distributions?

At this point I gave up. Until the text matches data, or data matches the text, or the authors give better clearer instructions to reviewers and potential users, I see no point in proceeding.

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