

Interactive comment on “Rainfall erosivity in subtropical catchments and implications for erosion and particle-bound contaminant transfer: a case-study of the Fukushima region” by J. P. Laceby et al.

C. Karydas (Referee)

xkarydas@auth.gr

Received and published: 25 August 2015

Dear authors. Your work seems very interesting and I encourage you to continue it. But I regret to say that in the current version, I find it lacking appropriate methodological strategy in order to fulfil its objectives. More specifically, I can detect the following important drawbacks:

1. As you state in the Introduction, "the goal of this research was to improve understanding of soil and radiocesium transfers...". However, selection of USLE as the main

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



methodology is problematic, considering that USLE is only appropriate for assessing soil loss and not transfer of soil (sediments) and moreover their concentration in surface waters. Therefore, the objective of the paper cannot be served by the main methodology applied. [7229/28-29]

2. Moreover, you are missing to justify the use of USLE for local to regional mapping (as the current), as USLE was originally developed for hillslope soil loss assessments -here, proper references are missing. [7229/22-24]

3. You state that "...characterizing the rainfall regime of the fallout impacted region is fundamental to modelling and predicting radiocesium migration". Even if USLE was considered proper for this work, rainfall is not the only erosion factor in USLE (or any other model). Equal important parameters (USLE is a multiplicative equation) are soil type, slope, vegetation coverage and management, and conservation measures. Taking only rainfall, it is assumed (?) that topography, physiography, and management of the entire study area is absolutely homogeneous (!) [7227/8-9]

4. From your statement "...it is important to combine rainfall erosivity layers with a cover factor that seasonally depicts soil erodibility based on land cover..." it seems that your team may not be quite familiar with erosion research (confusion in terminology like between 'soil erodibility', which is the inherent vulnerability of the specific soil type to erosion, and the 'management cover factor', which is the natural or human-induced coverage of the soil and thus protection by rain) [7229/21-22]

I would propose to use a different erosion model, which would take into account soil loss and sediment yield together and -moreover- risk of pollutant dispersion in an integrated approach. To my knowledge, an appropriate and modern spatial model for local to regional assessments of diffused pollution is G2 (module G2met), recently developed and published on <http://www.mdpi.com/2073-4441/7/8/4323>. G2 provides month-time step assessments, which you very correctly addressed as a necessity.

All the best.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 7225, 2015.

HESSD

12, C3296–C3298, 2015

Interactive
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

C3298

