General comments

The manuscript is based on the results of assessing the erosion/deposition rates using FRN as markers. The following questions arise when reading the manuscript:

1/ Based on Figure 4, we can conclude that the variability of 137Cs on a forested slope is higher than on vineyards. This clearly indicates that the Chernobyl fallout was extremely uneven in the area. It is obvious, that the initial 137Cs spatial variability of Chernobyl fallout too high for using the 137Cs technique for evaluating the soil losses based only on one reference location. It is necessary to evaluate 137Cs initial inventory minimum at three reference locations for the evaluation of the trend of initial fallout (See: Handbook for the Assessment of Soil Erosion and Sedimentation Using Environmental Radionuclides, F.Zapata for details). So authors aren't able to confirm the correctness of their evaluation of soil losses, based on Chernobyl-derived 137Cs because they have only one reference location on the distance of about 1 km from the studied site.

2/ On the other hand, if the mean 210Pb inventories values are approximately the same for the forested slope and vineyard (see bottom of page 9: 210Pbex inventories at 4068.3±2345.8 and 3990.1±2892.2 Bq m-2, respectively for forested and vineyard hillslopes) , then it is completely incomprehensible how such a large difference in net erosion rates (calculated based on 210Pbex) between the forested area and the vineyards was received (see Table 2). It is quite obvious that this is a very gross error in the calculations.

3/ The local spatial variation of the 137Cs fallout, as well as the other radionuclides, is >20% on the reference location. Isn't recommended to use FRD for evaluation of soil loss/gain in areas where initial fallout variability > 20% due to very high uncertainty of the results (see papers written by D. Walling and the other experts in the application of FNR for the evaluation of soil redistribution rates).

4/ Authors indicate that …The soil redistribution rates were, therefore, estimated using the Diffusion and Migration Model 185 (DMM) (Walling et al., 2002, 2014) in forested hillslope, Mass Balance Model II (MBM II) (Walling et al., 2002, 2014) in cultivated hillslope, and Modelling Deposition and Erosion rates with RadioNuclides (MODERN; Arata et al., 2016a, 2016b) – It is necessary to present the equations for all conversion models and to explain how you determine the parameters for each model.

5/ In addition application FRN for evaluation soil erosion rates in the forest isn't possible at all due to the influence of the crown of trees on the initial spatial variability.

Specific comments

1/ Are you sure that sampling only 40 cm layer is enough for determination of FRN total inventory in deposition location? How you can confirm that?

2/ In the Supplementary Material, the 137Cs depth distribution in the lake is presented. But it is completely incomprehensible how it was obtained?

3/ Figure 5 – how do you construct both maps with so high spatial resolution? Why was the total precipitation in April and May used to construct these maps? The accident at the Chernobyl nuclear power plant occurred on April 26 and the bulk of the Chernobyl fallout was observed until May 15 and was associated with the fallout of only one rain at a distance from Chernobyl.

4/ In the references, there are practically no papers on the use of 137 for assessing the erosion/sedimentation rates, prepared on the basis of research in the Chernobyl-affected areas (the UK, Poland, Belarus, Russia, Ukraine, Scandinavia, the Baltic States)

5/ It is not specified anywhere in the ms when the forest was cut down and vineyards were planted on the studied site.

Technical corrections:

1/ Introduction … than five times, increasing from 2.6 million ha (Wilber, 1948) to 18.5 million ha – should be more than seven times