General comments

This paper presents a study of suspended sediment concentrations and yields from five small agricultural catchments across Ireland, using calibrated turbidity measurements as a proxy for suspended sediment concentration. The aims of the paper are twofold: first to compare results from two installation approaches employing channel in-situ and ex-situ turbidity sensors in two of the catchments; and second, to investigate how sediment yields vary across all five catchments that exhibit different soil types and drainage conditions. The title of the paper, arguably, does not fully capture the article content, although the consideration of selected controls on soil loss is the main thrust of the paper.

The project design is robust and the results make an important contribution to empirical research on fine sediment fluxes/yields from Irish catchments, which has received little attention to-date. The arguments and interpretation are coherent, but need some clarification, and there are some minor edits to the text. These issues are highlighted below, under the respective specific and technical comments sections.

Specific comments

P. 2710 Line 20: the inference that alluvium is poorly-drained is too general – sandy alluvium can be very well drained.

P. 2712-2713: in the description of the study locations the authors do not refer to the Quaternary sub-soils in the catchments. Could the authors comment on the role of Quaternary sediments in terms of soil development, catchment hydrology and erodibility.

P. 2718 para 2: did the authors assess how effectively the suspended sediments were mixed in the ex-situ tank and was there any settling of sediment that could account for the lower SSCs recorded by the $ISCO_{out}$ set-up?

P. 2720: the authors refer to low runoff length - can this be quantified? Was there any evidence of the sediment trapping at hedgerows and in the vegetated ditches that the authors refer to?

P. 2722-2723: could the authors comment on the importance of scale in this study and the general attributes of the study catchments as representative of the Irish landscape. The inference that low SDRs are indicative of the Irish landscape's resilience to erosion is misleading, because SDR is a function of connectivity rather than the degree of field-scale soil erosion.

P. 2723: to follow on from the comment above, the authors infer that the Irish landscape may 'improve the resilience of agricultural soils to soil loss'. This statement appears to be predicated on the low SSYs from the study catchments compared to the larger regional dataset shown in Fig. 4. Could the authors comment on the catchment characteristics from this larger dateset and whether the small catchments, in particular, represent comparable low-lying catchments and soil types. In other words, how are these catchments 'equivalent' as stated on p.2724, line 9? For example, the 26 small cultivated catchments in the Verstraeten and Poesen (2001) study were located in Belgium on the European loess belt which has highly erodible soils.

P. 2724 Lines 1-3: the authors conclude that there was little difference between the in-situ and ex-situ set-ups, in terms of the total sediment loads and patterns observed. Could we conclude from this finding that there is no need to go to the trouble of employing an ex-situ installation approach? Furthermore, could the authors clarify what additional infrastructure (e.g. power supply) was needed for the ex-situ method and give some indication of the comparative costs involved for the two approaches. This information would be useful for researchers looking to replicate the methodologies employed in this study.

P. 2724 line 19: the statement 'complexity of the landscape' is a little vague and needs some explanation in the Conclusion.

Technical comments

Abstract

P. 2708 Line 11: Change sentence structure to remove semi-colon and clauses.

Suggested new sentence:

The in-situ and ex-situ installations gave comparable results when calibrated against storm-period, depth-integrated SS data, with total loads at Grassland B estimated at 12828 t and 15435 t, and 22554 t and 24852 t at Arable B, respectively.

P. 2708 Line 19: Replace (FFD) with **(78/659/EEC)**.

Introduction

The introduction is well-written, but is quite long and narrows to a consideration of the installation set-up rather than the controls on SSC. Suggest shortening overall, and aligning the structure of the Introduction to match the paper title and abstract.

P. 2709 Lines 19-26: this is a long sentence and does not require semi-colons. The terms 'greater' and 'better' suggest a comparison to some condition/state which does not appear to be the case.

Suggested new sentence:

A comprehensive evaluation of the extent of erosion and elevated sediment supply, therefore, requires a robust determination of sediment flux (Navratil et al., 2011), knowledge of the sources and fate of fine sediments within the system (Walling, 2005), and an appreciation of the risks that elevated concentrations present to aquatic ecosystems (Bilotta and Brazier, 2008).

p. 2709 Line 26: Change to '**integrated land, water and sediment**…..

p. 2710 Line 5: add a comma after 'preparation'.

p. 2710 Line 8: replace 'increasingly acknowledged' with '**important**'**.**

p. 2710 Line 15: slope length, steepness and shape are natural features and therefore refer to '**physiography**' not 'topography'.

P. 2710 Line 17: replace 'such that' with '**whereby**'.

P. 2710 Line 22: replace ‘is also suggested to’ with ‘**can also**’**.**

P. 2710 Line 28: restructure sentence along the lines of the following:

Firstly, robust flow and sediment concentration data capable of accurately describing short-term fluxes (Navratil et al., 2011).

P. 2711 Line 4: replace ‘recurrence interval’ with ‘**frequency**’.

P. 2711 Line 8-11: this sentence is cumbersome and lacks clarity - suggest rewrite.

P. 2711 Line 17-18: put citations in correct chronological order.

P. 2711 Line 21: should be ‘**Nitrates**’.

P. 2712: Study Location possibly warrants a separate section, with section numbers amended thereafter.

Materials and methods

Clearly written and presented – specific comments highlighted above.

Results and discussion

P. 2717 Line 8: change ‘Jansson et al.,’ to ‘**Jansson**’.

P. 2718 Lines 3 and 4: rewrite to remove phrase ‘suggested to’ in both cases.

P. 2719 Line 2: replace ‘however’ with ‘**although’** and remove semi-colon.

P. 2719 Line 28: are the authors referring to the FFD threshold? – in which case there is only one metric (25 mg L^{-1}).

P. 2720 Line 2: this sentence needs to be more precise. The authors are referring to the FFD 25 mg L^{-1} threshold. There are not multiple thresholds.

P. 2720 Line 11-14: use of parentheses is inconsistent in this sentence.

P. 2720 Line 25: add ‘**at**’ before ‘Grassland B’ and remove semi-colon.

P. 2720 Line 26: add ‘**in**’ before ‘2012’.

P. 2721 Line 1: replace semi-colon punctuation with ‘**, and**’.

P. 2721 Line 6: add ‘**e.g.**’ before ‘Deasy’ citation.

P. 2721 Lines 19 and 20: citations should be in parentheses.

P. 2721 Line 24: replace ‘however’ with ‘**nevertheless**’.

P. 2722 Lines 8-10: this sentence is cumbersome and lacks clarity - suggest rewrite.

P. 2722 Line 15: the phase ‘seasonality of risk’ although used in the literature does not read well in this sentence - suggest edit.

P. 2723 Line 4: replace ‘from’ with ‘**with**’.

P. 2723 Line 8: replace ‘will be’ with ‘**is**’.

Conclusion

The conclusions are quite detailed and are presented as bullet points, which does not appear to be consistent with the HESSD layout in other submissions.

P. 2723 Line 21: this should probably be ‘key findings **are**:’

P. 2724 Line 6: remove ‘**seasonality**’ from sentence, which is not necessary here.

P. 2724 Line 14: remove ‘**coincident**’ from sentence, which is not necessary here.

P. 2724 Line 16: ‘sediment loss risk’ is a cumbersome phrase, amend.

P. 2724 from Line 26: this sentence is wordy and lacks clarity, rewrite.

References

References have been checked with minor comments below.

P. 2725 Line 24: the title of the Brils (2008) article is incorrect, amend to ‘…**the European Water Framework Directive**…’

P. 2727 Line 23: ‘Geomorphology’ should be ‘**Geomorph.**’

P. 2730 Line 16: does TResearch refer to Teagasc Research? This may not be clear to non-Irish readers.

Tables

Table 1: this table could indicate which 3 decades the mean rainfall comes from.

Figures

Figure 1: the font size used on the location map and scale bar is too small.

Figure 1: the elevation scale is arbitrary and the gradient lacks clarity. Suggest amending to 0-250 m and clearly annotating elevation gradient scale.

Figure 2: increase the axes labels’ font size.

Figure 3: the Arable A curve is not very clear on the graphs. The line width could be increased to improve clarity.

Figure 4: the mainland Atlantic Europe symbols obscure the UK and Ireland datasets. These could be open triangles and the Ireland data should be brought forward.

Figure 4: the inter-annual ranges referred to on p. 2722 could be shown on this figure as minima and maxima for the Ireland data.