

## ***Interactive comment on “Continuous in-situ monitoring of nitrate concentration in soils – a key for groundwater protection from nitrate pollution” by Elad Yeshno et al.***

### **Anonymous Referee #2**

Received and published: 15 July 2019

Dear editor I appreciate the opportunity to review the manuscript entitled: ‘Continuous in-situ monitoring of nitrate concentration in soils– a key for groundwater protection from nitrate pollution’. The authors present a new monitoring concept which is based on the application of UV absorption techniques to continuously observe nitrate concentrations in soil under various types of agriculture cultivation. This method is unique and might change our ability to trace nitrate in soils. Therefore, I recommend publishing this manuscript. Before publication of the manuscript, I suggest to re-organize the text (see specific comments below). The authors have the tendency to elaborate methods and techniques at irrelevant sections. Please, try to be more concise, it would help the reader to follow the manuscript.

Specific comments:

Line 1: Why limit the presented method to groundwater protection? Also agriculture management could benefit from knowing the amount of leached nitrate. I suggest the following title: 'Real time monitoring of nitrate in soils'

Lines 11-12: 'Rising nitrate. . .' – delete this sentence, you already mentioned the problems arising from overuse of nitrate.

Line 12: I suggest 'The development of ...'

Line 22: delete 'the' and add 's' to soils

Lines 22 – 26: 'The system ...' delete. The abstract should be concise.

Lines 28-34: I suggest to include two main challenges with nitrate fertilizer application. The first problem, as was mentioned in the referred lines, is the water resources pollution by nitrate. Note that the references related only to groundwater resources. You should indicate that there are other water resources, such as rivers, which are affected by nitrate. The other issue is agriculture management. For example, the method can help the farmer to time the nitrate fertilization application. You should indicate the challenges that agriculture management is facing with regards to nitrate application, just mention it concisely in a couple of lines. Delete the sentence regarding the Israeli problem, 'In Israel. . .'. You want to generalize your contribution.

Lines 43-46: I suggest moving these lines to the first paragraph.

Lines 48-51: I don't see the contribution of these lines to the introduction. You already mentioned the disadvantages in lack of real time monitoring of nitrate. I suggest deleting these lines.

Line 52: Today – delete

Lines 54-59: 'However, . . . solution' – I suggest deleting these lines. 'these methods are designed for water samples. . .' move to last paragraph, because the current manuscript

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describes the next step or evolution of these methods.

Lines 65-67: delete. Put the references in line 65 after the words ‘...decades’.

Lines 67-98: I would move these lines to the method section. Here you talk about the challenges of applying the system at different environments. Or maybe make one paragraph, to explore the different implementations of the UV method.

Lines 178-194 – these are method descriptions. Please move these lines to the method section.

Line 196: ‘...between the two’ – which two, there are three wavelengths.

Lines 226-228: this sentence is a bit vague. Do you want to say that the results indicate that different soil types should have different calibrations curves. Or in short, the soil texture might affect nitrate concentration readings using the UV method?

Lines 230-236: These lines contain a mix of discussion and information, which makes it hard to follow. You can start this paragraph from ‘The absorption spectrum ...’ and delete the preceding lines.

Line 242: ‘it could be concluded’ - the conclusions section is at the end of the manuscript. Please rephrase the sentence.

Lines 320-325: move these lines to the method section.

Lines 339-342: ‘As ... equations’ delete these lines.

Lines 342-345: these lines should be in methods section.

Lines 346-348: delete these lines. You mentioned the sampling dates earlier and if not do so.

Lines 348-349: the sentence is vague, Do you mean that the August 2015 was used as a reference curve?

Line 351: you use the word ‘accordingly’ far too many times. Delete ‘Accordingly’, and

write 'It suggests...'

Lines 354: 'be concluded' - the conclusions section is at the end of the manuscript.  
Please rephrase the sentence.

Lines 359-371: move to methods section.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-198>, 2019.

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