Hydrology and
Earth System
Sciences
Discussions

Interactive comment on "A Bayesian Approach to Infer Nitrogen Loading Rates from Crop and Landuse Types Surrounding Private Wells in the Central Valley, California" *by* Katherine M. Ransom et al.

Anonymous Referee #2

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Review comments to hess-2017-39: A Bayesian approach to infer nitrogen loading rates from crop and landuse types surrounding private wells in the Central Valley, California by Katherine M. Ransom et al.

This paper presents a Bayesian regression model that provides a statistical methodology to relate nitrate measurements in wells to the various types of surrounding landuses as a means to obtain a statistical distribution of nitrate loading rates. The study is focused in the Central Valley, California, USA, an intensively farmed region with high agricultural crop diversity.

This method is especially useful absent specific information of individual farm agricultural management practices, specific groundwater quality, or local hydrogeology in the vicinity of a well. The tool can be used to define high nitrogen loading (high risk) zones. Authors have done interesting work. This paper has a good potential to be published in the journal. However, there are some significant issues, listed below, which need to be addressed before it is ready for publication. 1. Abstract section: Please rewrite this section, and focus more in what you have done including the study results in the manuscript.

2. Introduction section: Introduce more on Bayesian statistical models and why authors developed such types of models.

3. Combining the Results section and Discussion section. When each picture is shown, we would like to see the description for the picture and why this phenomenon happens. So it is better to combine the Results and Discussion sections.

4. In page 3, line 17-18: Spring 2011 depth to groundwater ranged from 10 feet below ground surface (bgs) in the northern section of the CV to 670 feet (bgs) in the southern portion of the CV (DWR, 2011).

5. In page 5, line 15-16: Insert "it" between "because" and "is".

6. In page 6, line 29: Delete blank space before the "where".

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2017-39, 2017.