

Interactive comment on “Earthquakes and depleted gas reservoirs: which comes first?” by M. Mucciarelli et al.

Anonymous Referee #2

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GENERAL COMMENTS: This paper is a novel and interesting one in terms of linking the impact of active faulting and earthquakes on hydrocarbon reservoirs. For this alone, I would like to see this (eventually) published. However, the statistical methodology in terms of discussion and ability to apply, are not well done, nor robust, along with multiple other smaller items which take this from an ‘international’ level paper to more ‘local’ in its writing. I hope that the authors can bring on board (or do themselves) a much stronger and robust statistical discussion and methodology so that as a reader, we become more convinced as to the potentially interesting results. The other major item is that the conclusions at this point do not match up or are justified by the data/methodology/results, and instead are much more conjectures, so the importance of them should be decreased (with words).

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SPECIFIC COMMENTS, NOT IN ORDER OF IMPORTANCE.

ABSTRACT: Please put more quantitative information on the results in the abstract, so it reads less qualitatively.

REFERENCING IN THE TEXT. Although referencing is not poor, in a number of places lacking references when information/facts are included, or talking about other studies. Please go through entire text and ensure references are put where appropriate. Examples include (but are not limited to) first sentence, and places with phrases like “The May 2012 earthquakes occurred in a relatively small portion. . .” “The Po Plain is punctuated by a number of gas fields as well as a few oil-and-gas fields, all of which have been systematically and heavily exploited from the 50s’ onwards.” “a NE-verging stack of faults and folds overlain by a Plio-Quaternary succession several kilometres thick that is mostly represented by syn-tectonic sedimentary wedges”, none of which have references. Again, these are just some of a number of examples, and detract the publication from being at an international level when sources of information not included.

INTERNATIONAL AUDIENCE. Write for an international audience, so, for example “Po Plain (Country)” first time introduced.

1. INTRODUCTION

PO PLAIN. When you first bring in the Po Plain, introduce a figure so the reader knows where you are discussing.

INTRODUCTION. This needs to tell us better what the paper is about, and towards the end, how the paper is organized.

2. DATA

FIGURE 1. Scale somewhat confusing. Is the 10 km for the entire bar, or for half the bar. Please use accepted international methods for doing a scale.

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FIGURE 1. Caption. Although the figure itself looks very nice, the caption is not at all clear in terms of colours and boxes and lines. You start off with “orange and yellow boxes. . .” and “yellow line”. I see large orange rectangles (note word, rectangle vs. box) and do NOT see yellow rectangles or yellow line. Perhaps these are the orange rectangles and lines ‘inside’ the darker orange rectangles? Then, there are two different lines, one inside the rectangular box and one outside parallel to it. Then later you talk about the boxes (I assume the small ones) of yellow, black, cyan. If the small boxes, state this, otherwise we see “yellow boxes” referring to two different items. I suggest ADDING A LEGEND to the map, as it is a complex one, not easy to figure out without reading carefully the caption and text, and even then, still confusing. It is a very key figure.

FIGURE 1. Why are some of the small black boxes bigger than others? Could a ‘cleaner’ black box be used?

TABLE 1. Please avoid using acronyms in table headers—define them.

CATEGORY C. The ambiguous category is a bit unclear to me.

CATEGORIES. When you first tell us about the three categories, tell us how many are in each.

UNCERTAINTIES IN DATA. Please discuss a bit in the data section a bit more the (known and unknown) uncertainties with the spatial location and magnitude of the data used.

3. DATA ANALYSIS. REFERENCES: Paragraph 1, please add some more references where appropriate. STATISTICAL ANALYSIS: This was weak in terms of description and application. There is a very small statistical sample, and it is not clear why binomial testing is included here. Limitations and obvious queries of the reader (such as, can this statistical test be applied with clustered data spatially?) are not discussed at all. For me, this was the weakest and unconvincing part of the paper, with very little

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discussion or robustness.

4. CONCLUSIONS These are unconvincing given the argument raised in the first three sections.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 7507, 2014.

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