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Discussions
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Interactive comment on "Remote sensing in an index-based insurance design for hedging economic impacts on rice cultivation" *by* Omar Roberto Valverde-Arias et al.

Anonymous Referee #1

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The paper presents the definition of an index-based insurance for possible losses on rice production due to weather extreme events using remote sensing and field data. The paper well fits with the journal and the special issue and is recommended for publication after some possible improvements. Despite the number of comments, these are not related to substantial changes, but in some cases alternative approaches should be considered and some results should be better presented.

Comments on data, methods and results. 1) Have you considered the option of using EVI instead of the NDVI? In some cases, it can show better estimates of yeld than NDVI. It could be useful to motivate the choice. 2) Have you used quality information to

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filter MODIS data considered in the analysis? Being the rainy season there can be a high influence of clouds, but it seems that quality information have not been considered. This can be explained and motivated. 3) Have you considered the possibility of using other statistics of NDVI (max, percentiles?). It can interesting to see if the average was the best one. 4) You define extreme events based only on precipitation, but this rather a big simplification. The description of what you consider extreme event should be more evident and I would suggest explain why you adopted this simplified approach. Further, since the two considered zones have rather different precipitation regimes, should extreme precipitation-related event have different thresholds? 5) Looking at Figure 3A, is seems that even a linear fitting could give a good result: have you tried it? How large is the difference with the normal accumulative curve? 6) Looking at figure 3B is possible to see several cases of large under/over production estimates: have you checked those cases?

Specific comments on figures. Figure 1: this figure can be merged with Figure 2 saving space (maybe Latin America map can be removed) and figure 1A is similar to figure 2 but not dividing coloured area in zones. Figure 2: see above Figure 3: the graph in figure A seems that could be fitted also linearly: how different would it be? Figure 4: images should all use the same legend, otherwise the comparison lead to wrong interpretation. Further, reducing the area to a smaller region can simplify making legend uniform. Figure 5: axis should be the same in all graphs. Figure 6: axis should be the same in all graphs.

Specific comments on tables. Table 1: this table do not provide many additional information and can be removed, if you want. Table 6: The use of the symbol > is a bit misleading, so I'd remove it and the unit of precipitation maybe is missing the time period. Table 7: it seems there is some inconsistency between table and text, since Z is negative in Scenario 2 and not in Scenario 1. Further, many information are repeated in the table: would it possible to remove repetition and improve the readability? Table 8: the first column is a class, but it show just a single value. Maybe it would be better to

show the boundary values of each class. The table could be also replaced by a graph. Tables 9 and 10: would it be possible to merge these tables? Further why the price should be always either 371 or 371.5. Table 11: it might be useful to add a column with the compensation per ha, before the total compensation for a 20 ha farm.

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