

Report on the paper:

Flood risk analysis of the Limpopo Riverbasin through past evolution reconstruction and geomorphological approach

By M. Spaliviero, M. De Dapper, and S. Maló

I. General comments: The paper reconstructs the main changes occurred in the evolution of the Limpopo river since late Jurassic – early Cretaceous period with the purpose to determine the areas prone to flooding in the future. Based on a rich literature review (43 cited papers) the authors present the role played by tectonics in determining major river's developments. Coupling this information with the land use and geomorphological observations they put into evidence how apparently abandoned palaeo drainage patterns are re-activated by the present floods. The analysis was confirmed by the satellite images of the geographical extent of the most recent catastrophic floods in the region that occurred in the years 2000 and 2013.

This approach can be used to estimate the flood extent in data-scarce areas with the purpose to identify the unsuitable locations for human settlements, taking into account that flood hazards tend to concentrate in the same locations where past fluvial changes occurred.

II. Specific comments:

It is generally accepted that the flood risk is: **Hazard Probability x Consequences**

In this paper the authors describe only from a qualitative point of view the flood consequences, as it follows:

- Major events occur every five years in average since the 1990's, provoking severe loss of crops, livestock, physical property and sometimes even human life – page 1374, rows 8-10).
- The settlements in that area, in particular Tchouque and Macaringue (see map in Fig. 9) were completely surrounded by water during the 2000 floods – page 1378, rows 17-18).
- This dramatic event caused more than 700 deaths, displacing approximately 500 000 people and affecting a total population of two million people – page 1380, rows 20-21)

The authors propose an approach for the identification of the flooded areas during extreme events. No return period is associated with the produced floods and no quantitative evaluation of the flood consequences is presented (except the loss of human lives). Under these circumstances, I consider that the adequate title of the paper would be:

Flood hazard analysis of the Limpopo Riverbasin through past evolution reconstruction and geomorphological approach

At the same time, I suggest to the authors to make at least a rough evaluation of the return period of the floods produced in 2000 and 2013. In the absence of such values, the following title fits better the paper's content:

Flood analysis of the Limpopo Riverbasin through past evolution reconstruction and geomorphological approach.

III. Technical issues

1. To replace everywhere in the text the notion of “flood risk” by the “flood hazard”.
2. At the same time, to replace “areas of high flood hazard risk” by “areas of high flood hazard ” (page 1375, row 3).

Conclusion: The paper can be published with minor revision.