

Interactive comment on “Building hazard maps of extreme daily rainy events from PDF ensemble, via REA method, on Senegal River Basin” by J. D. Giraldo and S. G. García Galiano

J. D. Giraldo and S. G. García Galiano

sandra.garcia@upct.es

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Reply to Anonymous Referee #2

Thank you for your comments. The paper was modified considering the suggestions.

- Pg 3818: The authors said that "These spatial-temporal distributions 20 could be considered by local stakeholders in such a way as to reach a better balance between mitigation and adaptation". I think that the concept of Local stakeholders need to be clarify! As you know, the Senegal river basin is a transboundary catchment, and OMVS is charge of its management. It would be better if we can directly refer to this Authority

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that to "Local stakeholders" that is very wide; authors must be more targeted!

Yes, we are agreeing with you, the statement "local stakeholders" is too wide. A paragraph about OMVS was included in the section Target basin and dataset for clarification, and the corresponding references to "local stakeholders" were replaced in the Abstract and Conclusions. In page 3818, the lines 20-21 were modified: "These spatial-temporal distributions could be considered by Organization for the Development of the Senegal River (Organisation pour la mise en valeur du fleuve Sénégal, OMVS), in such a way as to reach a better balance between mitigation and adaptation." In page 3821, a new paragraph was included (in line 23): "The Organization for the Development of the Senegal River (Organisation pour la mise en valeur du fleuve Sénégal, OMVS), is the river basin organization in charge of the management and planning of water resources in the region." In page 3829, the line 23 was modified: "The key findings of this study could be considered by OMVS, ..."

- Pg 3819: in addition to some reference, I think that we cannot talk about RCM in Senegal without taking into account these references: Sylla M. B., Coppola E., Mariotti L., Giorgi F., Ruti P. M., Dell'Aquila A., Bi X., 2009a, Multiyear simulation of the African climate using a regional climate model (RegCM3) with the high resolution ERA-interim reanalysis, Climate Dynamics, Sylla M. B., Gaye A. T., Pal J. S., Jenkins G. S., Bi X. Q., 2009b, High-resolution simulations of West African climate using regional climate model (RegCM3) with different lateral boundary conditions, Theor. Appl. Climatol., DOI 10.1007/s00704-009-0110-4 Sylla M.B., Dell'Aquila A., Ruti P. M., Giorgi F., 2009c, Simulation of the intraseasonal and the interannual variability of rainfall over West Africa with RegCM3 during the monsoon period, Int. J. Climatol. (2009), DOI: 10.1002/joc.2029

A new paragraph was considered in the manuscript, according to suggestion of the reviewer Although several authors have been comparing results from RCMs and present-day climate, the works proposed by the reviewer trying to explain climate processes and mechanisms over West Africa. In page 3822, line 21, the following paragraph was

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included: “Several authors have contrasted results from RCMs to present-day data, trying to explain the dynamics of WAM, and interaction with precipitation. Among them, Sylla et al. (2009) worked with precipitation and temperature from ICTP-RegCM3 RCM nested in both reanalysis data and ECHAM5 GCM simulations, and observed data from Climate Research Unit database (CRU, University of East Anglia, Norwich, UK); and Sylla et al. (2010b) analyzed intraseasonal and interannual variability of rainfall taking into account the same RCM driven by reanalysis data. The performance of the RCM, considering several observed datasets, was evaluated by Sylla et al. (2010a) for seasonal mean climatologies, annual cycle and interannual variability over Africa. They found biases from the regional model as well as those brought through the boundary forcing, and have concluded that a larger set of RCMs and GCMs data comparisons could be better for general applicability.” The corresponding references were included: Sylla M. B., Gaye A. T., Pal J. S., Jenkins G. S, Bi X. Q.: High-resolution simulations of West African climate using regional climate model (RegCM3) with different lateral boundary conditions, *Theor. Appl. Climatol.*, 98, 293-314, doi 10.1007/s00704-009-0110-4, 2009. Sylla M. B., Coppola E., Mariotti L., Giorgi F., Ruti P. M., Dell’Aquila A., Bi X.: Multiyear simulation of the African climate using a regional climate model (RegCM3) with the high resolution ERA-interim reanalysis, *Clim. Dyn.*, 35, 231-247, doi 10.1007/s00382-009-0613-9, 2010a. Sylla M.B., Dell’Aquila A., Ruti P. M., Giorgi F.: Simulation of the intraseasonal and the interannual variability of rainfall over West Africa with RegCM3 during the monsoon period, *Int. J. Climatol.*, 30, 1865-1883, doi 10.1002/joc.2029, 2010b.

- Pg: 3829: regarding the "Acknowledgements", there is formula accepted for AMMA project, see below “Based on a French initiative, AMMA was built by an international scientific group and is currently funded by a large number of agencies, especially from France, UK, US and Africa. It has been the beneficiary of a major financial contribution from the European Community’s Sixth Framework Re-search Programme. Detailed information on scientific coordination and funding is available on the AMMA International web site <http://www.amma-international.org>”

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The corresponding section was extended (page 3829), considering the standard full Acknowledgment of AMMA EU Project.

- Pg 3835: the situation map has no scale and north orientation; obviously for somebody who knows this Senegal river basin, there is no problem but it would be better if these informations can be added.

All the maps were improved, adding explicitly north and west coordinates. Thank you for your observation.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 3817, 2011.

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