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Interactive comment on "Streamflow droughts in the Iberian Peninsula between 1945 and 2005: spatial and temporal patterns" *by* J. Lorenzo-Lacruz et al.

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Comments on the paper "Streamflow droughts in the Iberian Peninsula between 1945 and 2005: spatial and temporal patterns"

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General Comments

At catchment level, the study analyzed the temporal and spatial variability of stream-

flow drought in Iberian Peninsula. Adequate historical daily streamflow data spanning from 1945 to 2005, recorded from 187 flow gauging stations was used. The daily streamflow series were aggregated to monthly values that were further transformed to Standardized Streamflow Index (SSI). Principal component analysis (PCA) was performed to all standardized variables that were comparable in both spatial and temporal scales. While focusing of prior set threshold levels, regions with homogenous level were identified. About 10 principal components (PCs) which explained 70% and 60% of the precipitation and streamflow respectively were identified throughout the Iberian Peninsula. The study verified a worsening situation with respect to drought duration and magnitude. Generally, the study's contribution in improving the knowledge as well as the suitable approach in analyzing streamflow drought not only in Iberian Peninsula alone but also in other regions in the world is pronounced.

Specific Comments

Daily data versus monthly data Page 7 line 8-9 The study aggregated the average daily streamflow to average monthly streamflow series. This process is associated with loss of information such the dimensional determinism (Salas et al., 2005). Although, the use of daily data would have required the use of computers with large space and speed in order to perform all the computations. The study should have commented something in this regards. Slopes (terrain) Page 12 line 4 and 7 Although it may not be of significant importance, the study should have defined the meaning of steep slope (for example slope> 10%, steepest slope>20). By defining these terms it becomes easy to reproduce a similar study somewhere else. Natural flow characteristics and quality In a situation were droughts characteristics are increasing in complexity, it is likely that the natural characteristics of the river flows are impacted and it threatens the sustainability of the ecosystem (Katambara and Ndiritu, 2009). In addition, as the flows decrease the return flows that are normally of higher concentrations are expected to be diluted by the receiving waters, this is likely not the case and it affects the sustainability of the ecosystem. It not the objective if this study, however, discussing this issue in the

recommendation may be necessary.

Technical corrections

Streamflow homogeneously distributed Page 1 line 2-3 The study indicates that the streamflow are uniformly distributed across the study area. It will be clearer if the streamflow gauging stations where the data was recorded from are considered to be uniformly distributed within the study area. SS Page 10 line 5 SS hould be replaced by SSI

References

Katambara, Z. and Ndiritu, J., 2009. A fuzzy inference system for modelling streamflow: Case of Letaba River, South Africa. Physics and Chemistry of the Earth, Parts A/B/C, 34(10-12): 688-700. Salas, J., Kim, H., Eykholt, R., Burlando, P. and Green, T., 2005. Aggregation and sampling in deterministic chaos: implications for chaos identification in hydrological processes. Nonlinear Processes in Geophysics, 12(4): 557-567.

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