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Solid Earth Discussions

Interactive comment on "Delineating small karst watersheds based on digital elevation model and eco-hydrogeological principles" *by* G. J. Luo et al.

Anonymous Referee #2

Received and published: 1 March 2016

In this paper, authors discuss about the problem of low accuracy of traditional methods for mapping karst watersheds and propose a quite innovative mehod. The suggested methodology looks good and provides accurate results. Mathematical description of methods and results is correct.

In my opinion, the manuscrcript should be published in Solid Earth. Just some moderate changes need to be done before the paper is ready for publication. These changes are listed below.

Delete keywords (not required by the journal).

Figures and tables: Figures and tables must be understood independently of the rest of the paper, so avoid abbreviations in the caption and define them when used in figures or tables.

Line 40. Add units to the infiltration coefficient (80%?).

Line 43. Delete "hill".

Lines 54-55. Check this sentence ("no papers have. . ."?). What does "in geographical area scale"mean?

Line 63. Substitute "as the basic unit of" with "for".

Line 64. Re-write: "Digital Elevation Models (DEMs) provide a solid basis for. . .".

Line 70. Re-write: "DEMs are one of. . .".

Line 82. Substitute "DEM" with "DEMs" or "a DEM". Re-write: "Geographic Information System".

Lines 85-86: Squared kilometers?

Line 90 and others. Do not use "rocky desertification", just "desertification".

Lines 107-111. Add just some words to explain the expected benefits and consequences of your work.

Line 113. Re-write: "Methods".

Line 120. Delete "/a".

Lines 121-122. Re-write: "15.6 oC (for data between 1961 and 2006)".

Figure 1: Add letters to identify images: A (general view of. . .), B (Location of the study area) and C (elevation map of the study area).

Line 137. Substitute "The data employed" with "Data used".

Line 151 and following. Avoid the use of lists. Re-write: "In this study, the delineation of KW is completed by the following five steps: (i) ATW is delineated by using the hydrological tools in ArcGIS 10 (ESRI 2010), (ii) regional corrosion–erosion datum and exit of watershed are determined, (iii) the. . .".

Line 162. Re-write: “The basic process is shown in Fig. 2.”

Figure 2. Please, check that this is open-access material. Otherwise, prepare a new figure or delete it.

Figure 3. Delete the excessive blank space in the top of the figure.

Figure 4. Consider the size of the print paper and homogenize the size of fonts in the image. Yellow text in a, b, c and d images may be not legible. In ‘c’, re-write: “No runoff”.

Line 281. Re-write: “conducted”.

Line 288. Here and through the text, avoid abbreviations in section titles.

Line 298. Re-write: “(Table 3)”.

Lines 301-303. This lines should be moved to “discussion” or “conclusions” sections.

Table 3. No colors in tables! Colors seem to correspond to last column values, so do not use colors. Use the same font from the main text.

Figure 7. Add letters to graphs. The R2 coefficient is OK, but can you add the p-value of regression? Is the second graph (discharge/upstream accumulation area of subsurface runoff in ATW) significant? Not an outlier?

Table 4. Do not use shaded cells in tables. Check the excessively long titles in the first row. Can you use shorter expression or codes (and explain them in the caption) instead?

The following references should be considered and possibly included in the discussion of this paper:

A threshold artificial neural network model for improving runoff prediction in a karst watershed. DOI: http://dx.doi.org/10.1007/s12665-015-4562-9

Assessing spatial-temporal evolution processes of karst rocky desertification land: in-

dications for restoration strategies. DOI: http://dx.doi.org/10.1002/ldr.1102

Delineating groundwater/surface water interaction in a karst watershed: Lower Flint River Basin, southwestern Georgia, USA. DOI: http://dx.doi.org/10.1016/j.ejrh.2015.11.011

Multi-scale anthropogenic driving forces of karst rocky desertification in southwest China. DOI: http://dx.doi.org/10.1002/ldr.2209

Object-based mapping of karst rocky desertification using a support vector machine. DOI: http://dx.doi.org/10.1002/ldr.2193

Soil loss from erosion in the next 50âĂŁyears in karst regions of Mayabeque province, Cuba. DOI: http://dx.doi.org/10.1002/ldr.2184

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