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Interactive comment on "Assessment of combating desertification strategies using the linear assignment method" *by* M. H. Sadeghravesh et al.

M. H. Sadeghravesh et al.

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Dear Editor in Chief, My Paper has been revised based on reviewers comment. You can see the revised parts with different color. Best Regards Hassan Khosravi

Response to comments: The paper submitted by Sadeghravesh et al is very confusing and mix materials and methods, results and discussions. The discussions of the paper are very poor. In the present form the paper cannot be accepted to be publish in SE and needs a very strong revision, — The paper is thoroughly revised with enormous changes in grammatical structure. Besides, all sections (Abstract, Introduction, Study Area, Result and Discussion and Conclusion) were revised in detail and some resources were added to this paper. It should be noted that all comments of judges

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were taken into account.

1) Encourage the authors to please revise the English. It is not possible to send for review and possible publication a paper in which this issue has not been taken into account. Repetitive expressions, bad use of commas, missing capital letters, etc. — The paper is now fully revised in term of grammatical structure and other mentioned issues.

2) References are missing all the way through the paper. Also, please check the guidelines of the Journal in order to know how to cite scienctiïňĄc work. As it is now it seems like the authors did not have this in mind. I would like to recommend the authors to deeply revise their work and make it suitable for publication. The world (including the scientiïňĄc community) needs to know what is happening nowadays in Iran and the nearby countries. — The paper is now adjusted with Solid Earth Journal's format. Meanwhile, new resources were added to the paper.

ABSTRACT: Please provide in the abstract: 1) problem in Iran to be solved, 2) hypothesis of the work, 3) research area, 4) methodology used in order to check/solve the hypothesis, 5) results. — The abstract was revised and we tried to point out the problem of Iran in the abstract section. Moreover, methodology and results revised according to judges comments (a suggestion added to the end).

INTRODUCTION: In this part you should give references to the reader about the problem you want to solve, or at least, the wanted you are presenting to the scientiïňĄc community. To do so, please enter to the Web of Knowledge site, or look on Google Scholar for already published scientiïňĄc work worldwide. Also, in the introduction section you have to present your hypothesis and the steps followed to solve it (steps that will be explain later on in the Methodology and Results section). — Changes were done based on this comment.

MATERIALS AND METHODS: Here is where you have to present your study area and be extremely concise on the methodology you have followed. It needs to be so concise

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so other researchers in different parts of the world could apply it. For instance, in Line5 of the 'Study area' C2 section you talk about the"Amberje classiïňĄcation'. What is this classiïňĄcation? It is not cited and it is not an international way of climate classiïňĄcation as Köppen. Also, the description is weak. More data to understand how the area is can be interesting. Pictures might help as well. — For Biochemical Ambereger Classification the following method was used; however, the limitation of pages' number didn't allow us to insert this part in the paper and it only mentioned in the references of article. Climate Classification of the study area To determine bioclimatic classification of the study area De Martonne, Koppen and Emberger climate classification methods were used.

De Martonne aridity index. Early studies on aridity in Dobrudja were made by Ioan (1929), and continued afterwards by several other authors, including Cernescu (1961), Berbecel (1984), and others. A suggestive indicator for the characterization of the aridity index is De Martonne's (Iar-DM), described by the Eq. Iar-DM = P/(Tm + 10) () where: P = total annual precipitation and Tm = mean annual temperature. The denominator contains additionally the value of 10°C to produce positive results in regions with negative average annual temperatures, such as mountainous regions or deserts from median latitudes. This indicator was introduced by De Martonne (1926) to characterize the climate, and was subsequently used in the characterization of soil hydrologic regime, including in our country. In general, low values of Iar-DM show dry conditions, while higher values show wet conditions. Table 1 presents De Martonne's climatic classification (1926) according to the Iar-DM indicator.

Tab. - Climatic classification according to De Martonne (1926) Type of climate I Very dry = desert (arid) 0-5 Dry = steppe, semiarid (semi desert) 5-15 (5-12) Semi-dry (dry subhumid) 15-20 Mildly wet (moist sub-humid) 20-30 Wed (wet) 30-60 Very wet (humid) Over 60

Based on the climatologic stations near the study area and through using Eq. the aridity index was calculated and compared to the De Martonne aridity index (Tab.).

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The results shown all the stations had arid climate (Tab.).

Tab. De Martonne aridity Index of climatologic stations of study area Modifies De Martonne Climate (De Martonne) Aridity Index (I) Station dry cold arid 2.83 Khezr-abad Very dry cold arid 2.06 Ashkzar Very dry cold arid 7.3 Nasr-abad Very dry cold arid 4.04 Nadoshan Very dry cold arid 5.05 Khezr-abad basin It should be mentioned that the average daily minimum temperature of the coldest day in the year added to modified De Martonne (Tab.) (Khalili, 1996). Tab. Identified climate by Modified De Martonne Average daily minimum temperature Climate < -7 (-7) - 0 0 - 5 > 5 Very cold cold moderate warm According to the Tab () average daily minimum temperature of all stations (-7.9) climate of the study area is very cold dry. Köppen Climate Classification System. Köppen's classification is based on a subdivision of terrestrial climates into five major types, which are represented by the capital letters A, B, C, D, and E. Each of these climate types except for B is defined by temperature criteria. Type B designates climates in which the controlling factor on vegetation is dryness (rather than coldness). Aridity is not a matter of precipitation alone but is defined by the relationship between the precipitation input to the soil in which the plants grow and the evaporative losses. Since evaporation is difficult to evaluate and is not a conventional measurement at meteorological stations, Köppen was forced to substitute a formula that identifies aridity in terms of a temperature-precipitation index (that is, evaporation is assumed to be controlled by temperature). Dry climates are divided into arid (BW) and semiarid (BS) subtypes, and each may be differentiated further by adding a third code, h for warm and k for cold. A - Tropical Moist Climates: all months have average temperatures above 18° Celsius. B - Dry Climates: with deficient precipitation during most of the year. C - Moist Mid-latitude Climates with Mild Winters. D - Moist Mid-Latitude Climates with Cold Winters. E - Polar Climates: with extremely cold winters and summers. The annual evapotranspiration of the Khezr-abad basin (1610.44 mm) is more than its annual precipitation (120 mm), so the climate of the basin is in category (B). Besides, more than 55 percent of precipitations in the Khezr-abad basin happen in cold seasons, and the average temperature of that is 15.72 °C. Therefore, the climate of basin is in subtype BSK which represents

desert climate (Tab). Ambereger Climate Classification System: This method is based on average minimum and maximum temperature of coldest and warmest months of the year and is calculated through Eq. () Where: Q= Aridity index of Ambereger, P= Annual average precipitation (mm), M= average daily maximum temperature of the warmest month in the year (K), m= average daily minimum temperature of the coldest month in the year (K). The Ambereger index was calculated for all climatologic stations of the study area and the whole basin (Tab .). Tab. Ambereger index of climatologic stations in the study area Station P(mm) M(c°) m(c°) Q Ashkzar 59 43 8 3.98 Nadoshan 98.7 36.8 11.2 7.19 Nasr-abad 158 34.85 12.32 11.77 Khezr-abad 81.8 39.68 3.6 6.55 Khezr-abad basin 121 38.3 7.9 9.08 Finally, by taking the Q and m parameters into account and using Ambereger climagram the climatic circumstance of the study area defined as dry and clod climate.

DISCUSSION: Weak, short and with lack of references. Here is where you have to link your results with other results presented by different scientist all over the world. Also, here is where you have to show the relevance of your ïňĄndings and possible difïňĄculties you had. — This comment also was considered, and tried to point out the result of other researches to our paper to make a comparison with the other papers.

REFERENCES: Please cite properly! — The citation modified properly.

Please also note the supplement to this comment:
http://www.solid-earth-discuss.net/se-2015-133/se-2015-133-AC2-supplement.pdf

Interactive comment on Solid Earth Discuss., doi:10.5194/se-2015-133, 2016.

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Assessment of combating desertification strategies using the linear assignment method

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Abstract

Nowadays desertification, as a global problem, affects many countries in the world especially developing countries such as Iran. With respect to increasing importance of desertification and its complexity, the necessity of attention to the optimal combating desertification alternatives is essential. Select appropriate strategies according to all effective criteria in combating desertification process can be so useful in ~~controlling and rehabilitation~~ rehabilitating ~~of~~ degraded lands~~,~~ and avoid degradation in vulnerable fields. This study provides systematic and optimal strategies of combating desertification by group decision-making model. To this end, the preferences of indexes were obtained through using Delphi model; in the framework of Multi Attribute Decision Making (MADM)~~, and by using Delphi model (Delphi), the preferences of indexes were obtained~~. Then,