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Comment

Interactive comment on “Developing an index for heavy convective rainfall over a Mediterranean coastal area” by M. Korologou et al.

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General Comments

The paper is dealing with the development of an index for predicting heavy convective rainfall over a Mediterranean coastal area. Since severe convection forecasting remains a challenging research and operational issue, this work is highly important and welcome.

The paper is generally well written, in appropriate length and with clear conclusions. I would recommend acceptance of the paper for publication to NHESS, with the following minor specific comments and technical corrections.

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Specific comments

In the Title, some word like “forecasting” should be added to define the index operation and role.

In Section 2 (Data), lines 37-105: A too long and rather confusing phrase that should be rewritten in order to give a more clear meaning. A similar small change should be considered for lines 106-109.

In Section 3 (Data) after line 134: An improvement of Figure 1 is recommended, i.e. including in a small box the whole Greece and highlighting the area in question.

In Section 2 (Data), lines 205-106 and 111-112: Concerning data accuracies, as they estimated at 88% and 90% levels, respectively, some more explanation is needed about what those accuracies are expressing, i.e. an average estimate for all the parameters examined?

In Section 2 (Data), line 151: Some information should be added, about how these 143 cases were identified as flash flood events.

In Section 3 (Methodology), lines 188-190: the statement “. . . their performance found to be poor (Dimitrova et al., 2009) and thus of no practical value” is not acceptable as it is expressed. There are many references supporting a good performance of the instability indices examined, depending on a variety of meteorological conditions and other factors, thus some revision in the text is needed here.

In Section 3 (Methodology), line 246: For the “Combined Hypothesis Development” tool, some more description of the concept and some reference is needed.

In Section 4 (Developing the New Local Instability Index), lines 318-320: Some reference is needed here, about the tools and methods used.

In Paragraph 4.1 (CAPE Term), lines 343-352: Some explanations should be given in the text about the various threshold values set, i.e. what criteria have been used.

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In Paragraph 4.2 (Moisture Term), 377-380: This phrase should be a little revised, since cooling at lower levels generally results to a more stable airmass.

In Section 5 (Calculations, Evaluation and Discussion): Some comment is needed about the size of the data sample and its representativeness in relation to the extracted results. Except September and October, all the remaining months exhibit a small number of thunderstorm cases. Future work may consider a larger number of cases, possibly including severe summertime thunderstorm cases.

In Section 6 (Conclusions): Future research as it mentioned in the last paragraph, is also recommended, to implement a more representative severe thunderstorm data sample, including hail, windy conditions and possibly other areas, i.e. northern Greece that is usually affected by severe thunderstorms mainly in May and June. The use of weather radar data for a more accurate specification of thunderstorm intensity is also highly recommended, to a further improvement and strength of the proposed LII index, towards a more widely research and operational forecasting use.

Technical corrections

The paper should be checked for corrections of small errors in English expressions.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 1837, 2014.

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