The reviewer's constructive comments and suggestions are addressed below.

Reviewer #3

General Comments

This paper presented a model framework and a case study for assessing the impact of climate change on streamflow in an area dominantly affected by convective rainfall. The methods are not new, but the study finds interesting local results and complements the already published literature on the subject. The conclusion of the study, that changes in rainfall are amplified in changes in streamflow in arid to semi-arid catchments, is consistent with previous studies, which reinforce our knowledge. Furthermore, the methods used are well chosen, explained and justified and the paper is clearly written and logically structured. Therefore I recommend its publications with minor revision.

Specific Comments

The paper deals with a subject that has been addressed by many similar studies and therefore I think it needs to emphasise its strengths/difference better in the introduction section. For instance, the integration of existing tools, the significance of the study area, the distinctive effects of convective rainfall, and the difficulty of capturing characteristics of convective rainfall in models.

We agree with the reviewer comment and therefore added the following to the last paragraph of the introduction section:

"In this study we present a new modeling framework to assess projected climate impact on the hydrological regime by generating high spatiotemporal resolution rain fields with statistics that are depended on the regional meteorological synoptic systems (Fig. 1). **The suggested modeling framework integrates methods and models from various disciplines such as a classification of synoptic systems, remote sensing of rainfall, stochastic convective rainfall generator, and hydrological modeling. This integration enables, for the first time, to assess the impact of climate change on the hydrological regime in an environment that is strongly influenced by convective rainfall.** To exemplify the presented modeling framework, two medium size catchments in Israel were selected for a case study. Section 2 presents the suggested conceptual… ".

1. Page 10569, lines 25-26. As far as I know, at least two of the studies listed here have used gridded rainfall datasets, instead of rainfall data for point locations.

This sentence was corrected as follows:

"**Most of** the above studies used rainfall data for point locations".

2. Page 10572, lines 9-13. In fact Chiew et al. (2006) has assessed and discussed this ratio, which they called precipitation elasticity of streamflow "p, using the data across the world. Generally the "p values range from 1 to 3 with relatively strong inverse relationship with runoff coefficient. It is not surprising that in a semi-arid to arid catchment, the value could be more than 3.

Chiew, F.H.S., Peel, M.C., McMahon, T.A., Siriwardena, L.W., 2006. Precipitation elasticity of streamflow in catchments across the world. In: Demuth, S., Gustard, A., Planos, E., Scatena, F., Servat, E. (Eds.), Climate Variability and Change – Hydrological Impacts. Iahs Publication, 256–262.

We thank the reviewer for this comment and for bringing to our intention Chiew et al. (2006) paper. The paragraph was modified as follows:

"Future drier soil conditions resulting from the shortening of the wet season and reducing the number of rainfall events (which cause an increase in the length of dry periods between rainfall events) are the reasons for this amplification. **Chiew et al. (2006) defined this amplification,** the change in annual runoff in comparison to the change in annual rainfall, **as the precipitation elasticity of streamflow (ε_P).** Chiew et al. (2010) reported a change in annual runoff that is up to two times the change in annual rainfall, but in an earlier study Chiew and McMahon (2002) stated that "in ephemeral catchment with low runoff coefficients the percentage change in runoff can be more than four times the percentage change in rainfall". **ε_P values similar in magnitude to those of this study (ε_P >3) were found in other catchments worldwide, representing a variety of climates (Chiew et al., 2006)**".

3. I suggest the authors to separate discussion and conclusions into two sections so that the main findings/messages from the study can be clearly conveyed.
We prefer not to separate the discussion and conclusions section into two parts. Most of this section is devoted to the discussion (excluding the first and last paragraphs). We believe that the main findings from our study are clearly conveyed in the current form.

4. Table 1. It would be helpful to add one more column showing the time periods available for each dataset so that it is easier for readers to understand why the 12 years is chosen.
For the rain gauges and for the hydrometric stations we have data for a much longer time period. We are limited for a 12 years period because of the weather radar data. Instead of modifying Table 1 we suggest to clarify this in the text:
"Following a rigorous quality control assessment **applied to the weather radar information**, data for twelve hydrological years (1 October–30 September) were compiled for this study (i.e. 1991/1992–1997/1998, 1999/2000–2002/2003 and 2004/2005)".

5. Figure 1. The map on the lower right should show the surroundings of the study area and clear boundaries of the two catchments. The current form is confusing and doesn't give much information.
The map of the catchments shows clearly the basins boundaries, the tributaries and the topographic elevation. The location reference of the basins is indicated in map at the upper right. We also added the location of the hydrometric station as suggested by Reviewer #2.

6. Figures 5 and 8. It's better to have a side-by-side layout.
We thank the reviewer for this suggestion and we can see the benefit for doing so. However, considering that the separate figures match better the sequence of results explanations in the text, we decided to leave these figures separately.

Technical corrections
7. Page 10554, line 21. relative to
Thanks, corrected as suggested.

8. Page 10556, lines 28-29. high spatial and temporal resolution
Corrected as suggested.

9. Page 10557, line 11. that are dependent on
Corrected as suggested.

10. Page 10560, lines 28-19. 94% . . . as ML, and 6% as ARST.
Corrected as suggested.

Finally, we wish to reiterate our appreciation for reviewer 3 constructive comments which helped us significantly to improve the presentation of our study.