

## ***Interactive comment on “Future extreme precipitation assessment in Western Norway – using a linear model approach” by G. N. Caroletti and I. Barstad***

**G. N. Caroletti and I. Barstad**

giulio.caroletti@bjerknes.uib.no

Received and published: 23 April 2010

[english]article [T1]fontenc [latin9]inputenc babel

C3539

### **Reply to Anonymous Referee #2**

General comment

Anonymous referee #2 mentioned the fact that the abstract is too long and including too many references, so part of the abstract has been moved to the introduction, which has been re-organized accordingly.

Specific comments

COMMENT P7540, line 4 and 13. IPCC 2003 is missing in the reference list. Is it probably ment to be IPCC 2007? because on P7543 at line 11 you are talking about 12 simulations from IPCC 2007.

REPLY: Corrected to IPCC 2007.

COMMENT P7540, line 17-19. Extreme Precip. events should be defined before showing the future evolution.

REPLY: Changed to “Extreme precipitation events, defined by the exceedence of the 99.5%-ile threshold in the considered period, are up to 20% more intense in future time slices than the 1971-2000 values.”

COMMENT P7541, line 23-24. IPCC 2007 is missing in the reference list. Some basic findings in the report would be great to mention.

REPLY: IPCC 2007 have been included in the reference list. It has been included in three different formats: one mentioning the Working Group I findings, and two mentioning to sections of the Working Group findings. I leave it up to journal editors to decide whether these references are correct in that format or whether I should add something (eg a IPCC 2007 stand-alone entry in the references). Findings from the report have

C3540

been included earlier on in the paper (see the reply to Anonymous referee #1).

COMMENT P7542, line 18. „Deque” but „Déqué” in the reference list.

REPLY: Corrected.

COMMENT P7543, line 11. The reference to IPCC reports should probably be in the same way (with or without „Report”), not different: (IPCC, 2003) and (IPCC Report, 2007).

REPLY: Changed to “(IPCC, 2007)”.

COMMENT P7543, line 13. „Smith and Barstad’s” should be followed by „(2004)”.

REPLY: Changed according to reviewer’s suggestion.

COMMENT P7544, line 4. In the reference list only one Smith 2003 can be found so why 2003a?

REPLY: Corrected.

COMMENT P7544, line 5. I would like to see better explanation of how qc and qs are connected to P, probably also show the full equations qc(x,y) and qs(x,y)

REPLY: Added full equations for qc(x,y) and qs(x,y).

COMMENT P7545, line 1. Corrsponding to the first line of section 2, the first three words are superflous or LM should be explained by the same way at the first line of section 2.

REPLY: Uniformed as per reviewer’s suggestion.

COMMENT P7545, line 23. Should (US Navy, 2003) be in the reference list?

REPLY: Added in reference as asked from the NCAR web-page which provides the data (from <http://dss.ucar.edu/datasets/ds758.0/>); the reference reads: "The USGS 30 ARC-second Global Elevation Data, GTOPO30, are from the Research Data Archive

C3541

(RDA) which is maintained by the Computational and Information Systems Laboratory (CISL) at the National Center for Atmospheric Research (NCAR). NCAR is sponsored by the National Science Foundation (NSF). The original data are available from the RDA (<http://dss.ucar.edu>) in dataset number ds758.0."

COMMENT P7546, line 10. The last two words should be removed.

REPLY: Removed as per reviewer’s suggestion.

COMMENT P7547, line 6. „+” is unnecessary before 10% and 16%.

REPLY: Removed as per reviewer’s suggestion.

COMMENT P7548, line 10. 66,7 mm but in table 8 it’s 66,1 mm.

REPLY: Typo corrected to 66,1 mm.

COMMENT P7548, line 23. Flora – Gloppen, with a long or short „-“ with or without spaces (line 7)?

REPLY: This part was removed after inputs from Anonymous reviewer #1.

COMMENT P7549, line 12. 6. Maybe you should refer to some basic thermodynamic litterature for the constants Rv and L, and put it like Lv.

REPLY: We choose to keep it the way it is in order to make sure the reader knows the numbers done. Moreover, also to keep it consistent with previous works referenced in the text, e.g. Smith and Barstad (2004) and other papers.

COMMENT P7549, line 19. I can only count seven positive signs not eight.

REPLY: Typo corrected to seven.

COMMENT P7549, lines 20-23. These lines should be moved up and combined with lines 3-5. Anyway (Smith and Barstad 2003) is not in the reference list.

REPLY: Combined as from reviewer’s suggestion, and corrected year of reference (it’s

C3542

2004 and not 2003). This section has been moved to 2.1 (see reply to Anonymous reviewer #1).

COMMENT P7551, line 5. (Allan and Soden, 2008) are missing from the reference list.

REPLY: Added (Allan and Soden, 2008) to reference list.

COMMENT P7551, line 13. Is 2007 correct for Zhang et al.? the year is missing in the ref. list.

REPLY: Added year to Zhang et al. reference in reference list (it is 2007).

COMMENT P7551, line 19. „Trenberth’s” should be followed with „(2003)”.

REPLY: Added “(2003)” as per reviewer’s suggestion.

COMMENT P7552, line 7. „An an” double „an”.

REPLY: Corrected typo.

COMMENT P7552, line 12-14. Are you talking about increase in intensity or magnitude, aswell as in line 15. If magnitude, can you then combine line 15-16 with lines 12-14? AND COMMENT P7552, line 14. „main cause increased influx” I think an „of” is missing.

REPLY: Modified as per reviewer’s suggestion. This part now reads: “By separating out the factors that contribute to moisture influx, results show that temperature increases are the main cause of increased influx, eventually accounting for roughly 50% of the increase in intensity of extreme Orographic Precipitation for all models.”

COMMENT P7553, line 22. I can’t find the reference (Christensen et al., 2007) in the paper, only (IPCC, 2007) which is not corresponding to the reference list .

REPLY: All the references to IPCC 2007 have been changed into (Christensen et al., 2007), since this is how the IPCC 2007 Report suggests to do in regards to references to that part of the report.

C3543

COMMENT P7570, fig.2: The legend bar to right should have the label defination „elevation (m)”.

REPLY: Corrected as for reviewer’s suggestion

COMMENT P7572, fig.4: I suggest to use the symbol for tau (also in fig. 5).

REPLY: Corrected as for reviewer’s suggestion

COMMENT P7573, fig.5 and P7574, fig.6. Are you talking about 12 model runs or actually 12 models?

REPLY: Text changed: “12-model” into “12-simulation”, “model” into “simulation”.

COMMENT P7574, fig.6. Interactive Discussion Besides the left part is too small, label explanations are missing all over (% , elevation, the color of the columns, latitude and longitude and a legend bar for elevation on the bigger image to the right. According the text, I wonder if you are in the beginning talking about twelve model runs or actually twelve models?

REPLY: Corrected as for reviewer’s suggestion. It is model runs/simulations, not models.

## Figures

COMMENT: Please try to standardize figures with histograms, f. ex. size, number og decimals and type of letter (bold or normal) in labels and titles. Labels on y-axis on all histograms should be standardized, now you have three different types. The same is for the x-axis on all figures but #7, I think „model runs” is correct. Please try to locate the legend box at similar place on all histograms (on fig. 8-10 that looks fine).

REPLY: Histograms have been standardized as for reviewer’s suggestion.

C3544