

General comments

In general, while I find the paper is very detailed to some rainfall parameters, it is not clear what the broader impacts are. It looks like something can be said about projected rainfall changes, but they are not said directly; what people care are actual rainfall changes but not changes to parameters that are used in IDF curves.

Some part of the text can probably be shuffled a bit. I also have some reservations how the figures are presented.

Major comments

1. Introduction discussion on ζ or β vs γ :

- a. The description of the above is sometimes hard to follow, so I just wish some clarifications.
- b. In a nutshell: ζ or β describe how **intensity** of rainfall changes by accumulation period, while γ describe how **frequency** of rainfall changes by accumulation period. Would the above be the most **direct** description of what they mean? This ties it nicely with IDF and should be the way these parameters introduced first in a single sentence, probably right after Equations 2 and 3. The more detailed description and discussion can come after. I appreciate detail discussion, but there should be a balance between detail and directness.
- c. This is in light of the text between lines 101-104: for example, it is entirely possible that γ can increase (more rainfall events of short duration), but β has to decrease (the now more frequent short-duration showers are relatively weaker than longer-duration events after rescaled in IDF). This type of intuition ties in nicely with the IDF again.
- d. Another suggestion from me is to have this detailed description about frequency and intensity parameters moved to the Method (section 2) instead in the Introduction (section 1). If anything, Method section is relatively short, considering how detailed Section 1 is after line 55; consider moving post line-55 to Method section.
- e. Minor: The description about γ should occur sooner than it currently is (like right after Equation 2). Right now, γ is not described until multiple paragraphs after Equation 2. Symbols and variables should be explained immediately after the equation is introduced.
- f. Discussion check for Figure 3B and lines 155-163: Did not you say higher γ indicates higher concentration of rainfall frequency in a few hours during a wet day (lines 85-86)? Why do you now say large γ off the Norwegian coast is associated with “decrease towards shorter duration frequencies is largest” (line 159-160)? What does that statement even mean? Please check.

2. General comments about quality and presentation of figures:
 - a. Make sure the captions are consistent with the main text and other figures. The goal is to make all figures directly readable by the reader without referring to the text first. I have commented on this in some minor comments.
 - b. For change plots like Figures 4, 5, 6, S6, they will be easier to read if white (or near-white) colour is used label 0 or small changes (a divergent colour bar that is white-centred on 0). The delta- γ plots are particularly an issue because either side of the 0 is yellow.
3. Given the larger changes with some of the parameters in the interior of Scandinavia as well as the Baltic Sea coast, it may be useful to add a grid point in Sweden for Figure 7.
4. Conclusions: I guess what the conclusions (as well as the abstract) are missing one key information: given all these rainfall parameters (μ , β -hat, γ , etc.) are changing, are there something general we can say about the model projections? What are the general impacts and stakeholder interpretations of these changing parameters? I know the authors are avoiding the estimation of return levels or IDF directly; however, let's take Figure 4 as an example, what would I expect when both β -hat and γ increase for most of model domain? This is sort of related item 3 above: the chosen Norwegian cities are not particularly "well-located" for β -hat and γ changes but looks like there are interesting results over Sweden that worth talking about. The goal is to translate these diagnosed rainfall parameter changes to something that have broader impacts.

Minor comments:

Figure 1: Perhaps break this plot into two panels. One showing sensitivity of μ vs f_w and other one showing f_w vs ζ . Right now, there are a bit too many lines and marker variation within a single panel.

Figures 2, S1, S2 caption: Add " μ " and " f_w " next to "wet-spell intensities" and "wet-spell frequencies" to make them consistent with plot labels, line 143, and caption of Figure 3.

Figure S3 caption: R-square for what? The caption should include what are the dependent and independent for the linear regression (i.e. $\log u_L$ and β -hat $\log(L/24)$).

Line 181 and Figures S4-S6: Figures S4 and S5 show the **actual** β -hat and γ of the near as well as the far future simulation. It is only for S6 that you show their change (i.e. to be compared with Figure 4). I would not group S4 and S5 together with S6 in the main text discussion (line 181). Do you even need Figures S4 and S5 since you are primarily interested in the delta for near- and far-future simulation? If you do think it is necessary

to keep Figure S4 and S5, make the γ contour levels for S5 to be the same as Figures 3, S2, and S4.

Lines 188-189: “Note that especially hourly frequencies decrease over large parts of the domain” – rephrase this sentence.

Figure 6 caption: “... GFDL-CM3 driven (**bottom**)...”