The paper has significantly improved in clarity. My impression is that the discussion of the results is pretty long and articulated and would benefit a lot from a summary table or even a summary as bullet points. It is still difficult to follow it.

I am providing below some comments on the response letter and some minor comments on the nw manuscript.

Line 137 in the response letter: I believe there is some misunderstanding regarding local sensitivity analysis and how they should be used. The weighting is based on the variance-covariance matrix of the data errors. This is different than the correlation matrix of the parameters. The answer of the authors regarding omega is not correct.

The CSS uses the weighting, so it only accounts for the variance-covariance of the data errors. I think this is the point of the authors, and I agree – but this is only because CSS by themselves do not tell the whole story and need to be used combined with other measures. To get a bigger picture, it is important to consider them with the parameter correlations, which UCODE does calculate. UCODE calculates also leverage that is another measure including information on correlations.

Their final statement that says the conventional local sensitivity analysis (e.g., the one used in UCODE and also in this study) does not address parameter correlation is not correct. UCODE does calculate the variance-covariance matrix for the parameters and also the correlations. Whether it is chosen to use them or ignore them, this is the authors' choice. It is not a shortcoming of UCODE, but of the way it is used. Relying only on CSS, does not allow getting the full picture. It is true that user needs to make the interpretations by considering these together, so the problem is NOT "addressed" automatically. Guidelines on how to use CSS, parameter correlation coefficients and also leverage at the same time are provided in Hill and Tiedeman, 2007. The most informative way of going through all the measure is following the sensitivity analysis developed for the synthetic exercise presented in the book. I can provide more references upon request.

Line 270 in the response letter: same comment as above

In the new manuscript:

Line 31: What does WKP stand for?

Line 30-35: the justification of why Local and Global analysis are performed is very weak

Line 268-270: check the sentence

Line 382: parameters eventually to be adjusted during calibration

Line 600: it would be good to understand the connection between the sensitivity analysis and this has been used to design scenarios

Line 601: remove one "the"

Line 742: any idea of why this is happening?