Dear Editors,

We are pleased with this decision and we will now upload the files needed for the publication process. However, I think I need to comment the requirement to check further figures for colour blindness/deficiencies. We have not ignored this requirement, not at all. This has been a discussion point all through the manuscript writing and several figures have been revised for that purpose before submitting the manuscript.

I also used the Coblis tool directly after the files were validated and I could not at that point find anything serious. I concluded then that all figures basically could be interpreted reasonably well even with the simulated colour deficiencies. So, I took no further action and waited for the final editor decision.

But, I admit that it is sometimes hard to judge the effects of various colour deficiencies. Further, there is some kind of trade-off limit if you restrict colours used too much. I mean, to skip completely using the blue colour to help those with Tritanopia (which is extremely rare) will seriously limit what you can do if you want to use a colour representation. This is a problem when a monochromatic view is clearly not able to show the things you want.

Since the red-green colour deficiency is the most common deficiency (in fact, I have myself a ~25% red-green deficiency!), we have basically tried to avoid colour combinations where those two colours are present simultaneously in the same plot (at least, if they show things that are really important for the discussion in the text). When checking for the red-green deficiencies using Coblis I could not see any big remaining problems due to this in the plots.

I think I need to go through all 11 figures with specific comments to explain our thoughts and choices of colours:

Figure 1:

This is an important figure for the article showing the use of data from 16 satellites during 42 years of measurements. Each satellite curve has been given a specific colour. In this case there are also co-existing red and green colours since it is a bit difficult to find 16 different colours and still avoiding red and green. However, we think we can be excused in this case since we also have written clearly in the figure the name of the satellite in front of each curve. With this backup-text we don't think this can be misinterpreted.

Figure 2:

Here we again have a large number of curves (8 curves) with different colours. In this case we do emphasize two curves with thick lines, i.e. the ones for CLARA-A2 (blue) and CLARA-A3(red). We want to show the change when going from CLARA-A2 to CLARA-A3. This is the main message. But we also wanted to set the CLARA-results in perspective to other available datasets without really allowing full

details (i.e., these curves are partly obscured by the CLARA curves). Here we can see that the CLARA-A3 results are now in better agreement with the bulk of other datasets whereas CLARA-A2 was clearly on the low side. Notice that we avoided simultaneous use of red-green for the two thick lines.

Figure 3:

This is basically a similar plot as in Figure 3 for another parameter but since the curves are better separated here we skipped the use of thicker lines for CLARA-A2 and CLARA-A3. I could not find any particular problem with this visualization using Coblis. If a reader also use the magnifying tool (zoom) I cannot see that the figure can be misinterpreted.

Figure 4:

Basically the same conclusions as for Figure 3. Coblis did not indicate a problem when testing the red-green deficiencies. For us, the separation of CLARA-A2 and CLARA-A3 is most important and this seems to work reasonably well.

Figure 5:

Now we are presenting spatial (global) plots. Here we have used two-colour schemes (i.e., going from dark blue/green to yellow or from blue to red). This is at least much better than if using more complicated colour schemes with more colours (like rainbow or jet). And I think the combination of blue and red works nicely to show the most important features. Coblis did not indicate any big problems here.

Figure 6:

Again, a spatial plot using a two-colour scheme going from dark blue to yellow. Coblis did not indicate any problems here.

Figure 7:

Basically the same comment as for Figure 6. However, here we use two different two-colour schemes: one going from red to black (via white in the middle) for circle symbols and one going from dark blue to yellow for the global plot. I think that it worked well with different Coblis options but here I am a bit more uncertain. However, after discussing it with the other authors we still think this is the most useful option. The changed validation results (for rMBE) are also thoroughly commented in the text and the reader should not misinterpret this message, we think.

Figure 8:

This simple schematic plot cannot possibly be misinterpreted, even with colour deficiencies. Tests with Coblis did not show any problems.

Figure 9:

These regional plots caused us quite a lot of problems initially when other colour schemes were used. But this colour scheme seems to work well according to Coblis. Thus, I think we have found a useful representation in the end.

Figures 10 and 11:

Again we have line plots with several (i.e., five or six different) datasets. We think that colour schemes are not the biggest problem here (at least according to Coblis) but rather the visualization of all the details. But if using the magnifying tool (zoom) the reader would certainly be able to identify and separate these datasets. We also found it important to really show results over the full 42-year period which consequently creates a lot of details.

With this I hope I have shown that we have taken the colour blindness/deficiency problem seriously and done the best we can to minimize them. If you disagree, we would appreciate to get some more specific instructions of what can be done to improve things further.

Best regards

Karl-Göran Karlsson (on behalf of authors)

PS. The reply to Reviewer 3 is now uploaded to the Interactive Discussion part.