Review of "Glyph Maps for Visually Exploring Temporal patters in Climate Data and Models, " by Hadley Wickham, Heike Hoffman, Charlotte Wickham, and Dianne Cook

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1 General Comments

Overall, the paper is well structured and accomplishes what it sets out to do. I have three main conceptual comments to make.

1. In describing the data used to motivate the methodology (page 2, lines 3-4), the authors attribute a particular trend to the "...El Niño event, a major temperature anamoly". This is not really an accurate explanation of El Niño. An easy fix would be to rephrase with something along the lines of "this pattern in temperature occurs during the El Niño phenomena". A similar correction needs to be made on line 10 and in the caption for Figure 1. Here are two references that may be of use:

   - Kevin E. Trenberth. The Definition of El Niño. *Bulletin of the American Meteorological Society*, 78:2771–2777, 1997

   - Author Unknown. What's happening in the atmosphere during El Niño. `http://www.esrl.noaa.gov/psd/enso/enso.description.html`

2. I think the methodology would be greatly improved by adding a "legend" to the glyph plots to give an idea of scale and resolution. Without seeing the axis labels it's hard to interpret. One possibility would be to include a sample gridbox in the spot where the legend would be. This sample plot should be large enough to include axis labels and to give an idea of scale. This would allow the reader to quickly see the temporal resolution, which is important for understanding variability, and to know if all plots are on the same scale or if the scales are relative. Captions aren't sufficient for conveying this information.

3. The "Construction" section needs work to fit with the document as a whole.

   (a) One option is to remove the section all together. As it stands, it is not necessary for understanding the method or the new contributions.

   (b) If the section is going to be included with the amount of detail it currently contains, it needs to be better motivated. Why are these equations included and why should the reader care about them? How do they relate to the bigger picture?

   (c) Another option is to include more details about the plots. Specifically, using R, how does the user construct them using the 2 packages the author mentions. Explain how the equations fit in that context.

2 Specific Comments

2.1 Conceptual

1. The references are not handled consistently. For example, on page 2, the reference in lines 48 and 49 should look like the reference on line 41. *done*

2. The legend on Figure 1 needs to be larger.

3. In the description of GISTEMP on page 4, anomaly is a more appropriate description of the data than measurement. *done*

4. It would be useful to include an example of the star glyph with the reference circle and a sample interpretation.

5. In Figure 5, right, it isn't clear to me why the daily temperature data isn't periodic. A better explanation of the data construction is needed.

6. Figure 6 would be improved by including not only the "legend" described above, but also a legend indicating what the color means.

7. In Figure 8, what is the temporal resolution of the data? Monthly? Annually? Again, a legend to aid interpretation would be useful.

8. In Figure 10 (top), it isn't clear what "warm" and "cool" means. A legend is necessary along with a better explanation of how the color was chosen.

9. I can't see the different line weights in Figure 10 (bottom). Either the widths need to be more varied, or some other method needs to be used to denote the number of gridboxes incorporated in the line.

10. Is Figure 11 just a repeat of Figure 10? If not, how is it different and where is it discussed in the text?

11. Figure 12 (right) needs better motivation. Why not just a heat map of correlation? Based on the scatter plots, it isn't clear there is a relationship between the two variables and that loess is appropriate.

12. The conclusion would be strengthened by including a discussion of when these plots are most appropriate. Just for EDA? In presenting results? etc.

2.2 Grammar and Spelling

I point out a number of grammar and spelling issues here. The whole document needs to be reread and checked for grammatical errors though.

1. Page 1, line 48, "as" should be at. *done*

2. Page 2, line 29 is missing "a". *can't find this*

3. Page 4, line 28 – "carefully" should be changed to careful. *done*

4. Line 7, page 5, "were" should be was. *done*

5. Line 14, page 4, does "they" refer to the glyph-map? *done*

6. Line 32-33, page 6, define silent failure *done*

7. "An" should be A, pg 6, line 42 *done*

8. pg 9, line 51, increase should be increased. *done*

9. pg 10, line 13 remove "the" *done*