

Interactive comment on “Regularization Destriping of Remote Sensing Imagery” by R. Basnayake et al.

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Received and published: 23 March 2017

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C1

Responses to the Comments made by Prof. K. McIlhany

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March 23, 2017

Dear Prof. K. McIlhany,

Thank you for carefully reading the manuscript and providing helpful guidance for revisions. We highlighted the changes in the revised version of the manuscript using a [blue font](#).

Prof. K. McIlhany: *I found the paper interesting and relevant.*

Response: Thank you for identifying the value of our work and providing a positive feed back.

Prof. K. McIlhany: *There are numerous grammatical errors however which need to be addressed. There are enough that I simply scanned my edited copy for your perusal. My strong suggestion is that one of the writers read aloud the paper so that these mistakes are caught early on before submitting in the future. I realize that some of the authors are non-native English speakers and I am always impressed at how well*

C2

they perform in the scientific environment, however, technical writing requires clarity. In some cases, the grammar issues lead to confusion about what exactly is being said.

Response: We agree, our original version had too many spelling and grammar errors; hopefully our second try is not a hard slog. We have highlighted the corrections in blue in the revised version.

Prof. K. McIlhany: *On pages 4-5 there is some confusion in the text about whether the equations indicated boundary points as either "red" or "bold". Further, this confusion is present in table 1. The PDF file does not show "red" when it is indicated in table 1 but does show red in table 2. When printing the article in black and white, it is better to indicate these as bold, so perhaps they could be both red and bold and then everyone is happy.*

Response: Thank you for pointing out this issue. We have replaced the "red" letters from the "bold" letters to follow the journal standard.

Prof. K. McIlhany: *Also, on page 4 and 5 is repeated text, pick one and remove the other..*

Response: Thank you for pointing this out. We have removed the repeated text.

Prof. K. McIlhany: *Overall, I enjoyed the paper and its content. I do have a few technical questions, but nothing to prevent publication.*

Response: Thank you for your interest. We have addressed all the questions in the rest of this letter.

Prof. K. McIlhany: *1) Page 7: In seeking a minimum for the U-curve method, how many numerical attempts at alpha are reasonable?*

C3

Response: In general, the range for the α varies from 0 to 1. In this work, we have used 100 of α values that varies from 10^{-12} to 1. We have added an explanation to clarify this in page 6 (modified version).

Prof. K. McIlhany: *2) Page 9: When the data contains a horizontal stripe, do you accidentally remove it (like a road) and if not, how do you know to avoid it?*

Response: This is a good question. And a valid criticism. We can break this question into two parts.

1. If there is a road, or any real signal that is exactly aligned with axis of the known stripes biased in a part of the image (assume that we have a part of the image with only biased data). In this case, we can destripe the image by defining the weight matrix L , considering a piece of image that does not have the horizontal road. We have added an explanation in page 3 for that.
2. If there is a road, or any real signal that is exactly aligned with axis of the known stripes biased in the complete image. Then they would be in danger of being regularized to disappear in a smooth "denoised" image and our only current protection against this is the unlikeliness that a perfectly straight road would be both straight for long stretches, and furthermore straight and aligned with the sensor error. If this were deemed a general problem however, a mask to de-emphasize the regularization spatially could be developed in the regularity term at spatial locations where there is a known mapped road or other perfectly straight feature.

Prof. K. McIlhany: *3) Page 10: Why 12 for the threshold? How do you choose 12? A suggestion would be to turn Fig. 5 by 90 degs and then set the threshold to the FWHM of the highest peak found. You could repeat this process using the next lowest peak*

C4

and see how many more stripes are found. Eventually, you will see a rise in the number of stripes found and then raise the threshold to an earlier value when the number of stripes found was more consistent.

Response: We take the suggestion and we have included an explanation for that in page 10.

Prof. K. McIlhany: *4) When citing "inpainting" did you consider Andrea Bertozzi?*

Response: We didn't consider Andrea Bertozzi for this work. We referred M. Bertalmio and we have cited the author.

Prof. K. McIlhany: *Most of my grammatical issues are highlighted in red ink on the attached PDF. I answered my own inquiries about the "argmin_a" and "vicarious" comments, so please disregard those, but the rest are genuine issues about writing.*

Response: We have answered all the other comments.

Prof. K. McIlhany: *Thank you for the opportunity to review your work*

Response: Thank you for the valuable comments which helped to improve the quality of our article.