

Interactive comment on “Large-scale vegetation responses to terrestrial moisture storage changes” by Robert L. Andrew et al.

Robert L. Andrew et al.

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Dear Reviewer #1.

Thank you for taking the time to read our manuscript and to provide valuable comments. We are glad you found the work interesting and are supportive of its publication.

We would hereby like to address your major concern by explaining a bit more the scientific and physical basis of the comparison. The core idea in the paper is that high frequency signals (D1, D2, A1, and A2) correspond to storage changes of shallow soil moisture, while low frequency signals such as D3, D4, A3 and A4 correspond to deeper soil moisture or even groundwater. We previously proved this in another manuscript which is currently under review (revised version) for Journal of Hydrology. This is why forests mostly correspond with low frequency changes; their roots are

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accessing water storage that is changing at a lower frequency (though it is entirely possible for high frequency signals to also exist in forests and low frequency signals to exist in grasslands etc.). Land covers (hence NDVI) dominated with shrubs and grasses (shallow roots) correspond to higher frequency signals where moisture change is more dynamic. This might not have been as clear as we intended in the manuscript, we can make changes to make this clearer in future revisions.

Additional minor comments:

1. Such a figure as you suggest is in our other manuscript which is in review (as mentioned above). We agree that it would be useful too in this paper, and will include an alternative version of it in the main text of future revisions. See figure 1.

Figure 1: An example of a wavelet decomposition from a cell in central South Australia (29°S 136°E). Notice the visible trends in the approximations, which are normalised in the details.

2. The MODIS land use type is from 2012, this information will included in future revisions.

3. Thank you, this will be included in future revisions.

4. Yes, what you have commented is absolutely correct. I hope this has been answered in our response to your major concern. We will try to make this clearer in revised versions.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-545, 2016.

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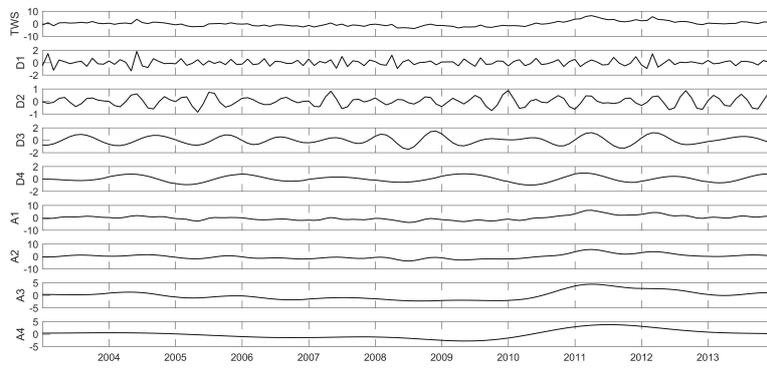


Fig. 1.