

Interactive comment on “Note on the application of planar-fit rotation for non-omnidirectional sonic anemometers” by M. Li et al.

Anonymous Referee #2

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General comments:

This manuscript describes a comparison of different applications of the planar fit method for non-omnidirectional sonic anemometers. The application of the planar fit method for ‘undisturbed’ sectors leads to increased friction velocities. This may be an improvement but as there is no reference measure available to state this reliably, an increase does not necessarily mean an improvement. Irregular values of momentum fluxes may occur due to flow distortion by the probe itself but also by obstacles in the surrounding and flux values should be removed in both of these cases. The manuscript should be improved by comparisons with other (omni-directional) anemometers or at least by a comparison with 2D-rotated wind fields as the experiment was not performed

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with an additional omnidirectional anemometer. Obviously there is an urgent need for publications on this topic with thorough experiments and data analysis. This should be added in the discussion and outlook.

Specific comments: P 7324, I 16: the double rotation is still in use, especially for short vegetation

P 7325, I 12f: The first sentence has to be re-written to make it clear. The next sentence is not fully correct as effects on routine measurements are not discussed in the paper.

P 7326, I 11f: The difference in orientation means that there is no overlap for the undisturbed sectors of the two sonic anemometers. For a comparison of the results this would have been helpful.

P 7326, I 14: a topographical map should be added to show the need for the planar fit rotation

P 7326, I 25f: there is no overlapping of the undisturbed wind sectors, which would have been necessary for a comparison

P 7327, I 9f: A comparison with 2D rotation should be added.

P 7328, I 4f: This can hardly be seen, the remaining number of negative values should be pointed out and be related to table 1 (20% compared to 34%?). Table 1 should then be complemented by dataset B.

Technical comments: P 7324, I 16: see specific comment, but one could insert: ‘earlier introduced double rotation. . .’

P 7324, I 19: ‘For this type of . . .’

P 7325, I 4: ‘. . . has two sectors: the disturbed. . .’

P 7324, I 8: ‘confirmed’ instead of ‘found’

P 7325, I 19: ‘If this is not done, the. . .’

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P 7326, I 4: 'For this study, two well-analysed and quality checked data sets...'

P 7326, I 14: '...is located on a homogeneous and flat...'

P 7326, I 19-20: '...Mauder et al., 2008) which offers the possibility to apply the...'

P 7327, I 3: 'Furthermore, the wind field in the front sector from 183° to 243°, opposite to the disturbed sector, is influenced by the CSAT3 sensor construction.'

P 7327, I 16: What is meant with 'applying all data,..?'

P 7327, I 21: 'After sector-wise planar fit, the undisturbed...'

English language has to be checked for several occasions

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 7323, 2012.