Interactive comment on “Wind Reconstruction Algorithm for Viking Lander 1” by Tuomas Kynkäänniemi et al.

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Specific comments:

1. "Page 1, L3: What is the duration of the initial phase of the mission?"
The "initial phase of the mission" is corrected to "first 45 sols of the mission".

2. Page 1, L3, L10, L11 and L21: Was sol 45th the last sol of the initial phase? If one of the wind sensors broke down during sol 378, why PDS-available wind data extend only to sol 350?
The PDS-available data is produced with the algorithm by (Murphy et al., 1990). There was no mention in (Murphy et al., 1990), why the reconstruction was not extended to sol 378.

3. Page 1, L21: ‘Extended’ from NASA’s PDS?
The tools extend the data available in NASA’s PDS. The sentence was restructured to make it more clear.

4. Page 1, L29: I suggest writing ‘(Chamberlain et al., 1976)’ after ‘meteorological experiments’ and ‘(Soffen et al., 1977)’ after ‘payload’.
The citations were changed as the reviewer suggested.

5. Page 1, L33: I suggest deleting the reference to Soffen (1977) from this line.
The reference was removed from this line.

6. Page 1, 3rd Paragraph: Please, rewrite or clarify this sentence. I suggest ‘The VL1 data set enables the study of various meteorological phenomena ranging from diurnal to seasonal time scales using measurements of temperature, pressure and wind direction’.
The sentence was rewritten as the reviewer suggested.

7. Page 1, 5th Paragraph, first sentence: I suggest replace ‘poor’ by ‘limited’.
The word ‘poor’ was changed to ‘limited’.

8. Page 1, 5th Paragraph: I suggest mentioning that the MPF wind data is not available in the NASA’s PDS.
Mention that the MPF wind data is not available in the NASA’s PDS was added.

9. Page 1, 5th Paragraph: Phoenix’s “telltale” measurements should be mentioned [Holstein-Rathlou et al., 2010].
A mention of Phoenix’s “telltale” measurements was added.

10. Page 1, 5th Paragraph: I suggest mentioning that the MSL wind sensor can still be used to retrieve wind speeds and accurate wind directions when wind comes from the
A mention was added that the MSL wind sensor can be used, when the wind comes from the hemisphere in front of the rover.

11. Page 2, 6th Paragraph: I suggest adding a summary of Section 2 and 4 (instead of just 4.1).

Summary of sections 2 and 4 were added.

12. Page, 3, L37: Which algorithm, yours? If so, I suggest deleting these two sentences from this subsection.

The two sentences were deleted from the subsection.

13. Page 4, L55-57: I suggest rewriting this sentence.

The sentence was rewritten.

14. Page 6, L26: Have the authors quantified the impact of a threshold different from one hour on the results?

Different threshold values were examined and the threshold value of one hour yielded the minimum mean difference between the wind directions of SANMET and the reconstruction algorithm during sols 1-45.

15. Page 6, 40: LLT is not defined.

The Lander Local Time (LLT) is now defined, where it was first used.

16. Page 7, Eq. (5): VQS1 and QS1 are used interchangeably across the manuscript. I suggest to stick to one of them.

The term QS1 refers to the thermocouple pair 1 and \( V_{QS1} \) refers to the voltage value of the thermocouple pair 1. We felt that keeping these separate is important for clarity.

17. Page 8: Fig. 16 is not referenced.

Reference to Fig. 16 was added.

18. Page 9: Fig. 19 is not referenced in the text.

Reference to Fig. 19 was added.

19. Page 10, Figs. 21 and 22: Why in particular are these sols & LLT chosen? What exactly makes both figures representative of the performed reconstruction?

The figures were chosen arbitrarily from the part of the VL1 mission, where the wind sensors were fully functional.

20. Page 11, L1-15: The discussion made in these lines seems to remain open as it is not supported by any Figure included in this subsection.

We have expanded the discussion in 4.2.

21. Page 11, L56: Provide solar longitude values (Ls) values for both sols.

The solar longitude values (\( L_s \)) were added to Figs. 20, 21 and 22.

Technical corrections:

1. Page 8, L15: Replace 'Fig. 15' by 'Fig. 14'.

Reference to the correct figure was added.

Thank you very much for your efforts in reviewing this article.

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