

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

**Tuomas Kynkäänniemi et al.**

tuomas.kynkaanniemi@fmi.fi

Received and published: 20 April 2017

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.

[Printer-friendly version](#)

[Discussion paper](#)



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 to 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*

[Printer-friendly version](#)

[Discussion paper](#)



*hemisphere in front of the rover Newman et al., (2017).*

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): V<sub>QS1</sub> 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.*

[Printer-friendly version](#)

[Discussion paper](#)



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 ( $L_s$ ) 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.

**T. Kynkäänniemi et al.**

---

**Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., doi:10.5194/gi-2016-41, 2017.**

[Printer-friendly version](#)

[Discussion paper](#)

