Letter to reviewers

Authors would like to thank the reviewers and editors for their efforts and the valuable help offered to improve our work. We consider that suggestions and comments have been of great relevance and the paper has been largely improved after the changes, corrections and additions. Authors are very grateful to the reviewers.

The changes in the paper have been highlighted in blue color.

Reviewer 2

1) It is difficult to understand the observability analysis section. The authors should present measurements first.
The paper has been restructured to improved readability. In the revised version of it, besides other changes, the dynamic system model, as well as the measurement models, are presented in section 2 (System specification) before the observability analysis.

We hope that with these changes the observability analysis will be easier to follow.

2) The observability analysis takes too much space. Is is possible to shorten the section as the results can be expected from physical sense.

To addressing the reviewer's suggestion, in the revised version of the manuscript the descriptions of the Lie derivatives have been moved to an appendix. With this change, the observability analysis section has been shortened, and now it is more focused on the results.

3) The unknown disturbance(Delta_g) in the stability analysis of Eq.(56) is missing.

In the revised version of the paper, the derivation of Eq (48) (Eq 56 in the former version of the manuscript) has been expanded to better clarify the result. In particular, Delta_g is assumed to be bounded (see below the description of Eq 42) so it is smaller than epsilon.

4) How about the matrix B^(-1) in Eq.(53). Does inverse always exist. Or should we use pseudo inverse then?

In the revised version of the paper, in appendix B, a proof of the existence of B^(-1) has been included.
Thanks to the reviewer for its suggestion.

5) I wonder where the set up using altimeter for SLAM is new in this study or has been done already in some previous studies.

The use of the altimeter as an aiding sensor in monocular SLAM is not completely new since some methods have incorporated this sensor previously. Regarding the incorporation of the altimeter in monocular SLAM, the main contribution of this work is to theoretically show, by means of the observability analysis, that the observability properties of the system take advantage of the incorporation of altitude measurements. Also, it is shown that the use of this sensor along with the proposed target-based feature initialization technique improves the performance of monocular-based SLAM systems.

In the revised version of the paper, a note has been added to better clarify this potential misunderstanding.