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Interactive comment on "A new high-precision and low-power GNSS receiver for long-term installations in remote areas" *by* D. H. Jones et al.

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Interactive Comment

Modifications to “A new high-precision and low-power GNSS receiver for long-term installations in remote areas”

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7 March 2016

1 Modifications 02/03/16, in response to feedback from K. Palamartchouk

- The word receiver can mean both the measurement device, and also just the signal tracking circuitry. I would suggest changing ’receiver’ into ’receiver unit’. *Thanks for this comment. We have now added the following sentence "Here we use the word ’receiver’ to include the signal tracking and control circuits, internal power supplies, communications and logging hardware. We do not include the antenna or field installation hardware"*
- It is mentioned that the Ubi software is open-source, but the precise license is not specified. *I have added the following "(under the GNU version 2 license)"*
- It would also be helpful to give an example of a typical installation and maintenance instruction sheets for unqualified field personnel to demonstrate how

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Interactive Discussion

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straightforward Ubi's operation is. *I have added the following "The external interfaces of **Ubi** are common to those of existing GNSS receivers, so installation of **Ubi** does not require significant changes to existing setup procedures."*

- An estimate of the current cost of a single Ubi unit would be also useful *We have added the sentence "The individual components of a single **Ubi** receiver can be procured for less than £2000, making this potentially significantly cheaper than commercial alternatives."*.

- The fact that carrier phase residuals are generally lower for **Ubi** than for another receiver does not necessarily mean that it is "the more precise receiver". *We have added the following sentences: "The comprehensive assessment of the accuracy and precision of a GPS receiver is difficult, expensive (Jackson et al., 2000; UNAVCO, 2012; Penna et al., 2012) and subjective — different conclusions can be drawn depending on the form of the experiment and the type of post-processing performed. These assessments normally consist of several different measurement types, performed on data from one or more of the receivers under evaluation. Here we use three separate types of metrics to evaluate the accuracy of GPS positions calculated from data recorded by **Ubi** . By themselves, none of these metrics are a conclusive measure of the absolute performance of **Ubi** but, taken as a whole, their results can be considered indicative of the relative performance of **Ubi**"*.

- I have made all of the changes recommended in the minor corrections, except for:

  - If Ubis performed generally better than the COTS receivers in similar conditions and over similar time intervals. *I don't have this data*.
  - The status of the Ubi is broadcast - *it is broadcast, you do not request an update*.

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– Fig 7. *These are local, in that they are normalised geo-centric co-ordinates. There are no other suitable local co-ordinate systems*

Again, we thank the reviewers for their time and efforts. The reviews have indeed been very helpful tous and we feel they have significantly contributed to the quality of the paper.

Jackson, M., Meertens, C., Andreatta, V., and Hove, T. V.: GPS Receiver and Antenna Testing Report for SumoiNet, UNAVCO Knowledgebase, 2000. Penna, N., Clarke, P., Edwards, S., and King, M.: Further testing of commer- cial Network RTK GNSS services in Great Britain (NetRTK-2), The Survey Association presentation, 2012. UNAVCO: GPS Receiver Evaluations, UNAVCO Knowledgebase, 2012.

Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., 5, 285, 2015.