

Thank you for the editorial summary and the additional comments on the manuscript itself. Our responses to each point raised, together with details of modifications made, are included below.

*Title etc. I though geodesists insisted on GNSS and not GPS these days? Although I can see that most of the historical record must have come from GPS.*

As we have used only GPS (not multi-GNSS) data in the processing and analysis, we consider GPS to be the appropriate and accurate term.

*p2, 3 - what does 'positive trend of amplitude' mean?*

We have rephrased this sentence to now read, "Ito et al. (2009) found the average amplitude ratios between GPS tidal displacement observations and an Earth tidal model (including OTL and Earth body tide) across Japan were greater than one, indicating observational agreement with inelastic Earth models".

*40 - west coast of central America*

We have inserted 'western' to clarify.

*Figure 1 caption line 4 - move 'as triangles' to the end of the sentence. Also in the caption say that (b) has the same colour scale as (a) as there is no colour bar alongside it.*

We have made these modifications.

*p6, 17-18 - what does 'instead of .. values' mean? Obviously, if you have a record of 18.6 years you need nodal corrections to be time-dependent (with that period). I guess this is alluding to some software packages for which for short records one can assume a fixed 'f' and 'u'. But for what you are doing here it is obvious they have to be at the exact times.*

We have simplified the sentence to now just state, "For time series shorter than 18.6 years, we applied nodal corrections during the harmonic tidal analysis (Foreman et al., 2009)."

*Figure 2 - the absence of data from S. Korea in the UHSLC data set (and also GESLA-2) is a bit of a puzzle which hopefully will be corrected at some point. It that impacts on your analysis I would be grateful if you could stress the importance.*

We have added a sentence to Section 2 to state that unfortunately no data are currently available within the Korea sub-area. However, it can be seen from Table 3 that the contribution of this water sub-area to the loading displacement at our sample sites shown is very small (<0.2 mm).

*20 - the problematic coastal areas ..*

'coastal' inserted.

*p7, 1 - is listed*

“are” changed to “is”.

*Figure 3 - presumably the overflow white arrow in the colour bar is a GMT error? Could you make that red? Also, on paper anyway, I can hardly see the three GPS station numbers in (b). Also the caption should include mention of the numbers.*

We have modified the colour bar in Figure 3 to be red, and also the caption to now mention the three GPS stations shown. We have also improved the readability of the three GPS station names on the figure by adding a white background box.

*23 - Ryukyu Islands respectively (Figure 3b).*

Change made.

*p11, top - at this point I wondered if you had fully given credit to web sites or references of all data sources. Please check.*

Here we state the data set / networks used. They have been mentioned in full in the Data Availability section, and also the providers thanked in the Acknowledgements section.

*28 - I guess this 13.96 hour business is well known to GPS people but not to me. Could you have a sentence explaining more or a reference?*

We introduce the concept of using an artificial harmonic displacement to quality control the GPS estimation of tidal displacement at the start of Section 4, but appreciate that we had not linked the last sentence of paragraph 1 of Section 4.2 sufficiently. We have therefore amended the last two sentences of this paragraph so that they now read, “In each daily solution, an artificial 13.96 hour harmonic signal of 3.0 mm amplitude was introduced in each of the east, north and vertical components, with the phase referenced to zero defined at GPS time frame epoch J2000, and hence the GPS harmonic estimation capability with the aforementioned GIPSY processing settings assessed. 13.96 hours was chosen as the period of this displacement following Penna et al. (2015), as it is approximately in the semi-diurnal band but is distinct from the main tidal harmonics so will not be contaminated by geophysical signals.”

*p12, 4 - change 'maps to only an error of' to 'has an error of only'*

We consider the original form to be a clearer description, so have left this unchanged.

*15 - an improvement*

We have changed “the improvement” to “an improvement”.

*17 - isn't 'those' (i.e. the properties) of the asthenosphere part of the 'adopted Earth models' in the first part of the sentence? I think this needs rewording.*

First sentence of Section 5 now changed to read, “As Green’s functions essentially depend on the material properties of the adopted Earth models, an improvement of the agreement between GPS-observed and predicted OTL values (reduction in the observational residuals) could be expected by modifying the Earth models, and the representation of the asthenosphere has been demonstrated to be especially important (Bos et al., 2015).”

*18 - especially important*

Change made (incorporated within the response to the line 17 suggestion).

*21 'was prepared'. Sounds like cookery. You mean computed or extracted?*

Section 5 has been completely rewritten in response to .Reviewer 3’s comments.

*24 Q of 70. Is a reference needed here? Bos et al. (2015)?*

Kustowski et al. (2008) reference added.

*p13, 27 - 'has been validated'. Is this interpretation unique?*

We have re-written Section 5 and no longer include a statement about asthenosphere validation.

*p16, 8 needs https://*

We have added http://.

*30 drop 'assumed'*

This description has been moved into Section 5 and the ‘assumed’ dropped.