

Response to Comment on “Tidal variability in the Hong Kong region” by Devlin et al.

(from Richard D. Ray, NASA Goddard Space Flight Center, Greenbelt, Maryland, USA)

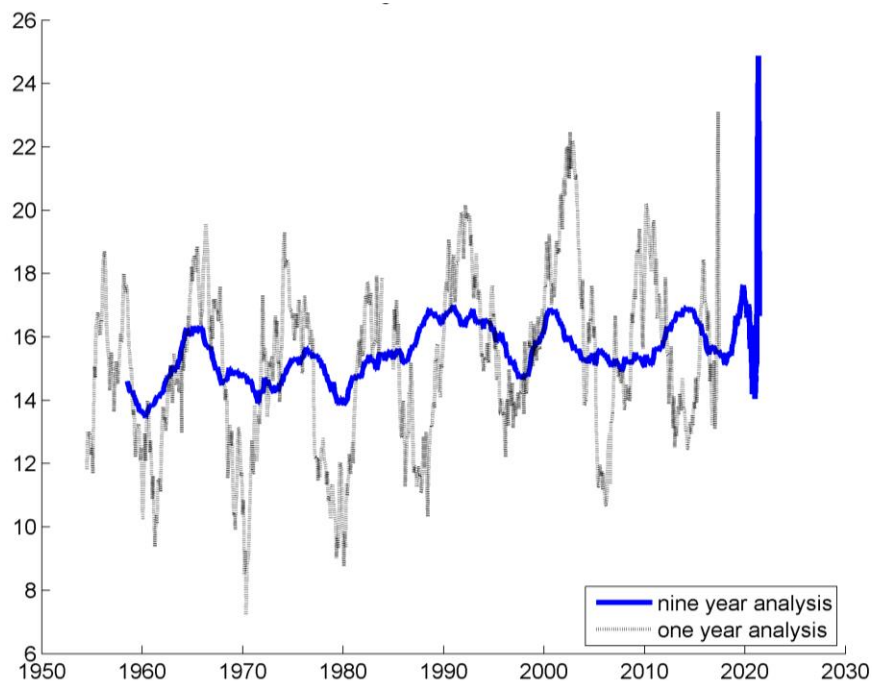
Dear Dr. Ray,

We would like to thank you greatly for your help and insight provided by your comment. You recognized that we had made some errors in our approach and our logic in analysing the minor tidal constituents in the Hong Kong waters, yet you provided a clear and kind elucidation of what was done incorrectly as well as teaching us the fine-scale details of these factors that have increased our knowledge and understanding. Your discussion has also steered us to perform better analyses, as well as opening up some new inspiration.

The result of your discussion coupled with the suggestions of the anonymous reviewers convinced us that the analyses and discussion of “minor” tides should be removed from the current paper. Now, this paper only focuses on the four largest tides; the other lesser tides and overtides are not included now, and neither are the contrasts between Hong Kong and the SCS tide gauges nor the “historical” vs. “modern” comparisons. If you can see my responses to the other reviewers, you should be able to see a better discussion of all the changes and the reason why. In general, our paper is now much shorter and much more focused on defensible and clear results in the Hong Kong waters.

However, even though we have removed all the material that your original comment addressed (and therefore we think that the current manuscript will have no conflict with the original comments), we want you to know that your insight has guided us to working on a new study that is looking specifically at the M_3 variation, analysed throughout the world ocean. In this new study, we follow your steps and perform 9-year analyses on the tide gauge records. This results in values for M_3 and other minor tides that removes the ~8.85 year variability seen before, and yields a more constant

and defensible result. We observe from comparing the M_3 tide done with 1-year and ~9-year analyses to see that the mean value is similar, but the ~9-year oscillation is no longer present. Interesting, though, some variability at other time scales is still present. For your consideration we show a simple plot of the results in Hong Kong (Quarry Bay), with the 9-year HA shown as a blue line (overlapping 9-year analyses, at one month steps), and the previous 1-year analyses shown as a broken grey line.



This is a rough plot (please disregard the spurious data at the end of the record, but the basic form is clear. We have also been performing similar 9-year analyses at every gauge in the world ocean where a significant M_3 tide has been observed and hope to soon make a paper that discusses the data and the possible reasons, likely aided by altimetry data.

This work is ongoing, but it would not have been possible without your help. We wish to thank you once again for your time and effort with your comments. When we finish our new study, I hope that you will approve! In regards to the current study about Hong Kong, we believe that since no

minor tides are now discussed, nothing contentious should remain in this manuscript.