

Interactive comment on “Reassessment of long-period constituents for tidal predictions along the German North Sea coast and its tidally influenced rivers” by Andreas Boesch and Sylvin Müller-Navarra

Anonymous Referee #1

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For those readers interested in the analysis and prediction of tides, this paper is of considerable interest. The main advancement, and nominally the justification for publication, is a small revision to the tidal frequencies used by the German hydrographic office for their official predictions. But personally I found the paper of interest not for that, but rather just for the description of the HRol method, about which I was completely unaware. Evidently developed by Horn in the 1950s, it is an unusual approach to tidal analysis. I'm especially appreciative of the fact it is developed for use in analyzing high and low water (rather than the more standard hourly data), and I can foresee

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more applications of the method once readers become familiar with it. Indeed, there are old methods for analyzing high-low data by Schureman and Doodson, and probably others, but these are difficult to follow and probably no longer merit consideration with modern computers. The few papers on analysing high-low data that have been published in the last several decades – at least those I'm familiar with – are trivial and not worth reading. So I'm happy to have this new paper that explains Horn's methods.

The one drawback of the method, according to how the authors describe it, is on page 8, lines 10-15, where it seems a 19-year time series is needed. That is a pity. The authors find a way to overcome this limitation in the German network, since there are other stations around, but this is not always the case if the method is to be applied elsewhere.

For my own interest, I would liked to have seen more standard methods of prediction included in the tests of Tables 5-6, but I won't insist on this, because it would involve the authors using methods they may not have ready at hand. Others can perform this extended testing.

I have a few minor items to address; otherwise, I think OS should publish this paper.

The paper is well-written and the English is quite good, but there is a number of misspellings which I noticed. The authors should run an English-language spell-checker on the text to pick these up. But a spell-checker may not catch: page 5, line 17: frequency depended → frequency-dependent page 4, line 78: what is "appodization" ?

Page 4, line 51: I understand why lunar transit times are computed, as they are fundamental to the method, but I do not understand why "lunar coordinates" are also needed. Or do the authors mean merely the mean longitudes needed to evaluate the Doodson arguments?

Page 4, lines 57-60: Regarding removal of "extreme events" – were these data also removed when the tests of Tables 5-6 were computed? Or do Tables 5-6 include ALL

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data from 2016 ?

Do any of the German stations experience a double high tide? This occurs in some locations in the English Channel. If that occurs, how does the time indexing change?

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