Ocean Sci. Discuss.,
https://doi.org/10.5194/os-2020-96-EC1, 2020

Ocean Science Discussions

Interactive comment on "FES2014 global ocean tides atlas: design and performances" *by* Florent H. Lyard et al.

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Received and published: 23 November 2020

23 November 2020

Comments on 'FES2014 global ocean tides atlas: design and performances' by Lyard et al. (OSD)

Below are some general comments on the draft with an editor hat on, I leave any more scientific comments to the reviewers. I found the text rather intense and technical but that is probably inevitable. However, there is at least a need to define all acronyms, for example, and have proper referencing. There is also inevitably some french-english.

A second problem is that, while most of the figures might be acceptable (although parts (c) of Figures 2 and 3 are missing), they are a mixture of styles which does not look

Printer-friendly version

Discussion paper

good. I make some comments on each below.

Comments on the text, apologies there are so many:

p3, 5, title - tides –> tide, performances –> performance

13 - with a tidal

20 - tidal constituent spectrum

22 - diagnostics and the Lowest and Highest Astronomical Tide and other hydrographic datums.

24 performance

32 performance

34 accuracy towards the end

41 error covariance data sets.

p4, 5 methodological

8 pretty –> very

13 define CNES

the decision was made

15 performance

18 by the GOT model (reference)

21 resolution grid on the

22 website (give http)

in 2019 by extending its long-period spectrum to include low-frequency ..

28 the reader with information

30 a basic accuracy

34 dependence

36 define these acronyms

38 based on the usual ..... with a non-hydrostatic

41 The ITWD

42 parameterization,

pioneering

p5,5 accounts for a significant

15 times smaller

19 solver's

23 parameter

28 Consequently, we will confine ourselves

33 velocity

37 currents

41 adapted for the global ocean to include near-shore

p6, 5 elevations

17 Reversely –> Conversely, it

24 Reversely –> On the other hand, minor

27 What is Go? GBytes?

31 define acronyms and give proper references

38 give year and add reference for Timmermann et al.

p7, 6 we have always

8 even on a regional level

19 you have defined these FES versions before and later without the hyphens

20 ditto

32 difference RMS reduced by nearly a factor

36 performance such as

40 because of the intrinsic variability of the atmosphere we consider

41 clearly

p8, 8 have been used in validation of simulations and in data assimilation steps

11 by means of harmonic

13 how much –> how

19 put 'respectively' at the endd of the sentence

21 time series raise more ... dependence

23 signals

29 dataset, but with larger uncertainties than

31 higher spatial

32 temporal under-sampling

36 Reversely –> Conversely

37 not only are the S1 and S2 tides projected

42 completed –> complemented

p9, 8 targeted

9 applied to the altimeter

12 noted –> denoted

13 ditto

14 what is the funny 18)

17 aliased to

18 and to the annual

19 analysis by the non-tidal signal is severe

virtue of the Parceval Rule (reference)

23 guarantee

24 portion of the annual

26 and so to tidal

27 harmonic

34 K1, and will.

The misfits –> Such differences were found to be consistently

35 demonstrating the benefits of the model-based correction

40 Because this signal was stronger during the TOPEX period [and why was that?]

41 Jason-1/Jason-2 relatively recent record.

p10, J1-J2. I think these sort of acronyms are asking a lot of the normal reader. I know what this means but I am not sure other people will. Also should not J1-J2 appear in Table 3 for example?

13 accurately the harmonic separation performance.

15 gap durations

17 consequently larger errors in the harmonic

19 damaging

24 tide model

by essence –> by definition?

25 internal tide

28-29 I don't understand this sentence. Could you reword it? Maybe it also needs a reference

31 tide becomes shorter.

33 with the notable

34 substituted by

35 forcing terms

36 as a variational

37 as is the case

p11, 7 - a representor

9 Although the variational

11 poorly able

13 has been constructed to ... error

14 demoniation is a mis-nomer as the error covariances of state vectors are not idealised ... but are justified

18 are run

26 experiences –> experiments

27 dependence

37 in Figure 6

40 global-average

p12, 7 - sloping

11 in Figure 7

13 global-average

16 regions using either synthetic

19 extracted from what we call 'gridone',

21 of the reference

28 the Weddell Sea region

p13, 6 solving an assimilation

11 feasible of the

18 why 20 years? There has been 28 years since T/P launch?

24 estimate of

26 errors

30 consisted of

38 enables us

40 Stammer et al should be 2014

43 what are Kowalik etc. (I know but the reader will not). Please give proper references. Define acronyms

p14, 7 - very peculiar –> particular

10 between the

16 separate the M4

17 in the M4 analysis

18 kept from –> kept in??

21 Avon Mouth –> Avonmouth

Bay of Bristol –> Bristol Channel

24 components (twice)

25 performance is

28 drop 'rather'

29 - why don't you include third-degree tides, especially M1? Although only a few mm or a centimetre at most places, it will be larger than some of the second-degree tides you have here

p15 top - I think, as becomes evident from the figures, you need to make clear that Sa and Ssa come from an ocean model as well as tidal forcing

27 - Stammer 2014

36 gauge data

37 The TPX09 atlas

40 performance in

p16, 7 - tide gauge

why do you define TG here when 'tide gauge' has been used a lot before. Please defineit first time and use from there.

9-10 I don’t understand this sentence. Please reword.

11 the GLOSS

14 .. regions, ... no data has

15 the GOT

16 gauge

19 using the

20 the GOT4v10

21 in the global

29 the Jason

30 of all the models tested ... variance

31 tidal models respectively.

34 Statistics for Altika

37 reduces

38 to the GOT

42 variance when using the

for the Altika .. to the coast

p17, 10 current maps ... budgets in the global

17 elevations where tides are the major contributor to variability .. validation of tidal currents

29 (as they are based

30 , and vertical current profiles

36 ellipse

37 dop 'Precisely'

42 in Figure 19

p18, 7 Globally –> Overall

16 depicts

20 The barotropic tide energy budget is a valuable diagnostic .. performance

22 proxy for the interaction

32 used to provide additional vertical diffusion information in ocean ..

36 In the

37 using a spherical harmonic/Love number approach ... Green's

41 Green's function

p19, 8 why is this final as you mention a version 'c' at the start

12 assessment

14 constituents

15 Mean Lower Low Water (MLLW) and Mean Higher High Water (MHHW)

These are not just used by NOAA. They are two of many rather archaic hydrographic datums. You could maybe refer to one of the annexes of the Pugh and Woodworth (2014) book.

21-22 where the accuracy of tidal atlases .. limited for precise

28 define ITRF and give reference

29 user community were able to accumulate

30 performance in the tidal

33 short-list

36 - define SWOT and give a reference (probably Morrow et al. in Frontiers a couple of years ago)

38 emphasis on

42 existing public data release

p20, 5 future atlas

10 believe that the

11 ... correction, in terms of surface elevations as well as tidal

14 The FES2014 project ..

16 - framework no [superscript to be consistent]

Comments on figures - sorry quite a few here. My main complaint is that their styles are very different, and (although I am not convinced it is necessary) but maps using have Longitude and Latitude axis titles.

Fig 1 - the lon/lats numbers are very small and the colour scales are cramped with them.

line 9 - you haven't defined in the text what resolution ratio means. You should define it here otherwise.

Fig 2 - (a) and (b) annotation needs adding. But figure (c) is missing completely?

Fig 3 - ditto

Fig 4 - say what the units are in the caption or the colour bar

Fig 5, line 1 - signature. What does number of points mean? I couldnn't see that in the

text.

You can see this is very different style to Fig 1 for example

Fig 6 - Watt should be W

It seems strange to have negative numbers increasing to the left, but ok.

Are the region numbers used in the paper? If not I would remove them.

line 1 - dissipated by bottom

Figs 7 and 8 - you can see on one page what I mean about different styles

Fig 12 - the fonts are very small

Figs 13 and 14 - please can you remove all the clutter on land with lakes and rivers? It is hard enough as it is to see the coloured dots. And in Fig 14 a simplified coastline might be best as your eye is taken by all the detail.

In the colour bar cm2 should be superscript

Fig 15 line 1 - variance

line 2 - for the Jason-2

It would be good to remove the lakes etc. from these maps also. Who cares about them?

Fig 17 - the font is again very small on the axes

Fig 23 line 2 - for the Jason-2

Fig 24 - Lowest Astronomical Tide (LAT) relative to mean sea level ..

Table 2 - Wave period should be (days). Please could you have decimal points and not commas?

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