Reviewer 2:

DOM represents a huge reservoir for biogenic elements and should be playing an important role in marine biogeochemical cycles. Given that most coastal waters are among the most dynamic and productive areas in the global ocean, a better understanding of DOM cycle in such environment is essential. However, there is clearly a huge gap between DOM data availability and its biogeochemical importance in coastal waters globally. To address the concern the authors here firstly present the most comprehensive database of DOM concentration in the global coastal waters to date, covering a wide range spatially and temporally as well. The aims of this work are clear and will be of interest to the wide readership of ESSD. It will also likely be a highly cited work considering the urgent call for such a comprehensive compilation of published+unpublished DOM concentration data. In general, the authors did a good job on data compilation. The manuscript is well written and well organized and will be a contribution to the aquatic science community.

Author reply: We very much value the positive and constructive comments provided by the reviewer. Below we have made a detailed response to the comments point by point. Please note that the pages and lines from the reviewer correspond to those in the first submission. Pages, lines and figures numbers from our replies correspond to those in the revised version.

Major comments

Title. The measurement of DOM can be multifaceted, i.e., concentration, chemical composition, bioavailability, age, isotopic ratios, etc. It's all about the most important parameter, i.e., concentration, in this effort of compilation.

Author reply: You are right. We have changed the title to include the word 'concentration' as follows: A global database of dissolved organic matter (DOM) concentration measurements in coastal waters (CoastDOM v1)

L279-281. I full agree with the authors that 'long-term consistency of the measurements, to enable data intercomparison, and establish a robust baseline for assessing,' is a fundamental issue. The authors have addressed the issue of comparability for data covering a wide range from multiple sources. The authors can provide more information (or give examples in SI) on this in the ms given its importance.

Author reply: This is indeed an important point. Long term consistency can e.g., be achieved by these two ways: the CRM standards provided by the Hansell's laboratory, or by comparing the DOM concentrations obtained between laboratories in the same study area and time of year. This information was added as follows (L. 436-441):

"However, obtaining consistent long-term datasets is important to enable data intercomparison and establish a robust baseline. Such long-term consistency can be achieved by using the CRM standards provided by the Hansell laboratory for DOC and TDN. Another helpful approach is comparing the DOM concentrations obtained by different laboratories in the same study area and time of year."

QC assessment part also deserves to be addressed in more detail. I would recommend a flow chart (step/criteria/priority) of data processing and quality control to be presented.

Are there any reliable time-series DOM concentration data included in this compilation that possibly provides a case to present or evaluate temporal variability/human perturbations, which is not generally lacking in its present form?
Author reply: Regarding the flow chart, we have included a new figure (New Fig. 1) that shows the steps taken throughout the process from receiving the data to including it in the database.
There are some relatively long time series in the database, but the authors would prefer to keep this manuscript focused on the database instead of giving specific examples, as this would spread the message and would also require giving other specific examples (e.g., spatial distribution).

I would recommend to try an addition of stoichiometry (ratios C/N/P) part. It may unveil the tight link for the elements and provide implications for understanding biogeochemical cycle in the highly dynamic and rapidly changing coastal waters.
Author reply: In Table 1 we now report the DOC:DON, DOC:DOP and DON:DOP ratios. We furthermore provide a brief overview of the stoichiometry in the manuscript (L.507-511):

"The average C: N: P stoichiometry for these paired DOM measurements was 1171 (± 4248): 100 (± 580): 1 (Table 1), which was very N- and P- depleted compared to the Redfield Ratio (Redfield et al., 1963). However, the large variations in C:N, C:P and N:P ratios reveals large variations in the composition of the DOM pool in coastal waters. "

Minor comments
L407-408: 'In cases where concentrations were below the detection limit, the zero values were replaced with half the value of the limit-of-detection.' I am not sure if this is the best practice. What about leaving it blank?
Author reply: We understand the comment and agree that this is not a perfect solution, but our aim here was to distinguish between no measure (blank), and a measure below detection limit (half of the detection limit). Therefore, we would like to keep these values in the database.

Typo: The unit on x axis would read 'umol P L-1) in Fig.1c.
Author reply: Corrected.

The color is too light for DON line in Fig.2a.
Author reply: We have changed the thickness of the lines in Fig.3a.

Fig 3 is not clear enough, especially for histograms.
Author reply: We have created a new figure which has a higher resolution.