1) As mentioned by the authors, the atmospheric deposition has a significant impact on the Mediterranean Sea. The first author quoted two of its own papers to support this. Even if no transient scenario for atmospheric deposition exists, did the model contain a present-day atmospheric deposition component? (As for example, the model analysis of Herrmann et al. (2014) and Macias et al. (2015) that used continued present–day discharge of nutrients)
If yes, the influence of the atmospheric depositions should be included in the discussion of the results. If not, I suggest use of continued present–day atmospheric depositions in the model.

The simulations presented in the article have no atmospheric deposition. However, we ran simulations containing the continued present-day atmospheric deposition of natural and anthropogenic nitrogen and phosphate from natural desert dust (the aerosol deposition fields used in Richon *et al* 2017). We initially chose to discard the results of these simulations from the article because we wanted to keep as much as possible a coherence in the scenarios for external biogeochemical forcings.
We include in the discussion section (4.1) a paragraph on these simulations (lines 587-601). These simulations show that in the beginning of the simulation period, the effects of nitrogen deposition are important in the northern and eastern part of the Mediterranean (15 to 20 % enhancement in average surface primary production). Phosphate deposition from natural dust has important impacts on the southern part of the Mediterranean (more than 20 % primary production enhancement in the South Ionian basin). These results are coherent with Richon *et al* (2017). By the end of the century, the results from these simulations indicate that the relative effects of nitrogen deposition have declined and the effects of phosphate deposition from dust are observed across the entire basin. These observations may be the result of the general phosphorus limitation in the Mediterranean. As a results of this limitation, the effects of extra nitrogen brought to the surface by deposition are negligible whereas the effects of phosphate are relatively important.

2) The present-day period (1966–81) cannot be older than the historical period (1980-99). Therefore, the CTRL simulations does not correspond to the present–day conditions, and because condition forcing between the periods 1966–81 and 1980-99 are different, results from the control simulation (CTRL) differed from those of the scenario simulation (HIS/A2) during the first simulated decades (from 1980 to now). Authors need to justify and clarify this choice.

This is an imprecision from us to call the CTRL period "present-day period". We change the phrasing to "*The control run CTRL is performed with forcing conditions corresponding to the period 1966–1981.*"
This control period was chosen in order to avoid years with too important warming such as the 80s and 90s.

In this section, the comparison of the model results with in situ data have been incorrectly conducted. The main issue is that no values to support the comparison between the model and the in situ data are provided (e.g., correlation coefficients, percentage of differences...). For example, the chlorophyll-a concentration in the Gulf of Lion seems two times lower in the model simulations than the estimates from satellite.

There is no information on the spatial variability of the nutricline depths (i.e., nitracline and phosphacline), and of the DCM.

The figure 1, associated with this section, compares data from the satellite and the model results during two different periods 1980-99 and 1997-2012.

The units are not coherent:

- ***"1 K colder than observations", temperature in Kelvin?***
- ***Figure A1 – "Chla 10^{-9} g m^{-3}", in the text: "227 ± 136 10^{-9} g L^{-1}", not consistent between them, and in the literature the most common unit is mg/m3 (or microg/L).***

Maybe, model values do not agree well with the in situ data, but spatial and temporal variabilities that exist between the different Mediterranean regions have to be simulated by the model. Unfortunately, quantitative information to support this hypothesis are not provided by the authors.

Reviewer is right, the evaluation of the model performances is mainly a visual comparison between the model outputs and the data.

In order to add some quantitative evaluation, we add a plot showing the average surface chlorophyll-a concentration over the Mediterranean basin from the satellite products of Bosc et al (2004) and from our HIS/A2 simulation for the years 1997 to 2005 (Figure 2). This figure shows the standardized average and standard deviation. We note that the model surface chlorophyll is underestimated (by a factor 2 on average) as shown on the maps. However, the satellites tend to yield overestimations of the surface chlorophyll-a concentrations, especially in the coastal and upwelling regions because of the high particulate matter concentrations in these areas, and also generally in the oligotrophic Mediterranean (see Claustre et al, 2002, D'Ortenzio et al, 2002, Bosc et al, 2004, Morel and Gentili 2009). The values show a good correlation between the model and the data over the 1997-2005 period. Therefore, the comparison of our modelled surface chlorophyll-a concentration with 2 independent data bases (namely SeaWIfs and MyOcean dataset) confirms that our model reproduces satisfyingly the surface chlorophyll-a in the Mediterranean.

We added some precisions on the nutricline variability (lines 233-240): "The vertical distribution of nitrate and phosphate over a section crossing the Mediterranean from East to West as well as chlorophyll and nutrient concentration profiles at the DYFAMED station are shown in appendix (Figures A1 and A3). These figures show that the model produces some seasonal and interannual variability of the nutricline depth and intensity. However, the nutricline depth and DCM depth are consistently overestimated by the model in comparison to the data. The nutricline intensities seem to be underestimated by about 50 % and the depth is overestimated. However, nutricline depth deepens from 100-120 m to 180-200 m between the western and the eastern basins (see Figure A3)."

- ***"1 K colder than observations", temperature in Kelvin?***

We changed the temperature difference units to degres C.

- ***Figure A1 – "Chla 10-9 g m-3", in the text: "227 ± 136 10−9 g L−1", not consistent between them, and in the literature the most common unit is mg/m3 (or microg/L).***

The units have been checked and corrected to ng/L. Figures A1 and A2 were changed to include the vertical profiles of chlorophyll at the DYFAMED station over several years.

Section 3.3.1 Evolution of phosphate and nitrate concentrations
Figure 3-4 – Adjust the y-axis, it is impossible to evaluate the results.
Figures 4, 5, 15 and 16 were readjusted. We rearranged the order, they are now figure 7, 8, 15 and 16. We also tried to accentuate the different lines and added average concentrations for the 1980-1999, 2030-2049 and 2080-2099 periods on the plots.

Line 259 – "A slight accumulation of phosphate is observed in the deep western basin" - For which simulations? Provide values.
We added the value (0.015 mmol m^{-3}) and precised this is for the HIS/A2 simulation.

Line 268 – "The evolution of nitrate concentration shows a marked accumulation over the century in all regions of the intermediate and deep Mediterranean waters" - For which simulations?
In the HIS/A2 simulation. We added the sentence "In particular, nitrate concentrations increase of about 0.5 mmol m^{-3} between 1980 and 2099 in the deep eastern basin."

Line 279-289 – Confusing, mixing general results (for both nitrate and phosphate) with results

specific to the nitrate that should have been present in previous paragraphs.
This sections need to be clearer. Stay with the same logic when you present your results. Compare CTRL with HIS/A2, western basin with eastern basin, depth by depth…

We rearranged this paragraph.

3.3.2 Exchange fluxes of nutrients at Gibraltar

Figure 5 – Keep the same x-axis as in the figures 3 and 4.
Figures 6, 7 and 8 were changed.

Line 293 – "We observe similar trends in phosphate and nitrate fluxes linked to the Redfieldian behavior of the primary production in PISCES." - What do you mean, where can we see this?
We modified this section to "Figure 6 shows the evolution of incoming and outgoing nitrate and phosphate fluxes at Gibraltar in the HIS/A2 and in the CTRL simulations. We observe similar trends in phosphate and nitrate fluxes in the model. This is linked to the Redfieldian behavior of the primary production in PISCES."

Line 295 – "the incoming fluxes decrease" - fluxes of what?
We added the precision "fluxes of nitrate and phosphate".

Line 295 - "According to the HIS/A2 simulation, the incoming fluxes decrease slightly until the middle of the century and then increase to reach values higher than the control in the last 25 years of simulations. Outgoing fluxes follow the same trends as incoming fluxes" – For the incoming fluxes, I see, a peak in the 90s, then stable incoming fluxes until a decrease in the 2030s, and then an increase in the last 25 years with a peak in the 2080s. For outgoing fluxes, I see, a slight increase in the first half of the 21st century and a decrease after. Not you?
The outgoing fluxes in figure 6c and 6d are negative, the lower absolute values indicate that the flux is weaker.
These sentences were changed to "According to the HIS/A2 simulation, the incoming fluxes of nitrate and phosphate decrease slightly (from 50 the 35 Gmol/month for nitrate and from 2.5 to 1.55 Gmol/month for phosphate) until the middle of the century (with a period of increased incoming fluxes of both phosphate and nitrate in the 1990s) and then increase to reach values higher than the control in the last 25 years of simulations (Figure 4). Outgoing fluxes follow the same trends as incoming fluxes: total outgoing nitrate and phosphate fluxes decrease from 1980 to 2040 (flux values getting closer to zero) and then increase until the end of the century."

Line 298 – "We observe a drift in the nitrate outgoing flux in the control." – Provide a value
We observe a decrease of about 15 % in nitrate outgoing flux between the beginning and the end of CTRL. (Lines 326-327: "We observe a decreasing trend in the nitrate outgoing flux in the control (from -129 to -110 Gmol/month representing about 18 %).")

Line 305 – "Figures 3a and 5b show that the evolution of phosphate concentration in the western basin is linked with Gibraltar inputs (Pearson's correlation coefficient is 0.63, p–value=10−14)" - Correlation between what and what, surface, intermediate or deep concentration of phosphate?

Correlation between surface phosphate concentrations and Gibraltar phosphate inputs. We added the precision in the sentence and corrected the value that was calculated for the entire water column.

Section 3.3.3 River fluxes of nutrients

Figure 6 – Keep the same x-axis as in the figures 3 and 4. Figure changed
All tables – In the result section you only wrote in percentages. Therefore, provide percentages values in tables.
We added percentage values in the Tables. Also, as suggested by another referee, we provide 2 schematics summarizing the phosphate and nitrate budgets and fluxes. We provide percentages in

these schematics (figure 18).

Line 311 – "River discharge is the main external source of nutrient for the eastern part of the basin." – Need references.

Sentence changed to "River discharge is the main external source of phosphate for the eastern part of the basin (Krom et al 2004, Christodoulaki et al 2013)".

Line 315 – "Nitrate discharge in the HIS/A2 simulation is significantly higher than in CTRL" – How much? Provide a value.

The difference is between 30 and 60 Gmol/month. Precision added.

Line 315 – "nitrate total discharge in the Mediterranean has continuously increased from the 1960s (see the CTRL values for the years 1966–1981)." - What was the value in the 1960s? The model simulations start in 1980.

The CTRL values are looping on the years 1966 to 1981. Therefore, the CTRL values represent the late 1960s.

Therefore, we can evaluate that nitrate total discharge increase from approximately 20 Gmol/month in 1966 to more than 55 Gmol/month in 1981.

I see that there is no internannual variability in the HIS/A2 simulations. You have to say something about it. Phosphate concentrations mainly decrease between 1980 and 2000. Why? Nitrate and Phosphate concentrations mainly increase between 2030 and 2050. Why?

In the Methods section (2.4), we stated "Yearly values are obtained by linear interpolation between 2000 and 2030 and between 2030 and 2050, after which they are held constant until the end of the simulation in 2100." There is no intrisic interannual variability accounted for in the nutrient riverine input scenario and this is the only transient scenario we found available. Moreover, the "Order from Strength" hypothesis appears the most consistent with the A2 climate change scenario.

Phosphate discharge decreased over the Mediterranean between 1980 and 2000 as a result of the European regulations on phosphate content in household products. After the 1980s, phosphate concentration in rivers decreased. No regulation on nitrate lead to the consistent increase in nitrate discharge observed in the forcings.

Section 4.4 Climate versus biogeochemical forcing effects

Line 559 – "They found a general decrease in plankton biomass that is lower than in our severe climate change scenario". – Provide a value.

We added some more precisions in our comparison with Lazzari et al.:

"Lazzari et al (2014) tested the effects of several land-use change scenarios on the A1B SRES climate change scenario over 10-years time slices. They found a general decrease in phytoplankton and zooplankton biomasses (about 5 %) that is lower than in our severe climate change scenario. In our simulations, average phytoplankton biomass decreases by about 2 to 30 % (see Figure 15 and average zooplankton biomass decreases by about 8 and 12 % (see Figure 16). However, our transient simulations revealed non linear trends in plankton biomass evolution. Lazarri et al (2014) also conclude that the river mouth regions are highly sensitive because the Mediterranean Sea is influenced by external nutrient inputs. Our results show the same sensitivity of the Mediterranean to external nutrient inputs."

Line 564 – "Results from Herrmann et al. (2014) indicate that chlorophyll production" – Chlorophyll production? Are you sure... I think you want to study Primary Production, or Net Primary Production. It is a major mistake…

Figure 3 and Table 1 from Herrmann et al (2014) show that chlorophyll is increasing by about 8 % between the present and future periods. See section 3.2.2 from their article "The annual total

chlorophyll biomass increases in average by 8 % between the present and future periods (Table 1). This increase is mainly associated with the winter mixing and spring bloom periods (February– May), whereas the total chlorophyll biomass does not change statistically significantly during the stratified summer-fall period (Figure 3). It can be attributed to the convection weakening and surface warming (Figure 2), which favors the photosynthesis in our model"
We changed the term to "Chlorophyll concentration".

Line 567 – "may lead to a decrease in chlorophyll and plankton biomass" - Provide values
We changed the sentence to "Our results indicate that the contrasting effects of vertical stratification and biogeochemical changes may lead to a decrease in chlorophyll-*a* concentration, phytoplankton and zooplankton biomass content of up to 50% locally and between 10 and 30 % at the basin scale as indicated by Figures 14, 15 and 16 "

Figure 14 & 15 – "nanophytoplankton and diatoms concentration (10−3 mol m−3)" "mesozooplankton concentrations (10−3 mol m−3)" – A mol of diatoms? A mol of mesozooplancton? Wrong units…
The model units are in moles of C. We added this precision in the figures.

Line 571 – "In particular, nutrient inputs at Gibraltar have substantial consequences on the western basin." – Provide an estimate.
"Results from Figures 4a and 5a and Table 4 indicate that the increase in nutrient inputs from Gibraltar at the end of the century are responsible for a 2.5 % increase in chlorophyll concentration in the western basin during the 2080-2099 period." lines 622-624

There are only four references in this crucial section (Lazzari et al., 2014; Herrmann et al., 2014; Macias et al., 2015). It is not enough…

We have added references to Luna et al 2012, Krom et al 2004, 2010, Pujo-Pay et al 2011 and Chust et al 2014.

List of corrections*:*

1) *Line 7 – "socio-economic", you used both socio-economic and socioeconomic in the text, choose the good one.*

We chose to use " socio-economic " in the text.

2) *Line 10 – "lead to changes in phytoplankton nutrient limitation factors.", which ones?*

We changed the sentence to " lead an expansion of phosphorus--limited regions across the Mediterranean. "

3) *Line 26 – "known as sapropels, have been recorded through the last 10 000 years", It is the most recent sapropel events that apparently lasted for 3000 years, other events occurred before. Please clarify.*

We changed the sentence to "In particular, high stratification events, characterized by the preservation of organic matter in the sediment, known as sapropels, have been recorded through several over geological times, the most recent was recorded 10 000 years ago and lasted about 3 000 years."

4) *Line 33 – "and had biogeochemical impacts", which ones? Where? Need references.*

Lascaratos *et al* (1999) showed that the interruption of the water exchanges between the Ionian and the Levantine basins triggered an increase in salinity in the Levantine basin.

5) *Line 35 – “The modification of water transport led to modified nutrient distribution that can alter local productivity.”, Need references.*

Sentence changed to " Also, changes in the North Ionian Gyre circulation triggered the so-called Bimodal Oscillating System (BiOS) that influences phytoplankton bloom in the Ionian Sea through the modification of water transport that led to modified nutrient distribution and altered local productivity (Civitarese et al, 2010). "

6) *Line 36 – “short residence time of water.” How long? Need references.*

We added the precision (about 100 years) and refered to Robinson et al 2001.

7) *Line 38 – “that changes in these conditions can trigger important circulation changes, ultimately leading to changes in”, three times the word “change” in the same sentence.*

We thank the reviewer for this remark. We changed the sentence to " These events show that a semi-enclosed basin with short residence time of water (about 100 years) such as the Mediterranean is highly sensitive to climate conditions and that perturbations of these conditions can modify the circulation, ultimately leading to changes in the biogeochemistry. "

8) *Line 40 – “The Mediterranean is connected to the global ocean by the narrow Strait of Gibraltar through which transport contributes substantially to its water and nutrient budgets.”, Transport of what? The link between the Strait of Gibraltar and the rest of the paragraph is unclear.*

We modified the sentence and moved it at the beginning of section 3.2.2. " The Mediterranean is connected to the global ocean by the narrow Strait of Gibraltar. Water masses transport through this strait contributes... "

9) *Line 42 to 46 – “Future climate projections yield […] the western basin for greenhouse gases high-emission scenarios and…” Modify, “Future climate projections with greenhouse gases high-emission scenarios…”*

Changed

10) *Line 47 – “In one of these MTHC weakening scenarios, Herrmann et al. (2014) show, in addition, a vertical stratification increase (Adloff et al., 2015).” Herrmann et al., 2014 or Adloff et al., 2015?*

Adloff et al, sentence changed

11) *Line 52 – “mixing that bring together available nutrients and phytoplankton”, not clear.*

Phytoplankton cells can't swim against currents and therefore need current to encounter nutrients.

Sentence changed to ““mixing that brings nutrients to phytoplankton”

12) *Line 65 – “as a result of density changes”, not clear, do you mean less stratify?*

Sentence changed to " density changes (increased stratification isolating the upper layer from the rest of the water column). "

13) *Line 74 – “…chlorophyll–a concentrations, plankton biomass…”, Chlorophyll-a concentration is a proxy of phytoplankton biomass, please clarify.*

Chlorophyll concentration is linked to phytoplankton biomass through the chlorophyll-to-carbon ratio in the planktonic cells. In this version of PISCES, the Chlorophyll-to-carbon ratio is fixed. Therefore, chlorophyll concentration and phytoplankton biomass follow similar trends in response to nutrient and climate change. We chose to show the evolutions of both chlorophyll and plankton biomass in order to keep the results in this article as easily comparable as possible with other studies.

14) *Line 83 – “In section 3.3, we expose the temporal evolution of the main nutrients, their budgets in present and future conditions and discuss their impact on the biogeochemistry of the Mediterranean Sea.”, You should discuss your result in the section 4 discussion.*

Sentence changed to "In section 3.3, we expose the temporal evolution of the main nutrients, their budgets in present and future conditions and discuss their impact on the biogeochemistry of the Mediterranean Sea in section 4."

15) Line 117 – "by up to 3 K by", temperature in Kelvin scale?
Temperatures in the model are in degrees Celcius. We kept the temperature difference in the international temperature unit: K

16) Line 121 – "0.5 (practical salinity scale)", not in pratical salinity unit?

Changed to "practical salinity unit"

17) Line 127 – "reduced vertical mixing may also reduce nutrient supply to the surface waters. A reduction in deep convection may also tend to reduce the loss of P and N to the sediment.", Is it not what you want to test? Why do you present this assumption here, in the section "2.2 The SRES–A2 scenario simulation"?

We thank the reviewer for this remark. We removed the sentence.

18) Line 178 – "the effects of climate and biogeochemical forcings". You used the expressions "climate and biological forcings" and "climate and biological changes", choose one of them.
We harmonized throughout the text by using " climate and biological changes "

19) Line 201 – "surface average chlorophyll concentrations in the top 10 meters of the CTRL and HIS simulations, and from satellites estimations", it is chlorophyll-a concentration, source of data?
It is chlorphyll a concentration in both data and model. The data come from the MyOcean product (http://marine.copernicus.eu)

20) Line 225 – "analysis reveals much greater variability depending on the region", for which regions? It is important for your results.
We added the sentence "For instance, the Balearic Sea is more sensitive to warming than the rest of the western basin, and the eastern basin has a more intense warming than the western basin (up to 3 K warming in the eastern basin and in the Balearic Sea). Also, the surface salinity in the Aegean Sea increases more than the other regions. "

21) Line 386 – "For instance, the P rich area between Crete and Cyprus is no longer observed in the 2080–2099 period (Figure 9). Moreover, Figure 10 shows that this area matches a productive zone observed in the 1980–1999 period.", It is the only area in the Levantine basin with some phosphate, nitrate and production values different from zero simulated in 2080-99. Are you sure about your observation?
The color scale of the figure makes it difficult to see, but the phosphate concentration in the eastern Mediterranean is very close to 0. We changed the sentence to "around Crete and Cyrpus" to avoid confusion.

22) Line 388 – "The primary production integrated over the euphotic layer (0–200 m) is reduced in our simulation by 10 % on average between 1980–1999 and 2080–2099. However, Figure 10 shows a productivity decrease of more than 50 % in areas such as the Aegean Sea and the Levantine Sea.", Provide time series, as in figure 3.
In order to make the argument clearer and since it has been suggested by other reviewers, we decided to include difference maps instead of the 2080-2099 maps.

23) Line 397 – "For instance, around Majorca Island, Corsica and Cyprus, changes in local concentrations of nutrients have substantial effects on primary productivity.", Ok for Majorca, but I cannot see something with Corsica and Cyprus. There is also no values provided to evaluate these changes.
Sentence changes to " For instance, around Cyprus, changes in local concentrations of nutrients (decrease of about 50~\% in phosphate concentration) have substantial effects on primary

productivity (decrease from 40-50 gC m-2 year-1 to 20-30 gC m-2 year-1). "

24) Line 413 – "Sea, the northern Levantine basin and the South Adriatic.", In Fig 11, it is the South of the Levantine Basin and the North of the Adriactic which are P-limited.
As stated in the sentence before, these regions are N and P colimited (see figure 12).

25) Line 418 – "Figure 12 shows the average depth of the simulated DCM for the period 1980–1999 and for the period 2080–2099.", results for the CTRL not shown, why?
We chose not to show the CTRL values because we did not want to overload the article with figures. Plus, the DCM does not vary much between the simulations nor during the 21st century.

26) Line 429 – "At the DYFAMED station, the average DCM depth is unchanged but surface concentration is reduced." A change from 1.10-7 to 0.75.10-7 g m-3 = 1.10-4 to 0.75.10-4 mg m-3. Units are certainly wrong…
Units and figures have been corrected

27) Line 432 – "the subsurface maximum in the present and future periods is located at the same depth (100–120 m), but the average productivity is reduced by almost 50 %," Where can we see this? Chlorophyll-a concentration ≠ productivity.

We changed the sentence to "chlorophyll concentration is reduced"

28) Line 439 – "Table 4 reports total chlorophyll production in the 1980–1999, 2030–2049 and 2080–2099 periods of all the simulations in all Mediterranean subbasins Adloff et al. (Figure 2 2015)." Why did you quote this reference here?

Because the subbasins are descried in the Adlof et al article.

29) Line 496 – "and modification of the physical ocean (vertical mixing, horizontal advection, ...).." Modification of physical processes. Need references.
We added references to Ludwig et al 2009, Krom et al 2010 and Santinelli et al 2012.

30) Line 497 – "Nutrient fluxes from these sources." Which ones?
Sentence changed to " Nutrient fluxes external sources (rivers, aerosols and Gibraltar) may evolve separately "

31) Line 514 – "In these regions, the effects of nutrient runoff changes seem more important than climate change effects (see Table 4)." provide the percentages, and discuss these results.
Tables 2, 3 and 4 were corrected to add the percentage of concentration change for each period in comparison to the 1980-1999 period. In the Adriatic basin, table 3 shows that riverine nitrate discharge is responsible for 41 % increase in nitrate concentration over the simulation period. In the CTRL_RG simulation, nitrate concentrations are similar to the CTRL_R simulation showing no influence of Gibraltar inputs in this region. Finally, nitrate concentrations in the HIS/A2 simulation are close to the CTRL_R values showing that most of the nitrate evolution in this region is linked with riverine discharge.
32) Section 4.2 Climate change scenario. I do not see the point of this section. You decide to use the A2 scenario and already justified it in the introduction.
This section is provided as an encouragement to develop climate change scenarios over the Mediterranean in order to assess uncertainties in the current results.

33) Line 537 – "Nutrient concentrations in the intermediate and deep layers were shown to be slightly underestimated in comparison to measurements (see appendix)." Provide values.
" Nutrient concentrations can be underestimated by up to 50~\%, in particular in the deep eastern basin. "
34) Line 543 – "Model values were not corrected to match data, and we are therefore conscious that the uncertainties in the representation of present–day biogeochemistry by the PISCES model may be propagated in the future." This is an important decision that needs to

be justify.

In order to study the effect of climate and biogeochemical changes as perturbations we needed to start from a relatively stable initial state. This initial state has been obtained thanks to a long term spin-up simulation. The downside of this approach is the formation of a bias from the present day biogeochemical state. After quantifying the model bias against available observations, we could have corrected the model values (for instance multiplying nutrient concentrations by a factor to correct for the underestimated values in the deep layers). However, such a correction seems dangerous when modeling future evolution of the Mediterranean because threshold effects, and non linear processes are frequent in marine biogeochemical reactions. Therefore, artificially and arbitrarily correcting values may lead to masking some reactions.

35) Line 571 – "In particular, nutrient inputs at Gibraltar have substantial consequences" Provide the percentages, and discuss them.

"Results from Figures 4a and 5a and Table 4 indicate that the increase in nutrient inputs from Gibraltar at the end of the century are responsible for a 2.5 % increase in chlorophyll concentration in the western basin during the 2080-2099 period." lines 622-624