We would like to thank reviewer 2 (F.J. Sierro) for raising excellent questions that certainly helped us to improve the manuscript.

On the following, I will answer the comments provided by the reviewer (which are also included in blue).

Comments to the manuscript submitted by Alonso-Garcia et al.

The manuscript submitted by Alonso-Garcia and coauthors presents a very interesting record of climate variability in the Inner Sea of the Maldives archipelago along the last 1.3 My. The study is mainly based on a detailed analysis of carbonate production in the carbonate platform and export to the inner sea, which is mainly controlled by sea level and regional climate variability linked to the Indian monsoons. The manuscript is well organized and well written and deserves publication in Climate of the Past.

Below I present some suggestions that can be considered by the authors in their interpretation.

I suggest that the authors consider and discuss in the text the possibility that part of the siliciclastic particles come from river plumes. The Ganges and Brahmaputra river plumes reach today southern India to the north of Sri Lanka. These rivers generate extensive river plumes that extend along the Eastern coast of India more than 2000 km. Fournier et al., 2018 Modulation of the Ganges-Brahmaputra River Plume by the Indian Ocean Dipole and Eddies Inferred From Satellite Observations. A proxy such as Ti/Al or Zr/Al could help in this discussion**.**

It is clear that the variability of Sr/Ca is opposite in phase to that of Fe normalized. I suggest the authors analyze the relationship between iron contents and carbonate, by analyzing the Fe/Ca and Fe/Sr or better the Fe/(Ca+Sr) ratio. It would be important to compare the relationship between Fe/(Ca+Sr) and Fe normalized. If these two records follow the same trend, then the record of Fe normalized probably reflects the mineralogical fraction that is not calcite or aragonite and therefore the balance between carbonate and eolian supply. Because there are two main sources of carbonate supply, aragonite coming from the inner sea and the pelagic calcite source, and considering that the pelagic source is less variable, the periods with less carbonate (aragonitic) supply from the inner sea would result in higher Fe concentration in the sediments, but this does not necessarily reflect higher eolian supply, instead it could be lower aragonitic supply from the shelf. To solve this question a proxy for wind intensity could help, assuming that more intense winds can carry more eolian particles. For example, the authors can use a proxy such as Ti/Al or Ti/K, or Zr+Ti/Al+K that could reflect more the intensity of the winds and its ability to transport coarser particles to the sea. The advantage of using a proxy like this is that it is not influenced by the “closed sum” effect between carbonate and siliciclastic particles.

Answer: This is a very good point and indeed at the early stages of this work we considered including a proxy to evaluate riverine input but the ratios we tried were not very helpful, and the PCA analysis didn’t show what could be used to discern between riverine and aeolian input. PC1 showed the differentiation between the carbonates (SR and Ca) and the detrital input (Si, K, Fe, Ti, Rb). PC2 differentiated between the carbonates rich in Ca associated with clays (rich in Fe, Si and K), and the carbonates rich in Sr mainly associated with Rb and Br. Looking at the records, it is clear that intervals rich in Sr correspond to intervals in which the input of detrital elements was reduced and carbonate production in the atolls was intense (i.e. during interglacial optima).

The problem is that the sediments from the Maldives Inner Sea are very rich in carbonate. According to the 359 Expedition report (Betzler et al., 2016), the carbonate content of Site U1467 in the upper 50 mbsf ranges from 75 to 95 wt% with an average value of 83.8 wt%. During the XRF scanning measurements we realized that Zr measurements were not reliable because the sediments are also very rich in Sr. The Sr K-beta peak (15.835 kV) overlaps the Zr K-alpha peak (15.775 kV) and, therefore, the results for Zr are not reliable in this case. Zr and Ti are elements that are included in heavy minerals such as Zircon and Rutile, respectively. It is difficult that those heavy minerals can reach the Maldives Inner Sea in a plume since they would tend to sink. Anyway, the Ti content in the XRF measurements was rather low and with many samples close to zero or even with negative numbers that indicate the element was below the detection limits (Figure 1-F).

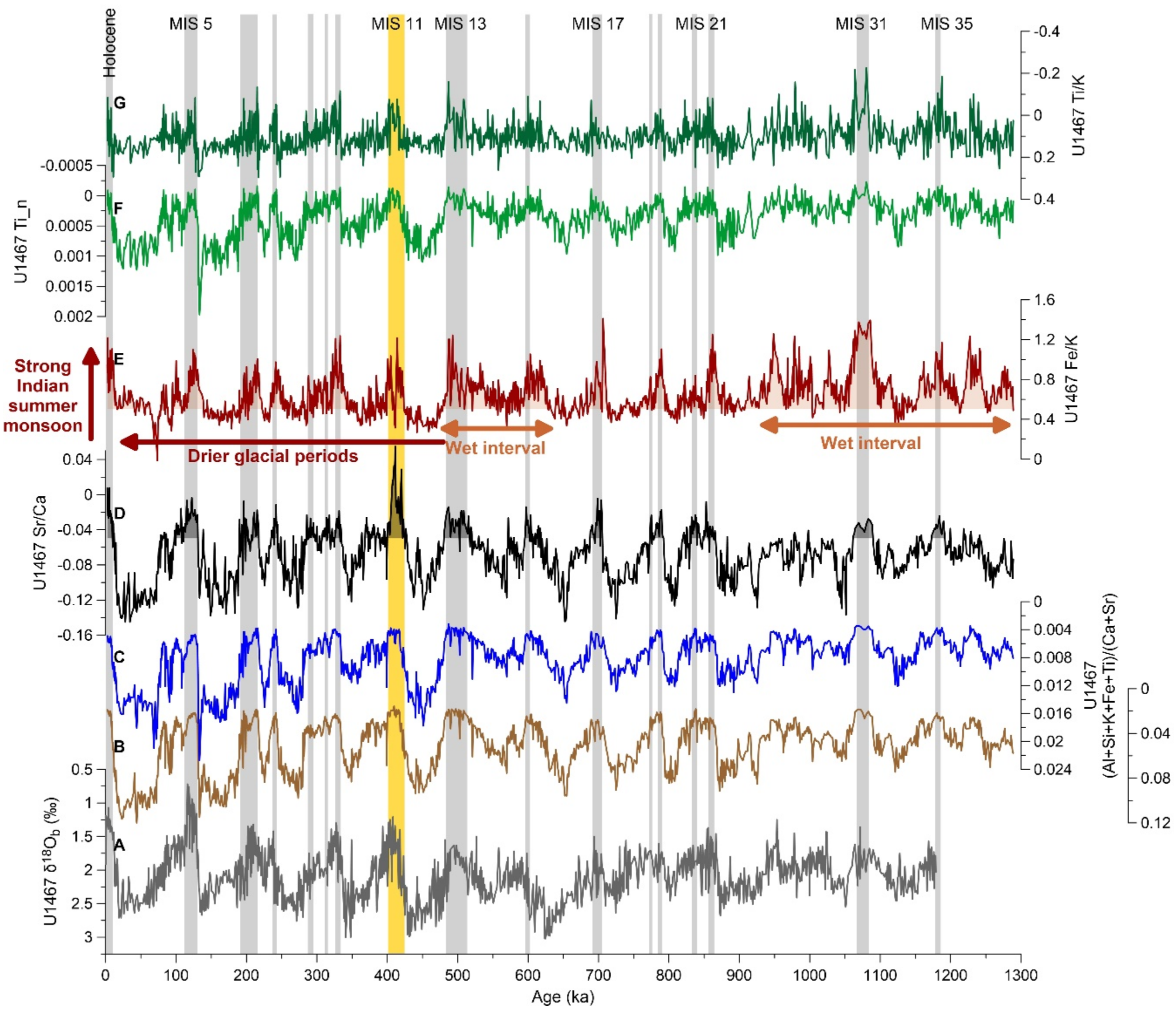

Figure 1. This figure is similar to the submitted figure 5 but includes new ratios following the reviewer's suggestions. A) Benthic foraminifer $\delta^{18}O$ record of Site U1467 (Stainbank et al., 2020) for stratigraphic reference; B) Fe normalized record of U1467; C) detrital elements vs carbonate elements from U1467 showing a similar pattern to Fe_n; D) U1467 Sr/Ca; E) Fe/K ratio of U1467 as a proxy for summer monsoon intensity (Kunkelova et al., 2018); F) Ti normalized record of U1467; G) U1467 Ti/K . Periods of high Sr/Ca values are highlighted by vertical grey bands except for MIS 11 which has been highlighted in orange.

The ratios proposed by the reviewer (Ti/Al or Ti/K, or Zr+Ti/Al+K) will not be useful in Site U1467 because Ti content is very low and Zr data is not reliable. In addition, in the analyses performed by Kunkelova et al. (2018), they concluded that it was better not to use ratios with Al because of the absorption effect of XRF by pore water and water film between the sediment surface and plastic film, especially on light elements such as Al. Ti/K shows a very noisy record which slightly resembles the Fe/K record (Figure 1-G). Moreover, most of the ratios with Fe are rather similar to the Fe_n record. For example, we tried a ratio with all the detrital elements vs Ca+Sr (Figure 1-C) and the record totally resembles the Fe_n record. The same thing happens with Fe/Rb for example. Anyway, discerning between riverine and aeolian input doesn't change the discussion because the source for the detrital component would be very similar (the Indian Peninsula and nearby region). In Kunkelova et al. (2018), we demonstrated that most of the detrital elements that reached the Maldives Inner Sea are transported by the winds of the winter monsoon, which is the wind that blowns over the archipelago and can bring the dust from the Indian continent. If we have riverine input through the plumes, the source would be the same, and the elemental composition would still reflect if the region of the Indian Peninsula was affected by a wetter or drier climate.

To better understand this, it would be worth calculating Iron accumulation rates and Ca and Sr accumulation rates to have an idea about the relative contribution of the different elements.

Answer: The reviewer raised an interesting question, however, we do not have quantitative analyses that allow us to calculate accumulation rates.

I agree that the Fe/K ratio reflects the balance between the chemical and physical weathering and that Fe should increase during episodes of intense summer monsoon, but the supply to the Maldives inner sea must have taken place during winter monsoon that carries eolian dust from the continent to the sea. Summer monsoon winds normally flow from the ocean to the continent and do not transport dust.

Answer: I think, maybe this was not clear enough in the manuscript, so I will improve the text of the revised manuscript to make it clear what the Fe/K reflects. The rationale behind the interpretation of the Fe/K ratio is that if chemical weathering dominates during a time interval (for example 100 years) it is because summer monsoon was intense and, therefore, the Fe/K ratio will be high. But it doesn't mean that Site U1467 is receiving detrital sediments during the summer. As I stated abobe, Kunkelova et al. (2018), demonstrated that most of the detrital elements that reached the Maldives Inner Sea are transported by the winds of the winter monsoon, and those particles reflect the average climatic conditions, because soils do not change radically from one year to the next, or between seasons. So, even if the particles are transported by the winter monsoon winds, the composition of the detrital particles depends on the general climate over a longer period of time. If the period is dry, the Fe/K will be low, and if the period is wet the Fe/K will be high. In other words, if the summer monsoon is weak the Fe/K will be low, and vice versa.

I agree with the authors that the strong calcification event during MIS 11 is a remarkable event in the Maldives, which is also observed in the marine microplankton, and that this high surface calcification caused the Mid Brunhes dissolution event in the deep sea. This is a very important record for carbonate platforms and surface water calcification.

Answer: Thanks for acknowledging that this is one of the highlights of the article. The remarkable changes that took place during MIS 11 in both calcification and deep-sea dissolution are still a paradox that is not very well resolved. Here, we tried to bring up some light into this topic, from the Maldives Sea perspective.

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