We thank Reviewer 2 for final comments on our manuscript. Below we have addressed all outstanding issues.

A) Chronology:

As pointed out by the reviewer many age models have been presented for ODP site 983 over the years. We chose the AICC2012 age model for 983 because we agree with the assumption that abrupt warming events are likely synchronous with warming across the wider North Atlantic region (Austin and Hibbert, 2012; Barker et al., 2015; Hodell et al., 2013) and with peaks in atmospheric methane (Govin et al., 2012) recorded in the EPICA Dome C ice core. We state the rationale for this assumption in the Chronology Section. "*Following the age model approach used by Govin et al. (2012), we compared peaks in atmospheric methane recorded in the EPICA Dome C ice core record to our chronology for DSDP 610B ; adopting the same assumption that abrupt warming events are synchronous with warming across the wider North Atlantic region (Hodell et al. 2013; Austin et al. 2012; Barker et al. 2015).*"

We therefore believe that the EDC3 or the AICC2012 chronology presents an improvement for 983 (used in Barker et al. (2019) and Barker et al. (2015) over the original LR04 model based on 80 tie points (one used every ~22 ka, on average) over the 1.8-million-year record (Raymo et al., 2004). We would be hesitant to choose LR04 just because the dataset "fit better" with our results. However, as the reviewer notes, it is important to state the rationale for these assumptions and how the remaining uncertainty impacts the interpretation. In response to these two points we have updated both the chronology and discussion sections to address this.

In the revised manuscript we have clarified in ll 337-343: The 390 ka methane event also corresponds to a coeval enrichment of benthic oxygen isotope values recorded in DSDP 610 and ODP 980 and 983 (EDC3 Age model (Barker et al., 2015)) and to a rapid cooling event (Uk'37-SST) recorded further south off the Iberian continental margin (Oliveira et al., 2016) (International Ocean Drilling Project (IODP) Site U1385). *Based on this agreement we chose to plot data from ODP 983 according to the AICC2012 chronology as in Barker et al. (2015) and Barker et al. (2019) in favour over the LR04 chronology from 2004 (Raymo et al. 2004). For the time interval of interest, the two chronologies (e.g., AICC2012 and LR04) for ODP 983 are well within the ±4 ka uncertainty. However, this dating uncertainty does affect the certainty with which the relative timing of events described in this manuscript can be interpreted. Notably, the age models used here result in an excellent alignment of the benthic $\delta^{18}O$ enrichment event at 390 ka (Figure 3) which is a distinct feature at all sites (DSDP 610, ODP 980 and 983).*

We also modify the wording in the discussion of the 397ka event to highlight the dependence of the interpretation on the age model in section ***5.2. Reorganization of Atlantic Waters in the SPG*** *(ll. 475-480)*

In the wider palaeoceanographic context, the onset of sea surface cooling observed at our site over the Rockall Trough at ca. 397 ka also occurs at site M23414 200 km west of DSDP site 610 (Fig 6b; Kandiano and Bauch (2007)) but is not evident further west, closer to the SPG (ODP site 983, Gardar Drift 60.48 N, 23.68 W), where Neogloboquadrina pachyderma abundances remain low and stable (0–10%) (see also Fig. 6) until ca. 391 ka (Barker et al., 2015). *While we cannot strictly rule out that the 391ka cooling observed at ODP 983 is actually occurring at 397 ka, most age models published for this site (EDC3, AIC2012; Barker et al. 2015) place this event around 391 ka (except LR04; Raymo et al. 2004, which places it closer to 393 ka) and this timing is supported by the close alignment of the distinct benthic d18O excursion at all North Atlantic sites (Figure 3; cf chronology section) and the methane changes at this time (Figure 4). In the absence of changes at the edge of the SPG (ODP 983),* it is

unlikely that a major displacement of oceanic fronts, as found by Irvalı et al. (2016) and Mokeddem et al. (2014) to mark the demise of the last interglacial, occurred at this time.

B) Study Premis:

Line 70-74: The statement of "similar to today" may be problematic. As suggested by the reviewer we have changed this wording to: "*during low cryosphere climate states.*"

Line 430-431: You say previously it was only observed in glacial boundary conditions, but these are glacial/interglacial boundary conditions. We have clarified that we refer to "*intermediate or large cryosphere boundary conditions*"

C) 2nd Abrupt event

At present, the authors do not have data after ~ 389 ka BP. As such, how confident are the authors that that event has 'finished'? Unfortunately, more data aside from the XRF is not available and not feasible to produce at this stage. In lines 400-401 we added the following sentence to acknowledge the uncertainty linked to the recovery: *Since WTOW values do not stabilize by the end of the timeseries produced for this study the recovery may extend beyond 388.5 ka*

Minor Comments:

1. I think the abstract could better show off your data as a summary. At present it doesn't mention the site nor the identification of 2 events in the data (the latter of which I think would be quite eye catching for the casual reader scrolling through!) We have added the site and reference to two climate events

2. Line 58: Forcing has a strikethrough – is this intentional? No this wasn't intentional just an oversight. We have deleted the word in the revised manuscript.

3. The structure of the introduction could be improved. We thank the reviewer for his/her recommendations; however, we feel that the restructuring is a subjective preference of the reviewer rather than a structural necessity that will improve the flow of the manuscript.

4. It is good you have clarified the conditions of Rockall Trough and how your site is not impacted by any issues associated with this. As a suggestion but not necessarily mandatory - I wonder if there is data to show in other interglacials (e.g., Holocene, MIS 5e) that sites of similar proximity / depth have also not experienced these issues that you could reference? We are not aware of any study not already mentioned in the manuscript that would specifically be able to demonstrate that their sedimentary record from the Feni Drift is not impacted by recirculation of southern sourced deep waters.

5. Line 424: you reference figure 6 and refer to a number of sites in preceding lines. One of these is 1063, but 1063 is not in your figure 6. I see figure 5 has the C13 data in a longer timespan but it is focussed on your time slice in figure 6. Did you mean to add 1063 to figure 6 or are you wanting to refer to figure 5 instead? To ensure that all datasets are referred to we included references to both figures here.

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