General Comments
This paper makes an important contribution to our understanding of GHG fluxes following rewetting – an area where there is a paucity of information. It challenges the view that methane emissions revert to more natural levels with time. However, it may be regarded an example of the extreme end of what may occur and to this end acts as a caution to the management of rewetting where tighter controls on the water table are paramount. The English is a little strange in places; some, but not all, are listed below.
Thank you very much for stating the important contribution of our presented data to the area of GHG fluxes in rewetted peatlands. We share the belief that this data is valuable for the scientific community and therefore appreciate the open access once this manuscript is published. We agree that results for this specific peatland can only be seen as an example and made this now clearer in the discussion.

Specific Comments
P2810 L26 I do not have access to the Koster reference but I would challenge this statement. Perhaps true if you are only including N. Germany, Denmark and the Benelux countries but it cannot be so if you include Sweden, Norway, Iceland, the UK and Ireland (as would normally be included in "north-western Europe"). It will be low (5% if you exclude Iceland, Norway and Sweden) but not as low as 1%. Check the figures in Joosten and Clarke (2002).
Thank you for this comment, we agree and additionally, we have to correct a mistake in the reference citation. It is from E.A. Koster and T. Favier (2005) instead from Koster solely. In their book chapter they are using the term "north-western Europe" without clearly stating which countries are included. Literally quoted they state: "Today, a mere 1% of the former extend of the peatlands can be classified as undisturbed or (near)-natural". However, from the following paragraph it can be anticipated that their definition includes Denmark, Germany, Benelux and France. We therefore changed the term into "Western-Europe".

P2814 L15 These are very deep frames
While natural peatlands can maintain a fairly constant water level (Dise, 2009), degenerated peatlands (partly) lost this ability. The water table is more variable and deeper in summer (Price and Whitehead, 2001). With these deep frames we intended to assure that the frames always reach the water level to keep the chamber system tight.

P2821 LL3/4 "N_2O fluxes were significantly different..." – slightly misleading statement; in reality all the vegetated sites were the same and only the industrial site was different.
We agree and we specified this in the manuscript.

P2823 L16ff The methane emissions are remarkably high: they are twice those seen in the hot spots of Cooper et al. and more than three times maximum values seen in other studies in natural systems (see Couwenberg et al.). The fact that the site is inundated for almost half the year must pay a major role (it would be useful to know the mean annual water level and also to know if this was typical of previous years or a more recent atypical phenomenon). The site would almost seem to be too wet for *Molinia* which prefers more sloping terrain where there is run-off.
We added the comparison with the literature to the manuscript and we added information on the mean annual water table. Unfortunately data on previous years is not available as this site was not studied before. Molina formed 30-40 cm high tussocks here, so that the inundation of the soil only effected a few centimeter of the tussock bases, which could explain that the grass can successfully grow here despite other preferences.

P2824 LL20-28 If this "filling up" was 30 years ago, it would seem unlikely to contribute much to current methane emissions as this material would already be quite decomposed. In contrast, the

heather bales in Cooper et al. had only been recently incorporated. Fresh labile material will surely be the dominant source.
We agree that labile material will be more likely the source. We therefore stronger emphasized in the text the difference in the age of incorporated material in comparison to the study of Cooper et al. and stated that this is a possible however not main reason for the high methane fluxes.

P2825 L5 It is almost passed over that even the *Sphagnum* (with *Eriophorum*) and Heath stands were still giving very large methane emissions and even if *Molinia* is excluded they would still be a problem for climate protection.
You are right. It was our intention not to emphasize strongly that the other plant communities (even the, by restoration desired *Sphagnum* stands) are still a problem for climate protection. We fear that otherwise this study could be misused to give arguments to restoration opponents, which is not in our sense, as restoration has lots of benefits beside reducing emissions.

Technical Corrections
P2815 L12 Replace “camber” by “chamber”.
Corrected

P2816 L2 Replace “closing” by “closure”.
Corrected

P2816 L9 Replace “triply” by “in triplicate” (also L14). Why “three” plots and not four?
Corrected. We decided to reduce the number of plots for N_2O, as first results showed now significant fluxes (as described on page 2815 L22-24) and the measurement of N_2O at the GC was very time consuming as we had no auto sampling system. Instead we decided to use our capacities to increase the frequency of CO_2 measurements, which improve the database for modelling.

P2817 L4 Replace “dillution” by “dilution”.
Corrected

P2818 L11 Replace “appropriate” by “appropriately”.
Corrected

P2818 L13 Replace “none” by “neither”.
Corrected

P2818 L24 Replace “well as” by “was done for”.
Corrected

P2819 L5 This sentence is not quite clear – reword.
We deleted the sentence in line 4-6 to avoid misunderstandings. But we would like to make it clear for you. We added the total amount of C of the harvested peat to our calculation. As the harvested peat is used as horticulture substrate it probably will emit CO_2 not only in the harvesting-year, but also in the following years. Additionally, the peat which was harvested in the years before probably emits CO_2 during the year 2011. As it was therefore not possible for us to estimate the real CO_2 emissions due to peat mining in 2011, we decided to add the whole C loss of the study year into the calculation. We think that this procedure is justified as the site factually lost this amount of C in this specific year.

P2821 L1 Not necessary to repeat numbers already in Table 3.
Deleted

P2824 L27 Replace “fulfilled” by “blocked”.
Corrected

Table 2 Replace “mooses” by “mosses”.
Corrected

Figure 2 It is not really necessary to denote the individual plots. A single mean fitted line for each vegetation type would be sufficient.
We agree that it is not really necessary. However, we think that it might be interesting to see the special variability between the plots.

Figure 5 I’m not sure why this should follow an exponential fit. In theory, it should be linear or even indicating some saturation when the belowground methane becomes exhausted.
Due to your comment and that of reviewer #2 we decided to delete this figure.

Figure 6 – not usual to duplicate data in both table and figure.
We deleted Figure 6 as data is already shown in table 4

Cited Literature

Dise, Nancy B. "Peatland response to global change." *Science* 326.5954: 810, 2009

Price, Jonathan S., and Grant S. Whitehead. "Developing hydrologic thresholds for *Sphagnum* recolonization on an abandoned cutover bog." Wetlands 21.1: 32-40, 2001.