The authors thank Referee#2 for the positive and constructive feedbacks toward this study. The manuscript is now revised accordingly to consider his/her suggestions and comments. Below are more detailed responses to each comment:

Ref2: If the main focus is to understand the role of volcanic forcing on the global carbon cycle, then I find the experimental design and the analysis performed a bit too short and too simplistic. If the main focus is to address the potential of sulphur-injection geoengineering scheme to decrease atmospheric CO2, then the scope of the paper has to be changed.

The paper was prepared to understand the volcanic forcing feedback on the carbon cycle as stated in the paper, however, as it developed, we had to go a bit into the geoengineering discussion. As suggested below, we have now included an additional future volcanic eruption scenario, applying a Pinatubo-like eruption in 25-year intervals. In addition, as the main motivation for this study is to better understand any potential change in future climate projection and carbon cycle feedback, we have further emphasize this in the introduction section. We have also included a new subsection in the revised manuscript, where we attempt to quantify the change in climate sensitivity and terrestrial/oceanic carbon uptake under different future volcanic eruption scenarios.

Ref2: Experimental design: Only 2 sensitivity experiments are presented here: one with frequent (5-yr) and relatively weak eruptions, another one with less frequent (25-yr) and large eruptions. This set-up makes it difficult to conclude on the role of frequency vs amplitude of volcanic eruptions on the carbon cycle. An additional simulation at least, with weak and unfrequent eruptions for example could help in that matter.

We agree with Referee#2 that one of the focal points of the paper is to assess the role of frequency and amplitude of volcanic forcing. Therefore, as it is, the experiment design is insufficient for the manuscript conclusions. In order to address this we have performed an additional future volcanic scenario using a weaker, and less frequent volcanic forcing (i.e., Pinatubo like eruptions applied every 25 year period), accordingly. In the revised manuscript, most figures and tables have been updated to include this additional experiment. The discussion has been extended somewhat as a result of this additional experiment.

Ref2: Model comparison: Some recent modelling studies (Jones and Cox, 2001, Brovkin et al. 2010, Frolicher et al. 2011) have discussed the role of volcanic eruptions on the global carbon cycle. These studies have indentified the land component as the main driver of atmospheric pCO2 changes but propose different mechanisms by which the land component drives a decrease in atmospheric CO2 (tropics vs high lat., respiration vs. photsynthesis). Tjiputra discuss most of these publications in light of their model results, but we are left with no clear hypothesis on why the models differ. In the summary section, Tjiputra and Ottera suggest that increased carbon uptake in the Northern Hemisphere (opposite result to Brovkin and Jones and Cox) is probably due to the additional CO2 fertilisation effect in their simulation. An additional simple & short sensitivity simulation mimicking the Pinatubo eruption would help in that matter.

This is indeed an important validation for a study such as this. As suggested, we have included an additional simulation mimicking the 1991 Pinatubo eruption. We performed an additional historical simulation, but including the 1991 Pinatubo eruption. The simulation shows that the model is able to reproduce the expected cooling in surface air temperature following the eruption. In addition, an increase in atmospheric CO2 drawdown is also simulated, predominantly attributed to the terrestrial reduction in high latitude soil respiration. This is consistent with the study of Lucht et al. (2002). The change in the terrestrial vegetation carbon pool under this experiment is not as clear as the one under the future scenario (i.e., GEO_PIN5). Therefore, this additional experiment supports our previous analysis that the increase in tropical uptake in the future scenario can partly be attributed to the additional CO2 fertilization factor. We have also included a reference to Tjiputra et al. (2010), who showed that the low latitude NPP simulated by the BCM-C terrestrial carbon model (LPJ) is relatively more sensitive (i.e., than the other regions) to change in atmospheric CO2 concentration.

Ref2: Ocean carbon cycle. I am not convinced by the discussion on the ocean carbon component. Tjiputra and Ottera explain the weak differences between the simulations for the ocean carbon uptake by the balance between: (1) increased CO2 solubility due to sea-surface cooling and (2) decreased atmospheric CO2 because of increased land carbon uptake. These effects have been identified for some time now in coupled carbon-climate simulations (see Cox et al. 200 for example). But Tjiputra and Ottera then mention another effect due to the impact of the induced cooling on inorganic carbon chemistry. It is not very clear how these additional effects come into play and even if they play a significant role here. I would reformulate this section and try to be much more quantitative.

The Revelle factor shown in Fig. 9 provides a convenient means to calculate changes in sea water chemistry (Egleston et al., 2010), taking into account both the anthropogenic carbon uptake and change in physical state, such as temperature (Thomas et al., 2007). Changes in temperature mainly cause the dissolved inorganic carbon concentration to vary, which in turn, indirectly, alter the Revelle factor.
As explained in the literature (for example in Mehrbach et al., 1973), the temperature causes the total DIC concentration to vary by altering the dissociation constants in the CO2 reaction in seawater. The change in temperature mainly alters the carbonate ion in the seawater, important for buffering the dissolved carbon taken up by the ocean. We have included the above description in the revised manuscript. It is, however, more complicated to separate the contributions from changes in anthropogenic carbon uptake and from changes in temperature. This is therefore beyond the scope of this paper. In the revised manuscript, we have expanded the discussions on the ocean carbon cycle by also adding more analysis on the changes in the oceanic export production.