General

1. The extreme winters are taken for testing the model performance, which is good and challenging (e.g. which is why the differences are up to 40—45%). However, the average/normal state should also be known as the extreme cases are "rare". Therefore, a discussion based on a normal (not very cold/warm) winter would have been a good addition to these analyses. If you have already a simulation, it would be helpful to include or at least mention the performance of the model for a normal year. Although you have mentioned about your previous work on Antarctic, please do mention the model's performance for the Antarctic region in the discussion section to make the sensitivity tests "complete".

2. You were also talking about the relationship between ozone loss and denitrification. However, nothing is done for this, as you were focussing completely on the latter. Therefore, please indicate how the ozone loss or chlorine activation is simulated in the model.

3. How was performance of this model in CCM val exercise? Please briefly mention that too, either in the introduction or in the discussion. Also, mention whether your sensitivity tests will improve the performance of the model for further assessments and reports. It is also good to include a general statement on this in the abstract.

Technical corrections

Page 1:
Line 2: delete ERA
Line 3: winters
Line 4: as previous studies
Line 5: for the Arctic winters
Line 9: largest deletion not strongest (strongest can also be episodes)
Line 13: occurred in that winter
Line 14: PSC formation and denitrification
Line 17: and associated sequestration
Line 18: smaller than that derived from
Line 18: Furthermore
Line 19: "as high as" , is this altitude? Or value?
Line 20: You need a concluding statement here on your model simulations, EMAC or the CCMs in general to put the results in perspective.
Line 21: winters

Page 2
Line 3, 7: very small sentences make the reading difficult
Line 17: largest depletion

Line 24-25: Sentence is not complete
Line 25: two e.g. are there in the same sentence. Please construct a better sentence.
Line 29: "and results ..."

Page 4
Line 11: delete further
Line 11: temperatures were

Page 6
Line 6: "Additionally there is no …". There is no connection. Why gravity waves are mentioned here.
Line 24: "ice PSCs and (4)"

Page 7
Line 10: data are "
Line 10: 13 march 2011

Page 8
Line 14/20: replace somewhat by slightly or give the value here
Line 25: mid-January?
Line 27: mid-January and mid-December?
Line 30—33: the "e.g" and "see" makes the sentence difficult to read. Please rephrase this.

Page 10
Line 21-22: Any idea how much that would make for chlorine activation and ozone loss estimation or simulation in the model?

Page 13
Line 6-7: This problem is common to most models, as I know. This is also reported in some other studies.

Page 16
Line 11—12: Please remove, if this is not published yet.