We thank the reviewer for their comments. Each comment is addressed below with the original review in italics and our responses in normal font.

The paper describes the impact of using CABLE rather than MOSES (the default LSM) within the ACCESS model system. This is a highly relevant paper as ACCESS is a widely used model within the Australian climate science community. The paper is well written, and the physical mechanisms behind the changes are very well explored and explained. The description of the model differences between CABLE and MOSES is also very valuable. Hence the paper is suitable for final publication in GMD with minor revisions. The following comments may help improve the manuscript.

Major comments:
Title: Suggest changing to "The impact of changing the land surface scheme in ACCESS (v1.0/1.1) on the surface climatology" – Reads better

We will revise the title so it is easier to read.

Abstract:
It is mentioned that CABLE results in a warmer winter and cooler summer in the NH, but no mention is made if this improves or degrades the bias?

Significance testing as requested by reviewer 1 suggests that A1.1 (CABLE) has smaller bias in summer than A1.0 (MOSES) while the relative model performance cannot be distinguished in winter. This will now be noted in the abstract.

The abstract should have a sentence or two, describing the overall effect of replacing MOSES with CABLE. The dynamics are very well explained, but it would leave a non-expert reader wondering: "was it worth the effort to replace MOSES with CABLE?" Although this is not the aim of this paper, an ACCESS user who is not an LSM-expert should be able to use the abstract as a guide to decide if they want to use CABLE versus MOSES. A few sentences could make this clearer.

A summary statement will be added to the end of the abstract indicating how the extra complexity in CABLE benefits the ACCESS simulation.

Section 2.1: It is mentioned that subsurface tiling is used in CABLE. Would be useful to provide information if the maximum number of tiles per grid-cell is user-specified, or automatically computed?

We will add this information is section 3.1 paragraph 4.

In the same section, would it be possible to tabulate the differences between CABLE and MOSES in table format? That would be a useful summary for ACCESS users to be able to refer to.

We now will include a table referenced from section 2.2 to summarise the differences including further details about the snow scheme as requested by reviewer 1.

Section 3.3: It is fine that you are using the offline simulations to focus on model behaviour rather than reproduce the online results, but a reader would be left wondering why you did not use same versions for the offline simulations.

Earlier versions of the code were not setup to easily switch between offline and online simulations. This information will be added in section 3.3.

In the same section, line 21, provide a CABLE version, and perhaps state the UM version with the different atmospheric physics.

We will add the versions and appropriate reference in manuscript.

Figure 4: The improved bias during JJA with ACCESS1.1 (CABLE) as compared to 1.0 (MOSES) over NA and northern Europe could be mentioned in the abstract.

As noted above this finding will be added to the abstract.

The discussion of the physical mechanisms behind the differences between CABLE and MOSES in ACCESS is very thorough and convincing. The conclusion could use a few sentences on "what this all means". It seems to me that CABLE in ACCESS, with its more realistic method of energy portioning etc, is an important step forwards in ACCESS development. I suggest a paragraph, aimed at a non-LSM experts, which paints the broader picture.

We agree that the paper would benefit from an additional paragraph in the conclusions as suggested by the reviewer. We will focus on how the unique features of CABLE contribute to ACCESS development.

There should be some rational for the use of Era-Interim. This has been raised by the first reviewer. Perhaps the authors should clarify that they use ERA-Interim such that they can investigate L-A feedbacks in a consistent manner? i.e., one can make inferences about temp, precip, cloud feedbacks using Era-Interim, but this is harder to do using pure observational data-sets. The aim here is to investigate the feedbacks, and the use of Era-Interim seems appropriate to me.

As suggested by reviewer 1 we have now confirmed our model-obs comparisons against other datasets than just Era Interim, noting also that much of the paper focuses on model-model comparisons for which observations are not relevant. The manuscript will be updated accordingly particularly section 3.2 and discussion of fig 3 and 4 a-d.

The first reviewer has also commented on the lack of statistics used in this paper.
I do not think the use of statistical significance testing would add much to this paper. The aim is to investigate the physical mechanisms, as the authors have carried out. So, I would disagree with the first reviewer on this point.

We have now performed significance testing for model-model and model-obs differences. The model-model differences are significant almost everywhere and we agree with the reviewer that this would not add much to the paper. The significance of model-obs differences may be helpful for commenting on whether one model or the other gives smaller biases compared to obs/reanalysis.

Editorial comments:
Page 1, line 8, replace "placement of canopy" with "placement of the canopy".

We will change this in the manuscript.

Page 1, line 11, replace "lowers diurnally" with "lowers the diurnally"

We will change this in the manuscript.

Page 2, line 11, replace "while (Kowalczky et al. 2013)" with "while Kowalczky et al. (2013)".

We will change this in the manuscript.

Page 2, line 24, the "HadGEM2 Development Team: et al. (2011)" reference seems strange?

We believe this follows GMD style guidelines.

Page 2, line 28, suggest to add/provide some references after "interpret the results from ACCESS1.3".

We will add references to Bi et al 2013 and Kowalczyk et al 2013

Page 3, line 15, replace "structural placing" with "the structural placement".

We will change this in the manuscript.

Figure 1 caption: provide descriptions of H, Hv, Hs, sigma_v etc.

We will change this in the manuscript.

Page 3, line 24, L does not appear in Eq. 1

L is in equation 1 as a part of LE. This will be made clearer in the definition of the variables in the equation.

Page 4, line 2, Fig. 2 should be in brackets? Or "as shown in Fig. 2", and elsewhere in the manuscript, e.g., line 4.

We will change this in the manuscript.

Page 4, line 4, what "many other LSMs", should provide references. Are you referring to CLM, NOAH, ORCHIDEE etc? or is this a broad statement?

This is a broad statement which we now clarify by noting that these other LSMs tend to use conventional rough wall boundary theory, with parameters that are a constant fraction of canopy height.

Page4, line 8 – Should note that it is possible to parameterize snow-free albedo in CABLE as described in Kala et al. (2014) (www.geosci-modeldev.net/7/2121/2014/), but this is yet to be tested coupled to ACCESS and not usually activated.

We will add this information in section 2.2.

Page 9, line 1, replace "In boreal summer" with "During the Boreal summer".

We will change this in the manuscript.

Page 10, line 12, replace "giving lower surface albedo" with "simulating lower surface albedo". The phrase "CABLE gives…." is use a lot through the manuscript. Suggest to use "simulates" instead.

We will change this in the manuscript.

Page 9, last line, impacts "the" overall

We will add this in the manuscript.

Page 10, line 29, "The" Boreas grid-cell

We will add this in the manuscript.

Page 15, last line. Recent work would suggest that stomatal opening to CO2 is equally important: Kala et al. (2015): http://www.nature.com/articles/srep23418

We will add this in the manuscript.