We thank the referee for providing a review of the manuscript and agree that the suggested changes and clarification improve it. We have made the changes outlined below in the revised manuscript. Each item starts with the reviewer's comment. The page and line numbers of where changes have been made to the updated manuscript are included at the end of each reply.

1. **Page 5343, line 8: As done for soil processes, could you specify by which processes CO2 fertilisation leads to an increase in plant CO2 uptake? Photosynthesis, LAI, etc. increase?**
   The processes affected by CO2 fertilisation have been added (Page 5343, lines 8-14).

2. **Page 5346, lines 1-4: Is JULES considering only natural vegetation types or also agricultural ones? In order to have a better idea of which PFTs are considered in JULES, could you please list their names?**
   JULES version 3.0 (version used in this study) has only natural vegetation types and does not have agriculture PFTs (such as croplands). Nine surface types are used in JULES (version 3.0): five Plant Functional Types (broadleaf trees, needleleaf trees, C3 (temperate) grass, C4 (tropical) grass and shrubs) and four non-vegetation types (urban, inland water, bare soil and land-ice) (Page 5346, lines 9-13).

3. **Page 5346, lines 10-15: Is the LAI in JULES calculated for each canopy layer or is it based on a big-leaf approach? Is there a maximum LAI prescribed for each PFT that could affect the value calculated eventually, and therefore the model data comparison?**
   LAI in JULES is calculated for each canopy layer and is updated once per day by multiplying the annual maximum LAI by a scaling factor, which is calculated by using temperature-dependent leaf turnover rates (Page 5346, line 27 - Page 5347, line 5).

4. **Page 5346, line 24: Could you specify which fluxes are directly, or less directly affected by an error in GPP estimates?**
   Errors in the calculation of GPP can lead to errors in simulated biomass, Net Ecosystem Exchange (NEE) and latent and sensible heat fluxes (Page 5347, lines 17-22).

5. **Page 5353, section 3.1: Site values for parameters such as Vcmax or maximum LAI were adjusted to global or local values, depending on simulations performed, for this evaluation. Do the authors have an idea of the model performance when used in its standard configuration, including original values for parameters?**
   Yes, site values for parameters such as Vcmax or maximum LAI were adjusted to global or local values, depending on simulations performed. The original values for the parameters, i.e. in its standard configuration, are the global values (Page 5354, section 3.1).

6. **Page 5357, section 3.4: Regarding satellite data derived LAI, could the authors give a quick overview of the different datasets available, and known discrepencies?**
   A brief overview of the different satellite LAI datasets available and the reason for choosing the MODIS dataset has been provided (Page 5348, line 25 - Page 5349, line 3).