We greatly appreciate the editor and the referee for the new valuable comments. Our responses to each of the comments are listed below.

Response to Reviewer 3

Point 1: English language and style check is recommended.

Response 1: Thank you very much for the careful reading. We have modified English language and style properly.

Point 2: Line 15/16: this sentence may be extended: ..... is established; the level of model integration and validation define the novelty of this paper.

Response 2: We have extended this sentence in Lines 15 to 17.

Point 3: Line 136: This sentence should be rephrased.

Response 3: We have rephrased this sentence in Lines 145 to 146.

Point 4: Line 438, Figure 13: Please consider to add scheme 3 to this figure for comparison.

Response 4: The thermal equilibrium of Scheme 3 has been shown in Lines 443 to 444. The equilibrium value is an important reference factor for comparing Scheme 1 and Scheme 3. There are two different points for Scheme 1 and Scheme 3. One is the inlet temperature of buried pipe. The other one is that a solar system with 20 degrees of water is used to supplement the heat of the shallow geothermal field in summer for Scheme 3. The operation pattern is different for Scheme 1 and Scheme 3, so equilibrium value is an obvious factor for comparing Scheme 1 and Scheme 3.