Review of: "Influence of a City Block on ES-CFD Coupled Analysis"

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Potential competing interests: No potential competing interests to declare.

General comments:

The author's focus in this article is on analysis using the complementary methods of energy simulation (ES) and computational fluid dynamics (CFD). They also do a coupled analysis that considers the effects of solar radiation. The literature review is not adequate, and some aspects of the methodology should, in my opinion, be thoroughly reviewed in order to be better explained. The manuscript should have **major corrections**.

(In the following comments, page numbers refer to the PDF file)

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- The author has not given any reference to equation (1); please give a reference for Eq. (1)
- The equation numbers (1), (2), (3), (4), (5), and (6) are missing.
- The Cp, To, and Ti definitions are missing.
- Inconsistency in the dimensions of equation (3): that of the left-hand member is W/s, whereas that of the right-hand member is Watt.

I would ask the author to correct it as follows

$$V_{ol}\overline{c\gamma}\frac{dT_i}{dt} = \sum_{j=1}^{J} S_{i,j}h_{i,j}\left(T_{i,j} - T_i\right) + V_o c\gamma\left(T_o - T_i\right)$$

V_{ol} is the volume [m^3] and V_o is the amount of ventilation with outside air [m3/s]

- The author wrote *“using a set of continuity, motion, and energy equations”*

Please correct it like this: ”continuity, momentum, and energy equations”

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Paragraph 2

- The author wrote “the recalculated surface temperature of the ES was passed to the CFD (STEP 5), and comfort was

evaluated using the ES." ?

How can the author assess comfort when he doesn't tell us how humidity is calculated? Does the author solve the species transport equation for water vapour? Please explain.

Paragraph 4

- The author wrote "the influences of opposite long-wave radiationand isolation reflected"

There's a typo: "the influences of opposite long-wave radiationand insolation reflected."

- The author wrote "This study conducts a relative evaluation"

The author must explain a relative evaluation of what?

- The author wrote "estimated using CFD analysis because they were examined in a stepwise manner"
  - In my opinion, it is better to write "….because the domain computation is limited to room volume only "
- The author wrote "Solar radiation enters the ground surface and the wall of the opposing residence, which it reflects off and ultimately enters the subject building"
  - In my opinion, it is better to write "Solar radiation absorbed by the ground surface and the wall of…"
- It says "…residence, **which** it reflects off and ultimately"
  - No, it is not the same; one part is absorbed, another is reflected.

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- « A similar tendency was observed for the amount of insolation"
  - Please specify this insolation (Global horizontal, direct normal radiation ….)
- "As the analytical results of this study were significantly affected by the outdoor temperature,"
  - In my opinion, this conclusion is purely qualitative and cannot be quantified in any way, as the author has not taken into account convection with the outside.

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- The legend of Figure 3, "Chronological change in outdoor temperatures in summer and winter," must be rewritten as follows:
  - Figure 3. Chronological change in outdoor temperatures and radiation in summer and winter
- Looking at Figure 4, we can see that the solar irradiance on the south wall is greater than that on the south wall at midday. I would like to ask the author if he could explain this.

- It can also be seen that the solar irradiance on the south wall in winter (800W/m²) is greater than that in summer (300W/m²). I would like to ask the author if he can explain this also.
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