Thanks for the replies from the first and corresponding to author Wu. Unfortunately, the following question in the last-round review has not been fully and carefully answered.

The last round of concern is: “I am a little bit concerned about the benefits/advantages when developing this new proposed InMAP-China model. Firstly, the important part of the InMAPChina model is the InMAP model (a reduced-complexity model producing the pollutant concentration), which is under-estimating the PM2.5 by 8.1 μg/m³ (Line 239-242). This reduced-complexity model also has difficulties in capturing the SOA (Line 335-336). The simulated concentrations will directly affect the accuracy of health calculations. On the other hand, computing power running chemical transport models is not an issue nowadays. Running it on a coarse resolution such as 36 km is remarkably faster. The running time of a CMAQ model at a resolution of 36 km is around half an hour for one-day output (varies depending on different machine cores). Running the InMAP-China model still needs the CMAQ model outputs for providing extracted parameters. So why not directly using the CMAQ model (in 36 km resolution) to produce the concentration maps for calculating the health?”

The first author’s reply: “The loss of accuracy is unavoidable and may need to be further improved in the future study.” cannot be accepted. It is reasonable and doable to have more accurate results with even longer running time as pursuing science. More clarification or work (suggested in the last paragraph) must be provided to illustrate the significance of this manuscript and its contribution to the model community.

The first author’s reply: “The advantage of InMAP-China is time-efficient when it is used to quantify the contributions of multiple fine emission sources”. I don’t see the time-efficient since you are making a 36 km resolution and still need to run the CMAQ model to extract the required parameters. Moreover, extensive scenario studies of 36 km resolution are too coarse (for example, urban and rural regions are different), introducing higher uncertainties. Running only a few carefully selected representative scenarios is not expensive using computers nowadays, even with year-long simulations. It is also reasonable and doable to have more accurate results with even longer running time pursuing science. Again, in conclusion, the current implemented reduced-complexity model with 36 km resolution cannot convince the audience that it has the advantage of being time-efficient in conducting air quality predictions.

Due to the authors admit higher resolution is more important for health calculation and the fact that coarse-resolution (36 km) modeling runs are not so time-efficient comparing with traditional chemical transport modeling, one more comparison (InMAP-China and CMAQ5.2) with nested domains (4 km) only focusing on a regional area (Jing-Jing-Ji, or YRD or PRD) need to be further provided as a demo covering four typical months of Year 2017. This should be doable since Tessum (2017) has done the coupling of InMAP with WRF-Chem under the higher-resolution (27km, 9km, 3km, 1km setting) modeling for the US. This set of comparisons will surely convince the audience of the effectiveness and the significance of the InMAP-China and the contribution of this manuscript.

Tessum, C. W., Hill, J. D., & Marshall, J. D. (2017). InMAP: A model for air pollution interventions**. *PloS one***, *12*(4), e0176131.