Dear Editor,

Happy New Year!! We appreciate for your time reviewing this paper and all your comments and suggestions. Here are our responses point by point in blue.

Comments to the author:

1. Please remove use of “ndigit” and “FX program” (these terms are not introduced in the manuscript text) and simply refer to “FX* simulations” etc. instead.

Done.

The following text was edited in the manuscript:

“Figure 2: Relative compression size of two utilities, gzip (solid line) and bzip2 (dotted line), on daily emission files (labelled as Emiss.) and direct CMAQ output (labelled as CMAQ) for 2016 with reduced-precision settings: 5, 4, and 3 (labelled as Altered 05, Altered 04, and Altered 03, respectively). Negative values indicate better compression efficiency.”

“… the altered-precision 3 cases (simulation output that was reduced to 3 significant digits; *A05FX03*, *A04FX03*, and *A03FX03*), performed equally poor, relatively speaking, with respect to the *orig* simulation. The altered-precision 4 cases (*A05FX04*, *A04FX04*, and *A03FX04*) performed nearly identically to the altered-precision 5 cases (*A05FX05*, *A04FX05*, and *A03FX05*) for all deposition rates excluding the wet-deposition rate of sodium and sulfate and the dry deposition rate of ozone. The altered-precision 5 cases (*A05FX05*, *A04FX05*, and *A03FX05*) and the altered simulations (*A05*, *A04*, and *A03*) performed nearly …”

2. Please add absolute simulated dry deposition amounts either in text or in the caption to Figure 10, otherwise one cannot judge the relative scale of changes.

Figure 10 depicts the sum of absolute difference between the base simulation (*orig*) and the altered-precision simulations and cases across the domain (over land across the contiguous US), throughout 2016, for hourly output, and with respect to the wet deposition rates of sodium, ammonium, chlorine, nitrate, and sulfate and for the dry deposition rate of ozone. We have provided the domain sum of the base case with respect to those variables, even though these sums do not reflect the Figure 10 directly, but as a simple gauge of the relative changes among all the altered-precision cases.

We have added the following in the manuscript:

“For comparison purposes, the annual sum, considering all grid cells within the contiguous U.S., for the wet deposition rates of sodium, ammonium, chlorine, nitrate, and sulfate are 1.42×10^5, 6.69×10^4, 21.75×10^4, 2.58×10^5, and 1.72×10^5 kg ha^{-1}, respectively for the base simulation (*orig*).

Similarly, the annual sum for the dry deposition rate of ozone (contiguous U.S.) is 2.78×10^6 kg ha^{-1} for the base simulation."

3. If you desire to keep Figure 3, I understand that other system bottlenecks are difficult to estimate (i.e. yes, you can state that potentially due to lesser I/O strain your emission data loading to the model proceeds faster). Then, however, either remove the statement on l.192 or provide figures on number of iterations changes in the chemistry solver or other computing routines – this information is always available from the model and should be made available to the readers. Using statements "can also" or "we believe" is inappropriate in such cases.

Within CMAQ, there are various subroutines that utilize iterative solver such as the SOA calculation and chemistry (EBI) routine, for example. CMAQ does not, however, report the number of iterations to achieve convergence for each time step. Therefore, we regret to inform the editor that we cannot provide direct evidence to support our original statement, "This change in emission input can also reduce the number of iterations in the chemistry solver." We removed the text from the manuscript.

Please also make sure to supply high-quality (vector) graphics during the typesetting.

We saved our images as .png and .pdf files. The .pdf files are vectorized and will be provided when applicable.