The review on "A deep stratosphere-to-troposphere ozone transport event over Europe simulated in CAMS global and regional forecast systems: Analysis and evaluation" by Akritidis et al.

General

This manuscript describes a deep stratosphere-to-troposphere event over Europe in 2017 winter that has been well captured by CAMS global and regional forecast models. The authors illustrated the simulated winds, geopotential height, PV, water vapour and ozone during the event. They compared the simulations with satellite data of water vapour , radiosonde, ozonesonde and aircraft observations. By putting all of the simulated and observed meteorological and chemical data together, the authors depicted the evolution of this event in detail and showed strong performance of the CAMS global and regional models.

Overall, this study is well conducted and has contributed to enhancing our knowledge of ozone transport from the stratosphere to troposphere. The presentation is overall clear. However, I have the following points for the authors to consider when revising their paper.

1. While the CAMS showed strong performance in capturing the stratospheric intrusion event, it is not clear (1) what are key schemes in the models that are responsible for the performance and (2) what advance this study has made comparing with earlier studies. Can the authors provide some assessments on the model prediction of ozone intrusion events? Do the models tend to overestimate or underestimate occurrence of these events?

2. There are more than one ozonesonde stations in Europe. The authors are encouraged to take advantage of the ozonesonde data from more ozonesonde stations to validate the model performance. In these validation, such as those in Figure 10, humidity can also be validated so to provide additional confidence on the model performance.

3. More description is required on the data assimilation. What kinds of observation data were used in the assimilation? Were the ozonesonde data at Prague or aircraft data at Frankfurt used? If so, this should be pointed out when discussing Figures 10 and 11.

Specific

1. Please indicate the locations of radiosond, ozonesonde stations, and Frankfun in Figures 1-4.

2. Figure 10, humidity data usually are available together with the ozonesonde data. Humidity can be validated at the same time.

3. References:
   P12, L3, CO 2 and CH 4?
   P12, L13, more information is required.
   P12,34, CATHALA?

P15, L22, Spell out the full name of the journal.