

Editor Comments on Manuscript No ACP-2021-874

P1, L2: applied -> apply

P2, L36: “.....both day- and nighttime near global coverage” does not sound correct. Please rephrase. Maybe you could write “near global coverage during both, day- and nighttime”.

P2, L44: lagranto -> LAGRANTO

P3, L65: “from different studies”. This text part does not seem to be at the right place in the sentence. I think you should rather write: For instance the estimation of SO₂ mass from the 2009 Sarychev eruption from different studies varies from 0.8 to 1.8 Tg (Fromm et al., 2014).”

P3, L89: “Finally, we discuss the results from our work comparing with previous studies in Sect.4”. Sentence not correct. I would suggest to write it as follows: “ Finally, in Sect.4 we discuss the results from our work by comparing to previous studies.....”

P4, L94: used -> use

P7, L164: add “a” and “vertical” so that it reads: “....at a 31 km horizontal resolution and 137 vertical levels spanning from the surface up to 0.01 hPa.”

P7, L165: interpolated to 0.3 x 0.3 horizonzal resolution -> inperpolated to a 0.3 x 0.3 horizontal resolution

P7, L177: of the SO₂ -> of SO₂

P8, L212. Delete “together”

P9, L219: troposphere -> tropospheric

P10, Fig 4 caption: Better to write “plot legend” than “plot key”?

P10, 224: Especially here the usage of retrieval is quite confusing. This paragraph should be reworked.

P11, Fig 5 caption. Add “the” -> “.... of the Raikoke SO₂.....”

P12, Fig 6 caption, third line: add “an” so that it reads “an e-folding lifetime”

P12, L243: Investigating -> To investigate

P15, L277: add “a” so that it reads “we also performed a forward simulation.....”

P15, L284: termolecular -> thermomolecular

P17, Fig. 10 caption: writing “ 1km thick layers between 21 June 2019 and 22 June” is rather confusing since you mix here the vertical layers with the time period you are considering. The altitude range should be given here as well.

P18, L322: SO₂ injections separated -> SO₂ injections are separated

P18, L329: show -> shows

P18, L333: east of the Raikoke -> east of the Raikoke volcano

P18, 334: either write after the comma “we find that” instead of “note that” or swap the two text parts, so that you start the sentence with “Note that.....” and continue without comma continuing the sentence with “....comparing.....”

P18, L340: by -> on

P19, L347: change “profile de Leeuw” –to “profile shown in de Leeuw” or “shown by”

P19, L348: was over -> was located over

P19, 359: delete “the” so that it reads “of SO₂” or add “plume” so that it reads “of the SO₂ plume”

P23, Fig. 13 and P24, Fig. 14: Add x-axis title (-> “Date”)

P31, L531: replace “the” by “a “ so that it reads “considered in a future study”.