Dear Dr. Balkanski,

Thank you for the rapid response and your suggestions to improve our manuscript.

We think however that the points you raised were already addressed in the revised manuscript. For your convenience, we recall the relevant text passages below.

Please let us know whether these clarifications are sufficient or whether more in-depth discussions are necessary.

Yours sincerely,
Mattia Righi and co-authors

the answer below does not address NO3:
"Page 34043, L15: how are aviation NO3 emissions estimated. Do you have mass and number emissions for all aviation aerosols? Please describe in more detail."
The now extended description of the emission setup (see reply to the first comment above) should address this comment. An additional sentence has been added in Sect. 2 to further clarify that number emissions are estimated from the mass of emitted BC and primary SO4: "Namely, we have used the same size distribution parameters as for the reference case in R13 and applied them to both emitted primary aerosol species, i.e. BC and primary SO4, in order to derive number emissions from mass."

This comment has been addressed in the revised manuscript by extending the description of the emission setup in Section 2 (see line 215 and following), where we clearly state that aviation emissions in the CMIP5 inventory also includes NO_x as an important aerosol NO_3 precursor: "The CMIP5 aviation emissions data includes NOx (an important aerosol nitrate precursor) and BC. We further derive SO_2 emissions by scaling the BC emissions with the ratio of the emission factors of the two species at each altitude level (see R13 for details) in all scenarios."

You missed the opportunity to point out to RCP2.6 rather akward behaviour in terms of BC. The trend in BC emission (and to as lesser extent of SO2) from RCP 2.6 that the reviewer refers to should be indicated in your text.

try to sharpen your answer of the following comment:
page 34044, line 23-24: "it should be questioned whether the assumptions of high aviation emission shares in RCP2.6 are realistic RCP2.6 is unrealistically high": This is the point. Is there really a good reason why they were constructed this way? Then you need to explain it."

The issue of BC in RCP2.6 is discussed in the revised manuscript at line 295 and following, where we also suggest a reason for its awkward behavior: "The very high increase in BC emissions in RCP2.6 (van Vuuren et al., 2011b) is due to the fact that in this scenario the emissions were calculated for total transport and then split among the three sectors (road, shipping and aviation): This split was based on the time-dependent shares of each sector for each species, again according to QUANTIFY. The aviation share for BC in QUANTIFY is characterized by a large increase between 2000 and 2030 (about an order of magnitude for all scenarios, not shown), which explains the large increase of BC emissions in RCP2.6 given in Fig. 2."