

This manuscript reports EMAC model experiments result regarding brominated VSLS and their influence on the 21<sup>st</sup> century ozone. Falk and co-authors investigate long-term changes of VSLS emission, transports, chemical transformations under RCP6.0 scenario, and evaluate how these changes will affect stratospheric ozone. Though their assumption of fixed ocean water concentrations for the VSLS emission is the weakest part of this study, however, given the large uncertainties regarding the marine bio-activity and the VSLS production in a warming climate, most of their conclusions derived are still valuable and informative. Moreover, they separate individual contribution of temperature, wind, [OH], AOA, and tropopause to the changes of VSLS in the troposphere and the stratosphere, which is interesting and give some insight details of how these factors may affect the VSLS as a source of Br<sub>y</sub> in a changing climate. The analysis of the data is clear and with results well interpreted. This manuscript itself is well written and fluent to read. Therefore, I would support publication in ACP, with minor revisions.

#### General comments:

The discussion on ozone depletion in Section 5 is too brief. Given the title of this study is about ozone influenced by VSLS, therefore, it would be benefit if it more information or discussions are given. One thing I think completely missed by this manuscript is the feedback effect of altered stratospheric ozone to the large scale circulation, as the change in circulation may in turn affect transport and the troposphere-stratosphere exchange of VSLS. Certainly this process is completely not reflected in nudged model simulation as in this study. However, a recent work done by Braesicke et al. (2013) (doi:10.5194/acp-13-10677-2013), using a chemistry-climate coupling model, clearly revealed that no matter how large (or small) the chemistry perturbation is to the stratospheric ozone (e.g. ozone hole vs a few percentage ozone loss by VSLS), the large scale circulation, particularly in the high-latitude, will be significantly affected. Please make comments on this issue in the revised version.

#### Minors:

Figure 1: the chemical reactions listed in the green box for the chemistry looks weird and not clear. For example, there are two '+' symbols, what do they mean?

P8 L4: change 'hpa' to 'ppt'

P10L11: need reference(s) for 'the speed-up BDC' caused by changing VSLS.

P11 figure 5 caption: do you mean 'Absolute values in upper PANEL, difference with respect to 2100 lower PANEL'?

Section 5 (on ozone loss due to VSLS): also note, Yang et al. (2014) work using UKCA gave very similar ozone column loss to this study.