Supplementary of

Simulations of ^{7}Be and ^{10}Be with the GEOS-Chem global model v14.0.2 using state-of-the-art production rates

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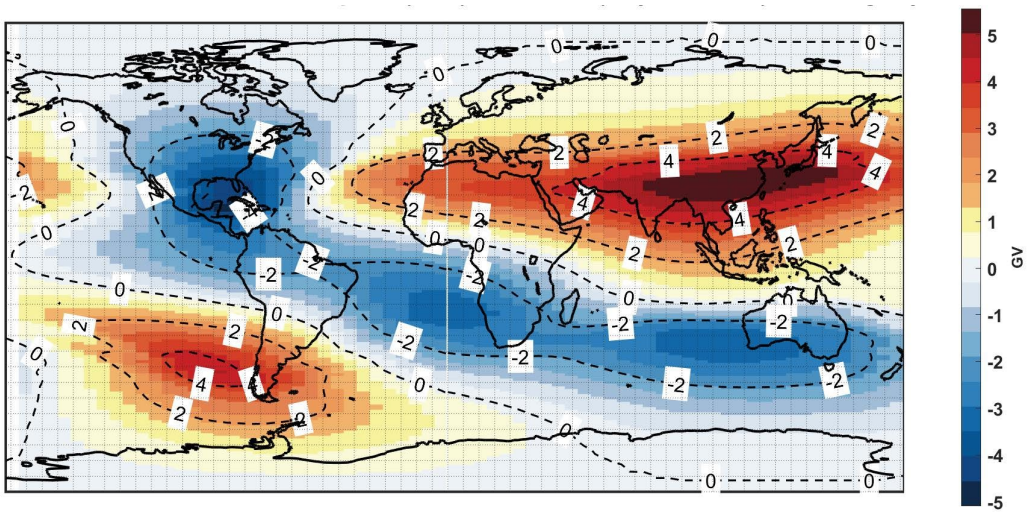

Figure S1. Differences between cut-off rigidity from Copeland (2018) and cut-off rigidity using the Stoermer method.

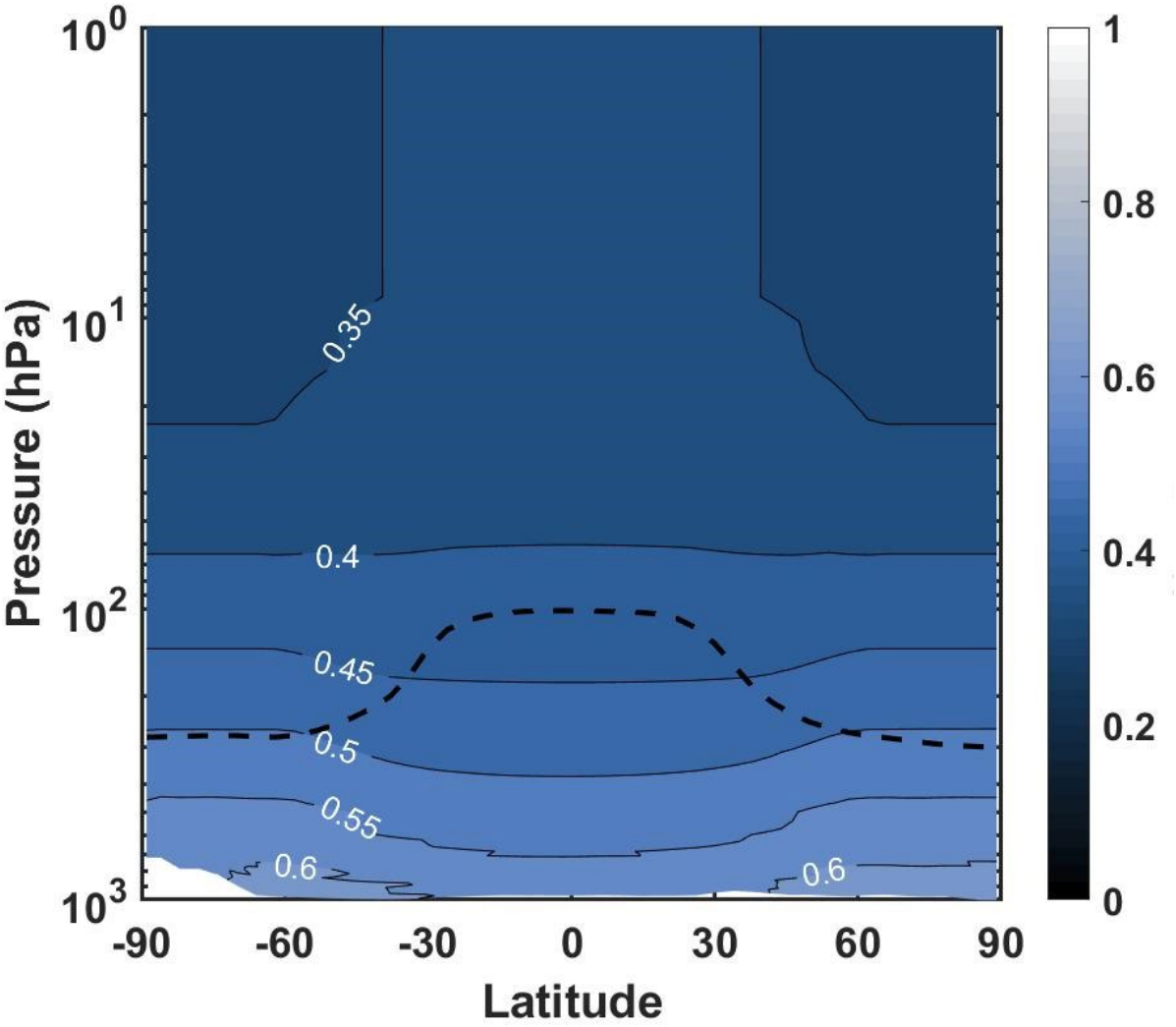

Figure S2. Vertical distribution of the $^{10}Be/^{7}Be$ production ratios in the P16 production model. The black dash line indicates the location of MERRA-2 thermal tropopause.

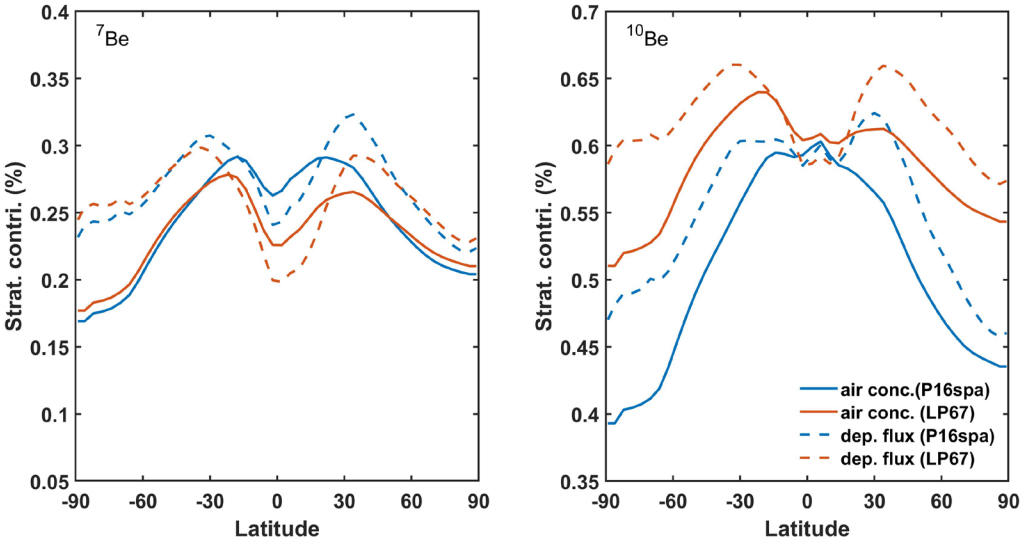

Figure S3. Stratospheric fraction of annual zonal mean surface air concentrations (solid lines) and total deposition fluxes (dashed lines) in the model simulations as a function of latitude for ^{10}Be (left panel) and ^{7}Be (right panel).

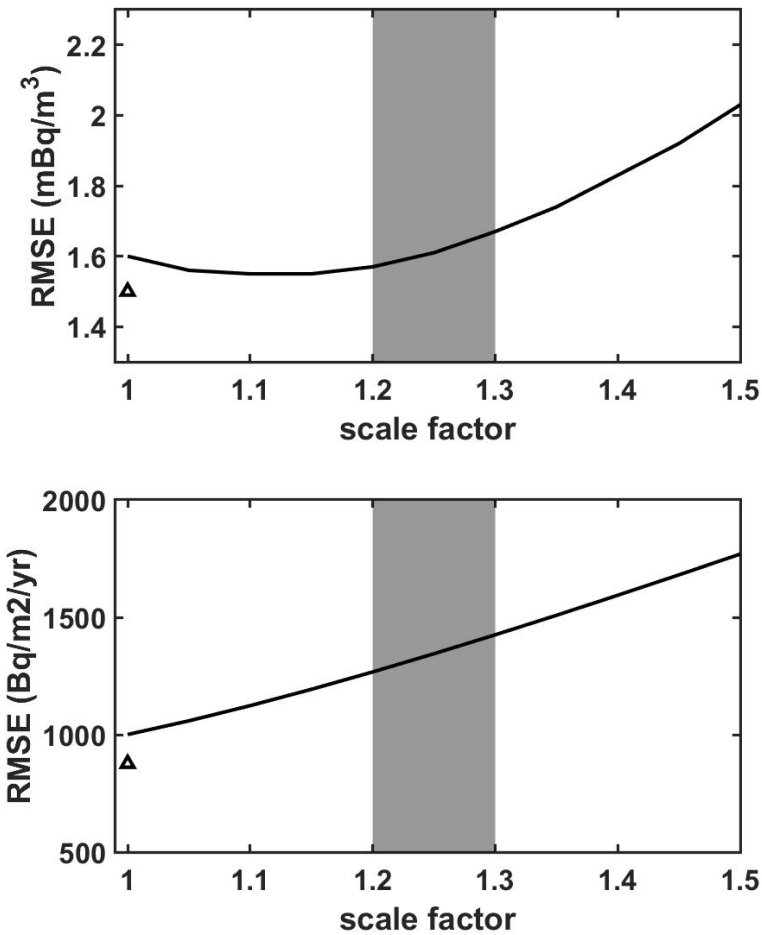

Figure S4. The RMSE values between the $^{7}Be_{LP67}$ applied with different scale factors (solid line) and measurements for surface air concentrations (upper panel) and depositions (lower panel). The shaded region indicates the theoretical scale factor range, which is estimated based on the production model. The triangle indicates the RMSE value between $^{7}Be_{P16spa}$ and measurements.

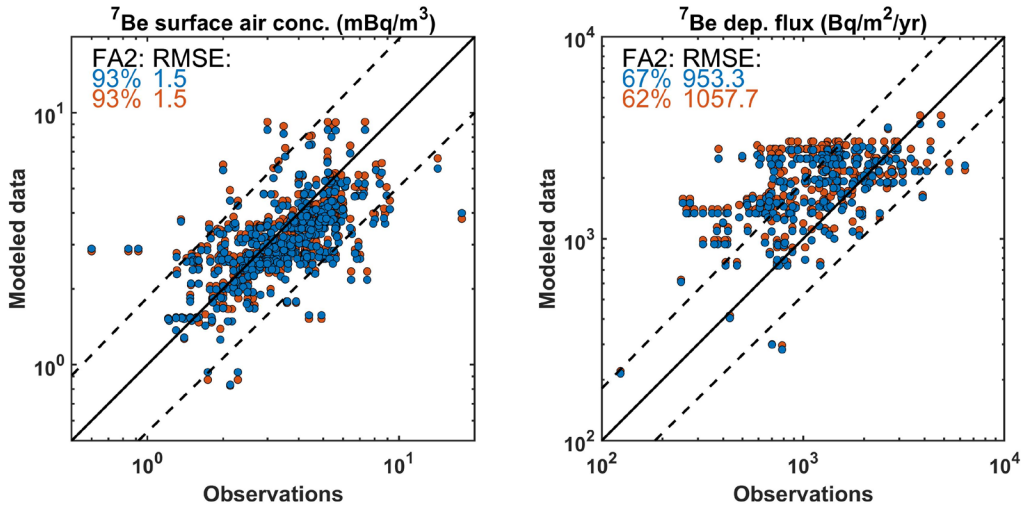

Figure S5. Scatter plot of modeled $^{7}Be_{P16spa}$ (blue color) and $^{7}Be_{P16}$ (red color) versus observed ^{7}Be surface air concentrations (left panel) and deposition fluxes (right panel). The model data is only for the year 2012. The dashed lines are the factor of 2 of 1:1 line (straight lines).

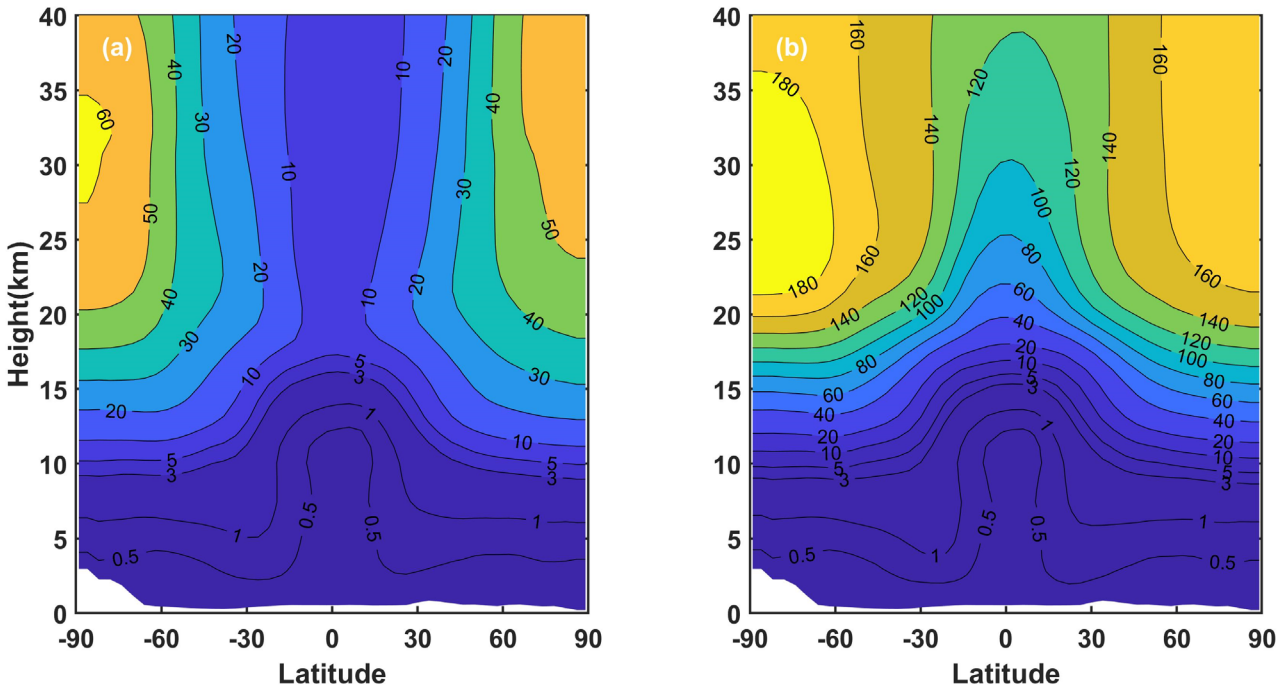

Figure S6. Latitude-height cross-sections of model zonal mean (a) ^{7}Be and (b) ^{10}Be ($\times 10^{5}$ atoms/SCM).