



*Supplement of*

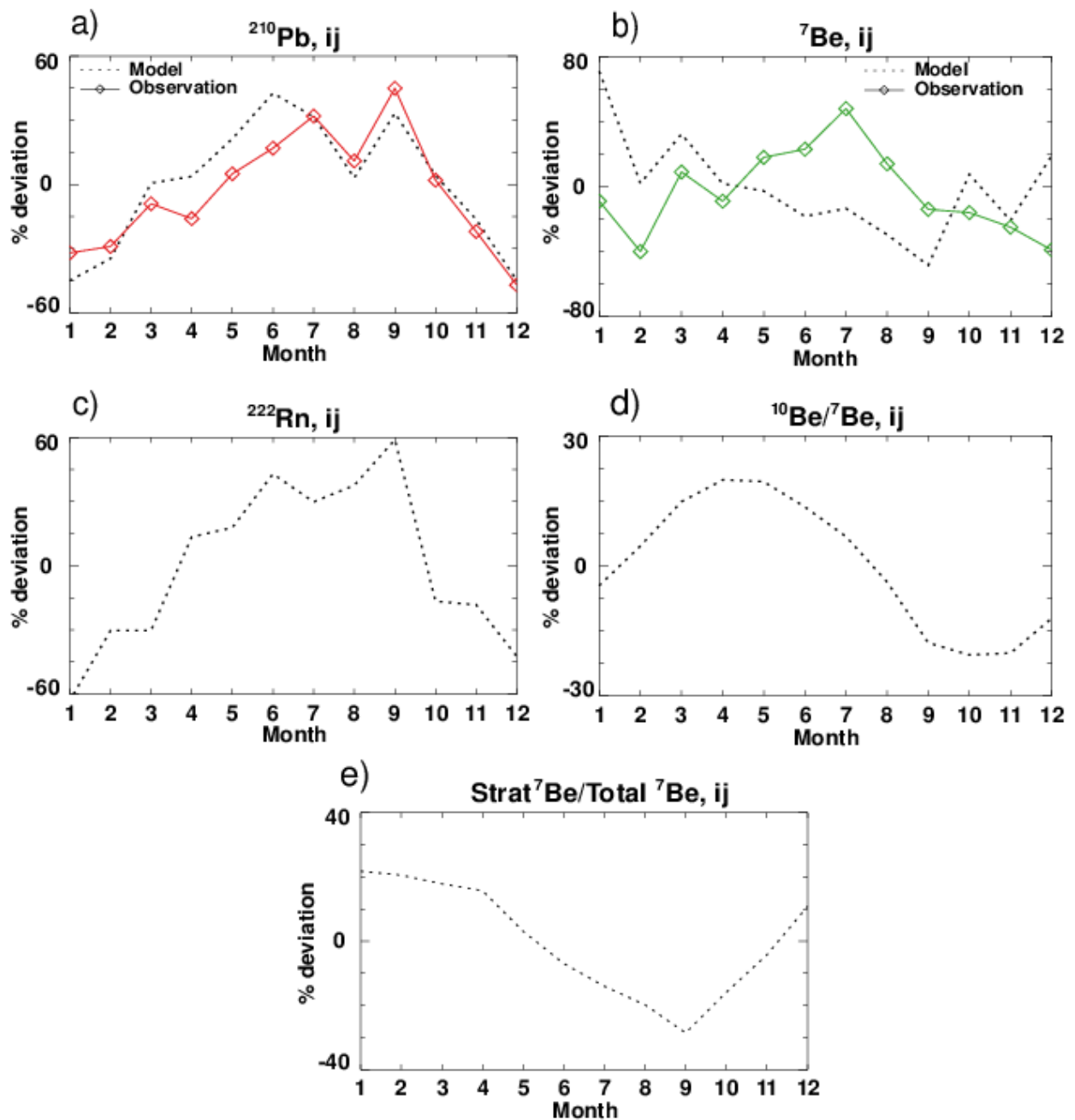
## **Processes controlling the seasonal variations in $^{210}\text{Pb}$ and $^7\text{Be}$ at the Mt. Cimone WMO-GAW global station, Italy: a model analysis**

**Erika Brattich et al.**

*Correspondence to:* Hongyu Liu ([hongyu.liu-1@nasa.gov](mailto:hongyu.liu-1@nasa.gov))

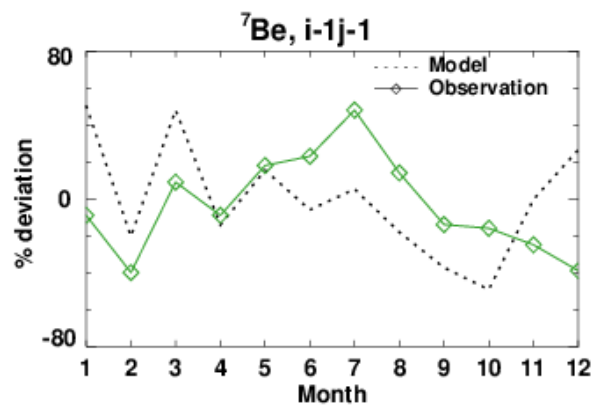
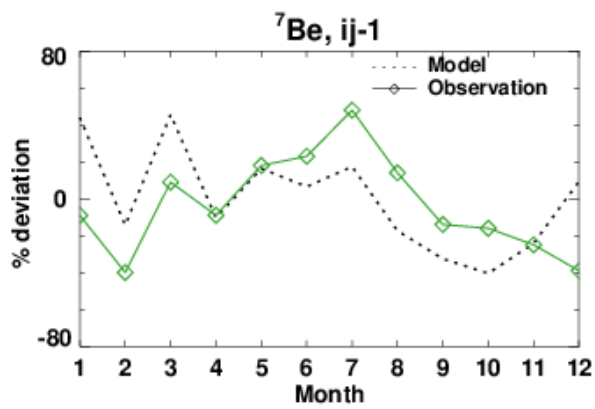
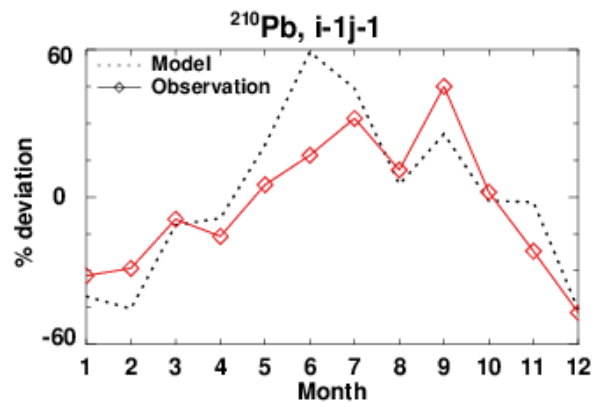
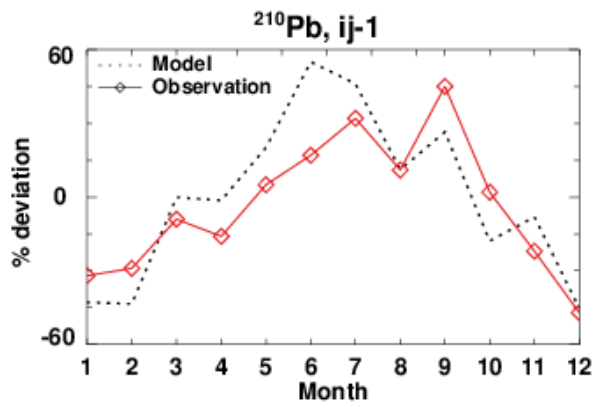
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# 1 Supplementary Material

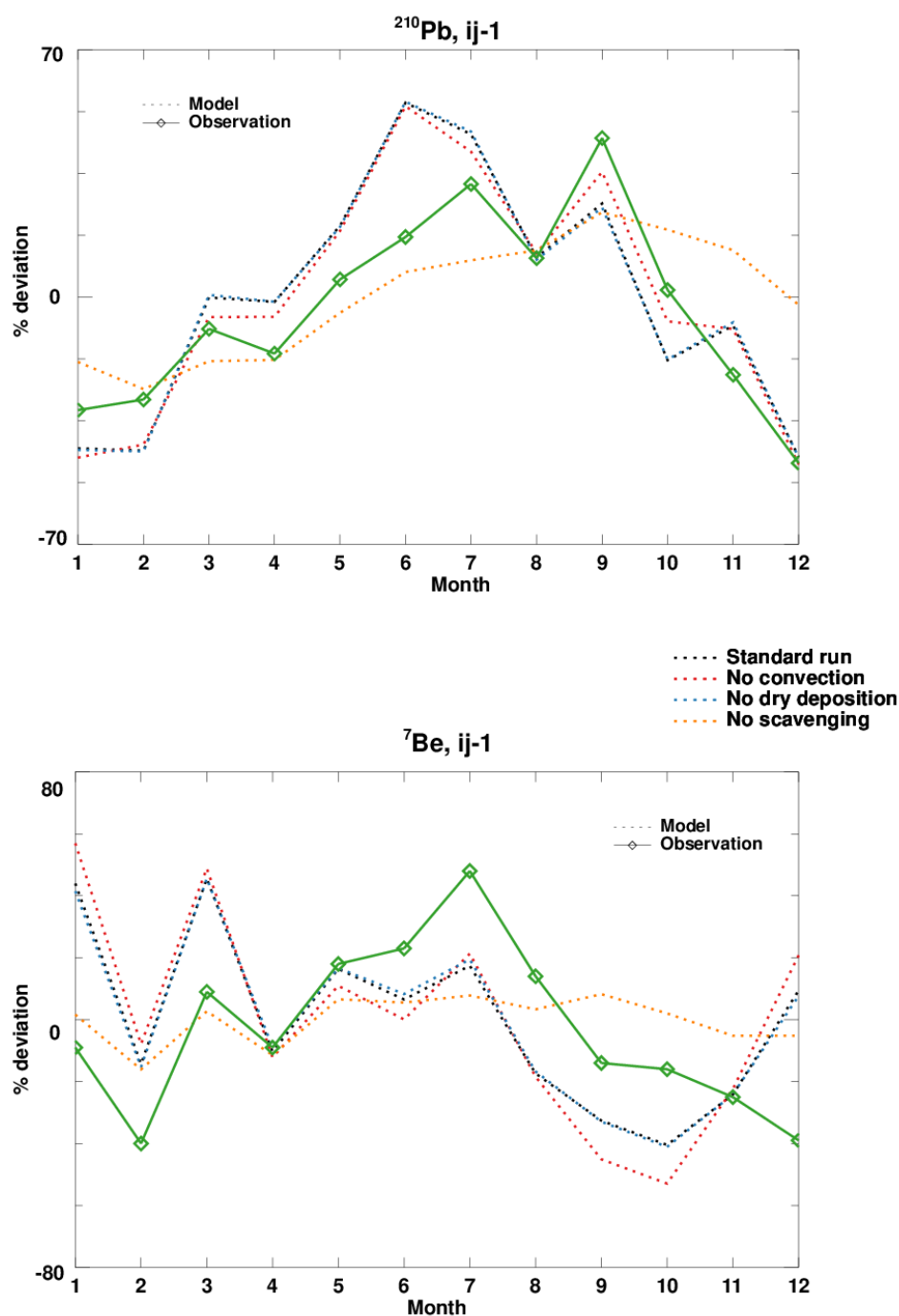


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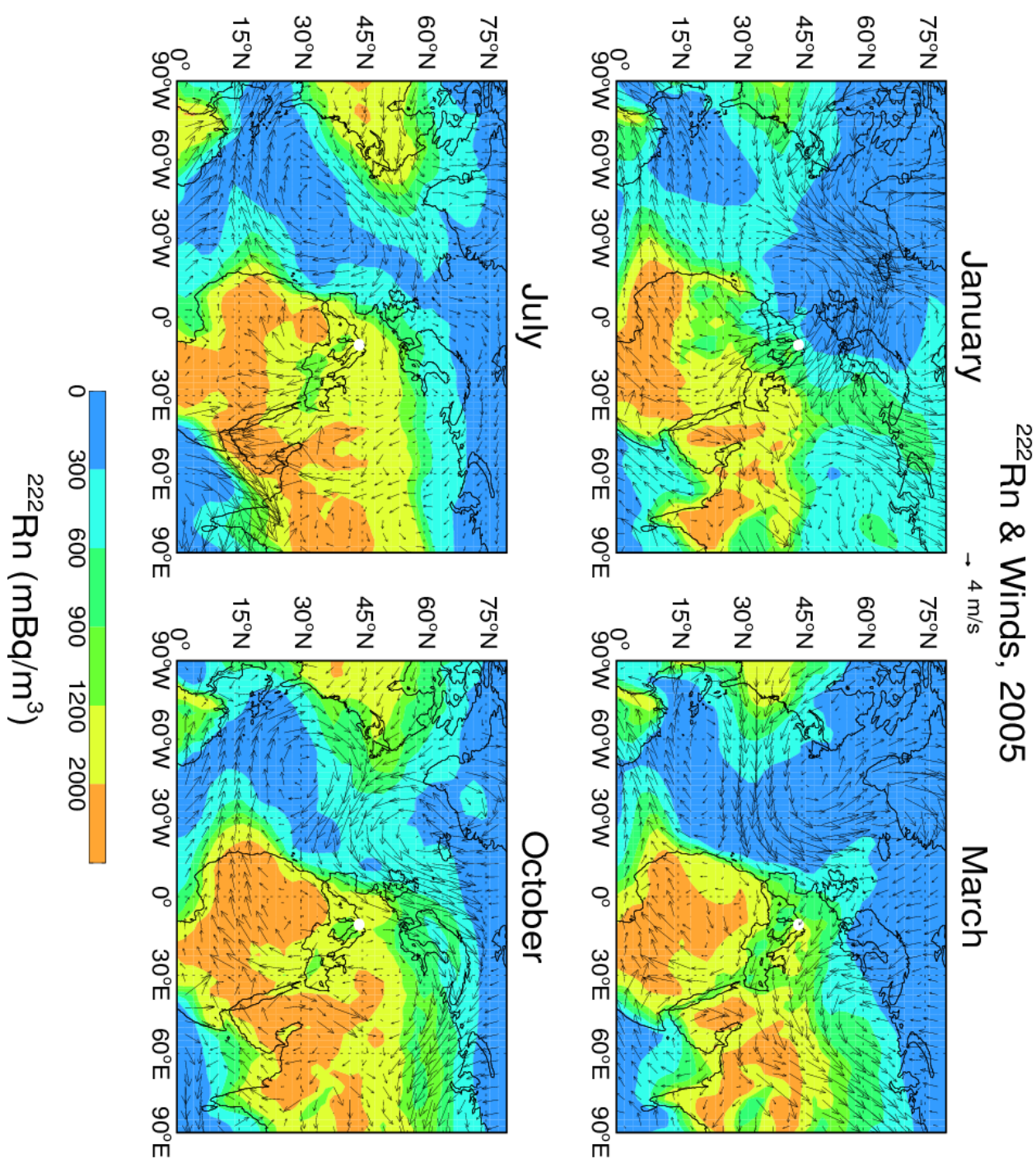
3 **SI Figure 1 (a,b,c,d,e).** Comparison of GMI simulated (black dotted line) percentage  
 4 deviations from the annual means of (a)  $^{210}\text{Pb}$  and (b)  $^7\text{Be}$  concentrations with those observed  
 5 at Mt. Cimone (solid lines). Model values are for the “ij” gridbox corresponding to the location  
 6 of Mt. Cimone. Also shown are GMI simulated monthly fluctuations of (c)  $^{222}\text{Rn}$  activities, (d)  
 7  $^{10}\text{Be}/^7\text{Be}$  ratios and (e) strat  $^7\text{Be}$ /total  $^7\text{Be}$  ratios.



**SI Figure 2.** Same as SI Figure 1(a, b), but for the “ij-1” grid to the south of Mt. Cimone (left column) and the “i-1j-1” grid to the southwest of Mt. Cimone (right column), respectively.

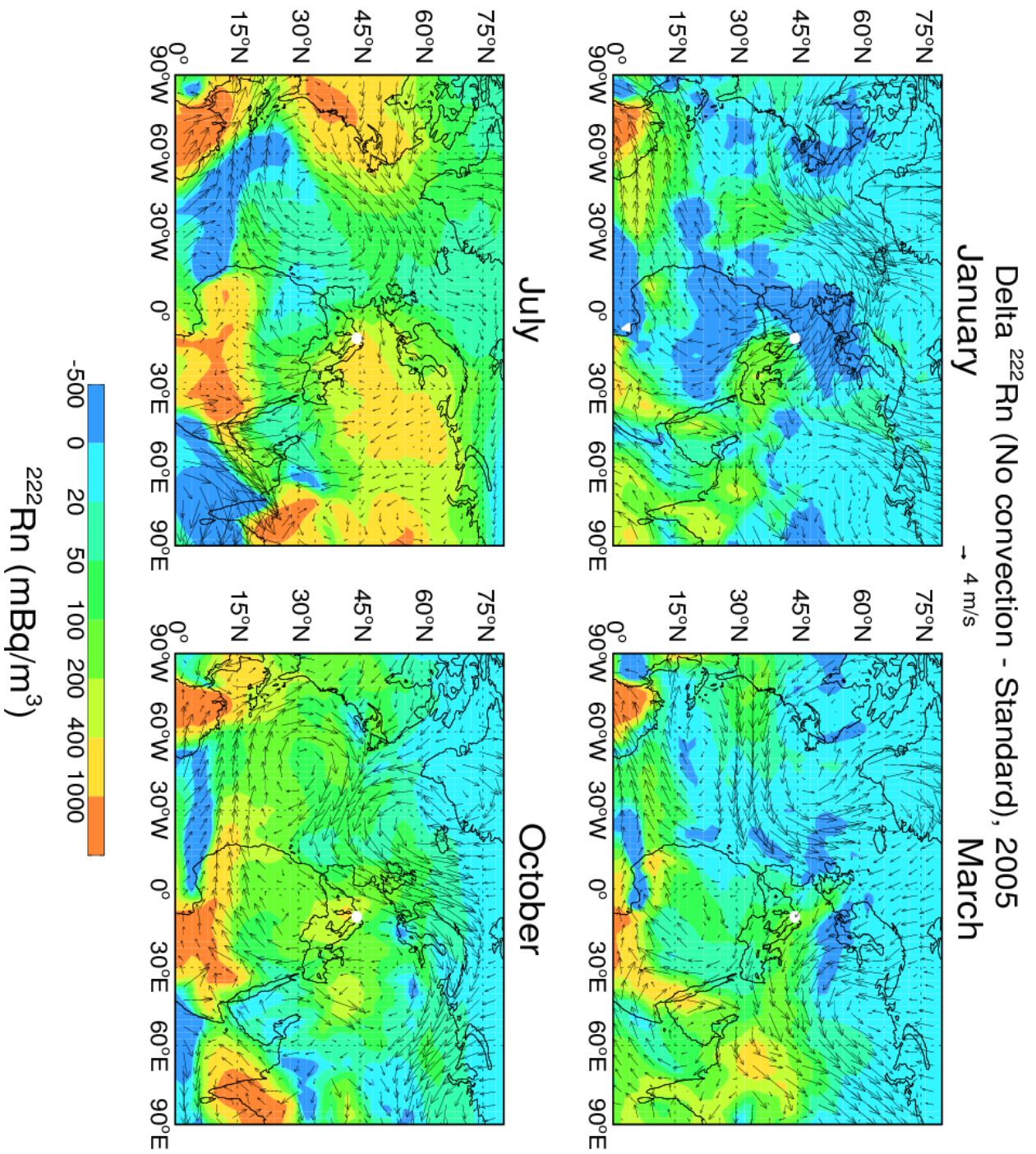


**SI Figure 3.** Comparison of GMI simulated monthly percentage fluctuations of  $^{210}\text{Pb}$  and  $^7\text{Be}$  at Mt. Cimone (“ij-1” grid) between the standard (black dotted line) and the sensitivity runs. The sensitivity runs are those without convective transport/scavenging (red dotted line), without dry deposition (blue dotted line), and without scavenging (orange dotted line). The observations are shown as green solid line.



**SI Figure 4.** Simulated monthly mean  $^{222}\text{Rn}$  concentrations, at the elevation of Mt. Cimone. Arrows represent the seasonality of winds in the MERRA meteorological data. The white dot indicates the location of Mt. Cimone (44°12' N, 10°42' E, 2165 m asl).





**SI Figure 5.** GMI simulated differences of  $^{222}\text{Rn}$  concentrations at the elevation of Mt. Cimone between a sensitivity run without convection and the standard run. Arrows denote MERRA winds. The white dot indicates the location of Mt. Cimone (44°12' N, 10°42' E, 2165 m asl).