



Supplement of

Observation and modeling of high-⁷Be concentration events at the surface in northern Europe associated with the instability of the Arctic polar vortex in early 2003

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^{210}Pb & Winds, 2003

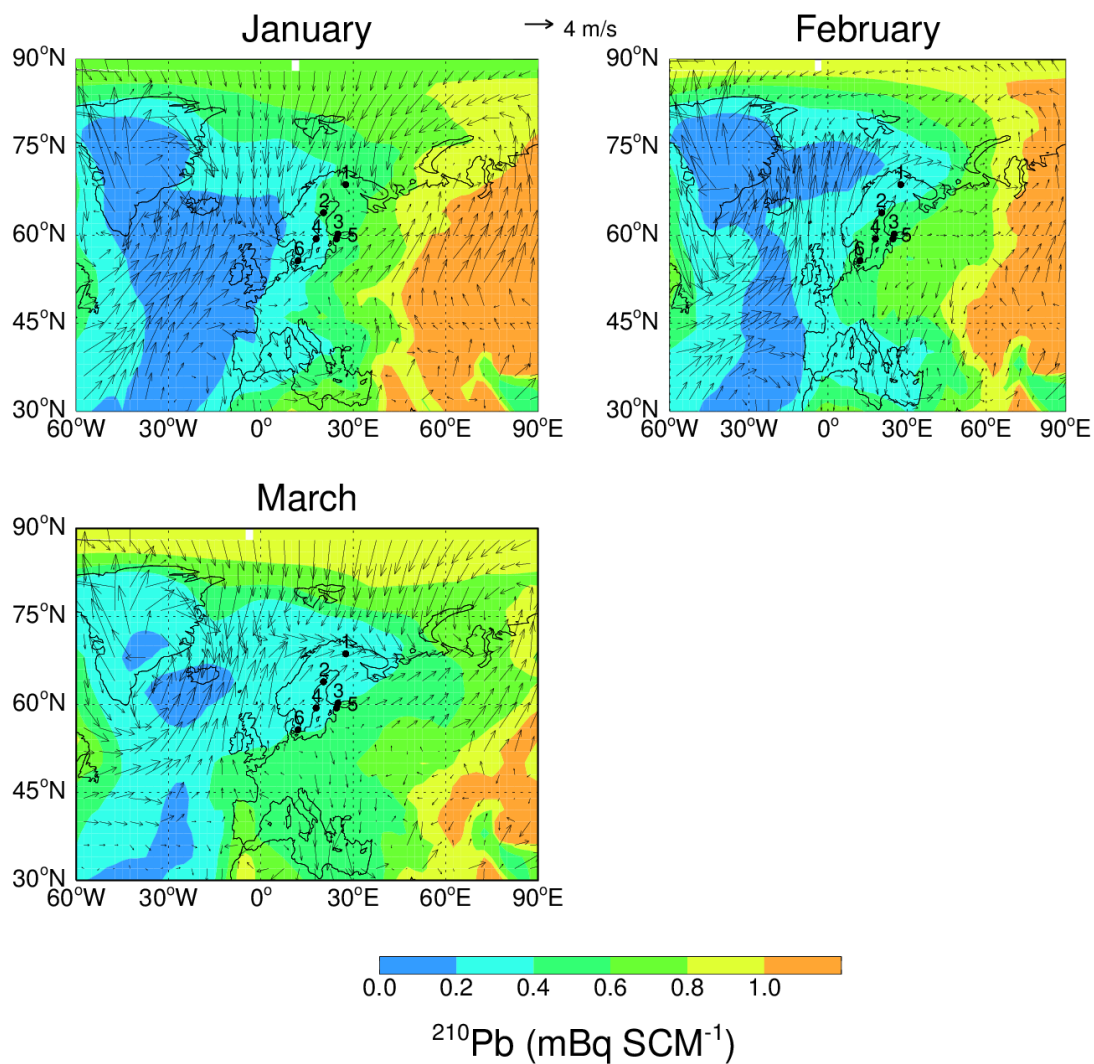
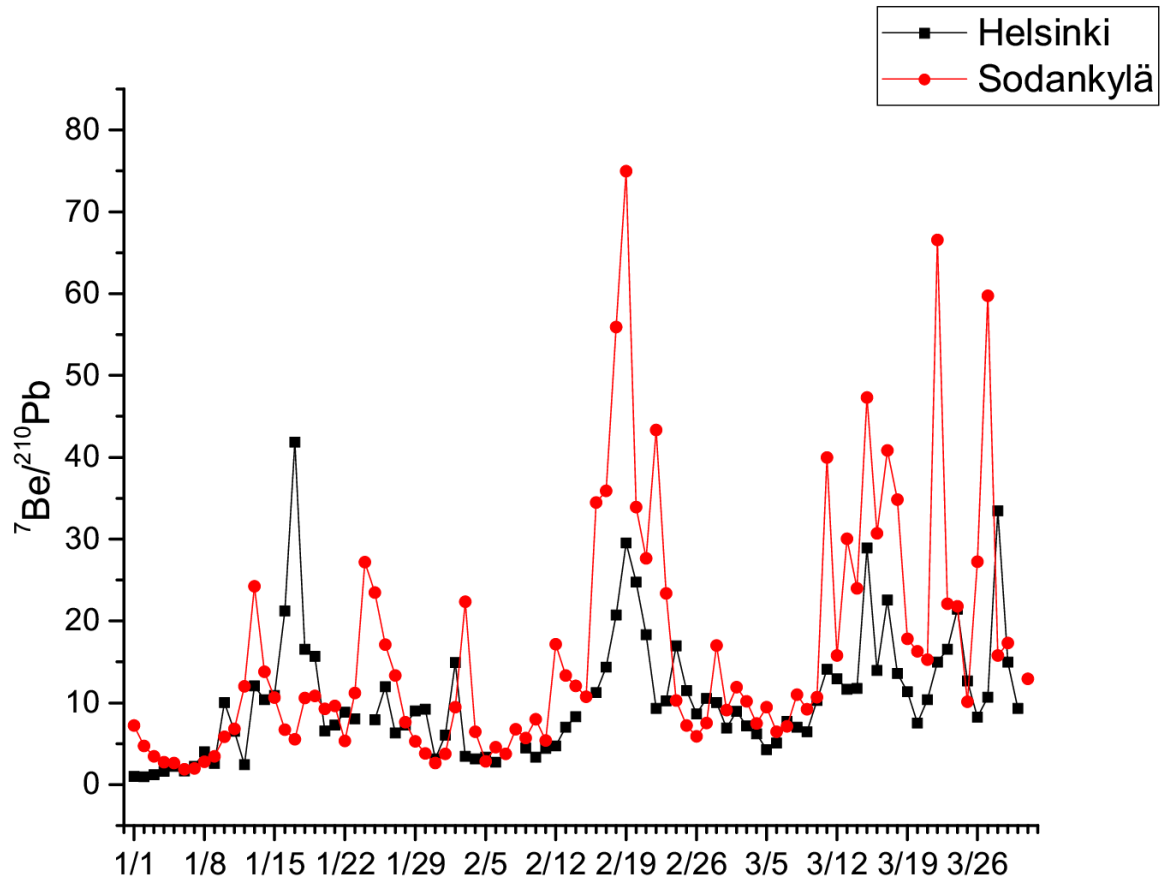
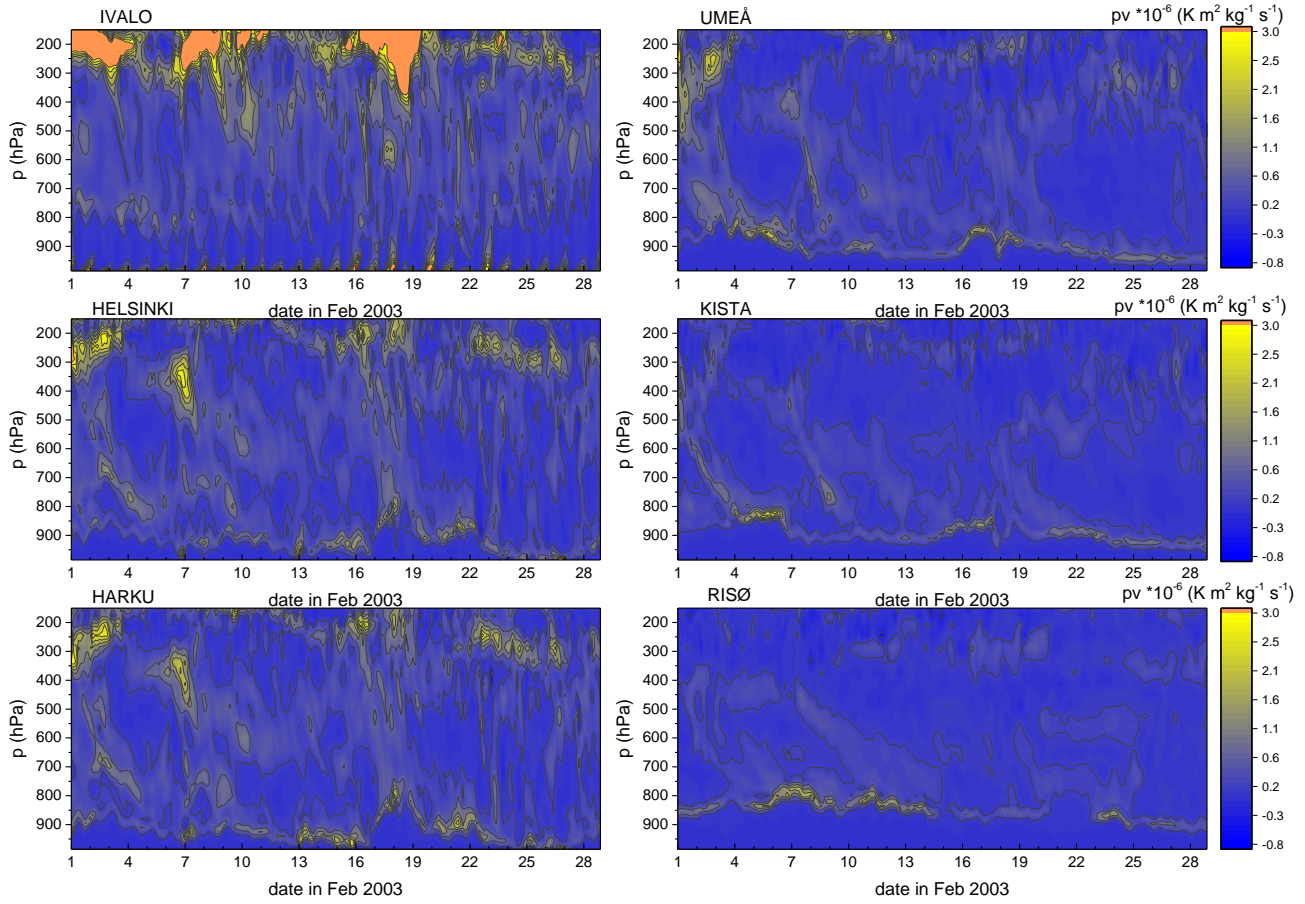


Figure S1. Simulated monthly mean ^{210}Pb surface concentrations (mBq SCM^{-1}). Arrows represent winds in the MERRA-2 meteorological data. The dots indicate the locations of the sampling sites: 1=Ivalo, 2=Umeå, 3=Helsinki, 4=Kista, 5=Harku, 6=Risø.

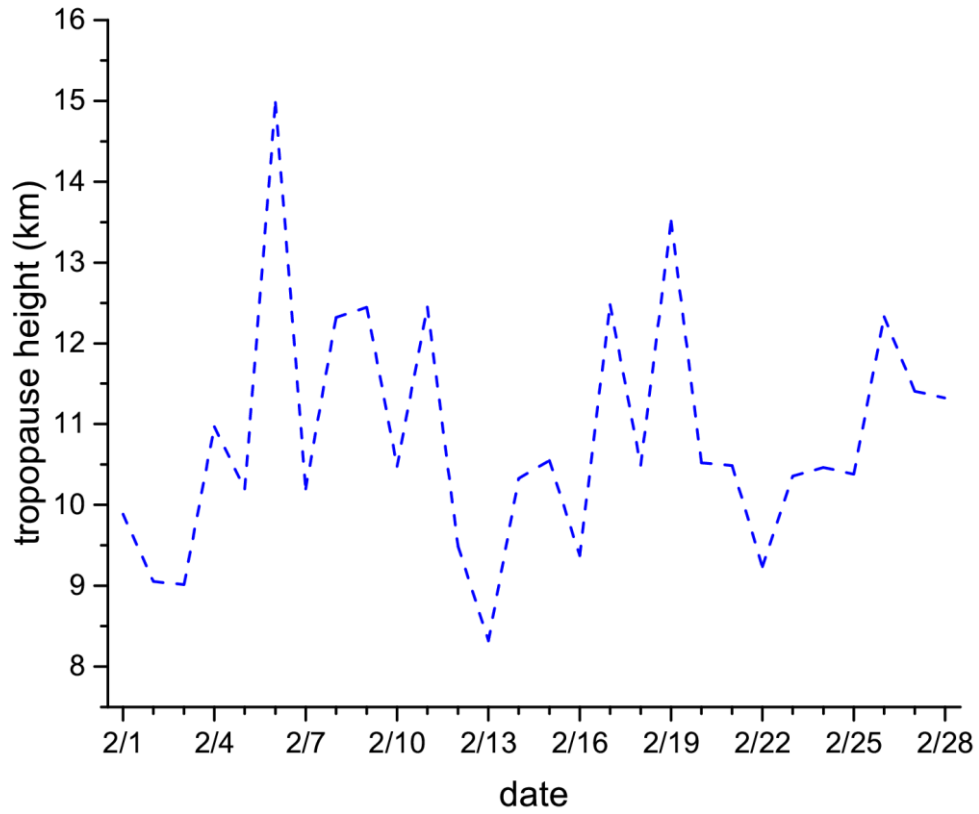


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Figure S2. Time series plots of observed daily $^7\text{Be}/^{210}\text{Pb}$ concentration ratio at the two stations of Helsinki (60.21°N, 25.06°E) and Sodankylä (67.367°N, 26.629°E).



20 **Figure S3.** Time-height cross-sections of MERRA-2 three-hourly Ertel's potential vorticity (in $\text{K m}^{-2} \text{ kg}^{-1} \text{ s}^{-1}$) during the month of February 2003 sampled at the six sampling sites.



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Figure S4. Temporal variation of MERRA-2 daily average height of thermal tropopause (in km) during February 2003 at the Sodankylä station in Finland.