Supplementary Materials:

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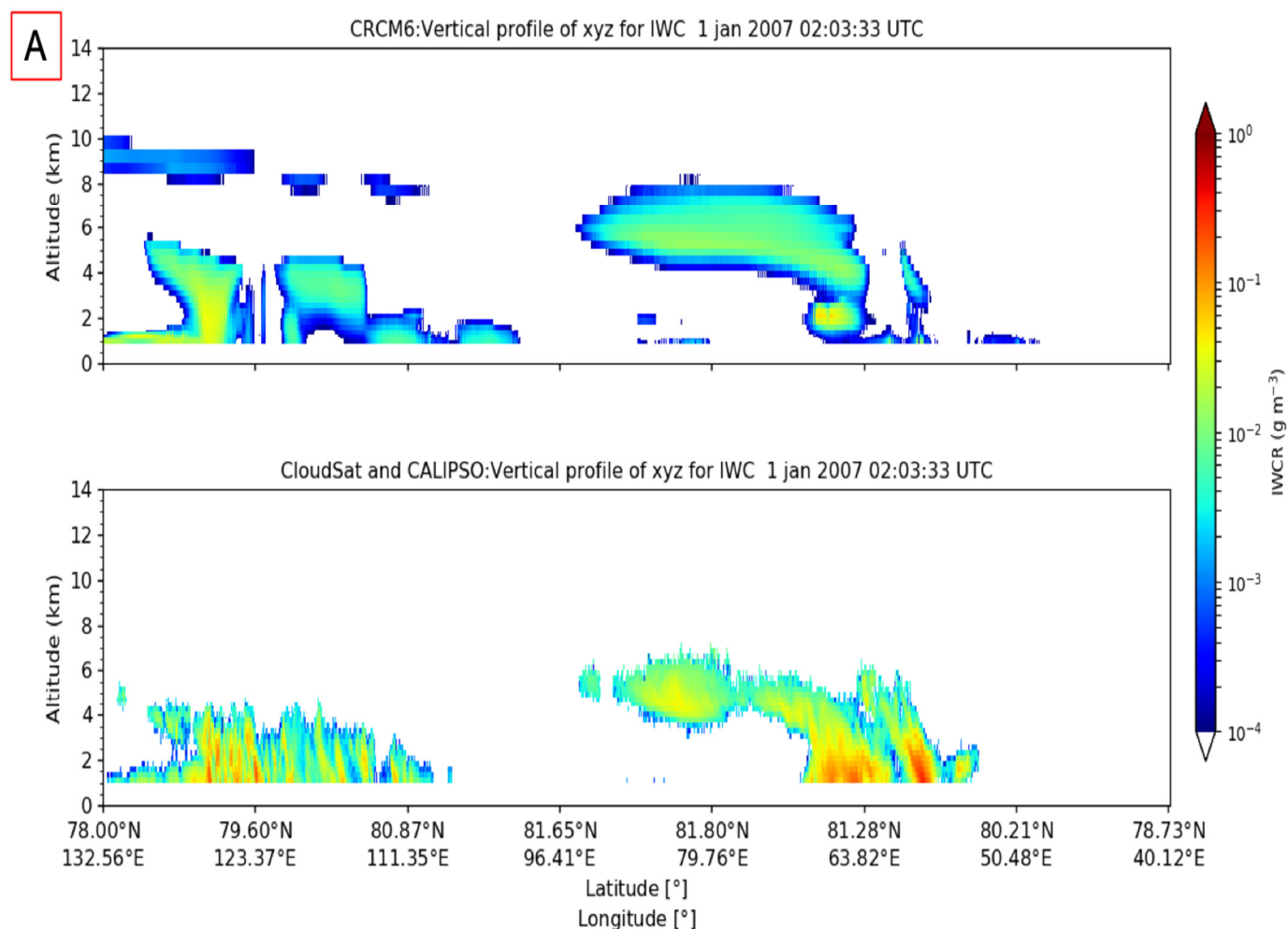

Figure S1. Run animation mode to see 2C-ICE IWC profiles blinking with 2B-FLXHR-LIDAR heating rate profiles
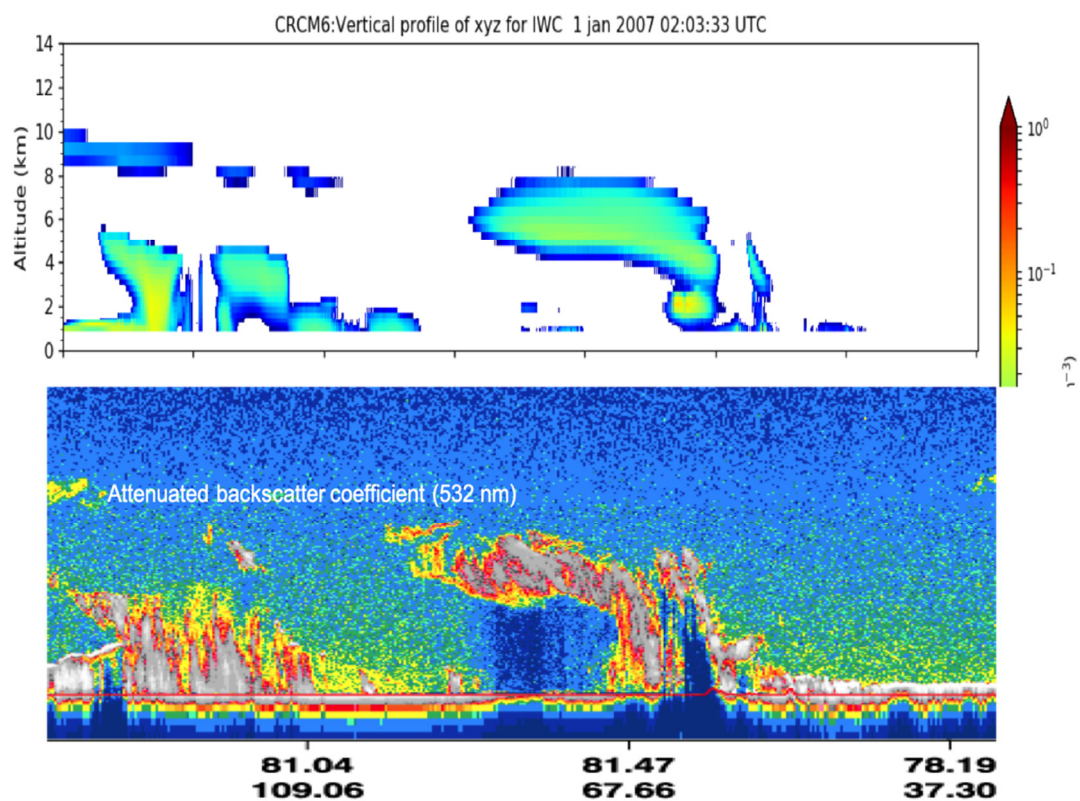
Figure S2. Run animation mode to see CALIOP profiles blinking with the 2C-ICE IWC profiles.
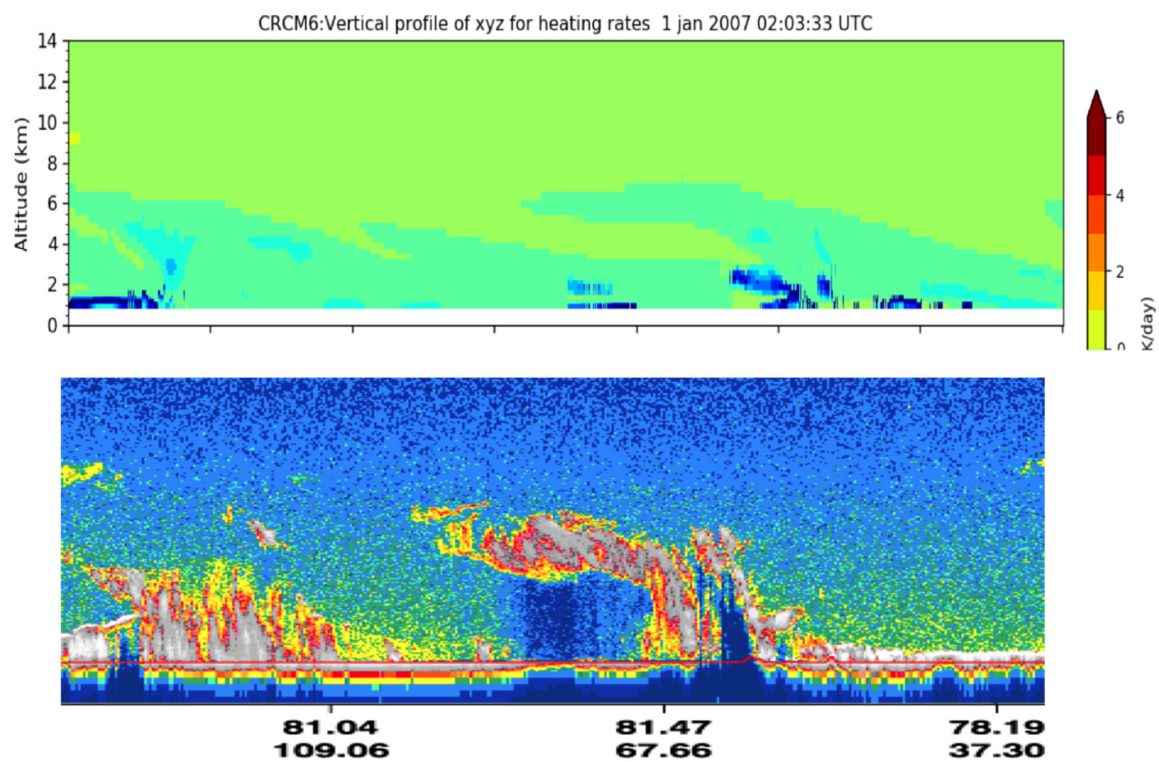

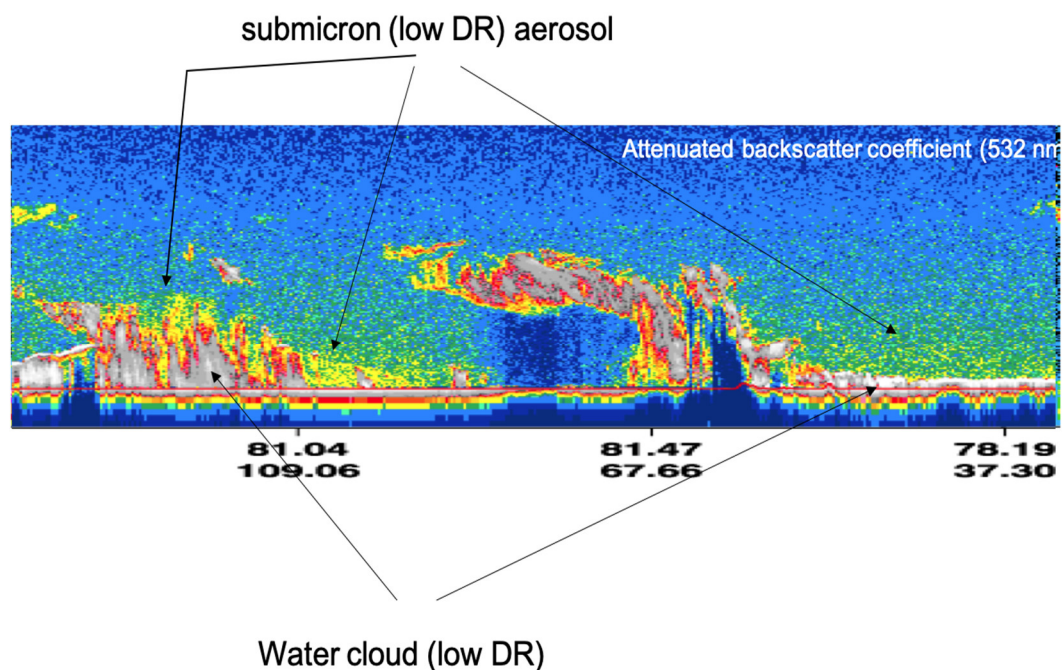**Figure S3.** Run animation mode to see CALIOP profiles blinking with 2B-FLXHR-LIDAR heating rate profiles.

Figure S4. Run animation mode to see CALIOP profiles blinking with CALIOP DR profiles.
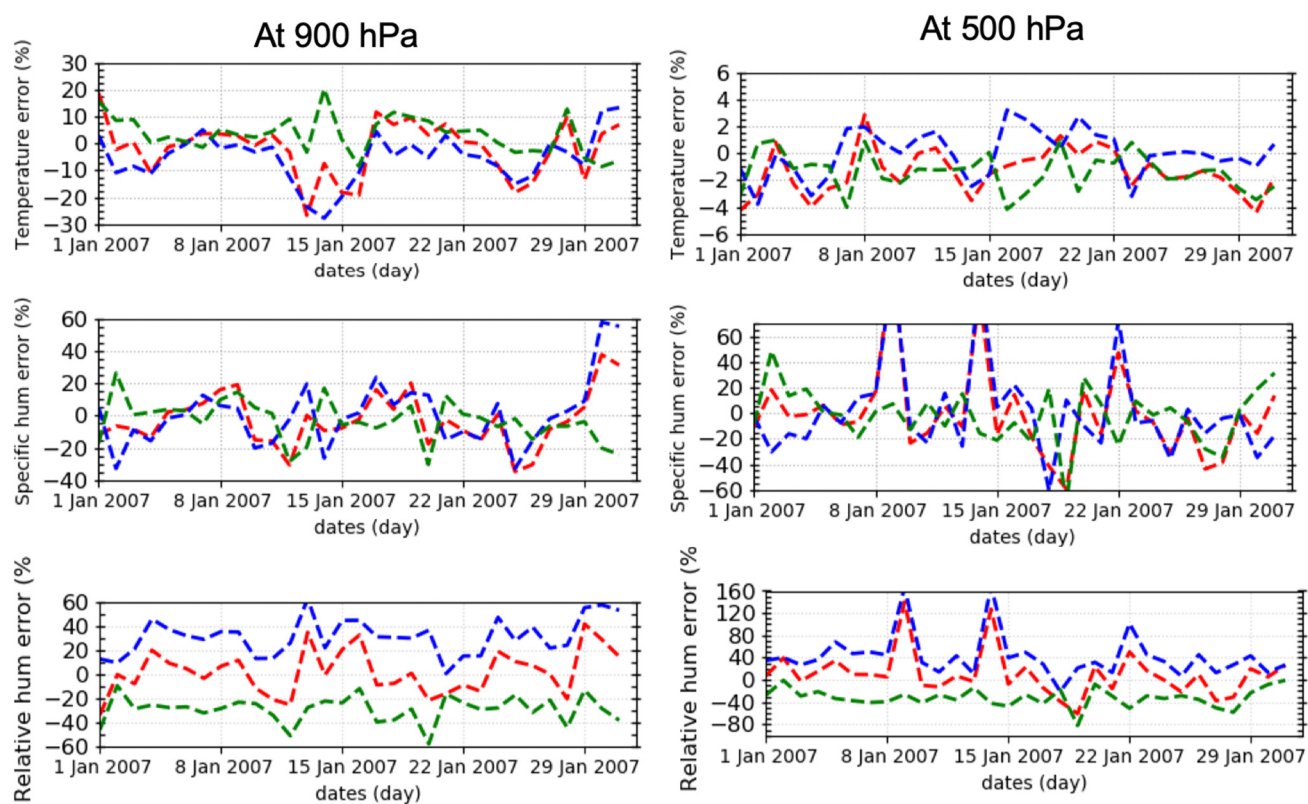

Figure S5. Systematic time deviation in percentage for temperature, SH and RH.