



Supplement of

Variability in the properties of the distribution of the relative humidity with respect to ice: implications for contrail formation

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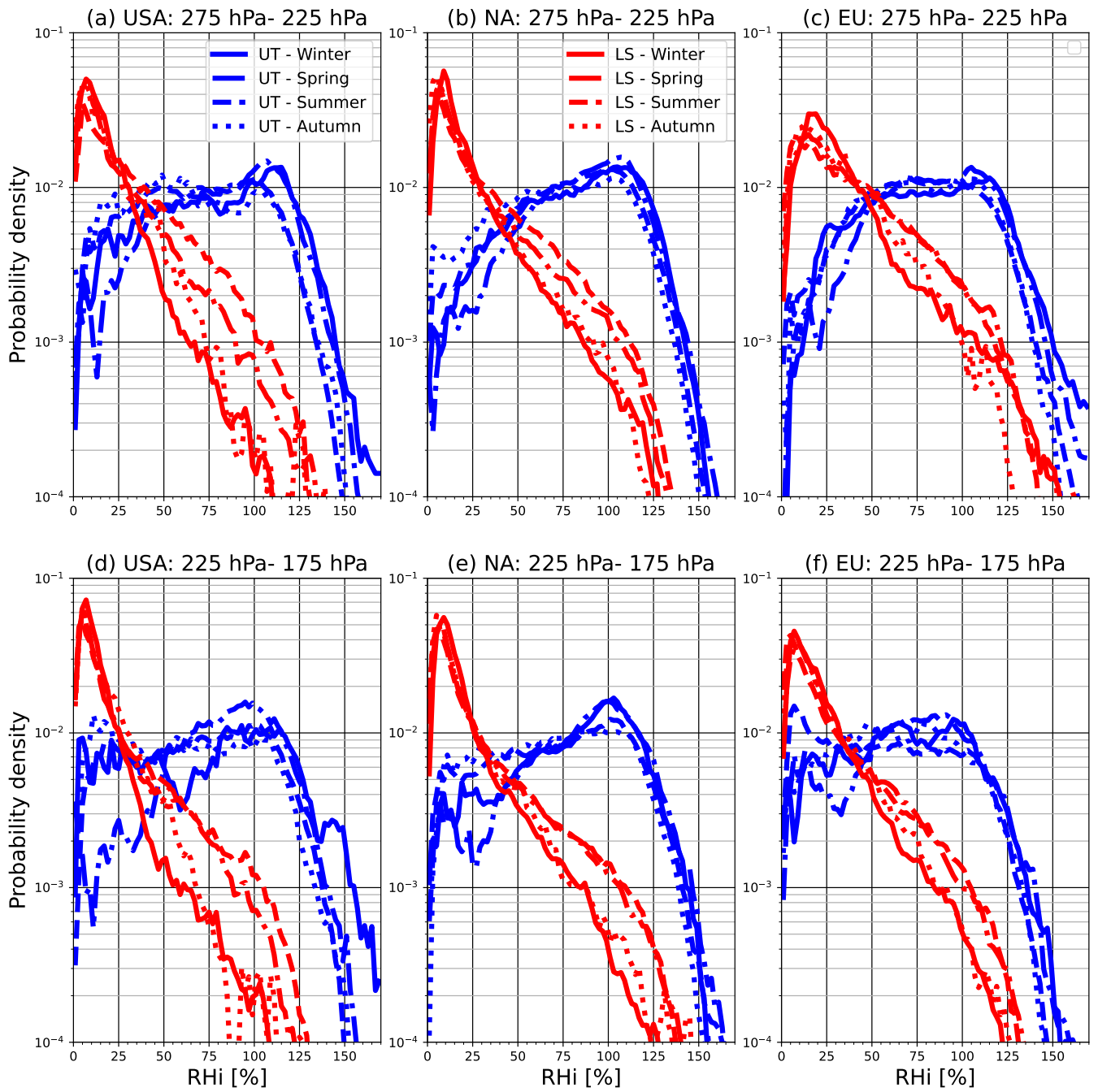


Figure S1. Same as Fig. 4 but for each season, for the pressure layers 275-225 and 225-175 hPa.

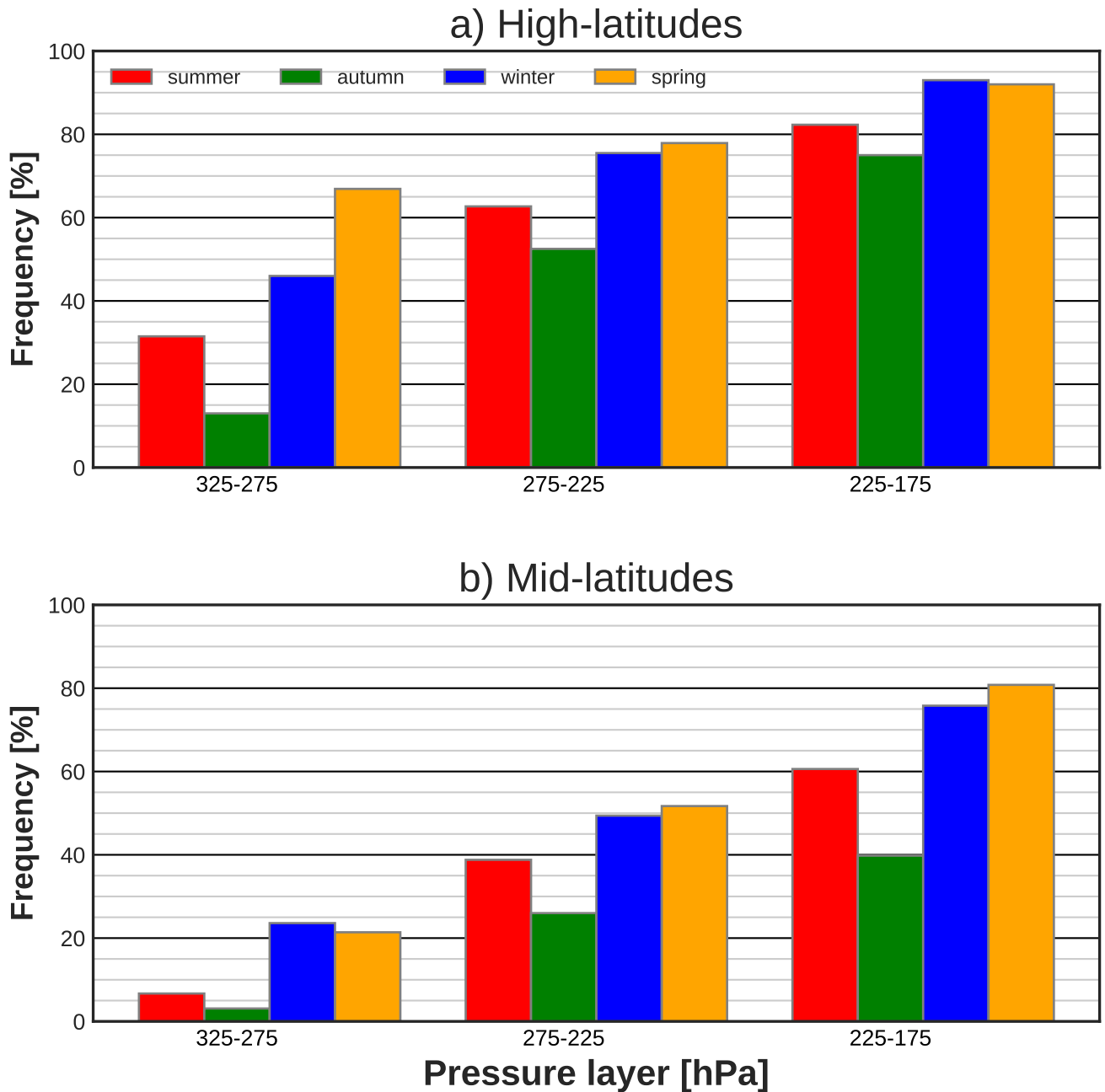


Figure S2. Same as Fig. 7 but for the percentage of measurements made in the LS in a) the high-latitudes and b) the mid-latitudes.

Table S1. Difference between the frequency of ice supersaturation and the frequency of persistent contrail formation associated with kerosene, bio-ethanol and liquid-hydrogen as a fuel in the high-latitude regions, computed over the period 1995-2022 for each season and three pressure layers.

Regions	Summer			Autumn			Winter			Spring		
Fuels	Kerosene	Ethanol	Hydrogen	Kerosene	Ethanol	Hydrogen	Kerosene	Ethanol	Hydrogen	Kerosene	Ethanol	Hydrogen
325 - 275 hPa	11.4 %	4.8 %	0.3 %	2.1 %	0.7 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
275 - 225 hPa	0.5 %	0.0 %	0.0 %	0.2 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
225 - 175 hPa	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %

Table S2. Same as Table S1 but for the mid-latitude regions.

Regions	Summer			Autumn			Winter			Spring		
Fuels	Kerosene	Ethanol	Hydrogen	Kerosene	Ethanol	Hydrogen	Kerosene	Ethanol	Hydrogen	Kerosene	Ethanol	Hydrogen
325 - 275 hPa	16.0 %	10.0 %	2.9 %	11.1 %	5.4 %	0.9 %	2.5 %	0.4 %	0.0 %	4.9 %	1.3 %	0.1 %
275 - 225 hPa	3.6 %	0.6 %	0.0 %	1.9 %	0.4 %	0.0 %	0.0 %	0.0 %	0.0 %	0.2 %	0.0 %	0.0 %
225 - 175 hPa	0.2 %	0.1 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %

Table S3. Same as Table S1 but for the tropics.

Regions	Summer			Autumn			Winter			Spring		
Fuels	Kerosene	Ethanol	Hydrogen	Kerosene	Ethanol	Hydrogen	Kerosene	Ethanol	Hydrogen	Kerosene	Ethanol	Hydrogen
325 - 275 hPa	9.4 %	9.4 %	9.1 %	9.9 %	9.3 %	5.5 %	5.5 %	5.5 %	4.5 %	7.42 %	7.3 %	5.9 %
275 - 225 hPa	9.6 %	6.7 %	1.9 %	5.9 %	9.8 %	9.8 %	9.8 %	5.6 %	1.3 %	10.5 %	7.3 %	0.6 %
225 - 175 hPa	5.2 %	1.4 %	0.0 %	0.3 %	0.2 %	0.2 %	2.1 %	0.0 %	0.0 %	3.6 %	0.1 %	0.0 %