Essential Data for the article "Sea Spray and Its Feedback Effects: Assessing Bulk Algorithms of Air-Sea Heat Fluxes via Direct Numerical Simulations"

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Supplementary material: 2D-PDFs generated by a case with bottom RH at 98% for droplets with radius at 25-microns

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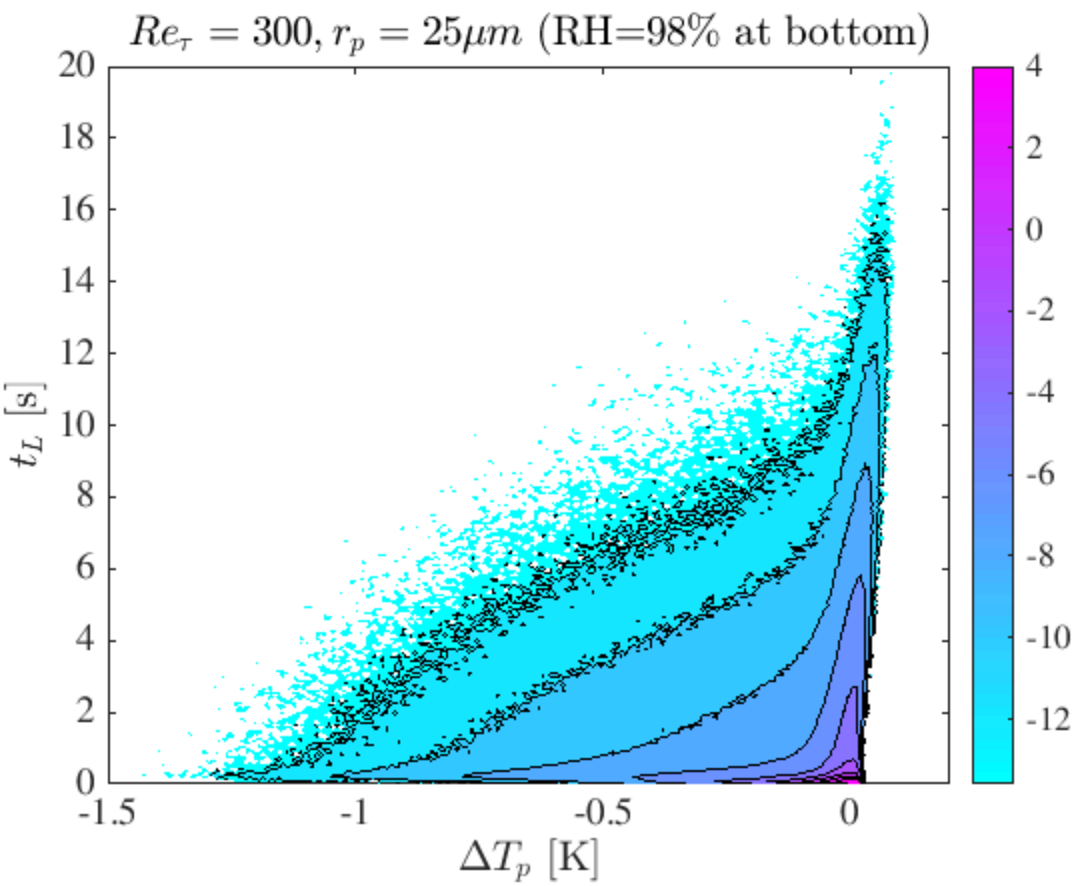
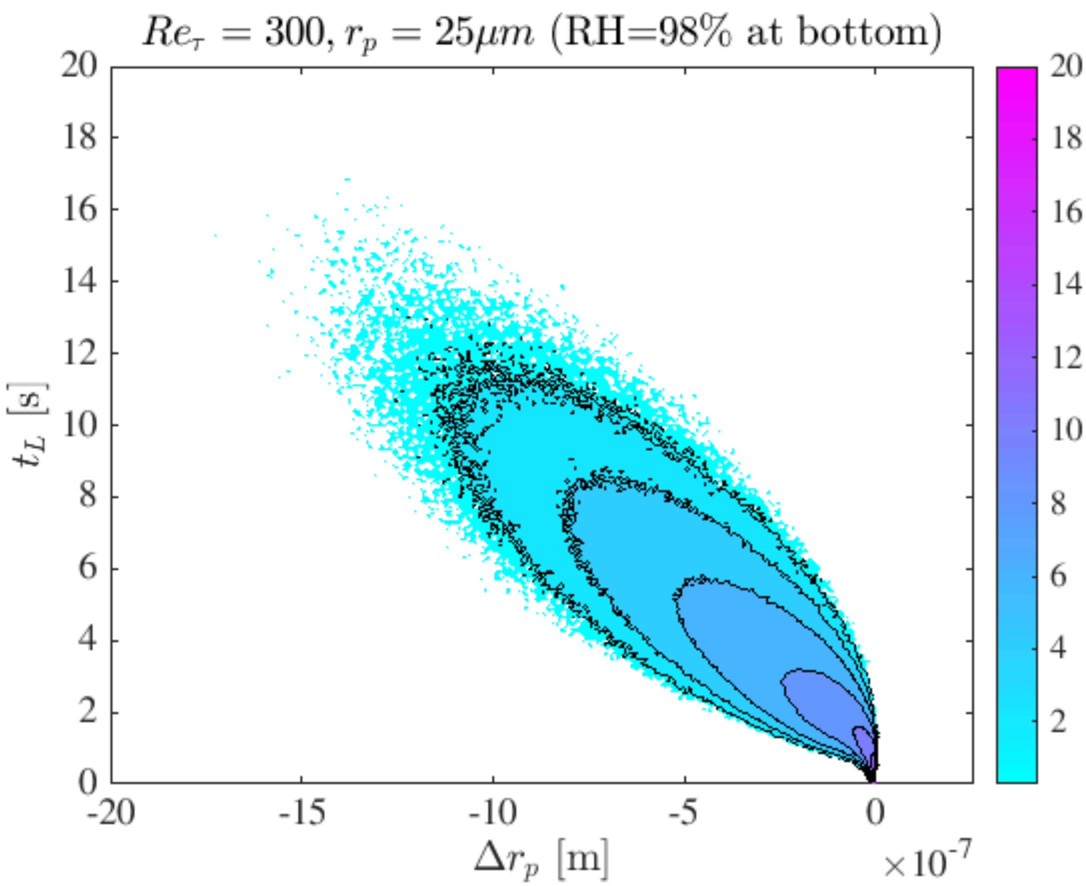
Attached are two 2D-PDFs showing the relationships between the residence time and droplets' temperature and radius change. The simulation was run at the benchmark boundary conditions "M1" except the reduced bottom RH from 100% to 98%. The mass loading of droplets is 5%. These two plots could be used as a comparison between the original cases (RH=100% at bottom, c.f. Fig. 7). Density legends are plotted in logarithm scale.

Due to the reduced bottom relative humidity, the high density area for short-lifetime droplets are shifted near the zero, which is as expected as the conclusion drawn in the original discussion (c.f. Sect. 3.b.2 and 3.b.3, and Eq. (21)).



$Re_\tau = 300, r_p = 25\mu m$ (RH=98% at bottom)
t_L [s]
ΔT_p [K]
20
18
16
14
12
10
8
6
4
2
0
-1.5
-1
-0.5
0
4
2
0
-2
-4
-6
-8
-10
-12



$Re_\tau = 300, r_p = 25\mu m$ (RH=98% at bottom)
t_L [s]
Δr_p [m]
$\times 10^{-7}$
20
18
16
14
12
10
8
6
4
2
0
-20
-15
-10
-5
0