
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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BC group	rp	phim	T_bot	T_top[K]	RH_bot	RH_top	Re_tau	delta [m]	lx [m]	ly [m]	Hatotal	Hqtotal	Htotal	Haturb	Hadiff	Hapart	Hqturb	Hqdiff	Hqpart	F	dTp [K]	drp [m]
M1	0	0	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.2340E+01	7.6101E+01	8.8440E+01	4.7997E-03	1.2340E+01	0.0000E+00	2.5686E-02	7.6180E+01	0.0000E+00	0.0000E+00	NaN	NaN
M1	20	0.01	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.1700E+01	7.6710E+01	8.8409E+01	5.4238E-03	2.0825E+00	9.6297E+00	2.3520E-02	9.3773E+01	-1.7055E+01	1.1743E+07	2.9226E-01	9.3430E-09
M1	25	0.01	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.1863E+01	7.6792E+01	8.8655E+01	5.0395E-03	5.7830E+00	6.0891E+00	2.4157E-02	8.9199E+01	-1.2322E+01	5.4027E+06	2.6977E-01	8.5462E-09
M1	45	0.01	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.2412E+01	7.6362E+01	8.8773E+01	4.5484E-03	1.0179E+01	2.2216E+00	2.5027E-02	8.0921E+01	-4.5427E+00	7.7619E+05	1.1804E-01	6.2745E-09
M1	75	0.01	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.2641E+01	7.6684E+01	8.9325E+01	4.4580E-03	1.0755E+01	1.5583E+00	2.4951E-02	7.6805E+01	-7.7527E-02	1.6882E+05	-6.3908E-02	7.0231E-10
M1	125	0.01	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.2600E+01	7.6829E+01	8.9428E+01	4.5017E-03	1.1484E+01	1.1140E+00	2.4795E-02	7.4769E+01	2.1348E+00	3.5092E+04	-1.5139E-01	-6.5640E-09
M1	200	0.01	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.2533E+01	7.6773E+01	8.9305E+01	4.6155E-03	1.1802E+01	7.2143E+01	2.5111E-02	7.4718E+01	2.0875E+00	8.1753E+03	-1.3696E-01	-1.1033E-08
M1	20	0.05	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	9.8047E+00	7.8948E+01	8.8752E+01	5.6301E-03	-1.1642E+01	2.1507E+01	1.9207E-02	1.3010E+02	-5.1183E+01	5.8632E+07	2.7914E-01	6.2167E-09
M1	25	0.05	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.0370E+01	7.8640E+01	8.9010E+01	5.0959E-03	-4.0950E+00	1.4534E+01	2.0042E-02	1.1988E+02	-4.0986E+01	3.0299E+07	2.5474E-01	6.1906E-09
M1	45	0.05	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.2215E+01	7.8007E+01	9.0221E+01	4.0340E-03	5.8980E+00	6.3551E+00	2.2051E-02	9.4670E+01	-1.6383E+01	3.8820E+06	1.1296E-01	4.5911E-09
M1	75	0.05	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.3375E+01	7.8618E+01	9.1992E+01	3.5587E-03	7.8015E+00	5.5620E+00	2.2280E-02	7.8962E+01	-2.9041E-01	9.8157E+05	-1.1737E-01	6.2391E-10
M1	125	0.05	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.3321E+01	7.8813E+01	9.2133E+01	3.6823E-03	8.8743E+00	4.4061E+00	2.2421E-02	7.0657E+01	8.0323E+00	1.7677E+05	-1.1550E-01	-4.9034E-09
M1	200	0.05	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.3148E+01	7.8856E+01	9.2003E+01	4.0088E-03	9.9843E+00	3.1451E+00	2.3217E-02	6.9858E+01	8.9957E+00	4.1766E+04	-1.1546E-01	-9.2459E-09
M1	20	0.1	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	8.4740E+00	8.0253E+01	8.8727E+01	5.0527E-03	-1.5957E+01	2.4564E+01	1.6576E-02	1.5642E+02	-7.6121E+01	1.1780E+08	2.6318E-01	4.9552E-09
M1	25	0.1	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	9.2191E+00	7.9971E+01	8.9190E+01	4.6120E-03	-8.2170E+00	1.7606E+01	1.6759E-02	1.4380E+02	-6.3225E+01	5.3637E+07	2.4032E-01	5.0586E-09
M1	45	0.1	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.1998E+01	7.9921E+01	9.1918E+01	3.6161E-03	3.2703E+00	8.7718E+00	1.9142E-02	1.0715E+02	-2.6907E+01	8.1171E+06	1.0736E-01	4.0188E-09
M1	75	0.1	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.3872E+01	8.0691E+01	9.4562E+01	2.9546E-03	5.6255E+00	8.2371E+00	1.9916E-02	8.2767E+01	-1.9958E+00	1.8647E+06	-2.2426E-02	8.6814E-10
M1	125	0.1	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.3940E+01	8.0792E+01	9.4731E+01	3.0047E-03	6.8355E+00	7.0621E+00	2.0213E-02	6.8549E+01	1.2135E+01	3.5363E+05	-8.8705E-02	-3.6551E-09
M1	200	0.1	301.15	298.15	100%	90%	300	0.04	0.25133	0.25133	1.3674E+01	8.0554E+01	9.4227E+01	3.4308E-03	8.2916E+00	5.3635E+00	2.1353E-02	6.5608E+01	1.4954E+01	1.1873E+05	-9.7564E-02	-7.7426E-09
M2	0	0	301.15	301.15	100%	90%	300	0.04	0.25133	0.25133	-1.5553E-05	3.1791E+01	3.1791E+01	8.5753E-08	2.2218E-04	0.0000E+00	1.0757E-02	3.1808E+01	0.0000E+00	0.0000E+00	NaN	NaN
M2	25	0.05	301.15	301.15	100%	90%	300	0.04	0.25133	0.25133	-2.9110E+00	3.4688E+01	3.1778E+01	1.4320E-03	-1.4122E+01	1.1238E+01	7.3715E-03	7.6006E+01	-4.1327E+01	2.7456E+07	2.8264E-01	6.6971E-09
M2	75	0.05	301.15	301.15	100%	90%	300	0.04	0.25133	0.25133	-6.0814E-02	3.1478E+01	3.1417E+01	1.3518E-05	-9.0558E-01	8.4243E-01	1.0550E-02	4.4720E+01	-1.3213E+01	8.4331E+05	1.1384E-01	5.2734E-09
M2	200	0.05	301.15	301.15	100%	90%	300	0.04	0.25133	0.25133	-3.4693E-03	3.2000E+01	3.1997E+01	3.2876E-06	-1.4358E-02	1.0723E-02	1.0622E-02	3.3589E+01	-1.6107E+00	4.0744E+04	1.4408E-02	1.6507E-09
M3	0	0	301.15	301.15	100%	90%	300	0.04	0.25133	0.25133	1.2301E+01	4.8923E+01	6.1223E+01	4.8028E-03	1.2307E+01	0.0000E+00	1.6570E-02	4.8999E+01	0.0000E+00	0.0000E+00	NaN	NaN
M3	25	0.05	301.15	298.15	100%	100%	300	0.04	0.25133	0.25133	1.4898E+01	4.5570E+01	6.0467E+01	3.8245E-03	-8.1745E+00	2.3133E+01	1.3877E-02	9.8961E+01	-5.3258E+01	2.7059E+07	2.6690E-01	7.4026E-09
M3	75	0.05	301.15	298.15	100%	100%	300	0.04	0.25133	0.25133	1.3912E+01	4.9003E+01	6.2914E+01	3.1522E-03	6.3071E+00	7.5820E+00	1.5649E-02	6.0482E+01	-1.1498E+01	8.6609E+05	3.1198E-02	4.6801E-09
M3	200	0.05	301.15	298.15	100%	100%	300	0.04	0.25133	0.25133	1.3201E+01	5.0035E+01	6.3235E+01	3.9587E-03	9.8021E+00	3.4103E+00	1.5671E-02	4.8164E+01	1.9720E+00	4.0707E+04	-5.6463E-02	-2.0755E-09
M4	0	0	301.15	296.15	100%	90%	300	0.04	0.25133	0.25133	2.0502E+01	1.0194E+02	1.2244E+02	8.0046E-03	2.0512E+01	0.0000E+00	3.4550E-02	1.0217E+02	0.0000E+00	0.0000E+00	NaN	NaN
M4	25	0.05	301.15	296.15	100%	90%	300	0.04	0.25133	0.25133	1.9394E+01	1.0439E+02	1.2378E+02	7.4104E-03	2.0425E+00	1.7457E+01	2.7593E-02	1.4607E+02	-4.1190E+01	2.7567E+07	2.3957E-01	6.3285E-09
M4	75	0.05	301.15	296.15	100%	90%	300	0.04	0.25133	0.25133	2.2312E+01	1.0613E+02	1.2844E+02	5.9300E-03	1.3525E+01	8.8208E+00	2.9431E-02	9.9691E+01	6.8352E+00	8.4389E+05	-1.3034E-01	-1.7624E-09
M4	200	0.05	301.15	296.15	100%	90%	300	0.04	0.25133	0.25133	2.1792E+01	1.0590E+02	1.2769E+02	6.6172E-03	1.6558E+01	5.2158E+00	3.0449E-02	9.1058E+01	1.4977E+01	4.0708E+04	-1.9444E-01	-1.5575E-08
M5	0	0	301.15	298.15	100%	80%	300	0.04	0.25133	0.25133	1.2301E+01	1.0280E+02	1.1510E+02	4.8028E-03	1.2307E+01	0.0000E+00	3.4817E-02	1.0296E+02	0.0000E+00	0.0000E+00	NaN	NaN
M5	25	0.05	301.15	298.15	100%	80%	300	0.04	0.25133	0.25133	5.5130E+00	1.1260E+02	1.1811E+02	6.4621E-03	1.1658E-01	5.4686E+00	2.6405E-02	1.4012E+02	-2.7171E+01	2.6912E+07	2.4382E-01	4.9590E-09
M5	75	0.05	301.15	298.15	100%	80%	300	0.04	0.25133	0.25133	1.2729E+01	1.0787E+02	1.2060E+02	3.9879E-03	9.4095E+00	3.3301E+00	2.8810E-02	9.7614E+01	1.0529E+01	8.4313E+05	-1.0885E-01	-3.1861E-09
M5	200	0.05	301.15	298.15	100%	80%	300	0.04	0.25133	0.25133	1.3015E+01	1.0715E+02	1.2016E+02	4.0810E-03	1.0213E+01	2.8058E+00	3.0796E-02	9.1625E+01	1.5711E+01	4.0700E+04	-1.7504E-01	-1.6394E-08
M6	0	0	298.15	301.15	100%	90%	300	0.04	0.25133	0.25133	-1.2301E+01	-1.7095E+01	-2.9396E+01	-4.8028E-03	-1.2307E+01	0.0000E+00	-5.7781E-03	-1.7087E+01	0.0000E+00	0.0000E+00	NaN	NaN
M6	25	0.05	298.15	301.15	100%	90%	300	0.04	0.25133	0.25133	-1.5603E+01	-1.4780E+01	-3.0383E+01	-2.5198E-03	-2.3664E+01	8.0331E+00	-6.2618E-03	2.6463E+01	-4.1444E+01	3.1620E+07	2.9445E-01	5.7073E-09
M6	75	0.05	298.15	301.15	100%	90%	300	0.04	0.25133	0.25133	-1.3307E+01	-2.0302E+01	-3.3610E+01	-3.5532E-03	-9.6368E+00	-3.6816E+00	-2.4287E-03	5.4084E+00	-2.5713E+01	8.4079E+05	2.6254E-01	9.6703E-09
M6	200	0.05	298.15	301.15	100%	90%	300	0.04	0.25133	0.25133	-1.3070E+01	-1.9575E+01	-3.2646E+01	-3.9765E-03	-9.9892E+00	-3.0814E+00	-3.4327E-03	-7.4246E+00	-1.2133E+01	4.0695E+04	1.4491E-01	1.2673E-08
R1	0	0	301.15	298.15	100%	90%	700	0.08	0.50265	0.50265	1.2515E+01	7.6612E+01	8.9126E+01	1.0161E-02	1.2498E+01	0.0000E+00	5.4298E-02	7.6591E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
R1	25	0.01	301.15	298.15	100%	90%	700	0.08	0.50265	0.50265	1.1013E+01	7.8371E+01	8.9383E+01	1.0458E-02	4.2178E+00	6.8457E+00	5.0256E-02	9.5132E+01	-1.6490E+01	3.8519E+07	2.5440E-01	6.6641E-09
R1	75	0.01	301.15	298.15	100%	90%	700	0.08	0.50265	0.50265	1.2989E+01	7.7103E+01	9.0091E+01	8.6497E-03	9.9393E+00	3.0580E+00	5.1590E-02	7.7981E+01	-7.5442E-01	1.6234E+06	-3.6407E-02	1.3696E-09
R1	200	0.01	301.15	298.15	100%	90%	700	0.08	0.50265	0.50265	1.2873E+01	7.7887E+01	9.0758E+01	9.5085E-03	1.1572E+01	1.3031E+00	5.2737E-02	7.5071E+01	2.9153E+00	8.6273E+04	-7.5781E-02	-2.3436E-08
R2	0	0	301.15	298.15	100%	90%	1															

Column name	Unit	Description
BC group	N/A	Boundary conditions group (shown in Table 4 in the paper)
rp	um	initial radius size
phim	N/A	Droplet mass ratio (water/air)
T_bot	K	Temperature of air at bottom
T_top	K	Temperature of air at top
RH_bot	%	Relative humidity of air at bottom
RH_top	%	Relative humidity of air at top
Re_\tau	N/A	Friction Reynolds number
\delta	m	Domain height (z- direction)
lx	m	Domain length (x-direction)
ly	m	Domain length (y-direction)
Hatotal	$J m^{-2} s^{-1}$	Total sensible heat flux
Hqtotal	$J m^{-2} s^{-1}$	Total latent heat flux
Htotal	$J m^{-2} s^{-1}$	Total (enthalpy) flux
Haturb	$J m^{-2} s^{-1}$	Turbulent sensible heat flux
Hadiff	$J m^{-2} s^{-1}$	Diffusive sensible heat flux
Hapart	$J m^{-2} s^{-1}$	Spray-mediated sensible heat flux
Hqturb	$J m^{-2} s^{-1}$	Turbulent latent heat flux
Hqdiff	$J m^{-2} s^{-1}$	Diffusive latent heat flux
Hqpart	$J m^{-2} s^{-1}$	Spray-mediated latent heat flux
F	$\# s^{-1} m^{-2}$	Spray refreshing rate
dTp	K	Measured temperature change of spray
drp	m	Measured radius change of spray